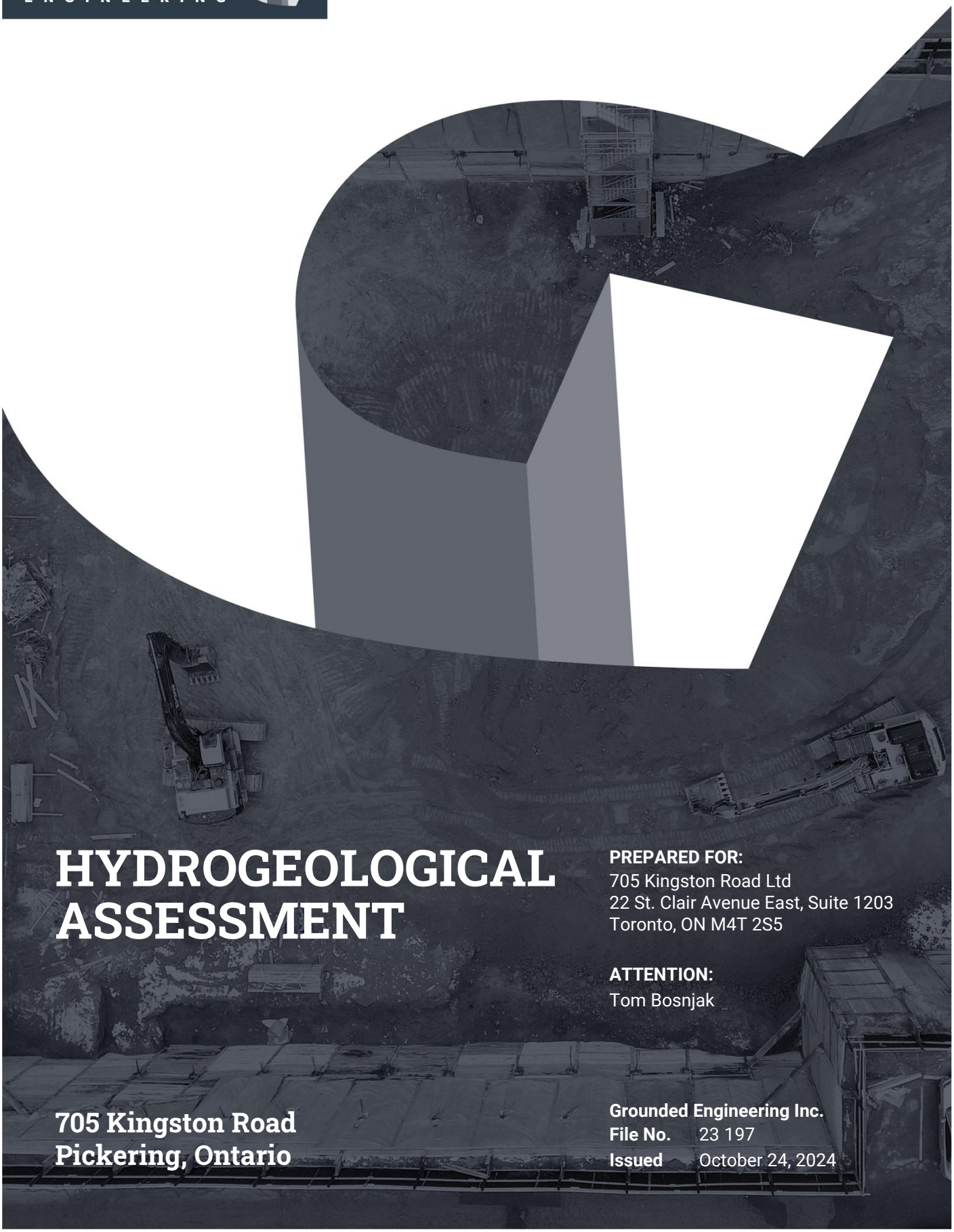

HYDROGEOLOGICAL ASSESSMENT

PREPARED FOR:
705 Kingston Road Ltd
22 St. Clair Avenue East, Suite 1203
Toronto, ON M4T 2S5

ATTENTION:
Tom Bosnjak

705 Kingston Road
Pickering, Ontario

Grounded Engineering Inc.
File No. 23 197
Issued October 24, 2024

1 Banigan Drive, Toronto ON M4H 1G3 | (647) 264-7909 | groundedeng.ca | Grounded Engineering

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1 Introduction

1.1 Background

705 Kingston Road Ltd retained Grounded Engineering Inc., to complete a Hydrogeological Assessment for the property located at the municipal address of 705 Kingston Road, Pickering, Ontario (the Property). The site location is presented in Figure 1.

Based on the architectural drawings (referenced below), it is understood that the proposed development includes constructing five (5) residential towers (ranging from 28 to 35 storeys) raising from three (3) 4-storey podiums, all resting on two (2) basement levels and one (1) parking level, set at a lowest Finished Floor Elevation (FFE) of 95.5± m. The hydrogeological assessment has been prepared for Site Plan application per the requirement of the City of Pickering. The survey plan and proposed architectural drawings are provided in Appendix A.

The hydrogeological assessment was undertaken to evaluate the hydrogeological conditions of the proposed development on the Property and to develop a plan to manage risk of potential impacts associated with activities related to the proposed land use.

Grounded has been provided with the following reports and drawings to assist in our scope of work:

- Site survey, prepared by Speight, Van Nostrand & Gibson Limited (Nov. 7, 2023).
- Architectural Drawings, “705 Kingston Road”; Project 21057, dated September 4, 2024, prepared by Quadrangle Architects Limited. (Updated September 5, 2024)
- Phase II Environmental Site Assessment, “705 Kingston Road, Pickering, Ontario”, Project Number 12699-001, dated June 25, 2021, prepared by Cambium Inc.

Grounded has been provided with factual borehole information for the subject site from other consultants as listed above. Those borehole logs are provided in a report signed and sealed by professional engineers. As such, this borehole information (appended) is taken as factual for present purposes. Unless noted, borehole labels appended with “CMB-” refer to Cambium’s boreholes.

1.2 Scope of Work

A summary of the scope of work is provided below:

- Background Information Review: Review of available background geologic and hydrogeological information for the Property and surrounding areas. This included a review of the Ministry of the Environment, Conservation and Parks (MECP) well records, watershed information by the Toronto Region Conservation Authority (TRCA), and results of previous studies and subsurface investigations.
- Private Well Survey: A well survey was conducted for properties within 250 m of the Property.
- Groundwater Level Monitoring: Groundwater level monitoring was conducted in order to assess the groundwater flow conditions.
- Hydraulic Conductivity Test: In-situ hydraulic conductivity tests were conducted in select monitoring wells to assess hydraulic conductivity of the strata. The underlying soils were assessed in order to determine potential dewatering requirements.
- Water Balance: A water balance and assessment of infiltration rates for existing (pre-development) and post development conditions was completed to determine the feasibility of the proposed development.

2 Site Information

2.1 Site Location and Description

The Property is located north of Highway 401, at the east corner of the intersection of Whites Road North and Kingston Road in Pickering, Ontario. The Property is irregular in shape, with a total area of 2.7317 ha (27,317 m^2). The Property is currently developed as a commercial plaza with a multi-tenant commercial building, and a standalone commercial restaurant building, with associated at-grade asphalt parking lot across the central portion of the Property. The existing site conditions are presented in Figure 2.

The Property and the immediate neighboring areas are serviced with municipal piped water and sewage services.

2.2 Topography & Drainage

The Ministry of Natural Resources and Forestry (MNRF) and Ministry of Energy, Northern Development and Mines (MENDM) database were searched to obtain topographic and geological maps of Ontario for review. The maps are provided as Appendix B and D. The information obtained is summarized below:

Records	Information
Topographic Maps	The approximate elevation of the Property ranged from 105 masl in the northwest, sloping down to 98 masl in the southeast.
Hydrology	The nearest body of water is Amberlea Creek, located approximately 160 m northeast of the Property and runs southeast toward Frenchman's Bay. Frenchman's Bay is located approximately 1.2 km east of the Property. Lake Ontario is located approximately 1.6 km southeast of the Property and is connected to Frenchman's Bay via a small tributary.
Run Offs	Based on the topography of the Property, surface water is anticipated to flow east toward the nearest catch basin. Based on the locations of Amberlea Creek and Frenchman's Bay, regional groundwater is inferred to flow to the southeast.

2.3 Regional Physiography

From a regional perspective, the Property is situated within the physiographic feature known as the Iroquois Plain, with the northern portion of the Property within sand plains, and the southern portion within the clay plains. The Iroquois Plain was formed during glaciation, when the lowlands of Lake Ontario were flooded by Lake Iroquois, covering the previous clay and till deposits, and adding a layer of sand in some locations. The shoreline of the historical glacial Lake Iroquois can be seen across the central and eastern portion of this physiographic region, and at the Scarborough Bluffs, it aligns with the present shoreline of Lake Ontario. River mouths and bays of nine (9) rivers and creeks are located within this region. The Iroquois Plain post-glacial erosion and deposition modified valleys, while the areas between valley features are characterized by clays and till. (TRCA, 1980).

The Property is located within the Toronto and Region Conservation Authority (TRCA) jurisdiction; however, it is not within a TRCA regulated area. Based on TRCA watershed mapping, the Property is considered to be part of the Lake Ontario Waterfront Watershed and is on the cusp of the Petticoat Creek Watershed. The source protection area and watershed maps are presented in Appendix C.

2.4 Regional Geology and Soils

Based on the published information, the regional geology is described as below.

Records	Information
Geological Maps	<u>Overburden:</u> The overburden on the Property is comprised of stone-poor, sandy silt to silty sand textured till and fine-textured glaciolacustrine deposits comprised of silt and clay with minor sand and gravel. <u>Bedrock:</u> The bedrock beneath the Property is part of the Blue Mountain Formation, which is comprised of shale, limestone, dolostone and siltstone.

Records	Information
	Depth to Bedrock: Based on the well record for well ID #4601906, located south of the Property, bedrock was encountered at approx. 28 mbgs and therefore is anticipated to be encountered at an elevation of approximately 70 – 77 masl on the Property. Bedrock was not encountered during the subsurface investigations conducted at the Property.

It should be noted that the subsurface soil and rock conditions described above represent generalized conditions only and should not be considered site specific. The geological mapping is presented in Appendix D.

2.5 Regional Hydrogeology

The Toronto and Region Conservation Authority (TRCA) has summarized the regional hydrogeologic conditions present within the Pickering/Ajax Sector of the Lake Ontario Waterfront Watershed (TRCA, 1980) and the Petticoat Creek Watershed (TRCA, 2012). As per TRCA (2012), the glacial till deposits in this region form aquitards, while the interglacial deposits form three (3) regionally extensive aquifer complexes within the watershed. This includes the Oak Ridges Aquifer Complex (ORAC), Thorncliffe Aquifer Complex (TAC) and the Scarborough Aquifer Complex (SAC). Groundwater flow within all three aquifer complexes is generally from north to south, toward Lake Ontario with local deflections toward stream reaches. Horizontal hydraulic gradients within these aquifers generally range from 0.01 to 0.001 m/m (TRCA, 2012).

The Oak Ridges Moraine is a ridge of land that runs parallel to Lake Ontario and is located approximately 60 km north of the lake. The Oak Ridges Aquifer Complex is the shallowest aquifer in this region, which occurs locally within sands and gravels deposited during the Mackinaw Interstadial (MIS) period (considered equivalent in time to depositional processes which formed the Oak Ridges Moraine). The regional groundwater flow direction in the ORAC generally follows the topography, and the aquifer can be up to 100 m in thickness consisting of granular sediments with interlaying finer material. The overall permeability of the ORAC is medium to high. Overlying the ORAC are recent glaciolacustrine deposits, which consist of sand, silts and clay, generally of low permeability.

The TAC and the SAC are both deeper aquifer complexes which are generally comprised of sands, silt and clays, and can both be up to 60 m thick. The permeability of the TAC is generally high. The flow patterns in these deeper groundwater systems are similar to that of the shallow system (ORAC), however, the topographical effects on the groundwater flow direction is much weaker (LSRCA, 2010).

2.6 Regional Climate

The following general climate data for the Property was obtained from the TRSPA Water Balance Tool with Climate Data for Region of Durham.

Mean annual precipitation (mm/yr)	864 mm
Mean annual evapotranspiration	361 mm
Mean annual water surplus	503 mm

The precipitation data was based on Toronto and Region Climate Data. It is noted that the above are average values, which are representative in a regional context. There will be seasonal and annual variations in these values. However, the average values will govern long-term groundwater recharge and discharge rates. Therefore, average values are appropriate for assessment of hydrogeologic conditions at the site.

2.7 Groundwater Resources

Private well records from the MECP well record database was reviewed for wells located within 250 m radius of the Property. A total of sixty-five (65) well records were retrieved from the well record database. The MECP well records are presented in Appendix F. Well record locations are presented in plan on Figure 3. A summary of data obtained is presented in the following table.

Total Number of Wells	**65**
Wells completed in Overburden	33 (51%)
Wells completed in Bedrock	2 (3%)
Unknown	30 (46%)
Depth Ranges	
50 ft. or less	32 (49%)
51 ft. to 100 ft.	3 (5%)
101 ft. to 200 ft.	0 (0%)
Unknown	30 (46%)
Water Use	
Monitoring/Test Holes	28 (43%)
Commercial Dewatering	3 (5%)
Water Supply (domestic)	3 (5%)
Abandoned (Commercial Supply)	1 (2%)
Abandoned (Other)	14 (21%)
Unknown	16 (24%)

MECP well records for wells completed in the vicinity of the Property show that the primary aquifer used for potable water is within coarse grained deposits or shale bedrock. Over 50% of wells were

installed within 30 mbgs (up to 100 ft.). Bedrock was encountered at the location of five (5) wells which extended to a maximum depth of 30 m (100 ft.) below grade.

2.8 Private Well Survey

A door-to-door water well survey of all properties located wholly or partially within a 250 m of the Property was completed on October 8, 2024, to characterize the groundwater condition. Based on the private well survey, it was concluded that no sites within a 250 m radius of the Property are on private well water.

Well records were searched through the MECP database within a 250 m radius of the Property boundary. Three (3) domestic well records were identified in this radius, and records indicate that these wells were installed and/or in use between the mid-1950s to 1970s. Each of these locations were thoroughly investigated during the private well survey, including the area within a 50 m radius from the marked domestic well locations, and observations indicate that none of these wells are present. The Property is located in a developed area of the City of Pickering, and all properties are municipally serviced. The private well survey letter distributed to residents and/or landowners within the 250 m radius of the Property is included in Appendix G.

The location of the wells surveyed (including the historical domestic well locations) are presented in Figure 3. Observations from the private well survey are summarized below:

MECP Domestic Well Record ID	Municipal Address	Private Well Survey Observations
4601905	773 Sheppard Avenue, Pickering	Property is currently developed with a detached residential single-family dwelling. Water shut off valve was not observed on the property; however, fire hydrants were present along the north side of Sheppard Avenue. Based on neighbouring properties along Sheppard Avenue, it is apparent this residential subdivision is serviced with municipal water. It is unlikely that this domestic well is still present at this location.
4601907	755 Omega Drive, Pickering	Property is under construction for development of a new residential apartment complex. Fire hydrants and municipal water shutoff valve were observed on the property. Confirmed domestic well was no longer present at this location.
4604328	1460 Whites Road North, Pickering	Property is currently developed with a new residential apartment complex. Fire hydrant was observed on the property. Confirmed domestic well was not longer present at this location.

2.9 Subsurface Investigation

The previous subsurface investigation conducted by Cambium was completed on May 25 and 31, 2021. Subsurface investigations were conducted by Grounded at the Property on the following dates:

- October 10 – 13, 2023
- November 1 – 2, 2023
- March 4 – 6, 2024

The field investigations are outlined below. Borehole logs are presented in Appendix H. The borehole and monitoring well locations are shown on Figure 2. Cross sections are shown in Figure 4.

Investigation Summary	**Cambium Investigation (2021):**
	• Advancing of three (3) boreholes to depths of approximately 6.7 m below ground surface (mbgs)
	  ○ CMB-101, CMB-102, CMB-104
	• Advancing of one (1) borehole to a depth of 4.5 mbgs
	  ○ CMB-BH103
	• Installation of four (4) monitoring wells (all boreholes)
	Grounded Investigation (2023):
	• Advancing of one (1) borehole to a depth of approximately 21 mbgs
	  ○ BH101
	• Advancing of four (4) boreholes to depths of approximately 15 mbgs
	  ○ BH102-D, BH103, BH104-D, BH105-D
	• Advancing of one (1) borehole to a depth of approximately 6.7 mbgs
	  ○ BH106
	• Installation of six (6) monitoring wells, and three (3) shallow nested monitoring wells
	  ○ BH101, BH102-S/D, BH103, BH104-S/D, BH105-S/D, BH106
	• Decommissioning of the four (4) deeper monitoring wells due to high methane levels.
	  ○ BH101, BH103, BH104-D, BH105-D
	Grounded Investigation (2024):
	• Advancing of two (2) boreholes to depths of approximately 9.4 to 10.9 mbgs
	  ○ BH201, BH202
	• Advancing of one (1) borehole to a depth of approximately 6.2 mbgs
	  ○ BH203
	• Installation of three (3) monitoring wells (all boreholes)

Boreholes / Monitoring Wells	**Cambium (2021):** BH101-21 BH102-21 BH103-21 BH104-21 **Grounded (2023):** BH101* BH102-S BH102-D BH103* BH104-S BH104-D* BH105-S BH105-D* BH106 **Grounded (2024):** BH201 BH202 BH203
Well Depth (mbgs)	4.6 to 15.2 mbgs

*Monitoring well decommissioned due to elevated methane readings per R.R.O. 1990, Reg. 903.

The stratigraphy beneath the investigated areas of the Property generally consists of the following:

Geological Units	Description
Pavement Structure/Surficial Materials	Boreholes 101 to 103, 105 to 106 and 201 to 203 encountered a 25 to 100 mm thick asphalt pavement structure at ground surface. Boreholes 102, 202 and 203 further encountered 15 to 25 mm of aggregate below the asphalt. Borehole 104 encountered a 190 mm thick concrete pavement structure at ground surface. During the Cambium investigation in 2021, all boreholes (CMB-BH101-21 to CMB-BH104-21) encountered a 50 to 150 mm thick asphalt pavement structure at ground surface. Cambium borehole 104-21 encountered a 0.5 m thick concrete structure at a depth of approximately 2.9 m below ground surface.
Earth Fill	Underlying the surficial materials, the boreholes observed a layer of earth fill that extends to depths of 0.8 to 2.3 m below grade (Elev. 104.2 to 95.8 m). The earth fill varies in composition but generally consists of sands and silts with some gravel. It contains brick fragments, asphalt fragments, and rootlets. The earth fill is typically brown and moist. Due to inconsistent placement and inherent heterogeneity of earth fill materials, the relative density of the earth fill varies. Cambium boreholes 102-21 and 104-21 observed a layer of earth fill underlying the surficial materials, that extended to depths of 0.5 to 2.7 m below grade (Elev. 103.1 to 95.6 masl).
Sandy Silt Till	Underlying the fill materials, all the Grounded boreholes encountered an undisturbed native glacial till deposit with a matrix of cohesionless sandy silts. This unit was encountered at depths of 0.8 to 2.3 m below grade (Elev. 104.2 to

Geological Units	Description
	95.8 m) and extends down to depths of 9.1 to 10.7 m below grade (Elev. 95.9 to 89.0 m). The sandy silt till generally transitions from brown to grey at a depth of 2 to 3 m. It is moist. It contains occasional seams of silty sandy to sand and rock fragments inferring cobbles. Borehole 106 reached target investigation depth in the sandy silt unit. Standard Penetration Test (SPT) results (N-Values) measured in the sandy silt unit range from 34 to over 50 blows per 300 mm of penetration ("bpf"), indicating a relative density ranging from dense to very dense. All Cambium boreholes encountered a sandy silt unit underlying the surficial materials and/or fill materials. Based on stratigraphical descriptions provided in the 2021 borehole logs, the sandy silt unit appears to be the same composition as the sandy silt till unit defined by Grounded. All Cambium boreholes (CMB-101-21 to CMB-BH104-21) encountered this unit, at depths of 0.1 to 3.4 m below grade (Elev. 99.7 to 94.9 masl). All Cambium boreholes were terminated in this unit.
Clayey Silt Till	Underlying the sandy silt till, Boreholes 101 to 105 encountered an undisturbed native glacial till deposit with a matrix of cohesive clayey silts. This unit was encountered at depths of 9.1 to 10.7 m below grade (Elev. 95.9 to 89.0 m) and extends down to target investigation depths of 15.4 to 21.6 m below grade (Elev. 89.6 to 80.8 m). It is generally grey and moist. Within the clayey silt till, Boreholes 101 to 104 encountered a more plastic silt and clay to clayey silt deposit. This unit was encountered at depths of 13.7 to 15.2 m below grade (Elev. 87.2 to 82.9 m) and extends down to depths of 15.2 to 18.3 m below grade (Elev. 84.8 to 82.3 m). It is generally grey and moist. SPT N-values measured in the clayey silt till range from 26 to over 50 bpf (very stiff to hard) while SPT N-values measured in the more plastic silt and clay deposit range from 18 to 49 (stiff to hard).
Bedrock	Bedrock was not encountered during the investigation. Based on the well record for well ID # 4601906, located south of the Property, the bedrock was encountered at approx. 28 mbgs, and therefore is anticipated to be encountered at an elevation of approximately 70 – 77 masl on the Property. Bedrock is part of the Blue Mountain formation and predominantly consists of shale and limestone.

2.10 Groundwater Level Monitoring

- Four (4) monitoring wells were installed by Cambium during the 2021 Phase Two ESA investigation, however only two (2) of these monitoring wells (CMB-BH102 and CMB-BH103) were relied upon for groundwater elevation and flow direction determination (CMB-BH101-21 is dry, CMB-BH104-21 is screened across multiple units)
- Twelve (12) monitoring wells were installed by Grounded between October 2023 and March 2024.
- Four (4) monitoring wells were decommissioned in October 2023 due to sustained elevated methane levels. All wells that discovered elevated methane levels and were subsequently decommissioned, were all screened in the lower clayey silt till unit.

A detailed table of monitoring well information is provided below:

Well ID	Well Diameter (mm)	Ground Surface (masl)	Top of Screen (masl)	Bottom of Screen (masl)	Screened Geological Unit
BH101	50 mm	102.4	84.1	81.1	Clayey Silt Till
BH102-S	50 mm	100.6	97.6	94.5	Sandy Silt Till
BH102-D	50 mm	100.6	88.4	85.4	Clayey Silt Till to Silt & Clay
BH103	50 mm	98.1	85.9	82.8	Clayey Silt Till
BH104-S	50 mm	99.6	97.5	94.4	Sandy Silt Till
BH104-D	50 mm	99.6	87.4	84.4	Clayey Silt Till
BH105-S	50 mm	105.0	98.9	95.8	Sandy Silt Till
BH105-D	50 mm	105.0	92.8	89.7	Clayey Silt Till
BH106	50 mm	98.6	95.0	91.9	Sandy Silt Till
BH201	50 mm	104.5	98.4	95.4	Sandy Silt Till
BH202	50 mm	104.1	96.5	93.4	Sandy Silt Till
BH203	50 mm	101.0	96.4	94.9	Sand and Silt Till
CMB-BH102-21	50 mm	103.6	100.5	97.5	Sandy Silt Till
CMB-BH103-21	50 mm	99.8	98.2	95.2	Sandy Silt Till

Observations pertaining to the depth of the water level and caving were made in the open boreholes immediately after completion of drilling and were reported on the borehole logs. A detailed table of monitoring well observation data and groundwater elevations are appended in Table 1 and are summarized on the borehole logs in Appendix H.

Groundwater elevations were assessed in both the overlying sandy silt till and underlying clayey silt till units. Groundwater within the monitoring wells screened in the sandy silt till was encountered at a range of 92.0 to 103.1 masl. Due to the slow recharge in monitoring wells on the Property, the groundwater elevation of 92.0 masl was measured in borehole 106 on the east portion of the Property, before a stabilized groundwater level had been reached. Based on recent water level measurements, the stabilized groundwater table elevation in the east has been determined to be 96 to 97 masl. Therefore, for design purposes, the stabilized groundwater table follows the topography of the site, and slopes from Elev. 103± m at the west end of the Property to Elev. 96± m in the east.

The groundwater in the sandy silt till was determined to flow locally to the east. The maximum groundwater level in relation to ground surface was 0.0 mbgs (Elev. 101.0 masl) measured in

BH203 and is considered to be anomalously high in relation to the ground surface in this portion of the Property. However, it should be noted that there is a significant grade change from the west (Elev. 105 masl) to the east (Elev. 98 masl) and the groundwater table within the sandy silt till is observed to follow the sloping topography across the Property.

Groundwater within the monitoring wells screened in the lower clayey silt till was encountered at a range of elevations 96.7 to 85.5 masl. This variability in elevation can be attributed to the following items:

- Due to the presence of methane gas, many of the deeper monitoring wells were decommissioned shortly after installation.
- This did not provide the opportunity for the water levels to recover to their full extent given the low permeability of the clayey silt till and therefore slower recharge rates.
- Due to the timing of the decommissioning of the monitoring wells, a complete set of groundwater level measurements could not be collected from the deeper monitoring wells on the same date. As such, groundwater flow direction and the horizontal hydraulic gradient of the clayey silt till could not be determined.

Should the deeper wells have had more time to recover, it is understood that the groundwater levels exhibited would be generally consistent with those in the sandy silt till as evidenced by water levels recorded in BH105-D and BH102-D. As such, the two units are hydraulically connected, and one groundwater table is present at the Property.

Given the natural variability in composition within both glacial till units (i.e., zones of higher sand or clay content), there is a variability in the depth to groundwater across the site. Overall, the local groundwater flow regime is to the east. Regional groundwater flow is expected to flow to the east/southeast towards Lake Ontario.

Groundwater levels fluctuate with time depending on the amount of precipitation and surface runoff and may be influenced by known or unknown dewatering activities at nearby sites. These groundwater level measurements include seasonal fluctuation monitoring.

2.11 Groundwater Quality

A groundwater sample was obtained from one monitoring well on-site (BH104-S) and submitted for laboratory analysis on October 26, 2023. Monitoring well construction details are provided above and in Table 1. The sample was analyzed with respect to The Regional Municipality of Durham Sewer Use By-law (By-Law No. 55-2013). The results of the groundwater testing is presented in Appendix I and summarized below.

Regional Municipality of Durham Sewer Use By-Law	Exceedance
Table 1 – Limits for Sanitary Sewer Discharge	Meets

Regional Municipality of Durham Sewer Use By-Law	Exceedance
Table 2 – Limits for Storm Sewer Discharge	Total Suspended Solids (Limit 15 mg/L, Result 92.6 mg/L)

Negative impacts to sewage works may occur in terms of the quality of groundwater discharged. As noted above, the groundwater sample **exceeded** the Limits for Storm Sewer Discharge and **met** the Limits for Sanitary Sewer Discharge.

In order to avoid impacts to the sewage works caused by groundwater quality, additional treatment will be required before the water can be discharged to the Storm Sewer (e.g. filtration for Total Suspended Solids). Additional treatment will not be required before the water can be discharged to the Sanitary Sewer.

2.12 Hydraulic Conductivity

2.12.1 In Situ Permeability Test (Single Well Response Test)

In situ single well response tests (SWRT) were conducted in select monitoring wells to assess the hydraulic conductivity of the underlying soil. SWRTs were conducted on October 19 - 20, 2023, November 6 and 9, 2023. These tests involve rapid removal of water or addition of a "slug", which displaces a known volume of water from a single well, and then monitoring the water level in the well until it recovers. Data from the SWRT were analyzed using the Bouwer and Rice method (1976). The table below summarizes the results of the hydraulic conductivity testing. The analyses are presented in Appendix J.

The hydraulic properties of the strata applicable to the site are as follows:

Well ID	Well Screen Elevation (masl)	Screened Geological Unit	Hydraulic Conductivity (m/s)
BH101	84.1 - 81.1	Clayey Silt Till	5.2×10^{-8}
BH102-S	97.6 - 94.5	Sandy Silt Till	1.9×10^{-7}
BH104-D	87.4 - 84.4	Clayey Silt Till / Silt and Clay	6.2×10^{-9}
BH105-D	92.8 - 89.7	Clayey Silt Till	5.8×10^{-8}
BH105-S	98.9 - 95.8	Sandy Silt Till	3.9×10^{-9}

2.12.2 Grain Size Analysis

Grain size analyses were conducted on representative soil samples through sieve and hydrometer analysis. The analysis is summarized below and presented in Appendix K.

The hydraulic conductivities of various soil types can also be estimated from grain size analyses. An assessment of the grain sizes was conducted using the excel-based tool, HydrogeoSieve XL (*HydrogeoSieve XL ver.2.2, J.F. Devlin, University of Kansas, 2015*). HydrogeoSieve XL compares the results of the grain size analyses against fifteen (15) different analytical methods.

Given our experience in the area as well as published literature, some of the geometric means provided for the soil were biased low by one or more methods. In these instances, the values determined by these methods were excluded from the mean. The table below illustrates the hydraulic conductivity values estimated from the mean of the analytical methods where the soil met the applicable analysis criteria.

Sample ID	Soil Description	Applicable Analysis Methods	Hydraulic Conductivity (m/s)
BH101 SS3	Sandy Silt Till	Alyamani and Sen, Barr, Sauerbrei	4.5×10^{-8}
BH101 SS9	Clayey Silt Till	Alyamani and Sen, Barr, Sauerbrei	1.9×10^{-9}
BH101 SS10	Silt and Clay	Alyamani and Sen, Barr, Sauerbrei	6.2×10^{-10}
BH101 SS11	Clayey Silt Till	Alyamani and Sen, Barr, Sauerbrei	1.8×10^{-9}
BH102 SS10	Clayey Silt Till	Alyamani and Sen, Barr, Sauerbrei	1.4×10^{-8}
BH102 SS11	Silt and Clay	Alyamani and Sen, Barr, Sauerbrei	3.0×10^{-10}
BH103 SS12	Clayey Silt Till	Alyamani and Sen, Barr, Sauerbrei	2.1×10^{-9}
BH104 SS12	Clayey Silt Till	Alyamani and Sen, Barr, Sauerbrei	1.1×10^{-9}

Based on the in-situ testing and grain size analysis, the Property consists of moderate to low permeability soils and is not considered to be significant in terms of groundwater recharge.

2.12.3 Literature

According to Freeze and Cherry (1979), the typical hydraulic conductivity of the strata investigated at the site are:

Stratum/Formation	Hydraulic Conductivity (m/s)
Earth Fill	10^{-2} to 10^{-6}
Silts	10^{-5} to 10^{-9}
Glacial Tills	10^{-6} to 10^{-12}
Clays	10^{-9} to 10^{-12}

2.13 Infiltration Testing

Infiltration testing was not conducted as part of the Hydrogeological Assessment scope.

2.14 Surface Water Features

A site inspection was conducted on February 28, 2024, to assess the presence of surface water features on, or bounding the Property. The inspection includes the following:

- Inspection of surface and groundwater interactions and associated features
- Inspection of areas of actual and potential groundwater discharge
- Inspection of swales and drainage courses
- Evidence of phreatophytic vegetation, which may indicate seasonally high groundwater levels and/or groundwater discharge and seepage

It is noted that there is a significant grade change across the Property (7 ± m), sloping from west to east. Notable features are summarized as follows:

- Ground cover on the property was majority asphalt parking areas or laneways. Landscaped grass areas with trees/vegetation are present along the southern, western and a portion of the eastern property boundaries. Vegetation (trees, small shrubs, etc.) are also present within the parking lot medians throughout the central portion of the Property.
- An apparent landscaped drainage swale was observed on the south/eastern portion of the Property, running southwest to northeast for surface water runoff from the asphalt parking areas. A catch basin was observed in the center of this drainage swale.
    - Ponded water was observed around the catch basin, which appeared to be clogged with debris (garbage litter, leaves, etc.)
- A secondary drainage swale was observed just south of the Property boundary, running adjacent to Highway 401.
- Amberlea Creek was observed and is located approximately 160 m northeast of the Property and runs southeast towards Frenchman's Bay.

2.15 Review of Current Regulatory Requirements

Current regulatory requirements associated with water supply and hydrogeology in connection with the proposed development was reviewed. This included the review of the Toronto and Region Conservation Authority and the City of Pickering Official Plan. Relevant information is provided below and presented in Appendix L.

2.15.1 Toronto and Region Conservation Authority

According to the Toronto and Region Conservation Authority (TRCA) website, the Property is within TRCA jurisdiction, however it is not within a TRCA regulated area.

The following information is summarized based on the Toronto Source Water Protection mapping and City of Pickering Official Plan maps of the region:

Source Water Protection Regulated Area	Site Details
Wellhead Protection Area	No
Intake Protection Zone	No
Issue Contributing Area	No
Significant Groundwater Recharge Area	No
Highly Vulnerable Aquifer	The majority of the site is not located within an HVA. However, the northern corner of the Property falls within a Highly Vulnerable Aquifer, with a score of 6.
Event Based Area	No
Vulnerable Scoring Area	No

2.15.2 Other Regulatory Authorities

The Property is not located within the Niagara Escarpment Plan Area, Oak Ridges Moraine Plan Area, the Greenbelt Protection Act Area, or a Natural Heritage Area.

3 Discussion and Analysis

3.1 Proposed Development Plan

The proposed development plan is presented in Figure 2B.

The proposed project includes constructing five (5) residential towers (ranging from 28 to 35 storeys) raising from three (3) 4-storey podiums, all resting on two (2) basement levels and one (1) parking level, set at a lowest Finished Floor Elevation (FFE) of 95.5± m. The following summarizes the proposed land coverage areas for the development:

Land Coverage Type	Areas
Building Envelope	0.98 ha
Hard Surface Paving	0.95 ha
Landscape areas for infiltration	0.80 ha
Total Area	**2.73 ha**

No infiltration or Low Impact Design (LID) measures are currently proposed for the Property. In comparison to the existing conditions on the Property, the proposed development includes increased landscaped areas due to:

- The 14 m setback along the south and west Property boundaries per Ontario Ministry of Transportation (MTO) requirements.
- The proposed parkland conveyance in the northern corner of the Property, occupying 10% of the net site area.
- Multiple landscaped Privately-Owned Publicly Accessible Spaces (POPS) proposed throughout the at-grade asphalt paved parking areas.

The increase in landscaped area will directly correlate to increased potential for infiltration across the post-development Property. Landscaped areas across the site may be directly underlain by the P1 parking garage. There will be potential for infiltration in these areas, however it may be limited by the depth of the top of the concrete parking structure.

3.2 Summary of Hydrogeologic Conditions

Based on the review of the available site information, the hydrogeologic conditions of the Property are summarized as follows:

- For design purposes, the stabilized groundwater table follows the topography of the site, and slopes from Elev. 103± m at the west end of the Property to Elev. 96± m in the east.
- The general direction of groundwater flow at the site is to the east.
- The groundwater table is present in all the native soil units.
- The site is underlain by deposits of sandy silt cohesionless till and clays, consistent with the regional physiography of the Iroquois Plains.
- Available source water protection mapping indicates that the northern corner of the Property lies within a Highly Vulnerable Aquifer (score of 6) (according to the TRCA and City of Pickering Official Plan). The underlying soils observed at the site are not consistent with those typically found in HVA areas. These soils tend to be of a higher permeability (higher sand content) and allow for a relatively fast path for water to migrate from the ground's surface down to the aquifer.
- Based on in situ well testing and grain size analysis, the site soils are of moderate to low permeability and are not considered to be significant in terms of groundwater recharge.
- Bulk excavation and foundation excavations will extend below the prevailing groundwater table at the site. Due to the low permeability nature of the soils, a minimal zone of influence with respect to groundwater will be generated during construction/dewatering, as estimated in Section 3.5. Dewatering is not anticipated to generate any long-term affects on the quantity and quality of the underlying aquifer.

- A Phase Two ESA has been prepared for the site and a Record of Site Condition filed (RSC#B-403-8290591592) and acknowledged by the MECP. The soil and groundwater at the site meets the applicable Site Condition Standards.
- The future use of the Property is not anticipated to generate any impacts to the soil or groundwater at the site.
- The ZOI with respect to dewatering will be minimal, such that the migration of potential contaminants from off-site is not anticipated.

3.3 Water Balance Analysis

A water balance model was prepared for the Property to assess the distribution of rainfall run-off and infiltration for existing (pre- and post-development) conditions (Appendix M). The model is based on the TRSPA Water Balance Tool using water budget values based on regional models developed by the Regional Municipality of York presented in Section 2.6. The Thornthwaite method was used to evaluate the relative balance between rainfall, evaporation and evapotranspiration in the shallow soil zones. The water balance for pre-and post-development conditions is summarized below:

Pre-Development Water Balance

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Existing Buildings	6,192	5,350	0	0	5,350
Hard Surface Paving	17,611	15,216	0	0	15,216
Landscape Areas	3,514	3,036	1,269	707	1,061
Total	**27,317**	**23,602**	**1,269**	**707**	**21,626**

The post-development water balance accounts for hard surfaced areas created by buildings and pavements and uses the proposed land use statistic information provided by Quadrangle Architects Limited.

Post-Development Water Balance

	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Infiltration (m^3)	Run-Off (m^3)
Proposed Development (Building areas)	9,819	8,484	0	0	8,484
Proposed Hard Surface Paving	9,508	8,215	0	0	8,215
Proposed Landscape Areas	7,990	6,903	2,884	1,608	2,411
Total	**27,317**	**23,602**	**2,884**	**1,608**	**19,110**

There is an increase in landscaped area which will directly correlate to increased potential for run-off capture and infiltration across the post-development Property. As such, there is a post-development infiltration surplus. Nevertheless, to further assist with maintaining groundwater recharge and function at the Property post-development, surface water run-off from roof tops can be captured and used as a resource.

The volume of surface water run-off available from roof tops was calculated to be 7,635 m^3 (90% of volume captured). The volume of roof run-off available is compared to the difference in infiltration volume between pre-development and post-development, as noted below:

Potential Post-Development Infiltration Deficit (m^3)	Volume of Roof Run-off Available (m^3)	Percentage of Roof Run-off Required to Match Pre-Development Infiltration (%)
- 901*	7,635	-12%*

*Negative values indicate there will be a run-off surplus based on the architectural drawings provided as of September 5, 2024.

3.4 Groundwater Control Requirements

Numerical analyses were conducted for both short-term and long-term dewatering scenarios. The modeling was conducted using computer software, which deploys the finite element modelling method. The Finite Element Model (FEM) for groundwater seepage indicates the short term (construction) and long term (permanent) dewatering requirements as provided below.

Prior to excavation, positive dewatering to lower the groundwater table will be required to facilitate construction as well as to maintain the integrity of the subgrade for foundation and slab-on-grade support. The water level must be kept at least 1.2 m below the lowest excavation elevation during construction. Failure to dewater prior to excavation will result in unrecoverable disturbance of the subgrade, which will render advice provided for undisturbed subgrade conditions inapplicable.

Dewatering will take some time to accomplish prior to the start of excavation. An estimated initial volume of stored groundwater has been provided below, which will require removal before steady state is reached.

If the excavation is exposed to the elements, stormwater will have to be managed. The short term control of groundwater should consider stormwater management from rainfall events. A dewatering system should be designed to consider the removal of rainfall from excavation. A design storm of 25 mm has been used in the quantity estimates.

As required by Ontario Regulation 63/16, a plan for discharge must consider the conveyance of storm water from a 100-year storm. The additional volume that will be generated in the occurrence of a 100-year storm event (94mm) is approximately 1,790,000 L.

Based on the Grounded Geotechnical Report (October 2024) which proposes a raft foundation below the proposed towers and spread footings below the podiums, the following design considerations have been incorporated into the numerical modelling/dewatering estimates:

- For design purposes:
  - a **design water table of Elev. 103 m** should be assumed in the proposed development area within the west portion of the site.
  - A **design water table of Elev. 96 m** should be assumed in the proposed development area within the east portion of the site.
- Excavation depth assumes a raft foundation under the P1 parking structure across the entire site.
  - The lowest P1 FFE is at about Elev. 95.5± m
- Excavation will extend to approximately Elev. 94± m.
- Based on the sloping design groundwater table, the excavation will extend to:
  - Approximately 9± m below the groundwater table in the west end of the site.
  - Approximately 2± m below the groundwater table in the east end of the site.
- The dewatering target is at Elev. 92.8 m.
- The proposed shoring at the site is assumed to consist of conventional soldier piling and lagging for present purposes.
- A fully drained underground structure is proposed.
- A Factor of Safety of 3 was used for all groundwater seepage volume calculations.
- The design hydraulic conductivities for the site are:

Design Hydraulic Conductivity	
Stratum/Formation	**K (m/s)**
Earth Fill	1.0×10^{-5}
Cohesionless Till (Sandy Silt)	2.0×10^{-7}
Cohesive Till (Clayey Silt)	2.0×10^{-8}

Stored Groundwater (pre-excavation/dewatering)					
Volume of Excavation (m^3)	**Volume of Excavation Below Water Table (m^3)**	**Estimated Volume of Stored Groundwater**		**Estimated Volume of Available Groundwater**	
		m^3	**L**	**m^3**	**L**
142,800	114,250	22,850	22,850,000	11,500	11,500,000

The quantity estimates for both short- and long-term conditions are presented below and in Appendix N.

Short Term (Construction) Groundwater Quantity – Safety Factor of 3 Used					
Groundwater Seepage		Design Rainfall Event		Total Daily Water Takings	
L/day	L/min	L/day	L/min	L/day	L/min
95,000	66.0	476,000	330.6	571,000	396.5

Long Term (Permanent) Groundwater Quantity – Safety Factor of 3 Used					
Groundwater Seepage		Infiltration Design Rainfall Event (25mm)		Total Daily Water Takings	
L/day	L/min	L/day	L/min	L/day	L/min
75,000	52.1	23,000	16.0	98,000	68.1

A professional dewatering contractor must be consulted to review the subsurface conditions and to design a site-specific dewatering system. It is the dewatering contractor's responsibility to assess the factual data and to provide recommendations on dewatering system requirements.

Regulatory Requirements	
Environmental Activity and Sector Registry (EASR) Posting	Required
Short Term Permit to Take Water (PTTW)	Not Required
Long Term Permit to Take Water (PTTW)	Required
Short Term Discharge Agreement [Durham Region]	Required
Long Term Discharge Agreement [Durham Region]	Required

3.5 Assessment of Potential Impact

It is understood that the proposed project includes constructing five (5) residential towers (ranging from 28 to 35 storeys) raising from three (3) 4-storey podiums, all resting on two (2) basement levels and one (1) parking level, set at a lowest Finished Floor Elevation (FFE) of 95.5± m. The Property will be serviced with municipal piped water, storm and sanitary sewers. The proposed nature of the development does not pose any significant concern with respect to potential impact to groundwater quality or quantity in the area, per the following report sections.

Available source water protection mapping indicates that the northern corner of the Property lies within a Highly Vulnerable Aquifer (score of 6) (according to the TRCA and City of Pickering

Official Plan). The underlying soils observed at the site are not consistent with those typically found in HVA areas. These soils tend to be of a higher permeability (higher sand content) and allow for a relatively fast path for water to migrate from the ground's surface down to the aquifer.

- Based on in situ well testing and grain size analysis, the site soils are of moderate to low permeability and are not considered to be significant in terms of groundwater recharge.
- Bulk excavation and foundation excavations will extend below the prevailing groundwater table at the site. Due to the low permeability nature of the soils, a minimal zone of influence with respect to groundwater will be generated during construction/dewatering, as estimated in the following report section.
- Dewatering is not anticipated to generate any long-term affects on the quantity and quality of the underlying aquifer.
    - A Phase Two ESA has been prepared for the site and a Record of Site Condition filed (RSC#B-403-8290591592) and acknowledged by the MECP. The soil and groundwater at the site meets the applicable Site Condition Standards.
    - The future use of the Property is not anticipated to generate any impacts to the soil or groundwater at the site.
    - The ZOI with respect to dewatering will be minimal, such that the migration of potential contaminants from off-site is not anticipated.

3.5.1 Zone of Influence

Localized dewatering of an aquifer produces a cone-shaped depression in the groundwater table that extends some distance away from the dewatering point. The lateral distance which the cone of depression extends (i.e., the distance to where drawdown is effectively zero) is known as the Zone of Influence (ZOI).

The ZOI was calculated using the Sichardt equation below.

$$R_0 = 3000(\Delta H)\sqrt{K}$$

ΔH	=	dewatering thickness (m)
K	=	hydraulic conductivity (m/s)
R_0	=	radius of influence (m)

The ZOI with respect to groundwater seepage at the site is summarized as follows.

Zone of Influence (ZOI)		
	Short Term (Construction)	**Long Term (Permanent)**
Pile and Lagging Scenario	4 m – 9 m	3 m – 9 m

3.5.2 Land Stability

The impacts to land stability on adjacent structures due to the proposed short- and long-term dewatering at the site are summarized as follows:

Land Stability		
	Short Term (Construction)	**Long Term (Permanent)**
Dewatering Thickness (m)	3 m – 7 m	2 m – 7 m
Increase in Effective Stress (kPa)	31 kPa – 69 kPa	20 kPa – 69 kPa
Maximum Theoretical Settlement due to Dewatering (mm)	3 mm – 5 mm	2 mm – 5 mm
Public Realm Theoretical Settlement due to Dewatering (mm)	<5 mm	<5 mm

The theoretical maximum induced settlement (estimated) occurs directly adjacent to the proposed excavation and decreases in a nonlinear fashion with distance away from the excavation.

On this basis, the impact of the proposed dewatering on the existing adjacent structures is considered by Grounded to be within acceptable limits.

3.6 Mitigation Measures to Maintain Hydrogeologic Functions

3.6.1 Maintenance of Groundwater Recharge

The existing groundwater recharge rates at the Property are approximately 79 mm/a. Based on the water balance analysis, as outlined in Section 3.3, mitigation measures may be proposed to maintain recharge rates following development. The following measures can be incorporated as part of the site development to help regulate run-offs:

- Collection of clean run-offs from the building rooftops and redirection to grass areas and overland flow.
- Provision of an extra thickness of topsoil at the Property (approximately 0.3 m) on open areas (especially in landscaped areas resting on top of the P1 underground parking structure) to promote water storage in surficial soil and infiltration.

3.6.2 Maintenance of Groundwater Transmission Pathways

As previously indicated, the soils present on the Property are of low permeabilities. No significant groundwater flow or transmission zones were encountered on the Property. However, the overall continuity of the groundwater flow at the Property should be maintained, where practical.

Generally, the groundwater transmission pathways can be maintained through the following means:

- Bedding materials beneath underground services may serve as a subdrain to collect and convey groundwater. To prevent drainage of groundwater along bedding materials, clay trench plugs should be provided at all manhole locations in order to cut off the granular bedding.
- The excavation of any underground services or utilities across permeable layers may interrupt the groundwater flow. It is recommended that trench backfilling be carried out with materials that are similar to the materials that have been excavated.

Groundwater flow may occur into the open shallow excavations if more permeable deposits (such as sand or gravel) are encountered; however, based on the results of the subsurface investigation, active groundwater control (such as from wells or well points) is anticipated during construction, therefore groundwater seepage will be controlled. Localized groundwater flow into shallow excavations can be controlled by utilizing localized sumps and pumps at the base of the excavations. In addition to this, it is recommended that any excavations should be staged or constructed in such a manner to avoid the collection of overland drainage.

4 Source Water Impact Assessment and Mitigation Plan (SWIAMP)

4.1 Risk Assessment

4.1.1 Identification of Vulnerable Areas

Based on source water protection mapping, the northern corner of the Property has been identified as being located within a Highly Vulnerable Aquifer (score of 6). The Property is not located within any Wellhead Protection Areas (Q1, Q2, WHPA-E, etc.) or Intake Protection Zones (IPZ).

Additionally, the Property is not located within the Niagara Escarpment Plan Area, Oak Ridges Moraine Plan Area, the Greenbelt Protection Act Area, or a Natural Heritage Area.

The Source Protection Area and Watershed are presented in Appendix C.

4.1.2 Identification of Anthropogenic Transport Pathways

There are no anthropogenic (ex. man-made) transport pathways from ground surface to the relevant aquifers (ex. existing, unused or abandoned water wells; pits and quarries; sewers) present on the Property.

4.1.3 Identification of Water Quality Impacts and Threats

The Clean Water Act, 2006, prescribes a number of land uses that are considered to be drinking water threats. The applicable circumstances for activities and conditions to the Property are listed, along with a qualitative evaluation of the threat level, in table below. For the proposed development Property, three activities from the list are considered relevant potential drinking water quality threats: application of winter de-icing salt, fuel handling and storage, and snow storage (*Tables of Drinking Water Threats, Clean Water Act, 2006, Ontario Ministry of the Environment (as amended July 2018)*).

The drinking water quality threats is summarized below:

#	WHPA Zone on Property	Intrinsic Vulnerability Score	Identified Prescribed Drinking Water Threat	Short Form Name	Type of Threat (Chemical or Pathogen)	Applicable Circumstances	CWA Rating of the Drinking Water Threat
1	HVA	6	Road Salt - Application	Road Salt	Chemical	The road salt is applied in an area where the percentage of total impervious surface area, as set out on a total impervious surface area map, is 30% or more. The application may result in the presence of Chloride /Sodium in groundwater or surface water.	Low
			Road Salt – Handling & Storage (Exposed)			The storage of road salt exposed to precipitation, runoff or snow melt where the quantity is < 10 kg, 10 – 20 kg or >20 kg. The storage and handling of road salt where exposed may result in the presence of Chloride/Sodium in groundwater or surface water.	

#	WHPA Zone on Property	Intrinsic Vulnerability Score	Identified Prescribed Drinking Water Threat	Short Form Name	Type of Threat (Chemical or Pathogen)	Applicable Circumstances	CWA Rating of the Drinking Water Threat
			Road Salt – Handling & Storage (Potentially Exposed)			The storage of road salt in an enclosure such as outdoor brings, salt boxes, tarps or containers, 3-sided storage sheds or domes, or any other means where it has the potential to be exposed to precipitation, or runoff from precipitation or snow melt, where the quantity store is <50 kg. The storage and handling or road salt where it is potentially exposed may results in the present of Chloride/Sodium in groundwater or surface water.	
2	HVA	6	Fuel – Handling & Storage	Fuel	Chemical	Liquid fuel storage in a tank at or above grade at a facility as defined in section 1 of O.Reg. 213/01, a facility as defined in section 1 of O.Reg. 217/01, or a facility that manufactures or refines fuel. Fuel stored or handled in a quantity that is: • > 2,500 litres • 25 - 250 litres • 250 - 2500 litres • < 25 litres Fuel handling and/or storage is anticipated to occur during construction on the Property.	Low
3	HVA	6	Snow – Storage	Snow	Chemical	Infiltration or discharge of snowmelt from the storage of snow on commercial or industrial sites, where the snow storage is: • 200 – 2000 m^2 • <200 m^2 • >2000 m^2	Low

4.1.4 Identification of Drinking Water Quantity Impacts and Threats

Currently the area for the proposed development is occupied by a commercial plaza with an asphalt surfaced parking lot. The Property provides minimal groundwater recharge into the shallow groundwater system. The Property and properties located within the Study Area are serviced with municipal drinking water via Lake Ontario. As such, locally, the underlying aquifer systems are not directly utilized for drinking water purposes, however it is important to maintain groundwater recharge and minimize impacts to the overall watershed.

The proposed development includes an increase in landscaped areas across the Property as well as potential run-off mitigation measures (i.e., green roofs), which will serve to help maintain groundwater recharge and function. Though the proposed development at the Property will require groundwater control during the construction and post-construction period, the subsurface investigation completed at the Property identified earth fill underlain by sandy silt till, and clayey silt till that extended to the full depth of investigation of 15.4 to 21.6 m below grade. An enhanced zone of groundwater flow was not encountered within the full depth of subsurface investigation at the Property.

Based on the proposed development design and nature of the underlying low permeability soils, there are no anticipated threats or impacts to drinking water quantity. Furthermore, groundwater recharge to a deeper aquifer at the site will generally be precluded due to the following reasons:

- The presence of asphaltic pavement at the development area of the Property
- A moderately thick layer of clayey silt till (from the subsurface investigation), which will act as a confining layer

4.2 Risk Management Plan

4.2.1 Water Quality Threats Management

4.2.1.1 Application of Road Salt

During construction and post construction, it is expected that salt will be applied to surfaces such as at-grade parking lot, sidewalks, and roadways (temporary and permanent), for safety of vehicular and pedestrian traffic under conditions of snow or ice or both.

To reduce salt-related parameters from migrating into the groundwater table at the site, the following mitigation and/or management measures are to be implemented:

Preventive, Mitigation, Management Measures
• Storage of salt at the Property shall be placed in water-impermeable containers and in roofed areas of the Property that either are asphalt-paved or have a poured concrete floor to minimize entry into the subsurface.

Preventive, Mitigation, Management Measures
• Run-offs from parking area/driveways will be directed into storm water catch basins located on the Property. This will prevent downward migration into the aquifer. The detailed design of the storm water management system will be provided to Durham Region/City of Pickering as part of the approval process. • The Transportation Association of Canada (TAC) has produced a document titled Syntheses of Best Practices – Road Salt Management (2013). These should be generally followed at the Property unless prohibited.   ○ In addition, best management practices for contractors, residents, and the community are provided by the not-for-profit organization Smart About Salt Council and their recommendations may be of benefit in reducing salt loads.

4.2.1.2 Fuel Handling and Storage

During construction it is expected that fuels such as gasoline and diesel, and other chemicals may be temporarily stored on the Property. The preventive, mitigation and/or management measures are provided below.

Preventive, Mitigation, Management Measures
• Storage and handling of fuel of any kind at the Property shall be supervised and managed accordingly during re-fuelling of all vehicles or machinery. • Fuel required for machinery during construction should be supplied and delivered to site via fuel tanker trucks, where possible. If fuel is to be stored at the site, it shall be stored in an above grade tank on an impervious surface with secondary containment. It shall be appropriately monitored for leaks/spills. Fuels shall not be stored in below grade tanks on the Property. • No above ground or underground fuel storage tanks are proposed to be installed at the Property as part of the future development. However, if any tanks are proposed, such as for a back-up generator, tanks shall be serviced and inspected regularly, ensuring there are no leaks/spills. Tanks shall have secondary containment to prevent the spread of any leaks/spills. • Sorbent spill kits shall be present in an easily accessible location on the Property at all times during construction in the event of a leak or spill from any vehicle, machine or piece of equipment.

4.2.1.3 Snow – Storage

Preventive, Mitigation, Management Measures
• Storage of snow at the Property shall be placed on an exterior impervious surface that is either asphalt-paved or has a poured concrete floor to minimize entry into the subsurface. • Run-offs from parking area/driveways will be directed into storm water catch basins located on the Property. This will prevent downward migration into the aquifer. The detailed design of the storm water management system will be provided to Durham Region/City of Pickering as part of the approval process. • The Transportation Association of Canada (TAC) has produced a document titled Syntheses of Best Practices – Road Salt Management (2013). These should be generally followed at the Property for snow storage, unless prohibited, as there is the potential for salt from de-icing activities to be mixed with the snow that is removed/stored at the Property.   ○ In addition, best management practices for contractors, residents, and the community are provided by the not-for-profit organization Smart About Salt Council and their recommendations may be of benefit in reducing salt loads.

4.2.1.4 Monitoring & Communication Plan

The monitoring, communication and implementation plan, and/or emergency response plan is provided below.

	Description
Monitoring	It is recommended that temporary chemical storage (including salt) and snow storage locations be inspected on a regular basis to ensure integrity of the storage facility. It is recommended that any fuel handling or storage (including temporary) be supervised and inspected on a regular basis to ensure integrity of the vehicles and machinery during construction.
Communication and Implementation Plan	The Property Owner will be responsible for ensuring that property maintenance staff have and maintain an adequate and up-to-date emergency response plan at the Property at all times.
Emergency Response Plan	Any spills or leaks related to chemicals (salt included) located on the Property will be reported to the Spill Action Centre (https://report-pollution.ene.gov.on.ca/) or by calling 1-866-663-8477

4.2.2 Water Quantity Threats Management

4.2.2.1 Dewatering and Depressurization

As short-term groundwater control will be constrained to the sandy silt till aquifer, and all properties within a 250 m radius from the Property are serviced with municipal drinking water sourced from surface water bodies (Lake Ontario), there are no anticipated water quantity threats.

4.2.2.2 Reduction in Aquifer Recharge

Reduction in aquifer recharge is not anticipated in the post-development condition. There will be an increase in landscaped area which will directly correlate to increased potential for infiltration across the post-development Property. Similarly, where possible, run-off mitigation measures will be proposed across the site to help maintain groundwater recharge.

5 Conclusions and Recommendations

- The site is characterized by surficial deposits of earth fill, underlain by native cohesionless sandy silt till deposits, overlying cohesive clayey silt till deposits. The native soils are of moderate to low permeability.
- The **design groundwater table** follows the topography of the Property, and slopes from approximately Elev. 103 ± m at the west end of the site, to approximately Elev. 96 ± m at the east end of the site.
- The general direction of groundwater flow at the site to the east.

- The majority of the site is not located within a Highly Vulnerable Aquifer (HVA). However, the northern portion of the Property falls within an HVA with a score of 6, according to the Toronto and Region Conservation Authority (TRCA) and the City of Pickering Official Plan.
    - The underlying soils observed at the site are not consistent with those typically found in HVA areas. These soils tend to be of a higher permeability (higher sand content) and allow for a relatively fast path for water to migrate from the ground's surface down to the aquifer.
- The Property is **not** located within any Wellhead Protection Areas, Intake Protection Zones, Issue Contributing Areas, Significant Groundwater Recharge Areas, or Event Based Areas.
- MECP well records for wells completed within a 250 m radius of the Property identified sixty-five (65) wells.
    - Well records indicated the presence of three (3) historical domestic wells.
    - A private well survey was conducted for all properties within a 250 m radius of the Property, and concluded that all properties are currently serviced with municipal drinking water. The domestic wells identified in the MECP database search were installed between the mid-1950s and 1970s and are no longer present.
- There will be a post-development infiltration surplus of approximately 901 m^3.
- Low Impact Development measures may be proposed to maintain groundwater recharge or function across the site area.
- The groundwater sample **exceeded** the Limits for Storm Sewer Discharge and **met** the Limits for Sanitary Sewer Discharge.
    - To avoid impacts to the sewage works caused by groundwater quality, additional treatment will be required before the water can be discharged to the Storm Sewer (e.g. filtration for Total Suspended Solids).
    - Additional treatment will not be required before the water can be discharged to the Sanitary Sewer.
- The total short-term discharge volume (storm water and groundwater combined) for the site is 571,000 L/day.
- The total long-term discharge volume (groundwater and infiltration from storm water) for the site is 98,000 L/day.

5.1 Signatures

The Hydrogeological Assessment was conducted by Deeana Reynolds, EIT, under the supervision of Ylena Quan, P.Eng., QP_{ESA} and Matthew Bielaski, P.Eng., QP_{RA-ESA}.

We trust that this report meets your requirements at present.

For and on behalf of our team,

GROUNDED ENGINEERING

Deeana Reynolds, EIT
Project Coordinator

Ylena Quan, P.Eng., QP$_{ESA}$
Associate

Matthew Bielaski, P.Eng., QP $_{RA-ESA}$
Principal

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13. The Regional Municipality of Durham. *Sewer Use By-Law, By-Law No. 55-2013.* Dated October 30, 2013.

14. The Metropolitan Toronto and Region Conservation Authority. *Lake Ontario Waterfront Development Program Watershed Plan (1980).* Retrieved from: https://trca.on.ca/trca-user-uploads/LakeOntarioWaterfrontDevelopmentProgram.pdf
15. The Metropolitan Toronto and Region Conservation Authority. *Shoreline Management Program Watershed Plan (1980).* Retrieved from: https://trca.on.ca/trca-user-uploads/ShorelineManagementProgram-WatershedPlan.pdf
16. Toronto and Region Conservation Authority (TRCA). *Petticoat Creek Watershed Action Plan.* Dated August 2012.
17. Toronto and Region Conservation Authority (TRCA). *Regulated Area Search.* Retrieved from: https://trca.ca/planning-permits/regulated-area-search-v3/
18. Toronto and Region Conservation Authority (TRCA). *TRSPA Water Balance Tool.* Retrieved from: https://trca.ca/conservation/drinking-water-source-protection/trspa-water-balance-tool/
19. Quadrangle Architects Limited. *705 Kingston Road.* Project No. 21057. Dated September 5, 2024.

7 Limitations and Restrictions

The assessment should not be considered a comprehensive investigation that eliminates all risks of encountering environmental problems. The information presented in this report is based on information collected during the completion of the Hydrogeological Assessment by Grounded Engineering Inc. It was based on the conditions on the Hydrogeological Assessment at the time of the site inspection supplemented by a review of historical information to assess the environmental conditions regarding the Property.

There is no warranty expressed or implied by this report regarding the hydrogeologic conditions of the Property. Professional judgement was exercised in gathering and analysing information collected by our staff, as well as that submitted by others. The conclusions presented are the product of professional care and competence and cannot be construed as an absolute guarantee.

If new information regarding the hydrogeological condition of the Property is identified during future work, or outstanding responses from regulatory agencies indicate outstanding issues on file with respect to the Property, Grounded Engineering Inc. should be notified so that we may re-evaluate the findings of this assessment and provide amendments.

8 Report Use

The authorized users of this report are 705 Kingston Road Ltd, for whom this report has been prepared.

FIGURES

GROUNDED ENGINEERING
1 BANIGAN DRIVE, TORONTO, ONT., M4H 1G3
www.groundedeng.ca

LEGEND

APPROXIMATE PROPERTY BOUNDARY

Note

Reference

ArcGIS Online, 2024.

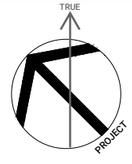
Project

705 KINGSTON RD, PICKERING, ONTARIO

Figure Title

SITE LOCATION PLAN

North



Date

OCTOBER 2024

Scale

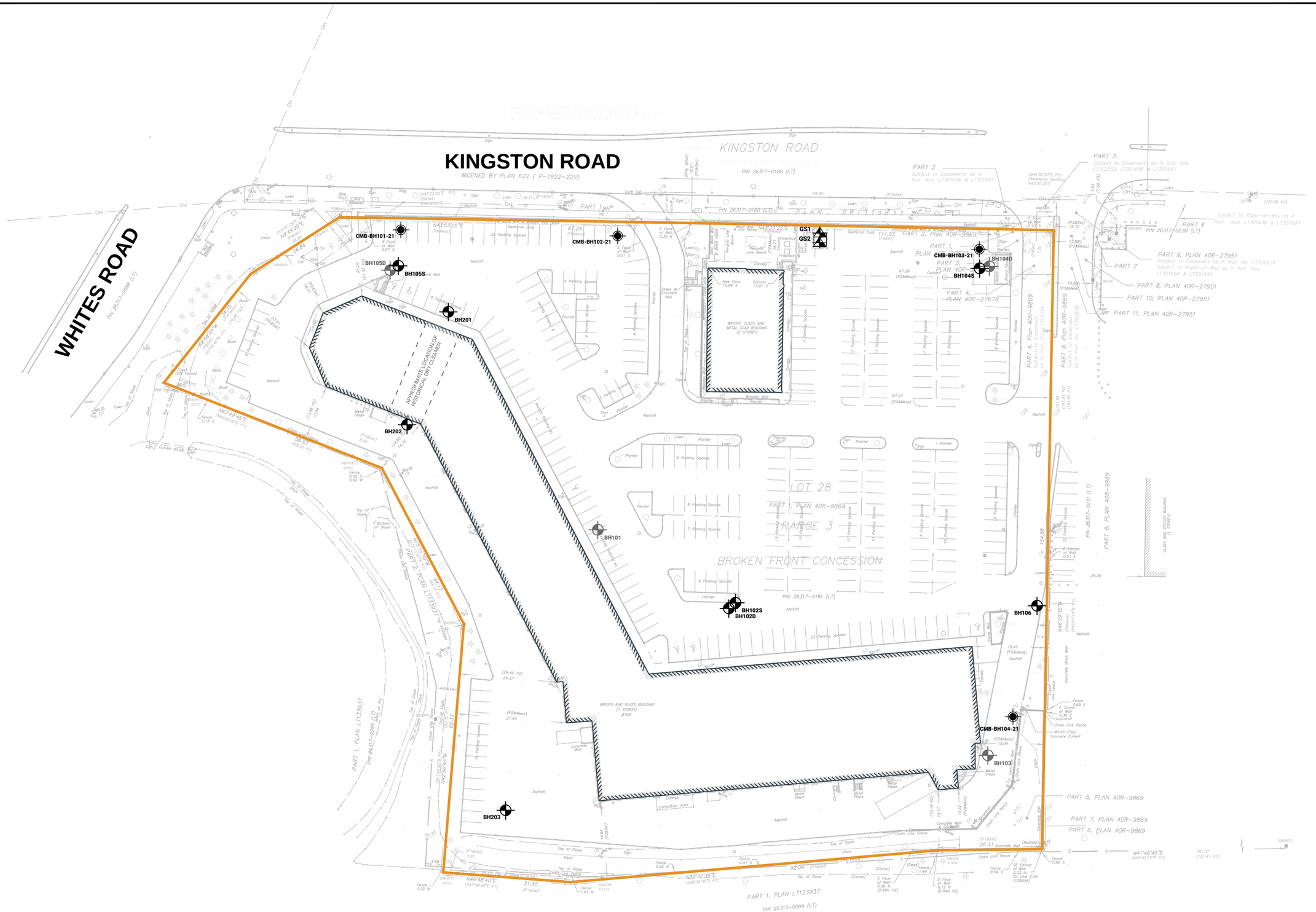
AS INDICATED

Job No

23-197

Figure No

FIGURE 1



GROUNDED ENGINEERING

1 BANIGAN DRIVE, TORONTO, ONT., M4H 1G3
www.groundedeng.ca

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING BUILDING STRUCTURE
- MONITORING WELL/BOREHOLE BY GROUNDED
- MONITORING WELL/BOREHOLE DECOMISSIONED DUE TO METHANE
- MONITORING WELL/BOREHOLE BY OTHERS
- GRAB SAMPLE LOCATION BY GROUNDED

Note

Reference
Survey Drawing no. 220-0094.
Prepared by SPEIGHT, VAN NOSTRAND & GIBSON LIMITED.
Date not listed.
Received - July 27, 2023

Project

705 KINGSTON RD, PICKERING, ONTARIO

Figure Title

BOREHOLE AND MONITORING WELL LOCATIONS PLAN - EXISTING CONDITIONS

North

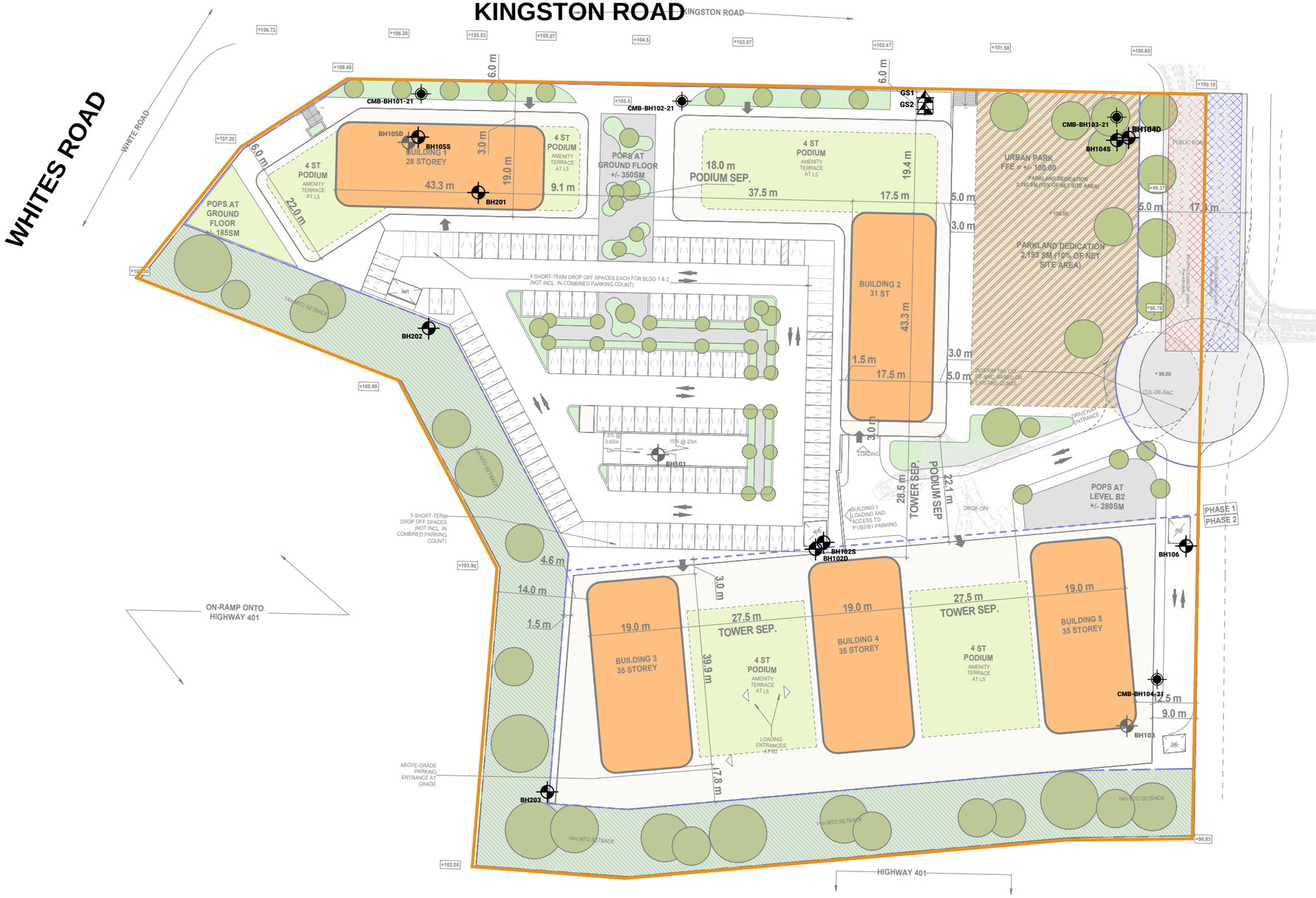
PROJECT

Date
OCTOBER 2024

Scale
AS INDICATED

Job No
23-197

Figure No
FIGURE 2



GROUNDED ENGINEERING
1 BANIGAN DRIVE, TORONTO, ONT., M4H 1G3
www.groundedeng.ca

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MONITORING WELL/BOREHOLE BY GROUNDED
- MONITORING WELL/BOREHOLE DECOMISSIONED DUE TO METHANE
- MONITORING WELL/BOREHOLE BY OTHERS
- GRAB SAMPLE LOCATION BY GROUNDED

Note

Reference
705 Kingston Road, Pickering, Architectural Drawing No. A101.S
Prepared by BDP Quadrangle
Date - September 5, 2024.
Received - September 5, 2024.

Project

705 KINGSTON RD, PICKERING, ONTARIO

Figure Title

BOREHOLE AND MONITORING WELL LOCATIONS PLAN - PROPOSED CONDISTIONS

North

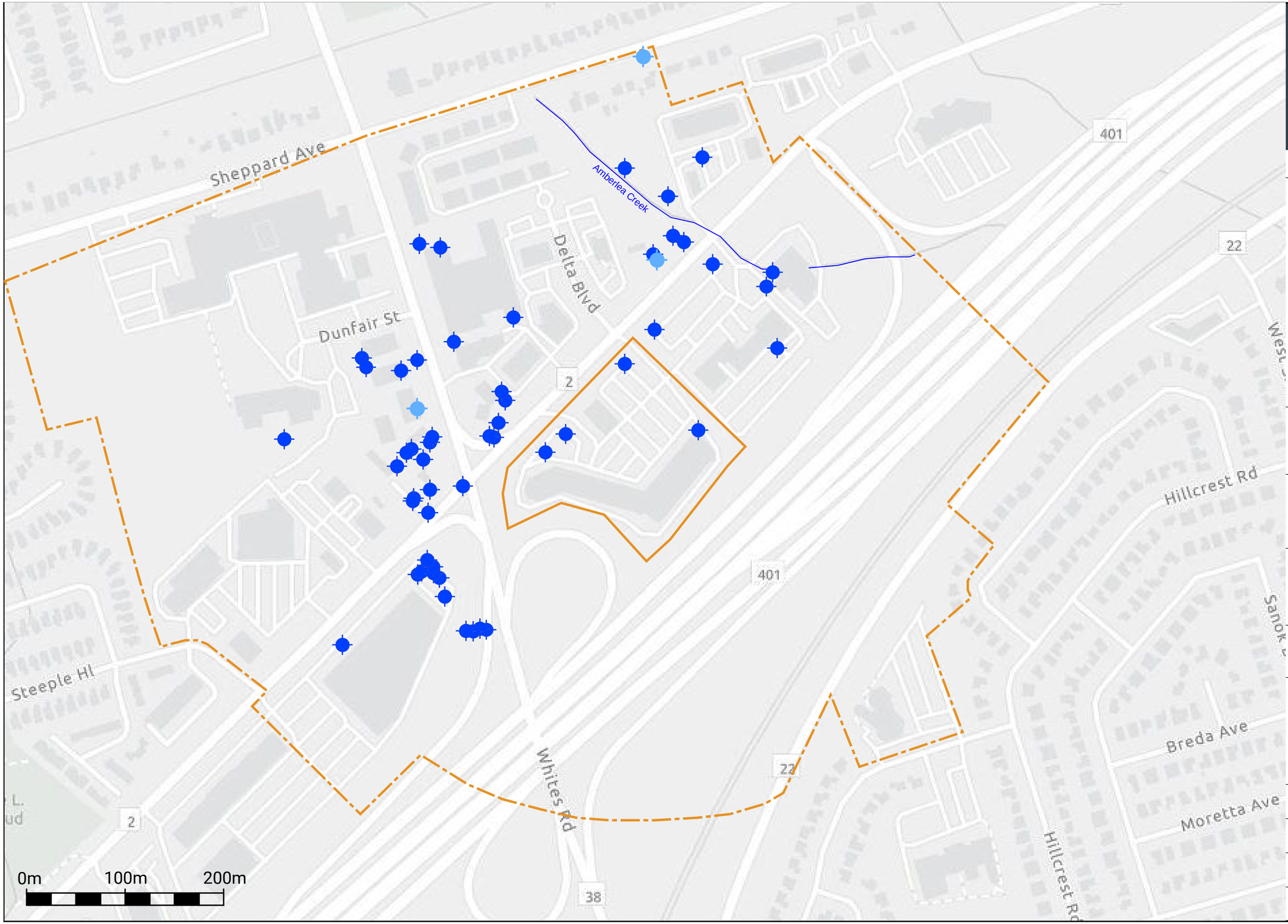
PROJECT

Date
OCTOBER 2024

Scale
AS INDICATED

Job No
23-197

Figure No
FIGURE 2B



GROUNDED ENGINEERING

1 BANIGAN DRIVE, TORONTO, ONT., M4H 1G3
www.groundedeng.ca

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- STUDY AREA (250 m RADIUS)
- MECP WELL LOCATION
- MECP HISTORICAL DOMESTIC WELL LOCATION
- WATER BODY

Note

Reference
ArcGIS My Map, 2023.

Project
705 KINGSTON ROAD PICKERING, ONTARIO

Figure Title
STUDY AREA MAP

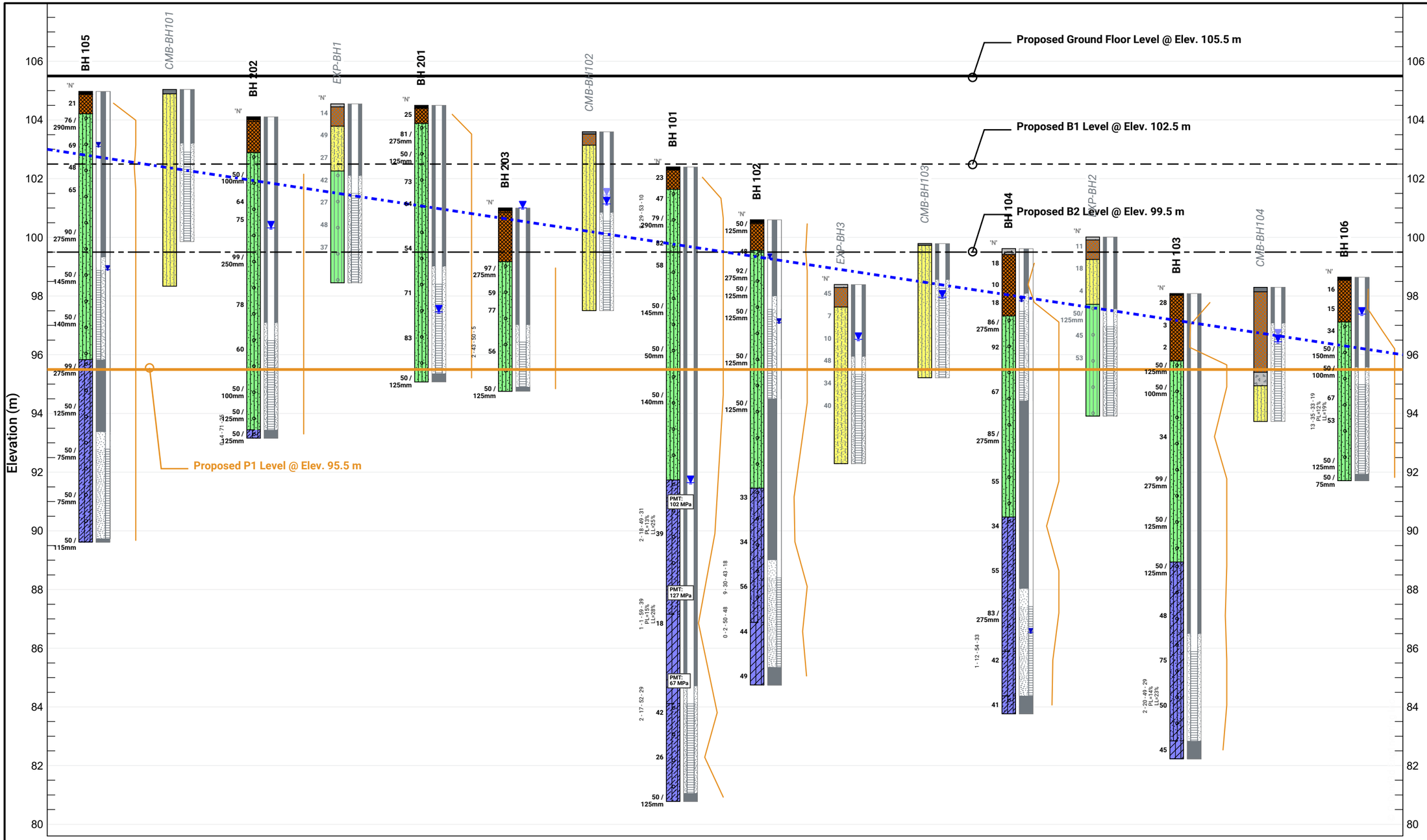
North

Date
OCTOBER 2024

Scale
AS INDICATED

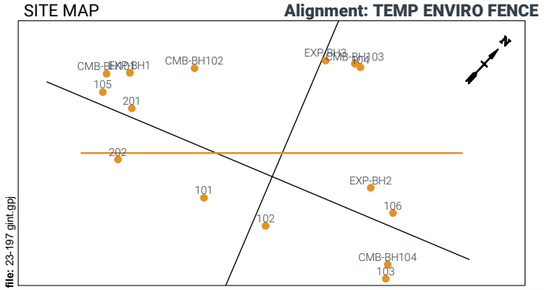
Job No
23-197

Figure No
FIGURE 3



SITE MAP

Alignment: TEMP ENVIRO FENCE



file: 23-197 grnt.gpj

Boreholes Equally Spaced

BOREHOLE STRATIGRAPHY LEGEND

Asphalt	Silt and Clay	Clayey Silt
Fill	Aggregate	Sandy Silt
Sandy Silt Till	Clayey Silt Till (sandy)	Silty Sand
Clayey Silt Till	Concrete	Silty Till

GROUNDED ENGINEERING
1 Banigan Drive, Toronto, Ont., M4H 1G3
www.groundedeng.ca

LEGEND

- FILL
- GRAVELS (gravel to gravelly sand)
- SILT TO SAND (not till)
- COHESIONLESS TILLS
- COHESIVE SOILS (clayey silt to clay, incl. tills)
- DISTURBED/REWORKED/ORGANIC

BH 101 BOREHOLES BY GROUNDED

T-BH7 BOREHOLES BY OTHERS

- water level, unstabilized
- water level, stabilized (latest)
- water level, stabilized (highest)

Project

705 KINGSTON ROAD PICKERING, ONTARIO

Figure Title

SUBSURFACE PROFILE

TEMP ENVIRO FENCE

Date: OCTOBER 2024

Scale: AS INDICATED

Job No: 23-197

Figure No: **FIGURE 4**

TABLES

TABLE 1
GROUNDWATER LEVEL MONITORING SUMMARY
705 KINGSTON ROAD
PICKERING, ON
PROJECT #23-197

Well ID	Ground Surface Elevation (masl)	Screen Interval	Screen Interval	Soil Strata	Other consultant		Grounded Engineering																								Minimum Elev. (Lowest)		Maximum Elev. (Highest)		Seasonal Fluctuation
					June 8, 2021		October 17, 2023*		October 18, 2023		October 19, 2023		October 20, 2023		October 23, 2023		November 3, 2023		November 9, 2023		December 7, 2023		January 5, 2024		February 28, 2024		March 14, 2024		April 16, 2024		October 8, 2024						
		(mbgs)	(masl)		(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(mbgs)	(masl)	(±m)
BH101	102.4	18.3 - 21.3	84.1 - 81.1	Clayey Silt Till	-	-	18.1	84.3	-	-	11.8	90.6	-	-	10.8	91.6	**-- DECOMMISSIONED--**														11.8	90.6	10.8	91.6	0.5
BH102-S	100.6	3.0 - 6.1	97.6 - 94.5	Sandy Silt Till	-	-	-	-	-	-	-	-	-	-	-	-	1.7	98.9	1.6	99.0	1.6	99.0	1.5	99.1	1.3	99.4	-	-	1.3	99.4	1.3	99.3	1.7	98.9	1.3	99.4	0.2
BH102-D	100.6	12.2 - 15.2	88.4 - 85.4	Clayey Silt Till to Silt & Clay	-	-	0.7	100.0	-	-	13.9	86.7	13.8	86.8	-	-	13.3	87.3	12.6	88.0	9.6	91.0	6.9	93.7	4.6	96.0	-	-	3.9	96.7	3.5		13.9	86.7	3.5	96.7	5.2
BH103	98.1	12.2 - 15.2	85.9 - 82.8	Clayey Silt Till	-	-	DRY	-	-	-	DRY	-	-	-	-	-	**-- DECOMMISSIONED--**														0.0	-	-	-	-
BH104-S	99.6	2.1 - 5.2	97.5 - 94.4	Sandy Silt Till	-	-	2.8	96.8	2.8	96.8	2.2	97.4	-	-	-	-	2.2	97.4	2.2	97.4	2.2	97.4	2.1	97.5	1.8	97.8	-	-	1.6	98.0	1.8	97.8	2.8	96.8	1.6	98.0	0.6
BH104-D	99.6	12.2 - 15.2	87.4 - 84.4	Clayey Silt Till	-	-	9.0	90.6	-	-	14.1	85.5	13.1	86.5	-	-	**-- DECOMMISSIONED--**														14.1	85.5	13.1	86.5	0.5
BH105-S	105.0	6.1 - 9.1	98.9 - 95.8	Sandy Silt Till	-	-	-	-	-	-	-	-	-	-	-	-	7.3	97.7	6.9	98.2	3.1	101.9	2.8	102.2	1.9	103.1	-	-	2.0	103.1	1.9	103.1	7.3	97.7	1.9	103.1	2.7
BH105-D	105.0	12.2 - 15.2	92.8 - 89.7	Clayey Silt Till	-	-	8.8	96.3	7.0	98.0	6.1	98.9	-	-	-	-	**-- DECOMMISSIONED--**														7.0	98.0	6.1	98.9	0.4
BH106	98.6	3.7 - 6.7	95.0 - 91.9	Sandy Silt Till	-	-	-	-	-	-	-	-	-	-	-	-	DRY	-	DRY	-	6.6	92.0	6.1	92.6	4.9	93.7	4.7	93.9	4.2	94.4	1.3	97.3	6.6	92.0	1.3	97.3	2.7
BH201	104.5	6.1 - 9.1	98.4 - 95.4	Sandy Silt Till	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DRY	-	DRY	-	7.1	97.4	7.1	-	-	-	-
BH202	104.1	7.6 - 10.7	96.5 - 93.4	Sandy Silt Till	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	97.8	4.7	99.4	3.8	100.3	6.3	97.8	3.8	100.3	1.2
BH203	101.0	4.6 - 6.1	96.4 - 94.9	Sand and Silt Till	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	100.2	0.2	100.9	0.0	101.0	0.8	100.2	0.0	101.0	0.4
CMB-BH101-21	105.0	2.0 - 5.0	103.0 - 100.0	Sandy Silt Till	DRY	-	**Flushmount Damaged - Cannot Open**																								0.0	-	-	-	-
CMB-BH102-21	103.6	3.1 - 6.1	100.5 - 97.5	Sandy Silt Till	2.2	101.4	-	-	-	-	2.8	100.8	-	-	-	-	-	-	-	-	2.9	100.7	2.4	101.2	2.4	101.2	-	-	1.9	101.7	2.5	101.1	2.9	100.7	1.9	101.7	0.5
CMB-BH103-21	99.8	1.6 - 4.6	98.2 - 95.2	Sandy Silt Till	4.0	95.8	-	-	-	-	2.2	97.6	-	-	-	-	2.4	97.4	-	-	2.4	97.4	2.2	97.6	2.1	97.7	-	-	1.4	98.4	1.9	97.9	2.4	95.8	1.4	98.4	0.5
CMB-BH104-21	98.3	1.6 - 4.6	96.7 - 93.7	Fill, Concrete, Sandy Silt Till	1.7	96.6	-	-	-	-	2.0	96.3	-	-	-	-	-	-	-	-	1.9	96.4	1.9	96.4	1.9	96.4	-	-	1.8	96.5	1.9	96.4	2.0	96.3	1.7	96.6	0.1

mbgs = metres below existing ground surface
masl = metres above sea level
***** = unstabilized groundwater level
NA = not available: unable to access monitoring well
- = not measured

APPENDIX A

PLAN OF SURVEY WITH TOPOGRAPHY OF

PART OF LOT 28
RANGE 3, BROKEN FRONT CONCESSION

(FORMERLY TOWNSHIP OF PICKERING)

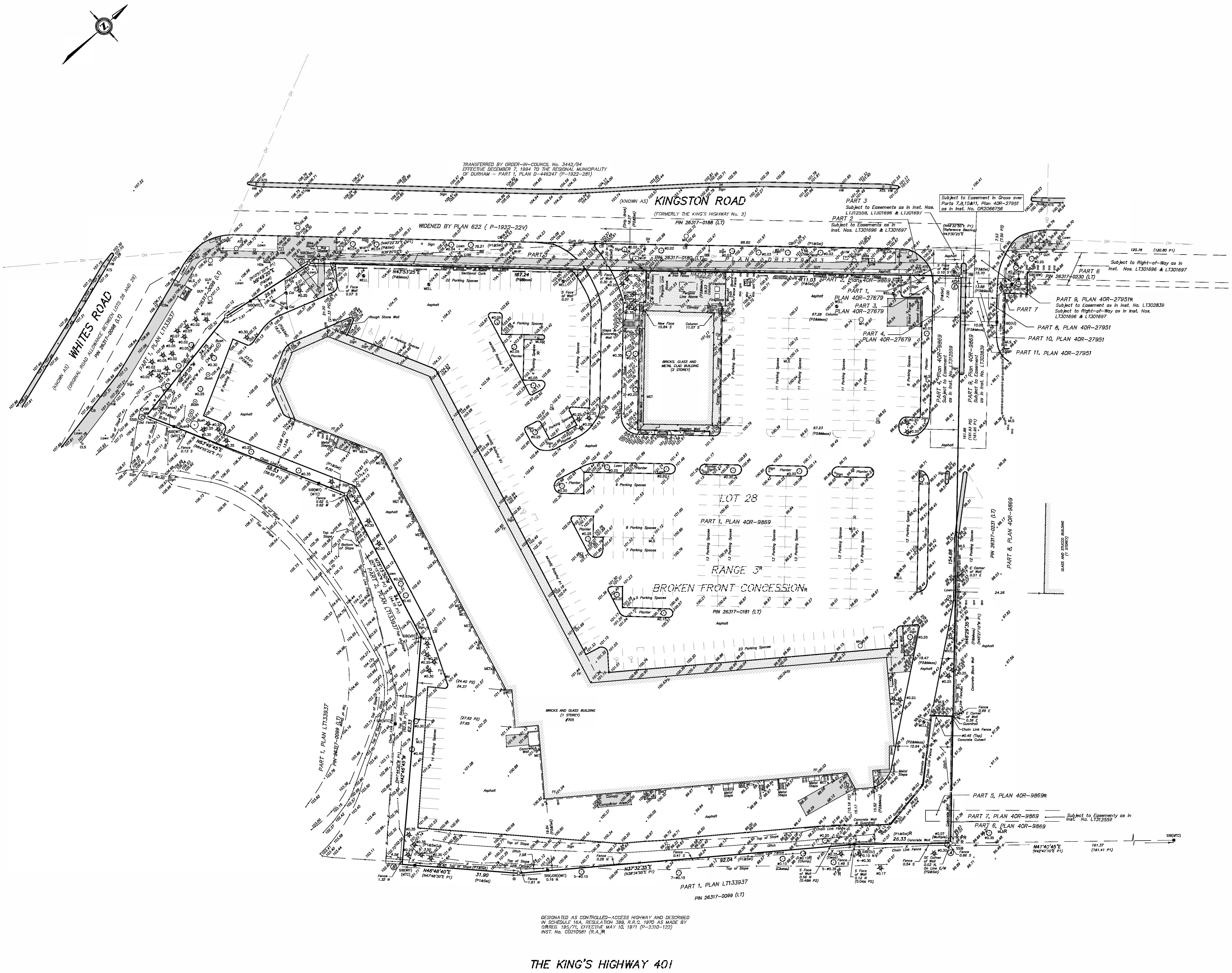
CITY OF PICKERING

REGIONAL MUNICIPALITY OF DURHAM

SCALE 1 : 400

10 0 10 20 30 40 metres

SPEIGHT, VAN NOSTRAND & GIBSON LIMITED
ONTARIO LAND SURVEYORS
2024



ELEVATION NOTE

ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE CITY OF PICKERING BENCHMARK No. 00820188082.

LOCATION :

A BRASS CAP FLUSH IN CONCRETE LOCATED ON THE CONCRETE BOX CULVERT, NORTH OF HWY 401 IN PICKERING. IT IS NORTHWEST ON RAMP ONTO HWY 401 FROM KINGSTON ROAD, 150.0m EAST OF MICHAEL BOYER CHEVROLET LIMITED.

ELEVATION: (DATUM: CGVD28:78)

PUBLISHED ELEVATION = 94.830 metres.

INTEGRATION/BEARING NOTE

BEARINGS SHOWN HEREON ARE UTM GRID AND ARE DERIVED FROM THE SMARTNET NETWORK, AND ARE REFERRED TO UTM ZONE 17, CENTRAL MERIDIAN 81°00' WEST LONGITUDE, NAD 83 (CSRS)

OBSERVED REFERENCE POINTS (ORPs) DERIVED FROM GPS OBSERVATIONS USING THE SMARTNET NETWORK, AND ARE REFERRED TO UTM ZONE 17, CENTRAL MERIDIAN 81°00' WEST LONGITUDE, NAD 83 (CSRS)

COORDINATES ARE TO AN URBAN ACCURACY AS PER SEC. 14 (2) OF ONT. REG. 216/10

POINT ID	NORTHING	EASTING
ORP Ⓐ	4853525.000	651828.884
ORP Ⓑ	4853410.557	651732.049
ORP Ⓒ	4853441.713	651594.536
ORP Ⓓ	4853502.486	651593.703
ORP Ⓔ	4853631.640	651716.590

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

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99987266

METRIC

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

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
□	"	SURVEY MONUMENT PLANTED
WIT	"	WITNESS MONUMENT
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
IB	"	IRON BAR
CC	"	CUT CROSS
N,S,E,W	"	NORTH, SOUTH, EAST, WEST
OU	"	ORIGIN UNKNOWN
P	"	PLAN DR1379833
P1	"	PLAN 40R–9869
P2/JDB	"	PLAN OF SURVEY BY J. D. BARNES LIMITED, O. L.S.R – DATED FEB. 28, 1990
P3	"	PLAN 40R–27951R
MTO/MTC		MINISTRY OF TRANSPORTATION ONTARIOR
ATS	"	AUTOMATIC TRAFFIC SIGNAL
B	"	BOLLARD
BB	"	BELL BOX
BP	"	BELL POLE
CB	"	CATCH BASIN
CLS	"	CONCRETE LIGHT STANDARD
COL	"	COLUMN
FF	"	FLOOR FINISH
FH	"	FIRE HYDRANT
GV	"	GAS VALVE
GUY	"	GUY WIRE / POLE
HB	"	HYDRO BOX
HYT	"	HYDRO TRANSFORMER
HW	"	HAND WELL
MET	"	METER
MH	"	MANHOLE
MLS	"	METAL LIGHT STANDARD
MP	"	METAL POLE
OH	"	OVERHEAD WIRE
WELL	"	MONITORING WELL
WHP	"	WOODEN HYDRO POLE
WP	"	WOODEN POLE
WV	"	WATER VALVE
⊙	"	DECIDUOUS TREE
✲	"	CONIFEROUS TREE
▭	"	CONCRETE
▭	"	BRICK
▭	"	GRAVEL
▭	"	METAL

NOTE

TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON FIELD MEASUREMENTS COMPLETED JUNE 6, 2022.

NEW MONUMENTS AND AN UPDATED LEGAL SEARCH WAS COMPLETED ON MAY 1ST, 2024.

COORDINATE LISTING

POINT ID	NORTHING	EASTING
Ⓐ	4,853,525.000	651,828.884
Ⓑ	4,853,410.557	651,732.049
Ⓒ	4,853,441.713	651,594.536
Ⓓ	4,853,502.486	651,593.703
Ⓔ	4,853,631.640	651,716.590

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON MAY 1, 2024

DATE May 8th, 2024

BRAD K. WARREN
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS — BRAD K. WARREN — 1660

SPEIGHT, VAN NOSTRAND & GIBSON LIMITED
ONTARIO LAND SURVEYORS
750 OAKDALE ROAD, Units 65 & 66
TORONTO, ONTARIO M3N 2Z4
TEL. 416 749–SVNG(7864) FAX 416 749–7866
E–MAIL: toronto@svng.on.ca

DRAWN : F. P. B./M. M.	FILE NAME : 23–712BT01.DWG
CHECKED : B. K. W.	PLOT SCALE : MET. 1=0.40
JOB No. : 23–712R	PLOTTED :
W.O. :R 40043	UPDATED :

A0 (840x1188)

BDP. Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

AERIAL IMAGE HERE

705 Kingston Road, Pickering

Ontario, Canada

for
Resident

Project No. 21057
Date 04 SEPTEMBER 2024
Issued for CONSULTANT COORDINATION

ARCHITECTURAL DRAWINGS

PLANNING CONSULTANT

The Biglieri Group
2472 Kingston Road
Toronto, ON, M1N 1V3
T: 416.693.9155

CIVIL ENGINEER

Counterpoint Engineering
8395 Jane Street,
Suite 100
Vaughan, ON, L4K 5Y2
T: 905.326.1404

URBAN DESIGN & LANDSCAPE ARCHITECT

MHBC
7050 Weston Road
Woodbridge, ON, L4L 8G7
T: 905.761.5588

TRAFFIC CONSULTANT

BA Consulting Group Ltd.
95 St. Clair Ave. W
Suite 1000
Toronto, ON, M4V 1N6
T: 416.961.7110

1 A101.S SITE PLAN

SITE PLAN LEGEND

- PROPERTY LINE
- LINE OF UNDER GROUND GARAGE BELOW
- MAIN BUILDING ENTRANCE
- RETAIL ENTRANCE
- EXIT
- VEHICLE / LOADING ENTRANCE / EXIT
- FIRE HYDRANT
- SIAMESE CONNECTION
- MH MANHOLE COVER
- AD AREA DRAIN
- CB CATCH BASIN
- FD FLOOR DRAIN (PARKING SLAB)
- FD FLOOR DRAIN (INTERIOR)
- EXISTING LIGHT
- TYPICAL PARKING SPACE
- TYPICAL B.F. PARKING SPACE
- F.F.E. FINISH FLOOR ELEVATION
- ### ### EXISTING ELEVATION
- ### ### PROPOSED ELEVATION
- 00000 TOP OF ROOF
- BUILDING ENVELOPE
- FIRE ACCESS ROUTE HEAVY DUTY PAVING. ASSEMBLY TO BE DESIGNED TO MEET THE LOADS IMPOSED BY FIRE FIGHTING EQUIPMENT.
- GREEN ROOF
- TERRACE PAVERS

REVISION RECORD

ISSUE RECORD

BDP. Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

705 Kingston Road, Pickering

Ontario, Canada

for
Resident

21057 1:400 MT YA
PROJECT SCALE DRAWN REVIEWED

Site Plan

A101.S

Autodesk Docs://705 Kingston Road/BDPQL_SITE_21057_705 Kingston Rd_R24023.rvt

2024-09-05 2:33:54 PM

BUILDING 1 (Phase 1) 28 STOREY TOWER w/ 4 STOREY PODIUM

Floor	GBA/Typ. Floor (sm)	No. Typ. Floors	GBA Gross Building Area (no exclusions) sm	GBA Gross Building Area (no exclusions) sf	Exemptions	City Centre By-law 7553/17 GFA (Res) sm	GFA (Res) sf	GFA (Non-Res) sm	GFA (Non-Res) sf	Number of Units B	1B	1B+D	2B	2B+D	3B	Total Suites
MPH	430	1	430	*4,629*	430	0	*0*									
Level 6-28	750	23	17,250	*185,679*	1,380	15,870	*170,825*			0	69	92	23	46	23	253
Level 5	1,375	1	1,375	*14,801*	61	1,314	*14,144*									
Level 4	1,400	1	1,400	*15,070*	61	1,339	*14,413*			0	3	8	4	0	2	17
Level 2-3	1,400	2	2,800	*30,139*	122	2,678	*28,826*			0	6	20	10	2	4	42
Ground Floor	1,485	1	1,485	*15,985*	68	356	*3,832*	1,129	*12,146*							
Building 1 Total		28	24,740	*266,301*		**21,557**	***232,040***	**1,129**	***12,146***	0	78	120	37	48	29	**312**
BUILDING HEIGHT			Interior amenity deduction (2*units) =			624	6,717			0.0%	25.0%	38.5%	11.9%	15.4%	9.3%	
Building Height **88.75** m										Saleable Areas (sf)	0	38,581	67,130	24,863	35,871	25,851	***192,296***
Height To top of MPH Roof **94.75** m			RGFA = 20,933 sm			225,323 sf				Average Unit Area (sf)	0	494	558	674	747	893	
			NRGFA = 1,129 sm			12,146 sf				Required Barrier Free Units	0	30		13		5	**48**
			Total = **22,062.0** sm			237,469 sf										

BUILDING 2 (Phase 1) 31 STOREY TOWER w/ 4 STOREY PODIUM

Floor	GBA/Typ. Floor (sm)	No. Typ. Floors	GBA Gross Building Area (no exclusions) sm	GBA Gross Building Area (no exclusions) sf	Exemptions	City Centre By-law 7553/17 GFA (Res) sm	GFA (Res) sf	GFA (Non-Res) sm	GFA (Non-Res) sf	Number of Units B	1B	1B+D	2B	2B+D	3B	Total Suites
MPH	430	1	430	*4,629*	430	0	*0*									0
Level 6-31	750	26	19,500	*209,898*	1,534	17,966	*193,386*			26	52	104	52	26	26	286
Level 5	750	1	750	*8,073*	56	694	*7,470*									0
Level 2-4	2,105	3	6,315	*67,975*	213	6,102	*65,682*			3	3	30	45	0	9	90
Ground Floor	2,045	1	2,045	*22,012*	88	150	*1,615*	1,710	*18,401*							0
Building 1 Total		31	29,040	*312,587*		**24,912**	***268,153***	**1,710**	***18,401***	29	55	134	97	26	35	**376**
BUILDING HEIGHT			Interior amenity deduction (2*units) =			752	*8,095*			7.7%	14.6%	35.6%	25.8%	6.9%	9.3%	
Building Height **97.60** m										Saleable Areas (sf)	13,149	27,359	77,164	65,412	19,994	30,907	***233,985***
Height To top of MPH Roof **103.60** m			RGFA = 24,160 sm			260,058 sf				Average Unit Area (sf)	453	497	576	674	769	883	
			NRGFA = 1,710 sm			18,401 sf				Required Barrier Free Units	5	29		19		6	**59**
			Total = **25,870.0** sm			278,459 sf										

BUILDING 3 (Phase 2) 35 STOREY (excl. 5-ST PODIUM)

Floor	GBA/Typ. Floor (sm)	No. Typ. Floors	GBA Gross Building Area (no exclusions) sm	GBA Gross Building Area (no exclusions) sf	Exemptions	City Centre By-law 7553/17 GFA (Res) sm	GFA (Res) sf	GFA (Non-Res) sm	GFA (Non-Res) sf	Number of Units B	1B	1B+D	2B	2B+D	3B	Total Suites
Mech PH	430	1	430	4,629	430	0	0									
Level 6-35	750	30	22,500	242,190	1,680	20,820	224,106			0	120	90	60	30	30	330
Level 5	750	1	750	8,073	62	688	7,406									0
Building 3 Total		31	23,680.0	*254,892*		**21,508**	***231,512***	**0**	***0***	0	120	90	60	30	30	**330**
BUILDING HEIGHT			Interior amenity deduction (2*units) =			660	*7,104*			0.0%	36.4%	27.3%	18.2%	9%	9.1%	
Building Height (incl. podium) **109.40** m										Saleable Areas (sf)	0	62,040	50,550	42,060	23,100	26,940	***204,690***
Height To top of MPH Roof **115.40** m			RGFA = 20,848 sm			224,408 sf				Average Unit Area (sf)	0	517	562	701	770	898	
			NRGFA = 0 sm			0 sf				Required Barrier Free Units	0	32		14		5	**51**
			Total = **20,848.0** sm			224,408 sf										

BUILDING 4 (Phase 2) 35 STOREY (excl. 5-ST PODIUM)

Floor	GBA/Typ. Floor (sm)	No. Typ. Floors	GBA Gross Building Area (no exclusions) sm	GBA Gross Building Area (no exclusions) sf	Exemptions	City Centre By-law 7553/17 GFA (Res) sm	GFA (Res) sf	GFA (Non-Res) sm	GFA (Non-Res) sf	Number of Units B	1B	1B+D	2B	2B+D	3B	Total Suites
Mech PH	430	1	430	4,629	430	0	0									
Level 6-35	750	30	22,500	242,190	1,680	20,820	224,106			0	120	90	60	30	30	330
Level 5	750	1	750	8,073	82	668	7,190									0
Building 4 Total		31	23,680.0	*254,892*		**21,488**	***231,297***	**0**	***0***	0	120	90	60	30	30	**330**
BUILDING HEIGHT			Interior amenity deduction (2*units) =			660	*7,104*			0.0%	36.4%	27.3%	18.2%	9%	9.1%	
Building Height (incl. podium) **109.40** m										Saleable Areas (sf)	0	62,040	50,550	42,060	23,100	26,940	***204,690***
Height To top of MPH Roof **115.40** m			RGFA = 20,828 sm			224,193 sf				Average Unit Area (sf)	0	517	562	701	770	898	
			NRGFA = 0 sm			0 sf				Required Barrier Free Units	0	32		14		5	**51**
			Total = **20,828.0** sm			224,193 sf										

BUILDING 5 (Phase 2) 35 STOREY (excl. 5-ST PODIUM)

Floor	GBA/Typ. Floor (sm)	No. Typ. Floors	GBA Gross Building Area (no exclusions) sm	GBA Gross Building Area (no exclusions) sf	Exemptions	City Centre By-law 7553/17 GFA (Res) sm	GFA (Res) sf	GFA (Non-Res) sm	GFA (Non-Res) sf	Number of Units B	1B	1B+D	2B	2B+D	3B	Total Suites
Mech PH	430	1	430	4,629	430	0	0									
Level 6-35	750	30	22,500	242,190	1,680	20,820	224,106			0	120	90	60	30	30	330
Level 5	750	1	750	8,073	101	649	6,986									0
Building 5 Total		31	23,680.0	*254,892*		**21,469**	***231,092***	**0**	***0***	0	120	90	60	30	30	**330**
BUILDING HEIGHT			Interior amenity deduction (2*units) =			660	*7,104*			0.0%	36.4%	27.3%	18.2%	9%	9.1%	
Building Height (incl. podium) **109.40** m										Saleable Areas (sf)	0	62,040	50,550	42,060	23,100	26,940	***204,690***
Height To top of MPH Roof **115.40** m			RGFA = 20,809 sm			223,988 sf				Average Unit Area (sf)	0	517	562	701	770	898	
			NRGFA = 0 sm			0 sf				Required Barrier Free Units	0	32		14		5	**51**
			Total = **20,809.0** sm			223,988 sf										

4-ST SHARED PODIUM (Phase 2) & SITE PARKING LEVELS

Floor	GBA/Typ. Floor (sm)	No. Typ. Floors	GBA Gross Building Area (no exclusions) sm	GBA Gross Building Area (no exclusions) sf	Exemptions	City Centre By-law 7553/17 GFA (Res) sm	GFA (Res) sf	GFA (Non-Res) sm	GFA (Non-Res) sf	Number of Units B	1B	1B+D	2B	2B+D	3B	Total Suites
Phase 2 Podium: Level 2-4	5,870	3	17,610.0	189,554	12,705	4,905	52,797	0	0	3	6	36	6	3	6	60
Phase 2 Podium: Ground Floor	5,825	1	5,825.0	62,700	4,135	1,690	18,191	0	0	0	1	7	1	1	1	11
Phase 1 & 2: Level B1	8,410	1	8,410.0	90,525	7,892	518	5,576	0	0							
Phase 1 & 2: Level B2	16,370	1	16,370.0	176,207	13,805	1,502	16,172	1,063	11,438							
Phase 1 & 2: Level P1	6,425	1	6,425.0	69,159	6,425	0	0	0	*0*							
PH-2 Podium & Parking Total	**Above Grade**	**4**	54,640.0	*588,145*		**8,615**	***92,736***	**1,063**	***11,438***	3	7	43	7	4	7	**71**
	Below Grade	*3*	Interior amenity deduction (2*units) =			142	*1,528*			4.2%	9.9%	60.6%	9.9%	6%	9.9%	
										Saleable Areas (sf)	1,305	3,556	24,983	4,713	2,956	6,343	***43,856***
			RGFA = 8,473 sm			91,208 sf				Average Unit Area (sf)	435	508	581	673	739	906	
			NRGFA = 1,063 sm			11,438 sf				Required Barrier Free Units	1	8		2		2	**13**
			Total = **9,536.0** sm			102,646 sf										

STATISTICS SUMMARY

TOTAL DEVELOPMENT

	TOTAL NEW RESIDENTIAL GFA	sm	*sf*	TOTAL NEW RETAIL GFA	sm	*sf*	TOTAL UNIT NUMBER	
PHASE 1	BUILDING 1 =	20,933	*225,323*	BUILDING 1 =	1,129	*12,146*	BUILDING 1 =	312
	BUILDING 2 =	24,160	*260,058*	BUILDING 2 =	1,710	*18,401*	BUILDING 2 =	376
PHASE 2	BUILDING 3=	20,848	*224,408*	BUILDING 3=	0	*0*	BUILDING 3=	330
	BUILDING 4=	20,828	*224,193*	BUILDING 4=	0	*0*	BUILDING 4=	330
	BUILDING 5=	20,809	*223,988*	BUILDING 5=	0	*0*	BUILDING 5=	330
	PH-2 PODIUM=	6,453	*69,460*	PH-2 PODIUM=	0	*0*	PH-2 PODIUM=	71
SHARED	P1/B1/B2=	2,020	*21,747*	P1/B1/B2=	1,063	*11,438*		
	TOTAL GFA =	**116,051**	***1,249,177***	**TOTAL GFA =**	**3,902**	***41,985***	**TOTAL =**	**1,749**

FSI

			FSI Calculation		**Parkland Calculation**		**LOT COVERAGE (Gross Site Area)**	
			Gross Site Area =	27,316 sm				
			Public Road Conveyance =	1,104 sm	MTO Lands =	4,310 sm	**Phase 1**	*2,790 sm*
Total Residential GFA=	**116,051 sm**	1,249,177 sf	**Net Site Area for FSI =**		**Net Site Area for Parkland =**			
Total Retail GFA=	**3,902 sm**	41,985 sf	*(Gross Site Area -Public Road - Parkland)*	**24,019 sm**	*(Gross Site Area -Public Road - MTO)*	21,902 sm	**Phase 2**	*5620 sm*
Total GFA=	**119,953 sm**	1,291,162 sf			**Min. Parkland - 10% Net Site Area =**	*2,191* **sm**	**Total**	**8,410 sm**
			FSI = Total GFA/NSA	**4.99**	**Parkland Provided =**	**2,193 sm**		**35.01%**

PARKING

Unit Mix: Unit Type	Unit Count	Unit %
Bachelor	32	2%
1B	1067	61%
2B	489	28%
3B	161	9%
TOTAL	**1,749 units**	

Parking Provided: Phase & Level	Combined Vis. & Retail	Long Term Residential	Combined Vis. & Retail	Long Term Residential	Net Parking Space Ratio
PH-1 Ground	125	0			
PH-1 B1	0	153	**0.33**	**0.82**	**1.15**
PH-1 B2	105	100			
PH-1 P1	0	311			
PH-2 Levels 2-4	0	359			
PH-2 Ground	51	55			
PH-2 B1	-	-	**0.11**	**0.54**	**0.39**
PH-2 B2	61	0			
PH-2 P1	0	162			
SITE TOTAL	**342**	**1,140**	**0.20**	**0.65**	**0.85**

Accessible Parking (included in the total): Provided	Required (by-law)	Required (AODA)
PH-1 Ground	3		
PH-1 B1	6		
PH-1 B2	6		
PH-1 P1	8		
PH-2 Levels 2-4	9		
PH-2 Ground	3		
PH-2 B1	-		
PH-2 B2	0		
PH-2 P1	6		
TOTAL	**41**	***TBD*****	***TBD*****

Additional Temporary Drop-Off Spaces: Building	Level	Number
PHASE 1		
Building 1	Ground	4
Building 2	Ground	4
PHASE 2		
Building 3	Ground	5
Building 4	B2	Circular Drop-off
Building 5	B2	Circular Drop-off

**Values determined by Traffic Consultant*

AMENITY

Building	Unit Count	Location	Amenity Provided (sm) Indoor	Outdoor	Total (sm) Indoor	Outdoor	Ratio (sm/unit) Indoor	Outdoor	Combined
Building 1	312	Level 5	556.2	400.0	**789.2**	**644.2**			
		Level 4	233.0				***2.53***	***2.06***	***4.59***
		Balconies*		244.2					
Building 2	376	Level 5	566.2	800.0	**566.2**	**1144.1**			
		Balconies*		344.1			***1.51***	***3.04***	***4.55***
Buildings 3, 4 & 5	1,061	Level 5	1,662.0	1,500.0	**2128.6**	**2320.0**			
Including 4-ST Podium		Ground	466.6				***2.01***	***2.19***	***4.19***
		Balconies*		820.0					
SITE TOTAL	**1,437**	***Tower Balcony Design is TBD**			**2,695**	**3,464**	***1.88***	***2.41***	***4.29***

REVISION RECORD

ISSUE RECORD

BDP. Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

705 Kingston Road, Pickering

Ontario, Canada

for
Resident

21057 N/A MT YA
PROJECT SCALE DRAWN REVIEWED

Statistics

A102.S

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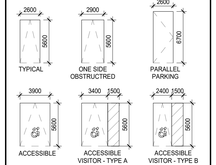
PARKING NOTES:

1. MINIMUM PARKING SPACE SIZES (UNLESS OTHERWISE NOTED):
   - 2600mm WIDE X 5600mm LONG (NO SIDES OBSTRUCTED)
   - 2900mm WIDE X 5600mm LONG (ONE SIDE OBSTRUCTED)
   - 3200mm WIDE X 5600mm LONG (TWO SIDES OBSTRUCTED)
2. MAINTAIN MINIMUM DRIVE AISLE WIDTH OF 6000mm UNLESS OTHERWISE NOTED.
3. MAINTAIN MINIMUM HEADROOM CLEARANCE OF 2100mm THROUGHOUT.

PARKING LEGEND:

- (C) COMMERCIAL PARKING SPACE
- (R) RESIDENTIAL PARKING SPACE
- (V) VISITOR PARKING SPACE
- (E) EXISTING PARKING SPACE
- BIKE LOCKER
- BIKE PARKING (STACKED)
- BIKE PARKING (VERTICAL)
- CONVEX MIRROR
- ELECTRIC VEHICLE
- LS LIGHT STANDARD
- PAINTED LINES
- FIRE-RATED BULKHEAD



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Ontario, Canada

for
Resident

21057 1:250 MT YA
PROJECT SCALE DRAWN REVIEWED

Underground Level P1

A151.S

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KINGSTON ROAD
KINGSTON ROAD PEDESTRIAN PATHS ABOVE
RES. GARBAGE 221.4 m²
P-STAIR
ELEV
ELEV. LOBBY 1
VEST
SHARED STAGING
RETAIL GARBAGE / STORAGE 490.7 m²
LOADING 1 375.7 m²
TRUCK TURNING
AIR SHAFT 21.5 m²
LOADING
LOCKERS 40.8 m²
205 SPACES INCL. 6 ACCESSIBLE
(105 COMBINED VISITOR AND RETAIL SPACES)
(100 LONG-TERM RESIDENTIAL SPACES)
B2 PARKING - PHASE 1 7638.0 m²
OUTLINE OF B1 LEVEL
RAMP TO U/G
15% @ 23m
7.5% @ 3.65m
RETAIL 2C
VESTIBULE 50.1 m²
RES. GARBAGE 132.7 m²
LOADING 2
STAIR
URBAN PARK FFE = +/- 100.00
PARKLAND DEDICATION 2,193 SM (10% OF NET SITE AREA)
INTERIM 10m CUL-DE-SAC BASED ON EXISTING CURBS
DRIVEWAY ENTRANCE
POPS AT LEVEL B2 +/- 280SM
CUL-DE-SAC
PHASE 1
PHASE 2
TURNING SPACE
AIR SHAFT 23.6 m²
14m MTO SETBACK
RETAINING WALL (ON USABLE SITE)
ON-RAMP ONTO HIGHWAY 401
M&E 3 95.5 m²
RAMP 178.8 m²
RES. GARBAGE 3 138.7 m²
MV. CORRIDOR
BICYCLE STORAGE 74.8 m²
BULK 25.4 m²
P-STAIR 23.6 m²
LOADING 3 175.6 m²
BICYCLE STORAGE 94.0 m²
RAMP 281.0 m²
M&E 3 / STORAGE 185.6 m²
BICYCLE STORAGE 114.5 m²
LOBBY 4 140.4 m²
BICYCLE AMENITY 150.0 m²
RES. GARBAGE 4 151.8 m²
M&E 4&5 149.1 m²
LOADING 4 & 5 208.1 m²
DROP OFF
LOBBY 5 167.2 m²
AMENITY 195.7 m²
RES. GARBAGE 5 134.3 m²
BICYCLE AMENITY 129.2 m²
STAIR 31.0 m²
B2 PARKING - PHASE 2 1963.6 m²
61 VISITOR SPACES
L2 TRANSFER
HIGHWAY 401

PARKING NOTES:

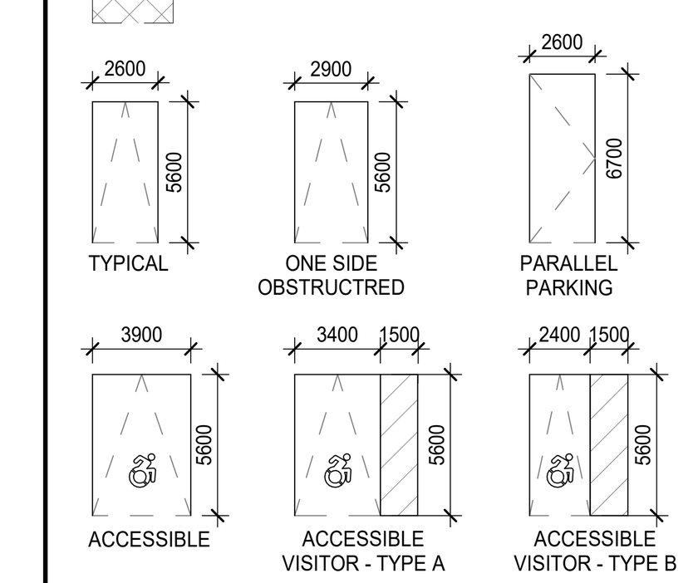
1. MINIMUM PARKING SPACE SIZES (UNLESS OTHERWISE NOTED):
   - 2600mm WIDE X 5600mm LONG (NO SIDES OBSTRUCTED)
   - 2900mm WIDE X 5600mm LONG (ONE SIDE OBSTRUCTED)
   - 3200mm WIDE X 5600mm LONG (TWO SIDES OBSTRUCTED)

2. MAINTAIN MININUM DRIVE AISLE WIDTH OF 6000mm UNLESS OTHERWISE NOTED.

3. MAINTAIN MINIMUM HEADROOM CLEARANCE OF 2100mm THROUGHOUT.

PARKING LEGEND:

- C COMMERCIAL PARKING SPACE
- R RESIDENTIAL PARKING SPACE
- V VISITOR PARKING SPACE
- E EXISTING PARKING SPACE
- BIKE LOCKER
- BIKE PARKING (STACKED)
- BIKE PARKING (VERTICAL)
- CONVEX MIRROR
- ELECTRIC VEHICLE
- LS LIGHT STANDARD
- PAINTED LINES
- FIRE-RATED BULKHEAD



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705 Kingston Road, Pickering

Ontario, Canada

for
Resident

21057	1:250	MT	YA
PROJECT	SCALE	DRAWN	REVIEWED

Level B2

A152.S

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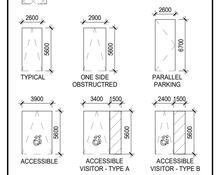
PARKING NOTES:

1. MINIMUM PARKING SPACE SIZES (UNLESS OTHERWISE NOTED):
   - 2600mm WIDE X 5600mm LONG (NO SIDES OBSTRUCTED)
   - 2900mm WIDE X 5600mm LONG (ONE SIDE OBSTRUCTED)
   - 3200mm WIDE X 5600mm LONG (TWO SIDES OBSTRUCTED)
2. MAINTAIN MINIMUM DRIVE AISLE WIDTH OF 6000mm UNLESS OTHERWISE NOTED.
3. MAINTAIN MINIMUM HEADROOM CLEARANCE OF 2100mm THROUGHOUT.

PARKING LEGEND:

- (C) COMMERCIAL PARKING SPACE
- (R) RESIDENTIAL PARKING SPACE
- (V) VISITOR PARKING SPACE
- (E) EXISTING PARKING SPACE
- BIKE LOCKER
- BIKE PARKING (STACKED)
- BIKE PARKING (VERTICAL)
- CONVEX MIRROR
- ELECTRIC VEHICLE
- LIGHT STANDARD
- PAINTED LINES
- FIRE-RATED BULKHEAD



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705 Kingston Road, Pickering

Ontario, Canada

for
Resident

21057 1:250 MT YA
PROJECT SCALE DRAWN REVIEWED

Level B1

A153.S

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KINGSTON ROAD

WHITE ROAD

ON-RAMP ONTO HIGHWAY 401

HIGHWAY 401

POPS AT GROUND FLOOR +/- 350SM

POPS AT GROUND FLOOR +/- 185SM

POPS AT LEVEL B2 +/- 280SM

URBAN PARK FFE = +/- 100.00

PARKLAND DEDICATION 2,193 SM (10% OF NET SITE AREA)

INTERIM 10m CUL-DE-SAC BASED ON EXISTING CURBS

FFE = +/- 104.5

FFE = +/- 102.5

RETAIL 4198 ft²

RETAIL 8010 ft²

RETAIL 1845 ft²

LOBBY 1 177.3 m²

LOBBY 2 89.1 m²

LOBBY 3 113.9 m²

4 SHORT-TERM DROP OFF SPACES EACH FOR BLDG 1 & 2 (NOT INCL. IN COMBINED PARKING COUNT)

125 COMBINED VISITOR AND RETAIL SPACES INCL. 3 ACCESSIBLE

5 SHORT-TERM DROP OFF SPACES (NOT INCL. IN COMBINED PARKING COUNT)

106 SPACES INCL. 3 ACCESSIBLE (51 VISITOR SPACES) (55 LONG-TERM RESIDENTIAL SPACES)

GROUND FLOOR PODIUM PARKING 3468.7 m²

AMENITY 178.3 m²

AMENITY 287.4 m²

STORAGE 27.1 m²

STORAGE 17.6 m²

STORAGE 84.3 m²

STORAGE 60.3 m²

STORAGE/ MECH 104.0 m²

OPEN TO BELOW

14m MTO SETBACK

1.5m MTO SETBACK

PHASE 1

PHASE 2

REVISION RECORD

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705 Kingston Road, Pickering

Ontario, Canada

for
Resident

21057 1 : 250 MT YA
PROJECT SCALE DRAWN REVIEWED

Ground Floor Plan

A201.S

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Resident

21057	1 : 250	MT	YA
PROJECT	SCALE	DRAWN	REVIEWED

Typical Podium Floor Plan (Floor 2-4)

A202.S

Autodesk Docs://705 Kingston Road/BDPQ_SITE_21057_705 Kingston Rd_CASE23.rvt
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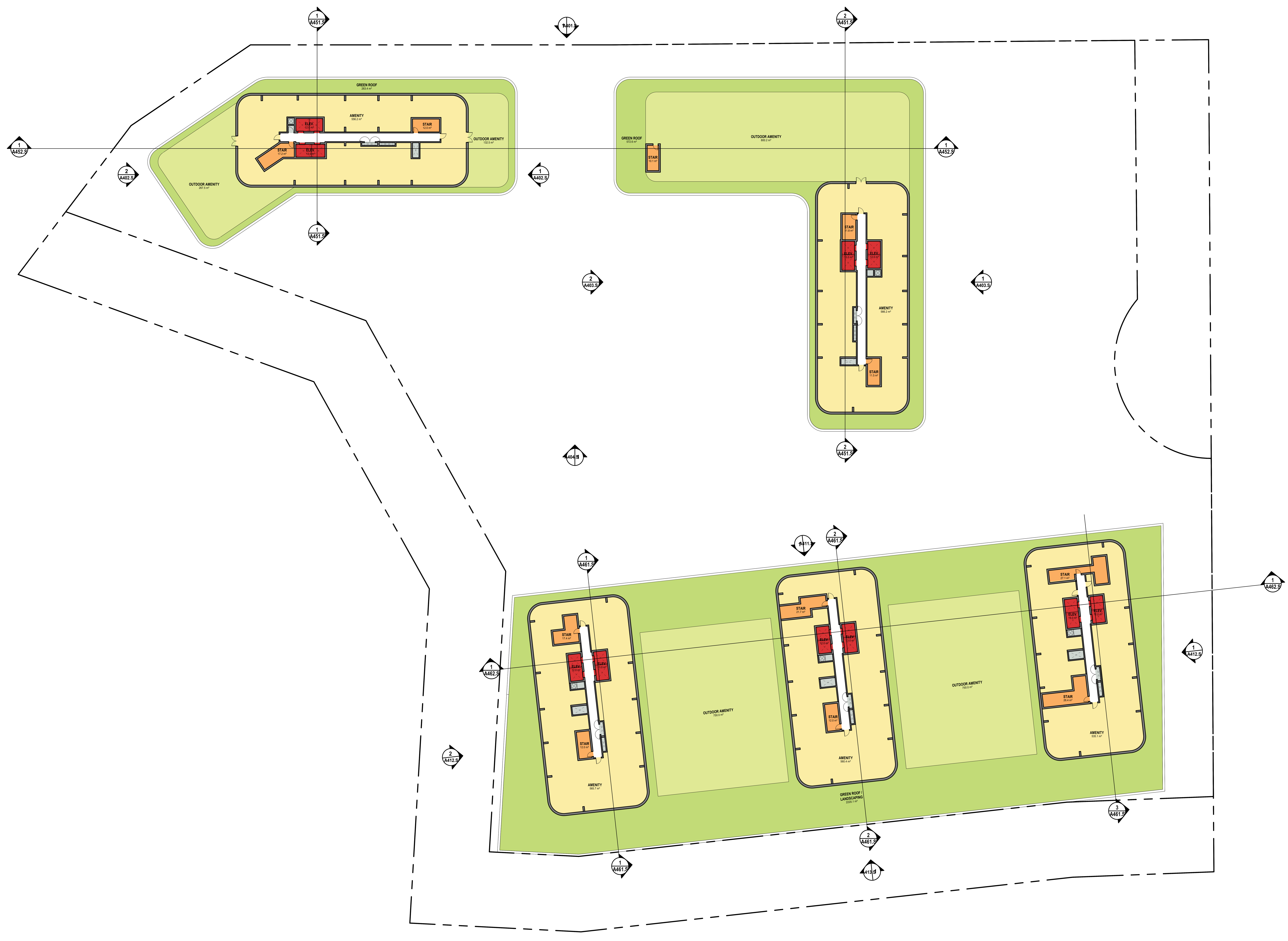


REVISION RECORD

ISSUE RECORD

BDP.
Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

705 Kingston Road, Pickering

Ontario, Canada

for
Resident

21057	1 : 250	MT	YA
PROJECT	SCALE	DRAWN	REVIEWED

Podium Roof Plan (Floor 5)

A203.S

2024-09-05 2:35:07 PM

REVISION RECORD

ISSUE RECORD

BDP. Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

705 Kingston Road, Pickering

Ontario, Canada

for
Resident

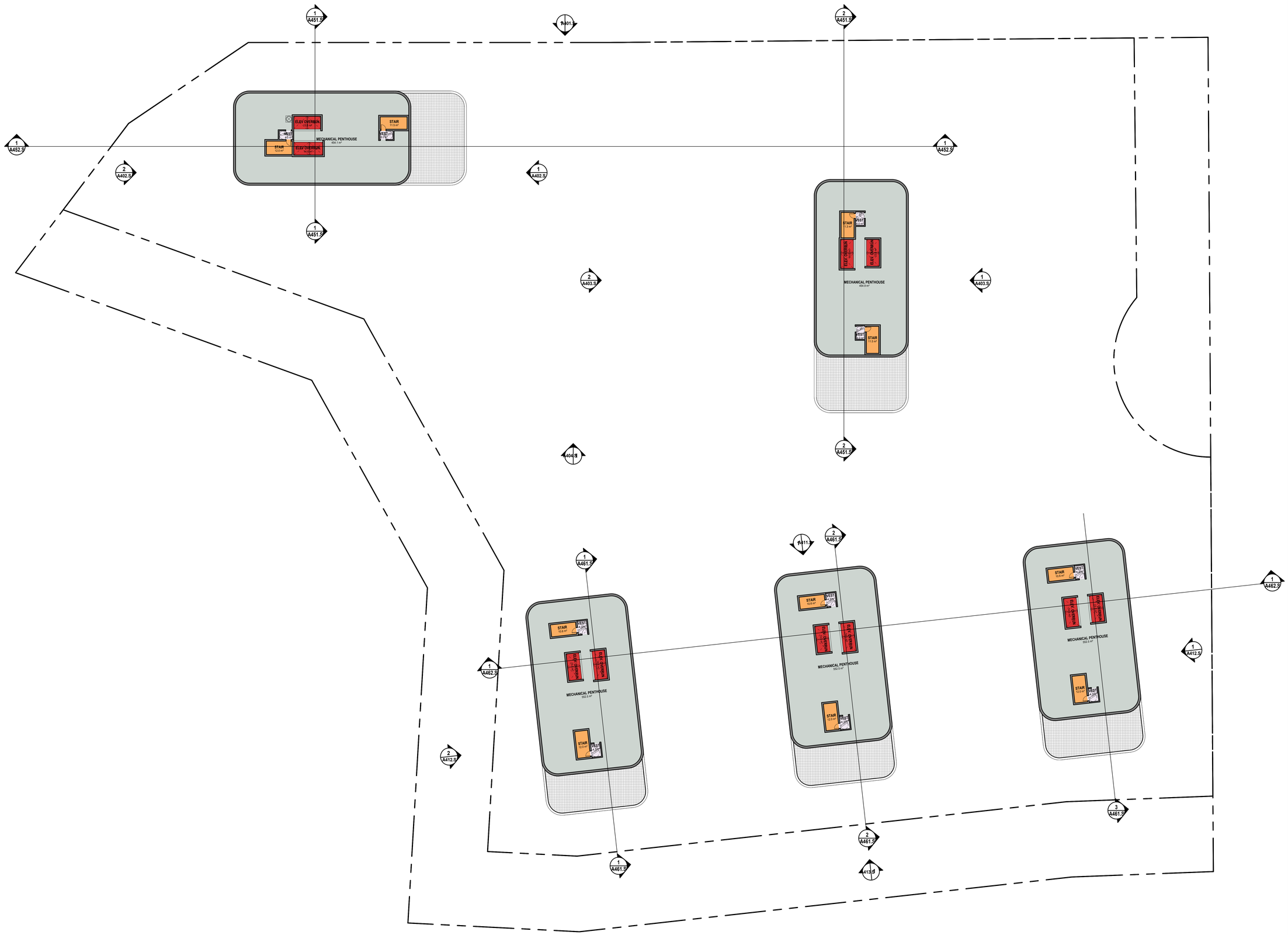
21057 1 : 250 MT YA
PROJECT SCALE DRAWN REVIEWED

Typical Tower Floor Plan (Floor 6-35)

A204.S

2024-09-09 2:35:10 PM

Autodesk Docs://7505 Kingston Road/BDPQ_SITE_21057_705 Kingston Rd_R2023.rvt



REVISION RECORD

ISSUE RECORD

BDP. Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

705 Kingston Road, Pickering

Ontario, Canada

for
Resident

21057 1 : 250 MT YA
PROJECT SCALE DRAWN REVIEWED

Mechanical Penthouse Plan

A205.S

Autodesk Docs://705 Kingston Road/BDPQ_SITE_A1097_705 Kingston Rd_R2023.rvt
2024-09-09 2:35:14 PM

APPENDIX B

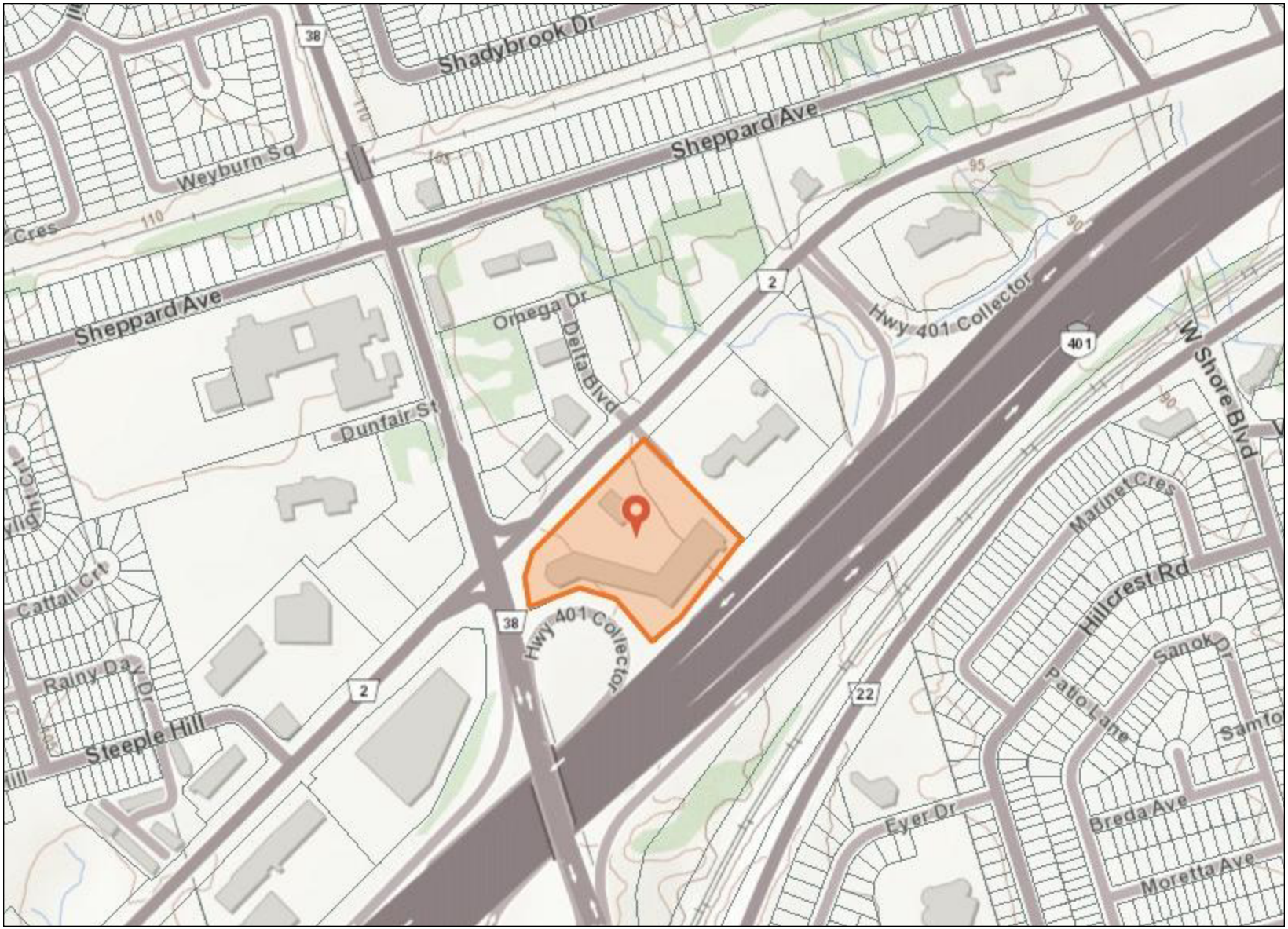
Ontario

Mi is ry f a ural Res urces

Make a T p graphic Map

es:

T p graphic Map



Lege

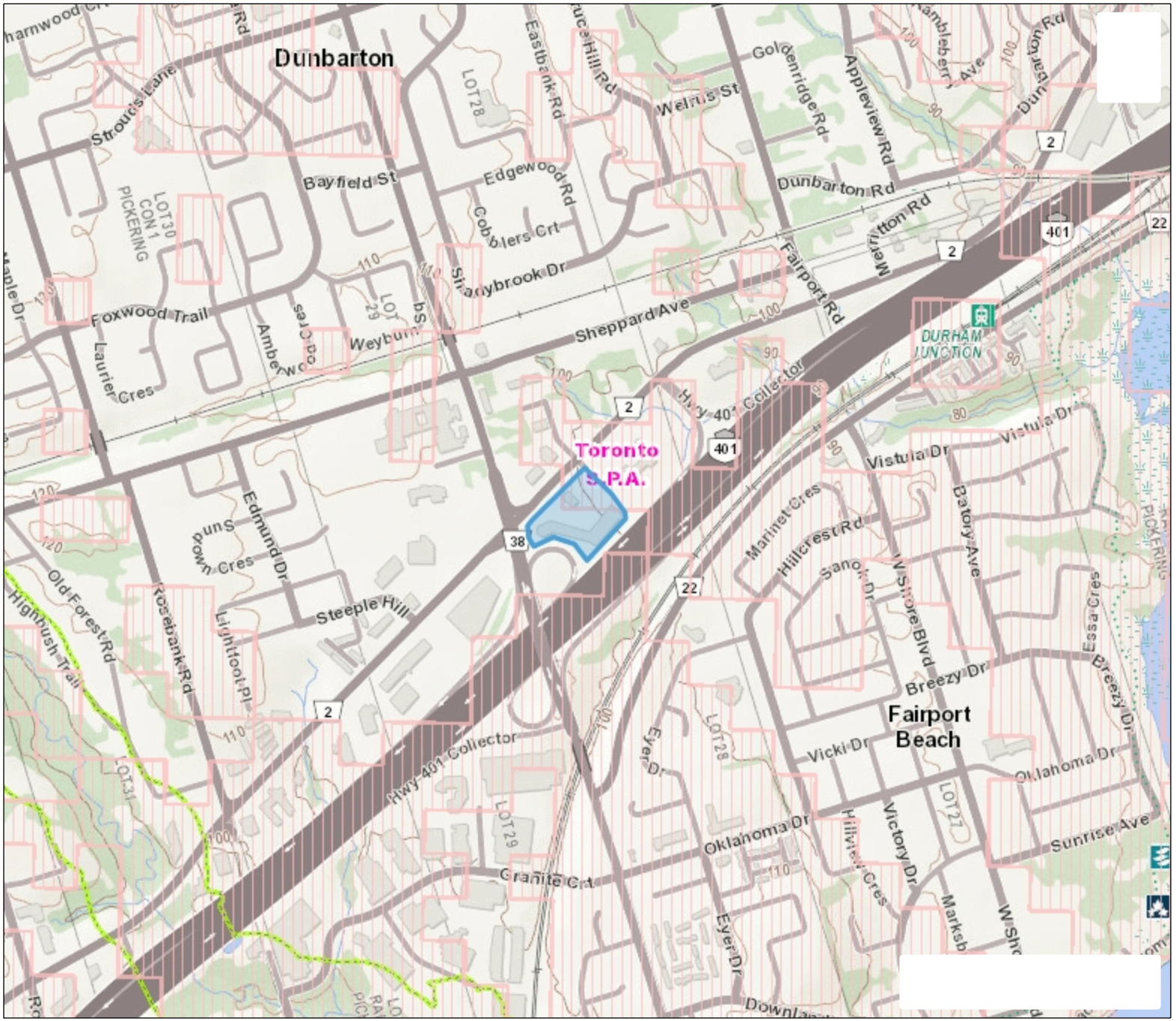
- Building as Symbol
- Building to Scale
- Airport
- Heliport \ Hospital Heliport
- Seaplane Base
- Ferry Route
- Trail
- Bruce Trail
- Greenbelt Route
- Rideau Trail
- Trans Canada Trail
- Voyageur Trail
- Waterfront Trail
- Railway \ Train Station
- Railway with Bridge
- Railway with Tunnel
- Road (Major → Minor)
- Winter Road
- Road with Bridge
- Road with Tunnel
- Primary, Kings or 400 Series Highway
- Secondary Highway
- Tertiary Highway
- District, County, Regional or Municipal Road
- Toll Highway
- One Way Road
- Road with Permanent Blocked Passage
- Road with Address Ranges
- Hydro Line, Communication Line or Unknown Transmission Line
- Natural Gas Pipeline, Water Pipeline or Unknown Pipeline
- Spot Height
- Index Contour
- Contour
- Wooded Area
- Wetland
- Waterbody
- Waterbody Elevation
- Watercourse
- Falls
- Rapids
- Rapids \ Falls
- Rapids
- Rocks
- Lock Gate
- Dam \ Hydro Wall
- Dam \ Hydro Wall
- Provincial \ State Boundary
- International Boundary
- Upper Tier \ District Municipal Boundary
- Lower Tier \ Single Tier Municipal Boundary
- Lot Line
- Indian Reserve
- Provincial Park
- National Park
- Conservation Reserve
- Military Lands

0 0.3 km

Projection: Web Mercator

APPENDIX C

Source Water Protection Map



Legend

- Intake Protection Zone Q
- Wellhead Protection Area Q1
- Wellhead Protection Area Q2
- Issue Contributing Areas
- Highly Vulnerable Aquifers
- WHPA-E
- Wellhead Protection Area
  - A
  - B
  - C
  - C1
  - D
  - F
- Intake Protection Zone 1
- Event Based Areas
- Intake Protection Zone 2
- Niagara Escarpment Plan (NEI
- Greenbelt
- Oak Ridges Moraine
- Source Protection Areas

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

Ontario

Map Created: 9/19/2023
Map Center: 43.8193 N, -79.11328 W

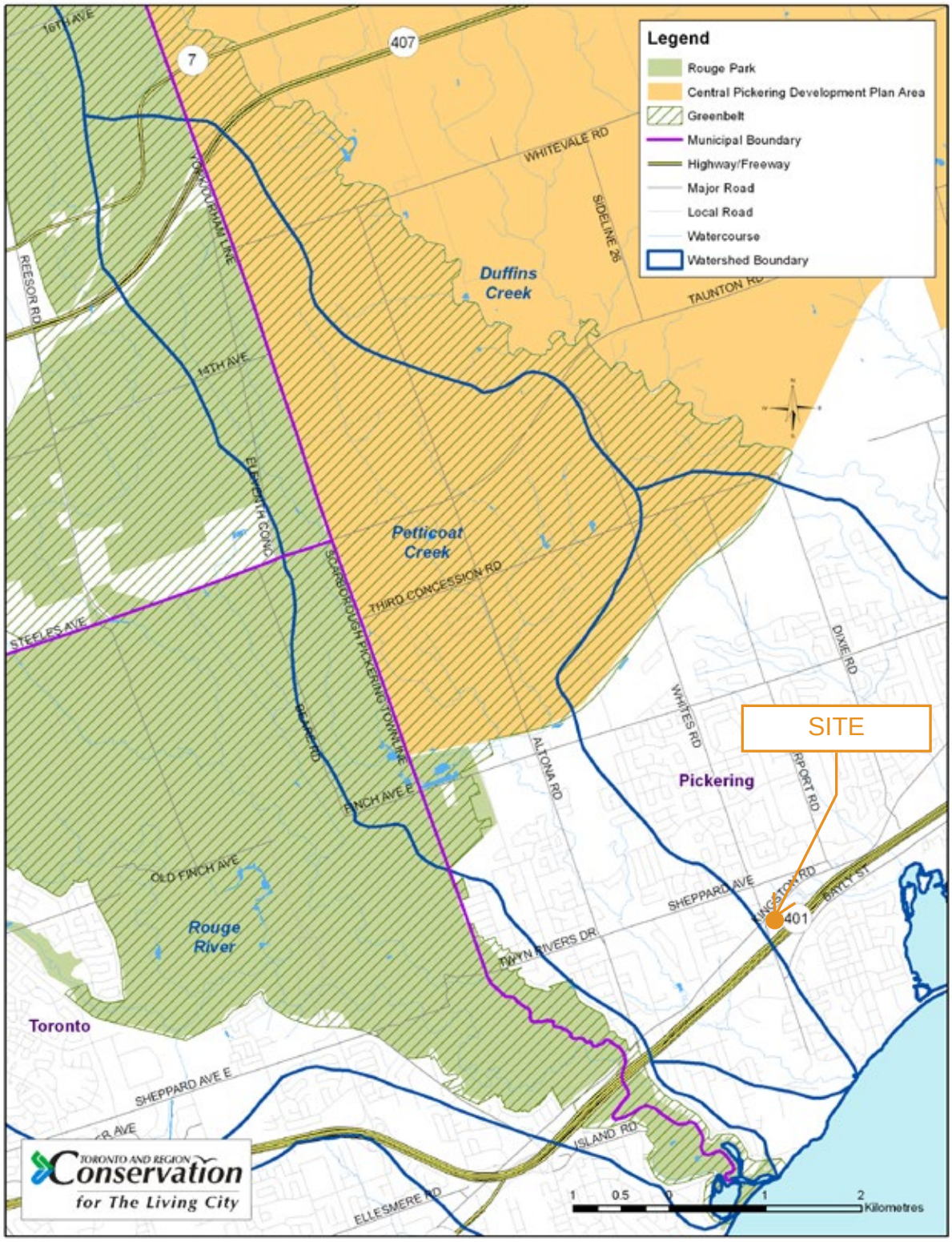


Figure 3: *Natural and Rural Land Protection Initiatives*

Waters ed Map

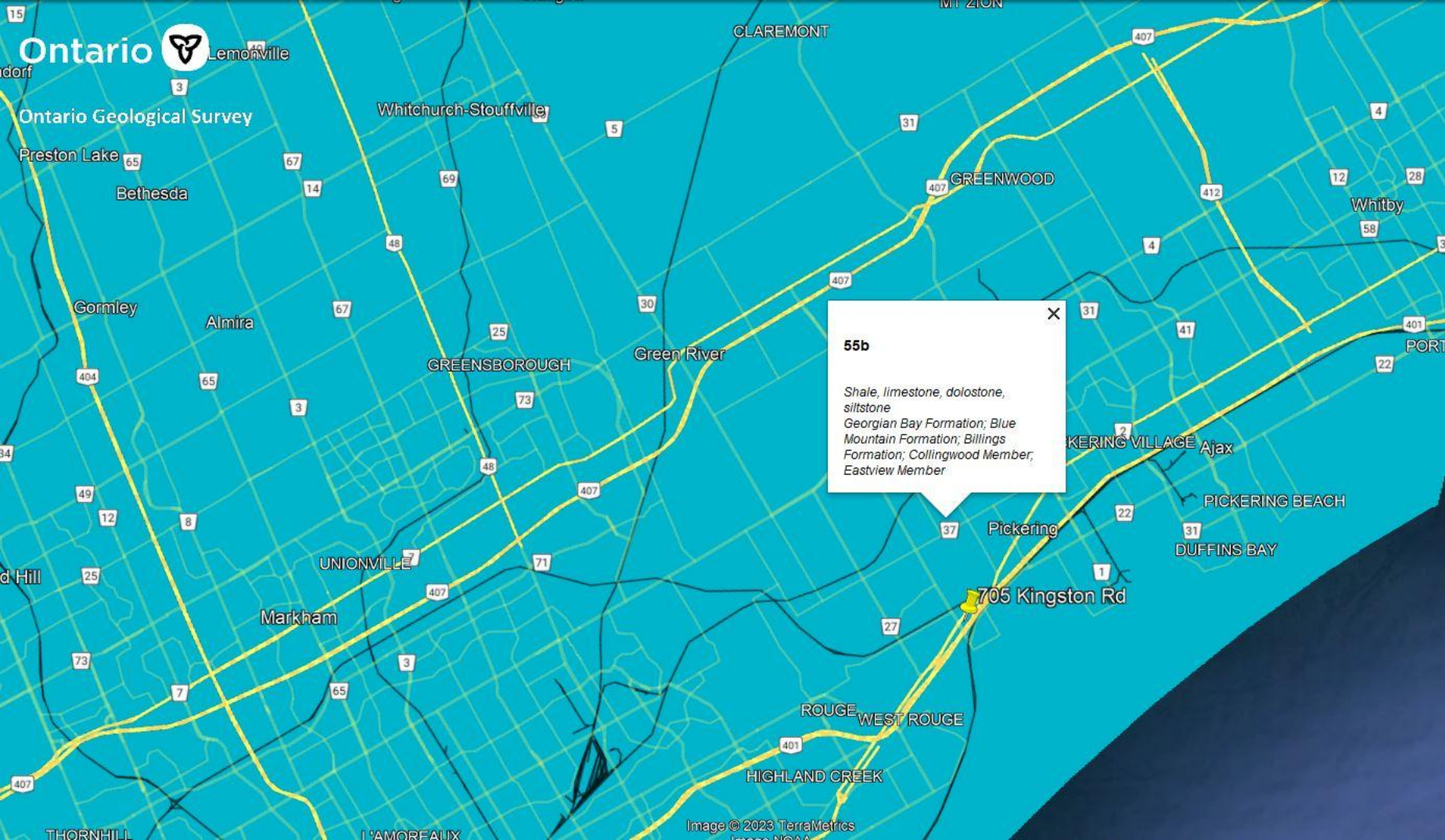
Lege

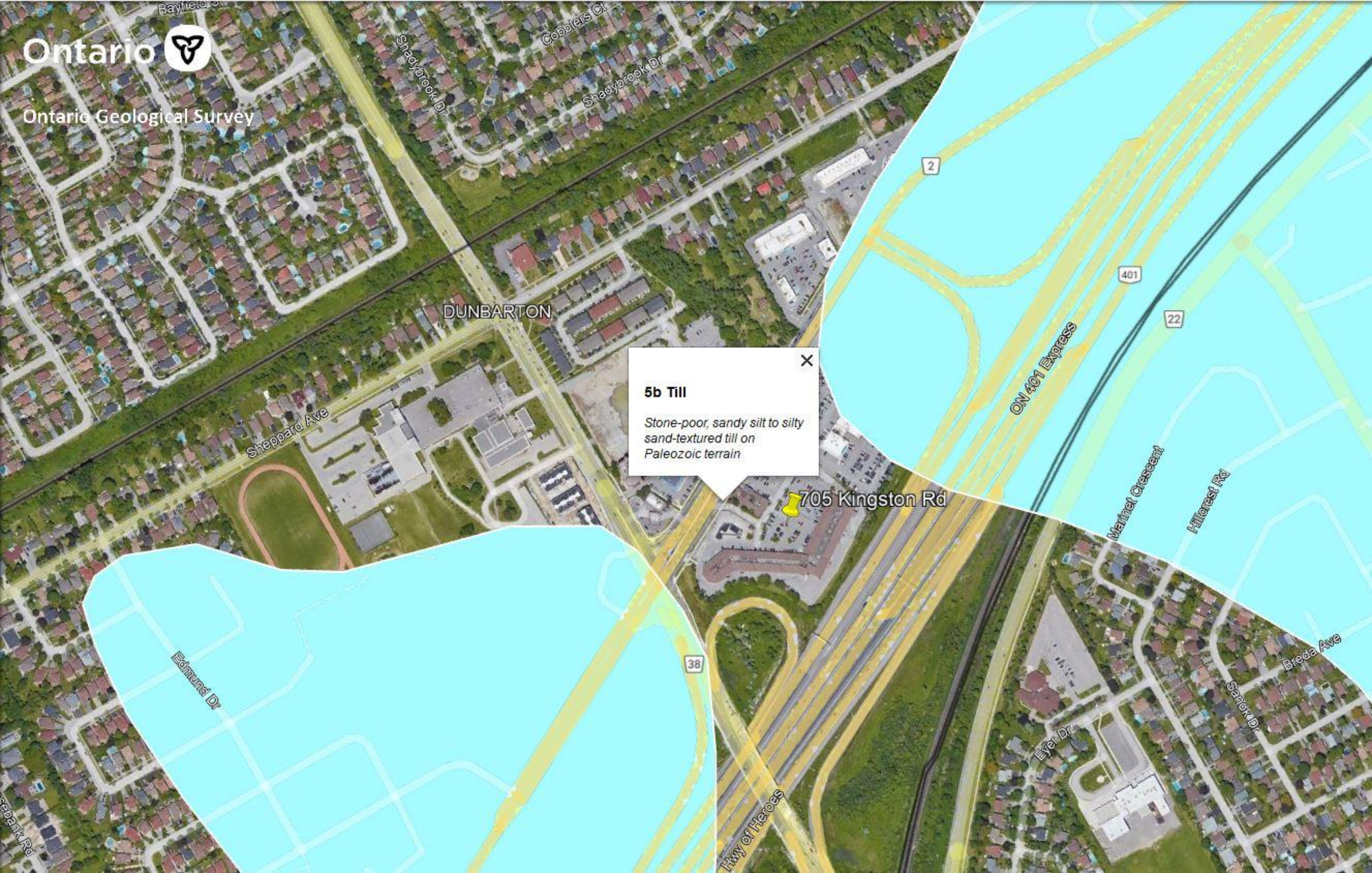
- Pr mary
- Secondary
- ert ary

s map s ould not be rel ed on as a prec se nd cator of routes or locat ons, nor as a gu de to nav gat on. e ntar o M n stry of Env ronment, Conservat on and Parks (MECP) s all not be l able n any way for t e use or any nformat on on t s map. of, or rel ance upon, t s map.

Map Created: 10/16/2024
Map Center: 43.81917 N, -79.11514 W

APPENDIX D


Ontario
Ontario Geological Survey
Lemonville
Whitchurch-Stouffville
CLAREMONT
MT ZION
Preston Lake
Bethesda
GREENWOOD
Whitby
Gormley
Almira
GREENSBOROUGH
Green River
55b
Shale, limestone, dolostone, siltstone
Georgian Bay Formation; Blue Mountain Formation; Billings Formation; Collingwood Member; Eastview Member
PICKERING VILLAGE
Ajax
PICKERING BEACH
Pickering
DUFFINS BAY
UNIONVILLE
705 Kingston Rd
Markham
ROUGE
WEST ROUGE
HIGHLAND CREEK
Image © 2023 TerraMetrics


Ontario
Ontario Geological Survey
Bayfield St
Cobblers Ct
Shadybrook Dr
Shadybrook Dr
DUNBARTON
Sheppard Ave
2
401
22
ON 401 Express
5b Till
Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain
705 Kingston Rd
Marinet Crescent
Hillcrest Rd
Breda Ave
Sanok Dr
Eyer Dr
38
Edmund Dr
Hwy of Heroes

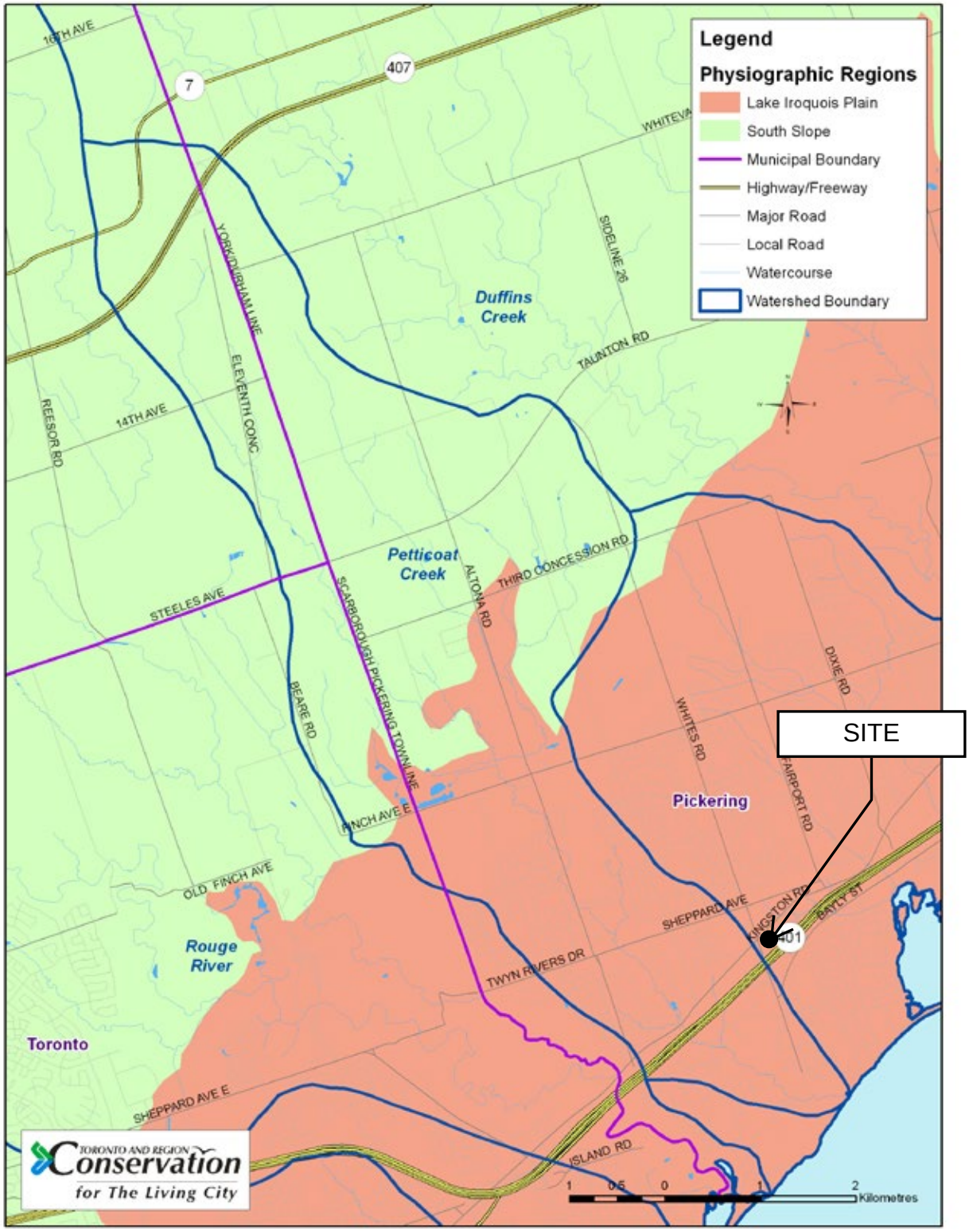


Figure 7: *Physiography*

Source: Chapman and Putnam, 1984

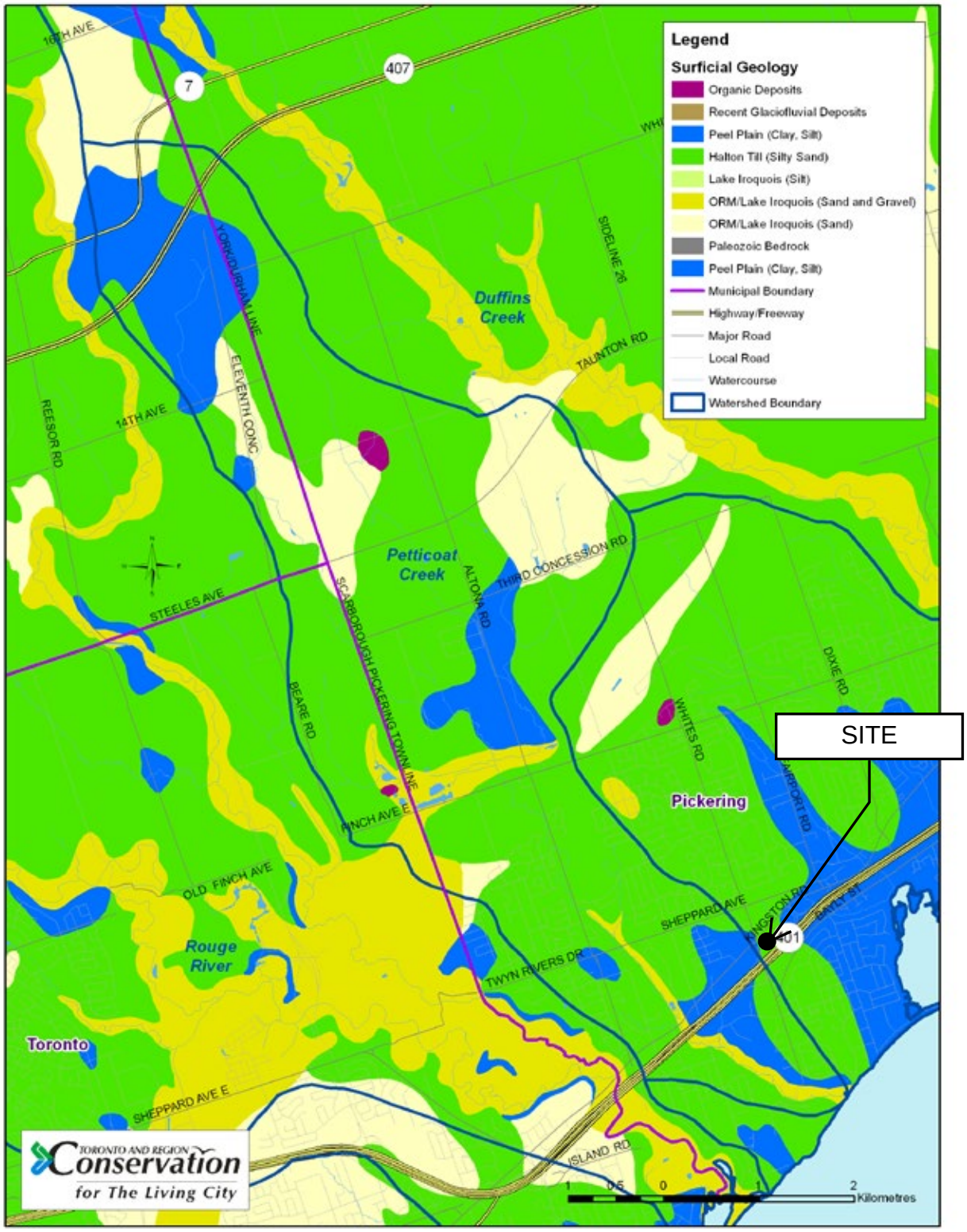
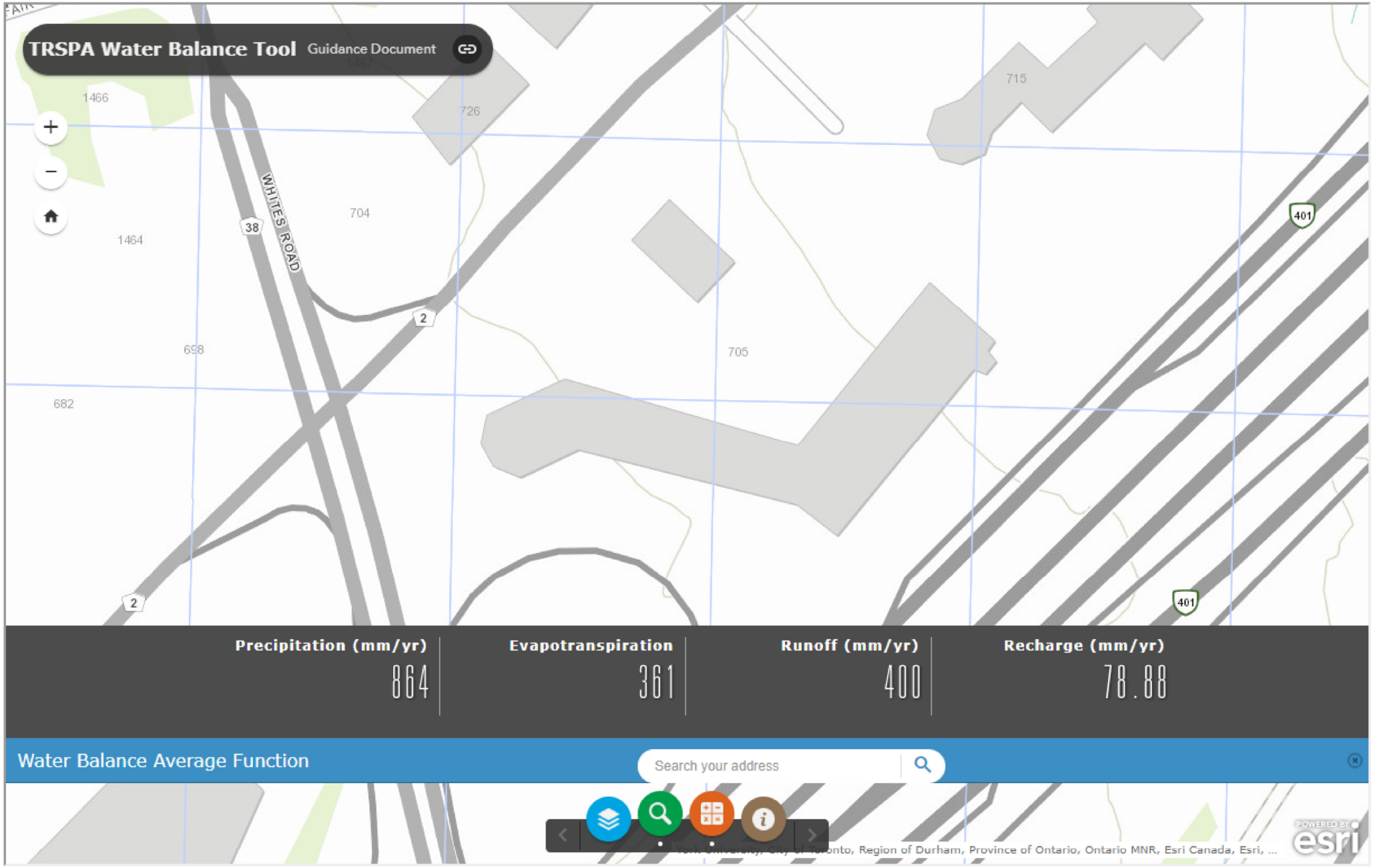


Figure 8: *Surficial Geology*

Source: Ontario Geological Survey, 2003

APPENDIX E

TRSPA WATER BALANCE TOOL



APPENDIX F

Water Well Records

Wednesday, October 16, 2024

3:40:33 PM

TOWNSHIP CON L	UTM	DATE CN	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
PICKERING TOWN	17 651854 4853712 W	2016/11 7230						7283297 (C36623) A217100 P	
PICKERING TOWN	17 651404 4853162 W	2019/05 7615	2	UT 0024	///:	MO	0020 10	7335759 (Z302045) A267437	BRWN FILL PCKD 0005 GREY TILL SAND HARD 0030
PICKERING TOWN	17 651426 4853325 W	2019/05 7615	2	UT 0027	///:	MO	0020 10	7335756 (Z302042) A267434	BRWN FILL PCKD 0003 GREY TILL SILT SAND 0030
PICKERING TOWN	17 651518 4853400 W	2019/03 7360	2	UT 0013	///:	MO	0007 10	7331993 (Z307516) A266668	SAND STNS 0010 SAND WBRG SLTY 0017
PICKERING TOWN	17 651523 4853385 W	2019/03 7360	2		///:	MO	0055 10	7331992 (Z307517) A259801	SAND GRVL 0010 BRWN SAND HARD 0020 TILL SLTY 0065
PICKERING TOWN	17 651510 4853412 W	2019/03 7360	2		///:	MO	0010 10	7331991 (Z307515) A266667	SAND STNS 0005 BRWN SAND 0010 GREY TILL HARD 0020
PICKERING TOWN	17 651508 4853461 W	2019/01 7215						7329547 (C44123) A259397 P	
PICKERING TOWN	17 651733 4853650 W	7215	40	UT 0008		TH	0015 10	7315926 (Z285567) A247000	FILL 0004 BRWN SILT SAND HARD 0008 GREY SILT CLAY TILL 0015
PICKERING TOWN	17 651859 4853635 W	2018/06 7215	40	UT 0008		TH	0015 10	7315925 (Z285569) A247002	FILL 0004 GREY CLAY SILT WBRG 0015
PICKERING TOWN	17 651508 4853405 W	2019/05 7615	2	UT 0027	///:	MO	0020 10	7335762 (Z302048) A267440	BRWN FILL LOOS 0002 GREY SAND SILT HARD 0008 GREY TILL SAND HARD 0030
PICKERING TOWN	17 651438 4853616 W	2017/01 7383	2			MO	0010 10	7288919 (Z257468) A211866	SNDY TILL 0020
PICKERING TOWN	17 651514 4853729 W	2020/03 4102						7357921 (Z317691) A	
PICKERING TOWN	17 651509 4853534 W	2016/01 6032	1.79			MO	0015 10	7262371 (Z183676) A194335	BRWN FILL LOOS 0003 BRWN SILT SAND 0025
PICKERING TOWN	17 651494 4853615 W	2014/09 7241	2.04			MT	0015 10	7228398 (Z195962) A164767	BRWN FILL GRVL LOOS 0005 BRWN TILL SAND DNSE 0010 BRWN SAND SILT DNSE 0015 GREY SAND SAND DNSE 0020 GREY SAND TILL DNSE 0025

TOWNSHIP CON L	UTM	DATE CN	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
PICKERING TOWN	17 651478 4853604 W	2014/09 7241	2.04			MT	0015 10	7228397 (Z195695) A164762	BRWN FILL GRVL LOOS 0005 BRWN TILL SAND DNSE 0010 BRWN SAND SILT DNSE 0015 GREY SAND SAND DNSE 0020 GREY SAND TILL DNSE 0025
PICKERING TOWN	17 651493 4853732 W	2012/10 7241	2			MO	0010 10	7190982 (Z160699) A123787	BRWN FILL 0005 BRWN TILL SILT HARD 0010 GREY TILL HARD 0020
PICKERING TOWN	17 651590 4853660 W	2012/10 7241	2			MO	0010 10	7190981 (Z160698) A109687	BRWN FILL 0001 BRWN TILL SILT HARD 0006 GREY TILL HARD 0020
PICKERING TOWN	17 651531 4853635 W	2012/10 7241	2			MO	0010 10	7190980 (Z160697) A109671	BRWN FILL 0005 BRWN TILL SILT HARD 0010 GREY TILL HARD 0020
PICKERING TOWN	17 651565 4853343 W	2009/05 6607	2.00			MO		7125150 (M05150) A082740	BRWN SILT SAND PCKD 0002 BRWN SILT TILL HARD 0007 GREY SILT TILL HARD 0013
PICKERING TOWN	17 651543 4853487 W	2009/03 7241	1.5			MT	0008 10	7122456 (Z93173) A081890	BRWN 0001 BRWN SILT CLAY DNSE 0014 GREY SILT CLAY DNSE 0018
PICKERING TOWN	17 651443 4853606 W	2017/01 7383	2			MO	0010 10	7288920 (Z257467) A211867	SNDY TILL 0020
PICKERING TOWN	17 651752 4853744 W	2022/09 4102						7439521 (Z391134) P	
PICKERING TOWN	17 651757 4853741 W	2022/09 4102						7439520 (Z391135) P	
PICKERING TOWN	17 651791 4853718 W	2022/03 6988						7418423 (Z387514) A332159 P	
PICKERING TOWN	17 651957 4853903 W	2022/03 7464						7418136 (Z381748) A345499 P	
PICKERING TOWN	17 651503 4853399 W	2019/05 7615	2		///:	MO	0010 5	7335761 (Z302047) A267438	BRWN FILL LOOS 0002 GREY TILL SAND SILT 0015
PICKERING TOWN	17 651961 4853902 W	2022/03 7464						7418135 (Z381746) A345482 P	
PICKERING TOWN	17 651582 4853583 W	2022/01 7464						7415976 (C53144) A343034 P	
PICKERING TOWN 02 440	17 651361 4853532 W	2006/10 1413	5.5		10///:			1918489 (Z53348) A	
PICKERING TOWN 028	17 651846 4853697 W	2005/08 6946	5					1917749 (Z10103) A	

TOWNSHIP CON L	UTM	DATE CN	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
PICKERING TOWN CON 01 028	17 651572 4853540 W	1994/11 5459				CO		1912210 (141557) A	GREY CLAY SAND STNS 0017 GREY SAND GRVL SILT 0037 GREY LMSN
PICKERING TOWN CON 01 028	17 651574 4853540 W	1994/11 5459	6	FR 0022	20/23/30/1:0	CO	0029 2	1912209 (141554)	GREY CLAY SAND STNS 0017 GREY SAND GRVL SILT 0022 BLCK CSND 0037 GREY LMSN 0037
PICKERING TOWN CON 01 028	17 651571 4853540 W	1994/11 5459	6	FR 0021	12/15/30/1:0	CO	0026 12	1912208 (141555)	GREY CLAY SAND 0018 GREY SAND STNS SILT 0021 BLCK SAND LOOS 0038 GREY LMSN
PICKERING TOWN CON 01 028	17 651573 4853540 W	1994/11 5459	6	FR 0022	12/16/30/1:0	CO	0025 3	1912207 (141552)	GREY CLAY SAND STNS 0017 GREY SAND GRVL SILT 0022 BLCK SAND LOOS 0037 GREY LMSN 0037
PICKERING TOWN RANGE 01 027	17 651778 4853826 W	2005/12 4102						1918302 (Z36198) A	
PICKERING TOWN RANGE 03 028	17 651731 4853724 W	1963/05 5412	30	FR 0057	48///:	DO		4601907 ()	BRWN CLAY 0008 BLUE CLAY STNS 0024 BLUE CLAY 0057 SHLE 0058
PICKERING TOWN RANGE 03 028	17 651847 4853860 W	2023/01 6946						7443902 (Z403602) A371395 P	
PICKERING TOWN RANGE 03 028	17 651862 4853864 W	2023/01 6946						7443901 (Z403601) A371394 P	
PICKERING TOWN RANGE 03 028	17 651853 4853870 W	2023/01 6946						7443900 (Z403603) A371396 P	
PICKERING TOWN RANGE 03 028	17 651781 4853551 W	2021/05 7241	2		///:	MT	0015 10	7391384 (Z364320) A317763	GREY ---- 0000 BRWN SAND STNS SAND 0008 GREY TILL WBRG TILL 0015
PICKERING TOWN RANGE 03 028	17 651647 4853545 W	2021/05 7241	2		///:	MT	0020 10	7391383 (Z364321) A318007	GREY ---- 0000 BRWN SAND STNS SAND 0012 GREY TILL WBRG SILT 0020
PICKERING TOWN RANGE 03 028	17 651626 4853523 W	2021/05 7241	2		///:	MT	0017 10	7391382 (Z364322) A318006	GREY ---- 0000 BRWN SAND STNS SAND 0012 GREY TILL DNSE CLAY 0017
PICKERING TOWN RANGE 03 028	17 651579 4853554 W	2021/04 7464	2		///:	MO	0004 10	7391083 (Z351801) A317477	BRWN FILL 0005 GREY TILL HARD 0007 BRWN SAND DRY 0010
PICKERING TOWN RANGE 03 028	17 651706 4853617 W	2021/05 7241	2		///:	MT	0005 10	7391385 (Z364300) A331071	GREY ---- FILL 0002 BRWN SAND SILT 0007 GREY SILT SAND 0015
PICKERING TOWN RANGE 03 028	17 651718 4853927 W	1955/11 3512	6	FR 0063	30/51/1/:	DO		4601905 ()	BLUE CLAY STNS 0062 BLCK SLTE 0100
PICKERING TOWN RANGE 03 028	17 651744 4853787 W	2020/05 7147	1.97		///:	MO	0010 10	7360329 (MA94RWKO) A289640	BRWN SILT CLAY 0020

TOWNSHIP CON L	UTM	DATE CN	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
PICKERING TOWN RANGE 03 028	17 651857 4853879 W	2023/01 6946						7443903 (Z403604) A371397 P	
PICKERING TOWN RANGE 03 028	17 651730 4853727 W	2020/05 7147	1.97		///:	MO	0010 10	7360328 (A7CLMK5J) A289639	BRWN SILT CLAY 0020
PICKERING TOWN RANGE 03 028	17 651700 4853814 W	2020/05 7147	1.97		///:	MO	0010 10	7360324 (4BQWEF59) A289635	BRWN SILT CLAY 0020
PICKERING TOWN RANGE 03 028	17 651840 4853872 W	2023/01 6946						7443904 (Z403605) A371360 P	
PICKERING TOWN RANGE 03 028	17 651583 4853577 W	2021/04 7464	2		///:	MO	0004 10	7391084 (Z351810) A317478	BRWN FILL 0005 GREY TILL HARD 0007 BRWN SAND 0015
PICKERING TOWN RANGE 03 029	17 651495 4853563 W	1969/09 5420	34	FR 0018	14/14/10/2:0	DO		4604328 ()	LOAM 0001 BRWN CLAY STNS 0012 BLUE CLAY STNS 0018 GREY GRVL CSND 0027
PICKERING TOWN RANGE 03 029	17 651506 4853522 W	2022/07 7282			///:	MO		7427700 (SYFBQ69A) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651493 4853472 W	2022/04 7282		UT 0008	///:	MO		7417554 (FIHF92XT) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651493 4853474 W	2022/04 7282		UT 0006	///:	MO		7417553 (3TEQ9L6Z) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651509 4853483 W	2022/04 7282		UT 0005	///:	MO		7417552 (TOZTIQLF) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651516 4853406 W	2022/04 7282		UT 0004	///:	MO		7417551 (K3VJ3NQI) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651515 4853402 W	2022/04 7282		UT 0004	///:	MO		7417550 (USDOVCDH) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651509 4853531 W	2022/04 7282		UT 0004	///:	MO		7417549 (WY6FDB5G) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651487 4853522 W	2022/04 7282		UT 0002	///:	MO		7417548 (BLZT38S6) _NO_TAG A	

TOWNSHIP CON L	UTM	DATE CN	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
PICKERING TOWN RANGE 03 029	17 651488 4853524 W	2022/04 7282		UT 0004	///:	MO		7417547 (CRJNJ32K) _NO_TAG A	
PICKERING TOWN RANGE 03 029	17 651477 4853507 W	2022/04 7282		UT 0002	///:	MO		7417555 (THYICPQ6) _NO_TAG A	

Notes:
UTM: UTM in Zone, Easting, Northing and Datum is NAD83; L: UTM estimated from Centroid of Lot; W: UTM not from Lot Centroid
DATE CNTR: Date Work Completedand Well Contractor Licence Number
CASING DIA: .Casing diameter in inches
WATER: Unit of Depth in Fee. See Table 4 for Meaning of Code

PUMP TEST: Static Water Level in Feet / Water Level After Pumping in Feet / Pump Test Rate in GPM / Pump Test Duration in Hour : Minutes
WELL USE: See Table 3 for Meaning of Code
SCREEN: Screen Depth and Length in feet
WELL: WEL (AUDIT #) Well Tag . A: Abandonment; P: Partial Data Entry Only

1. Core Material and Descriptive te

Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
BLDR	BOULDERS	FCRD	FRACTURED	IRFM	IRON FORMATION	PORS	POROUS	SOFT	SOFT
BSLT	BASALT	FGRD	FINE-GRAINED	LIMY	LIMY	PRDG	PREVIOUSLY DUG	SPST	SOAPSTONE
CGRD	COARSE-GRAINED	FGVL	FINE GRAVEL	LMSN	LIMESTONE	PRDR	PREV. DRILLED	STKY	STICKY
CGVL	COARSE GRAVEL	FILL	FILL	LOAM	TOPSOIL	QRTZ	QUARTZITE	STNS	STONES
CHRT	CHERT	FLDS	FELDSPAR	LOOS	LOOSE	QSND	QUICKSAND	STNY	STONEY
CLAY	CLAY	FLNT	FLINT	LTCL	LIGHT-COLOURED	QTZ	QUARTZ	THIK	THICK
CLN	CLEAN	FOSS	FOSILIFEROUS	LYRD	LAYERED	ROCK	ROCK	THIN	THIN
CLYY	CLAYEY	FSND	FINE SAND	MARL	MARL	SAND	SAND	TILL	TILL
CMTD	CEMENTED	GNIS	GNEISS	MGRD	MEDIUM-GRAINED	SHLE	SHALE	UNKN	UNKNOWN TYPE
CONG	CONGLOMERATE	GRNT	GRANITE	MGVL	MEDIUM GRAVEL	SHLY	SHALY	VERY	VERY
CRYS	CRYSTALLINE	GRSN	GREENSTONE	MRBL	MARBLE	SHRP	SHARP	WBRG	WATER-BEARING
CSND	COARSE SAND	GRVL	GRAVEL	MSND	MEDIUM SAND	SHST	SCHIST	WDFR	WOOD FRAGMENTS
DKCL	DARK-COLOURED	GRWK	GREYWACKE	MUCK	MUCK	SILT	SILT	WTHD	WEATHERED
DLMT	DOLOMITE	GVLY	GRAVELLY	OBDN	OVERBURDEN	SLTE	SLATE		
DNSE	DENSE	GYPS	GYPSUM	PCKD	PACKED	SLTY	SILTY		
DRTY	DIRTY	HARD	HARD	PEAT	PEAT	SNDS	SANDSTONE		
DRY	DRY	HPAN	HARDPAN	PGVL	PEA GRAVEL	SNDY	SANDYOAPSTONE		

2. Core Color

Code	Description
WHIT	WHITE
GREY	GREY
BLUE	BLUE
GREN	GREEN
YLLW	YELLOW
BRWN	BROWN
RED	RED
BLCK	BLACK
BLGY	BLUE-GREY

3. Well Use

Code	Description	Code	Description
DO	Domestic	OT	Other
ST	Livestock	TH	Test Hole
IR	Irrigation	DE	Dewatering
IN	Industrial	MO	Monitoring
CO	Commercial	MT	Monitoring TestHole
MN	Municipal		
PS	Public		
AC	Cooling And A/C		
NU	Not Used		

4. Water Detail

Code	Description	Code	Description
FR	Fresh	GS	Gas
SA	Salty	IR	Iron
SU	Sulphur		
MN	Mineral		
UK	Unknown		

WELL_ID	AUDIT_NO	TAG	County	Township	Received	Lic No of Contractor	Final_Status	Use1	Use2	STREET	CITY	SITE
1912207	141552		DURHAM	PICKERING	11/23/1994	5459	Dewatering	Commerical				
1912208	141555		DURHAM	PICKERING	11/23/1994	5459	Dewatering	Commerical				
1912209	141554		DURHAM	PICKERING	11/23/1994	5459	Dewatering	Commerical				
1912210	141557		DURHAM	PICKERING	11/23/1994	5459	Abandoned-Supply	Commerical				
1917749	Z10103		DURHAM	PICKERING	8/26/2005	6946	Abandoned-Other			816 KINGSTON R	PICKERING	
1918302	Z36198		DURHAM	PICKERING	7/10/2006	4102	Abandoned-Other			790 KINGSTON R	PICKERING	
1918489	Z53348		DURHAM	PICKERING	12/1/2006	1413	Abandoned-Other			985 SUSAN DR	PICKERING	
4601905			DURHAM	PICKERING	3/5/1956	3512	Water Supply	Domestic				
4601907			DURHAM	PICKERING	7/2/1963	5412	Water Supply	Domestic				
4604328			DURHAM	PICKERING	2/9/1970	5420	Water Supply	Domestic				
7122456	Z93173	A081890	DURHAM	PICKERING	4/29/2009	7241	Monitoring and Test Hole	Monitoring and Test Hole		702 KINGSTON R	Pickering	
7125150	M05150	A082740	DURHAM	PICKERING	7/9/2009	6607	Test Hole	Monitoring		704 KINGSTON R	Pickering	
7190980	Z160697	A109671	DURHAM	PICKERING	11/9/2012	7241	Observation Wells		Monitoring	1473 WHITES RD	Pickering	
7190981	Z160698	A109687	DURHAM	PICKERING	11/9/2012	7241	Observation Wells	Monitoring		1473 WHITES RD	Pickering	
7190982	Z160699	A123787	DURHAM	PICKERING	11/9/2012	7241	Observation Wells	Monitoring		1485 WHITES RD	Pickering	
7228397	Z195695	A164762	DURHAM	PICKERING	9/30/2014	7241	Monitoring and Test Hole	Monitoring and Test Hole		1466 WHITES RO		
7228398	Z195962	A164767	DURHAM	PICKERING	9/30/2014	7241	Monitoring and Test Hole	Monitoring and Test Hole		1466 WHITES RO	Pickering	
7262371	Z183676	A194335	DURHAM	PICKERING	5/3/2016	6032	Observation Wells	Monitoring		1464 WHITES RD.	PICKERING	
7283297	C36623	A217100	DURHAM	PICKERING	3/17/2017	7230						
7288919	Z257468	A211866	DURHAM	PICKERING	6/23/2017	7383	Test Hole	Monitoring		1466 WHITE'S RO	Pickering	
7288920	Z257467	A211867	DURHAM	PICKERING	6/23/2017	7383	Observation Wells	Monitoring		1466 WHITE'S RO	Pickering	
7315925	Z285569	A247002	DURHAM	PICKERING	8/9/2018	7215	Test Hole	Test Hole		715 KINGSTON R	Pickering	
7315926	Z285567	A247000	DURHAM	PICKERING	8/9/2018	7215	Test Hole	Test Hole		715 KINGSTON R	Pickering	
7329547	C44123	A259397	DURHAM	PICKERING	3/11/2019	7215						
7331991	Z307515	A266667	DURHAM	PICKERING	4/25/2019	7360	Observation Wells	Monitoring		KINGSTON RD	Pickering	
7331992	Z307517	A259801	DURHAM	PICKERING	4/25/2019	7360	Observation Wells	Monitoring		KINGSTON RD	Pickering	
7331993	Z307516	A266668	DURHAM	PICKERING	4/25/2019	7360	Observation Wells	Monitoring		KINGSTON RD	Pickering	
7335756	Z302042	A267434	DURHAM	PICKERING	6/18/2019	7615	Observation Wells	Monitoring		603 KINGSTON R	Pickering	
7335759	Z302045	A267437	DURHAM	PICKERING	6/18/2019	7615	Monitoring and Test Hole	Monitoring		603 Kingston Roa	Pickering	
7335761	Z302047	A267438	DURHAM	PICKERING	6/18/2019	7615	Observation Wells	Monitoring		603 Kingston Rd	Pickering	
7335762	Z302048	A267440	DURHAM	PICKERING	6/18/2019	7615	Monitoring and Test Hole	Monitoring		603 Kingston Roa	Pickering	
7357921	Z317691		DURHAM	PICKERING	5/11/2020	4102	Abandoned-Other			1475 WHITES RD	Pickering	
7360324	4BQWEF59	A289635	DURHAM	PICKERING	5/6/2020	7147	Observation Wells	Monitoring		760 Kingston Roa	Ajax	
7360328	A7CLMK5J	A289639	DURHAM	PICKERING	5/6/2020	7147	Observation Wells	Monitoring		760 Kingston Roa	Ajax	
7360329	MA94RWKO	A289640	DURHAM	PICKERING	5/6/2020	7147	Observation Wells	Monitoring		760 Kingston Roa	Ajax	
7391083	Z351801	A317477	DURHAM	PICKERING	6/29/2021	7464	Observation Wells	Monitoring		704 Kingston Rd	Pickering	
7391084	Z351810	A317478	DURHAM	PICKERING	6/29/2021	7464	Observation Wells	Monitoring		704 Kingston Rd	Pickering	
7391382	Z364322	A318006	DURHAM	PICKERING	6/29/2021	7241	Observation Wells	Monitoring and Test Hole		705 KINGSTON R	Pickering	
7391383	Z364321	A318007	DURHAM	PICKERING	6/29/2021	7241	Observation Wells	Monitoring and Test Hole		705 KINGSTON R	Pickering	
7391384	Z364320	A317763	DURHAM	PICKERING	6/29/2021	7241		Monitoring and Test Hole		705 KINGSTON R	Pickering	
7391385	Z364300	A331071	DURHAM	PICKERING	6/29/2021	7241	Monitoring and Test Hole	Monitoring and Test Hole		705 KINGSTON R	Pickering	
7415976	C53144	A343034	DURHAM	PICKERING	4/20/2022	7464						

WELL_ID	AUDIT_NO	TAG	County	Township	Received	Lic No of Contractor	Final_Status	Use1	Use2	STREET	CITY	SITE
7417547	CRJNJ32K	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417548	BLZT38S6	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417549	WY6FDB5G	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417550	USDOVCDH	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417551	K3VJ3NQI	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417552	TOZTIQLF	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417553	3TEQ9L6Z	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417554	FIHF92XT	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7417555	THYICPQ6	_NO_TAG	DURHAM	PICKERING	5/11/2022	7282	Abandoned-Other	Monitoring		689 Kingston Roa	Pickering	Job No. 57513,
7418135	Z381746	A345482	DURHAM	PICKERING	5/25/2022	7464						
7418136	Z381748	A345499	DURHAM	PICKERING	5/25/2022	7464						
7418423	Z387514	A332159	DURHAM	PICKERING	5/30/2022	6988						
7427700	SYFBQ69A	_NO_TAG	DURHAM	PICKERING	9/2/2022	7282	Abandoned-Other	Monitoring		698 Kingston Roa	Pickering	Job No. 57667,
7439520	Z391135		DURHAM	PICKERING	12/8/2022	4102						
7439521	Z391134		DURHAM	PICKERING	12/8/2022	4102						
7443900	Z403603	A371396	DURHAM	PICKERING	2/3/2023	6946						
7443901	Z403601	A371394	DURHAM	PICKERING	2/3/2023	6946						
7443902	Z403602	A371395	DURHAM	PICKERING	2/3/2023	6946						
7443903	Z403604	A371397	DURHAM	PICKERING	2/3/2023	6946						
7443904	Z403605	A371360	DURHAM	PICKERING	2/3/2023	6946						

APPENDIX G

File No. 23-056
October 8, 2023

Attention: Residents

Subject: Private Well Survey

Grounded Engineering Inc. ("Grounded") is retained on behalf of 705 Kingston Road Ltd. to conduct a Private Well Survey within 250 m of the proposed development located at 705 Kingston Road, Pickering, Ontario.

A Private Well Survey of the neighboring properties is required as part of the development application and is completely voluntary for the residents. The purpose of our visit is to conduct interviews with local residents and land owners in regards to water supply wells in operation surrounding the development project. The information we hope to obtain will include:

#	Information Collected
1.	Type of well (i.e. drilled, dug, bored)
2.	Casing material (i.e. metal, concrete, stone, etc.)
3.	Pump type and depth (i.e. Submersible [pump in well]/Jet Pump [pump in house])
4.	Water treatment systems in use (i.e. water softener, reverse osmosis, UV light)
5.	Date well was constructed and depth of well
6.	Use of the well (i.e. residential/agriculture/livestock/commercial, etc.)
7.	Number of residents/people the well supplies water to
8.	Past water quality problems with well (i.e. high bacteria levels, high iron, etc.)
9.	Past water quantity problems with well (i.e. does/has the well run dry in the past and if so, why?)
10.	Is well water consumed, or is water purchased for consumption (i.e. bottled water)
11.	Any past operating problems with well detailing the nature of the problem and when it occurred

If you wish to participate in the survey, please contact Deeana Reynolds (info below) at Grounded Engineering Inc. within 30 days of receiving this letter. If there is access to your well, and with your permission, our representatitves will measure the depth and level of water in your well. In addition, we will collect a water quality sample from your tap (with your permission). The results of the water quality testing will be provided to you by mail.

The contact information is as below

- Phone number: 647-370-3191
- Email: dreynolds@groundedeng.ca

If we can be of further assistance, please do not hesitate to contact us.

GROUNDED ENGINEERING

Deeana Reynolds, EIT
Project Coordinator

APPENDIX H

GROUNDED ENGINEERING

Date Started : Oct 11, 2023
Position : E: 651695, N: 4853499 (UTM 17T)
Elev. Datum : Geodetic

BOREHOLE LOG 101

File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 55

elev depth (m)	description	graphic log	number	type	SPT N-value
102.4	**GROUND SURFACE**				
	100mm **ASPHALT**		1A	SS	23
101.6	**FILL**, sand, some gravel, some silt, trace clay, trace rock fragments, compact, grey, moist		1B	SS	
0.8	...at 0.4 m, silty, brown		2	SS	47
	SANDY SILT, some clay, trace gravel, dense to very dense, grey, moist (GLACIAL TILL)		3	SS	79 / 290mm
			4	SS	82
			5	SS	58
			6	SS	50 / 145mm
	...at 6.1 m, trace rock fragments		7	SS	50 / 50mm
			8	SS	50 / 140mm
91.7					
10.7	**CLAYEY SILT**, some sand, trace gravel, hard, grey, moist (GLACIAL TILL)		1	PMT	
			9	SS	39
			2	PMT	
87.2					
15.2	**SILT AND CLAY**, trace sand, very stiff, grey, moist		10	SS	18
			3	PMT	
84.1					
18.3	**CLAYEY SILT**, trace to some sand, trace gravel, very stiff to hard, grey, moist (GLACIAL TILL)		11	SS	42
			12	SS	26
			13	SS	50 / 125mm
80.8					
21.6	**END OF BOREHOLE**				

hollow stem augers OD=215 mm

mud rotary small OD=100 mm

depth scale (m) 0–21

well details

elevation (m) 102–81

undrained shear strength (kPa)
■ unconfined + field vane
● pocket penetrometer ○ Lab Vane
40 80 120 160

headspace vapour (ppm)
× hexane □ isobutylene
△ methane
100 200 300

SPT N-values (bpf)
× dynamic cone
10 20 30 40

moisture / plasticity
PL MC LL
10 20 30

unstabilized water level

PMT@91.0 m: 102 MPa

PMT@87.9 m: 127 MPa

PMT@84.9 m: 67 MPa

lab data and comments

grain size distribution (%) (MIT)
GR SA SI CL

SS1B: H-Ms, Metals, ORPs, PAHs

SS2: BTEX, PHCs, VOCs
8 29 53 10

SS4: BTEX, H-Ms, Metals, ORPs, PAHs, PHCs, VOCs

5.9m: auger grinding

SS7: BTEX, PHCs, VOCs
6.1m: auger grinding

8.4m: PMT attempted and unsuccessful due to over-drilled testing pocket.

2 18 49 31

1 1 59 39

2 17 52 29

Borehole was filled with drill water upon completion of drilling.

50 mm dia. monitoring well installed.
No. 10 screen

GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Oct 17, 2023	18.1	84.3
Oct 19, 2023	11.8	90.6
Oct 23, 2023	10.8	91.6

file: 23-197 gint.gpj

Tech : LB | **PM** : DR/MG | **Rev** : NN

GROUNDED ENGINEERING

Date Started : Oct 13, 2023
Position : E: 651732, N: 4853511 (UTM 17T)
Elev. Datum : Geodetic

BOREHOLE LOG 102

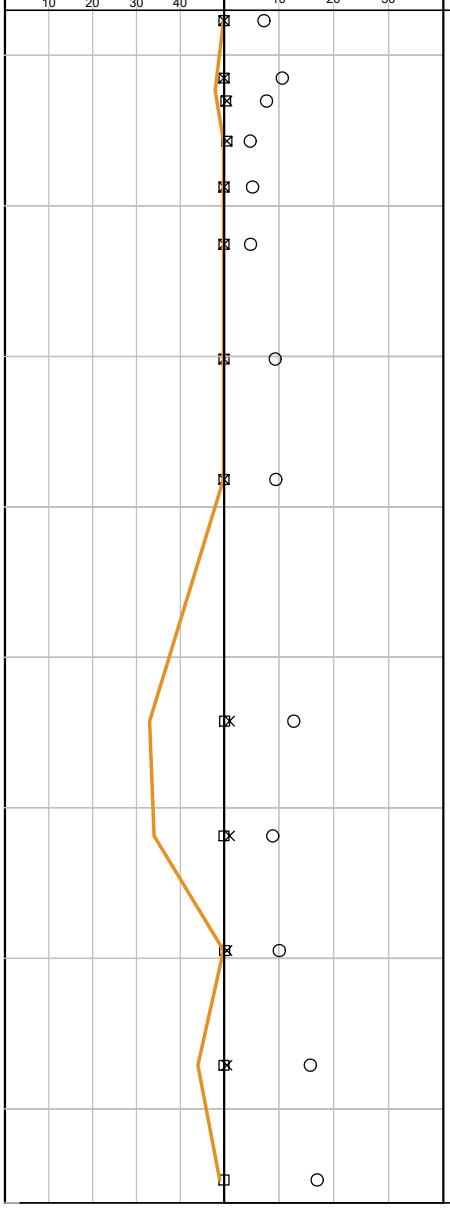
File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

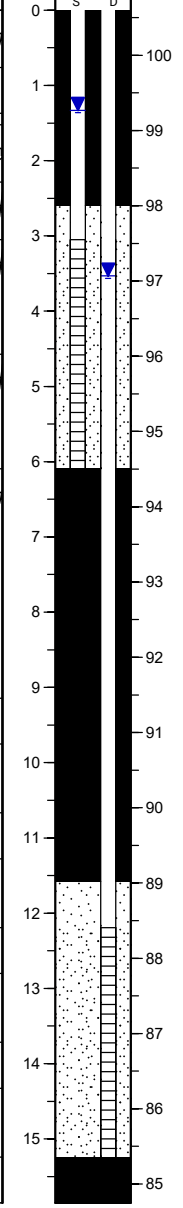
drill method : CME 55

hollow stem augers OD=215 mm

mud rotary small OD=100 mm

elev depth (m)	description	graphic log	number	type	SPT N-value
100.6	**GROUND SURFACE**				
	100mm **ASPHALT**		1	SS	50 / 125mm
	25mm **AGGREGATE**				
99.6 / 1.0	**FILL**, sand, some silt, trace gravel, trace brick fragments, dense to very dense, brown to black, moist		2A	SS	48
			2B	SS	
	SANDY SILT, trace to some clay, trace gravel, trace rock fragments, dense to very dense, brown, moist (GLACIAL TILL)		3	SS	92 / 275mm
			4	SS	50 / 125mm
	...at 3.0 m, grey		5	SS	50 / 125mm
	...at 4.6 m, wet		6	SS	50 / 125mm
91.5 / 9.1			7	SS	50 / 125mm
	CLAYEY SILT, sandy, trace gravel, hard, grey, moist (GLACIAL TILL)		8	SS	33
			9	SS	34
	...at 12.2 m, some clay		10	SS	56
86.9 / 13.7			11	SS	44
	SILT AND CLAY, trace sand, hard, grey, moist				
84.8 / 15.8			12	SS	49





unstabilized water level

lab data and comments

grain size distribution (%) (MIT)
GR SA SI CL

SS2A: H-Ms, Metals, ORPs, PAHs

SS3: BTEX, H-Ms, Metals, ORPs, PHCs, VOCs

SS4: PAHs

SS7: BTEX, PHCs, VOCs

8.4m: PMT attempted and unsuccessful due to over-drilled testing pocket.

9 30 43 18

13.4m: auger grinding

0 2 50 48

END OF BOREHOLE

Borehole was filled with drill water upon completion of drilling.

50 mm dia. monitoring well installed.

S: 50 mm dia. monitoring well installed.
D: 50 mm dia. monitoring well installed.
No. 10 screen

102-S GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Nov 3, 2023	1.7	98.9
Nov 9, 2023	1.6	99.0
Dec 7, 2023	1.6	99.0
Jan 5, 2024	1.5	99.1
Feb 28, 2024	1.3	99.3
Oct 8, 2024	1.3	99.3

102-D GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Oct 19, 2023	13.9	86.7
Oct 20, 2023	13.8	86.8
Nov 3, 2023	13.3	87.3
Nov 9, 2023	12.6	88.0
Dec 7, 2023	9.6	91.0
Jan 5, 2024	6.9	93.7
Feb 28, 2024	4.6	96.0
Oct 8, 2024	3.5	97.1

file: 23-197 gint.gpj

Tech : IH | **PM** : DR/MG | **Rev** : NN

BOREHOLE LOG 103

Date Started : Oct 11, 2023
Position : E: 651804, N: 4853536 (UTM 17T)
Elev. Datum : Geodetic

File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 55

hollow stem augers OD=215 mm

elev depth (m)	description	graphic log	number	type	SPT N-value
98.1	**GROUND SURFACE**				
	50mm **ASPHALT**		1	SS	28
	FILL, sand and gravel, compact, brown, wet				
	...at 0.8 m, clayey silt, some sand, soft, moist to wet		2	SS	3
			3A	SS	2
95.8	...at 2.0 m, sand, trace gravel, very loose, wet		3B	SS	
2.3	**SANDY SILT**, trace to some clay, trace gravel, trace rock fragments, dense to very dense, brown, moist (GLACIAL TILL)		4	SS	50 / 125mm
	...at 3.0 m, grey		5	SS	50 / 100mm
			6	SS	34
			7	SS	99 / 275mm
89.0			8	SS	50 / 125mm
9.1	**CLAYEY SILT**, sandy, trace gravel, hard, grey, moist (GLACIAL TILL)		9	SS	50 / 125mm
			10	SS	48
			11	SS	75
			12	SS	50
82.9					
15.2	**SILT AND CLAY**, trace sand, with light grey silt partings, hard, grey, moist		13	SS	45
82.3					
15.8	**END OF BOREHOLE**				

depth scale (m) | well details | elevation (m)

undrained shear strength (kPa): unconfined, field vane, pocket penetrometer, Lab Vane; 40 80 120 160
SPT N-values (bpf): dynamic cone; 10 20 30 40
headspace vapour (ppm): hexane, isobutylene, methane; 100 200 300
moisture / plasticity: PL MC LL; 10 20 30

unstabilized water level

lab data and comments

grain size distribution (%) (MIT) GR SA SI CL

SS2: PAHs
SS3A: BTEX, H-Ms, Metals, ORPs, PHCs, VOCs
SS6: H-Ms, Metals, ORPs, PAHs
SS8: BTEX, PHCs, VOCs
11.9m: auger grinding
2 20 49 29

Borehole was filled with drill water upon completion of drilling.

50 mm dia. monitoring well installed.
No. 10 screen

GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Oct 16, 2023	dry	n/a
Oct 17, 2023	dry	n/a
Oct 19, 2023	dry	n/a

file: 23-197 gint.gpj

Tech : IH | **PM** : DR/MG | **Rev** : NN

Date Started : Oct 10, 2023
Position : E: 651710, N: 4853616 (UTM 17T)
Elev. Datum : Geodetic

BOREHOLE LOG 104

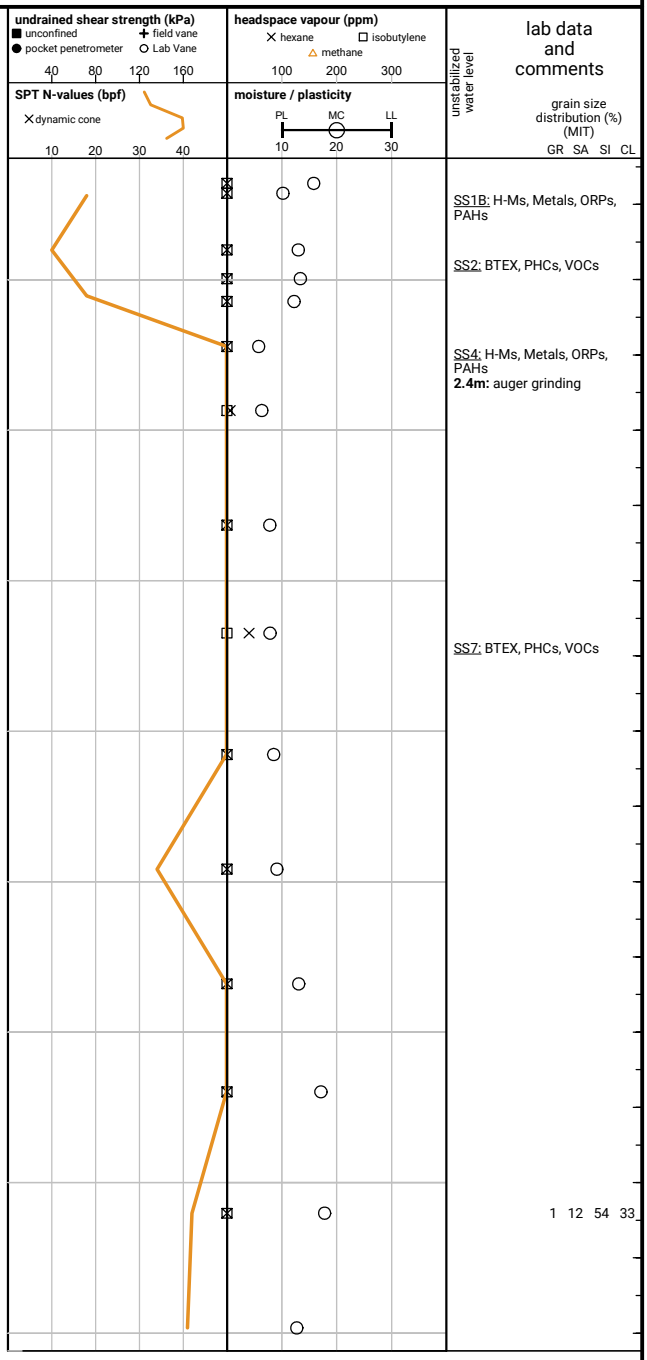
File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 55

hollow stem augers OD=215 mm

mud rotary small OD=100 mm

elev depth (m)	description	graphic log	number	type	SPT N-value
99.6	**GROUND SURFACE**				
	190mm **CONCRETE**		1A	SS	18
	FILL, sandy silt, some gravel, trace clay, trace rock fragments, compact, grey, wet		1B	SS	
	...at 0.3 m, clayey silt, sandy, trace gravel, trace asphalt, stiff, moist		2	SS	10
	...at 1.5 m, sand, compact, brown		3A	SS	18
	...at 1.7 m, clayey silt with wet sand seams, very stiff		3B	SS	
97.3					
2.3	**SANDY SILT**, trace to some clay, trace gravel, trace rock fragments, very dense, brown, moist (GLACIAL TILL)		4	SS	86 / 275mm
	...at 3.0 m, grey		5	SS	92
			6	SS	67
			7	SS	85 / 275mm
			8	SS	55
90.5					
9.1	**CLAYEY SILT**, trace to some sand, trace gravel, hard, grey, moist (GLACIAL TILL)		9	SS	34
			10	SS	55
			11	SS	83 / 275mm
85.9					
13.7	**CLAYEY SILT**, some sand, trace gravel, hard, grey, moist to wet		12	SS	42
84.4					
15.2	**CLAYEY SILT**, trace to some sand, trace gravel, hard, grey, moist (GLACIAL TILL)		13	SS	41
83.8					
15.8	**END OF BOREHOLE**				



Borehole was filled with drill water upon completion of drilling.

50 mm dia. monitoring well installed.

S: 50 mm dia. monitoring well installed.
D: 50 mm dia. monitoring well installed.
No. 10 screen

104-S GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Oct 17, 2023	2.8	96.8
Oct 18, 2023	2.8	96.8
Oct 19, 2023	2.2	97.4
Nov 3, 2023	2.2	97.4
Nov 9, 2023	2.2	97.4
Dec 7, 2023	2.2	97.4
Jan 5, 2024	2.1	97.5
Feb 28, 2024	1.8	97.8
Oct 8, 2024	1.8	97.8

104-D GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Oct 19, 2023	14.1	85.5
Oct 20, 2023	13.1	86.5

file: 23-197 gint.gpj

Tech : LB | **PM** : DR/MG | **Rev** : NN

GROUNDED ENGINEERING

Date Started : Oct 13, 2023
Position : E: 651611, N: 4853504 (UTM 17T)
Elev. Datum : Geodetic

BOREHOLE LOG 105

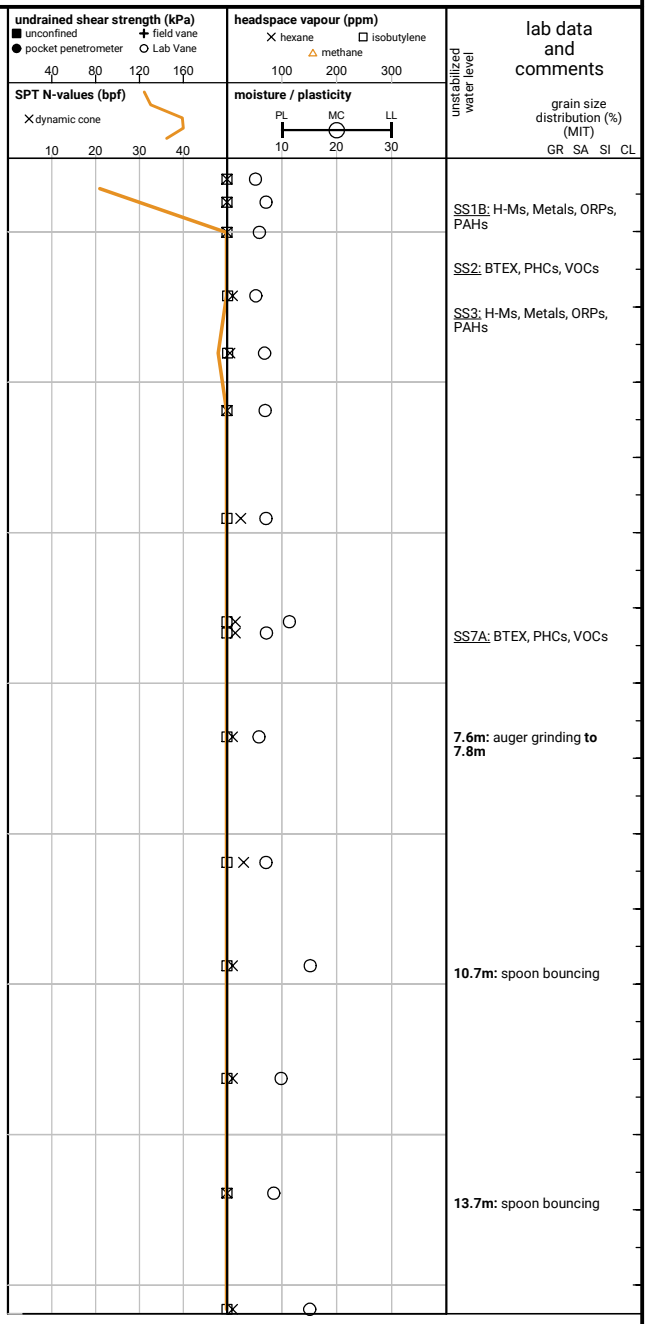
File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 55

hollow stem augers OD=215 mm

mud rotary small OD=100 mm

elev depth (m)	description	graphic log	number	type	SPT N-value
105.0	**GROUND SURFACE**				
	100mm **ASPHALT**		1A	SS	21
104.2	**FILL**, sand, trace silt, compact, grey, moist		1B	SS	
0.8	...at 0.5 m, sand, some silt, trace gravel		2	SS	76 / 290mm
	SANDY SILT, trace to some clay, trace gravel, trace rock fragments, dense to very dense, brown, moist (GLACIAL TILL)		3	SS	69
	...at 2.3 m, grey		4	SS	48
			5	SS	65
			6	SS	90 / 275mm
	...at 6.1 m, sand, trace silt, trace gravel		7A	SS	50 / 145mm
			7B	SS	
			8	SS	50 / 140mm
95.9					
9.1	**CLAYEY SILT**, trace to some sand, trace gravel, hard, grey, moist (GLACIAL TILL)		9	SS	99 / 275mm
	...at 10.7 m, silt seam		10	SS	50 / 125mm
			11	SS	50 / 75mm
			12	SS	50 / 75mm
89.6					
15.4	...at 15.2 m, silt seam		13	SS	50 / 115mm



SS1B: H-Ms, Metals, ORPs, PAHs

SS2: BTEX, PHCs, VOCs

SS3: H-Ms, Metals, ORPs, PAHs

SS7A: BTEX, PHCs, VOCs

7.6m: auger grinding **to 7.8m**

10.7m: spoon bouncing

13.7m: spoon bouncing

END OF BOREHOLE

Borehole was filled with drill water upon completion of drilling.

50 mm dia. monitoring well installed.

S: 50 mm dia. monitoring well installed.
D: 50 mm dia. monitoring well installed.
No. 10 screen

105-S GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Nov 3, 2023	7.3	97.7
Nov 9, 2023	6.9	98.1
Dec 7, 2023	3.1	101.9
Jan 5, 2024	2.8	102.2
Feb 28, 2024	1.9	103.1
Oct 8, 2024	1.9	103.1

105-D GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Oct 17, 2023	8.8	96.2
Oct 18, 2023	7.0	98.0
Oct 19, 2023	6.1	98.9

file: 23-197 gint.gpj

Tech : LB | **PM** : DR/MG | **Rev** : NN

BOREHOLE LOG 106

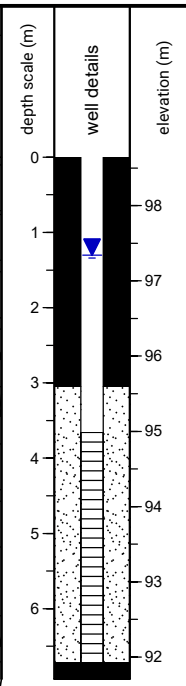
Date Started : Nov 1, 2023
Position : E: 651781, N: 4853567 (UTM 17T)
Elev. Datum : Geodetic

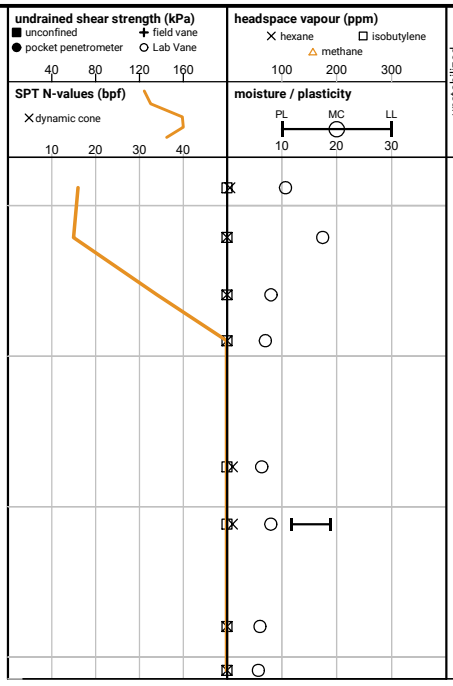
File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 75

hollow stem augers OD=215 mm

elev depth (m)	description	graphic log	number	type	SPT N-value
98.6	**GROUND SURFACE**				
	100mm **ASPHALT**		1	SS	16
	FILL, silty sand, some gravel, trace clay, compact, brown, moist ...at 0.8 m, organic matter, trace rootlets, dark brown		2	SS	15
97.1 1.5	**SANDY SILT**, trace to some gravel, dense to very dense, brown, moist (GLACIAL TILL)		3	SS	34
			4	SS	50 / 150mm
			5	SS	50 / 100mm
	...at 3.8 m, trace clay, grey		6	SS	67
	...at 4.6 m, silty sand, some clay		7	SS	53
	...at 6.1 m, trace rock fragments		8	SS	50 / 125mm
91.7 6.9			9	SS	50 / 75mm





unstabilized water level

lab data and comments

grain size distribution (%) (MIT)
GR SA SI CL

SS2: H-Ms, Metals, ORPs, PAHs

SS3: BTEX, PHCs, VOCs

SS4: H-Ms, Metals, ORPs, PAHs

3.2m: auger grinding **to 3.4m**

SS6: BTEX, PHCs, VOCs

13 35 33 19

END OF BOREHOLE

Borehole was dry upon completion of drilling.

50 mm dia. monitoring well installed.
No. 10 screen

GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Nov 2, 2023	dry	n/a
Nov 3, 2023	dry	n/a
Nov 9, 2023	dry	n/a
Dec 7, 2023	6.6	92.0
Jan 5, 2024	6.1	92.5
Feb 28, 2024	4.9	93.7
Mar 14, 2024	4.7	93.9
Oct 8, 2024	1.3	97.3

file: 23-197 gint.gpj

Tech : HP | **PM** : DR/MG | **Rev** : NN

BOREHOLE LOG 201

Date Started : Mar 6, 2024
Position : E: 651629, N: 4853508 (UTM 17T)
Elev. Datum : Geodetic

File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 55

hollow stem augers OD=215 mm

elev depth (m)	description	graphic log	number	type	SPT N-value
104.5	**GROUND SURFACE**				
	25mm **ASPHALT**		1	SS	25
103.9	**FILL**, silty sand, trace clay, trace to some gravel, compact, brown, moist		2	SS	81 / 275mm
0.6	**SANDY SILT**, trace gravel, trace clay, moderate sweet odour, very dense, brown, moist (GLACIAL TILL)		3	SS	50 / 125mm
	...at 1.5 m, no odour, some gravel				
	...at 2.3 m, grey		4	SS	73
	...at 3.0 m, trace gravel, mild sweet odour		5	SS	64
	...at 4.6 m, no odour		6	SS	54
			7	SS	71
	...at 7.6 m, trace rock fragments		8	SS	83
95.1			9	SS	50 / 125mm
9.4	**END OF BOREHOLE**				

depth scale (m) 0–9 | well details | elevation (m) 104–96

undrained shear strength (kPa): unconfined, pocket penetrometer, field vane, Lab Vane; 40 80 120 160
SPT N-values (bpf): dynamic cone; 10 20 30 40
headspace vapour (ppm): hexane, isobutylene, methane; 100 200 300
moisture / plasticity: PL MC LL; 10 20 30
unstabilized water level

lab data and comments
grain size distribution (%) (MIT) GR SA SI CL

SS2: VOCs
SS5: VOCs
SS8: VOCs

Borehole was dry upon completion of drilling.

50 mm dia. monitoring well installed.
No. 10 screen

GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Mar 14, 2024	dry	n/a
Oct 8, 2024	7.1	97.4

file: 23-197 gint.gpj

Tech : IH | **PM** : DR/YQ | **Rev** : NN

GROUNDED ENGINEERING

Date Started : Mar 6, 2024
Position : E: 651644, N: 4853481 (UTM 17T)
Elev. Datum : Geodetic

BOREHOLE LOG 202

File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 55

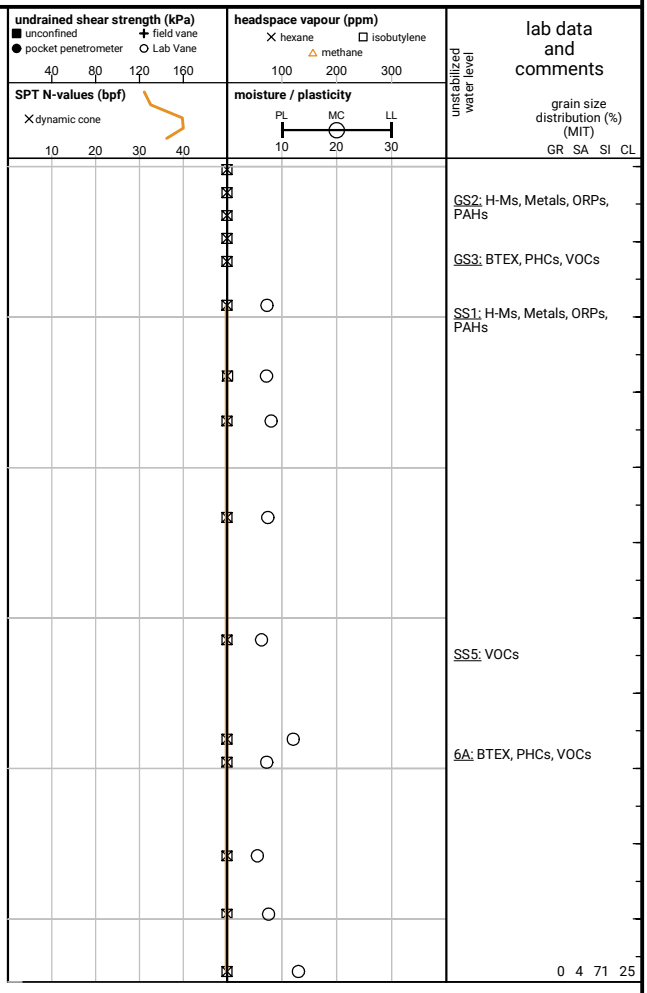
elev depth (m)	description	graphic log	number	type	SPT N-value
104.1	**GROUND SURFACE**				
	25mm **ASPHALT**		1	GS	
	15mm **AGGREGATE**		2	GS	
102.9	**FILL**, sandy silt, gravelly, trace clay, brown, wet (hydrovac)		3	GS	
1.2	...at 0.3 m, sand, some silt, trace to some gravel		4	GS	
	...at 0.6 m, sandy silt, some gravel, trace clay		5	GS	
	...at 0.9 m, brownish-grey		1	SS	50 / 100mm
	SANDY SILT, gravelly, trace clay, brown (GLACIAL TILL)		2	SS	64
	...at 1.8 m, trace gravel, grey, very dense below 1.8 m, moist		3	SS	75
	...at 3.2 m, some gravel		4	SS	99 / 250mm
	...at 6.1 m, mild sweet odour to 6.7 m		5	SS	78
	...at 7.6 m, wet sand seam, some silt to 7.8 m		6A 6B	SS	60
	...at 9.9 m, trace gravel		7	SS	50 / 100mm
93.4			8	SS	50 / 125mm
10.7	**CLAYEY SILT**, trace sand, hard, grey, moist (GLACIAL TILL)		9	SS	50 / 125mm
93.2					
10.9	**END OF BOREHOLE**				

vac (hydro)

hollow stem augers OD=215 mm

Borehole was dry upon completion of drilling.

50 mm dia. monitoring well installed.
No. 10 screen



GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Mar 14, 2024	6.3	97.8
Oct 8, 2024	3.8	100.3

file: 23-197 gint.gpj

Tech : IH | **PM** : DR/YQ | **Rev** : NN

GROUNDED ENGINEERING

Date Started : Mar 5, 2024
Position : E: 651729, N: 4853435 (UTM 17T)
Elev. Datum : Geodetic

BOREHOLE LOG 203

File No. : 23-197 **Project** : 705 Kingston Road, Pickering, Ontario **Client** : Plaza Partners

drill method : CME 55

elev depth (m)	description	graphic log	number	type	SPT N-value
101.0	**GROUND SURFACE**				
	25mm **ASPHALT**		1	GS	
	15mm **AGGREGATE**		2	GS	
	FILL, sand and gravel, some silt, trace clay, brown, wet (hydrovac)		3	GS	
	...at 0.3 m, clayey silt, trace to some sand, trace gravel, brown		4	GS	
99.2			5	GS	
1.8	...at 0.6 m, gravelly		1	SS	97 / 275mm
	SANDY SILT, some gravel, trace clay, trace rock fragments, very dense, grey, moist (GLACIAL TILL)		2	SS	59
			3	SS	77
	...at 4.6 m, sand and silt, trace clay, trace gravel, grey, wet		4	SS	56
94.8			5	SS	50 / 125mm
6.2	...at 6.1 m, granite rock fragments				

vac (hydro)

hollow stem augers OD=215 mm

depth scale (m): 0 1 2 3 4 5 6

elevation (m): 101 100 99 98 97 96 95

well details

undrained shear strength (kPa): unconfined, pocket penetrometer, field vane, Lab Vane; 40 80 120 160

SPT N-values (bpf): dynamic cone; 10 20 30 40

headspace vapour (ppm): hexane, isobutylene, methane; 100 200 300

moisture / plasticity: PL MC LL; 10 20 30

unstabilized water level

lab data and comments

grain size distribution (%) (MIT) GR SA SI CL

GS2: H-Ms, Metals, ORPs, PAHs

GS4: BTEX, PHCs, VOCs

SS1: H-Ms, Metals, ORPs, PAHs

2 43 50 5

SS4: BTEX, PHCs, VOCs

5.5m: auger grinding

5.8m: auger grinding

6.1m: auger grinding

END OF BOREHOLE
Refusal (obstruction in the hole)

Water level and cave not measured upon completion of drilling.

50 mm dia. monitoring well installed.
No. 10 screen

GROUNDWATER LEVELS

date	depth (m)	elevation (m)
Mar 14, 2024	0.8	100.2
Oct 8, 2024	0.0	101.0

file: 23-197 gint.gpj

Tech : IH | **PM** : DR/YQ | **Rev** : NN

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Log of Borehole: BH101

Client:	Valiant Rental Properties Ltd.	**Project Name:**	Phase II Environmental Site Assessment	**Project No.:**	12699-001
Contractor:	Strata Drilling Group	**Method:**	DP, solid stem	**Date Completed:**	May 25, 2021
Location:	705 Kingston Rd, Pickering	**UTM:**	17T 651608 m E, 4853498 m N	**Elevation:**	

SUBSURFACE PROFILE					SAMPLING INFO						
Depth (ft)	Depth (m)	Lithology	Description	Elevation (m)	Number	Type	% Recovery	CSV (ppm)	OV (ppm)	Well Installation	Remarks
0	0		Asphalt: granular material	0						Jplug	
1			Sandy Silt: trace clay, trace gravel, brown, stiff, moist		SS1	DP	100	20	<2	Concrete	
2											
3	1			-1	SS2	DP		30	<2	Bentonite	BH101_0.8-1.5 (PHC & BTEX)
4											
5			-dark grey, very stiff							PVC Standpipe	
6	2			-2	SS3	DP		20	<2		
7							100				Recorded dry on June 8, 2021
8					SS4	DP		20	<2		
9											
10	3		-hard	-3	SS5	DP		25	<2	Sand Pack	
11											
12										PVC Screen	
13	4		-increased moisture	-4	SS6	DP	100	25	<2		
14											
15			-DP refusal at 4.6 mbgs, augered to depth								
16	5			-5							
17										Cap	
18											
19											Borehole cave-in from 5 to 6.7 mbgs
20	6			-6							
21											
22			-BH terminated at 6.7 mbgs upon completion in SANDY SILT								
23	7			-7							
24											

Logged By: DN **Input By:** LW

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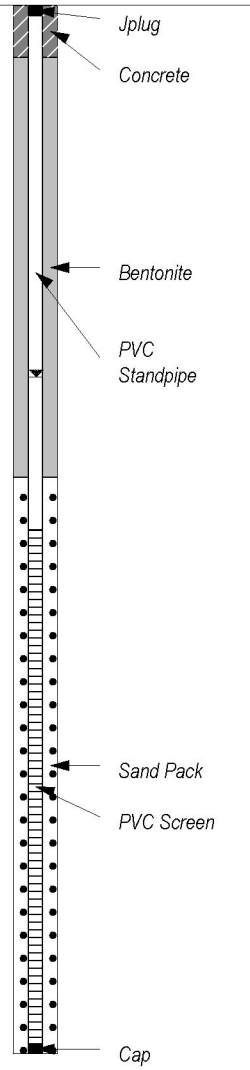
Log of Borehole: BH102

Client:	Valiant Rental Properties Ltd.	**Project Name:**	Phase II Environmental Site Assessment	**Project No.:**	12699-001
Contractor:	Strata Drilling Group	**Method:**	DP, solid stem	**Date Completed:**	May 25, 2021
Location:	705 Kingston Rd, Pickering	**UTM:**	17T 651649 m E, 4853551 m N	**Elevation:**	

SUBSURFACE PROFILE					SAMPLING INFO						
Depth (ft)	Depth (m)	Lithology	Description	Elevation (m)	Number	Type	% Recovery	CSV (ppm)	OV (ppm)	Well Installation	Remarks
0	0		Asphalt	0							
1			Fill: Sand, some gravel, trace silt, grey, loose, moist		SS1	DP		30	<2		
2			Sandy Silt: trace clay, trace gravel, brown, stiff, moist				40				
3	1			-1	SS2	DP		20	<2		
4											
5			-increased moisture								
6	2			-2	SS3	DP		80	<2		
7							100				
8			-decreased moisture, hard								Recorded water level of 2.16 mbgs on June 8, 2021
9					SS4	DP		35	<2		
10	3			-3							
11			-DP refusal at 3.4 mbgs, drilled to depth		SS5	DP	100	35	<2		
12											
13	4		-grey, increased moisture/wet	-4							
14					SS6	GB		320	<2		BH102_4.0-4.6 (PHC & BTEX)
15											
16	5			-5							
17											
18											
19											
20	6			-6	SS7	GB		80	<2		
21			Borehole terminated at 6.1 mbgs upon completion in SANDY SILT								
22											
23	7			-7							
24											



Logged By: DN **Input By:** LW

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Log of Borehole: BH103

Client:	Valiant Rental Properties Ltd.	**Project Name:**	Phase II Environmental Site Assessment	**Project No.:**	12699-001
Contractor:	Strata Drilling Group	**Method:**	DP, solid stem	**Date Completed:**	May 31, 2021
Location:	705 Kingston Rd, Pickering	**UTM:**	17T 651687 m E, 4853583 m N	**Elevation:**	

SUBSURFACE PROFILE					SAMPLING INFO						
Depth (ft)	Depth (m)	Lithology	Description	Elevation (m)	Number	Type	% Recovery	CSV (ppm)	OV (ppm)	Well Installation	Remarks
0	0		Asphalt: some sand and gravel	0							
1			Sandy Silt: trace clay, low plasticity, dark grey, medium-dense, moist		SS1	DP	40	<1	<2	Jplug, Concrete, Bentonite, PVC Standpipe	
2	1			-1							
3											
4			-wet and soft		SS2	DP	100	40	<2		BH103_1.5-1.8 (PHC/VOC)
5											
6	2		-brown, medium-dense to hard, some gravel	-2	SS3	DP		<1	<2	Sand Pack, PVC Screen	
7											
8											
9											
10	3			-3							
11			-grey								
12											
13	4			-4	SS4	DP	100	<1	<2		Recorded water level of 3.99 mbgs on June 8, 2021
14											
15										Cap	
16	5		Borehole terminated at 4.6 mbgs upon completion in SANDY SILT	-5							
17											
18											
19											
20	6			-6							
21											
22											
23	7			-7							
24											

Logged By: RD **Input By:** LW

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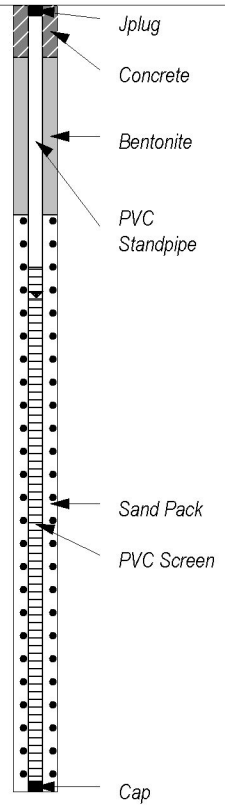
Log of Borehole: BH104

Client:	Valiant Rental Properties Ltd.	**Project Name:**	Phase II Environmental Site Assessment	**Project No.:**	12699-001
Contractor:	Strata Drilling Group	**Method:**	DP, solid stem	**Date Completed:**	May 25, 2021
Location:	705 Kingston Rd, Pickering	**UTM:**	17T 651785 m E, 4853555 m N	**Elevation:**	

SUBSURFACE PROFILE				SAMPLING INFO						
Depth (ft)	Depth (m)	Lithology	Description	Elevation (m)	Number	Type	% Recovery	CSV (ppm)	OV (ppm)	Well Installation	Remarks
0	0		Asphalt	0							
1			Fill: Sand, some gravel, trace silt, dark brown, medium-dense, moist		SS1	DP	40	30	<2		
2											
3	1			-1							
4											
5			-increased silt, increased moisture								
6	2			-2	SS2	DP	50	25	<2		
7											
8			-wet, minor black staining, minor HC odour								
9					SS3	DP		30	<2		
10	3		Concrete: Greenish grey lean mix concrete	-3							
11											
12			Sandy Silt: (native) trace clay, trace gravel, trace organics, dark brown, very stiff, moist		SS4	DP	100	30	<2		
13	4		-dark brownish grey, no organics	-4							
14					SS5	DP		15	<2		
15											
16			Borehole terminated at 4.6 mbgs upon completion in SANDY SILT								
17	5			-5							
18											
19											
20	6			-6							
21											
22											
23	7			-7							
24											



Recorded water level of 1.70 mbgs on June 8, 2021

BH104_2.7-2.9 (PHC/VOC)

Logged By: DN **Input By:** LW

APPENDIX I

ALS Canada Ltd.

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2334989**	Page	: 1 of 11
Client	: **Grounded Engineering Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Matthew Garcia	Account Manager	: Amanda Overholster
Address	: 1 Banigan Drive Toronto ON Canada M4H 1G3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 647 264 7928	Telephone	: 1 416 817 2944
Project	: 23-197-150	Date Samples Received	: 26-Oct-2023 16:30
PO	: ----	Date Analysis Commenced	: 27-Oct-2023
C-O-C number	: 20-1047464	Issue Date	: 02-Nov-2023 20:45
Sampler	: LB		
Site	: 705 KINGSTON RD, PICKERING		
Quote number	: 2023 SOA Pricing		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Hannah Lewis	Inorganics Analyst	Inorganics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
John Tang	Lab Analyst	Inorganics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Rachel Cameron	Supervisor - Semi-Volatile Extractions	Organics, Waterloo, Ontario
Ruby Sujeepan	Analyst	Microbiology, Waterloo, Ontario
Sanja Risticevic	Department Manager - LCMS	LCMS, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
SW-UF-BH104-S	Water	Solids, total suspended [TSS]		DURSUB	STM	92.6 mg/L	15 mg/L

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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. Guidelines 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.

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
µg/L	micrograms per litre
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Qualifiers

Qualifier	Description
BODL	Limit of Reporting for BOD was increased to account for the largest volume of sample tested.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: SW-UF-BH104-S	----	----	----	----	----	----
				Sampling date/time: 26-Oct-2023 10:00	----	----	----	----	----	----
				Sub-Matrix: Water	----	----	----	----	----	----
				WT2334989-001	--------	--------	--------	--------	--------	--------
Physical Tests										
pH	----	E108/WT	pH units	8.18	----	----	----	----	----	----
Solids, total suspended [TSS]	----	E160/WT	mg/L	92.6	----	----	----	----	----	----
Anions and Nutrients										
Fluoride	16984-48-8	E235.F/WT	mg/L	<0.200 DLDS	----	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/WT	mg/L	0.637	----	----	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/WT	mg/L	0.0713	----	----	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/WT	mg/L	122 DLDS	----	----	----	----	----	----
Cyanides										
Cyanide, strong acid dissociable (Total)	----	E333/WT	mg/L	<0.0020	----	----	----	----	----	----
Microbiological Tests										
Coliforms, Escherichia coli [E. coli]	----	E012A.EC/WT	CFU/100 mL	Not Detected	----	----	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/WT	mg/L	0.222 DLHC	----	----	----	----	----	----
Antimony, total	7440-36-0	E420/WT	mg/L	<0.00100 DLHC	----	----	----	----	----	----
Arsenic, total	7440-38-2	E420/WT	mg/L	<0.00100 DLHC	----	----	----	----	----	----
Cadmium, total	7440-43-9	E420/WT	mg/L	<0.0000500 DLHC	----	----	----	----	----	----
Chromium, total	7440-47-3	E420/WT	mg/L	<0.00500 DLHC	----	----	----	----	----	----
Cobalt, total	7440-48-4	E420/WT	mg/L	<0.00100 DLHC	----	----	----	----	----	----
Copper, total	7440-50-8	E420/WT	mg/L	<0.00500 DLHC	----	----	----	----	----	----
Lead, total	7439-92-1	E420/WT	mg/L	<0.000500 DLHC	----	----	----	----	----	----
Manganese, total	7439-96-5	E420/WT	mg/L	0.0933 DLHC	----	----	----	----	----	----
Mercury, total	7439-97-6	E508/WT	mg/L	<0.0000050	----	----	----	----	----	----
Molybdenum, total	7439-98-7	E420/WT	mg/L	0.0369 DLHC	----	----	----	----	----	----
Nickel, total	7440-02-0	E420/WT	mg/L	<0.00500 DLHC	----	----	----	----	----	----
Selenium, total	7782-49-2	E420/WT	mg/L	0.000598 DLHC	----	----	----	----	----	----
Silver, total	7440-22-4	E420/WT	mg/L	<0.000100 DLHC	----	----	----	----	----	----

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	SW-UF-BH104-S	----	----	----	----	----	----
				Sampling date/time	26-Oct-2023 10:00	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
				WT2334989-001		---	---	---	---	---	---
Total Metals											
Tin, total	7440-31-5	E420/WT	mg/L		0.00326 DLHC	----	----	----	----	----	----
Titanium, total	7440-32-6	E420/WT	mg/L		0.00917 DLHC	----	----	----	----	----	----
Zinc, total	7440-66-6	E420/WT	mg/L		<0.0300 DLHC	----	----	----	----	----	----
Aggregate Organics											
Biochemical oxygen demand [BOD]	----	E550/WT	mg/L		<3.0 BODL	----	----	----	----	----	----
Oil & grease (gravimetric)	----	E567/WT	mg/L		<5.0	----	----	----	----	----	----
Oil & grease, animal/vegetable (gravimetric)	----	EC567A.SG/WT	mg/L		<5.0	----	----	----	----	----	----
Oil & grease, mineral (gravimetric)	----	E567SG/WT	mg/L		<5.0	----	----	----	----	----	----
Phenols, total (4AAP)	----	E562/EO	mg/L		<0.0010	----	----	----	----	----	----
Volatile Organic Compounds											
Benzene	71-43-2	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Chloroform	67-66-3	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Dichloromethane	75-09-2	E611D/WT	µg/L		<1.0	----	----	----	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	µg/L		<0.30	----	----	----	----	----	----
Ethylbenzene	100-41-4	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	µg/L		<20	----	----	----	----	----	----
Styrene	100-42-5	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Toluene	108-88-3	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Trichloroethylene	79-01-6	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT	µg/L		<0.40	----	----	----	----	----	----
Xylene, o-	95-47-6	E611D/WT	µg/L		<0.30	----	----	----	----	----	----
Xylenes, total	1330-20-7	E611D/WT	µg/L		<0.50	----	----	----	----	----	----
Volatile Organic Compounds Surrogates											

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: SW-UF-BH104-S	----	----	----	----	----	----
Sampling date/time				26-Oct-2023 10:00	----	----	----	----	----	----
Sub-Matrix				Water	----	----	----	----	----	----
				WT2334989-001	--------	--------	--------	--------	--------	--------
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%	97.1	----	----	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	%	96.3	----	----	----	----	----	----
Phthalate Esters										
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F/WT	µg/L	<2.0	----	----	----	----	----	----
Di-n-butyl phthalate	84-74-2	E655F/WT	µg/L	<1.0	----	----	----	----	----	----
Semi-Volatile Organics Surrogates										
Fluorobiphenyl, 2-	321-60-8	E655F/WT	%	97.0	----	----	----	----	----	----
Terphenyl-d14, p-	1718-51-0	E655F/WT	%	119	----	----	----	----	----	----
Phenolics Surrogates										
Tribromophenol, 2,4,6-	118-79-6	E655F/WT	%	106	----	----	----	----	----	----
Nonylphenols										
Nonylphenol diethoxylates [NP2EO]	n/a	E749B/WT	µg/L	<0.10	----	----	----	----	----	----
Nonylphenol ethoxylates, total	n/a	E749B/WT	µg/L	<2.0	----	----	----	----	----	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B/WT	µg/L	<2.0	----	----	----	----	----	----
Nonylphenols [NP]	84852-15-3	E749A/WT	µg/L	<1.0	----	----	----	----	----	----
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1221	11104-28-2	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1232	11141-16-5	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1242	53469-21-9	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1248	12672-29-6	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1254	11097-69-1	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1260	11096-82-5	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1262	37324-23-5	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1268	11100-14-4	E687/WT	µg/L	<0.020	----	----	----	----	----	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	µg/L	<0.060	----	----	----	----	----	----
Polychlorinated Biphenyls Surrogates										

Analytical Results Evaluation

Matrix: **Water**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	SW-UF-BH104-S	----	----	----	----	----	----
				Sampling date/time	26-Oct-2023 10:00	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
				WT2334989-001	--------	--------	--------	--------	--------	--------	--------
Polychlorinated Biphenyls Surrogates											
Decachlorobiphenyl	2051-24-3	E687/WT	%	106	----	----	----	----	----	----	----
Tetrachloro-m-xylene	877-09-8	E687/WT	%	91.1	----	----	----	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Summary of Guideline Limits

Analyte	CAS Number	Unit	DURSUB SAN	DURSUB STM
Physical Tests				
pH	----	pH units	**6 - 10.5 pH units**	**6 - 9 pH units**
Solids, total suspended [TSS]	----	mg/L	**350 mg/L**	**15 mg/L**
Anions and Nutrients				
Fluoride	16984-48-8	mg/L	**10 mg/L**	**--**
Kjeldahl nitrogen, total [TKN]	----	mg/L	**100 mg/L**	**1 mg/L**
Phosphorus, total	7723-14-0	mg/L	**10 mg/L**	**0.4 mg/L**
Sulfate (as SO4)	14808-79-8	mg/L	**1500 mg/L**	**--**
Cyanides				
Cyanide, strong acid dissociable (Total)	----	mg/L	**2 mg/L**	**0.02 mg/L**
Microbiological Tests				
Coliforms, Escherichia coli [E. coli]	----	CFU/100mL	**--**	**200 CFU/100mL**
Total Metals				
Aluminum, total	7429-90-5	mg/L	**50 mg/L**	**--**
Antimony, total	7440-36-0	mg/L	**5 mg/L**	**--**
Arsenic, total	7440-38-2	mg/L	**1 mg/L**	**0.02 mg/L**
Cadmium, total	7440-43-9	mg/L	**0.7 mg/L**	**0.008 mg/L**
Chromium, total	7440-47-3	mg/L	**2 mg/L**	**0.08 mg/L**
Cobalt, total	7440-48-4	mg/L	**5 mg/L**	**--**
Copper, total	7440-50-8	mg/L	**3 mg/L**	**0.05 mg/L**
Lead, total	7439-92-1	mg/L	**1 mg/L**	**0.12 mg/L**
Manganese, total	7439-96-5	mg/L	**5 mg/L**	**0.15 mg/L**
Mercury, total	7439-97-6	mg/L	**0.01 mg/L**	**0.0004 mg/L**
Molybdenum, total	7439-98-7	mg/L	**5 mg/L**	**--**
Nickel, total	7440-02-0	mg/L	**2 mg/L**	**0.08 mg/L**
Selenium, total	7782-49-2	mg/L	**1 mg/L**	**0.02 mg/L**
Silver, total	7440-22-4	mg/L	**5 mg/L**	**0.12 mg/L**
Tin, total	7440-31-5	mg/L	**5 mg/L**	**--**
Titanium, total	7440-32-6	mg/L	**5 mg/L**	**--**
Zinc, total	7440-66-6	mg/L	**2 mg/L**	**0.04 mg/L**
Aggregate Organics				
Biochemical oxygen demand [BOD]	----	mg/L	**300 mg/L**	**15 mg/L**
Oil & grease (gravimetric)	----	mg/L	**--**	**--**
Oil & grease, animal/vegetable (gravimetric)	----	mg/L	**150 mg/L**	**--**
Oil & grease, mineral (gravimetric)	----	mg/L	**15 mg/L**	**--**
Phenols, total (4AAP)	----	mg/L	**1 mg/L**	**0.008 mg/L**

Analyte	CAS Number	Unit	DURSUB SAN	DURSUB STM					
Volatile Organic Compounds									
Benzene	71-43-2	µg/L	**10 µg/L**	**2 µg/L**					
Chloroform	67-66-3	µg/L	**40 µg/L**	**2 µg/L**					
Dichlorobenzene, 1,2-	95-50-1	µg/L	**50 µg/L**	**5.6 µg/L**					
Dichlorobenzene, 1,4-	106-46-7	µg/L	**80 µg/L**	**6.8 µg/L**					
Dichloroethylene, cis-1,2-	156-59-2	µg/L	**4000 µg/L**	**5.6 µg/L**					
Dichloromethane	75-09-2	µg/L	**2000 µg/L**	**5.2 µg/L**					
Dichloropropylene, trans-1,3-	10061-02-6	µg/L	**140 µg/L**	**5.6 µg/L**					
Ethylbenzene	100-41-4	µg/L	**160 µg/L**	**2 µg/L**					
Methyl ethyl ketone [MEK]	78-93-3	µg/L	**8000 µg/L**	--					
Styrene	100-42-5	µg/L	**200 µg/L**	--					
Tetrachloroethane, 1,1,2,2-	79-34-5	µg/L	**1400 µg/L**	**17 µg/L**					
Tetrachloroethylene	127-18-4	µg/L	**1000 µg/L**	**4.4 µg/L**					
Toluene	108-88-3	µg/L	**270 µg/L**	**2 µg/L**					
Trichloroethylene	79-01-6	µg/L	**400 µg/L**	**8 µg/L**					
Xylene, m+p-	179601-23-1	µg/L	--	--					
Xylene, o-	95-47-6	µg/L	--	--					
Xylenes, total	1330-20-7	µg/L	**1400 µg/L**	**4.4 µg/L**					
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	%							
Difluorobenzene, 1,4-	540-36-3	%							
Phthalate Esters									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	µg/L	**12 µg/L**	**8.8 µg/L**					
Di-n-butyl phthalate	84-74-2	µg/L	**80 µg/L**	**15 µg/L**					
Semi-Volatile Organics Surrogates									
Fluorobiphenyl, 2-	321-60-8	%							
Terphenyl-d14, p-	1718-51-0	%							
Phenolics Surrogates									
Tribromophenol, 2,4,6-	118-79-6	%							
Nonylphenols									
Nonylphenol diethoxylates [NP2EO]	n/a	µg/L	--	--					
Nonylphenol ethoxylates, total	n/a	µg/L	**200 µg/L**	--					
Nonylphenol monoethoxylates [NP1EO]	n/a	µg/L	--	--					
Nonylphenols [NP]	84852-15-3	µg/L	**20 µg/L**	--					
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	µg/L	--	--					
Aroclor 1221	11104-28-2	µg/L	--	--					
Aroclor 1232	11141-16-5	µg/L	--	--					
Aroclor 1242	53469-21-9	µg/L	--	--					
Aroclor 1248	12672-29-6	µg/L	--	--					

Analyte	CAS Number	Unit	DURSUB SAN	DURSUB STM					
Polychlorinated Biphenyls - Continued									
Aroclor 1254	11097-69-1	µg/L	--	--					
Aroclor 1260	11096-82-5	µg/L	--	--					
Aroclor 1262	37324-23-5	µg/L	--	--					
Aroclor 1268	11100-14-4	µg/L	--	--					
Polychlorinated biphenyls [PCBs], total	----	µg/L	**1 µg/L**	**0.4 µg/L**					
Decachlorobiphenyl	2051-24-3	%							
Tetrachloro-m-xylene	877-09-8	%							

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

DURSUB	Ontario Durham Sewer Use Bylaw (55-2013)
SAN	Durham Sanitary Sewer (55-2013)
STM	Durham Storm Sewer - (55-2013)

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2334989**	Page	: 1 of 10
Client	: **Grounded Engineering Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Matthew Garcia	Account Manager	: Amanda Overholster
Address	: 1 Banigan Drive Toronto ON Canada M4H 1G3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 647 264 7928	Telephone	: 1 416 817 2944
Project	: 23-197-150	Date Samples Received	: 26-Oct-2023 16:30
PO	: ----	Issue Date	: 02-Nov-2023 20:45
C-O-C number	: 20-1047464		
Sampler	: LB		
Site	: 705 KINGSTON RD, PICKERING		
Quote number	: 2023 SOA Pricing		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT-4d] SW-UF-BH104-S	E550	26-Oct-2023	----	----	----		28-Oct-2023	4 days	2 days	✓
Aggregate Organics : Mineral Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) SW-UF-BH104-S	E567SG	26-Oct-2023	30-Oct-2023	28 days	4 days	✓	30-Oct-2023	40 days	0 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) SW-UF-BH104-S	E567	26-Oct-2023	30-Oct-2023	28 days	4 days	✓	30-Oct-2023	40 days	0 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) [ON MECP] SW-UF-BH104-S	E562	26-Oct-2023	01-Nov-2023	28 days	6 days	✓	01-Nov-2023	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE [ON MECP] SW-UF-BH104-S	E235.F	26-Oct-2023	30-Oct-2023	28 days	4 days	✓	30-Oct-2023	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE [ON MECP] SW-UF-BH104-S	E235.SO4	26-Oct-2023	30-Oct-2023	28 days	4 days	✓	30-Oct-2023	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) [ON MECP] SW-UF-BH104-S	E318	26-Oct-2023	31-Oct-2023	28 days	5 days	✓	31-Oct-2023	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) [ON MECP] SW-UF-BH104-S	E372-U	26-Oct-2023	30-Oct-2023	28 days	4 days	✓	31-Oct-2023	28 days	5 days	✓
Cyanides : Total Cyanide										
HDPE - total (sodium hydroxide) SW-UF-BH104-S	E333	26-Oct-2023	30-Oct-2023	14 days	4 days	✓	30-Oct-2023	14 days	4 days	✓
Microbiological Tests : E. coli (MF-mFC-BCIG)										
Sterile HDPE (Sodium thiosulphate) [ON MECP] SW-UF-BH104-S	E012A.EC	26-Oct-2023	----	----	----		27-Oct-2023	48 hrs	29 hrs	✓
Nonylphenols : Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode										
Amber glass/Teflon lined cap - LCMS SW-UF-BH104-S	E749B	26-Oct-2023	27-Oct-2023	7 days	1 days	✓	30-Oct-2023	7 days	3 days	✓
Nonylphenols : Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode										
Amber glass/Teflon lined cap - LCMS SW-UF-BH104-S	E749A	26-Oct-2023	27-Oct-2023	7 days	1 days	✓	30-Oct-2023	7 days	3 days	✓
Phthalate Esters : BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS										
Amber glass/Teflon lined cap SW-UF-BH104-S	E655F	26-Oct-2023	27-Oct-2023	7 days	1 days	✓	29-Oct-2023	40 days	2 days	✓
Physical Tests : pH by Meter										
HDPE [ON MECP] SW-UF-BH104-S	E108	26-Oct-2023	30-Oct-2023	14 days	4 days	✓	31-Oct-2023	14 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE [ON MECP] SW-UF-BH104-S	E160	26-Oct-2023	----	----	----		30-Oct-2023	7 days	4 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined septa cap [ON MECP] SW-UF-BH104-S	E687	26-Oct-2023	27-Oct-2023	14 days	1 days	✓	30-Oct-2023	40 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) [ON MECP]										
SW-UF-BH104-S	E508	26-Oct-2023	27-Oct-2023	28 days	1 days	✓	27-Oct-2023	28 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
SW-UF-BH104-S	E420	26-Oct-2023	27-Oct-2023	180 days	1 days	✓	27-Oct-2023	180 days	2 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
SW-UF-BH104-S	E611D	26-Oct-2023	30-Oct-2023	14 days	4 days	✓	30-Oct-2023	14 days	4 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand - 5 day	E550	1212087	1	20	5.0	5.0	✓
E. coli (MF-mFC-BCIG)	E012A.EC	1210244	0	15	0.0	5.0	✗
Fluoride in Water by IC	E235.F	1213393	1	4	25.0	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1210156	1	9	11.1	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1210155	1	9	11.1	5.0	✓
pH by Meter	E108	1213398	1	14	7.1	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1217436	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1213394	1	10	10.0	5.0	✓
Total Cyanide	E333	1212990	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1212983	1	18	5.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1209947	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1210735	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1212984	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1212939	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1213579	1	14	7.1	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand - 5 day	E550	1212087	1	20	5.0	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1209861	1	1	100.0	5.0	✓
Fluoride in Water by IC	E235.F	1213393	1	4	25.0	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	1210248	1	13	7.6	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1210156	1	9	11.1	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1210155	1	9	11.1	5.0	✓
Oil & Grease by Gravimetry	E567	1210247	1	19	5.2	5.0	✓
PCB Aroclors by GC-MS	E687	1210004	1	8	12.5	4.7	✓
pH by Meter	E108	1213398	1	14	7.1	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1217436	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1213394	1	10	10.0	5.0	✓
Total Cyanide	E333	1212990	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1212983	1	18	5.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1209947	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1210735	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1212984	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1212939	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1213579	1	14	7.1	5.0	✓
Method Blanks (MB)							

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Biochemical Oxygen Demand - 5 day	E550	1212087	1	20	5.0	5.0	✓
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F	1209861	1	1	100.0	5.0	✓
E. coli (MF-mFC-BCIG)	E012A.EC	1210244	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	1213393	1	4	25.0	5.0	✓
Mineral Oil & Grease by Gravimetry	E567SG	1210248	1	13	7.6	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1210156	1	9	11.1	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1210155	1	9	11.1	5.0	✓
Oil & Grease by Gravimetry	E567	1210247	1	19	5.2	5.0	✓
PCB Aroclors by GC-MS	E687	1210004	1	8	12.5	4.7	✓
Phenols (4AAP) in Water by Colorimetry	E562	1217436	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1213394	1	10	10.0	5.0	✓
Total Cyanide	E333	1212990	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1212983	1	18	5.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1209947	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1210735	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1212984	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1212939	1	19	5.2	4.7	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1213579	1	14	7.1	5.0	✓
Matrix Spikes (MS)							
Fluoride in Water by IC	E235.F	1213393	1	4	25.0	5.0	✓
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B	1210156	1	9	11.1	5.0	✓
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A	1210155	1	9	11.1	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1217436	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1213394	1	10	10.0	5.0	✓
Total Cyanide	E333	1212990	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1212983	1	18	5.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1209947	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1210735	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1212984	1	20	5.0	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1213579	1	14	7.1	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
E. coli (MF-mFC-BCIG)	E012A.EC ALS Environmental - Waterloo	Water	ON E3433 (mod)	Following filtration (0.45 µm), and incubation at 44.5±0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated.
pH by Meter	E108 ALS Environmental - Waterloo	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Waterloo	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Fluoride in Water by IC	E235.F ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Waterloo	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Total Cyanide	E333 ALS Environmental - Waterloo	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Mercury in Water by CVAAS	E508 ALS Environmental - Waterloo	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Waterloo	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Oil & Grease by Gravimetry	E567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
Mineral Oil & Grease by Gravimetry	E567SG ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane, followed by silica gel treatment after which the extract is evaporated to dryness. The residue is then weighed to determine Mineral Oil and Grease.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
BNA (Ontario Sanitary Sewer SVOC Target List) by GC-MS	E655F ALS Environmental - Waterloo	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Nonylphenol, Octylphenol and BPA in Water by LC-MS-MS Negative Mode	E749A ALS Environmental - Waterloo	Water	J. Chrom A849 (1999) p.467-482	An aliquot of 5.0 ± 0.10 mL of filtered sample is spiked with Nonylphenol-D4, Nonylphenol Diethoxylate 13C6, and Bisphenol A 13C12 internal standards and analyzed by LC-MS/MS.
Nonylphenol Ethoxylates in Water by LC-MS-MS Positive Mode	E749B ALS Environmental - Waterloo	Water	J. Chrom A849 (1999) p.467-482	Water samples are filtered and analyzed on LCMS/MS by direct injection.
Animal & Vegetable Oil & Grease by Gravimetry	EC567A.SG ALS Environmental - Waterloo	Water	APHA 5520 (mod)	Animal & vegetable oil and grease is calculated as follows: Oil & Grease (gravimetric) minus Mineral Oil & Grease (gravimetric)

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for TKN in water	EP318 ALS Environmental - Waterloo	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Waterloo	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
BNA Extraction	EP655 ALS Environmental - Waterloo	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.
Preparation of Nonylphenol and Nonylphenol Ethoxylates	EP749 ALS Environmental - Waterloo	Water	J. Chrom A849 (1999) p.467-482	An aliquot of 5.0 ± 0.10 mL of filtered sample is spiked with Nonylphenol-D4, Nonylphenol Diethoxylate 13C6, and Bisphenol A 13C12 internal standards and analyzed by LC-MS/MS.

QUALITY CONTROL REPORT

Work Order	: **WT2334989**	Page	: 1 of 12
Client	: Grounded Engineering Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Matthew Garcia	Account Manager	: Amanda Overholster
Address	: 1 Banigan Drive Toronto ON Canada M4H 1G3	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: 1 416 817 2944
Project	: 23-197-150	Date Samples Received	: 26-Oct-2023 16:30
PO	: ----	Date Analysis Commenced	: 27-Oct-2023
C-O-C number	: 20-1047464	Issue Date	: 02-Nov-2023 20:45
Sampler	: LB 647 264 7928		
Site	: 705 KINGSTON RD, PICKERING		
Quote number	: 2023 SOA Pricing		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brooke Miller	Laboratory Analyst	Edmonton Inorganics, Edmonton, Alberta
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Hannah Lewis	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
John Tang	Lab Analyst	Waterloo Inorganics, Waterloo, Ontario
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, Waterloo, Ontario
Rachel Cameron	Supervisor - Semi-Volatile Extractions	Waterloo Organics, Waterloo, Ontario
Ruby Sujeepan	Analyst	Waterloo Microbiology, Waterloo, Ontario
Sanja Risticevic	Department Manager - LCMS	Waterloo LCMS, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include 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 predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1212939)											
WT2334689-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	23.6	21.4	2.2	Diff <2x LOR	----
Physical Tests (QC Lot: 1213398)											
WT2335003-009	Anonymous	pH	----	E108	0.10	pH units	7.89	7.85	0.508%	4%	----
Anions and Nutrients (QC Lot: 1212983)											
WT2334565-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.272	0.322	0.050	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1212984)											
WT2334689-003	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0340	0.0365	7.04%	20%	----
Anions and Nutrients (QC Lot: 1213393)											
WT2335117-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.125	0.126	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1213394)											
WT2335117-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	26.3	26.7	1.38%	20%	----
Cyanides (QC Lot: 1212990)											
TY2311133-006	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1209947)											
TY2311087-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 1210735)											
BU2300025-016	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1210735) - continued											
BU2300025-016	Anonymous	Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1212087)											
WT2335054-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	3.0	mg/L	<3.0	<3.0	0.0%	30%	----
Aggregate Organics (QC Lot: 1217436)											
WT2334689-003	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1213579)											
WT2334923-001	Anonymous	Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Nonylphenols (QC Lot: 1210155)											
WT2334836-001	Anonymous	Nonylphenols [NP]	84852-15-3	E749A	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
Nonylphenols (QC Lot: 1210156)											
WT2334836-001	Anonymous	Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.10	µg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2.0	µg/L	<2.0	<2.0	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1212939)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 1212983)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1212984)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1213393)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1213394)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Cyanides (QCLot: 1212990)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Microbiological Tests (QCLot: 1210244)						
Coliforms, Escherichia coli [E. coli]	----	E012A.EC	1	CFU/100mL	<1	----
Total Metals (QCLot: 1209947)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 1210735)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Aggregate Organics (QCLot: 1210247)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1210248)						
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	<5.0	----
Aggregate Organics (QCLot: 1212087)						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1217436)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1213579)						
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	----
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----
Phthalate Esters (QCLot: 1209861)						
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	<2.0	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	<1.0	----
Nonylphenols (QCLot: 1210155)						
Nonylphenols [NP]	84852-15-3	E749A	1	µg/L	<1.0	----
Nonylphenols (QCLot: 1210156)						
Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.1	µg/L	<0.10	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2	µg/L	<2.0	----
Polychlorinated Biphenyls (QCLot: 1210004)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polychlorinated Biphenyls (QCLot: 1210004) - continued						
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1212939)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	101	85.0	115	----
Physical Tests (QCLot: 1213398)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Anions and Nutrients (QCLot: 1212983)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1212984)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.393 mg/L	96.8	80.0	120	----
Anions and Nutrients (QCLot: 1213393)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1213394)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Cyanides (QCLot: 1212990)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	92.0	80.0	120	----
Total Metals (QCLot: 1209947)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	95.0	80.0	120	----
Total Metals (QCLot: 1210735)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	95.0	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	101	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	105	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	100.0	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.0125 mg/L	99.1	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	98.3	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	98.3	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	93.7	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	98.4	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	97.7	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	99.0	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	101	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	89.5	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	96.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1210735) - continued									
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.0125 mg/L	96.6	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	98.0	80.0	120	----
Aggregate Organics (QCLot: 1210247)									
Oil & grease (gravimetric)	----	E567	5	mg/L	200 mg/L	93.6	70.0	130	----
Aggregate Organics (QCLot: 1210248)									
Oil & grease, mineral (gravimetric)	----	E567SG	5	mg/L	100 mg/L	89.9	70.0	130	----
Aggregate Organics (QCLot: 1212087)									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	88.7	85.0	115	----
Aggregate Organics (QCLot: 1217436)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	99.5	85.0	115	----
Volatile Organic Compounds (QCLot: 1213579)									
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	98.9	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	95.7	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	93.2	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	100	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	107	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	88.6	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	91.5	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	110	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	96.8	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	97.0	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	93.5	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	97.3	70.0	130	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	93.1	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	93.2	70.0	130	----
Phthalate Esters (QCLot: 1209861)									
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E655F	2	µg/L	6.4 µg/L	140	50.0	140	----
Di-n-butyl phthalate	84-74-2	E655F	1	µg/L	6.4 µg/L	104	50.0	140	----
Nonylphenols (QCLot: 1210155)									
Nonylphenols [NP]	84852-15-3	E749A	1	µg/L	10 µg/L	118	75.0	125	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Nonylphenols (QCLot: 1210156)									
Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.1	µg/L	1 µg/L	104	75.0	125	----
Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	2	µg/L	20 µg/L	93.0	75.0	125	----
Polychlorinated Biphenyls (QCLot: 1210004)									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	105	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	105	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	105	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	105	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	85.6	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	108	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	119	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	119	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	119	60.0	140	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1212983)										
WT2334565-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.72 mg/L	2.5 mg/L	109	70.0	130	----
Anions and Nutrients (QCLot: 1212984)										
WT2334689-003	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.100 mg/L	0.1 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 1213393)										
WT2335117-001	Anonymous	Fluoride	16984-48-8	E235.F	5.16 mg/L	5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1213394)										
WT2335117-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	514 mg/L	500 mg/L	103	75.0	125	----
Cyanides (QCLot: 1212990)										
TY2311133-006	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333	0.227 mg/L	0.25 mg/L	90.9	75.0	125	----
Total Metals (QCLot: 1209947)										
TY2311087-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000941 mg/L	0.0001 mg/L	94.1	70.0	130	----
Total Metals (QCLot: 1210735)										
BU2300025-017	Anonymous	Aluminum, total	7429-90-5	E420	0.0925 mg/L	0.1 mg/L	92.5	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0528 mg/L	0.05 mg/L	106	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0538 mg/L	0.05 mg/L	108	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00508 mg/L	0.005 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0130 mg/L	0.0125 mg/L	104	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0127 mg/L	0.0125 mg/L	102	70.0	130	----
		Copper, total	7440-50-8	E420	0.0128 mg/L	0.0125 mg/L	103	70.0	130	----
		Lead, total	7439-92-1	E420	0.0253 mg/L	0.025 mg/L	101	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0126 mg/L	0.0125 mg/L	101	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0128 mg/L	0.0125 mg/L	102	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0256 mg/L	0.025 mg/L	102	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0506 mg/L	0.05 mg/L	101	70.0	130	----
		Silver, total	7440-22-4	E420	0.00474 mg/L	0.005 mg/L	94.7	70.0	130	----
		Tin, total	7440-31-5	E420	0.0256 mg/L	0.025 mg/L	102	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0122 mg/L	0.0125 mg/L	97.7	70.0	130	----
		Zinc, total	7440-66-6	E420	0.0252 mg/L	0.025 mg/L	101	70.0	130	----
Aggregate Organics (QCLot: 1217436)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Aggregate Organics (QCLot: 1217436) - continued										
WT2334914-015	Anonymous	Phenols, total (4AAP)	----	E562	0.0212 mg/L	0.02 mg/L	106	75.0	125	----
Volatile Organic Compounds (QCLot: 1213579)										
WT2334923-001	Anonymous	Benzene	71-43-2	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Chloroform	67-66-3	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	95.2 µg/L	100 µg/L	95.2	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	100 µg/L	100 µg/L	100	60.0	140	----
		Dichloromethane	75-09-2	E611D	106 µg/L	100 µg/L	106	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	86.8 µg/L	100 µg/L	86.8	60.0	140	----
		Ethylbenzene	100-41-4	E611D	92.4 µg/L	100 µg/L	92.4	60.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		Styrene	100-42-5	E611D	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	110 µg/L	100 µg/L	110	60.0	140	----
		Tetrachloroethylene	127-18-4	E611D	97.2 µg/L	100 µg/L	97.2	60.0	140	----
		Toluene	108-88-3	E611D	94.3 µg/L	100 µg/L	94.3	60.0	140	----
		Trichloroethylene	79-01-6	E611D	98.1 µg/L	100 µg/L	98.1	60.0	140	----
		Xylene, m+p-	179601-23-1	E611D	188 µg/L	200 µg/L	94.2	60.0	140	----
		Xylene, o-	95-47-6	E611D	94.3 µg/L	100 µg/L	94.3	60.0	140	----
Nonylphenols (QCLot: 1210155)										
WT2334836-001	Anonymous	Nonylphenols [NP]	84852-15-3	E749A	12.9 µg/L	10 µg/L	129	60.0	140	----
Nonylphenols (QCLot: 1210156)										
WT2334836-001	Anonymous	Nonylphenol diethoxylates [NP2EO]	n/a	E749B	0.93 µg/L	1 µg/L	93.4	60.0	140	----
		Nonylphenol monoethoxylates [NP1EO]	n/a	E749B	14.1 µg/L	20 µg/L	70.4	60.0	140	----

GC063, B185, L952, N376, MM046, ON439, OS007, VW161, OR372, OG083

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1047464

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Waterloo
Work Order Reference
WT2334989

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	Groundcleaning	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Matthew Garcia	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimu
Phone:	mgarcia@groundcleaning.ca	☑ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimu
647 264 7[illegible]	Company address below will appear on the final report	Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimu
Street:	1 Bangan Dr	Email 1 or Fax mgarcia@groundcleaning.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimu
City/Province:	Toronto ON	Email 2	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additi
Postal Code:	M4H 1G3	Email 3	may apply to rush requests on weekends, statutory holidays and non-rou
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Recipients	Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please com
Company:		Email 1 or Fax	Analysis Requ
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	23-197-150	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:	705 Kingston Rd, Pickering	Location:	
ALS Lab Work Order # (ALS use only):	WT2334989	ALS Contact:	Sampler: LB

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Durham Region Sanitary	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	SW-UF-B#104-S	26-Oct-23	10:00	GW	16	X			

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	Durham Region Sanitary & Storm
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
1.8				0.2				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: Lawrence	Date: 26 Oct 23	Time: 4:30	Received by: [illegible]	Date: 10/26/2023	Time: 16:30	Received by: [illegible]	Date: 27 Oct 23	Time: 9:15

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

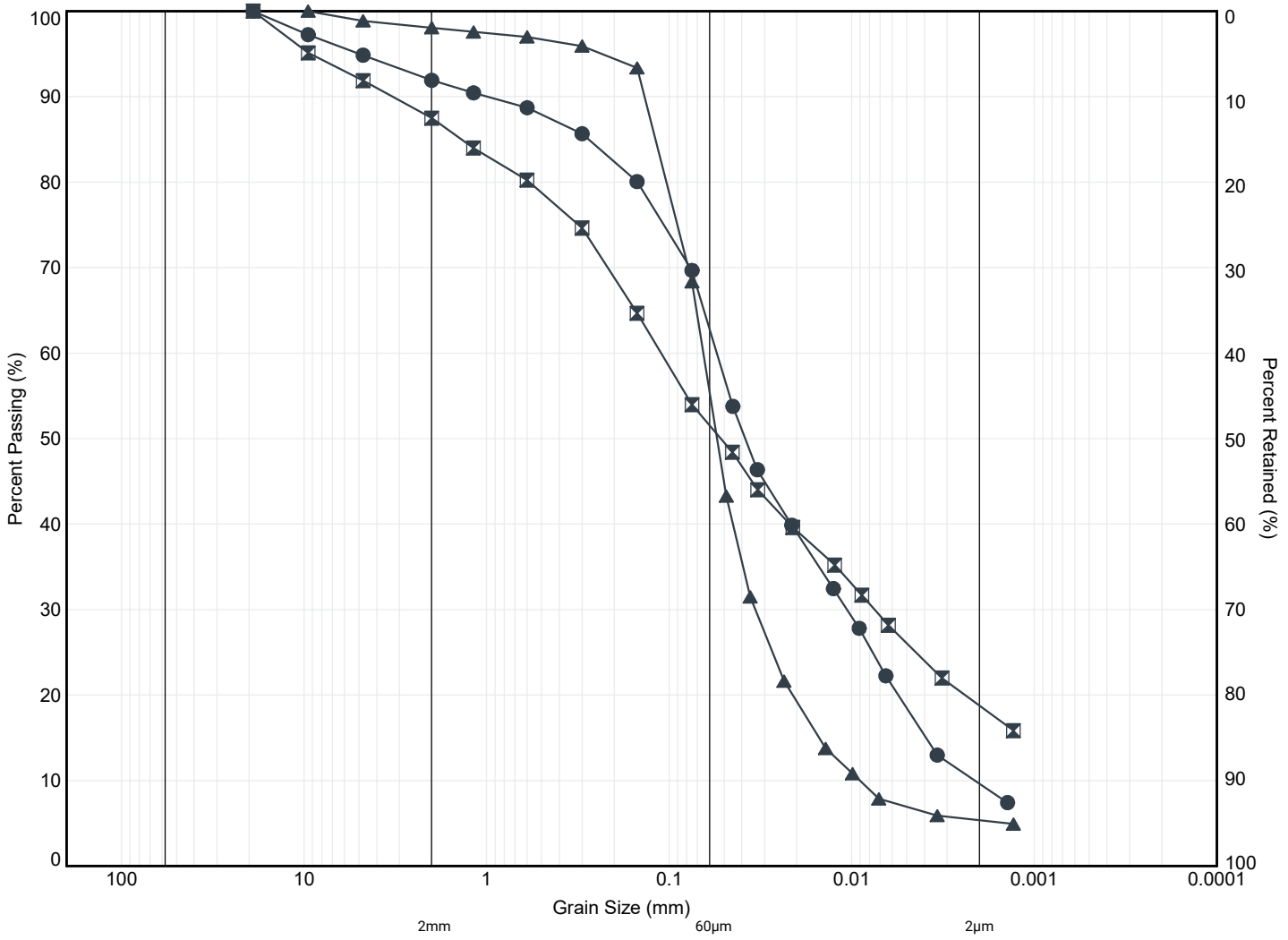
WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX J



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

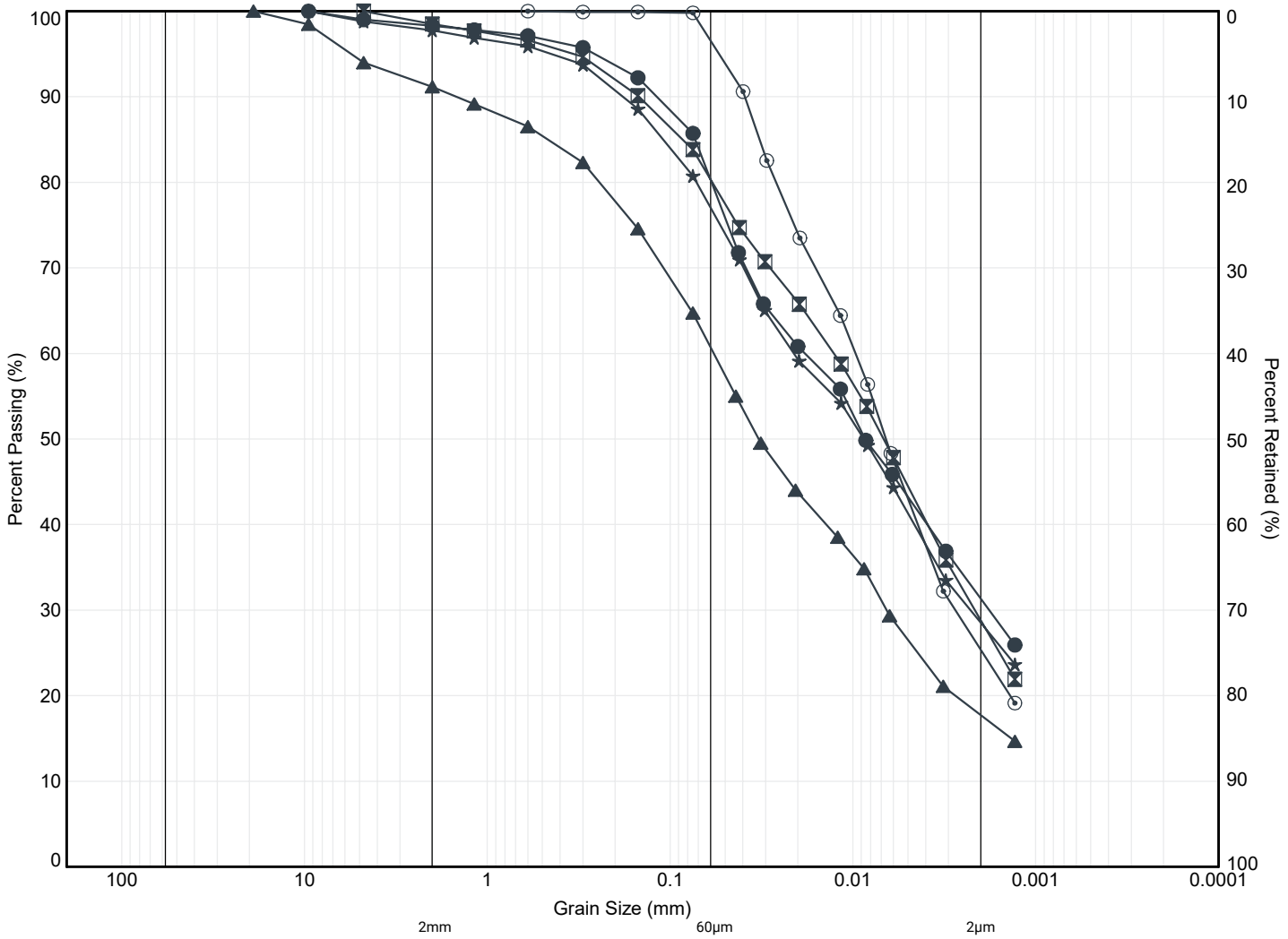
	Location	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
●	**BH 101**	SS3	1.7	100.7	8	29	53	10
⊠	**BH 106**	SS7	4.9	93.8	13	35	33	19
▲	**BH 203**	SS4	4.9	96.1	2	43	50	5

GROUNDED ENGINEERING

Title: **GRAIN SIZE DISTRIBUTION**
SANDY SILT TILL

File No.: **23-197**

file: 23-197 gint.gpj



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

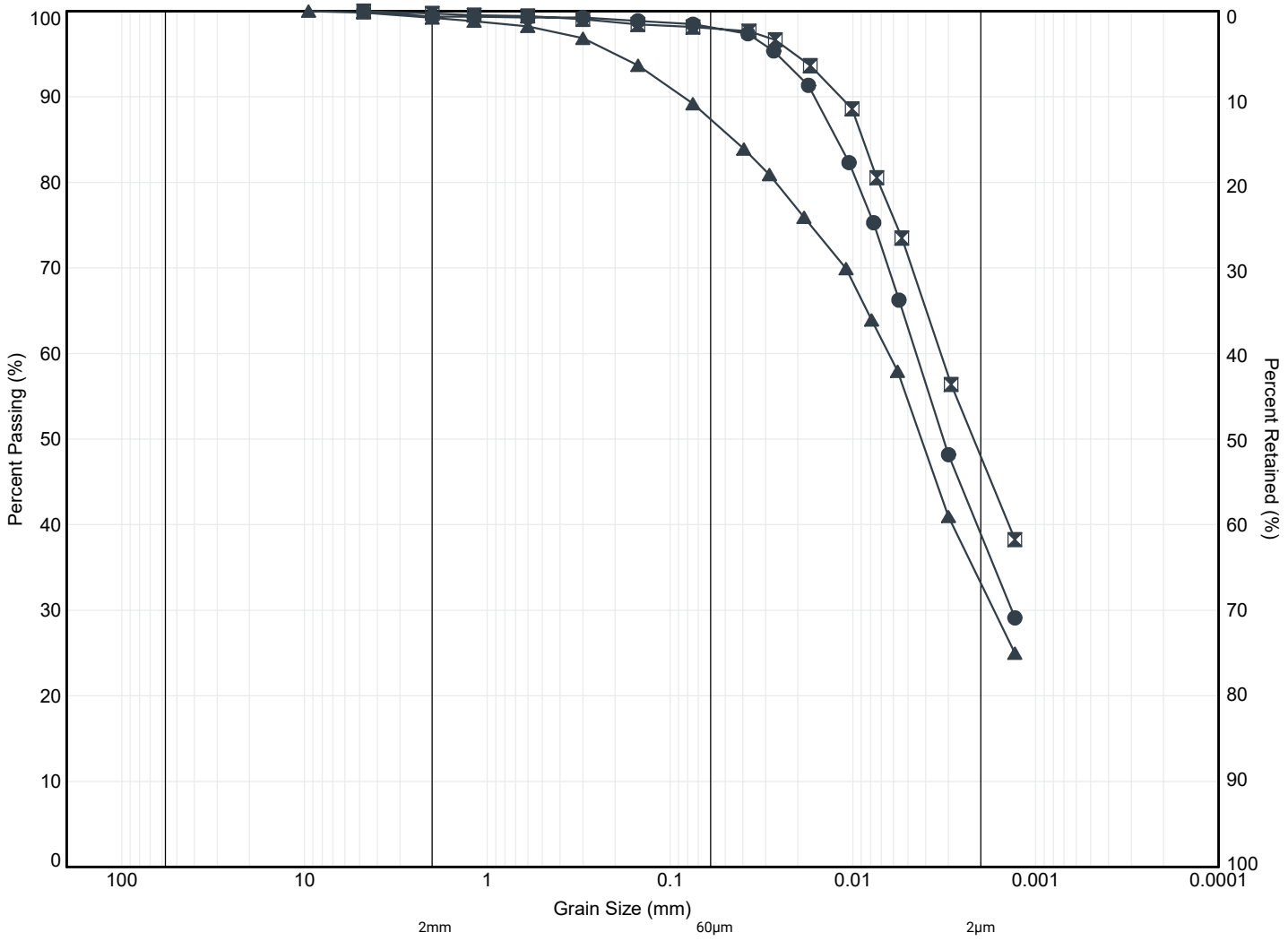
	Location	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
●	**BH 101**	SS9	12.5	89.9	2	18	49	31
⊠	**BH 101**	SS11	18.6	83.8	2	17	52	29
▲	**BH 102**	SS10	12.5	88.1	9	30	43	18
★	**BH 103**	SS12	14.0	84.1	2	20	49	29
⊙	**BH 202**	SS9	10.8	93.3	0	4	71	25

GROUNDED ENGINEERING

Title: **GRAIN SIZE DISTRIBUTION**
CLAYEY SILT TILL

File No.: **23-197**

file: 23-197 gint.gpj



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

	Location	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
●	**BH 101**	SS10	15.5	86.9	1	1	59	39
⊠	**BH 102**	SS11	14.0	86.6	0	2	50	48
▲	**BH 104**	SS12	14.0	85.6	1	12	54	33

GROUNDED ENGINEERING

Title:

GRAIN SIZE DISTRIBUTION
CLAY AND SILT TO CLAYEY SILT

File No.:

23-197

file: 23-197 gint.gpj

K from Grain Size Analysis Report

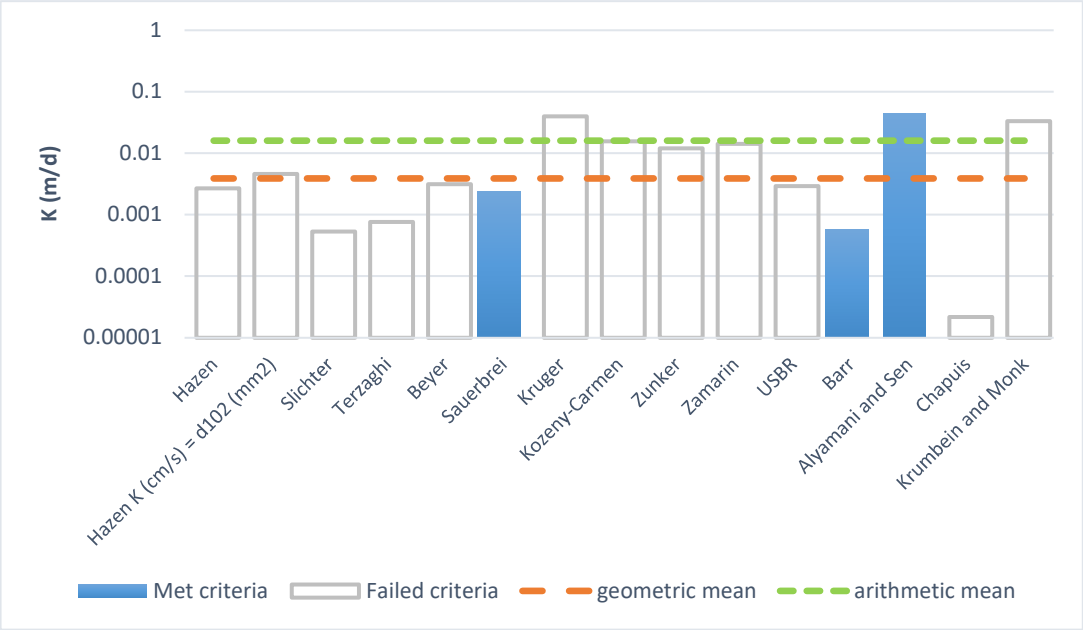
Date: 22-Nov-23

Sample Name: BH101 SS3

Mass Sample (g): 100

T (oC) 20

Poorly sorted sandy silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	3.1E-06	3.1E-08	0.00	
Hazen K (cm/s) = d_{10} (mm)	5.3E-06	5.3E-08	0.00	
Slichter	6.1E-07	6.1E-09	0.00	
Terzaghi	8.8E-07	8.8E-09	0.00	
Beyer	3.6E-06	3.6E-08	0.00	
Sauerbrei	2.7E-06	2.7E-08	0.00	
Kruger	4.6E-05	4.6E-07	0.04	
Kozeny-Carmen	1.8E-05	1.8E-07	0.02	
Zunker	1.4E-05	1.4E-07	0.01	
Zamarin	1.6E-05	1.6E-07	0.01	
USBR	3.4E-06	3.4E-08	0.00	
Barr	6.6E-07	6.6E-09	0.00	
Alyamani and Sen	5.2E-05	5.2E-07	0.05	
Chapuis	2.5E-08	2.5E-10	0.00	
Krumbein and Monk	3.8E-05	3.8E-07	0.03	
geometric mean	4.5E-06	4.5E-08	0.00	
arithmetic mean	1.9E-05	1.9E-07	0.02	

K from Grain Size Analysis Report

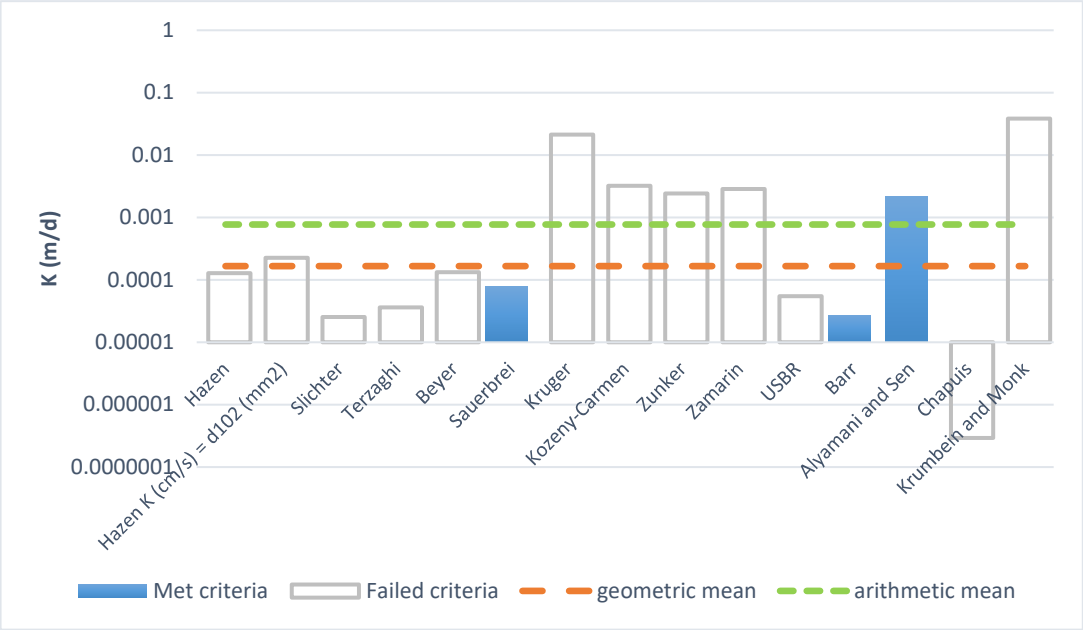
Date: 22-Nov-23

Sample Name: BH101 SS9

Mass Sample (g): 100

T (oC) 20

Poorly sorted clay with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	1.5E-07	1.5E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	2.6E-07	2.6E-09	0.00	
Slichter	2.9E-08	2.9E-10	0.00	
Terzaghi	4.2E-08	4.2E-10	0.00	
Beyer	1.5E-07	1.5E-09	0.00	
Sauerbrei	8.9E-08	8.9E-10	0.00	
Kruger	2.5E-05	2.5E-07	0.02	
Kozeny-Carmen	3.7E-06	3.7E-08	0.00	
Zunker	2.8E-06	2.8E-08	0.00	
Zamarin	3.3E-06	3.3E-08	0.00	
USBR	6.3E-08	6.3E-10	0.00	
Barr	3.1E-08	3.1E-10	0.00	
Alyamani and Sen	2.6E-06	2.6E-08	0.00	
Chapuis	3.4E-10	3.4E-12	0.00	
Krumbein and Monk	4.4E-05	4.4E-07	0.04	
geometric mean	1.9E-07	1.9E-09	0.00	
arithmetic mean	8.9E-07	8.9E-09	0.00	

K from Grain Size Analysis Report

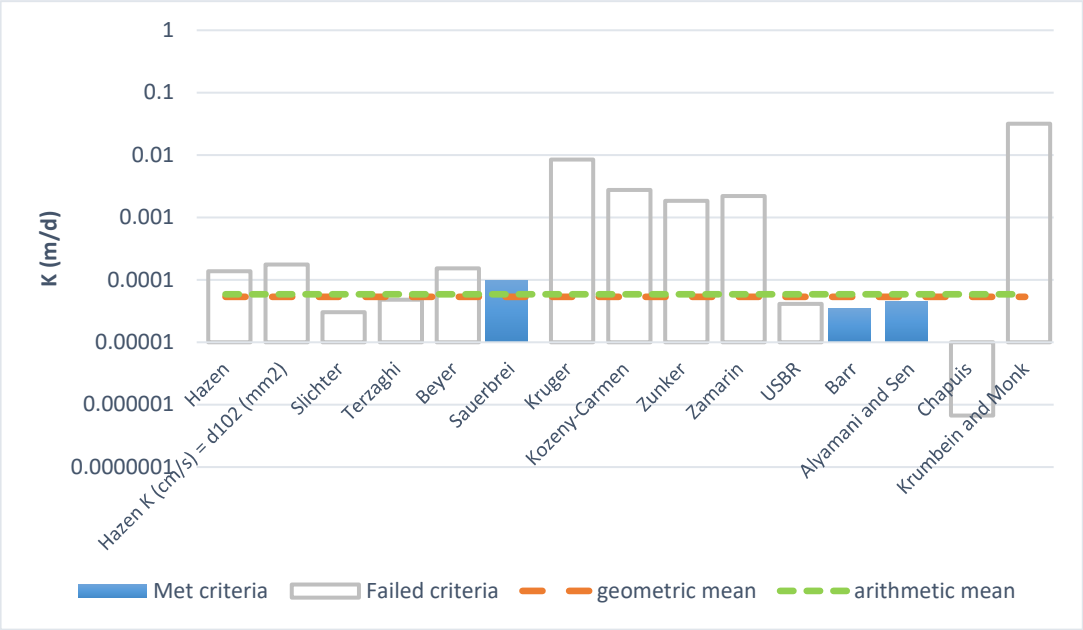
Date: 22-Nov-23

Sample Name: BH101 SS10

Mass Sample (g): 100

T (oC) 20

Poorly sorted clay with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	1.6E-07	1.6E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	2.0E-07	2.0E-09	0.00	
Slichter	3.5E-08	3.5E-10	0.00	
Terzaghi	5.5E-08	5.5E-10	0.00	
Beyer	1.8E-07	1.8E-09	0.00	
Sauerbrei	1.1E-07	1.1E-09	0.00	
Kruger	9.8E-06	9.8E-08	0.01	
Kozeny-Carmen	3.2E-06	3.2E-08	0.00	
Zunker	2.1E-06	2.1E-08	0.00	
Zamarin	2.5E-06	2.5E-08	0.00	
USBR	4.7E-08	4.7E-10	0.00	
Barr	4.0E-08	4.0E-10	0.00	
Alyamani and Sen	5.3E-08	5.3E-10	0.00	
Chapuis	7.7E-10	7.7E-12	0.00	
Krumbein and Monk	3.7E-05	3.7E-07	0.03	
geometric mean	6.2E-08	6.2E-10	0.00	
arithmetic mean	6.8E-08	6.8E-10	0.00	

K from Grain Size Analysis Report

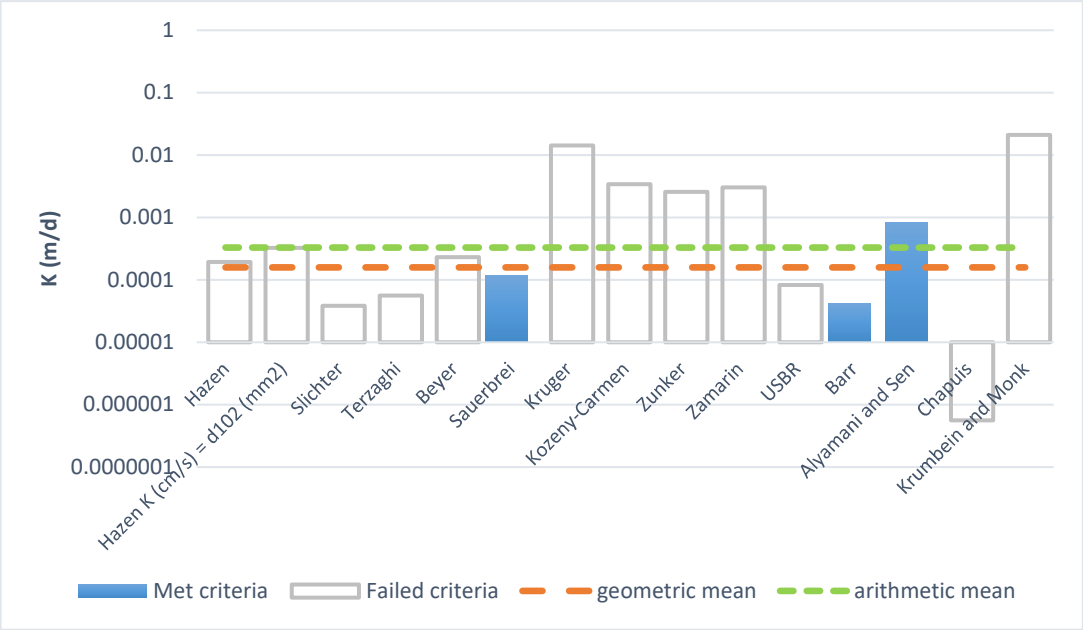
Date: 22-Nov-23

Sample Name: BH101 SS11

Mass Sample (g): 100

T (oC) 20

Poorly sorted clay with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	2.2E-07	2.2E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	3.7E-07	3.7E-09	0.00	
Slichter	4.4E-08	4.4E-10	0.00	
Terzaghi	6.4E-08	6.4E-10	0.00	
Beyer	2.7E-07	2.7E-09	0.00	
Sauerbrei	1.4E-07	1.4E-09	0.00	
Kruger	1.7E-05	1.7E-07	0.01	
Kozeny-Carmen	3.9E-06	3.9E-08	0.00	
Zunker	3.0E-06	3.0E-08	0.00	
Zamarin	3.5E-06	3.5E-08	0.00	
USBR	9.6E-08	9.6E-10	0.00	
Barr	4.8E-08	4.8E-10	0.00	
Alyamani and Sen	9.6E-07	9.6E-09	0.00	
Chapuis	6.5E-10	6.5E-12	0.00	
Krumbein and Monk	2.4E-05	2.4E-07	0.02	
geometric mean	1.8E-07	1.8E-09	0.00	
arithmetic mean	3.8E-07	3.8E-09	0.00	

K from Grain Size Analysis Report

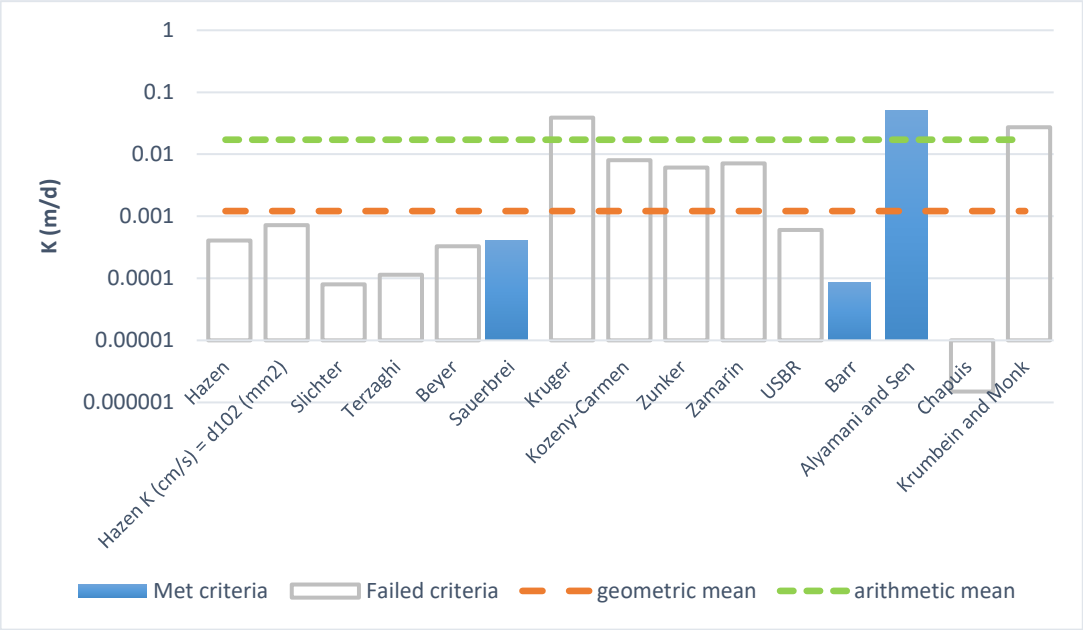
Date: 22-Nov-23

Sample Name: BH102 SS10

Mass Sample (g): 100

T (oC) 20

Poorly sorted sandy silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	4.7E-07	4.7E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	8.3E-07	8.3E-09	0.00	
Slichter	9.3E-08	9.3E-10	0.00	
Terzaghi	1.3E-07	1.3E-09	0.00	
Beyer	3.8E-07	3.8E-09	0.00	
Sauerbrei	4.8E-07	4.8E-09	0.00	
Kruger	4.5E-05	4.5E-07	0.04	
Kozeny-Carmen	9.3E-06	9.3E-08	0.01	
Zunker	7.0E-06	7.0E-08	0.01	
Zamarin	8.3E-06	8.3E-08	0.01	
USBR	6.9E-07	6.9E-09	0.00	
Barr	9.9E-08	9.9E-10	0.00	
Alyamani and Sen	5.9E-05	5.9E-07	0.05	
Chapuis	1.7E-09	1.7E-11	0.00	
Krumbein and Monk	3.1E-05	3.1E-07	0.03	
geometric mean	1.4E-06	1.4E-08	0.00	
arithmetic mean	2.0E-05	2.0E-07	0.02	

K from Grain Size Analysis Report

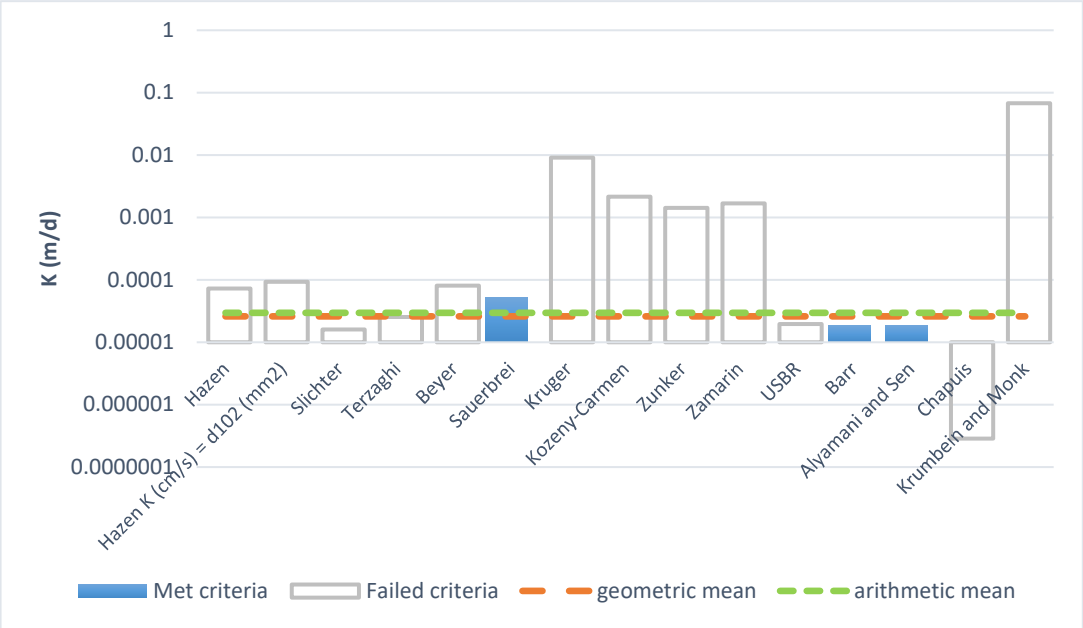
Date: 22-Nov-23

Sample Name: BH102 SS11

Mass Sample (g): 100

T (oC) 20

Poorly sorted clay with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	8.4E-08	8.4E-10	0.00	
Hazen K (cm/s) = d_{10} (mm)	1.1E-07	1.1E-09	0.00	
Slichter	1.9E-08	1.9E-10	0.00	
Terzaghi	2.9E-08	2.9E-10	0.00	
Beyer	9.3E-08	9.3E-10	0.00	
Sauerbrei	6.0E-08	6.0E-10	0.00	
Kruger	1.1E-05	1.1E-07	0.01	
Kozeny-Carmen	2.5E-06	2.5E-08	0.00	
Zunker	1.6E-06	1.6E-08	0.00	
Zamarin	1.9E-06	1.9E-08	0.00	
USBR	2.3E-08	2.3E-10	0.00	
Barr	2.1E-08	2.1E-10	0.00	
Alyamani and Sen	2.1E-08	2.1E-10	0.00	
Chapuis	3.3E-10	3.3E-12	0.00	
Krumbein and Monk	7.9E-05	7.9E-07	0.07	
geometric mean	3.0E-08	3.0E-10	0.00	
arithmetic mean	3.4E-08	3.4E-10	0.00	

K from Grain Size Analysis Report

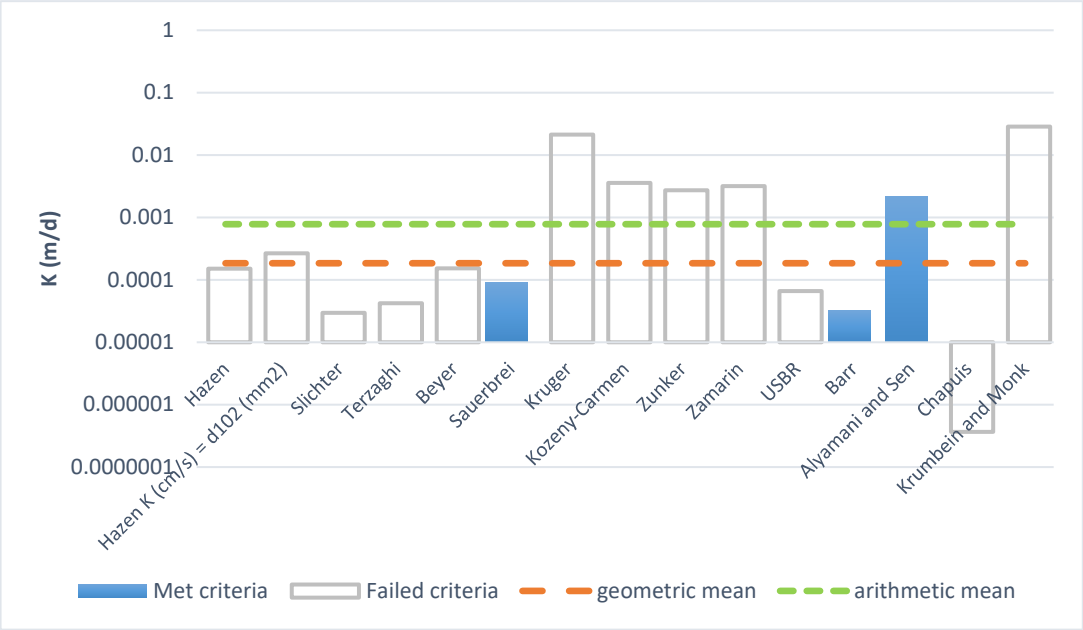
Date: 22-Nov-23

Sample Name: BH103 SS12

Mass Sample (g): 100

T (oC) 20

Poorly sorted clay with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	1.7E-07	1.7E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	3.1E-07	3.1E-09	0.00	
Slichter	3.4E-08	3.4E-10	0.00	
Terzaghi	4.9E-08	4.9E-10	0.00	
Beyer	1.8E-07	1.8E-09	0.00	
Sauerbrei	1.0E-07	1.0E-09	0.00	
Kruger	2.5E-05	2.5E-07	0.02	
Kozeny-Carmen	4.1E-06	4.1E-08	0.00	
Zunker	3.1E-06	3.1E-08	0.00	
Zamarin	3.7E-06	3.7E-08	0.00	
USBR	7.6E-08	7.6E-10	0.00	
Barr	3.7E-08	3.7E-10	0.00	
Alyamani and Sen	2.6E-06	2.6E-08	0.00	
Chapuis	4.2E-10	4.2E-12	0.00	
Krumbein and Monk	3.3E-05	3.3E-07	0.03	
geometric mean	2.1E-07	2.1E-09	0.00	
arithmetic mean	9.0E-07	9.0E-09	0.00	

K from Grain Size Analysis Report

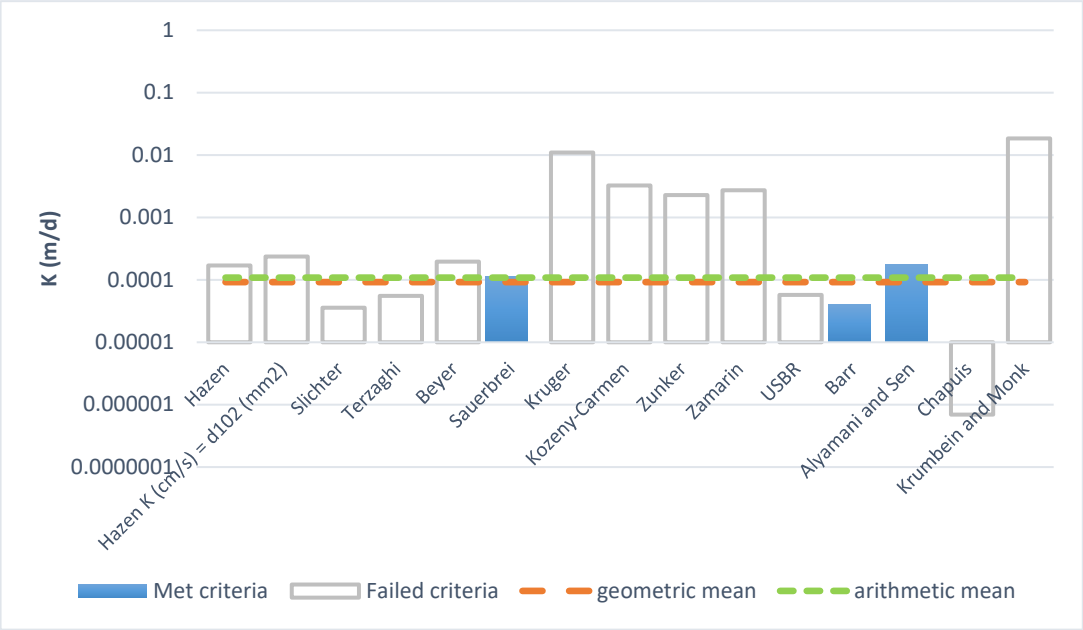
Date: 22-Nov-23

Sample Name: BH104 SS12

Mass Sample (g): 100

T (oC) 20

Poorly sorted clay with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	2.0E-07	2.0E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	2.7E-07	2.7E-09	0.00	
Slichter	4.1E-08	4.1E-10	0.00	
Terzaghi	6.4E-08	6.4E-10	0.00	
Beyer	2.3E-07	2.3E-09	0.00	
Sauerbrei	1.3E-07	1.3E-09	0.00	
Kruger	1.3E-05	1.3E-07	0.01	
Kozeny-Carmen	3.8E-06	3.8E-08	0.00	
Zunker	2.6E-06	2.6E-08	0.00	
Zamarin	3.1E-06	3.1E-08	0.00	
USBR	6.6E-08	6.6E-10	0.00	
Barr	4.6E-08	4.6E-10	0.00	
Alyamani and Sen	2.0E-07	2.0E-09	0.00	
Chapuis	8.0E-10	8.0E-12	0.00	
Krumbein and Monk	2.1E-05	2.1E-07	0.02	
geometric mean	1.1E-07	1.1E-09	0.00	
arithmetic mean	1.3E-07	1.3E-09	0.00	

K from Grain Size Analysis Report

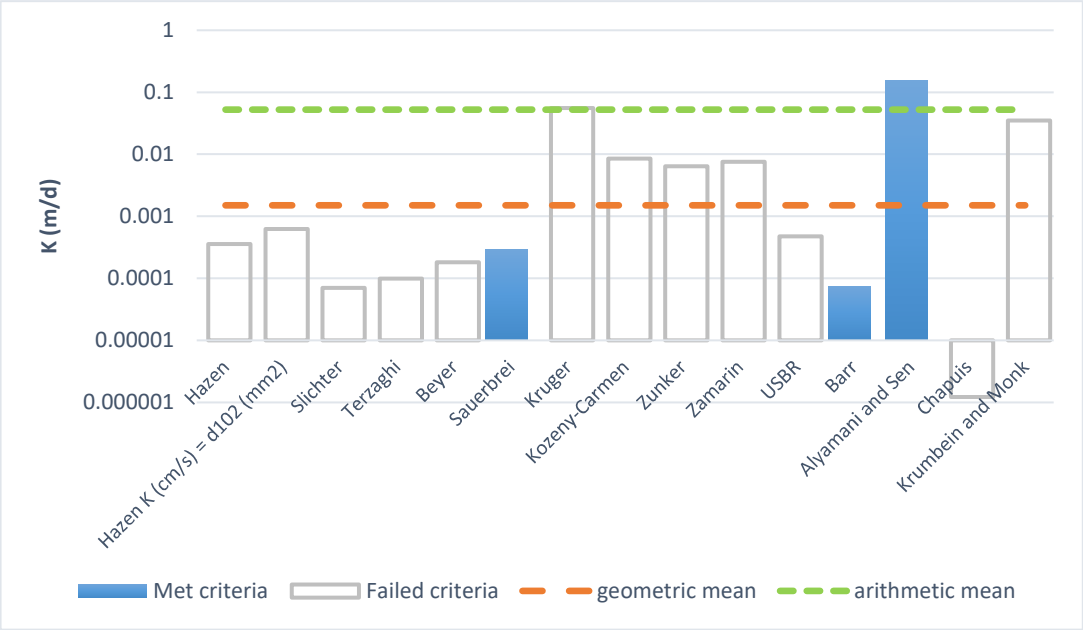
Date: 4-Dec-23

Sample Name: BH106 SS7

Mass Sample (g): 296.4

T (oC) 20

Poorly sorted sandy gravelly silt with fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	4.1E-07	4.1E-09	0.00	
Hazen K (cm/s) = d_{10} (mm)	7.2E-07	7.2E-09	0.00	
Slichter	8.1E-08	8.1E-10	0.00	
Terzaghi	1.1E-07	1.1E-09	0.00	
Beyer	2.1E-07	2.1E-09	0.00	
Sauerbrei	3.4E-07	3.4E-09	0.00	
Kruger	6.4E-05	6.4E-07	0.06	
Kozeny-Carmen	9.8E-06	9.8E-08	0.01	
Zunker	7.4E-06	7.4E-08	0.01	
Zamarin	8.7E-06	8.7E-08	0.01	
USBR	5.5E-07	5.5E-09	0.00	
Barr	8.6E-08	8.6E-10	0.00	
Alyamani and Sen	1.8E-04	1.8E-06	0.16	
Chapuis	1.4E-09	1.4E-11	0.00	
Krumbein and Monk	4.1E-05	4.1E-07	0.04	
geometric mean	1.8E-06	1.8E-08	0.00	
arithmetic mean	6.1E-05	6.1E-07	0.05	

APPENDIX K

GROUNDED ENGINEERING

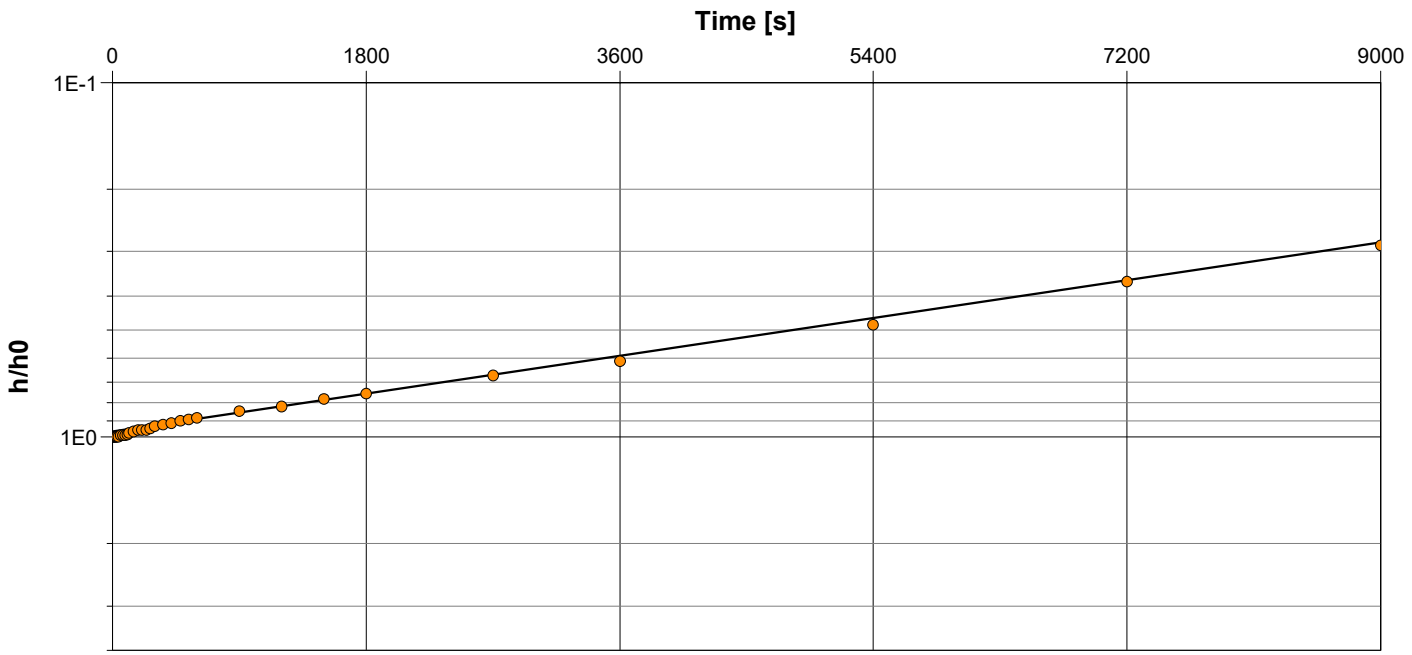
Slug Test Analysis Report

Project: 705 Kingston Road, Pickering

Number: 23-197

Client:

Location: ON	Slug Test: BH101	Test Well: BH101
Test Conducted by:		Test Date: 10/19/2023
Analysis Performed by: AK		Analysis Date: 11/7/2023
Aquifer Thickness: 22.15 m		

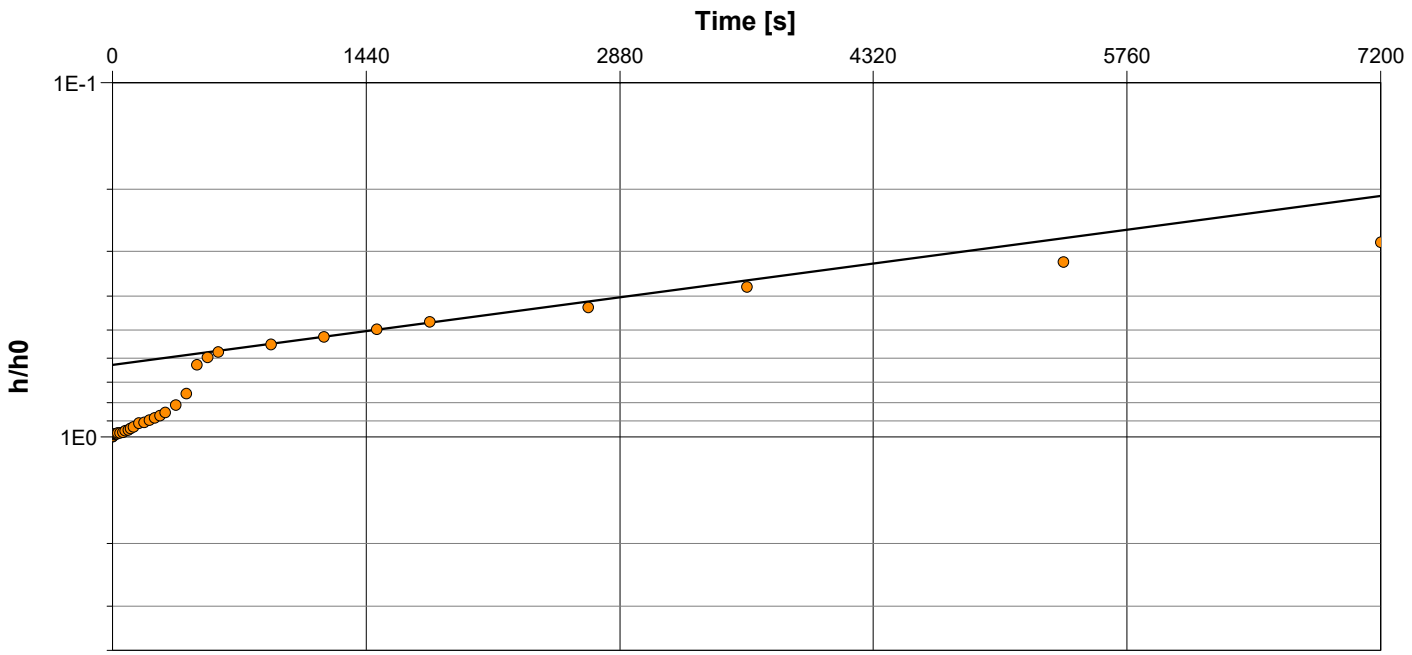


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH101	5.23×10^{-8}	

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 705 Kingston Road, Pickering
	Number: 23-197
	Client:

Location: ON	Slug Test: BH105	Test Well: BH105-D
Test Conducted by: HP		Test Date: 10/19/2023
Analysis Performed by: AK		Analysis Date: 11/7/2023
Aquifer Thickness: 22.15 m		

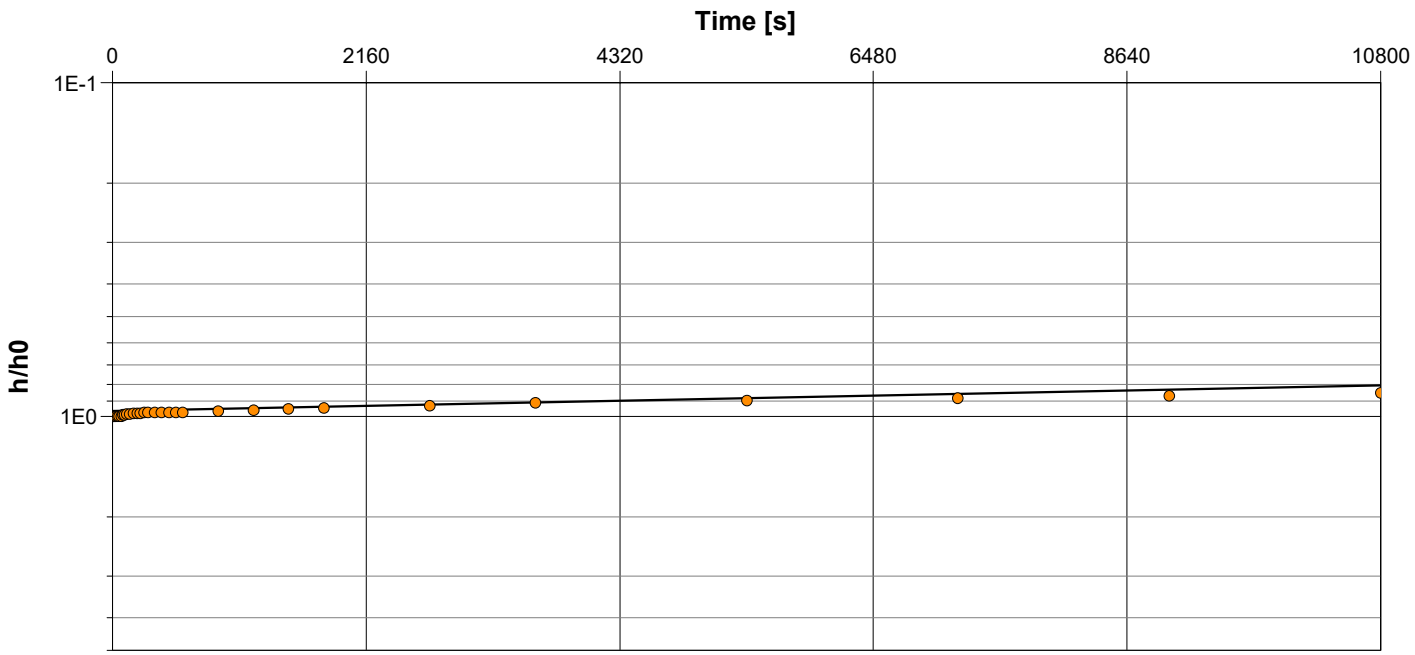


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH105-D	5.84×10^{-8}	

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 705 Kingston Road, Pickering
	Number: 23-197
	Client:

Location: ON	Slug Test: BH104-D	Test Well: BH104-D
Test Conducted by: LB		Test Date: 10/19/2023
Analysis Performed by: AK		Analysis Date: 11/7/2023
Aquifer Thickness: 22.15 m		

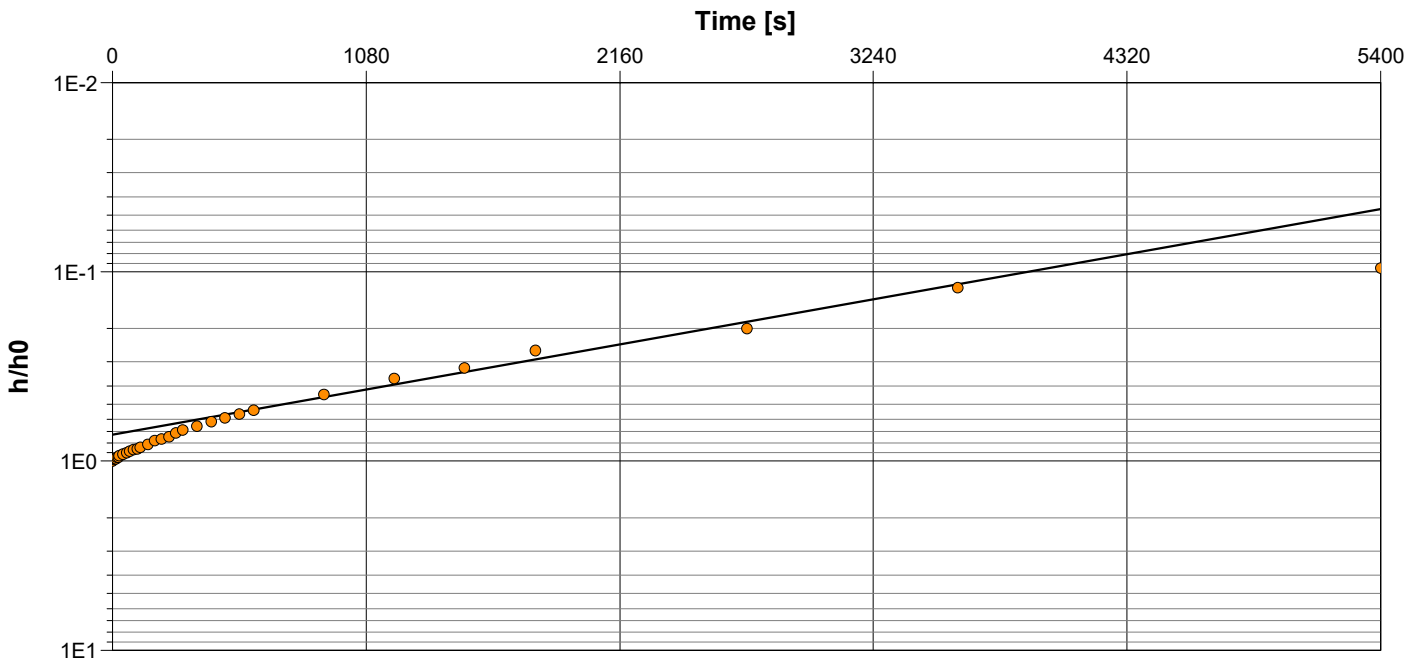


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH104-D	6.22×10^{-9}	

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 705 Kingston Road, Pickering
	Number: 23-197
	Client:

Location: ON	Slug Test: BH102-S	Test Well: BH102-S
Test Conducted by: KS		Test Date: 10/19/2023
Analysis Performed by: AK		Analysis Date: 11/7/2023
Aquifer Thickness: 22.15 m		

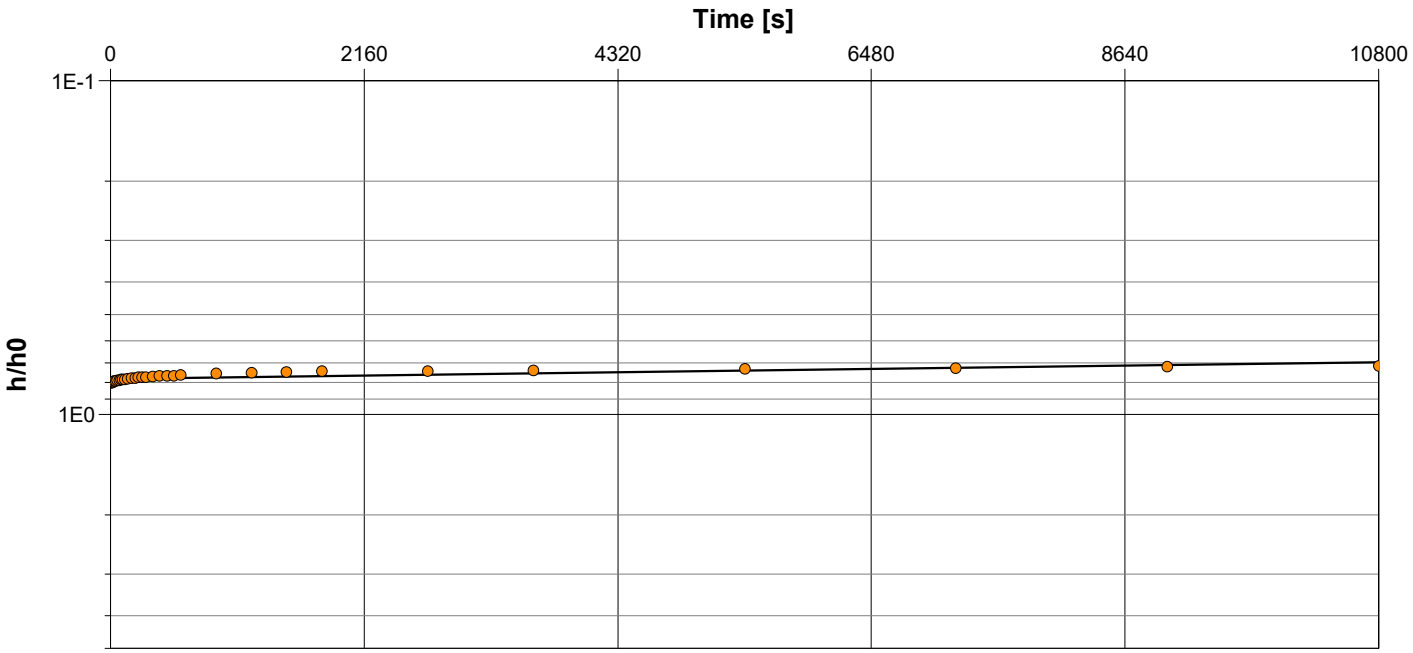


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH102-S	1.94×10^{-7}	

GROUNDED ENGINEERING	**Slug Test Analysis Report**
	Project: 705 Kingston Road, Pickering
	Number: 23-197
	Client:

Location: ON	Slug Test: BH105-S	Test Well: BH105-S
Test Conducted by: LB		Test Date: 11/10/2023
Analysis Performed by: AK		Analysis Date: 11/10/2023
Aquifer Thickness: 22.15 m		

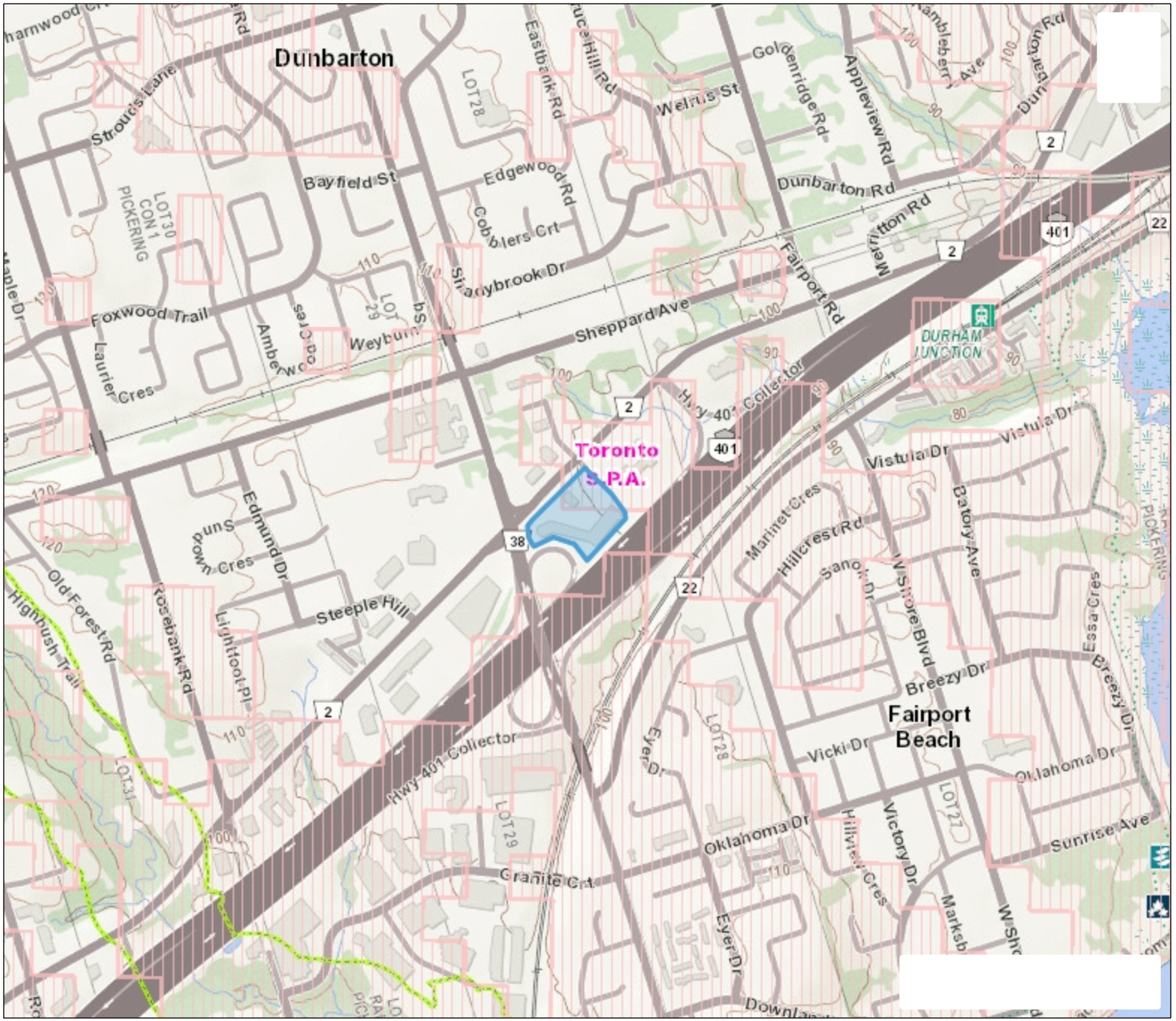


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
BH105-S	3.93×10^{-9}	

APPENDIX L

Source Water Protection Map



Legend

- Intake Protection Zone Q
- Wellhead Protection Area Q1
- Wellhead Protection Area Q2
- Issue Contributing Areas
- Highly Vulnerable Aquifers
- WHPA-E
- Wellhead Protection Area
  - A
  - B
  - C
  - C1
  - D
  - F
- Intake Protection Zone 1
- Event Based Areas
- Intake Protection Zone 2
- Niagara Escarpment Plan (NEI
- Greenbelt
- Oak Ridges Moraine
- Source Protection Areas

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

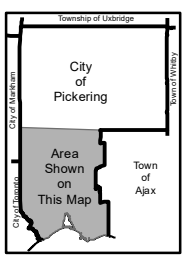
Ontario

Map Created: 9/19/2023
Map Center: 43.8193 N, -79.11328 W

Schedule I to the

Pickering Official Plan

Edition 9



Sheet 1 of 3

Open Space System

- Seaton Natural Heritage System
- Natural Areas
- Active Recreational Areas
- Marina Areas
- Hamlet Heritage Open Space

Rural Settlements

- Rural Clusters
- Rural Hamlets

Land Use Structure

Urban Residential Areas

- Low Density Areas
- Medium Density Areas
- High Density Areas

Mixed Use Areas

- Local Nodes
- Community Nodes
- Mixed Corridors
- Specialty Retailing Node
- City Centre

Employment Areas

- General Employment
- Prestige Employment
- Mixed Employment

Freeways and Major Utilities

- Controlled Access Areas
- Potential Multi Use Areas

Seaton Symbols

- DP District Park
- CP Community Park
- HS High School

Other Designations

- Prime Agricultural Areas
- D1 Deferrals
- Greenbelt Boundary

Township of Uxbridge

Town of Whitchurch - Stouffville

Reesor Creek

Sideline 32

Sideline 28

Sideline 26

Wixon Creek

Sideline 24

Sideline 20

Sideline 12

Brock Road

Sideline 14

O.P.R.

Central Street

CLAREMONT

Trans-Canada Pipeline

Sideline 30

Sideline 28

Eighth Concession Road

Michell Creek

Town of Markham

York Durham Line

West Duffins Creek

Sideline 32

Sideline 26

Sideline 24

Sideline 22

Sideline 20

Seventh Concession Road

Sideline 16

Sideline 14

Paddock Road

Brougham Creek

Mowbray Street

GREEN RIVER

North Road

Highway 7

BROUGHAM

Markham-Pickering Townline Road

407

GREENWOOD

Greenwood Road

HS

WHITEVALE

CP

Whitevale Road

Sideline 24

Fifth Concession Road

Duffins Creek

Whitevale By-Pass

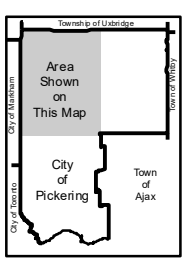
Town of Ajax

DP

Schedule I to the

Pickering Official Plan

Edition 9



Sheet 2 of 3

City of Pickering
City Development Department
© March, 2022
This Map Forms Part of Edition 9 of the Pickering Official Plan and Must Be Read in Conjunction with the Other Schedules and the Text.

Open Space System

- Seaton Natural Heritage System
- Natural Areas
- Active Recreational Areas
- Oak Ridges Moraine Natural Linkage Areas
- Hamlet Heritage Open Space
- Oak Ridges Moraine Natural Core Areas

Rural Settlements

- Rural Clusters
- Rural Hamlets
- Oak Ridges Moraine Rural Hamlets

Land Use Structure

Urban Residential Areas

- Low Density Areas
- Medium Density Areas

Mixed Use Areas

- Local Nodes
- Community Nodes
- Mixed Corridors

Employment Areas

- Prestige Employment

Seaton Symbols

- DP — District Park
- CP — Community Park
- HS — High School

Freeways and Major Utilities

- Controlled Access Areas

Other Designations

- Proposed Airport Site
- Prime Agricultural Areas
- Prime Agricultural Areas On The Oak Ridges Moraine
- Oak Ridges Moraine Countryside Areas
- Rural Study Area
- Federal Lands
- Oak Ridges Moraine Boundary
- Greenbelt Boundary

Schedule III A to the

Pickering Official Plan

Edition 9

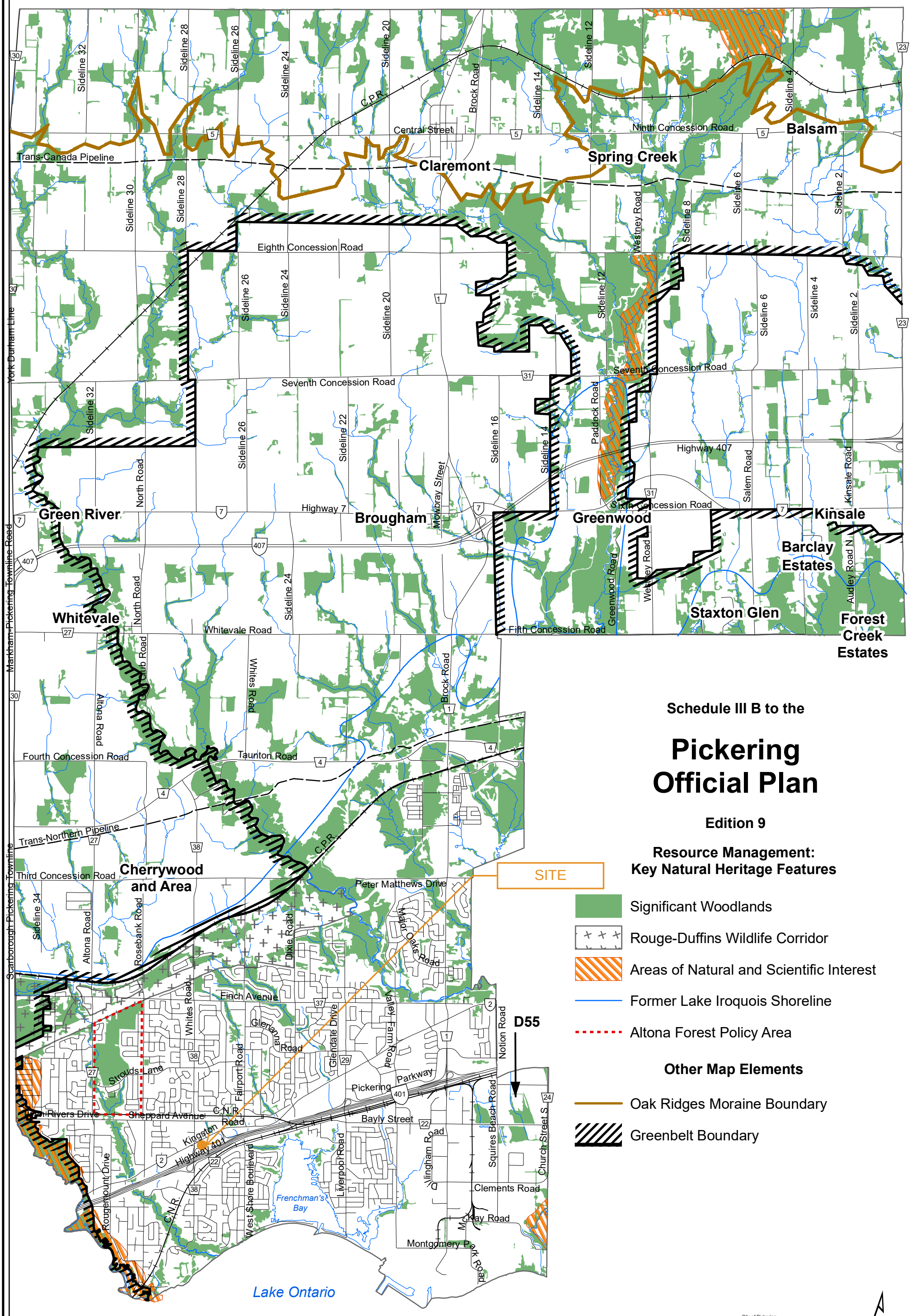
Resource Management:
The Natural Heritage System

Natural Heritage System

Greenbelt Natural Heritage System

SITE

D55



Schedule III B to the

Pickering Official Plan

Edition 9

Resource Management: Key Natural Heritage Features

- Significant Woodlands
- Rouge-Duffins Wildlife Corridor
- Areas of Natural and Scientific Interest
- Former Lake Iroquois Shoreline
- Altona Forest Policy Area

Other Map Elements

- Oak Ridges Moraine Boundary
- Greenbelt Boundary

City of Pickering
City Development Department
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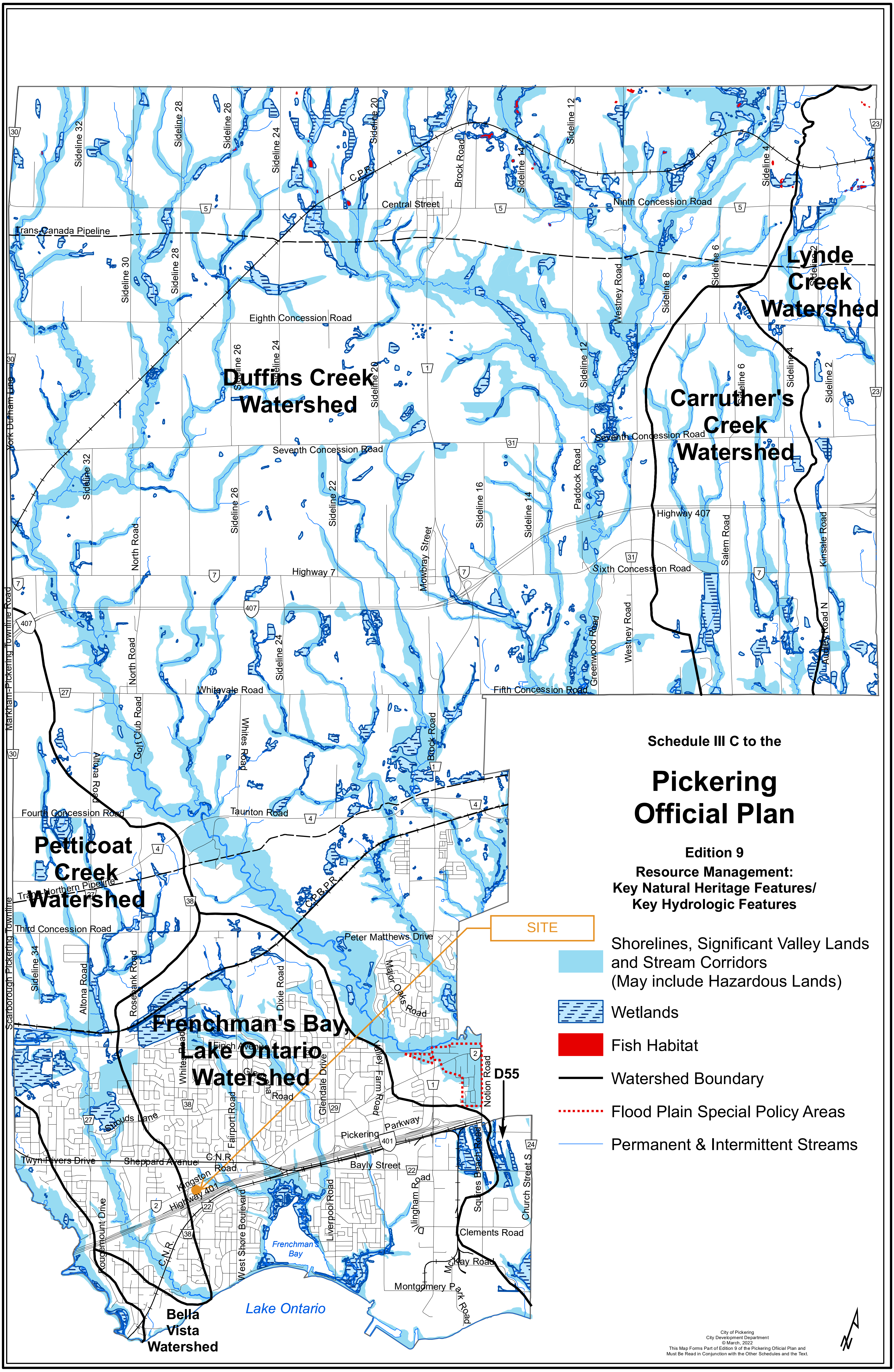

Schedule III C to the
Pickering
Official Plan
Edition 9
Resource Management:
Key Natural Heritage Features/
Key Hydrologic Features
SITE
Shorelines, Significant Valley Lands and Stream Corridors (May include Hazardous Lands)
Wetlands
Fish Habitat
Watershed Boundary
Flood Plain Special Policy Areas
Permanent & Intermittent Streams
Duffins Creek Watershed
Carruther's Creek Watershed
Lynde Creek Watershed
Petticoat Creek Watershed
Frenchman's Bay, Lake Ontario Watershed
Bella Vista Watershed
Lake Ontario
Frenchman's Bay
D55
Trans-Canada Pipeline
Trans-Northern Pipeline
C.P.R.
C.P.R.P.R.
C.N.R.
Ninth Concession Road
Central Street
Eighth Concession Road
Seventh Concession Road
Sixth Concession Road
Fifth Concession Road
Fourth Concession Road
Third Concession Road
Highway 407
Highway 7
Whitevale Road
Taunton Road
Peter Matthews Drive
Finch Avenue
Sheppard Avenue
Twyn Rivers Drive
Kingston Road
Highway 401
Pickering Parkway
Bayly Street
Clements Road
McKay Road
Montgomery Park Road
York Durham Line
Markham-Pickering Townline Road
Scarborough Pickering Townline
Brock Road
Westney Road
Mowbray Street
Greenwood Road
Paddock Road
Salem Road
Kinsale Road
Audley Road N
North Road
Golf Club Road
Altona Road
Whites Road
Rosebank Road
Dixie Road
Glendale Drive
Valley Farm Road
Fairport Road
Liverpool Road
West Shore Boulevard
Rougemount Drive
Dillingham Road
Squires Beach Road
Notion Road
Church Street S
Major Oaks Road
Strouds Lane
Glenanna Road
Sideline 2
Sideline 4
Sideline 6
Sideline 8
Sideline 12
Sideline 14
Sideline 16
Sideline 20
Sideline 22
Sideline 24
Sideline 26
Sideline 28
Sideline 30
Sideline 32
Sideline 34
City of Pickering
City Development Department
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Must Be Read in Conjunction with the Other Schedules and the Text.

Schedule III D to the

Pickering Official Plan

Edition 9

Resource Management:
Highly Vulnerable Aquifers,
Significant Groundwater Recharge Areas

Oak Ridges Moraine

Significant Groundwater Recharge Areas (SGRA)

Highly Vulnerable Aquifers (HVA)

SITE

Schedule III E to the

Pickering Official Plan

Edition 9

Resource Management: Aggregate Resources, Waste Disposal Sites and Abandoned Oil and Gas Wells

Areas of High Potential Mineral Aggregate Resources

Known Waste Disposal Sites*

Abandoned Oil and Gas Wells

SITE

*Each Dot Represents Ministry of Environment Record

Schedule III F to the

Pickering Official Plan

Edition 9

Resource Management: Vulnerable Areas

Oak Ridges Moraine

Wellhead Protection Areas (WHPA) Water Quality

WHPA-B

WHPA-C

WHPA-D

Wellhead Protection Areas (WHPA) Water Quantity

York-Durham WHPA-Q1/Q2

York-Durham WHPA-Q1/Q2 Downgradient Line

Intake Protection Zones (IPZ)

IPZ - 2

IPZ - 3

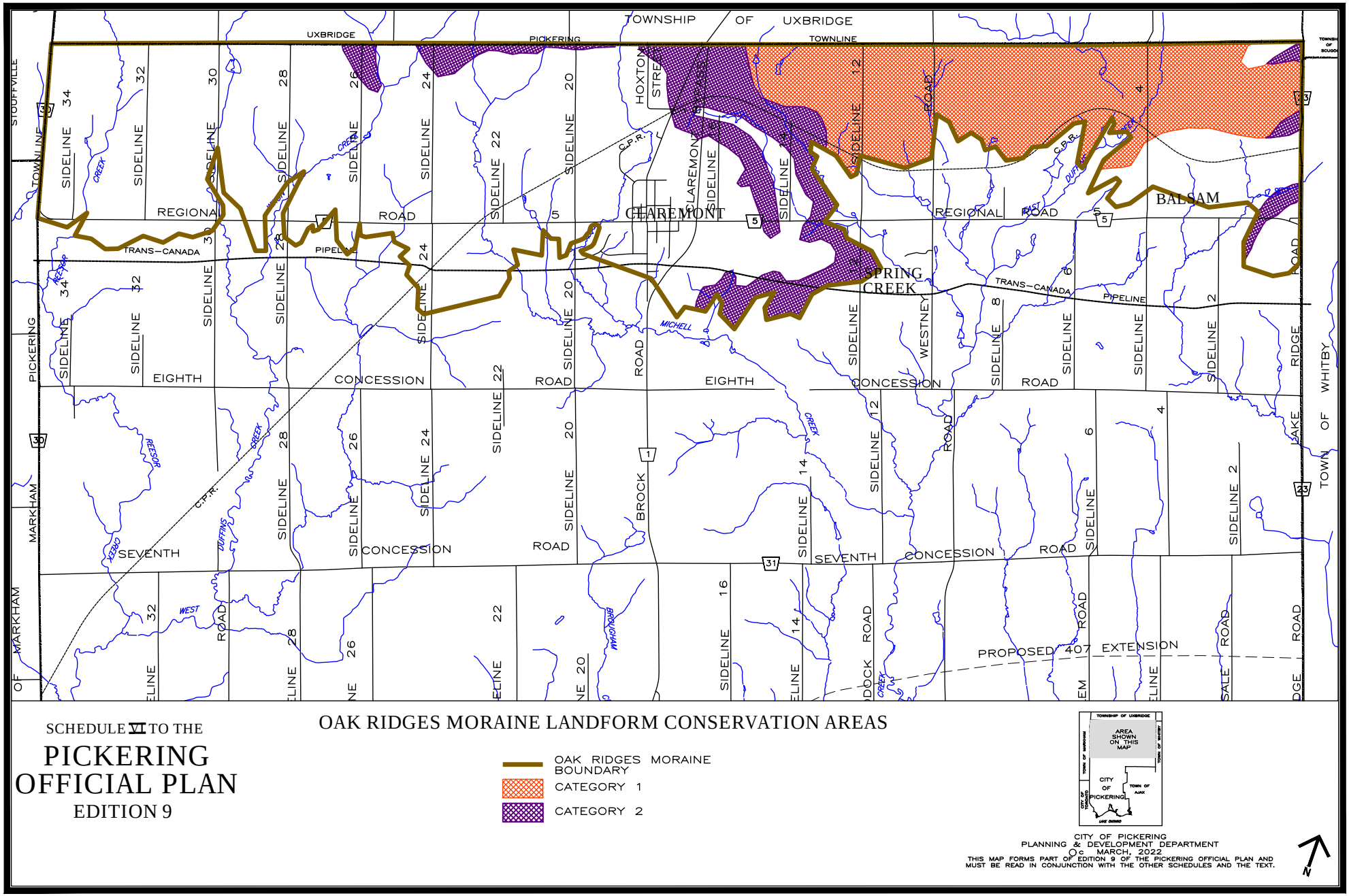
Event Based Areas (EBAs)

EBAs

SITE

City of Pickering
City Development Department

This Map Forms Part of Edition 9 of the Pickering Official Plan and Must Be Read in Conjunction with the Other Schedules and the Text.



SCHEDULE VI TO THE

PICKERING OFFICIAL PLAN

EDITION 9

OAK RIDGES MORAINE LANDFORM CONSERVATION AREAS

- OAK RIDGES MORAINE BOUNDARY
- CATEGORY 1
- CATEGORY 2

CITY OF PICKERING
PLANNING & DEVELOPMENT DEPARTMENT
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THIS MAP FORMS PART OF EDITION 9 OF THE PICKERING OFFICIAL PLAN AND MUST BE READ IN CONJUNCTION WITH THE OTHER SCHEDULES AND THE TEXT.

N

APPENDIX M

Water Balance - 705 Kington Road, Pickering

1. Climate Information

Precipitation	864	mm/a	0.86 m/a *
Evapotranspiration	361	mm/a	0.36 m/a *
Water Surplus	503	mm/a	0.50 m/a

2. Infiltration Rates

Table 2

Table 2 Approach - Infiltration Factors

Topography - (Hilly land)	0.1 *
Soil - (Medium combinations)	0.2 *
Cover - (Cultivated lands)	0.1 *
TOTAL:	0.4

Infiltration (Infiltration Factor x Water Surplus)	201.2	mm/a	0.2012 m/a
Run-off (Water Surplus - Infiltration)	302	mm/a	0.3018 m/a

Table 3 Approach - Typical Recharge Rates

coarse sand and gravel	250+	mm/a *
fine to medium sand	200 - 250	mm/a *
silty sand to sandy silt	150 - 200	mm/a *
silt	125 - 150	mm/a *
clayey silt	100 - 125	mm/a *
clay	< 100	mm/a *

The site development area is underlain by sandy silt till and clayey silt till.

Based on the above, the recharge rate is	79	mm/a	0.079 m/a
with runoff of	424	mm/a	0.424 m/a

3. Property Statistics Pre development

Area Covered by Existing Building	6,192	m^2	0.62 ha
Area Covered by Existing Hard Surface Paving	17,611	m^2	1.76 ha
Area Covered by Existing Landscaped area	3,514	m^2	0.35 ha
TOTAL	27,317	m^2	2.73 ha

4. Property Statistics Post development

Area Covered by Building with Additions	9,819	m^2	0.98 ha
Area Covered by Hard Surface Paving	9,508	m^2	0.95 ha
Area Covered by Landscaped Area	7,990	m^2	0.80 ha
TOTAL:	27,317	m^2	2.73 ha

*Based on published information

Water Balance - 705 Kington Road, Pickering

5. Annual Water Balance Before Building Additions

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Evaporation (m^3)	Infiltration (m^3)	Run-Off (m^3)
Building (entire site)	6,192	5,350	-	-	-	5,350
Hard Surface Paving	17,611	15,216	-	-	-	15,216
Landscape Area (entire site)	3,514	3,036	1,269	-	707	1,061
TOTAL	**27,317**	**23,602**	**1,269**	**0**	**707**	**21,626**

6. Annual Water Balance After Building Additions

Land Use	Area (m^2)	Precipitation (m^3)	Evapotranspiration (m^3)	Evaporation (m^3)	Infiltration (m^3)	Run-Off (m^3)
Building (entire site)	9,819	8,484	-	-	-	8,484
Hard Surface Paving	9,508	8,215	-	-	-	8,215
Landscape Area (entire site)	7,990	6,903	2,884	-	1,608	2,411
TOTAL	**27,317**	**23,602**	**2,884**	**0**	**1,608**	**19,110**

7. Comparison of Pre Development (before buidling additions) and Post Development (after building additions)

	Precipitation (m^3)	Evapotranspiration (m^3)	Evaporation (m^3)	Infiltration (m^3)	Run-Off (m^3)
Pre-Development	23,602	1,269	-	707	21,626
Post-Development	23,602	2,884	-	1,608	19,110

8. Requirement for Infiltration of Roof Runoff

Volume of roof (building additions) run-off captured (90%)	7,635	m^3
Volume of post-development infiltration without roof run-off	1,608	m^3
Volume of roof run-off required to match pre-development infiltration rates	-901	m^3
Percentage of roof run-off (building additions roof) required to match pre-development infiltration	-12%	

Appendix N

Material Name	Color	KS (m/s)
Cohesionless Till		2e-07
Fill		1e-05
Cohesive Till		2e-08

Short Term - Pile and Lagging

Equivalent Excavation Dimensions: 85.0 (N-S) m* x 224.0 (E-W) m
Section Cut: E-W

P1 Level Finished Floor: Elev. 95.5 m
Raft Foundation Bulk Excavation: Elev. 94.0 m

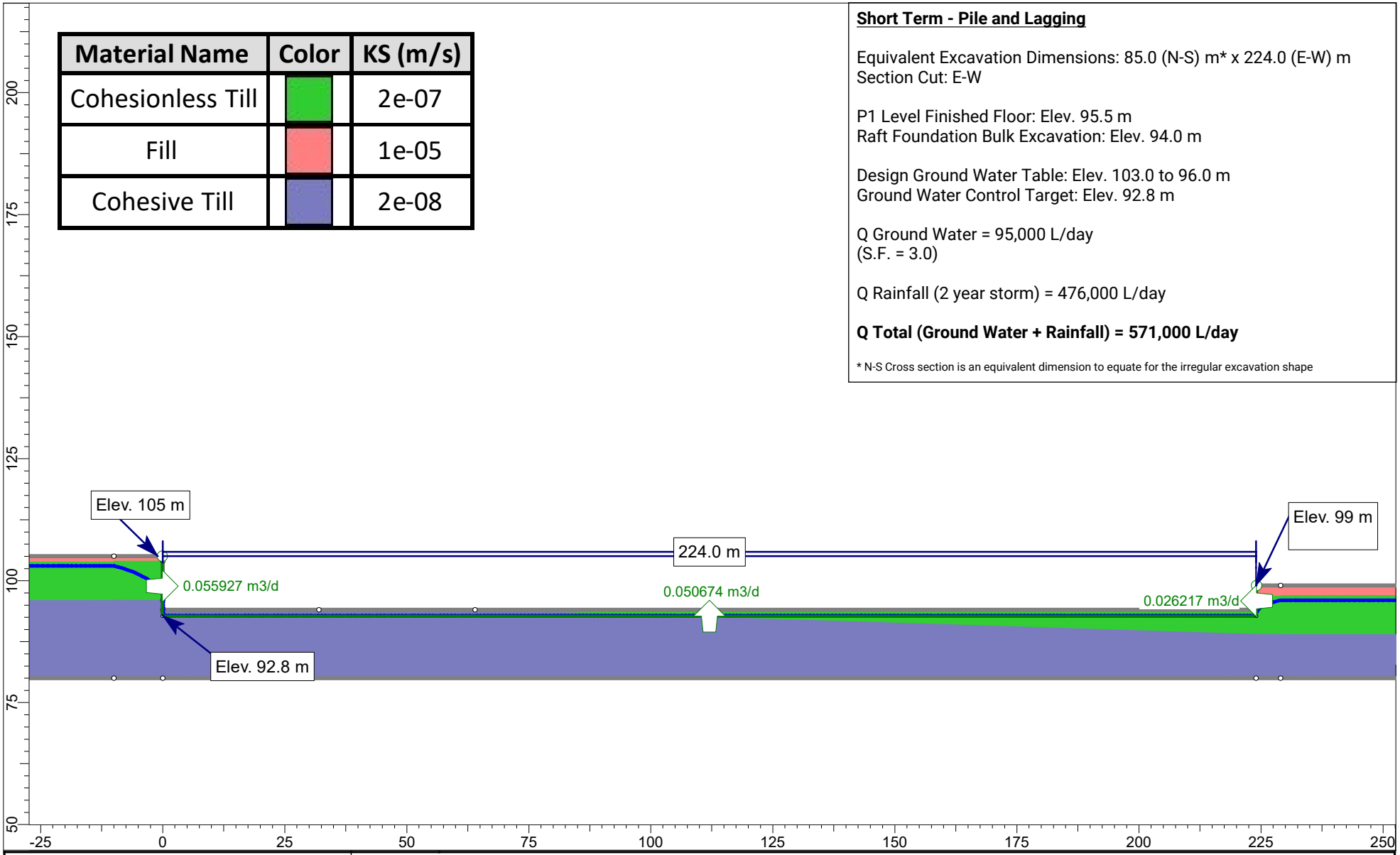
Design Ground Water Table: Elev. 103.0 to 96.0 m
Ground Water Control Target: Elev. 92.8 m

Q Ground Water = 95,000 L/day
(S.F. = 3.0)

Q Rainfall (2 year storm) = 476,000 L/day

Q Total (Ground Water + Rainfall) = 571,000 L/day

* N-S Cross section is an equivalent dimension to equate for the irregular excavation shape



GROUNDED ENGINEERING

File	705 Kingston Rd		
Analysis	Steady State FEM: 23-197, Short Term Dewatering		
Ref.			
RS2 File	23-197 705 Kingston Rd FEM.slmd	Scale 1:1100	Eng RS

SLIDEINTERPRET 9.034

Material Name	Color	KS (m/s)

Long Term - Pile and Lagging

Equivalent Excavation Dimensions: 85.0 (N-S) m* x 224.0 (E-W) m
Section Cut: E-W

P1 Level Finished Floor: Elev. 95.5 m
Sub floor Drainage Layer: Elev. 94.0 m

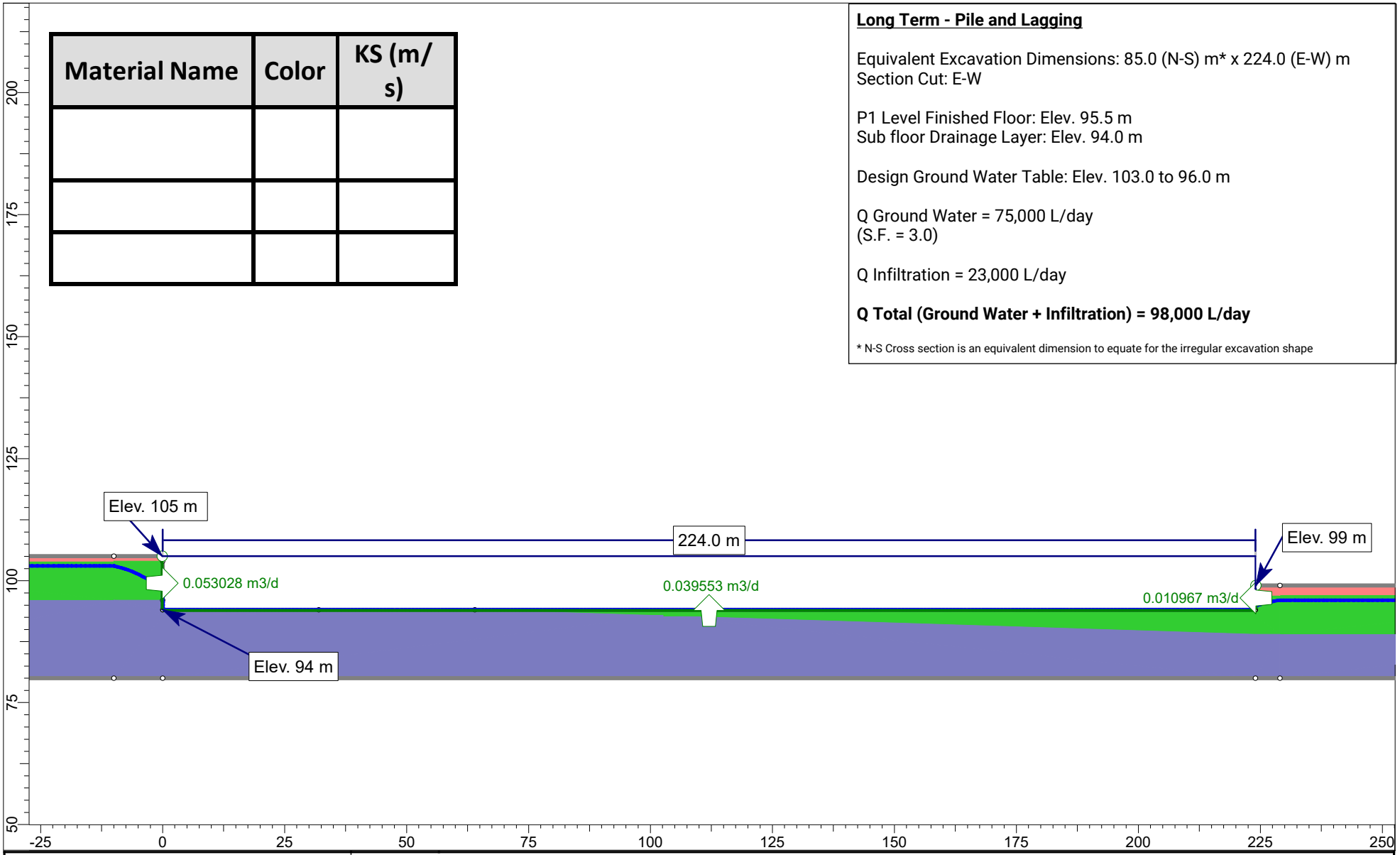
Design Ground Water Table: Elev. 103.0 to 96.0 m

Q Ground Water = 75,000 L/day
(S.F. = 3.0)

Q Infiltration = 23,000 L/day

Q Total (Ground Water + Infiltration) = 98,000 L/day

* N-S Cross section is an equivalent dimension to equate for the irregular excavation shape



GROUNDED ENGINEERING

File	705 Kingston Rd		
Analysis	Steady State FEM: 23-197, Long Term Dewatering		
Ref.			
RS2 File	23-197 705 Kingston Rd FEM.slmd	Scale 1:1100	Eng RS

SLIDEINTERPRET 9.034