GEI Consultants

Consulting Engineers and Scientists

Hydrogeological Investigation

Proposed Commercial Warehouse Development

6728 Sixth Line, Milton, Ontario

Submitted to:
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1st Submission	July 19, 2023	Hydrogeological Investigation
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3rd Submission	January 17, 2024	Revised Hydrogeological Investigation to include preliminary high groundwater level measurements to date

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1. Introduction

GEI Consultants Ltd. (GEI) was retained by the Anatolia Investments Corporation to complete a subsurface investigation and provide a hydrogeological report in support of the proposed development of 6728 Sixth Line in the Town of Milton, Ontario for commercial warehousing. A site location plan is shown in Figure 1.

The site comprises the land in the southwest quadrant of the Derry Road West and Sixth Line intersection and is approximately 625 m north-to-south and 1,000 m east-to-west. Until recently, 6728 Sixth Line was the location of the former Trafalgar Golf and Country Club with predominantly landscaped golf course areas across the site. It is understood that some of the structures have been demolished in preparation for the redevelopment.

It is understood that three commercial buildings are proposed, and a grade raise is proposed for most of the site. Building 1 will be about 240 m by 450 m in plan (proposed slab Elev. 191.90), Building 2 will be about 180 m by 330 m in plan (proposed slab Elev. 192.10) and Building 3 will be approximately 85 m by 225 m in plan (proposed slab Elev. 191.05). All three buildings will be slab-on-grade and will have some form of truck loading docks on portions of the buildings. Paved parking and access will surround the buildings. Three Storm Water Management (SWM) facilities are proposed, one underground south of Building 1 and two at-grade ponds south of Buildings 2 and 3, respectively. A new road (Clark Boulevard) is proposed between Buildings 1 and 2, connecting to Derry Road West in the north. A future watercourse channel is proposed between Buildings 2 and 3 and along the south of Buildings 1 and 2 (a re-alignment of the existing watercourses). An aerial image of the site is provided on Figure 2A and the proposed concept plan is included as Figure 2B.

The following documents were provided for our review:

- *Conceptual Site Plan – Scheme: 06F, 6728 Sixth Line, Milton, ON CAN by Ware Malcom, Project Number: TOR22-0102-00, dated January 4, 2023*

- *Topographic Sketch of Part of Lot 10, Concession 6 New Survey – Geographic Township of Trafalgar, Town of Milton, Regional Municipality of Halton by Vujeva Surveys Ltd., JOB No. 18 – 6072, dated September 13, 2018*

The purpose of this hydrogeological investigation was to determine the subsurface conditions beneath the site and provide a report appropriate for the expected dewatering condition, that could be used to support future EASR or PTTW applications prior to construction, if necessary.

It is noted that the recommendations provided in this report must be considered preliminary in nature due to the current uncertainty of the design for the project. As the design progresses further hydrogeological review and input may be required which might necessitate the need for additional investigation and/or analysis.

GEI has also been retained to complete a geotechnical study and slope stability assessment for the site and the findings and recommendations are provided under separate covers.

1.1 Purpose and Scope of Work

The main objectives of the hydrogeological Investigation were to:

a) Establish the local hydrogeological settings of the site;

b) Assess groundwater quality and compare the results to the applicable Halton Region Combined Sewer Use By-Law Criteria, Provincial Water Quality Objective (PWQO), and Ontario Regulation 153/04 (O.Reg.153/04), as amended, Site Condition Standards (SCS);

c) Carry out analysis for construction dewatering rates based on the subsurface conditions and proposed site works, and discuss the regulatory requirements;

d) Complete a preliminary water balance (pre-construction); and

e) Prepare a hydrogeological investigation report.

To achieve the investigation objectives, GEI proposed and completed the following scope of work:

a) Conduct a background desktop review of pertinent geological and hydrogeological resources, Ministry of Environment, Conservation and Parks (MECP) Water Well Records, previous reports, and proposed site plan drawings.

b) Visit the site and note existing site conditions, site setting, topography, drainage, water features, and potential water wells within 500 m of the site, if any.

c) Utilization of the data generated from the fifty-four (54) boreholes completed as part of the geotechnical investigation, with the sixteen (16) boreholes instrumented with monitoring wells.

d) Revisit the site and measure groundwater levels all monitoring wells, perform hydraulic conductivity testing in eight (8) monitoring wells, retrieve representative groundwater samples, and install loggers in ten (10) monitoring wells for long term groundwater monitoring.

e) Submit two (2) representative unfiltered groundwater samples for laboratory testing to compare against the Halton Region Combined Sewer Use By-Law Criteria, PWQO standards for metals and Total Suspended Solids (TSS) and, O.Reg.153/04, as amended, for Petroleum Hydrocarbons (PHCs), and Volatile Organic Compounds (VOCs), subject to available monitoring well groundwater quantity.

f) Submit two (2) representative filtered groundwater samples for laboratory testing to compare against the PWQO standards for metals and TSS, subject to sufficient available monitoring well groundwater quantity.

g) Test thirteen (13) selected soil samples for particle size distribution (as per Ontario LS standards in reference to ASTM D6913 and D7928).

h) Carry out a dewatering assessment for construction.

i) Complete a preliminary water balance for the proposed development.

j) Prepare a hydrogeological report.

1.2 Regulatory Requirements

1.2.1 Source Water Protection

The site is within jurisdictional boundary of the Conservation Halton (CA). The site is within the Halton Source Protection Area, in the Hamilton-Halton Source Protection Region. The following documents should be used in determination of the regulatory requirements when it comes to maintaining hydrogeological function at this site:

- "*Halton-Hamilton Source Protection Plan",* approved November 4, 2022, by the Halton-Hamilton Source Protection Region.

Based on Source Water Protection and Natural Heritage Areas online mapping, the following is noted:

- Wellhead Protection Area (WHPA): The site is not located within a WHPA (Figure 3).
- Intake Protection Zone (IPZ): The site is not located within an IPZ (Figure 4).
- Highly Vulnerable Aquifer (HVA): The site is not located within an HVA (Figure 5).
- Significant Groundwater Recharge Area (SGRA): The site is located within a SGRA (Figure 6).
- Issue Contributing Area (ICA): The site is not located within an ICA (Figure 7).
- The site is not located within the Oak Ridges Moraine.
- The site is not located within the Niagara Escarpment.
- The site is not located in or within 500 m of an Area of Natural and Scientific Interest (ANSI).
- The site is located adjacent to an unevaluated wetland but is not located in or within 500 m of a provincially significant nor non-significant wetland.

1.2.2 Water Taking – Temporary

The volume of water entering the excavation during construction will be based on both groundwater infiltration and precipitation events. Based on O.Reg. 63/16, the following dewatering limits and requirements are as follows:

- Construction Dewatering less than 50,000 L/day: The takings of both groundwater and stormwater does not require a hydrogeological report, does not require registration on the Environmental Activity and Sector Registry (EASR), and does not require a Permit to Take Water (PTTW) from the MECP.

- Construction Dewatering greater than 50,000 L/day and less than 400,000 L/day: The taking of groundwater and/or stormwater requires a hydrogeological report and registration on the EASR but does not require a PTTW from the MECP.

- Construction Dewatering greater than 400,000 L/day: The taking of groundwater and/or stormwater requires a hydrogeological report and requires a PTTW from the MECP.

2. Background Review

The site comprises the former Trafalgar Golf and Country Club at 6728 Sixth Line in Milton, Ontario in the southwest quadrant of the Derry Road West and Sixth Line intersection and is approximately 625 m north-to-south and 1,000 m east-to-west. The surrounding area is predominantly agricultural, with industrial properties to the north, parkland to the east, an institutional property to the south, and residential properties to the west. The site extent is shown in Figures 1, 2a, and 2b.

2.1 Site Physiographic, Geologic and Hydrogeological Settings

The site is approximately rectangular, following the boundaries of Derry Road West (Highway 7), Sixth Line, and Lot 10 Con 6.

The site is located within the physiographic region denoted as the Peel Plain and the local terrain is characterized by sand plains and bevelled till plains (Chapman, L.J. and Putnam, D.F., 2007). The predominant surficial geology of the site is described as till of clay to silt-textured (derived from glaciolacustrine deposits or shale). It is noted that coarse-textured glaciolacustrine deposits of sand, gravel, minor silt and clay, fine-textured glaciolacustrine deposits of silt and clay with minor sand and gravel, interbedded silt and clay, gritty, pebbly flow till, and rainout deposits, and modern alluvial deposits of clay, silt, sand, and gravel, that may contain organic remains, were also identified within the site (Ontario Geological Survey, 2010).

The bedrock underlying the general area corresponds to the Queenston Formation, consisting of shale with siltstone and minor limestone and sandstone. Based on the Drift Thickness of the Brampton Area (Hewitt, D. F., and Vos, M. A., 1969) and MECP Water Well Records in the area, shale and limestone bedrock can be expected to be 4 to 59 m below existing grade.

2.2 Review of MECP Water Well Records and Existing Water Wells

MECP water well records within 500 m of the site area were obtained from the MECP's online interactive well records map to assess the general nature of the groundwater resource in the near vicinity of the site, and historical/current uses of wells in the area. Six (6) well records were found on-site and seventy-four (74) well records were found in the surrounding the site, the approximate MECP well locations are shown on Figure 8 and a well records summary table is included in Appendix A.

The on-site well(s) were installed for the following uses:

- One (1) of the records indicated domestic use for the golf course club house.
    - Well ID: 2808031, located near the east corner of the site, was installed in 1991 and encountered salty water at 25 m below grade within the shale bedrock.
- One (1) of the records indicated commercial use.

  - Well ID: 2802597, located near the south corner of the site, was installed in 1965 for commercial and irrigation use and encountered fresh water 13 m below grade within the shale bedrock.

- One (1) of the records indicated irrigation use.
  - Well ID: 2807993, located near the north corner of the site, was installed in 1992, encounter fresh water 9 to 19 m below grade and was screened 6 to 18 m below grade within the overburden.

- Three (3) of the records indicated “Not Used” or did not indicate the well use and are assumed to be unknown.
  - Well ID: 2802601, located near the northeast boundary of the site, was installed in 1960 and encountered salty water 26 m below grade within the shale bedrock.
  - Well ID: 2808205, located near the northeast boundary of the site, was installed in 1993 and encountered water of unknown quality 25 m below grade within the shale bedrock.
  - Well ID: 2080206, located near the northeast boundary of the site, was installed in 1993. No other information regarding depth of water encountered or depth of screen was provided.

The off-site well(s) were installed for the following uses:

- Twenty-two (22) of the records indicated domestic use.
  - Installations took place from 1953 to 2008.
  - Fresh water was encountered in twelve (12) wells from 2 to 60 m below grade within the overburden.
  - Fresh water was encountered in eight (8) wells from 7 to 20 m below grade within the shale bedrock.
  - Salty water was encountered in one (1) well from 27 m below grade within the shale bedrock
  - Water of unknown quality was encountered in one (1) well from 2 m below grade within the overburn
- Two (2) of the records indicated public use for a test hole and an institutional property.
  - Installations took place in 1985 and 2005.
  - Fresh water was encountered in two (2) wells from 19 to 60 m below grade within the overburden.
- One (1) of the records indicated irrigation use.
  - Installation took place in 1971.
  - Fresh water was encountered in one (1) well from 2 to 7 m below grade within the overburden.
- Twenty-three (23) of the records indicated monitoring and/or test hole use.

- Twenty-six (26) of the records indicated “Not Used” or did not indicate the well use and are assumed to be unknown.

The stratigraphic descriptions within the MECP monitoring well records are typically inaccurate due to the methodology in which they are determined (observations of cuttings without depositional context and possibly some mixture between layers, plus no consistency between descriptions of soils between drillers). While this may be the case, an overall sense of the regional stratigraphy can be determined by looking at commonalities between most stratigraphic descriptions and where the wells were terminated in an aquifer. The well records typically indicate overburden of clay and sand layers with variable silt and gravel, over shale and limestone bedrock encountered 4 to 26 m below existing grade.

The domestic and public water supply wells records on and within 500 m of the site provided little information on the regarding the depths of screens, with one (1) well record indicating that a domestic well was screen approximately 16 to 17 m below existing grade, within a gravel unit of the overburden. Fresh water was encountered at depths of 2 to 60 m below existing grade in the domestic and public supply wells during drilling in both the overburden and the shale bedrock, salty water was encountered 25 to 26 m below existing grade in the domestic wells during drilling in the shale bedrock, and water of unknown quality was encountered 2 to 11 m below existing grade in the domestic wells during drilling in the overburden.

As some domestic and public supply wells were installed as recently as 2008 and the surrounding area is within a rural-urban transition area, it is possible that there are domestic and public supply wells are still in use.

2.3 Review of PTTW Records and EASRs

Records of PTTW and water taking EASRs were obtained within 500 m of the site area from the Access Environment and MECP’s online interactive permits to take water map to assess the general nature of the groundwater resources in the near vicinity of the site, and the scale of historical/current groundwater takings required in the area. It should be noted that while these records indicate approved daily water taking volumes, it does not provide details on target depths for the water takings nor does it provide the actual volumes extracted, which could be less.

Five (5) separate water taking records were found on-site and three (3) water taking records were found surrounding the site within the search radius. A summary of the conditions noted is provided below.

Location	Approval Type	Status	Dates Originally Issued	Maximum Water Taking Approved (L/day)
On-Site	PTTW	Issued	March 2022	1,635,840
		Revoked and Replaced	February 2006 to July 2010	1,635,840 to 3,273,120
		Expired	November 2015	1,635,840
Off-Site	PTTW	Expired	January 2015 to June 2016	1,285,500 to 24,000,000

2.4 Site Condition Standards

The MECP has developed a set of Soil, Ground water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) and O. Reg. 153/04, as amended. The standards consist of nine tables (Table 1 through Table 9) that provide criteria for maximum concentrations of various contaminants. In general, the applicable O. Reg. 153/04, as amended, SCSs depends on the site location, land use, soil texture, bedrock depth and the applicable potable or non-potable ground water condition at the investigation site.

In order to determine the Site Sensitivity, Sections 41 and 43.1 of O. Reg. 153/04, as amended, were evaluated by GEI as shown in the following table:

Criteria	Result
Current Property Use	Golf Course
Proposed Property Use	Warehousing
Potable vs. Non-Potable Ground Water	Potable
Proximity of Areas of Natural Significance	> 30 m
Proximity to a Water Body	< 30 m
Shallow Soil Condition	No
Current Land Use	Parkland
Proposed Land Use	Industrial
Applicable Site Condition Standard for Proposed Use	Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition (Table 8 RPI/ICC)

2.5 Visual Inspection of the Site

A visual site inspection was carried out on May 24, 2023, by GEI staff to assess site drainage, topography and the presence of surface water features.

The surrounding area is predominantly agricultural, with industrial properties to the north, parkland to the east, an institutional property to the south, and residential properties to the west.

At the time of the site inspection the conditions were sunny, approximately 20°C, and the topography of the site was observed to be of rolling hills, with an overall slope down a total of 8.8 m towards the east/northeast such that there is an elevation high at the southern corner of site (Borehole 36) and an elevation low at the eastern corner of site (Borehole 53), as measured at the boreholes. Channeling around the tributaries of Sixteen Mile Creek was observed, such that there was approximately a 1 m difference between the bank and toe of the tributaries.

On site there were two tributaries of the Sixteen Mile Creek identified, as well as multiple water hazards related to the golf course operation, and a stormwater management pond. Adjacent to the site, at the eastern corner, the main channel of Sixteen Mile Creek was observed.

3. Procedures and Methodology

It is noted that all elevations in this report are metric and expressed in metres (m). All measurements are also in metric and expressed in millimeters (mm), meters (m) or kilometers (km).

3.1 Borehole Drilling and Monitoring Well Installation

The borehole locations were laid out in the field by GEI staff prior to commencement of drilling operations. The locations of underground utilities were completed with the assistance of public and private locating companies.

Ground surface elevations of the boreholes were interpreted from the design drawings provided by the client and horizontal coordinates (referencing NAD 83 geodetic datum) were recorded by a hand-held GPS device. The elevations and coordinates are provided on the borehole logs in Appendix A. Borehole locations are shown on Figure 2.

The fieldwork for the drilling program was carried out between April 21 and May 1, 2023. Boreholes 1 to 42, 44 and 48 to 54 were advanced from 5.0 to 8.1 m below existing grade (Elev. 187.4 to 178.6). Boreholes 43, 45, 46 and 47 were drilled earlier for the slope stability assessment on March 6, 2023, and were advanced to 5.0 to 8.1 m depth (Elev. 183.7 to 181.1). Borehole logs are provided in Appendix B and the borehole locations are shown on Figure 2A (aerial image) and Figure 2B (concept plan).

The boreholes were advanced by a drilling subcontractor retained and supervised by GEI using a track-mounted drill rig, solid stem augers, and standard soil sampling equipment. Sampling was conducted using a 51 mm O.D. Split Spoon (SS) sampler. Standard Penetration Test (SPT) “N” Values (N values) were recorded for the sampled intervals as the number of blows required to drive an SS sampler 305 mm into the soil using a 63.5 kg drop hammer falling 750 mm, in accordance with ASTM D1586. In each borehole soil sampling was conducted at 0.75 m intervals for the upper 3.0 m and at 1.5 m intervals thereafter.

Monitoring wells were installed in Boreholes 1, 2, 13, 14, 22 to 24, 26, 28, 31, 35, 37, 40, 43, 45 and 52 by GEI to facilitate long-term groundwater monitoring, each consisting of 50 mm diameter PVC pipe with a 1.5 m long screen and protective casing. Boreholes without wells were backfilled in accordance with O.Reg. 903. Monitoring well construction is shown on the borehole logs in Appendix A and summarized below.

Monitoring Well ID	Well Screen Depth / Elevation (m) / Elev.	Unit Screened
BH/MW 1	4.6 to 6.1 / 187.7 to 186.2	Sandy Silt Glacial Till
BH/MW 2	3.0 to 4.6 / 188.2 to 186.7	Sandy Silt Glacial Till

Monitoring Well ID	Well Screen Depth / Elevation (m) / Elev.	Unit Screened
BH/MW 13	1.5 to 3.0 / 188.8 to 187.3	Clayey Silt
BH/MW 14	2.4 to 4.0 / 187.7 to 186.1	Sandy Silt Glacial Till
BH/MW 22	1.5 to 3.0 / 187.9 to 186.4	Sandy Silt Glacial Till
BH/MW 23	4.6 to 6.1 / 184.8 to 183.3	Sandy Silt Glacial Till
BH/MW 24	3.0 to 4.6 / 186.5 to 184.9	Clayey Sandy Silt Glacial Till
BH/MW 26	1.5 to 3.0 / 187.8 to 186.3	Clayey Silt / Sandy Silt Glacial Till
BH/MW 28	3.0 to 4.6 / 186.5 to 185.0	Sandy Silt Glacial Till
BH/MW 31	6.1 to 7.6 / 184.4 to 182.9	Clayey Sandy Silt Glacial Till
BH/MW 35	1.5 to 3.0 / 189.9 to 188.4	Silt / Sandy Silt Glacial Till
BH/MW 37	6.1 to 7.6 / 185.9 to 184.4	Sandy Silt Glacial Till
BH/MW 40	3.0 to 4.6 / 187.2 to 185.6	Sandy Silt Glacial Till
BH/MW 43	3.0 to 4.6 / 183.1 to 181.6	Sandy Silt Glacial Till
BH/MW 45	3.0 to 4.6 / 185.4 to 183.9	Sandy Silt Glacial Till
BH/MW 52	1.5 to 3.0 / 187.2 to 185.6	Clay and Silt

Boreholes without wells were backfilled in accordance with O.Reg.903.

The GEI field staff examined, and classified characteristics of the soils encountered in the boreholes, including the presence of fill materials, groundwater observations during and upon completion of the drilling, recorded observations of borehole construction, and processed the recovered samples. All recovered soil samples were logged in the field, carefully packaged, and transported to GEI's laboratory for more detailed examination and classification.

In GEI's laboratory, the samples were classified as to their visual and textural characteristics. A total of nineteen (19) representative samples of the major soil units were selected and submitted to our laboratory for grain size analysis. Seven (7) of the samples were also submitted for Atterberg Limits tests. Laboratory results are provided in Appendix C. It is noted that the laboratory testing from the slope stability report is presented on separate figures.

3.2 Hydraulic Conductivity Testing

Rising head hydraulic conductivity tests were completed to estimate the horizontal hydraulic conductivity (K) of the soils at the well screen depths. These tests were completed in eight (8) monitoring wells on site on May 24 to 31, 2023. Water was manually purged rapidly from monitoring wells using LDPE tubing and a foot valve. The static water level was measured prior to the start of testing, and the initial change in water level was monitored both manually and by using an electronic level logger. The level loggers were left in the monitoring wells to measure recovery of the groundwater to equilibrium, with regular manual measurements recorded for corroboration and correction of the level logger data.

The semi-log plots for drawdown versus time for the tests are provided in Appendix D.

3.3 Groundwater Sampling

To establish baseline conditions and assess the suitability for discharge of pumped groundwater to surface during potential dewatering activities, the following groundwater samples were collected from Borehole/Monitoring Wells (BH/MWs) 23 and 37 on May 30, 2023:

- Two (2) unfiltered groundwater samples were collected from BH/MW 23 and 37 and analyzed against the Halton Region Sanitary Sewer Use By-Law Criteria, PWQO for metals and TSS, and O.Reg.153/04, as amended, SCS for PHCs and VOCs;

- Two (2) filtered groundwater samples were collected from BH/MW 23 and 37 and analyzed against PWQO for metals and TSS only.

Prior to collection of the samples, a minimum of three (3) standing well volumes of groundwater were purged from each well. The samples were collected and placed into pre-cleaned laboratory-supplied vials and/or bottles provided with analytical test group specific preservatives, as required. Dedicated nitrile gloves were used during sample handling. The field filtered samples were processed through a 45 µm filter prior to collection in the required vials/bottles. The samples were submitted to CALA-accredited EUROFINS for analysis. The results of the groundwater chemistry are presented in the laboratory Certificates of Analysis provided in Appendix E.

4. Subsurface Conditions

4.1 Stratigraphy

The detailed soil profiles encountered in the boreholes are indicated on the attached borehole logs in Appendix B, and the geotechnical laboratory results are included in Appendix C. The borehole locations are shown on Figure 2 and the subsurface profiles interpreted from those logs is included as Figures 9 and 10.

It should be noted that the conditions indicated on the borehole logs are for specific locations only and can vary between and beyond the locations. It should be noted that the soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations during drilling. These boundaries are intended to reflect approximate transition zones and should not be interpreted as exact planes of geological change.

In addition, the descriptions provided in the borehole logs are inferred from a variety of factors, including visual observations of the soil samples retrieved, laboratory testing, measurements prior to and after drilling, and the drilling process itself (speed of drilling, shaking/grinding of the augers, etc.). The passage of time also may result in changes in conditions interpreted to exist at locations where sampling was conducted.

4.1.1 Topsoil

A surficial topsoil layer was at the ground surface in all boreholes except Boreholes 17 and 27 ranging in thickness from 50 to 280 mm. In Borehole 27, the 180 mm topsoil layer was buried beneath the surficial fill.

4.1.2 Fill

A fill layer was encountered in most boreholes and considered to be associated with final grading for the golf course. Boreholes 3 to 8, 10 to 13, 15, 17 to 21, 23 to 34, 36, 37, 40, 41, and 43 to 54 encountered fill below the topsoil, locally at the surface, and the fill was penetrated at 0.2 to 2.3 m depth (Elev. 191.6 to 182.1). The fill predominantly consisted of clayey silt or sandy clayey silt or sandy silt, varying to sand and silt or silty sand. Trace organics and rootlets were observed in some boreholes. The fill was moist to wet with moisture contents of 10 to 32%. The fill typically had N values of 10 or less revealing soft to stiff / very loose to compact conditions.

4.1.3 Clayey Silt / Sandy Clayey Silt / Clay and Silt

A cohesive unit of soil comprising clayey silt, sandy clayey silt, or clay and silt was encountered below the fill and/or the topsoil, locally the discontinuous cohesionless soil layers (described below), in most boreholes, except Boreholes 16, 18, 34, 43, 49, 50 to 53 and 54. The unit was penetrated at depths of 1.1 to 4.6 m (Elev. 189.9 to 185.6). Grain size analysis results of seven (7) samples are included in Figures C1 and C3 in Appendix C. Atterberg limits tests on three samples are provided in Figure BC, with plastic limits of 15.7 to 18.7 and liquid limits of 27.5 to 35.9. The moisture contents ranged between 8 and 28%, being moist to wet. The N values in these layers

ranged between 4 to more than 50 blows, indicating firm to hard conditions but typically stiff to very stiff.

4.1.4 Sandy Silt / Silt / Sand and Silt / Sand / Gravelly Sand / Sand and Gravel

Localized layers of cohesionless soil consisting of sandy silt, silt, sand and silt, sand, gravelly sand, or sand and gravel were observed below the upper clayey soil layers and/or the topsoil in Boreholes 1, 11, 16, 35, 38, 42 and 53. These layers were generally observed at depths of 0.2 to 2.6 m (Elev. 189.9 to 182.1) and extended to 1.5 to 3.5 m depth (Elev. 189.2 to 181.4). Locally, these layers were observed in Boreholes 27, 36, and 38 from 4.6 to 4.8 m (Elev. 287.5 to 182.6) and extended to 4.7 to 5.0 m depth (Elev. 187.4 to 182.2). One (1) sample of the sand material was submitted for grain size analysis and the results are provided in Figure C4 in Appendix C. The soil was moist to wet with moisture contents of 16 to 25%. The soil was loose to compact, and N values ranged from 5 to 29 blows.

4.1.5 Glacial Till

A glacial till deposit was encountered in all boreholes below the upper soil layers and extended below the 5.0 to 8.1 m depth of exploration (Elev. 183.7 to 181.1). The till matrix predominantly consisted of sandy silt or sandy clayey silt, locally grading to clayey silt or gravelly sand. Cobbles and boulders should be expected based on augers grinding during advancement of the boreholes. Eleven (11) samples of the material were submitted for grain size analysis and the results are provided in Figures C5 and C6 in Appendix C. Four (4) samples were also submitted for Atterberg Limit tests and the results are presented on Figure C7 in Appendix C. Plastic limits of 8.0 to 16.9 and liquid limits of 20.4 to 34.0 were revealed from the lab testing. The glacial till was brown, brownish grey or grey near the base, and was typically moist to wet, with moisture contents ranging from 6 to 29%, typically 7 to 12%. N values were 4 to more than 50 blows, indicating compact to very dense / firm to hard conditions, typically compact / stiff to very stiff.

4.2 Groundwater Conditions

Unstabilized groundwater level measurements and cave-in measurements were taken upon the completion of drilling of each borehole as shown on the borehole logs in Appendix B. These measurements were taken to provide a rough estimate of the possible excavation and temporary groundwater control constructability considerations that may arise. The boreholes remained open and dry upon completion. Additional groundwater level measurements taken during the remainder of the field investigation are considered more representative of static groundwater conditions as the wells had been developed and had time to recover and stabilize following initial construction.

The groundwater observations are noted on the borehole logs in Appendix B, and a summary is provided below.

Monitoring Well ID	Groundwater Level / Depth (m) / Elev.	
	May 23, 2023	**June 22, 2023**
BH/MW 1	0.7 / **191.6**	1.0 / 191.3
BH/MW 2	0.5 / 190.7	0.8 / 190.4

Monitoring Well ID	Groundwater Level / Depth (m) / Elev.	
	May 23, 2023	**June 22, 2023**
BH/MW 13	1.0 / 189.4	1.4 / 189.0
BH/MW 14	0.5 / 189.6	0.8 / 189.3
BH/MW 22	0.5 / 189.0	0.6 / 188.9
BH/MW 23	0.9 / 188.5	1.2 / 188.1
BH/MW 24	0.6 / 188.9	0.9 / 188.6
BH/MW 26	1.1 / 188.2	1.3 / 188.0
BH/MW 28	0.9 / 188.7	1.1 / 188.5
BH/MW 31	1.0 / 189.5	1.2 / 189.3
BH/MW 35	0.4 / 191.0	0.7 / 190.7
BH/MW 37	1.2 / 190.8	1.5 / 190.6
BH/MW 40	0.5 / 189.7	0.9 / 189.3
BH/MW 43	**-0.4** / 186.5	-0.1 / 186.3
BH/MW 45	3.3 / 185.5	3.5 / 185.0
BH/MW 52	Well Destroyed	Well Destroyed

The stabilized groundwater level measurements within the monitoring wells were observed May and June 2023 at depths of 0.4 m above current grade to 3.5 m below current grade, corresponding to Elev. 191.6 to 185.5. The highest water levels were measured at Monitoring Wells 43 (0.4 m above current grade) and 1 (Elev. 191.6) on May 23, 2023.

Groundwater levels are expected to show seasonal fluctuations and vary in response to prevailing climate conditions. It is noted that site water flow appears to flow east toward the main branch of the Middle Sixteen Mile Creek, east adjacent to the site, as shown in Figure 11. It is anticipated that the local water flow will generally be east towards Sixteen Mile Creek and regional water flow will generally be southeast towards Lake Ontario.

Long term groundwater levels monitoring is ongoing at the site. This long term monitoring, upon completion, will provide input on the seasonal high groundwater table for any building underground levels and the base of infiltration-based LID development measures to be situated/designed appropriately. GEI has been retained to attend the site and conduct manual readings in all eleven (11) wells during monthly visits for a year (May 2023 to April 2024) with data loggers installed in all wells to provide continuous monitoring (hourly readings). A letter report under a separate cover will be provided to summarize the readings at the end of the monitoring period.

The groundwater level highs for each month as measured by the loggers to date (May 2023 to December 2023) are provided in Appendix J. In summary, Monitoring Well 43, located in the south-central portion of the site, exhibited the shallowest groundwater, measuring 0.4 m above the current grade (Elev. 186.5) in May 2023. Conversely, the highest groundwater elevation occurred at Monitoring Well 1, situated in the northwestern portion of the site, registering Elev. 191.5 (0.8 m below current grade) during the months of May and June 2023. Monitoring well locations are shown in Figure 2.

4.3 Hydraulic Conductivity

In-situ hydraulic conductivity tests were conducted in eight (8) monitoring wells on May 24 to 31, 2023. Values were calculated using AQTESOLV Pro V4.50.002 for Windows as developed by HydroSOLVE, Inc. from the rising head test data using Hvorslev's solution (1951) where the well screen was fully saturated. The semi-log plots for the results are provided in Appendix D and are summarized in the table below. It should be noted that the hydraulic conductivity values obtained from the manual level measurements were very similar to the results obtained from the test where the logger data was analyzed.

Borehole / Monitoring Well	Well Screen Location Depth (m) / Elev.	Unit Screened	In-Situ Hydraulic Conductivity (K) (m/s)
BH/MW 2	3.0 to 4.6 / 188.2 to 186.7	Sandy Silt Glacial Till	7.3×10^{-6} m/s
BH/MW 13	1.5 to 3.0 / 188.8 to 187.3	Clayey Silt	4.8×10^{-8} m/s
BH/MW 14	2.4 to 4.0 / 187.7 to 186.1	Sandy Silt Glacial Till	7.3×10^{-8} m/s
BH/MW 23	4.6 to 6.1 / 184.8 to 183.3	Sandy Silt Glacial Till	4.5×10^{-8} m/s
BH/MW 28	3.0 to 4.6 / 186.5 to 185.0	Sandy Silt Glacial Till	2.2×10^{-6} m/s
BH/MW 35	1.5 to 3.0 / 189.9 to 188.4	Silt / Sandy Silt Glacial Till	1.3×10^{-6} m/s
BH/MW 37	6.1 to 7.6 / 185.9 to 184.4	Sandy Silt Glacial Till	1.6×10^{-7} m/s
BH/MW 45	3.0 to 4.6 / 185.4 to 183.9	Sandy Silt Glacial Till	8.3×10^{-7} m/s

According to Freeze and Cherry (1979), the typical range in hydraulic conductivity is as follows:

- Silty Sand: 10^{-3} m/s to 10^{-7} m/s
- Silt: 10^{-5} m/s to 10^{-9} m/s
- Glacial Till: 10^{-6} m/s to 10^{-12} m/s
- Clay: 10^{-9} m/s to 10^{-12} m/s

From the hydraulic conductivity test results for the wells screened within or across the sandy silt glacial till encountered on site, the results (10^{-6} m/s to 10^{-8} m/s) fell within the range of the expected values for glacial till (10^{-6} m/s to 10^{-12} m/s) and for the wells screened within or across the silt and clayey silt encountered on site, the result (10^{-6} m/s to 10^{-8} m/s) fell within the range of the expected values for silt (10^{-5} m/s to 10^{-9} m/s).

As such, the highest value, 7.6 x 10^{-6} m/s, is considered an appropriately conservative hydraulic conductivity value to apply for the dewatering calculations across the site.

4.4 Hydrostratigraphy

Based on the stratigraphy identified on site, the stabilized groundwater and hydraulic conductivity observed in the wells, the predominant water-bearing unit that are expected to generate groundwater inflow during dewatering are the loose to compact cohesionless soils consisting of sandy silt, silt, sand and silt, sand, gravelly sand, or sand and gravel encountered below the topsoil and/or upper clayey soil layers and generally extending to 1.5 to 3.5 m depth (Elev. 189.2 to 181.4).

To a lesser extent, some groundwater flow may be encountered from the compact to very dense / firm to hard glacial till deposits encountered below the upper soil layers and extended below the 5.0 to 8.1 m depth of exploration (Elev. 183.7 to 181.1). Inflow encountered from these soils would primarily be expected from gravelly, sandy, or silty seams within these units which may be temporary depending on the extents and interconnectedness of such features.

Some perched water is to be expected in the fill encountered below the topsoil, extending to 0.2 to 2.3 m depth (Elev. 191.6 to 182.1).

The firm to hard cohesive unit of soil comprising clayey silt, sandy clayey silt, or clay and silt encountered below the topsoil and/or fill extending to depths of 1.1 to 4.6 m (Elev. 189.9 to 185.6) is not expected to be a significant source of groundwater inflow based on observations made during the field investigation.

4.5 Groundwater Quality

To assess the suitability for discharge of pumped groundwater to the land surface or to sewers during dewatering activities, four (4) groundwater samples total, two (2) unfiltered and two (2) filtered, were collected from BH/MWs 23 and 37 on May 30, 2023.

For assessment purposes, the analytical results were compared to the Halton Region Sewer Use By Law Criteria, PWQO, and O.Reg.153/04 Table 1, as amended. The results of the groundwater chemistry are presented in the laboratory Certificates of Analysis provided in Appendix E. A summary of the results is presented in the table below for samples relative to the Halton Region Sewer Use By Law Criteria, PWQO, and O.Reg.153/04, as amended.

Monitoring Well Sample Location	Well Screen Location Depth (m) / Elev.	Parameters Tested	Exceedances of Halton Region Combined Sewer Use By Law Criteria	Exceedances of PWQO	Exceedances of O.Reg.153/04 Table 1
BH/MW 23 (Unfiltered)	4.6 to 6.1 / 184.8 to 183.3	Halton Region Sewer Use By Law Criteria PWQO: Metals, TSS O.Reg. 153/ 04: PHCs, VOCs	No exceedances	PWQO: No exceedances Interim PWQO: Boron	No Exceedances
BH/MW 23 F (Filtered)		PWQO: Metals, TSS	Not Tested	PWQO: No exceedances Interim PWQO: Boron	Not Tested
BH/MW 37 (Unfiltered)	6.1 to 7.6 / 185.9 to 184.4	Halton Region Sewer Use By Law Criteria PWQO: Metals, TSS O.Reg. 153/ 04: PHCs, VOCs	Sanitary: No exceedances	PWQO: Iron Interim PWQO: Boron	No Exceedances
BH/MW 37 F (Filtered)		PWQO: Metals, TSS	Not Tested	PWQO: No exceedances Interim PWQO: Boron	Not Tested

The unfiltered groundwater samples collected from BH/MWs 23 and 37 met the Halton Region Sewer Use By Law Criteria

The unfiltered groundwater sample collected from BH/MWs 23 and 37 met the PWQO and Interim PWQO with the exception of PWQO iron (BH/MW 37) and Interim PWQO boron (BH/MWs 23 and 37). No exceedances to O.Reg. 153/04 Table 1 were encountered for PHCs or VOCs.

The filtered groundwater samples collected from BH/MWs 23 and 37 met the PWQO and Interim PWQO with the exception of exceedances to the Interim PWQO for boron. It is noted that some filters may be effective at removing certain forms of boron from water, however, filtering alone does not guarantee complete removal or reduction of boron concentrations found in the groundwater. The reduction or removal of boron from groundwater may depend on the form of boron present, the type of filter used, and the properties of the water sample itself. The effectiveness of a specific filter in reducing boron depends on its pore size, surface properties, and the specific adsorption or filtration mechanisms involved, and should be determined by a dewatering contractor prior to discharging any water to the surface.

If pumped groundwater will be discharged to the Halton Region Sewer or the surface it must be suitably treated to remove the parameter exceedances prior to discharge (treatment methods to be determined by the dewatering contractor or civil engineer).

It is expected that during construction dewatering, the pumped water is to be first discharged to a sedimentation tank and/or a silt/sediment bag, at a minimum, before being discharged to surface.

5. Discussion and Analysis

5.1 Preliminary Construction Dewatering

5.1.1 Generic Excavations and Temporary Groundwater Control

The site comprises the land in the southwest quadrant of the Derry Road West and Sixth Line intersection and is approximately 625 m north-to-south and 1,000 m east-to-west, as shown on Figure 2.

The elevation of the site is ranges from Elev. 183.6 to 192.4 such that there is an elevation high at the southern corner of site (Borehole 36) and an elevation low at the eastern corner of site (Borehole 53), as measured at the boreholes.

The highest stabilized groundwater level measurements within the monitoring wells were observed on May 23, 2023 and ranged from 0.4 m above current grade to 3.3 m below current grade, as measured at the monitoring wells.

It is GEI's understanding that the proposed work includes two at-grade SWM facilities south of Buildings 2 and 3. A future watercourse channel is also proposed between Buildings 2 and 3 and along the south of Buildings 1 and 2 (a re-alignment of the existing watercourses). It is assumed that the site will be serviced with municipal water, storm, and sanitary sewers. The current designs provided (Figure 2b) may be subject to change.

Based on both GEI's review of these drawings and our correspondence, the following assumptions regarding construction geometry were made:

Dewatering Zone	Description	Assumed Lowest Local Ground Elevation (m asl)	Assumed Lowest Proposed Excavation (m bgs)	Assumed Length of Excavation (m)	Assumed Width of Excavation (m)
1 – General Site Servicing	Per 100 m of water, storm and sanitary sewer service trenching to Buildings 1 to 3	183.6(1)	4(2)	100	4(2)
2 – General Creek Realignment	Per 100 m of creek realignment trenching between Buildings 2 and 3 and along the south of Buildings 1 and 2	183.6(1)	1(3)	100	5(3)
3 – At-Grade SWM Pond (Building 2)	At-grade SWM facilities south of Building 2	187.3(4)	6	300(5)	80(5)

Dewatering Zone	Description	Assumed Lowest Local Ground Elevation (m asl)	Assumed Lowest Proposed Excavation (m bgs)	Assumed Length of Excavation (m)	Assumed Width of Excavation (m)
4 – At-Grade SWM Pond (Building 3)	At-grade SWM facilities south of Building 3	183.6[1]	6	110[5]	90[5]

1. *Lowest ground elevation on site at Borehole 53.*
2. *The site servicing excavations for the project site are assumed to account for engineered fill placement, and associated service connections.*
3. *Dimensions based on the Topographic Sketches by Vujeva Surveys Ltd (2018).*
4. *Lowest ground elevation on site at Borehole 34.*
5. *Dimensions based on the Conceptual Site Plan by Ware Malcomb (2023).*

It has been assumed that below the topsoil, excavations are anticipated to encounter fill of clayey silt or sandy clayey silt or sandy silt, varying to sand and silt or silty sand, over native soils including a cohesive unit of soil comprising clayey silt, sandy clayey silt, or clay and silt, underlain by localized layers of cohesionless soil consisting of sandy silt, silt, sand and silt, sand or sand and gravel, underlain by a glacial till deposit with a till matrix predominantly consisted of sandy silt or sandy clayey silt, locally grading to clayey silt or gravelly sand. Cobbles and boulders should be expected based on augers grinding during advancement of the boreholes.

5.1.2 Construction Dewatering Assumptions

For conservative purposes, the construction dewatering calculation is based on an open cut excavation at the present time to excavate under dry conditions. Based on GEI's investigation, the following assumptions were used for the calculation of the dewatering rates for the proposed development are presented below:

Dewatering Zone	Description	Assumed Highest Local Groundwater Level (m bgs)	Assumed Local Target Water Level (m bgs)	Assumed Local Aquifer Bottom (m bgs)	Assumed Hydraulic Conductivity (m/s)
1 – General Site Servicing	Per 100 m of water, storm and sanitary sewer service trenching to Buildings 1 to 3	-0.4[1]	4.5[2]	5.5[3]	7.3×10^{-6} [4]
2 – General Creek Realignment	Per 100 m of creek realignment trenching between Buildings 2 and 3 and along the south of Buildings 1 and 2	-0.4[1]	1.5[2]	2.5[3]	7.3×10^{-6} [4]

Dewatering Zone	Description	Assumed Highest Local Groundwater Level (m bgs)	Assumed Local Target Water Level (m bgs)	Assumed Local Aquifer Bottom (m bgs)	Assumed Hydraulic Conductivity (m/s)
3 – At-Grade SWM Pond (Building 2)	At-grade SWM facilities south of Building 2	-0.4(1)	6.5(2)	7.5(3)	7.3×10^{-6} (4)
4 – At-Grade SWM Pond (Building 3)	At-grade SWM facilities south of Building 3	0.9(5)	6.5(2)	7.5(3)	7.3×10^{-6} (4)

1. *Highest groundwater level measures in the vicinity from Monitoring Well 43 on May 23, 2023.*
2. *0.5 m below the lowest proposed excavation.*
3. *1.0 m below the target water level.*
4. *Maximum hydraulic conductivity measured on site at Monitoring Well 2.*
5. *Highest groundwater level measures in the vicinity from Monitoring Well 28 on May 23, 2023.*

Based on the aforementioned assumptions for the expected construction scenario, excavations at the site are assumed to extend approximately 4.9 to 6.9 m below the prevailing groundwater table.

5.1.3 Temporary Dewatering Flow Rate Calculations

The Dupuit equation for linear flow from an unconfined aquifer for a fully penetrating excavation was used to obtain a flow rate estimate for the proposed linear infrastructure, and is expressed as follows:

$$Q_w = Kx\frac{H^2 - h^2}{L_0}$$

Where:

Q_w = Rate of pumping (m³/s)
X = Length of excavation (m)
L_0 = Length of influence (m) ($L_0 = \frac{R_0}{2}$)
K = Hydraulic conductivity (m/s)
H = Head beyond the influence of pumping (static groundwater elevation) (m)
h = Head above base of aquifer at the excavation (m)

The dewatering rates are expected to decrease once steady state conditions are achieved within the excavation footprints as groundwater will have been removed locally from storage resulting in lower seepage rates into the excavations.

Based on the assumptions provided in this report, the results of the dewatering rate estimates are summarized below, and calculation details are provided in Appendix F:

Location and Scenario	Construction Dewatering Flow Rate without a Safety Factor	Construction Dewatering Flow Rate Including Safety Factor of 2.0	Construction Dewatering Flow Rate Including Safety Factor of 2.0 with a 10 mm Rainfall Event
	L/day		
1: General Site Servicing per 100 m	111,700	223,400	227,400
2: General Creek Realignment per 100 m	63,700	127,400	132,400
3: General Stormwater Management Pond (Building 2)	526,300	1,052,600	1,292,600
4: General Stormwater Management Pond (Building 3)	236,600	473,200	572,200

The total construction dewatering flow rate includes a factor of safety of 2.0 to account for seasonal fluctuations in the groundwater table, initial removal of groundwater from storage and variation in hydrogeological properties beyond those encountered during the course of this study. This total dewatering flow rate also provides additional capacity for the dewatering contractors. A 10 mm rain event was also included in the water taking calculation. Given that the predicted temporary water taking rates for construction dewatering exceeds 50,000 L/day and 400,000 L/day it is recommended that a PTTW from MECP be obtained for the site for the construction of the at-grade SWM facilities, the general site servicing and the creek channel realignment.

The maximum water taking rate to be requested in the PTTW application depends on the construction phasing. If multiple areas will be dewatered and constructed concurrently, the zones of influence will overlap and higher water taking rates should be requested. A 10-year PTTW duration (i.e., the maximum PTTW duration) can be considered if the construction phasing will extend over several years.

Please note that it is the responsibility of the contractor to ensure dry conditions are maintained within the excavations at all times. Based on the calculated water taking rate, it is expected that well points and/or deep wells will be required to achieve the recommended drawdowns during earthworks of the underground parking and site servicing, and a series of sump pumps may be suitable to achieve the recommended drawdowns during earthworks of the site servicing and channel re-alignment. However, the dewatering contractor is responsible for selecting the dewatering method based on their preferred means and methods after reviewing the information

provided in this report. Additional pumping capacity may be required to maintain dry conditions within the excavation during and following significant precipitation events. Additionally, the presence of near-surface fill material could hold significant groundwater. The maximum flow calculation is intended to provide a conservative estimate to account for unforeseeable conditions that may arise during construction. It should be noted that the dewatering estimates provided in this report are based on assumptions and details available at the time of this report. If changes to the design are considered (e.g., increase to planned excavation depths, widening of excavations, etc.), the dewatering estimates must be revised to include and reflect future changes and to confirm that conclusions and recommendations provided here remain valid.

The maximum flow calculation is intended to provide a conservative estimate to account for variable or unusual conditions that may arise during construction. It should be noted that the dewatering estimates provided in this report are based on assumptions and details available at the time of this report. If changes to the design are implemented (e.g., increase to planned excavation depths, widening of excavations, increased length of trenching etc.), the dewatering estimates must be revised to include and reflect future changes and to ensure that any conclusions or recommendations made by GEI remain valid.

5.1.4 Radius of Influence

The Radius of Influence (ROI) for the construction dewatering is based on the empirical Sichardt Equation. This equation is used to predict the distance at which the drawdown resulting from pumping is negligible. This equation is empirical and was developed to provide representative flow rates using the steady state flow dewatering equations, as discussed below.

It is noted that in steady state conditions, the radius of influence of pumping will extend until boundary flow conditions are reached and provide sufficient water inputs to the aquifer, such as recharge and surface water bodies. As a result, the distance of influence calculated using the Sichardt equation is used to provide a representative flow rate calculation, but it is not precise in determining the actual radius influenced by pumping.

The ROI of pumping (dewatering) for radial flow was calculated based on the Sichardt equation, which is described as follows:

$$R_0 = 3000\ (\mathrm{H} - \mathrm{h})\sqrt{\mathrm{K}}$$

Where:

K	= Hydraulic conductivity (m/s)
H	= Static Saturated Head (m)
h	= Dynamic Saturated Head (m)
R_0	= Radius of influence (m)

Based on the Sichardt equation, the hydraulic conductivity of 7.3 x 10^{-6} m/s and the total groundwater drawdown required at this site, the ROIs can be assumed to be 15 to 56 m from the centre of the excavations for radial flow. Calculation details are provided in Appendix F, and zone-specific ROIs are summarized below:

Dewatering Zone	Description	ROI (m)
1: General Site Servicing per 100 m	Sanitary, storm, and water servicing for Buildings 1 to 3 Removal of existing channel below grade between Buildings 2 and 3	40
2: General Creek Realignment per 100 m	Future watercourse channel proposed between Buildings 2 and 3 and along south of Buildings 1 and 2	15
3: General Stormwater Management Pond	South of Building 2	56
4: General Stormwater Management Pond	South of Building 3	45

The ROI calculation is a conservative methodology and is calculated based on the assumption of active (steady state) pumping during the construction dewatering. It should be noted that a higher volume of water will be pumped during the first stage of the construction period or when a rain event occurs. It is uncertain whether dewatering efforts would reach steady state prior to the completion of construction of each dewatered segment.

5.1.5 Remedial Dewatering Activities

The dewatering contractor is responsible for finalizing and implementing the discharge plan, including information such as the exact discharge location, erosion control methods, method of conveyance, treatment systems, temperature of the discharged groundwater, etc. It is the contractor's responsibility to implement a treatment system to ensure that discharged groundwater meets the applicable By-Law Criteria or PWQO. This may be done by examining the hydrogeologic conditions in a test pit (and/or a full-range pumping test by the dewatering subcontractor).

The dewatering discharges should follow the best management practices, including sediment and erosion control measures, removal of suspended solids by a decanting tank, as well as water quality and quantity control monitoring programs, as mentioned earlier. The contractor should be aware that the purpose of the dewatering system is to maintain stable excavation slopes and dry working conditions during excavation.

The extent and details of the dewatering scheme (trench or well dimensions, spacing, pump levels, screen size and wick gradation, etc.) are left solely to the contractor's discretion to achieve the performance objectives for maintaining stable slopes and dry working conditions and will be based on their own interpretation and analysis of site conditions, equipment, experience, and efficiency. The contractor should also appreciate that additional dewatering means and modifications may be required as variations in site conditions are encountered. The recommended groundwater taking and discharge plans are provided in Appendices G and H, respectively.

5.1.6 Impact Assessment for Groundwater Dewatering

The impact assessment for taking groundwater during construction is provided in the Groundwater Talking Plan in Appendix G and includes a review of settlement, impacts to nearby groundwater users or to surface water / environmental features.

One (1) record of a domestic water supply well was found on-site (Well ID: 2808031) installed in 1991 for the use of the golf course club house. Twenty-two (22) domestic water supply well records were identified within 500 m of the site, installed from 1953 to 2008. Two (2) public water supply well records were identified within 500 m of the site for a test hole installed in 1986 for future irrigation / public supply use (Well ID: 2806503) and a water supply well installed in 2006 for the Radha Soami Society Beas Canada (Well ID: 2810623).

It is unknown if the domestic or public water supply wells within 500 m of the site have been abandoned or are no longer in use for domestic supply since some of the surrounding area is developed and now serviced by the Town of Milton. However, one (1) domestic well installed in 1959 (Well ID: 2802600) may be within the estimated radius of influence for drawdown and may be impacted by the temporary dewatering that is occurring near the ground surface.

As the total estimated drawdown during dewatering will be 4.9 to 6.9 m below current grade, a door-to-door well survey should be undertaken to determine if any the domestic or public water wells within the estimated radius of influence for drawdown are still in use.

5.2 Preliminary Water Balance

5.2.1 Water Balance Components

A water balance is an accounting of the water resources within a given area. The water balance equates the precipitation (P) over a given area to the summation of the change in groundwater storage (S), evapotranspiration/evaporation (ET), surface water runoff (R) and infiltration (I) using the following equation:

$$\mathrm{P} = S + I + ET + R$$

The components of the water balance vary in space and time and depend on climatic conditions as well as the soil and land cover conditions (i.e., rainfall intensity, land slope, soil hydraulic conductivity and vegetation). For example, runoff occurs at a higher percentage during periods of snowmelt when the ground is frozen or during intense rainfall events.

Precise measurement of the water balance components is difficult, and as such, approximations and simplifications are made to characterize the water balance of a property. Field observations of the drainage conditions, land cover and soil types, groundwater levels and local climatic records are important inputs to the water balance calculations.

- Precipitation (P): For the purposes of approximating the annual precipitation at this site, the monthly rainfall between 1981 and 2010 was used based on Environment Canada historical weather data for the Georgetown WWTP weather station (Climate

ID 6152695, Latitude 43.63 N, Longitude 79.9 W, Elevation 221 m), which is located about 11.6 km north of the site.

- Storage (S): Although there are groundwater storage gains and losses on a short-term basis, the net change in groundwater storage on a long-term basis is assumed to be zero.
- Evapotranspiration/Evaporation (PET): The evapotranspiration and evaporation components vary based on the characteristics of the land surface cover (i.e., type of vegetation, soil moisture conditions, perviousness of surfaces, etc.). Potential evapotranspiration refers to the water loss from a vegetated surface to the atmosphere under conditions of an unlimited water supply. Evaporation occurs from a hard surface (such as flat rooftops, asphalt, gravel parking areas, etc.).
- Water Surplus (R + I): The difference between the mean precipitation and evapotranspiration is referred to as the water surplus. The water surplus is divided into two parts: as surface or overland runoff (R) and the infiltration into the surficial soil (I). The infiltration is comprised of two end member components: one component that moves vertically downward to underlying aquifers (referred to as percolation, deep infiltration or net recharge) and a second component that moves laterally through the near surface soil profile or shallow soils as interflow that re-emerges locally to surface (i.e., as runoff) at some short distance and time following precipitation.

5.2.2 Approach and Methodology

The analytical approach to calculate the water balance involves monthly soil-moisture balance calculations to determine the pre-development infiltration volumes. The detailed water balance calculation is provided in Appendix I, which is summarized in this and subsequent sections of the report. The following assumptions were used as part of the soil-moisture balance calculations:

- A soil moisture balance approach assumes that soils do not release water as potential recharge while a soil moisture deficit exists.
- During wetter periods, any excess of precipitation over evapotranspiration first goes to restore soil moisture. Considering the nature of the near surface soils and vegetation cover, a soil moisture storage capacity of 125 mm was assumed.
- Once the soil moisture deficit is overcome, any further excess water can then pass through the soil as infiltration and either become interflow (indirect runoff) or recharge (deep infiltration).

Monthly potential evapotranspiration calculations accounting for latitude, climate and the actual evapotranspiration and water surplus components of the water balance based on the monthly precipitation and soil moisture conditions was calculated. The *MECP SWM Planning and Design Manual* (2003) methodology for calculating total infiltration based on topography, soil type and land cover was used, and a corresponding infiltration factor was calculated for pre- and post-development conditions. The water surplus was multiplied by the infiltration factor to determine both the pre-existing and post-condition annual volumes for run-off and infiltration for the property.

The pre-development scenario was estimated from the site inspection and aerial images and the post-development scenario was estimated from the Conceptual Site Plan by Ware Malcomb (2023) for the site and is summarized as flows:

Condition	Total Area	Woodland Areas	Pasture / Lawn Area	Paved Areas	Rooftop Area
Pre-Development Land Use	636,650 m^2	31,800 m^2	595,800 m^2	7,500 m^2	1,550 m^2
Post-Development Land Use	636,650 m^2	0 m^2	313,250 m^2	161,500 m^2	161,900 m^2

It is noted that the infiltration and runoff values presented in Appendix I are estimates only. Single values are used for the water balance calculations, but it is important to understand that infiltration rates are dependent upon the hydraulic conductivity of the surficial soils which may vary over several orders of magnitude. As such, the margins of error for the calculated infiltration and runoff component values are potentially quite large. These margins of error are recognized, but for the purposes of this assessment, the numbers used in the water balance calculations are considered reasonable estimates based on the site-specific conditions and useful for comparison of pre- to post-development conditions.

5.2.3 Pre and Post Development Water Balance

Detailed water balance calculations are included in Appendix I. The pre and post development calculations summarized in this section are preliminary only and must be updated once site plans are finalized.

The table below summarizes the pre and post construction water balance as per the proposed site development plans.

Condition	Average Annual Runoff Volume (m^3/year)	Average Annual Infiltration Volume (m^3/year)
Existing Land Use (Pre-Development)	116,270	74,569
Proposed Land Use (Post-Development No Mitigation)	296,291	36,754

These calculations suggest that, without mitigation such as LID measures, the proposed development will decrease average infiltration by approximately 37,815 m^3/year (51% decrease). The proposed development will increase runoff by approximately 153,021 m^3/year (155% increase). This means about 37,815 m^3/year of infiltration is required to maintain the water balance. The potential impacts of these changes and recommended mitigation measures are discussed below.

5.2.4 Mitigation Measures for Maintaining Infiltration

The increases in surface water runoff that will occur with urban development and mitigation of the potential impacts to the local water table due to reduction of infiltration will be minimized by using

appropriate stormwater management and using the proposed LID measures to promote infiltration. These measures can be implemented on-site.

The basic premise for LID is to try to minimize changes to runoff and infiltration. As outlined in the *MECP SWMP Design Manual* (2003) and *Low Impact Development Stormwater Management Planning and Design Guide* published by the Credit Valley Conservation (CVC) and TRCA (2010), there are a suite of techniques that may be considered to promote infiltration and reduce runoff.

Implementation of any LID measures will not only allow for infiltration of the surface water into the near-surface groundwater regime but will also allow for increase in natural filtration of surficial runoff, prevent sedimentation transport and potential erosion, and help reduce flooding by increasing the transit time for water on the site. These types of LID techniques promote natural infiltration by providing additional water volumes in the previous areas. This is particularly effective in the summer months when natural infiltration would not generally occur because the additional water overcomes the natural soil moisture deficit.

Before any LID measures are implemented for the site, the details and designs should demonstrate through plans and sections (including all dimensions, materials used and including the seasonal high groundwater level) how this infiltration deficit will be mitigated.

As it is typically a requirement of maintaining the same levels of infiltration post-construction, no appreciable change in the groundwater table elevation should occur over the long-term condition. The water balance calculations show that the amount of infiltration will decrease for the post-construction scenario without mitigation, compared to existing conditions.

5.2.4.1 Groundwater Quality

Depending on land use, runoff from urban developments may contain a variety of dilute contaminants such as suspended solids, chloride from road salt, oil and grease, metals, pesticide residues, phosphorous, bacteria and viruses. For groundwater, generally except for the dissolved constituents such as nitrogen and salt, most contaminants are attenuated by filtration during groundwater flow through the soils.

LID measures or end treatments such as oil/grit separators or wet ponds also help to remove suspended solids and other contaminants in runoff prior to infiltration or conveying the flows off the site, especially when a treatment train approach is taken for stormwater management. Any stormwater management facilities must be designed such that the water quality is maintained or improved prior to discharging water from the site or infiltrating water into the ground.

The site is a “major development,” is not within a WHPA Zone Q1 nor within an HVA, however it is within an SGRA. Infiltration of runoff from vegetated areas and rooftops is always permitted but there may be some restrictions for infiltration of runoff from paved areas due to the proposed commercial development. Pre-treatment may be an option in this case.

Since only clean or pre-treated runoff will be infiltrated, the groundwater quality will not be degraded and will not impact nearby domestic wells or nearby environmental features.

6. Limitations

The recommendations and comments provided are necessarily on-going as new information of underground conditions becomes available. More specific information with respect to the conditions between samples, or the lateral and vertical extent of materials may become apparent during excavation operations. The interpretation of the borehole information must, therefore, be validated during excavation operations. Consequently, conditions not observed during this investigation may become apparent. Should this occur, GEI should be contacted to assess the situation and additional testing and reporting may be required.

GEI should be retained for a general review of the final design drawings and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, GEI will assume no responsibility for interpretation of the recommendations in the report.

The comments given in this report are intended only for the guidance of the design engineers. The number of boreholes required to determine the localized underground conditions between boreholes affecting construction costs, techniques, sequencing, equipment, scheduling, etc. could be greater than has been carried out for design purposes. Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual borehole results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

This report was authorized by and prepared by GEI for the Anatolia Investments Corporation (as provided in the signed Standard Professional Services Agreement). Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. GEI accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

7. Closure

We trust that this information is satisfactory for your purposes. Should you have any questions or comments, please do not hesitate to contact our office.

Yours truly,

GEI Consultants

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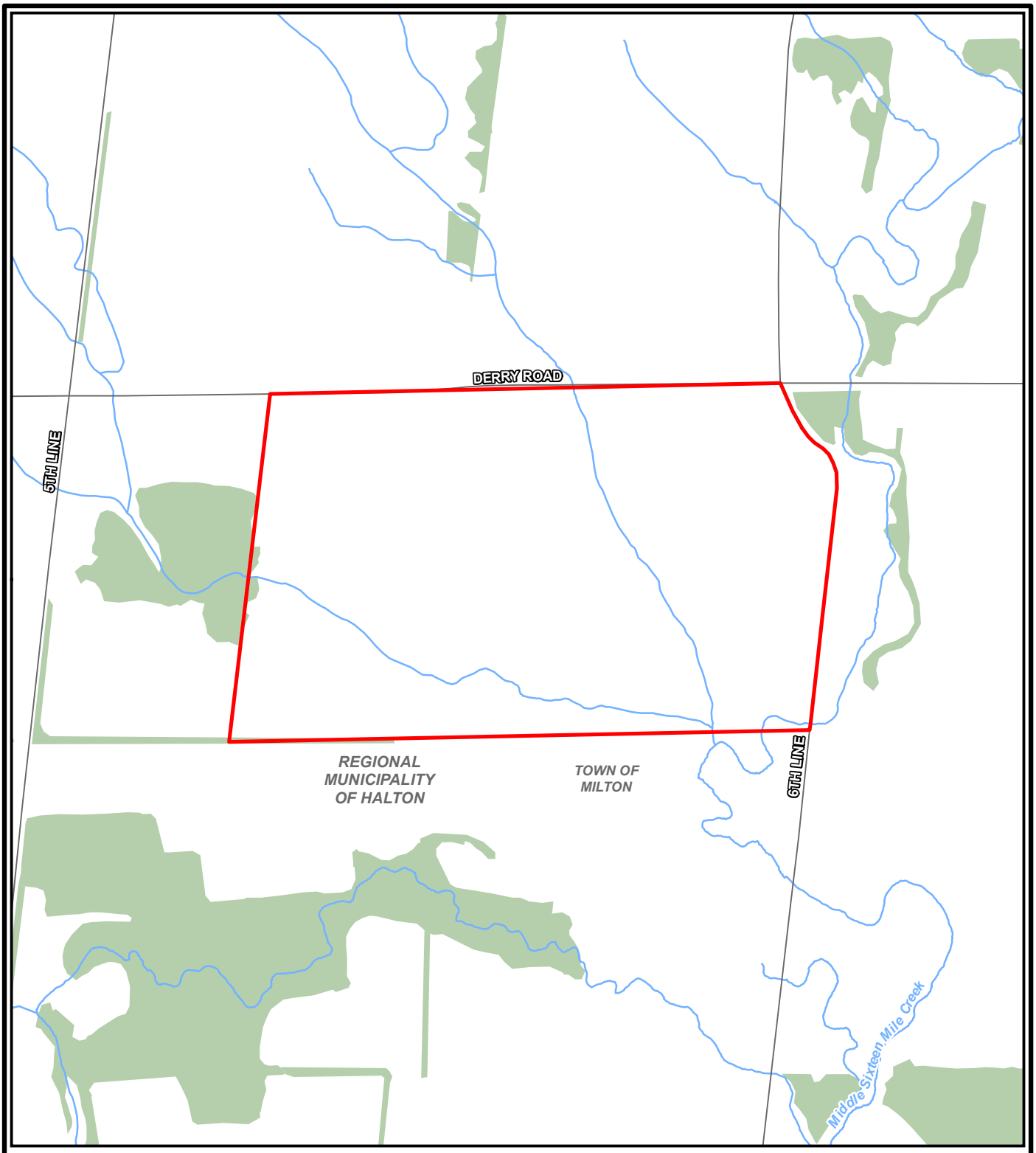
Figures



NOTES:
1. Coordinate System: NAD 1983 UTM Zone 17N.
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Legend
- Site
- Road
- Watercourse
- Wooded Area

N

0 50 100 m
1:10,000

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

GEI Consultants

Project 2300805

SITE LOCATION PLAN

January 2024 Fig. 1

NOTES:
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3. Orthoimagery © First Base Solutions, 2023. Imagery taken in 2018.

Legend

- Site
- Approximate Borehole Location
- Approximate Borehole/Monitoring Well Location
- Monitoring Well Destroyed May 23, 2023
- Road
- Watercourse

N

0 50 100 m

1:6,500

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

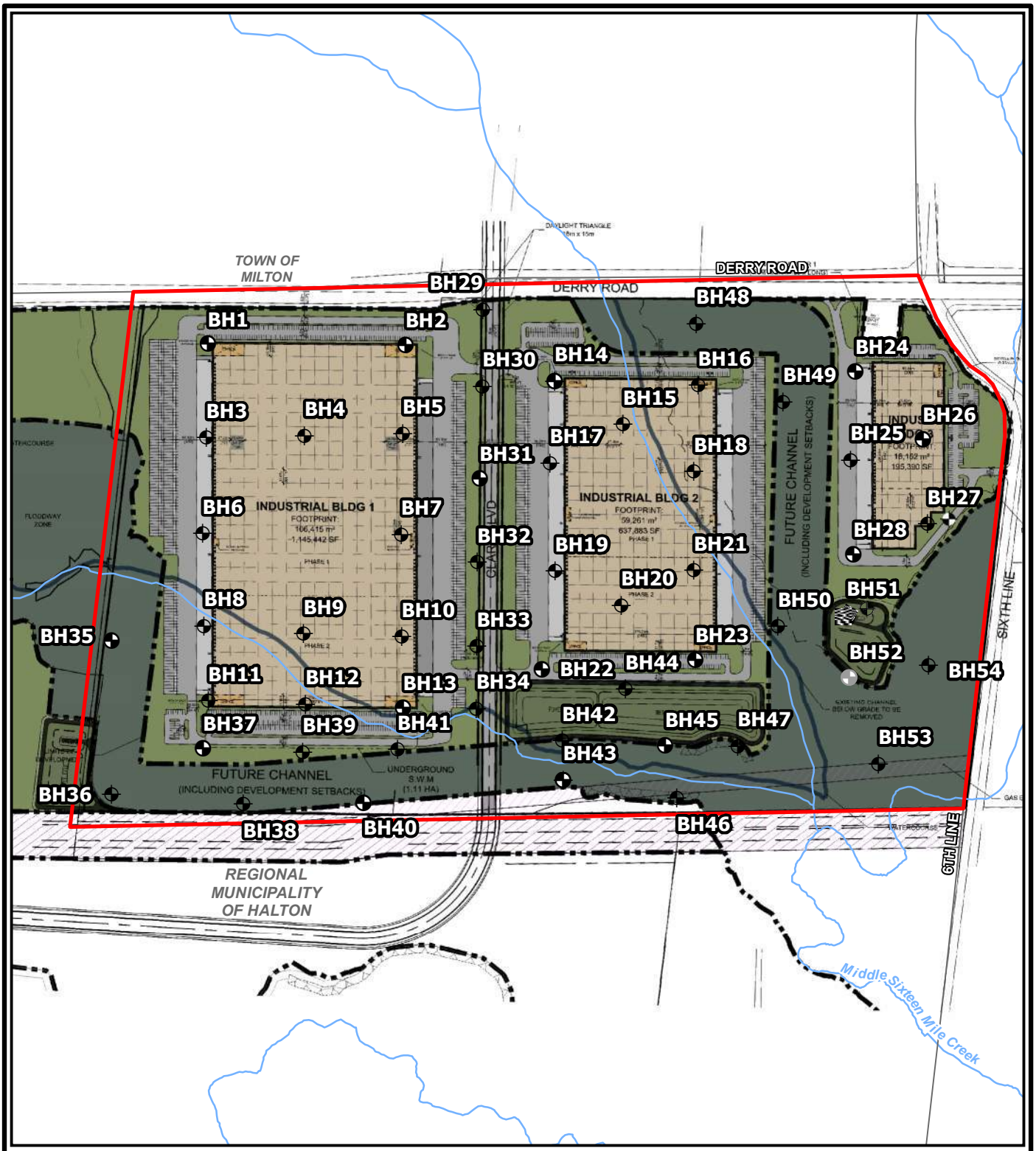
GEI Consultants

Project 2300805

SITEPLAN (AERIAL)

January 2024

Fig. 2a



NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
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3. Conceptual Site Plan, 6728 Sixth Line, Milton, ON CAN, Sheet 1, Project Number TOR22-0102-00, by Ware Malcom, 2023.

Legend

- Subject Lands
- Approximate Borehole Location
- Approximate Borehole/Monitoring Well Location
- Monitoring Well Destroyed May 23, 2023
- Road
- Watercourse

N

0 50 100 m

1:6,500

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

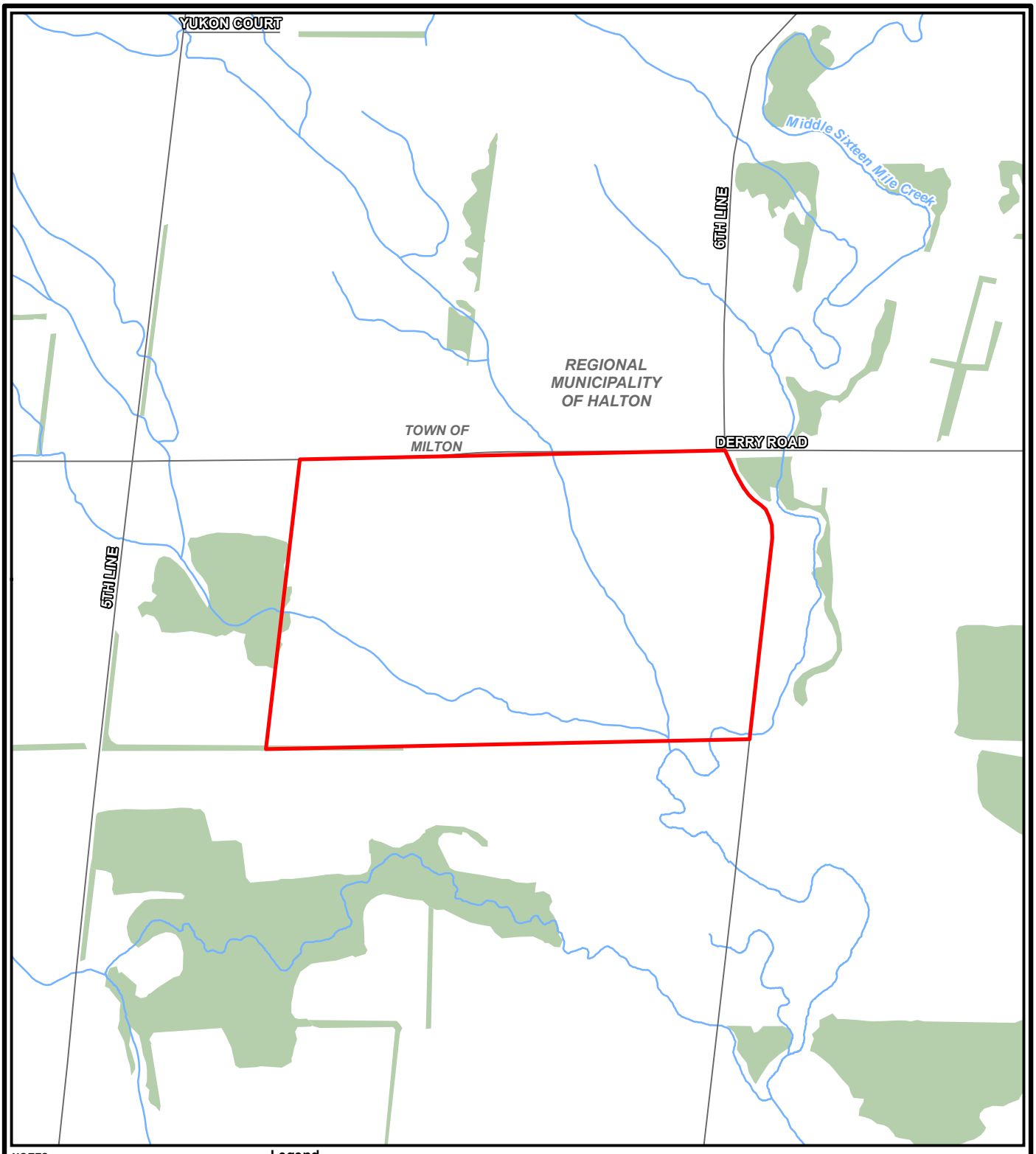
GEI Consultants

BOREHOLE LOCATION PLAN (SITEPLAN)

Project 2300805

January 2024

Fig. 2b



NOTES:
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Legend

- Site
- Road
- Watercourse
- Wooded Area
- WHPA-Q1/Q2
- Wellhead Protection Zone A
- Wellhead Protection Zone B
- Wellhead Protection Zone C
- Wellhead Protection Zone D
- Wellhead Protection Zone E

-No Wellhead Protection Area Within 500m of Site-

N

0 50 100 m

1:12,000

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

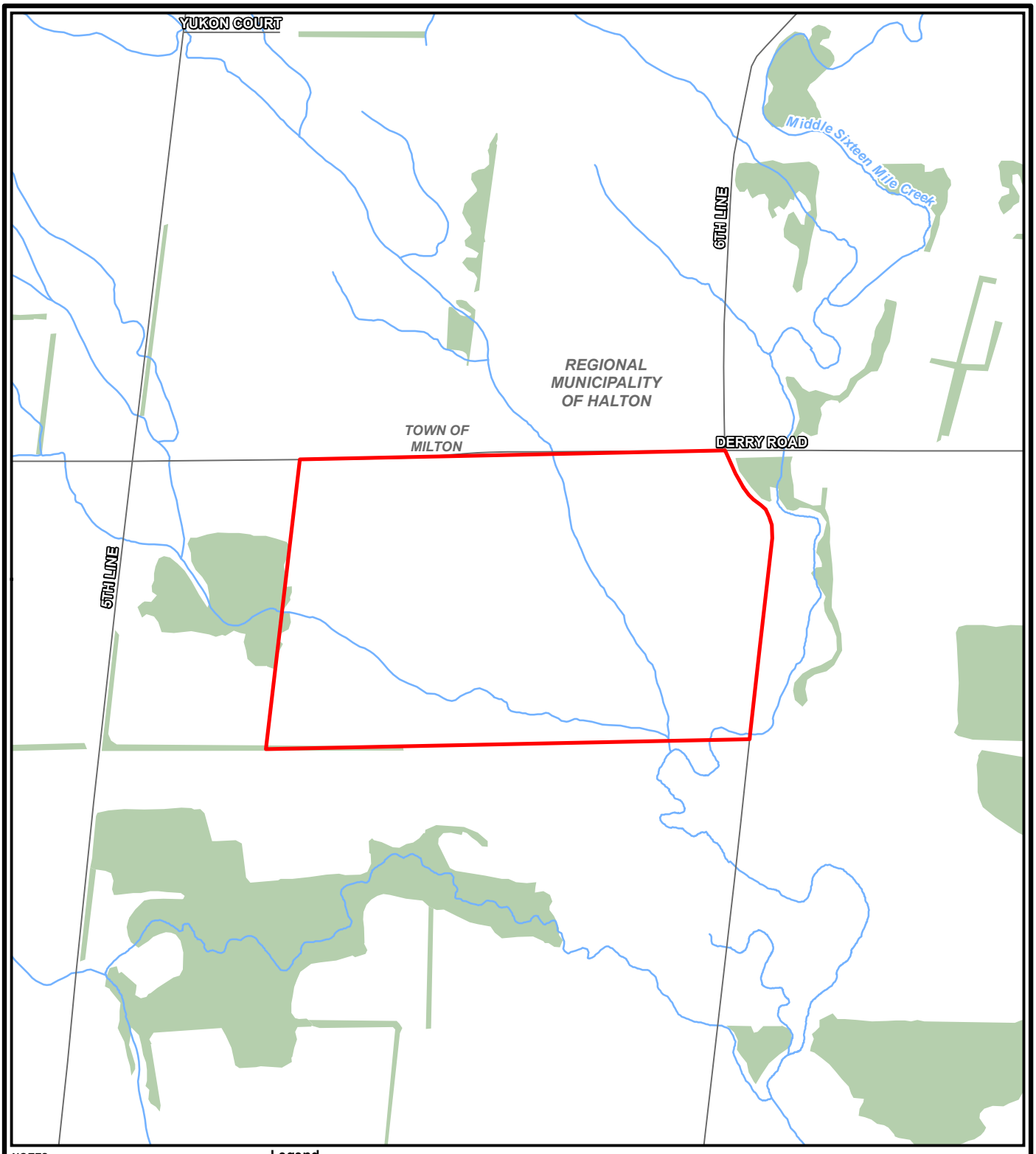
Anatolia Investments Corporation

GEI Consultants

Project 2300805

WELL HEAD PROTECTION AREA

January 2024 Fig. 3



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Legend

- Site
- Road
- Watercourse
- Wooded Area
- Intake Protection Zone 1
- Intake Protection Zone 2
- Intake Protection Zone 3

-No Intake Protection Zones Within 500m of Site-

N

0 50 100 m

1:12,000

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

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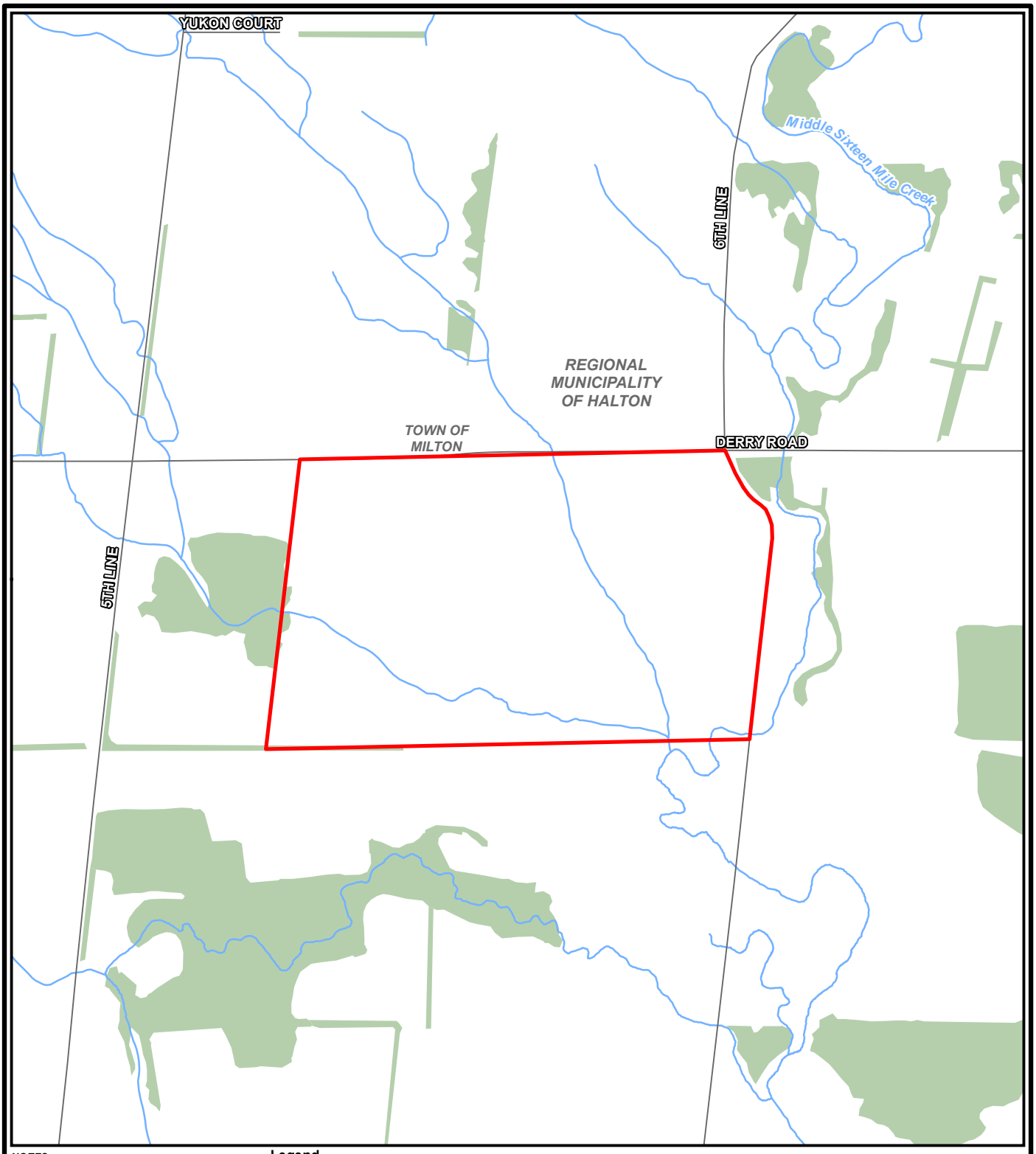
Project 2300805

INTAKE PROTECTION ZONES

January 2024

Fig. 4



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Legend

- Site
- Road
- Watercourse
- Wooded Area
- Highly Vulnerable Aquifer

-No Highly Vulnerable Aquifer Within 500m of Site-

N

0 50 100 m

1:12,000

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

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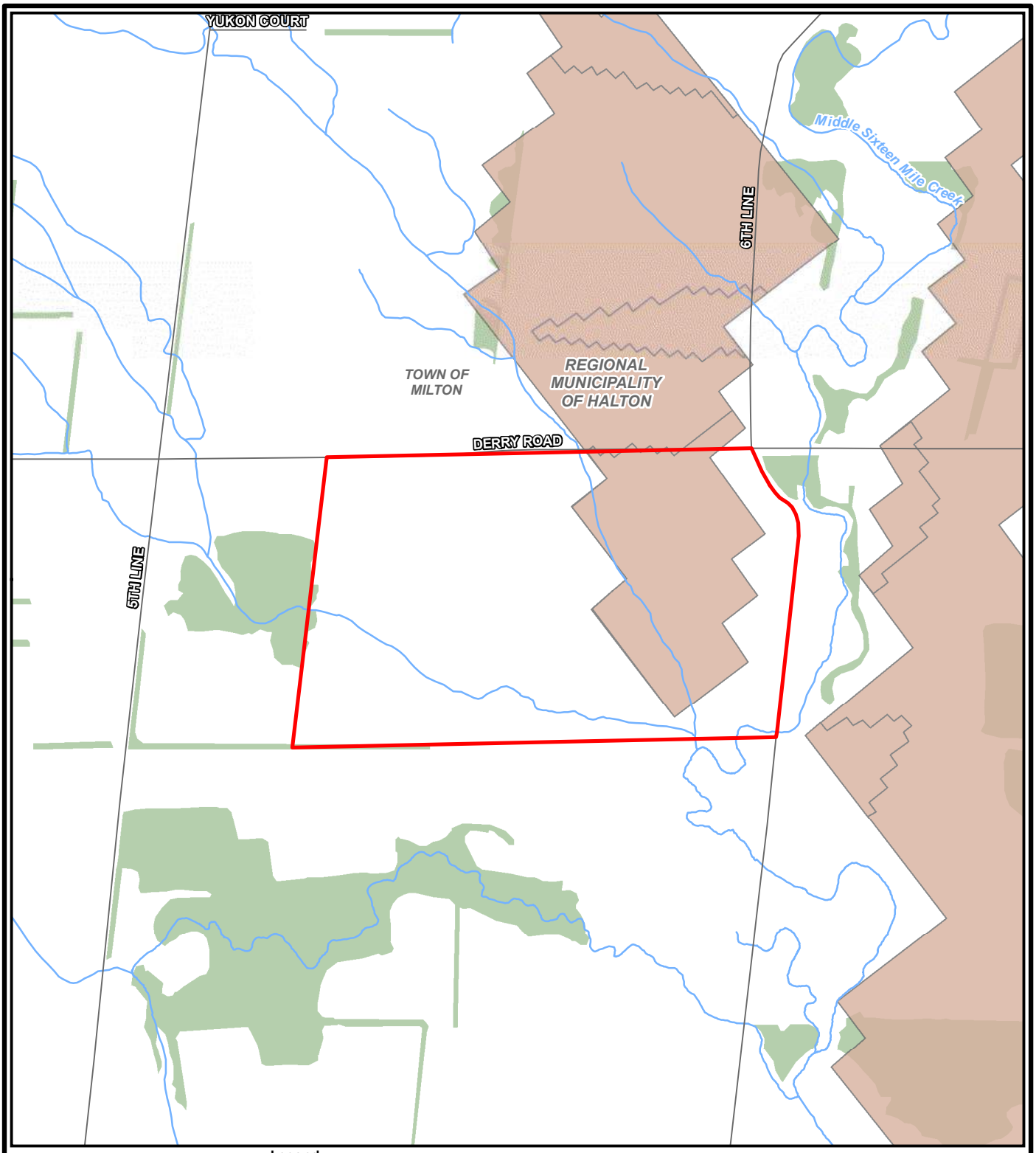
Project 2300805

HIGHLY VULNERABLE AQUIFER

January 2024

Fig. 5



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Legend

- Site
- Road
- Watercourse
- Wooded Area

Significant Ground Water Recharge Area (LSRCA, 2022) Vulnerability Score

- No Score

N

0 50 100 m

1:12,000

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

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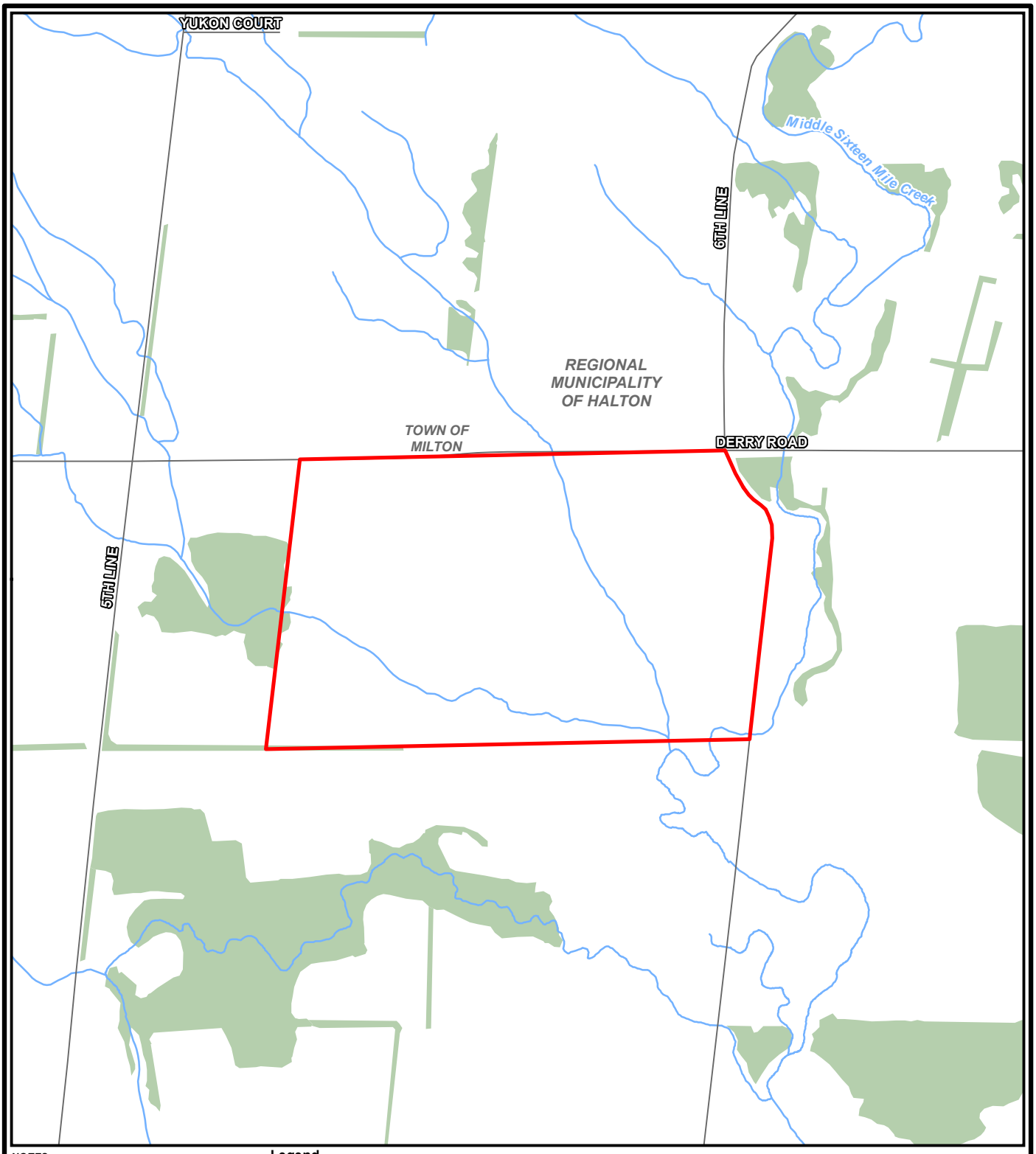
SIGNIFICANT GROUNDWATER RECHARGE AREAS

January 2024 Fig. 6



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Legend

- Site
- Road
- Watercourse
- Wooded Area
- Issue Contributing Area

-No Issue Contributing Area Within 500m of Site-

N

0 50 100 m

1:12,000

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

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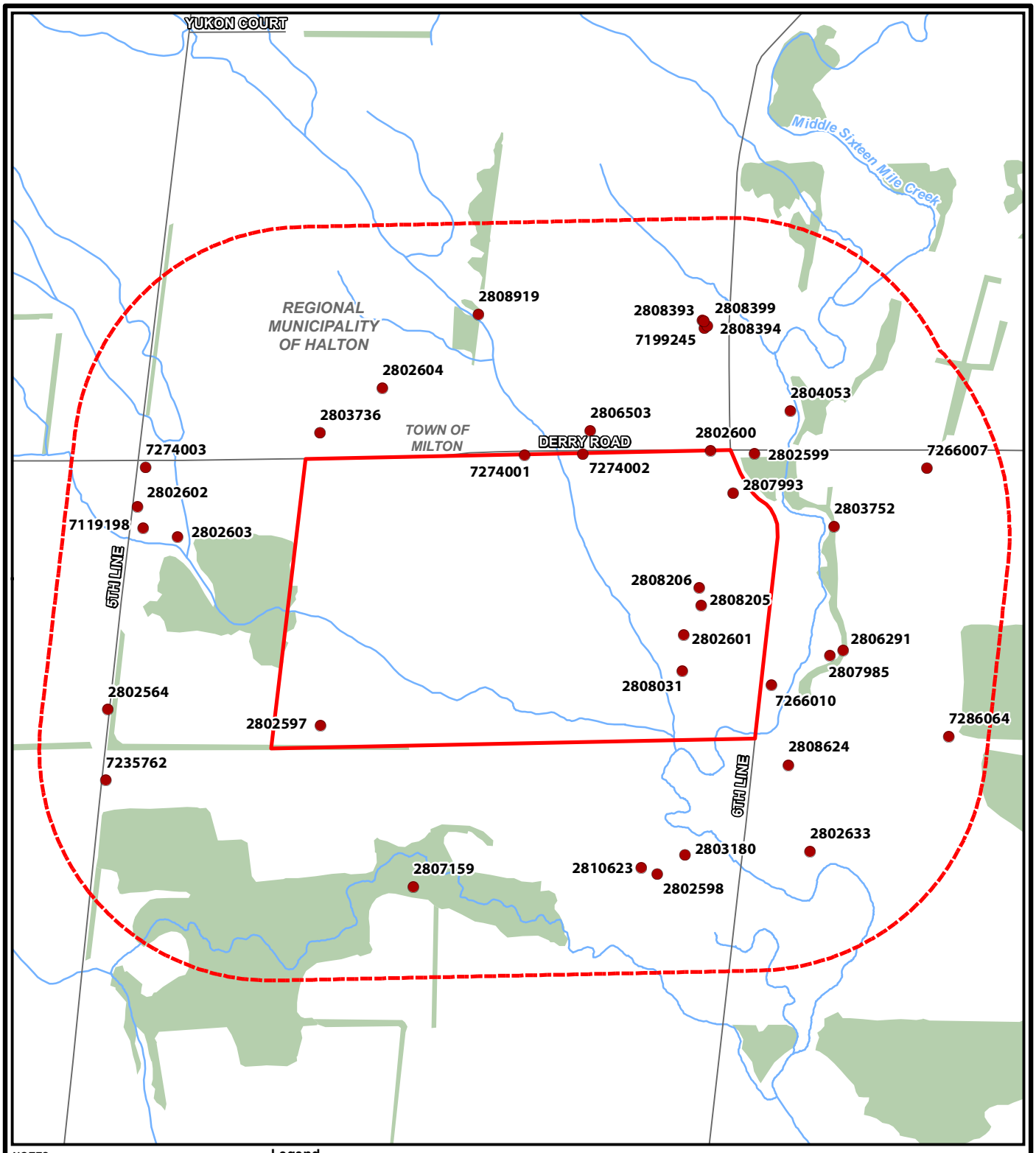
ISSUE CONTRIBUTING AREA

January 2024

Fig. 7



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Legend

- Site
- Site + 500 m
- Well Record Location
- Wooded Area
- Road
- Watercourse

N

0 50 100 m

1:12,000

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

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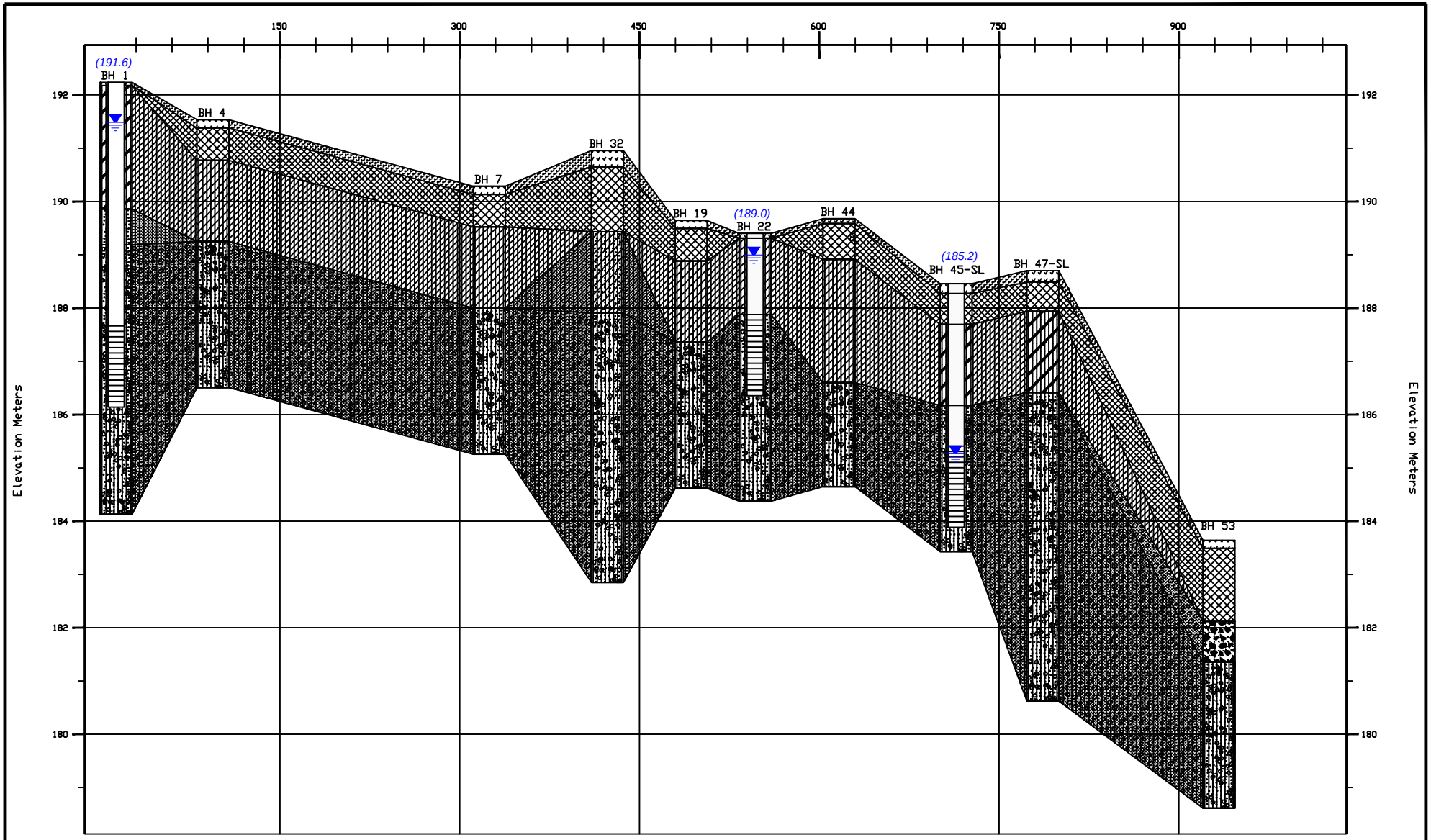
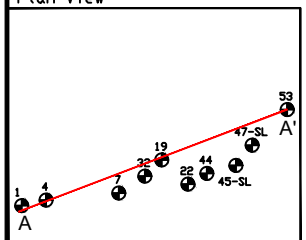
MECP WATER WELL RECORD LOCATIONS

Project 2300805 | January 2024 | Fig. 8



Plan View



Strata Symbols

- Topsoil
- Clay and Silt
- Sandy Silt
- Sandy Silt Glacial Till
- Fill
- Clayey Silt
- Sandy Clayey Silt
- Sand and Gravel

(XXX.X) Groundwater Elevation measure May 23, 2023

GEI Consultants, Inc.

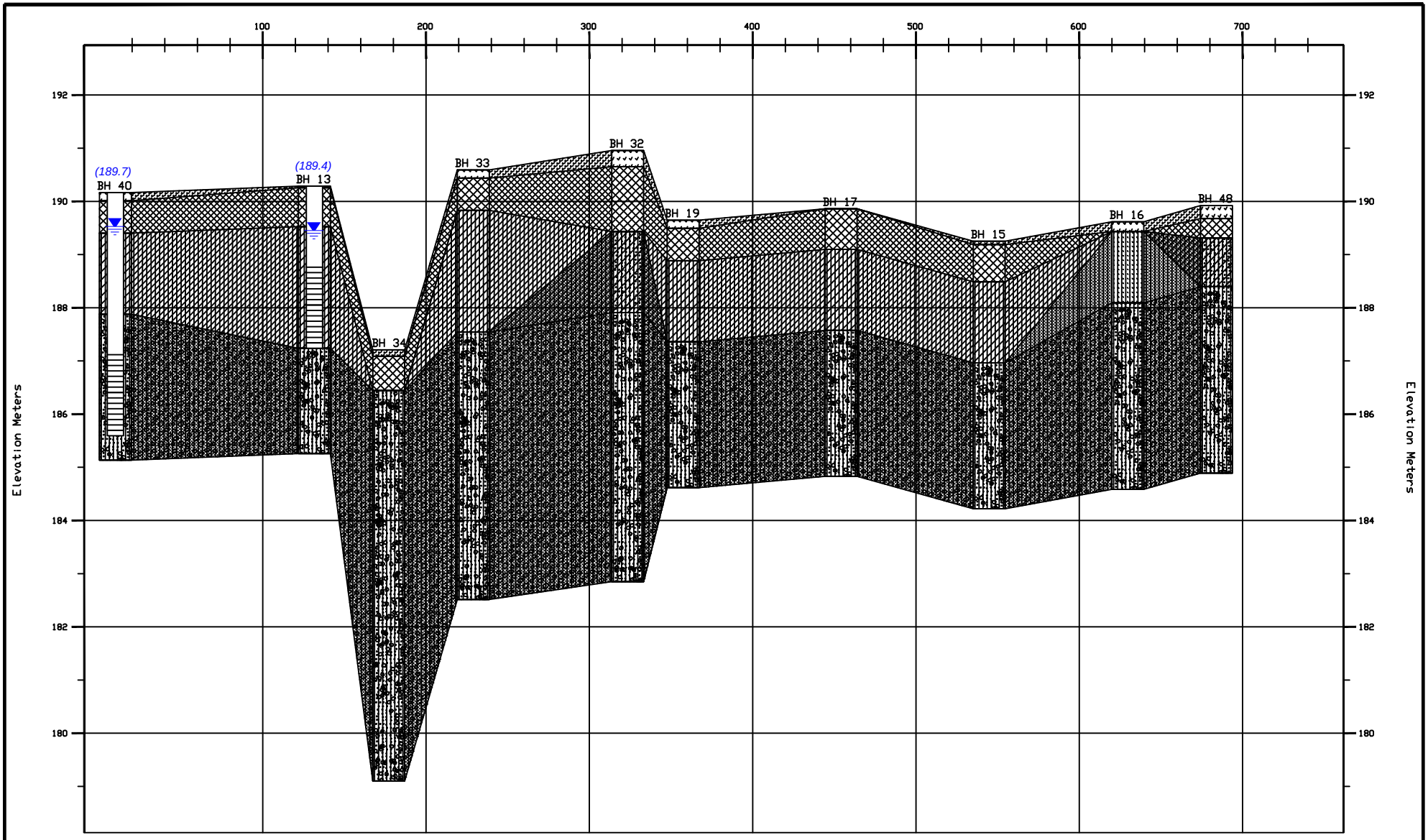
GENERALIZED SOIL PROFILE

HORIZONTAL NOT TO SCALE	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: AS DRAWN	SG	7/17/2023

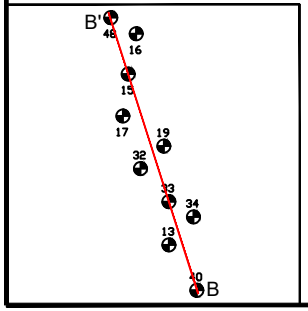
Proposed Commercial Warehouse Development

PROJECT NO. 2300805

FIGURE NUMBER 9



Plan View



Strata Symbols

- Topsoil
- Sandy Silt
- Sandy Silt Glacial Till
- Fill
- Clayey Silt
- Sandy Clayey Silt

(XXX.X) Groundwater Elevation measure May 23, 2023

GEI Consultants, Inc.

GENERALIZED SOIL PROFILE

HORIZONTAL NOT TO SCALE	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: AS DRAWN	SG	7/17/2023

Proposed Commercial Warehouse Development

PROJECT NO. 2300805

FIGURE NUMBER 10

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Legend

- Site
- Approximate Borehole Location
- Approximate Borehole/Monitoring Well Location
- Monitoring Well Destroyed May 23, 2023
- Road
- Watercourse
- (XXX.X) Groundwater Elevation measure May 23, 2023
- XXX Approximate Groundwater Surface
- Approximate Groundwater Flow Direction

N

0 50 100 m

1:6,500

Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, ON

Anatolia Investments Corporation

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GROUNDWATER CONTOUR MAP

Project 2300805

January 2024

Fig. 11

Appendix A

MECP Water Well Records

GEI Consultants

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	Well ID Only	WELL	FORMATION
MILTON TOWN (TRAFALG	17 595791 4821744 W	2016/05 7238	2			MO	0039 5	7266010	7266010 (Z232700) A201621	LOAM 0002 GREY CLAY SAND SLTY 0012 GREY CLAY SLTY 0042 RED SILT CLAY SNDY 0065
MILTON TOWN (TRAFALG	17 595629 4822296 W	2016/05 7238	2			MO	0048 5	7266007	7266007 (Z232699) A201623	BRWN LOAM 0002 GREY SAND SLTY 0012 GREY SILT CLAY SNDY 0026 GREY CLAY SLTY 0046 RED SAND CLAY STNS 0051 RED SHLE 0054
MILTON TOWN (TRAFALG	17 594591 4820971 W	6875						7274003	7274003 (Z227656) A	
MILTON TOWN (TRAFALG	17 595148 4821731 W	6875						7274002	7274002 (Z227668) A	
MILTON TOWN (TRAFALG	17 595073 4821631 W	6875						7274001	7274001 (Z227669) A	
MILTON TOWN (TRAFALG	17 595096 4822104 W	2013/02 7472	417	7		NU		7199245	7199245 (Z166626) A	
MILTON TOWN (TRAFALG	17 594141 4821511 W	2016/02 7475	2			MO	0010 10	7258404	7258404 (Z227543) A200563	BRWN SAND GRVL PCKD 0005 GREY CLAY SILT DNSE 0015 RED HARD 0020
MILTON TOWN (TRAFALG	17 594155 4821482 W	2016/02 7472	2			MO	0010 10	7258403	7258403 (Z227544) A200562	BRWN SAND GRVL PCKD 0005 GREY CLAY SILT SAND 0015 RED SHLE HARD 0020
MILTON TOWN (TRAFALG	17 594141 4821441 W	2016/02 7472	2			MO	0010 10	7258402	7258402 (Z227538) A200561	BRWN SAND GRVL PCKD 0005 GREY CLAY SILT SAND 0015 RED SHLE HARD 0020
MILTON TOWN (TRAFALG	17 596347 4821190 W	2016/06 7238	2			MO	0053 5	7266004	7266004 (Z232919) A201626	LOAM SNDY 0005 TILL 0058 SHLE 0060
MILTON TOWN (TRAFALG	17 595070 4820488 W	2014/10 7472	2.04			MO	0035 10	7235762	7235762 (Z200641) A172490	RED SILT LOOS 0015 GREY CLAY SILT PCKD 0035 GREY CLAY SILT FSND 0045
MILTON TOWN (TRAFALG	17 595448 4822113 W	2021/04 7472						7389001	7389001 (Z343417) A P	
MILTON TOWN (TRAFALG	17 595336 4821967 W	2021/04 7472						7389003	7389003 (Z343414) A P	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	Well ID Only	WELL	FORMATION
MILTON TOWN (TRAFALG	17 595381 4822027 W	2021/04 7472						7389002	7389002 (Z343415) A P	
MILTON TOWN (TRAFALG	17 595047 4820457 W	2017/09 6607						7298238	7298238 (C31119) P	
MILTON TOWN (TRAFALG	17 594526 4820796 W	2018/05 7472	2			MO	0005 10	7319816	7319816 (Z277345) A242013	BRWN LOAM LOOS 0001 YLLW CLAY SILT PCKD 0015
MILTON TOWN (TRAFALG	17 596113 4821977 W	2017/03 6607	5.09			MO	0050 10	7286064	7286064 (Z248216) A217854	BRWN SILT TILL 0012 GREY SHLE LMSN 0060
MILTON TOWN (TRAFALG	17 594770 4820704 W	2018/05 7472	2			MO	0010 10	7319817	7319817 (Z277348) A242014	BRWN LOAM LOOS 0001 YLLW CLAY SILT 0020
MILTON TOWN (TRAFALG	17 594146 4821412 W	2019/05 7230						7338874	7338874 (C45655) A265111 P	
MILTON TOWN (TRAFALG	17 595382 4822029 W	2021/04 7472						7393792	7393792 (Z343416) A P	
MILTON TOWN (TRAFALG	17 594926 4820501 W	2021/11 7320						7408292	7408292 (Z352060) A318852 P	
MILTON TOWN (TRAFALG 06 009	17 595928 4821282 W	2006/07 7268	2.46	FR 0194	46/171/0/ 22:0	PS		2810623	2810623 (Z08016) A007916	BLCK LOAM 0007 BRWN CLAY 0062 BRWN CLAY GRVL 0105 GREY CLAY GRVL 0184 GREY GRVL 0194
MILTON TOWN (TRAFALG NS 05 010	17 594954 4820511 W	2019/05 7484		UT 0005				7339714	7339714 (Z295773) A	
MILTON TOWN (TRAFALG NS 05 010	17 594662 4820607 W	1959/10 1718	7	SA 0080	35/80/1/1 :0	NU		2802562	2802562 () A	PRDG 0030 RED SHLE 0080
MILTON TOWN (TRAFALG NS 05 010	17 594682 4820632 W	1959/10 1718	7	FR 0024	9///:			2802563	2802563 () A	LOAM 0001 YLLW CLAY 0024 SILT 0030 RED SHLE 0055
MILTON TOWN (TRAFALG NS 05 010	17 594952 4820585 W	1961/05 1307	30	FR 0031	16//1/:	DO		2802564	2802564 ()	BRWN LOAM CLAY 0017 RED SHLE 0031
MILTON TOWN (TRAFALG NS 06 008	17 596310 4821169 W	2016/10 7501	2	UT 0021		MT	0020 10	7280480	7280480 (Z228822) A196898	BRWN LOAM LOOS 0000 BRWN TILL CLAY HARD 0015 BRWN CLAY SAND DNSE 0030

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	Well ID Only	WELL	FORMATION
MILTON TOWN (TRAFALG NS 06 008	17 596277 4821158 W	2022/03 7360	2			MO	0020 10	7416239	7416239 (4SSGCH5J) A314179	GREY TILL HARD 0030
MILTON TOWN (TRAFALG NS 06 008	17 596247 4821089 W	2022/03 7360	2			MO	0020 10	7416238	7416238 (BVMKJECV) A314164	GREY TILL HARD 0030
MILTON TOWN (TRAFALG NS 06 009	17 595659 4820869 L	1988/11 1130	7 6	FR	/30/5/1:30	DO		2807159	2807159 (41971)	BRWN LOAM 0008 BRWN CLAY BLDR 0030 RED CLAY 0045 RED SHLE ROCK 0085
MILTON TOWN (TRAFALG NS 06 009	17 595835 4820955 W	2022/03 7360	2			MO	0020 10	7416248	7416248 (NM3G5IEU) A347300	GREY TILL HARD 0030
MILTON TOWN (TRAFALG NS 06 009	17 595765 4820914 W	2022/03 7360	2			MO	0020 10	7416247	7416247 (7U9BKNCL) A347282	BRWN FILL 0006 BRWN SILT 0020 GREY TILL SOFT 0030
MILTON TOWN (TRAFALG NS 06 009	17 596176 4821225 W	2022/03 7360	2			MO	0020 10	7416246	7416246 (P5ILX9AR) A345754	BRWN FILL 0006 BRWN SILT 0020 GREY TILL SOFT 0030
MILTON TOWN (TRAFALG NS 06 009	17 595964 4821373 W	1969/06 3637	30	FR 0023 FR 0038	15///:	DO		2803180	2803180 ()	BRWN LOAM 0001 BRWN CLAY 0009 GREY CLAY STNS 0041 BRWN CLAY 0046
MILTON TOWN (TRAFALG NS 06 009	17 595960 4821300 W	1953/08 1642	6 6	SA	18/18/2/:	NU		2802598	2802598 () A	PRDG 0021 CLAY 0050 RED SHLE 0073
MILTON TOWN (TRAFALG NS 06 010	17 595649 4821612 W	1991/04 1660	6 6	SA 0083	18/85/4/2:0	DO		2808031	2808031 (43800)	BLCK LOAM 0002 BRWN CLAY 0019 BRWN SAND 0031 BRWN SAND GRVL 0065 GREY CLAY 0072 RED SHLE SOFT 0076 RED SHLE HARD 0090
MILTON TOWN (TRAFALG NS 06 010	17 595414 4821934 W	1992/05 4868	36 30	FR 0029 FR 0062	22/40/10/4:30	IR	0020 40	2807993	2807993 (103911)	BRWN LOAM SOFT 0001 BRWN SAND SOFT 0003 GREY CLAY STNS FSND 0029 GREY SILT FSND SOFT 0030 BRWN CLAY SAND 0052 GREY CLAY STNS FSND 0056 RED CLAY SAND HARD 0062 RED GRVL BLDR HARD 0064
MILTON TOWN (TRAFALG NS 06 010	17 595530 4821751 W	1993/10 4005	6					2808206	2808206 (124445) A	BRWN CLAY SAND LOOS 0008 BRWN CLAY 0021 BRWN CLAY SAND LOOS 0053 BRWN SAND GRVL LOOS 0054 RED CLAY 0055 RED SHLE HARD 0055
MILTON TOWN (TRAFALG NS 06 010	17 595562 4821731 W	1993/10 4005	6	UK 0083	10/83/2/0:30			2808205	2808205 (124443)	BRWN CLAY LOOS 0014 BRWN CLAY SAND LOOS 0055 RED SHLE 0058 RED SHLE HARD 0085

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	Well ID Only	WELL	FORMATION
MILTON TOWN (TRAFALG NS 06 010	17 594691 4820886 W	2008/12 1660	6.25 6	FR 0040 FR 0055	2/5/5/1:0	DO		7119198	7119198 (Z89723) A059939	BRWN CLAY 0024 BRWN CLAY SAND GRVL 0026 RED SHLE HARD 0061
MILTON TOWN (TRAFALG NS 06 010	17 595590 4821662 W	1960/08 3514	5	SA 0085	35/50/15/ :	NU		2802601	2802601 () A	PRDG 0028 BLUE CLAY SILT 0082 RED SHLE 0085
MILTON TOWN (TRAFALG NS 06 010	17 594752 4820933 W	1965/01 1308	30	FR 0027	18//1/:	DO		2802603	2802603 ()	LOAM 0002 BRWN CLAY MSND 0009 RED CLAY 0020 RED MSND CLAY 0027 MSND 0028
MILTON TOWN (TRAFALG NS 06 010	17 595376 4822023 W	1953/06 1642	6	FR 0048	18//1/:	DO		2802599	2802599 ()	CLAY MSND 0048
MILTON TOWN (TRAFALG NS 06 010	17 595262 4820925 W	1965/07 1307	30	FR 0043	20//1/:	CO IR		2802597	2802597 ()	BRWN LOAM CLAY 0015 RED CLAY 0041 CSND 0043 RED SHLE 0044
MILTON TOWN (TRAFALG NS 06 010	17 595312 4821952 W	1959/08 1718	7	FR 0060	20/25/8/8 :0	DO		2802600	2802600 ()	LOAM 0001 LOAM MSND 0006 YLLW CLAY 0051 QSND 0057 GRVL 0060
MILTON TOWN (TRAFALG NS 06 010	17 594648 4820905 W	1963/05 1308	30	FR 0023	6/24/2/1: 0	DO		2802602	2802602 ()	BRWN CLAY MSND 0006 RED CLAY MSND BLDR 0020 RED SHLE 0025
MILTON TOWN (TRAFALG NS 06 011	17 595119 4821774 W	1986/08 4005	4	FR 0063	32/85/4/2 :0	IR PS		2806503	2806503 (00257)	BRWN CLAY GRVL LOOS 0017 GREY CLAY LOOS 0025 GREY CLAY GRVL LOOS 0038 BRWN SAND GRVL LOOS 0044 BRWN CLAY GRVL LOOS 0059 GREY SAND LOOS 0061 RED CLAY FGVL HARD 0066 RED SHLE HARD 0090
MILTON TOWN (TRAFALG NS 06 011	17 594764 4821313 W	1971/03 3637	30	FR 0028	10/30//2: 0	DO		2803736	2803736 ()	BRWN LOAM 0001 BRWN CLAY 0003 GREY CLAY 0005 BRWN CLAY 0013 GREY CLAY 0018 BRWN STNS 0024 RED CLAY STNS 0032
MILTON TOWN (TRAFALG NS 06 011	17 595084 4822113 W	1995/09 3030	36	FR 0012 FR 0025 FR 0040	12///:	DO		2808399	2808399 (158461)	BRWN LOAM 0001 BRWN CLAY SNDY 0012 BLUE CLAY STNS 0025 GREY FSND 0031 BLUE CLAY STNS 0042
MILTON TOWN (TRAFALG NS 06 011	17 594774 4821739 L	1998/02 1660	6 6	FR 0050	24/48/6/3 :0	DO		2808919	2808919 (192161)	BLCK LOAM 0002 BRWN CLAY 0017 BRWN CLAY GRVL 0026 RED CLAY 0030 RED SHLE 0055

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	Well ID Only	WELL	FORMATION
MILTON TOWN (TRAFALG NS 06 011	17 595080 4822112 W	1995/09 3132		FR 0035 FR 0093	45//0/:	NU		2808393	2808393 (159779) A	BRWN LOAM SOFT 0002 BRWN CLAY STNS DNSE 0008 BLUE CLAY STNS DNSE 0030 BLUE CLAY STNS SOFT 0035 BLUE CLAY STNS DNSE 0045 RED CLAY DNSE 0063 BLUE CLAY DNSE 0069 RED SHLE HARD 0130
MILTON TOWN (TRAFALG NS 06 011	17 595096 4822112 W	1995/08 3132	6 6	SA 0087	22//6/:	DO NU		2808394	2808394 (159777) A	BRWN LOAM SOFT 0002 BRWN CLAY STNS DNSE 0005 BLUE CLAY STNS DNSE 0030 BLUE CLAY STNS SOFT 0033 BLUE CLAY STNS DNSE 0052 RED CLAY STNS DNSE 0058 BLUE CLAY STNS DNSE 0087 RED SHLE HARD 0170
MILTON TOWN (TRAFALG NS 06 011	17 594586 4821735 W	2020/07 7230						7370388	7370388 (C47954) A297427 P	
MILTON TOWN (TRAFALG NS 06 011	17 594582 4821360 W	2021/09 7472						7400610	7400610 (JW2SRBWI) _NO_TAG A	
MILTON TOWN (TRAFALG NS 06 011	17 594540 4821312 W	2021/09 7472						7400609	7400609 (K82RF38S) _NO_TAG A	
MILTON TOWN (TRAFALG NS 06 011	17 594821 4821404 W	2018/05 3108						7316029	7316029 (Z265282) A	
MILTON TOWN (TRAFALG NS 06 011	17 594746 4821486 W	2021/09 7472						7400611	7400611 (RCOS8J3P) A308318 A	
MILTON TOWN (TRAFALG NS 06 011	17 594672 4821358 W	2021/09 7472						7400612	7400612 (XZT9DPS2) _NO_TAG A	
MILTON TOWN (TRAFALG NS 06 011	17 594444 4821342 W	2021/09 7472						7400613	7400613 (J62A2B38) _NO_TAG A	
MILTON TOWN (TRAFALG NS 06 011	17 594442 4821490 W	2021/09 7472						7400614	7400614 (Z9FBGEFJ) _NO_TAG A	
MILTON TOWN (TRAFALG NS 06 011	17 594720 4821500 W	2020/11 7472	2			MO	0010 10	7375667	7375667 (UF88ZRGP) A308318	GREY CLAY PCKD 0020
MILTON TOWN (TRAFALG NS 06 011	17 595257 4821932 W	2021/09 7282	2			MO	0018 10	7404950	7404950 (IDPAA39F) A337710	OBDN 0028

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	Well ID Only	WELL	FORMATION
MILTON TOWN (TRAFALG NS 06 011	17 594425 4821138 W	2021/09 7472						7400616	7400616 (MNYMTTWR) _NO_TAG A	
MILTON TOWN (TRAFALG NS 06 011	17 594395 4821438 W	2021/09 7472						7400615	7400615 (HT4JKRN5) _NO_TAG A	
MILTON TOWN (TRAFALG NS 06 011	17 595267 4821992 W	2022/05 7472	2			MO	0010 10	7421168	7421168 (NIL3SSKZ) A351011	BRWN SAND LOAM LOOS 0004 GREY CLAY TILL PCKD 0020
MILTON TOWN (TRAFALG NS 06 011	17 594961 4822031 W	2022/05 7472	2			MO	0010 10	7421166	7421166 (QAWEZXD4) A351029	BRWN SAND LOAM LOOS 0004 GREY CLAY FILL PCKD 0020
MILTON TOWN (TRAFALG NS 06 011	17 595129 4821839 W	2022/05 7472	2			MO	0010 10	7421169	7421169 (R9PC8ZRW) A348392	BRWN SAND LOAM LOOS 0004 GREY CLAY TILL PCKD 0020
MILTON TOWN (TRAFALG NS 06 011	17 595138 4822057 W	2022/05 7472	2			MO	0010 10	7421167	7421167 (E9UA2TKX) A351009	BRWN SAND LOAM LOOS 0004 GREY CLAY TILL PCKD 0020
MILTON TOWN (TRAFALG NS 06 011	17 594770 4821478 W	1966/06 1308	30	FR 0030	10/28/2/0 :30	ST DO		2802604	2802604 ()	LOAM 0002 BRWN CLAY BLDR 0006 BRWN CLAY 0009 BLUE CLAY 0021 MSND BLDR 0029 RED SHLE 0030
MILTON TOWN (TRAFALG NS 06 012	17 594844 4822470 W	1989/06 4868	30 30	FR 0045	15/25/5/1 :0	DO		2807318	2807318 (41638)	BRWN LOAM LOOS 0001 BRWN CLAY FSND 0006 GREY CLAY SILT FSND 0031 GREY CLAY FSND 0032 GREY CLAY FSND 0042 RED CLAY FSND 0045 BRWN SAND GRVL LOOS 0049 RED SHLE HARD 0051
MILTON TOWN (TRAFALG NS 07 008	17 596342 4821226 W	1955/10 1642	6 6	FR 0066	18/65/5/1 :0	DO		2802631	2802631 ()	LOAM MSND 0008 BLUE CLAY 0028 MSND STNS CLAY 0060 RED SHLE 0069
MILTON TOWN (TRAFALG NS 07 009	17 595949 4821667 W	1997/11 2576	6	FR 0053	19//10/4: 0	DO	0053 4	2808624	2808624 (185741)	LOAM 0002 BRWN CLAY 0018 GREY CLAY FGVL 0048 GREY GRVL CLAY 0052 BLUE GRVL FSND 0057
MILTON TOWN (TRAFALG NS 07 009	17 596124 4821589 W	1959/10 1718	7	FR 0055	24/50/4/9 6:0	ST DO		2802633	2802633 ()	LOAM 0001 YLLW CLAY 0004 FSND 0007 YLLW CLAY 0040 FSND 0050 SILT 0054 FSND 0055 GRVL 0060 RED CLAY 0061
MILTON TOWN (TRAFALG NS 07 010	17 595827 4821912 W	1985/04 4005	6	FR 0059	16/30/8/2 :30	DO		2806291	2806291 ()	BRWN CLAY LOOS 0012 GREY CLAY LOOS 0029 GREY SAND GRVL LOOS 0030 GREY CLAY LOOS 0058 GREY GRVL SAND LOOS 0059

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	Well ID Only	WELL	FORMATION
MILTON TOWN (TRAFALG NS 07 010	17 595604 4822061 W	1971/08 3637	30	FR 0005 FR 0024	4/26/30/0 :25	IR		2803752	2803752 ()	BLCK LOAM 0001 GREY CLAY 0006 GREY CLAY BLDR MSND 0026
MILTON TOWN (TRAFALG NS 07 010	17 595818 4821883 W	1992/04 3030	36	FR 0005 FR 0010 FR 0016 FR 0030	10///:	DO		2807985	2807985 (093638)	LOAM 0001 BRWN CLAY SNDY 0005 BRWN FSND WBRG 0006 BRWN CLAY 0010 BLUE SILT 0016 RED CLAY SAND LYRD 0023 BLUE SILT STNS 0030 GREY SAND GRVL 0032 RED CLAY 0035
MILTON TOWN (TRAFALG NS 07 011	17 595350 4822140 W	1972/09 3637	30	FR 0026 FR 0055	20/55/4/2 :0	DO		2804053	2804053 ()	BRWN SAND 0003 BRWN CLAY 0008 BLUE CLAY 0009 GREY CLAY SAND 0015 BRWN CLAY 0021 BLUE CLAY 0026 BRWN CSND 0027 GREY CLAY STNS 0053 BLUE CLAY 0055 BRWN MSND 0056
MILTON TOWN (TRAFALG NS 07 011	17 595722 4822522 W	1998/05 3030	36	UK 0005 UK 0015 UK 0024 UK 0037		DO		2808753	2808753 (185410)	BRWN LOAM 0001 BRWN CLAY SNDY 0004 BRWN SAND GRVL 0006 GREY SILT 0024 BRWN SAND 0030 GREY CLAY STNS 0037
MILTON TOWN (TRAFALG NS 07 011	17 595554 4822344 W	2021/09 7282	2			MO	0020 10	7404949	7404949 (MK5A8JLN) A337709	OBDN 0030
MILTON TOWN (TRAFALG NS 07 011	17 595704 4822556 W	1964/08 1307	30	FR 0040	15//2/:	DO		2802638	2802638 ()	BRWN LOAM 0002 BRWN CSND 0006 BRWN CLAY 0012 GREY CLAY 0038 MSND 0040

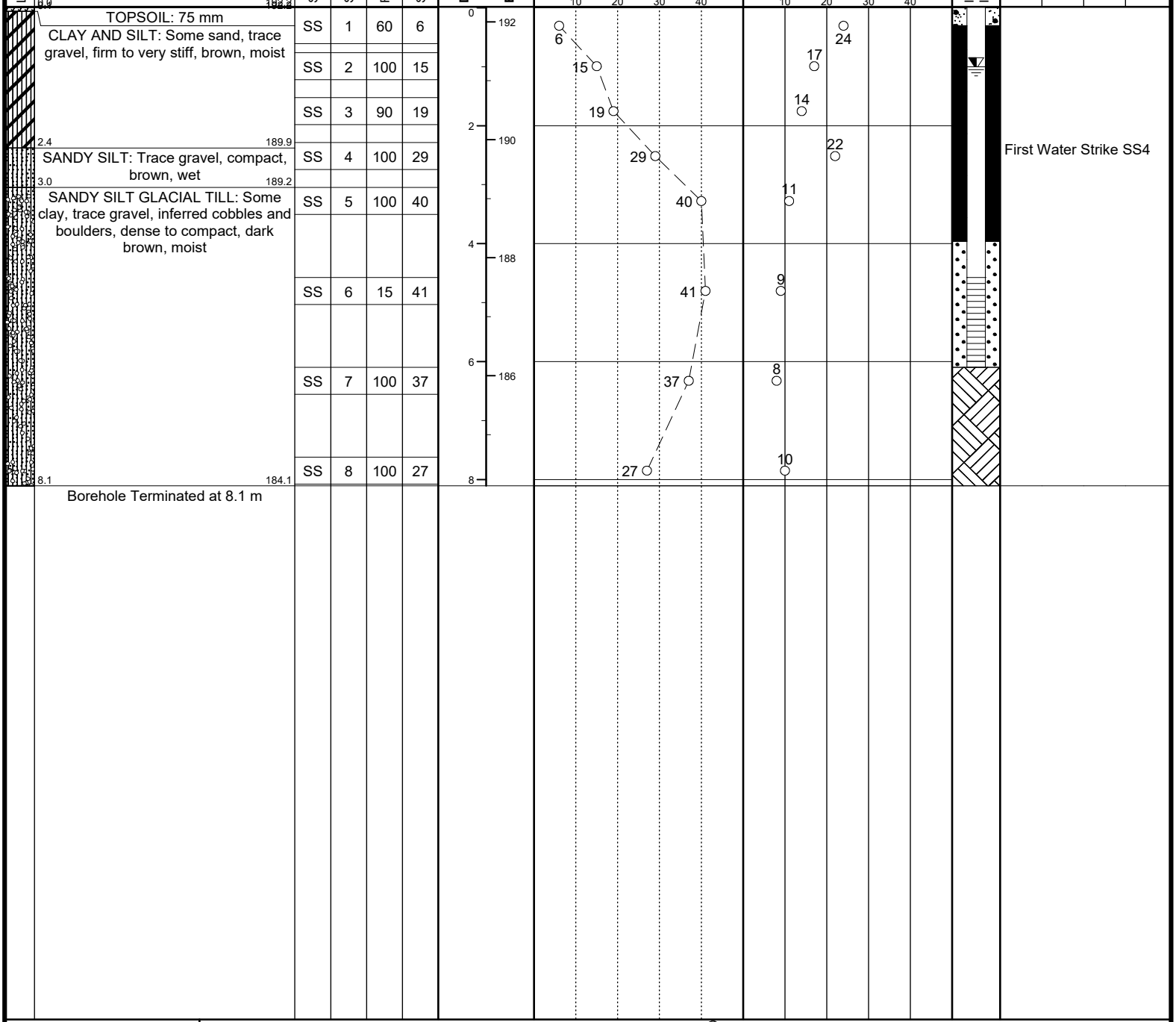
Appendix B

Borehole Logs

RECORD OF BOREHOLE No. 1

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821286**	Date Started: **Apr 24/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **594889.1**	Date Completed: **Apr 24/23**
Local Benchmark:					

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0	TOPSOIL: 75 mm	SS	1	60	6	192.2
	CLAY AND SILT: Some sand, trace gravel, firm to very stiff, brown, moist	SS	2	100	15	
		SS	3	90	19	
2.4						189.9
	SANDY SILT: Trace gravel, compact, brown, wet	SS	4	100	29	
3.0						189.2
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to compact, dark brown, moist	SS	5	100	40	
		SS	6	15	41	
		SS	7	100	37	
8.1		SS	8	100	27	184.1
	Borehole Terminated at 8.1 m					



Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Groundwater depth observed on: Jun 22/23 at depth of: 1.0 m.

Groundwater Elevation: 191.2 m

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Scale: **1 :100**

RECORD OF BOREHOLE No. 2

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821460** Date Started: **Apr 24/23**
Reviewed By: **GW** Easting: **595031.6** Date Completed: **Apr 24/23**

DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)
0.0 191.2					0	190
0.2 191.0 TOPSOIL: 150 mm						
CLAY AND SILT: Some sand, trace gravel, firm to very stiff, brown, moist	SS	1	85	6		
	SS	2	100	19		
	SS	3	100	17	2	188
2.3 188.9 SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense, brown, moist to wet	SS	4	100	34		
	SS	5	100	46		
- - - Gravelly sand seam - - -	SS	6	75	34	4	
5.0 186.2 Borehole Terminated at 5.0 m						

FIELD TESTING: Shear Strength Testing (kPa) — Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded); 40 80 120 160. Penetration Testing — SPT; DCPT; 10 20 30 40. SPT values: 6, 19, 17, 34, 46, 34.

LAB TESTING: Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); 100 200 300 400. Atterberg Limits — PL; LL. Water Content (%); 10 20 30 40. Water Content values: 13, 18, 20, 10, 14, 10.

Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
4	13	48	35

First Water Strike SS5

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Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on: Jun 22/23 at depth of: 0.8 m.
Groundwater Elevation: 190.4 m

Scale: **1 :100**

RECORD OF BOREHOLE No. 3

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821210**	Date Started: **Apr 24/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **594968.5**	Date Completed: **Apr 24/23**
Local Benchmark:					

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0	192.1					
0.2	191.9	TOPSOIL: 125 mm	SS	1	85	5
0.8	191.3	FILL: Clayey silt, some sand, trace organics, firm, brown, moist	SS	2	100	9
		CLAYEY SILT: Some sand, trace gravel, stiff, brown, moist	SS	3	100	14
2.3	189.8	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown, wet to moist	SS	4	100	25
			SS	5	100	32
		- - - Some gravel, brownish grey - - -	SS	6	100	24
			SS	7	100	19
8.1	183.9		SS	8	100	16
		Borehole Terminated at 8.1 m				

FIELD TESTING
Shear Strength Testing (kPa)
× Other Test
+ Pocket Penetrometer
▲ Field Vane (Intact)
△ Field Vane (Remolded)
40 80 120 160
Penetration Testing
○ SPT ● DCPT
10 20 30 40

LAB TESTING
△ Combustible Organic Vapour (ppm)
▲ Combustible Organic Vapour (%LEL)
◇ Total Organic Vapour (ppm)
100 200 300 400
Atterberg Limits
PL ○ Water Content (%) LL
10 20 30 40

COMMENTS & GRAIN SIZE DISTRIBUTION (%)
First Water Strike SS4

GR	SA	SI	CL

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Groundwater depth encountered on completion of drilling: 7.6 m. Cave depth after auger removal: Open
Groundwater depth observed on: Groundwater Elevation:

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

Scale: **1 :100**
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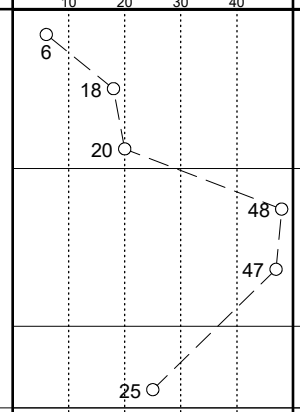
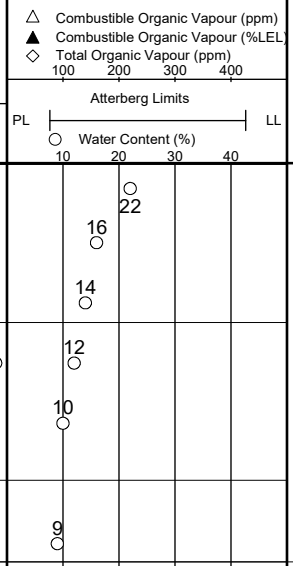
RECORD OF BOREHOLE No. 4

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821304**	Date Started:	**Apr 24/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**594968.5**	Date Completed:	**Apr 24/23**
Local Benchmark:							

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0	191.5					
0.2	191.4	TOPSOIL: 150 mm	SS	1	60	6
0.8	190.8	FILL: Clayey silt, some sand, trace gravel, firm, grey, moist				
		CLAYEY SILT: Some sand, trace gravel, very stiff, brown, wet	SS	2	100	18
			SS	3	100	20
2.3	189.3	SANDY SILT GLACIAL TILL: Trace clay, trace gravel, inferred cobbles and boulders, dense to compact, brown, moist to wet	SS	4	65	48
			SS	5	100	47
5.0	186.5		SS	6	100	25
		Borehole Terminated at 5.0 m				





First Water Strike SS2

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

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

Scale: **1 :100**
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RECORD OF BOREHOLE No. 5

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Hollow Stem Augers**	Drilling Machine:	**Track Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821393**	Date Started: **Apr 21/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **595046.6**	Date Completed: **Apr 21/23**
Local Benchmark:					

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING (Shear Strength Testing (kPa); Penetration Testing SPT/DCPT)	LAB TESTING (Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits PL–LL; Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	0.0 190.6 TOPSOIL: 75 mm	SS	1	75	10	0	190	10	18		First Water Strike SS2
	0.8 189.8 FILL: Clayey silt, some sand, trace organics, stiff, brown, wet	SS	2	80	13			13	18		
	CLAYEY SILT: Some sand, trace gravel, stiff, brown, moist to wet	SS	3	85	13	2	188	13	27		
	2.3 188.3 SANDY SILT GLACIAL TILL: Some clay, trace to some gravel, inferred cobbles and boulders, dense, brown to brownish grey, moist	SS	4	90	33			33	10		
		SS	5	85	43	4	186	43	9		
	5.0 185.6	SS	6	100	38			38	7		
	Borehole Terminated at 5.0 m										

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Groundwater depth encountered on completion of drilling: 3.0 m. Cave depth after auger removal: 3.9 m.

Groundwater depth observed on: Groundwater Elevation:

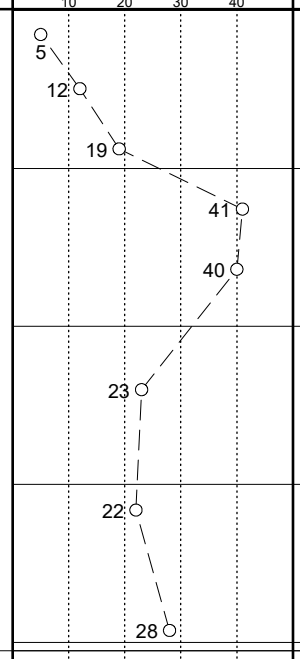
Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and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

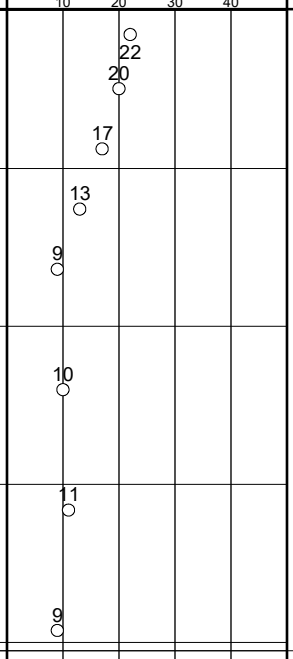
Scale: **1 :100**

RECORD OF BOREHOLE No. 6

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821393**	Date Started:	**Apr 24/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595061.7**	Date Completed:	**Apr 24/23**
Local Benchmark:							

Depth	Elevation	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0	191.3					
0.2	191.2	TOPSOIL: 150 mm	SS	1	85	5
0.8	190.6	FILL: Clayey silt, some sand, trace organics, firm, brown, moist				
		CLAYEY SILT: Some sand, trace gravel, stiff to very stiff, brown, moist	SS	2	100	12
			SS	3	100	19
2.3	189.0					
		SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to compcat, brown to brownish grey, wet to moist	SS	4	100	41
			SS	5	100	40
			SS	6	100	23
			SS	7	100	22
		- - - Some gravel - - -	SS	8	100	28
8.1	183.2	Borehole Terminated at 8.1 m				





First Water Strike SS4

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Groundwater depth encountered on completion of drilling: 7.6 m. Cave depth after auger removal: Open

Groundwater depth observed on: Groundwater Elevation:

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

Scale: **1 :100**

RECORD OF BOREHOLE No. 7

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Hollow Stem Augers**	Drilling Machine:	**Track Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821327**	Date Started: **Apr 25/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **595205.4**	Date Completed: **Apr 25/23**
Local Benchmark:					

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						190.3
0.2	TOPSOIL: 150 mm					190.1
	FILL: Clayey silt, some sand, trace organics, stiff, brown, moist	SS	1	75	10	
0.8						189.5
	CLAYEY SILT: Some sand, stiff, greyish brown, moist	SS	2	100	13	
		SS	3	100	13	
2.3						188.0
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense, dark brown, moist	SS	4	100	33	
		SS	5	100	43	
	- - - Wet - - -	SS	6	65	38	
5.0						185.3
	Borehole Terminated at 5.0 m					

FIELD TESTING: Shear Strength Testing (kPa) — Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded); 40 80 120 160. Penetration Testing — SPT; DCPT; 10 20 30 40.

LAB TESTING: Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); 100 200 300 400. Atterberg Limits — PL; LL; Water Content (%); 10 20 30 40.

Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
9	29	44	18

First Water Strike SS6

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Groundwater depth encountered on completion of drilling: 3.2 m. Cave depth after auger removal: Open

Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 8

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821074**	Date Started:	**Apr 27/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595147.5**	Date Completed:	**Apr 27/23**
Local Benchmark:							

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING (Shear Strength Testing (kPa); Penetration Testing SPT/DCPT)	LAB TESTING (Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits PL–LL; Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
	0.0 190.5 0.1 190.4 TOPSOIL: 75 mm	SS	1	75	7	0	190	7	20					
	FILL: Clayey silt, some sand, firm, brown, moist 0.8 189.7								15					
	CLAYEY SILT: Some sand, stiff, brown, moist 1.5 189.0	SS	2	100	14			14						
	SANDY SILT GLACIAL TILL: Some clay, inferred cobbles and boulders, compact to dense, brown, wet to moist	SS	3	100	28	2	188	28	23		First Water Strike SS3			
		SS	4	100	38			38	10					
		SS	5	100	28			28	9					
		SS	6	100	23	4	186	23	10					
	6.1 184.4 CLAYEY SANDY SILT GLACIAL TILL: Trace gravel, inferred cobbles and boulders, compact to dense, brown to brownish grey, moist	SS	7	100	16	6	184	16	15		1	22	55	22
		SS	8	100	43	8		43	9					
	8.1 182.4 Borehole Terminated at 8.1 m													

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Groundwater depth encountered on completion of drilling: 7.4 m. Cave depth after auger removal: Open

Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 9

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821164** Date Started: **Apr 27/23**
Reviewed By: **GW** Easting: **595225.7** Date Completed: **Apr 27/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING	LAB TESTING	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	0.0 190.4							Shear Strength Testing (kPa): × Other Test; + Pocket Penetrometer; ▲ Field Vane (Intact); △ Field Vane (Remolded); 40 80 120 160. Penetration Testing: ○ SPT ● DCPT; 10 20 30 40	△ Combustible Organic Vapour (ppm); ▲ Combustible Organic Vapour (%LEL); ◇ Total Organic Vapour (ppm); 100 200 300 400. Atterberg Limits: PL LL. ○ Water Content (%); 10 20 30 40		GR SA SI CL
	TOPSOIL: 100 mm	SS	1	90	7	0	190	7 17 23 40 51 22	21 14 18 10 10 9		
	0.1 190.3 CLAYEY SILT: Some sand, trace gravel, firm to very stiff, brown, moist to wet	SS	2	85	17						
	1.1 189.3 SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to very dense, brown, moist	SS	3	100	23	2	188				First Water Strike SS3
		SS	4	100	40						
		SS	5	100	51						
	5.0 185.4	SS	6	65	22	4	186				
	Borehole Terminated at 5.0 m										

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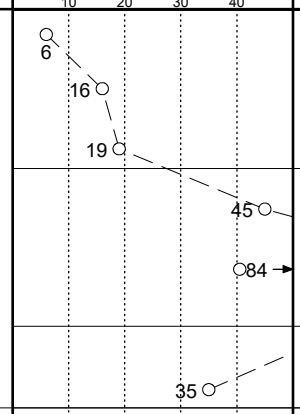
Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on:
Groundwater Elevation:

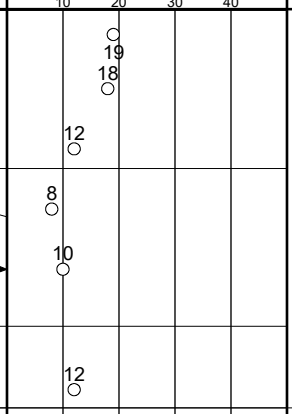
RECORD OF BOREHOLE No. 10

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821245** Date Started: **Apr 27/23**
Reviewed By: **GW** Easting: **595296.6** Date Completed: **Apr 27/23**

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0	190.1					
0.2	189.9	TOPSOIL: 205 mm	SS	1	80	6
0.8	189.3	FILL: Clayey silt, some sand, firm, brown, moist				
		CLAYEY SILT: Some sand, very stiff, brown, moist - - - Trace gravel - - -	SS	2	100	16
			SS	3	100	19
2.3	187.8	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to very dense, brown, moist	SS	4	100	45
			SS	5	100	84
5.0	185.0		SS	6	100	35
		Borehole Terminated at 5.0 m				





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

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

Scale: **1 :100**
Page: **1 of 1**

RECORD OF BOREHOLE No. 11

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821021** Date Started: **Apr 27/23**
Reviewed By: **GW** Easting: **595221.8** Date Completed: **Apr 27/23**

DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)
0.0 191.9					0	
0.2 191.7 TOPSOIL: 150 mm						
FILL: Clayey silt, Some sand, trace organics, firm, brown, moist 0.8 191.1	SS	1	80	7		
CLAYEY SILT: Some sand, trace gravel, very stiff, brown, moist	SS	2	100	18		
	SS	3	100	21	2	190
2.6 189.3	SS	4	100	19		
SILT AND SAND: Trace clay, compact, brown, wet						
3.5 188.4	SS	5	100	28		
SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brownish grey, moist					4	188
	SS	6	100	20		
					6	186
	SS	7	100	18		
	SS	8	100	19	8	184
8.1 183.8 Borehole Terminated at 8.1 m						

FIELD TESTING
Shear Strength Testing (kPa)
× Other Test
+ Pocket Penetrometer
▲ Field Vane (Intact)
△ Field Vane (Remolded)
40 80 120 160
Penetration Testing
○ SPT ● DCPT
10 20 30 40

LAB TESTING
△ Combustible Organic Vapour (ppm)
▲ Combustible Organic Vapour (%LEL)
◇ Total Organic Vapour (ppm)
100 200 300 400
Atterberg Limits
PL LL
○ Water Content (%)
10 20 30 40

Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
4	17	47	32

First Water Strike SS4

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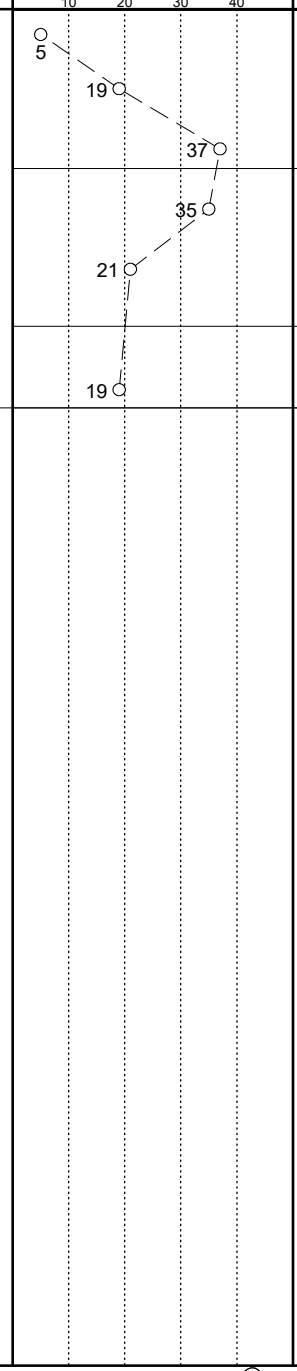
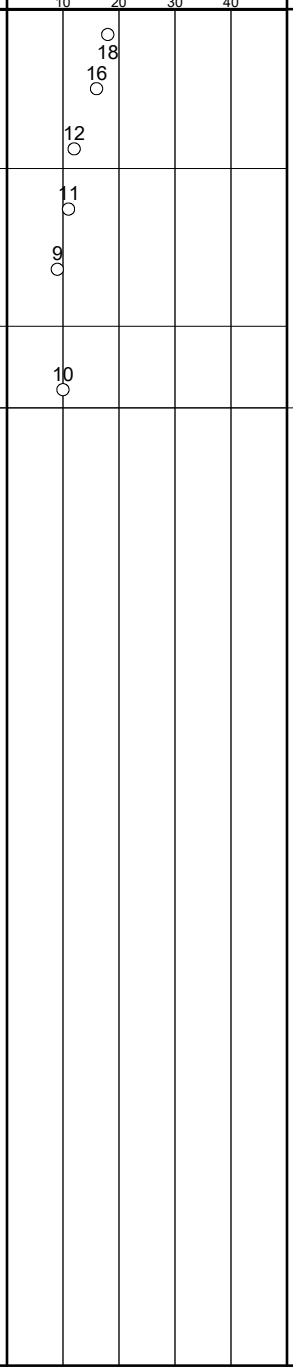
Groundwater depth encountered on completion of drilling: 7.3 m. Cave depth after auger removal: Open
Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 12

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method: **Solid Stem Augers**		Drilling Machine: **Track Mount**	
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By: **SDP**	Northing: **4821109**	Date Started:	**Apr 27/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By: **GW**	Easting: **595294.3**	Date Completed:	**Apr 27/23**
Local Benchmark:					

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						189.9
0.2	TOPSOIL: 205 mm					189.7
0.6	FILL: Clayey silt, some sand, trace gravel, firm, brown, moist	SS	1	65	5	189.3
1.5	CLAYEY SILT: Some sand, trace gravel, very stiff, brown, moist	SS	2	100	19	188.4
	SANDY SILT GLACIAL TILL: Trace gravel, trace clay, inferred cobbles and boulders, dense to compact, brown to brownish grey, moist	SS	3	100	37	
		SS	4	100	35	
		SS	5	100	21	
5.0		SS	6	100	19	184.9
	Borehole Terminated at 5.0 m					





Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL

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Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Groundwater depth observed on:

Groundwater Elevation:

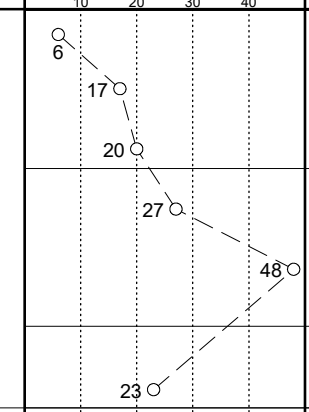
Scale: **1 :100**

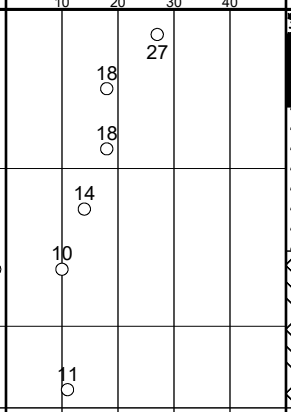
RECORD OF BOREHOLE No. 13

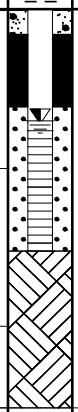
Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821202** Date Started: **Apr 26/23**
Reviewed By: **GW** Easting: **595357.4** Date Completed: **Apr 26/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)	Comments
0.0 / 190.3	TOPSOIL: 50 mm	SS	1	75	6		
0.8 / 189.5	FILL: Sandy clayey silt, firm, brown, very moist	SS	2	100	17		
	CLAYEY SILT: Some sand, very stiff, brown, moist	SS	3	100	20		
3.0 / 187.2		SS	4	100	27		
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to compact, brown to bronwish grey, moist	SS	5	100	48		
5.0 / 185.3		SS	6	100	23		
	Borehole Terminated at 5.0 m						







First Water Strike SS2

GR | SA | SI | CL

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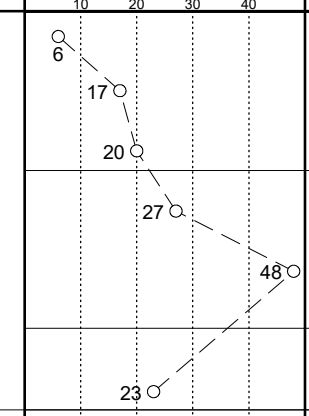
Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on: Jun 22/23 at depth of: 1.4 m.
Groundwater Elevation: 188.9 m

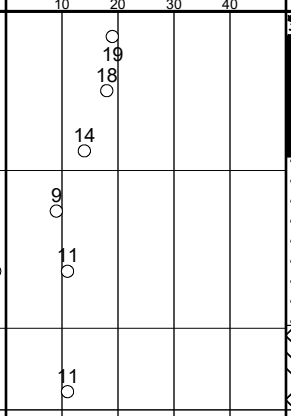
RECORD OF BOREHOLE No. 14

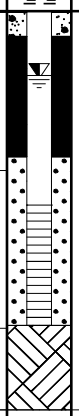
Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821572** Date Started: **May 1/23**
Reviewed By: **GW** Easting: **595174.6** Date Completed: **May 1/23**

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0	190.0					
0.2	189.9	TOPSOIL: 175 mm	SS	1	75	6
		CLAYEY SILT: Some sand, trace gravel, firm to very stiff, grey, moist	SS	2	100	17
			SS	3	100	20
2.3	187.8	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown, moist	SS	4	100	27
			SS	5	100	48
5.0	185.0		SS	6	100	23
		Borehole Terminated at 5.0 m				







COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR | SA | SI | CL

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Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on: Jun 22/23 at depth of: 0.8 m.
Groundwater Elevation: 189.2 m

Scale: **1 :100**

RECORD OF BOREHOLE No. 15

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821605** Date Started: **Apr 21/23**
Reviewed By: **GW** Easting: **595261.4** Date Completed: **Apr 21/23q**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING	LAB TESTING	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	0.0 189.3 TOPSOIL: 75 mm	SS	1	100	5	0		5	17		
	0.8 188.5 FILL: Sand and silt, trace clay, trace organics, trace gravel, loose, brown, moist to wet	SS	2	100	10		188	10	12		
	CLAYEY SILT: Some sand, trace gravel, till-like, inferred cobbles and boulders, stiff to very stiff, brown, moist	SS	3	90	16	2		16	20		
	2.3 187.0 SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown to brownish grey, moist	SS	4	90	24			24	10		
		SS	5	100	32		186	32	9		
	5.0 184.2 Borehole Terminated at 5.0 m	SS	6	100	15	4		15	10		

Shear Strength Testing (kPa): Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded) — 40 80 120 160
Penetration Testing: SPT ○ DCPT ● — 10 20 30 40
Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm) — 100 200 300 400
Atterberg Limits: PL LL; Water Content (%) — 10 20 30 40

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

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

Scale: **1 :100**
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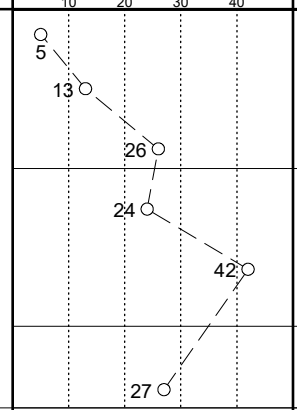
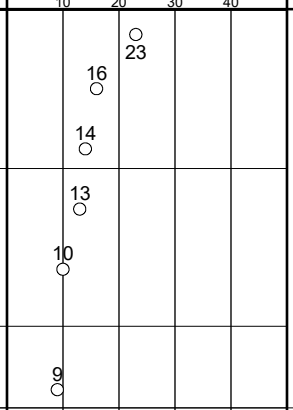
RECORD OF BOREHOLE No. 16

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821700** Date Started: **Mar 9/23**
Reviewed By: **GW** Easting: **595280.3** Date Completed: **Mar 9/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						189.6
0.2	TOPSOIL: 205 mm					189.4
	SAND AND SILT: Some clay, loose to compact, brown, moist	SS	1	75	5	
		SS	2	100	13	
1.5						188.1
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown, moist to wet	SS	3	100	26	
		SS	4	100	24	
		SS	5	100	42	
5.0		SS	6	100	27	184.6
	Borehole Terminated at 5.0 m					





First Water Strike SS4

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

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

Scale: **1 :100**
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RECORD OF BOREHOLE No. 17

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Hollow Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821506**	Date Started:	**Apr 21/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595248.9**	Date Completed:	**Apr 21/23**
Local Benchmark:							

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	Shear Strength Testing (kPa): Other Test, Pocket Penetrometer, Field Vane (Intact), Field Vane (Remolded); Penetration Testing: SPT, DCPT	Combustible Organic Vapour (ppm), Combustible Organic Vapour (%LEL), Total Organic Vapour (ppm); Atterberg Limits; Water Content (%)	Instrumentation Installation	GR / SA / SI / CL
	0.0 / 189.9					0					
	FILL: Clayey silt, some sand, trace organics, firm, dark brown, moist	SS	1	60	5			5	23		
	0.8 / 189.1								17		
	CLAYEY SILT: Some sand, stiff, brown, moist	SS	2	90	14			14			
		SS	3	95	15	2	188	15	15		
	2.3 / 187.6										
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown to brownish grey, wet to moist	SS	4	95	23			23	13		First Water Strike SS4
		SS	5	100	29			29	9		
						4	186				
	5.0 / 184.8	SS	6	100	18			18	8		
	Borehole Terminated at 5.0 m										

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Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Groundwater depth observed on:

Groundwater Elevation:

RECORD OF BOREHOLE No. 18

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Solid Stem Augers**
Logged By: **SDP** Northing: **4821646** Date Started: **May 1/23**
Reviewed By: **GW** Easting: **595336.2** Date Completed: **May 1/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)	Comments & Grain Size Distribution (%) GR	SA	SI	CL
0.0 / 190.8										
0.2 / 190.6	TOPSOIL: 230 mm									
	FILL: Clayey silt, some sand, stiff, brown, moist	SS	1	100	5					
		SS	2	55	6					
	- - - Some organics - - -	SS	3	100	11					
2.3 / 188.5	CLAYEY SAND AND SILT GLACIAL TILL: Some gravel, inferred cobbles and boulders, compact to dense, brown, moist	SS	4	100	22		12	31	31	26
	- - - Wet - - -	SS	5	100	18		First Water Strike SS5			
		SS	6	100	35					
	- - - Sand seam - - -	SS	7	100	25					
8.1 / 182.7		SS	8	100	19					
	Borehole Terminated at 8.1 m									

Groundwater depth encountered on completion of drilling: 4.5 m. Cave depth after auger removal: 6.7 m.
Groundwater depth observed on: Groundwater Elevation:

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RECORD OF BOREHOLE No. 19

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Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821435**
				Date Started:	**Apr 25/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595345.4**
				Date Completed:	**Apr 25/23**
Local Benchmark:					

LITHOLOGY PROFILE / SOIL SAMPLING / FIELD TESTING / LAB TESTING / COMMENTS & GRAIN SIZE DISTRIBUTION (%)

Field Testing – Shear Strength Testing (kPa): × Other Test; + Pocket Penetrometer; ▲ Field Vane (Intact); △ Field Vane (Remolded); scale 40, 80, 120, 160. Penetration Testing: ○ SPT; ● DCPT; scale 10, 20, 30, 40.

Lab Testing: △ Combustible Organic Vapour (ppm); ▲ Combustible Organic Vapour (%LEL); ◇ Total Organic Vapour (ppm); scale 100, 200, 300, 400. Atterberg Limits: PL ├──┤ LL; ○ Water Content (%); scale 10, 20, 30, 40.

Depth (m) / Elev. (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	SPT (plotted)	Water Content (%)	Instrumentation Installation	Comments	GR	SA	SI	CL
0.0 / 189.6 – 0.2 / 189.5	TOPSOIL: 150 mm												
0.2 / 189.5 – 0.8 / 188.9	FILL: Clayey silt, some sand, firm, brown, moist	SS	1	80	8	8	18						
0.8 / 188.9 – 2.3 / 187.4	CLAYEY SILT: Trace gravel, very stiff, dark brown, moist	SS	2	100	16	16	19						
		SS	3	100	22	22	21						
2.3 / 187.4 – 5.0 / 184.6	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brownish grey, moist to wet	SS	4	100	29	29	11						
		SS	5	100	19	19	8		First Water Strike SS5				
		SS	6	100	20	20	9						
	Borehole Terminated at 5.0 m												

Depth scale (m): 0, 2, 4. Elevation scale (m): 188, 186.

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Groundwater depth encountered on completion of drilling: 4.5 m.
Cave depth after auger removal: Open
Groundwater depth observed on:
Groundwater Elevation:

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

Scale: **1 :100**

RECORD OF BOREHOLE No. 20

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821473** Date Started: **Apr 26/23**
Reviewed By: **GW** Easting: **595427.7** Date Completed: **Apr 26/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING (Shear Strength Testing (kPa); Penetration Testing SPT/DCPT)	LAB TESTING (Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits; Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
	0.0 189.5 TOPSOIL: 50 mm	SS	1	80	5	0		5	20					
	0.8 188.7 FILL: Sandy clayey silt, trace organics, firm, brown, moist							17	16					
		SS	2	100	17		188				4	16	48	32
	1.5 188.0 CLAYEY SILT: Some sand, trace gravel, very stiff, brown, moist					2		17	12					
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, cobbles and boulders, compact to dense, brown, moist	SS	3	100	17									
		SS	4	100	22			22	10					
	- - - Sand seam, wet - - -	SS	5	100	48		186	48	10		First Water Strike SS5			
						4								
	5.0 184.5	SS	6	100	21			21	12					
	Borehole Terminated at 5.0 m													

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Groundwater depth encountered on completion of drilling: 4.1 m. Cave depth after auger removal: Open
Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 21

GEI Consultants

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821561** Date Started: **Apr 25/23**
Reviewed By: **GW** Easting: **595444.9** Date Completed: **Apr 25/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING (Shear Strength Testing (kPa); Penetration Testing SPT/DCPT)	LAB TESTING (Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits PL–LL; Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	0.0 / 189.1										
	0.2 / 188.9 TOPSOIL: 150 mm										
	0.8 / 188.3 FILL: Clayey silt, some sand, firm, brown, moist	SS	1	85	4	0		4	15		
	CLAYEY SILT: Some sand, trace gravel, very stiff, brown, moist	SS	2	100	15		188	15	16		
		SS	3	100	26	2		26	16		
	- - - Sand seam, wet - - -	SS	4	100	20		186	20	10		First Water Strike SS4
	3.0 / 186.0 SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense, brownish grey, moist	SS	5	100	31	4		31	10		
		SS	6	100	34		184	34	11		
		SS	7	100	30	6		30	10		
		SS	8	100	38		182	38	9		
	8.1 / 181.0 Borehole Terminated at 8.1 m					8					

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Groundwater depth encountered on completion of drilling: 5.7 m. Cave depth after auger removal: Open
Groundwater depth observed on: Groundwater Elevation:

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

Scale: **1 :100**
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RECORD OF BOREHOLE No. 22

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821356** Date Started: **Apr 26/23**
Reviewed By: **GW** Easting: **595430.7** Date Completed: **Apr 26/23**

DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)
0.0 189.4 TOPSOIL: 100 mm					0	
0.1 189.3 CLAYEY SILT: Some sand, firm to very stiff, brown, moist	SS	1	80	8		
- - - Trace gravel - - -	SS	2	100	23		188
1.5 187.9 SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to very dense, brown, moist	SS	3	100	18	2	
	SS	4	100	43		
- - - Brownish grey - - -	SS	5	100	52		186
5.0 184.4	SS	6	100	24	4	
Borehole Terminated at 5.0 m						

FIELD TESTING: Shear Strength Testing (kPa); Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded); Penetration Testing: SPT, DCPT

LAB TESTING: Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits: PL, LL; Water Content (%)

Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%): GR, SA, SI, CL

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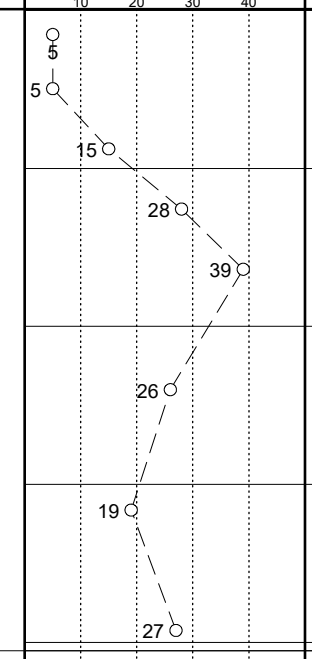
Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on: Jun 22/23 at depth of: 0.6 m.
Groundwater Elevation: 188.8 m

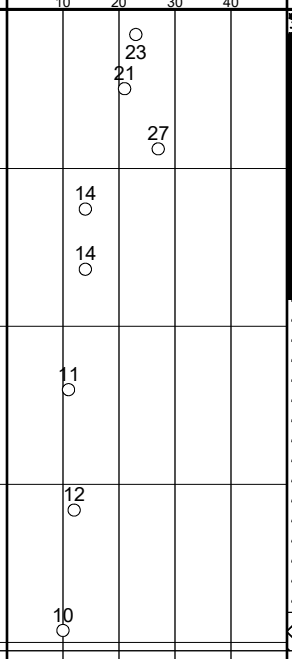
Scale: **1 :100**

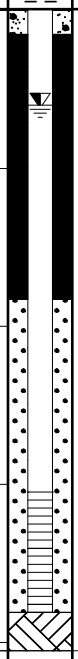
RECORD OF BOREHOLE No. 23

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821523**	Date Started:	**May 1/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595461.3**	Date Completed:	**May 1/23**
Local Benchmark:							

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0	189.3					
0.2	189.1	TOPSOIL: 205 mm	SS	1	90	5
0.8	188.5	FILL: Clayey silt, some sand, firm, brown, moist to wet	SS	2	100	5
		CLAYEY SILT: Some sand, firm to very stiff, brown, moist	SS	3	100	15
			SS	4	100	28
3.0	186.3					
		SANDY SILT GLACIAL TILL: Some clay, inferred cobbles and boulders, dense to compact, brownish grey, moist	SS	5	60	39
			SS	6	100	26
			SS	7	90	19
8.1	181.2		SS	8	100	27
		Borehole Terminated at 8.1 m				







First Water Strike SS2

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Groundwater depth encountered on completion of drilling: 6.0 m. Cave depth after auger removal: Open

Groundwater depth observed on: Jun 22/23 at depth of: 1.2 m. Groundwater Elevation: 188.1 m

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

Scale: **1 :100**

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RECORD OF BOREHOLE No. 24

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Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Buggy Mount**
Logged By: **SDP** Northing: **4821856** Date Started: **Mar 9/23**
Reviewed By: **GW** Easting: **595377.8** Date Completed: **Mar 9/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						189.5
0.2	TOPSOIL: 230 mm	SS	1	45	6	189.3
0.8	FILL: Sand and Silt, trace clay, loose, brown, wet	SS	2	100	12	188.7
1.5	CLAYEY SILT: Some sand, stiff, brown, wet	SS	3	100	20	187.9
	CLAYEY SANDY SILT GLACIAL TILL: Trace gravel, inferred cobbles and boulders, compact, brown, moist	SS	4	100	14	
	- - - Grey, wet - - -	SS	5	90	12	
5.0		SS	6	100	14	184.4
	Borehole Terminated at 5.0 m					

Shear Strength Testing (kPa): Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded)
Penetration Testing: SPT; DCPT
Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm)
Atterberg Limits: PL; LL; Water Content (%)
Instrumentation Installation: First Water Strike SS2

COMMENTS & GRAIN SIZE DISTRIBUTION (%): GR; SA; SI; CL

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Groundwater depth encountered on completion of drilling: 4.5 m. Cave depth after auger removal: 4.8 m.
Groundwater depth observed on: Jun 22/23 at depth of: 0.9 m. Groundwater Elevation: 188.6 m

Scale: **1 :100**

RECORD OF BOREHOLE No. 25

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Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Buggy Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821795**	Date Started:	**Mar 12/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595486.1**	Date Completed:	**Mar 12/23**
Local Benchmark:							

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING	LAB TESTING	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	0.0 / 189.6							Shear Strength Testing (kPa): × Other Test; + Pocket Penetrometer; ▲ Field Vane (Intact); △ Field Vane (Remolded); 40 80 120 160	△ Combustible Organic Vapour (ppm); ▲ Combustible Organic Vapour (%LEL); ◇ Total Organic Vapour (ppm); 100 200 300 400		GR SA SI CL
	0.1 / 189.5 TOPSOIL: 100 mm										
	FILL: Silty sand, loose, brown, moist	SS	1	30	4	0					
	0.8 / 188.8										
	SANDY CLAYEY SILT: Trace organics, firm to stiff, brown, moist to wet	SS	2	100	5			Penetration Testing: ○ SPT ● DCPT; 10 20 30 40	Atterberg Limits: PL ○ Water Content (%) LL; 10 20 30 40		
		SS	3	100	14	188					First Water Strike SS3
	2.3 / 187.3					2					
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown, very moist	SS	4	100	18						
		SS	5	100	14	186					
						4					
	5.0 / 184.6	SS	6	100	23						
	Borehole Terminated at 5.0 m										

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Groundwater depth encountered on completion of drilling: 1.8 m. Cave depth after auger removal: 3.6 m.

Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 26

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Buggy Mount**
Logged By: **SDP** Northing: **4821869** Date Started: **Mar 9/23**
Reviewed By: **GW** Easting: **595484.5** Date Completed: **Mar 9/23**

Depth (m)	Description	Elevation (m)	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0		189.3				
0.3	TOPSOIL: 280 mm	189.0	SS	1	100	4
0.8	FILL: Sand and silt, loose, brown, moist to wet	188.5	SS	2	95	10
	CLAYEY SILT: Some sand, trace organics, stiff to very stiff, brown, wet to moist		SS	3	100	20
2.3		187.0	SS	4	100	22
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown, moist		SS	5	100	22
5.0		184.3	SS	6	100	18
	Borehole Terminated at 5.0 m					

First Water Strike SS2

FIELD TESTING
Shear Strength Testing (kPa)
× Other Test
+ Pocket Penetrometer
▲ Field Vane (Intact)
△ Field Vane (Remolded)
40 80 120 160
Penetration Testing
○ SPT ● DCPT
10 20 30 40

LAB TESTING
△ Combustible Organic Vapour (ppm)
▲ Combustible Organic Vapour (%LEL)
◇ Total Organic Vapour (ppm)
100 200 300 400
Atterberg Limits
PL LL
○ Water Content (%)
10 20 30 40

COMMENTS & GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

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Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on: Jun 22/23 at depth of: 1.3 m.
Groundwater Elevation: 188.0 m

RECORD OF BOREHOLE No. 27

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821820**	Date Started:	**Mar 10/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595579.4**	Date Completed:	**Mar 10/23**
Local Benchmark:							

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	Shear Strength Testing (kPa); Penetration Testing (SPT, DCPT)	Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits; Water Content (%)	Instrumentation Installation		GR	SA	SI	CL
	0.0 187.2 FILL: Sand and gravel, loose, brown, moist 0.3 186.9	SS	1	75	5	0	187	5	23		First Water Strike SS2				
	TOPSOIL: 180 mm								20						
	SANDY CLAYEY SILT: Trace organics, stiff, brown to grey, wet 1.5 185.7	SS	2	70	10		186	10							
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown, moist	SS	3	100	23	2		23	11						
		SS	4	100	20			20	11						
		SS	5	70	22		184	22	11						
	4.6 182.6 SILT: Trace sand, compact, grey, wet 5.0 182.2	SS	6	100	12	4		12	24						
	Borehole Terminated at 5.0 m														

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Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Groundwater depth observed on:

Groundwater Elevation:

RECORD OF BOREHOLE No. 28

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Buggy Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821729**	Date Started:	**Mar 10/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595539.0**	Date Completed:	**Mar 10/23**
Local Benchmark:							

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING			COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	Shear Strength Testing (kPa): Other Test, Pocket Penetrometer, Field Vane (Intact), Field Vane (Remolded); Penetration Testing: SPT, DCPT	Combustible Organic Vapour (ppm), Combustible Organic Vapour (%LEL), Total Organic Vapour (ppm); Atterberg Limits; Water Content (%)	Instrumentation Installation		GR	SA	SI	CL
	0.0 189.5														
	0.2 189.4 TOPSOIL: 125 mm	SS	1	45	4	0		4, 4	14						
	FILL: Silty sand, loose, brown, wet - - - Sand and silt - - -	SS	2	100	4				27		First Water Strike SS2				
	1.5 188.0						188								
	SANDY CLAYEY SILT: Stiff, brown, wet	SS	3	100	10	2		10	25						
	2.3 187.2														
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown, wet to moist	SS	4	100	18			18	14						
		SS	5	100	11		186	11	14						
						4									
	5.0 184.5	SS	6	85	28			28	10						
	Borehole Terminated at 5.0 m														

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Groundwater depth encountered on completion of drilling: 1.5 m. Cave depth after auger removal: Open

Groundwater depth observed on: Jun 22/23 at depth of: 1.1 m. Groundwater Elevation: 188.4 m

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

Scale: **1 :100**

RECORD OF BOREHOLE No. 29

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Project Number:	2300805				
Project Client:	Anatolia Invesments Corporation				
Project Name:	Proposed Commercial Warehouse	Drilling Method:	Hollow Stem Augers	Drilling Machine:	Track Mount
Project Location:	6728 Sixth Line, Milton, ON	Logged By: SDP	Northing: 4821552	Date Started:	Apr 21/23
Drilling Location:	See Borehole Location Plan	Reviewed By: GW	Easting: 595065.4	Date Completed:	May 1/23
Local Benchmark:					

LITHOLOGY PROFILE / SOIL SAMPLING / FIELD TESTING / LAB TESTING

Field Testing – Shear Strength Testing (kPa): Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded). Penetration Testing: SPT; DCPT.

Lab Testing: Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits (PL, LL); Water Content (%).

Depth (m) / Elev. (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Water Content (%)	Comments
0.0 / 190.5 0.1 / 190.4	TOPSOIL: 75 mm						
	FILL: Clayey silt, some sand, firm, brown, moist	SS	1	90	6	14	
0.8 / 189.7	CLAYEY SILT: Some sand, trace gravel, very stiff, brown, moist	SS	2	100	16	17	
		SS	3	100	15	14	
	- - - Trace sand, wet - - -	SS	4	100	15	24	First Water Strike SS4
3.0 / 187.4	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brownish grey, very moist	SS	5	100	27	11	
		SS	6	65	11	10	
		SS	7	100	11	12	
8.1 / 182.4		SS	8	100	19	10	
	Borehole Terminated at 8.1 m						

Grain Size Distribution (%): GR, SA, SI, CL

Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Groundwater depth observed on:

Groundwater Elevation:

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Scale: 1 :100

RECORD OF BOREHOLE No. 30

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Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Hollow Stem Augers**	Drilling Machine:	**Track Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821503**	Date Started: **Apr 21/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **595121.7**	Date Completed: **Apr 21/23**
Local Benchmark:					

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING (Shear Strength Testing (kPa); Penetration Testing SPT/DCPT)	LAB TESTING (Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits PL–LL; Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
	0.0 191.8 TOPSOIL: 50 mm	SS	1	100	8	0		8	15					
	0.8 191.0 FILL: Silty sand, trace clay, loose, brown, very moist								15					
	CLAYEY SILT: Some sand, trace gravel, stiff to very stiff, brown, moist	SS	2	25	10			10						
		SS	3	100	19	2	190	19	16					
	3.0 188.7	SS	4	100	17			17	18					
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to compact, brownish grey, moist	SS	5	100	35			35	12					
		SS	6	100	27	4	188	27	9					
	- - - Very dense - - -	SS	7	50	50+	6	186	50+	16					
	8.1 183.7	SS	8	100	21	8	184	21	23					
	Borehole Terminated at 8.1 m													

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Groundwater depth encountered on completion of drilling: 4.4 m. Cave depth after auger removal: 4.8 m.

Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 31

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

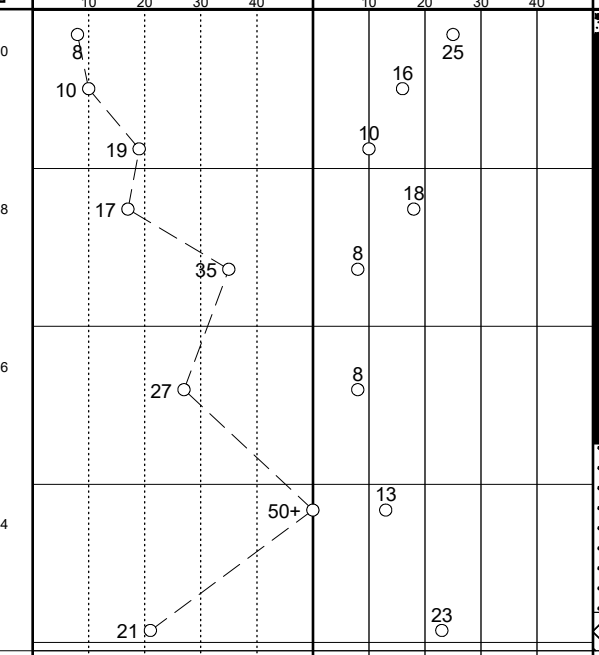
Drilling Method: **Hollow Stem Augers** Drilling Machine: **Solid Stem Augers**
Logged By: **SDP** Northing: **4821438** Date Started: **Apr 25/23**
Reviewed By: **GW** Easting: **595217.2** Date Completed: **Apr 25/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						190.5
0.2	TOPSOIL: 150 mm					190.3
0.8	FILL: Clayey silt, some sand, firm, brown, moist	SS	1	100	8	189.7
	CLAYEY SILT: Some sand, stiff to very stiff, brown, moist	SS	2	25	10	
	- - - Very stiff - - -	SS	3	100	19	
		SS	4	100	17	
3.0						187.5
	CLAYEY SANDY SILT GLACIAL TILL: Trace gravel, inferred cobbles and boulders, compact to dense, brownish grey, moist	SS	5	100	35	
		SS	6	100	27	
	- - - Very dense - - -	SS	7	50	50+	
8.1		SS	8	100	21	182.4
	Borehole Terminated at 8.1 m					

Instrumentation Installation: First Water Strike SS7

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
SS7	5	35	34	26



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Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on: Jun 22/23 at depth of: 1.2 m.
Groundwater Elevation: 189.3 m

Scale: **1 :100**

RECORD OF BOREHOLE No. 32

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821382**	Date Started:	**Apr 25/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595290.3**	Date Completed:	**Apr 25/23**
Local Benchmark:							

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
	0.0 191.0											
	0.3 TOPSOIL: 330 mm 190.7											
	FILL: Silty sand, loose, brown, wet	SS	1	75	4							
		SS	2	75	4							
	1.5 189.4											
	SANDY CLAYEY SILT: Trace gravel, very stiff, brown, moist	SS	3	40	21	2	190					
		SS	4	100	22							
	3.0 187.9						188					
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense, brownish grey, moist to wet	SS	5	100	33							
						4						
		SS	6	20	45		186					
						6						
		SS	7	25	31							
							184					
	- - - Silty clay layer - - -											
	8.1 182.9	SS	8	100	10	8						
	Borehole Terminated at 8.1 m											

FIELD TESTING
Shear Strength Testing (kPa)
× Other Test
+ Pocket Penetrometer
▲ Field Vane (Intact)
△ Field Vane (Remolded)
40 80 120 160
Penetration Testing
○ SPT ● DCPT
10 20 30 40

LAB TESTING
△ Combustible Organic Vapour (ppm)
▲ Combustible Organic Vapour (%LEL)
◇ Total Organic Vapour (ppm)
100 200 300 400
Atterberg Limits
PL LL
○ Water Content (%)
10 20 30 40

First Water Strike SS2

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Groundwater depth encountered on completion of drilling: 7.0 m. Cave depth after auger removal: Open

Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 33

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821304** Date Started: **Apr 26/23**
Reviewed By: **GW** Easting: **595357.3** Date Completed: **Apr 26/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	0.0 190.6								
	0.2 190.4 TOPSOIL: 150 mm								
	FILL: Silty sand, loose, brown, moist 0.8 189.8	SS	1	80	4				
	CLAYEY SILT: Some sand, firm to very stiff, brown, moist	SS	2	100	6				
		SS	3	100	20				
	- - - Wet - - -	SS	4	100	18				First Water Strike SS4
	3.0 187.5								
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown, moist to wet	SS	5	95	22				
		SS	6	100	27				
		SS	7	100	25				
	8.1 182.5	SS	8	100	14				
	Borehole Terminated at 8.1 m								

FIELD TESTING
Shear Strength Testing (kPa)
× Other Test
+ Pocket Penetrometer
▲ Field Vane (Intact)
△ Field Vane (Remolded)
40 80 120 160
Penetration Testing
○ SPT ● DCPT
10 20 30 40

LAB TESTING
△ Combustible Organic Vapour (ppm)
▲ Combustible Organic Vapour (%LEL)
◇ Total Organic Vapour (ppm)
100 200 300 400
Atterberg Limits
PL ○ Water Content (%) LL
10 20 30 40

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Groundwater depth encountered on completion of drilling: 4.5 m. Cave depth after auger removal: 7.0 m.
Groundwater depth observed on: Groundwater Elevation:

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

Scale: **1 :100**
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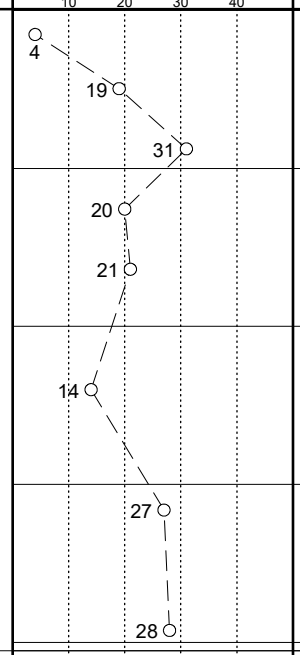
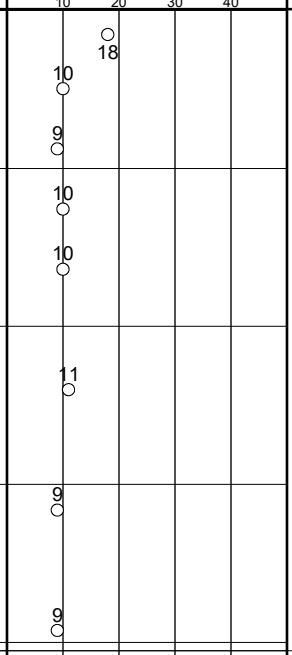
RECORD OF BOREHOLE No. 34

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821268** Date Started: **Apr 26/23**
Reviewed By: **GW** Easting: **595415.3** Date Completed: **Apr 26/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0 / 0.1	TOPSOIL: 125 mm	SS	1	70	4	187.2 / 187.1
0.8	FILL: Sandy silt, some clay, loose, brown, moist	SS	2	100	19	186.4
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown to brownish grey, moist	SS	3	100	31	
		SS	4	100	20	
		SS	5	100	21	
	- - - Wet - - -	SS	6	100	14	
		SS	7	100	27	
8.1		SS	8	100	28	179.1
	Borehole Terminated at 8.1 m					





Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR | SA | SI | CL

First Water Strike SS6

Groundwater depth encountered on completion of drilling: 7.0 m. Cave depth after auger removal: Open

Groundwater depth observed on: Groundwater Elevation:

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Scale: **1 :100**

RECORD OF BOREHOLE No. 35

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4820869**	Date Started:	**Apr 27/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595098.0**	Date Completed:	**Apr 27/23**
Local Benchmark:							

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING	LAB TESTING	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	0.0 191.4							Shear Strength Testing (kPa): × Other Test; + Pocket Penetrometer; ▲ Field Vane (Intact); △ Field Vane (Remolded); 40 80 120 160. Penetration Testing: ○ SPT ● DCPT; 10 20 30 40	△ Combustible Organic Vapour (ppm); ▲ Combustible Organic Vapour (%LEL); ◇ Total Organic Vapour (ppm); 100 200 300 400. Atterberg Limits: PL — LL; ○ Water Content (%); 10 20 30 40		GR SA SI CL
	TOPSOIL: 50 mm	SS	1	65	7	0		7	26		
	CLAYEY SILT: Some sand, trace organics, firm to very stiff, brown, moist	SS	2	60	15			15	22		
	1.5 189.8						190				
	SILT: Some clay, trace sand, compact, brown, wet	SS	3	100	19			19	24		First Water Strike SS3
	2.3 189.1					2					
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brownish grey, wet	SS	4	90	22			22	11		
		SS	5	100	16		188	16	10		
	5.0 186.3					4					
		SS	6	100	20			20	16		
	Borehole Terminated at 5.0 m										

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Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Groundwater depth observed on: Jun 22/23 at depth of: 0.7 m.

Groundwater Elevation: 190.7 m

RECORD OF BOREHOLE No. 36

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4820869**	Date Started:	**Apr 28/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595240.4**	Date Completed:	**Apr 28/23**
Local Benchmark:							

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Field Testing (Shear Strength / Penetration)	Lab Testing (Combustible Organic Vapour / Atterberg Limits / Water Content)	Instrumentation Installation	Comments & Grain Size Distribution (%)
0.0	192.4									
0.2	192.2	TOPSOIL: 230 mm								
0.8	191.6	FILL: Sandy silt, some clay, trace rootlets, loose, brown, moist to wet	SS	1	100	7	7	28		
		SANDY CLAYEY SILT: Trace gravel, very stiff, brown, moist	SS	2	100	15	15	18		
			SS	3	100	19	19	16		
2	190		SS	4	100	22	22	17		
3.4	189.0		SS	5	100	16	16	17		First Water Strike SS5
		SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown, wet								
4.8	187.5		SS	6	100	20	20	18		
5.0	187.4	GRAVELLY SAND: Trace clay, trace silt, dense, brownish grey, wet Borehole Terminated at 5.0 m								

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Groundwater depth encountered on completion of drilling: 2.1 m. Cave depth after auger removal: Open

Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 37

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method: **Solid Stem Augers**		Drilling Machine: **Track Mount**	
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By: **SDP**	Northing: **4820989**	Date Started:	**Apr 28/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By: **GW**	Easting: **595256.3**	Date Completed:	**Apr 28/23**
Local Benchmark:					

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Field Testing (Shear Strength / Penetration)	Lab Testing	Instrumentation Installation	GR	SA	SI	CL
0.0	192.0												
0.2	191.8	TOPSOIL: 150 mm											
0.8	191.2	FILL: Clayey silt, some sand, firm, brown, moist	SS	1	65	5	5	21					
		SANDY CLAYEY SILT: Trace gravel, inferred cobblesa nd boulders, compact to dense, brown, moist	SS	2	100	19	19	14					
			SS	3	100	21	21	15					
			SS	4	100	32	32	12		3	22	49	26
		- - - Wet - - -	SS	5	100	30	30	24					
4.6	187.4												
		SANDY SILT GLACIAL TILL: Some clay, trace gravel, cobbles and boulders, compact, brown, moist	SS	6	100	27	27	10					
			SS	7	100	21	21	9					
8.1	183.9		SS	8	100	17	17	11					
		Borehole Terminated at 8.1 m											

First Water Strike SS5

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Groundwater depth encountered on completion of drilling: 7.1 m. Cave depth after auger removal: Open

Groundwater depth observed on: Jun 22/23 at depth of: 1.7 m. Groundwater Elevation: 190.3 m

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

Scale: **1 :100**

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RECORD OF BOREHOLE No. 38

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4820983**	Date Started:	**Apr 28/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595335.2**	Date Completed:	**Apr 28/23**
Local Benchmark:							

Depth	Elevation	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	FIELD TESTING (Penetration Testing: SPT / DCPT)	LAB TESTING (Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
0.0	191.2									
0.2	191.0	TOPSOIL: 205 mm								
		CLAYEY SILT: Some sand, stiff, brown, moist	SS	1	90	11	11	18		
		- - - Some gravel - - -	SS	2	100	19	19	14		
			SS	3	100	22	22	16		
		- - - Trace gravel - - -	SS	4	100	24	24	15		GR 3 SA 18 SI 47 CL 32
		- - - Hard, wet - - -	SS	5	100	44	44	13		First Water Strike SS5
4.6	186.6									
4.7	186.4	GRAVELLY SAND: Dense, brown, wet	SS	6	100	32	32	10		
5.0	186.1	SANDY SILT GLACIAL TILL: Trace gravel, inferred cobbles and boulders, dense, brownish grey, wet								
		Borehole Terminated at 5.0 m								

Depth (m): 0, 2, 4 — Elevation (m): 190, 188

Shear Strength Testing (kPa): Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded) — 40 80 120 160

Penetration Testing: SPT / DCPT — 10 20 30 40

Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm) — 100 200 300 400

Atterberg Limits: PL — LL

Water Content (%) — 10 20 30 40

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Groundwater depth encountered on completion of drilling: 4.2 m. Cave depth after auger removal: Open

Groundwater depth observed on: Groundwater Elevation:

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

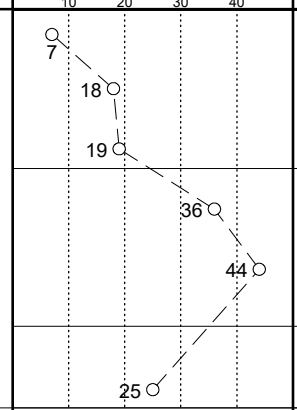
Scale: **1 :100**

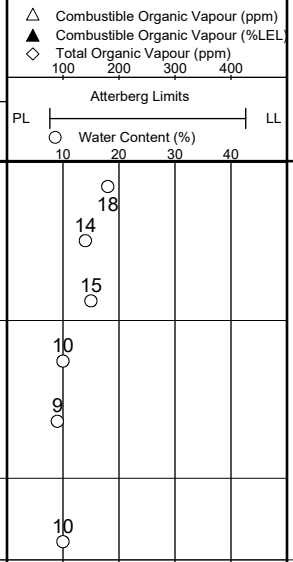
RECORD OF BOREHOLE No. 39

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821080** Date Started: **Apr 28/23**
Reviewed By: **GW** Easting: **595334.0** Date Completed: **Apr 28/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						190.5
0.2	TOPSOIL: 230 mm					190.3
	CLAYEY SANDY SILT: Trace gravel, firm to very stiff, brown, moist	SS	1	80	7	
		SS	2	100	18	
		SS	3	100	19	
2.3						188.2
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to compact, brown, moist	SS	4	100	36	
		SS	5	100	44	
5.0		SS	6	100	25	185.4
	Borehole Terminated at 5.0 m					





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

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

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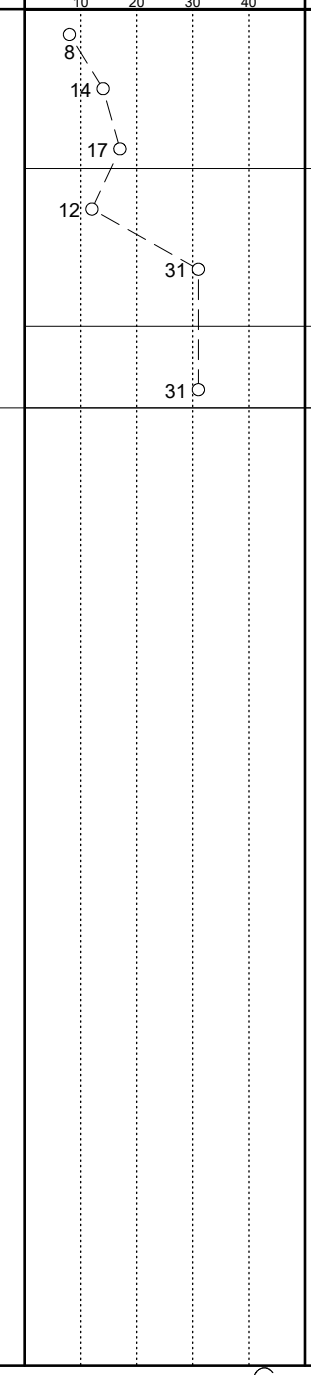
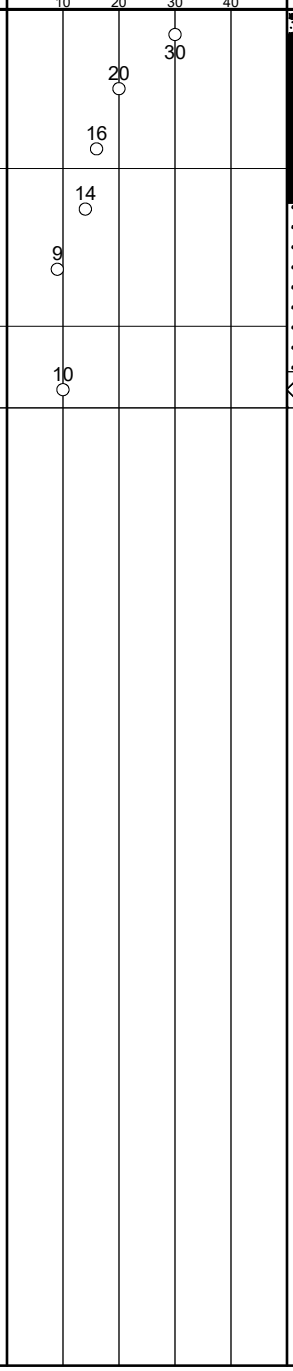
RECORD OF BOREHOLE No. 40

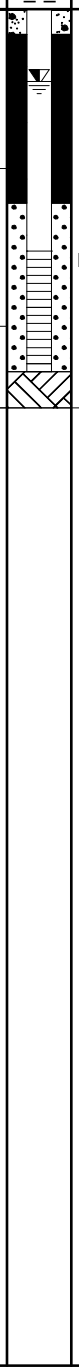
Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Solid Stem Augers**
Logged By: **SDP** Northing: **4821095** Date Started: **Apr 28/23**
Reviewed By: **GW** Easting: **595423.2** Date Completed: **Apr 28/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						190.2
0.2	TOPSOIL: 180 mm					190.0
0.8	FILL: Clayey silt, some sand, stiff, brown, very moist	SS	1	100	8	189.4
	CLAYEY SILT: Some sand, stiff to very stiff, brownish grey, moist	SS	2	100	14	
		SS	3	100	17	
2.3						187.9
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown to brownish grey, moist to very moist	SS	4	100	12	
		SS	5	100	31	
5.0		SS	6	100	31	185.1
	Borehole Terminated at 5.0 m					







COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR | SA | SI | CL

First Water Strike SS5

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Groundwater depth encountered on completion of drilling: 4.2 m. Cave depth after auger removal: Open

Groundwater depth observed on: Jun 22/23 at depth of: 0.9 m. Groundwater Elevation: 189.3 m

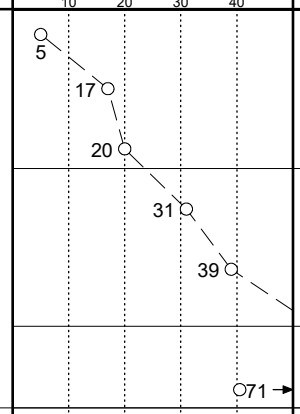
Scale: **1 :100**

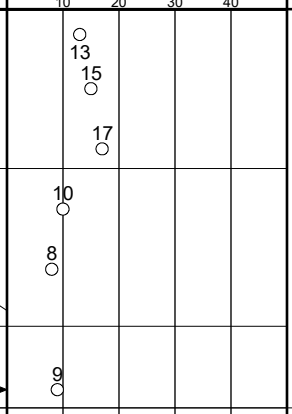
RECORD OF BOREHOLE No. 41

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821162** Date Started: **Apr 28/23**
Reviewed By: **GW** Easting: **595100.2** Date Completed: **Apr 28/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						189.8
0.2	TOPSOIL: 180 mm	SS	1	90	5	189.6
0.8	FILL: Clayey sandy silt, trace gravel, firm, brown, moist	SS	2	100	17	189.0
	SANDY CLAYEY SILT: Trace gravel, very stiff, brown, moist - - - Some sand - - -	SS	3	100	20	
2.3						187.5
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to very dense, brown to brownish grey, moist	SS	4	100	31	
		SS	5	100	39	
5.0		SS	6	80	71	184.8
	Borehole Terminated at 5.0 m					





GR	SA	SI	CL
7	30	46	17

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

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

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RECORD OF BOREHOLE No. 42

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821313** Date Started: **Apr 26/23**
Reviewed By: **GW** Easting: **595502.9** Date Completed: **Apr 26/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING	LAB TESTING	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	0.0 188.6							Shear Strength Testing (kPa): × Other Test; + Pocket Penetrometer; ▲ Field Vane (Intact); △ Field Vane (Remolded); 40 80 120 160. Penetration Testing: ○ SPT ● DCPT; 10 20 30 40	△ Combustible Organic Vapour (ppm); ▲ Combustible Organic Vapour (%LEL); ◇ Total Organic Vapour (ppm); 100 200 300 400. Atterberg Limits: PL LL; ○ Water Content (%); 10 20 30 40		GR SA SI CL
	0.1 188.5 TOPSOIL: 125 mm					0					
	CLAYEY SILT: Some sand, trace gravel, firm to stiff, brown, moist	SS	1	75	6		188	6, 9	23, 21		
	1.5 187.1	SS	2	100	9						
	SAND: Trace silt, trace gravel, trace clay, loose, brown, wet	SS	3	90	9	2		9	16		7 82 8 3
	2.3 186.4						186				First Water Strike SS3
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, cobbles and boulders, dense to compcat, brown, moist	SS	4	100	30			30	11		
		SS	5	100	47			47	10		
						4					
							184				
	5.0 183.6	SS	6	100	20			20	10		
	Borehole Terminated at 5.0 m										

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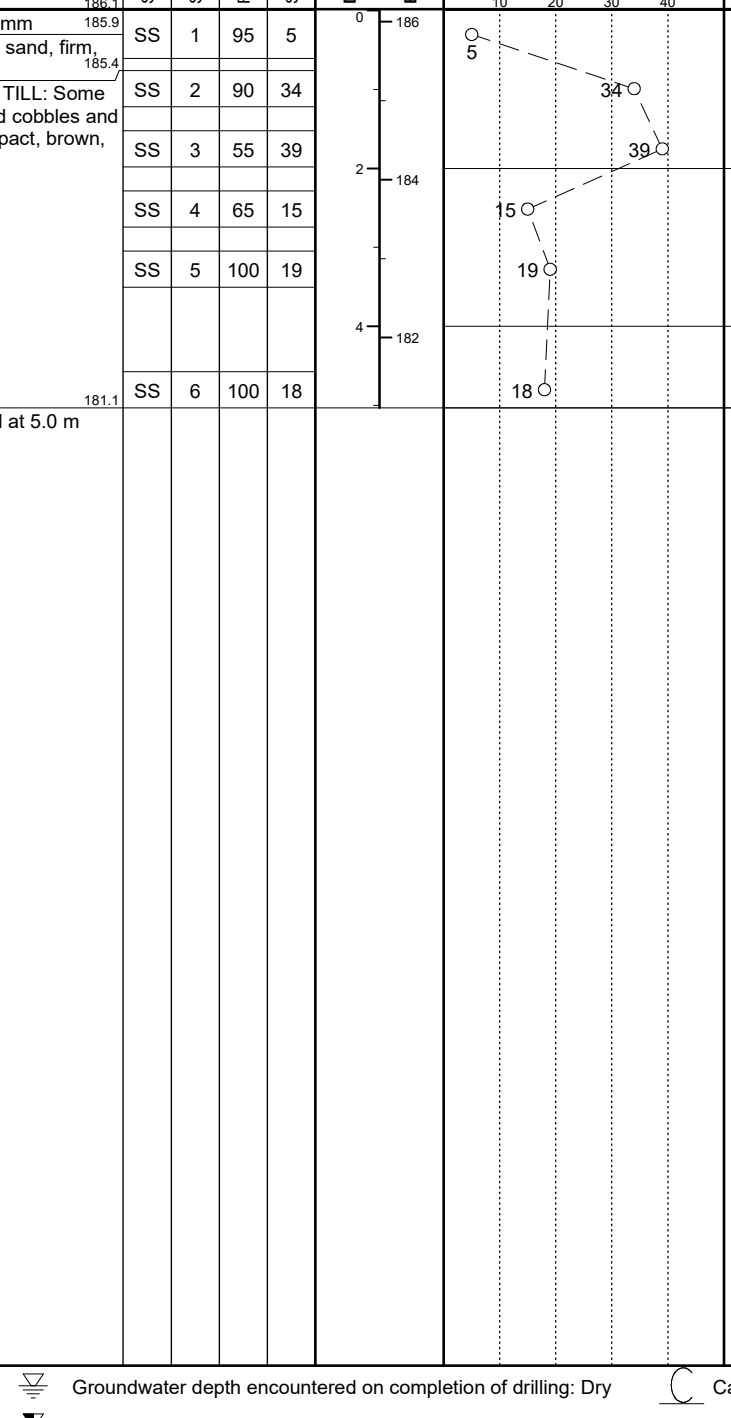
Groundwater depth encountered on completion of drilling: 4.5 m. Cave depth after auger removal: Open
Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 43-SL

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821298** Date Started: **Mar 6/23**
Reviewed By: **GW** Easting: **595546** Date Completed: **May 1/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)	GR	SA	SI	CL
0.0						186.1				
0.2	TOPSOIL: 255 mm					185.9				
0.8	FILL: Clayey silt, some sand, firm, brown	SS	1	95	5	185.4				
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, dense to compact, brown, moist	SS	2	90	34					
		SS	3	55	39					
		SS	4	65	15					
		SS	5	100	19					
5.0		SS	6	100	18	181.1	6	34	44	16
	Borehole Terminated at 5.0 m									



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Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: Open
Groundwater depth observed on: Jun 22/23 at depth of: 0.1 m.
Groundwater Elevation: 186.0 m

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

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RECORD OF BOREHOLE No. 44

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821391** Date Started: **May 1/23**
Reviewed By: **GW** Easting: **595492.5** Date Completed: **May 1/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING	LAB TESTING	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)
	0.0 189.7							Shear Strength Testing (kPa): Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded) 40 80 120 160	Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm) 100 200 300 400		GR SA SI CL
	0.1 189.6 TOPSOIL: 100 mm	SS	1	75	7	0		Penetration Testing: SPT ○ DCPT ● 10 20 30 40	Atterberg Limits: PL ○ Water Content (%) LL; 10 20 30 40		
	0.8 188.9 FILL: Clayey silt, some sand, trace organics, firm, brown, wet										
	CLAYEY SILT: Some sand, trace organics, trace gravel, stiff to very stiff, brownish grey, wet	SS	2	100	8			7 8	24 19		First Water Strike SS2
		SS	3	90	16	2	188	16	15		
		SS	4	100	20			20	14		
	3.1 186.6 - - - Silt seam - - -	SS	5	100	41			41	8		
	SANDY SILT GLACIAL TILL: Some clay, inferred cobbles and boulders, dense to compact, brown to brownish grey, moist					4	186				
	5.0 184.6	SS	6	100	28			28	14		
	Borehole Terminated at 5.0 m										

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

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

Scale: **1 :100**
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RECORD OF BOREHOLE No. 45-SL

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Hollow Stem Augers**	Drilling Machine:	**Track Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821417**	Date Started: **Mar 6/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **595587**	Date Completed: **May 1/23**
Local Benchmark:					

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						188.5
0.2	TOPSOIL: 205 mm					188.3
0.8	FILL: Clayey silt, trace sand, trace organics, firm, brown, moist to wet	SS	1	85	5	187.7
	CLAY AND SILT: Some sand, trace gravel, stiff to hard, greenish brown to light brown, moist	SS	2	100	13	
		SS	3	100	50+	
2.3						186.2
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown, moist	SS	4	100	27	
		SS	5	100	31	
5.0		SS	6	100	13	183.4
	Borehole Terminated at 5.0 m					

FIELD TESTING
Shear Strength Testing (kPa)
× Other Test
+ Pocket Penetrometer
▲ Field Vane (Intact)
△ Field Vane (Remolded)
40 80 120 160
Penetration Testing
○ SPT ● DCPT
10 20 30 40

LAB TESTING
△ Combustible Organic Vapour (ppm)
▲ Combustible Organic Vapour (%LEL)
◇ Total Organic Vapour (ppm)
100 200 300 400
Atterberg Limits
PL ○ Water Content (%) LL
10 20 30 40

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
3	16	42	39

First Water Strike SS4

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Groundwater depth encountered on completion of drilling: 4.6 m. Cave depth after auger removal: Open

Groundwater depth observed on: Jun 22/23 at depth of: 3.5 m. Groundwater Elevation: 185.0 m

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

Scale: **1 :100**

RECORD OF BOREHOLE No. 46-SL

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821390** Date Started: **Mar 6/23**
Reviewed By: **GW** Easting: **595644** Date Completed: **May 1/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)	GR	SA	SI	CL
0.0 / 187.5										
0.2 / 187.2	TOPSOIL: 230 mm	SS	1	85	7					
0.8 / 186.7	FILL: Clay, some sand, some silt, trace gravel, firm, brown	SS	2	50	4					
1.5 / 185.9	CLAY AND SILT: Some sand, trace gravel, firm, greenish brown, light brown, moist	SS	3	100	10					
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown	SS	4	100	24		7	31	44	18
		SS	5	100	27					
4.6 / 182.9	CLAYEY SANDY SILT GLACIAL TILL: Trace gravel, inferred cobbles and boulders, compact, grey, moist	SS	6	100	15		7	25	42	27
5.0 / 182.4	Borehole Terminated at 5.0 m									

First Water Strike SS6

Shear Strength Testing (kPa): Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded)
Penetration Testing: SPT; DCPT
Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm)
Atterberg Limits: PL; LL; Water Content (%)

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Groundwater depth encountered on completion of drilling: Dry
Cave depth after auger removal: 4.2 m.
Groundwater depth observed on:
Groundwater Elevation:

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

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RECORD OF BOREHOLE No. 47-SL

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Hollow Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821483** Date Started: **Mar 6/23**
Reviewed By: **GW** Easting: **595640** Date Completed: **May 1/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING (Shear Strength Testing (kPa); Penetration Testing SPT/DCPT)	LAB TESTING (Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits PL/LL; Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR	SA	SI	CL
	0.0 188.7													
	0.2 188.5 TOPSOIL: 230 mm	SS	1	85	5									
	0.8 187.9 FILL: Clayey silt, trace sand, trace, firm, brown													
	CLAY AND SILT: Some sand, trace gravel, stiff to firm, greenish brown, light brown, moist	SS	2	100	10									
		SS	3	100	6	2	186							
	2.3 186.4 SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown, moist	SS	4	100	21									
		SS	5	100	33	4	184							
	- - - Orange staining, darker brown-grey - - -	SS	6	100	16									
		SS	7	100	14	6	182				9	32	42	17
	8.1 180.6	SS	8	100	23	8								
	Borehole Terminated at 8.1 m													

Vane shear test at 1.5 m: T = 100 lb-ft at torque arm length of 300 mm

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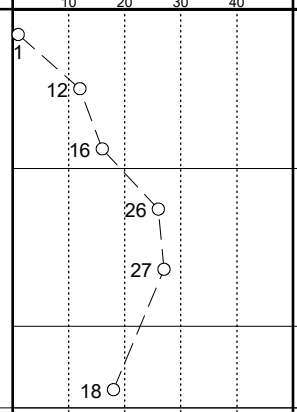
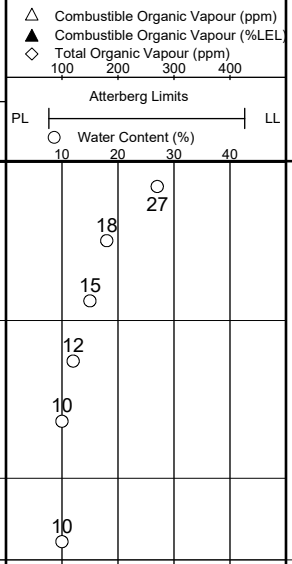
Groundwater depth encountered on completion of drilling: 6.7 m. Cave depth after auger removal: Open
Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 48

Project Number:	**2300805**						
Project Client:	**Anatolia Invesments Corporation**						
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Track Mount**		
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing:	**4821738**	Date Started:	**Mar 9/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting:	**595220.3**	Date Completed:	**Mar 9/23**
Local Benchmark:							

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value
0.0	189.9					
0.2	189.7	TOPSOIL: 255 mm	SS	1	100	1
0.6	189.3	FILL: Sand and silt, very loose, brown, wet				
1.5	188.4	SANDY CLAYEY SILT: Trace organics, stiff, brownish grey, wet	SS	2	100	12
		SANDY SILT GLACIAL TILL: Trace gravel, trace clay, inferred cobbles and boudlers, compact, brown, moist	SS	3	100	16
			SS	4	100	26
			SS	5	100	27
5.0	184.9		SS	6	100	18
		Borehole Terminated at 5.0 m				





First Water Strike SS2

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Groundwater depth encountered on completion of drilling: Dry

Cave depth after auger removal: Open

Groundwater depth observed on:

Groundwater Elevation:

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

Scale: **1 :100**

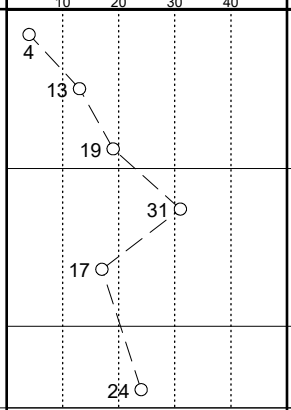
RECORD OF BOREHOLE No. 49

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

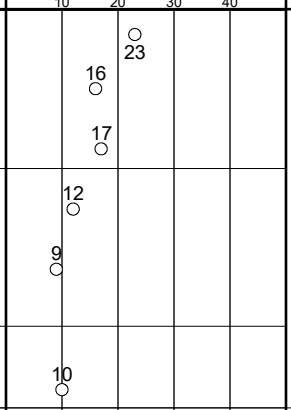
Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821767** Date Started: **Mar 9/23**
Reviewed By: **GW** Easting: **595351.0** Date Completed: **Mar 9/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)
	0.0 189.6						
	0.2 TOPSOIL: 255 mm 189.4	SS	1	75	4	0	
	FILL: Sand and silt, loose, brown, wet 0.8 188.9						
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to dense, brown, moist	SS	2	100	13		
		SS	3	100	19	2	188
		SS	4	100	31		
		SS	5	100	17		
						4	186
	5.0 184.6	SS	6	100	24		
	Borehole Terminated at 5.0 m						

FIELD TESTING
Shear Strength Testing (kPa)
× Other Test
+ Pocket Penetrometer
▲ Field Vane (Intact)
△ Field Vane (Remolded)
40 80 120 160
Penetration Testing
○ SPT ● DCPT
10 20 30 40



LAB TESTING
△ Combustible Organic Vapour (ppm)
▲ Combustible Organic Vapour (%LEL)
◇ Total Organic Vapour (ppm)
100 200 300 400
Atterberg Limits
PL LL
○ Water Content (%)
10 20 30 40



Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

First Water Strike SS2

GR	SA	SI	CL
7	32	45	16

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

RECORD OF BOREHOLE No. 50

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Buggy Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821608**	Date Started: **Mar 13/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **595565.0**	Date Completed: **Mar 13/23**
Local Benchmark:					

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Field Testing (Penetration Testing: SPT / DCPT)	Lab Testing (Water Content %)	Instrumentation Installation	Comments & Grain Size Distribution (%)
0.0	188.0									
0.2	187.8	TOPSOIL: 150 mm								
		FILL: Sand and silt, orange brick waste, trace clay, loose to very loose, brown, wet	SS	1	75	6	6, 2	19, 32		First Water Strike SS2
			SS	2	45	2				
1.5	186.5									
		SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown to brownish grey, wet	SS	3	100	18	18	12		
2	186		SS	4	100	28	28	11		
			SS	5	75	27	27	11		
4	184									
5.0	183.0		SS	6	95	15	15	12		
		Borehole Terminated at 5.0 m								

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Groundwater depth encountered on completion of drilling: 4.5 m. Cave depth after auger removal: 4.8 m.

Groundwater depth observed on: Groundwater Elevation:

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

Scale: **1 :100**

RECORD OF BOREHOLE No. 51

GEI Consultants

Project Number:	**2300805**				
Project Client:	**Anatolia Invesments Corporation**				
Project Name:	**Proposed Commercial Warehouse**	Drilling Method:	**Solid Stem Augers**	Drilling Machine:	**Buggy Mount**
Project Location:	**6728 Sixth Line, Milton, ON**	Logged By:	**SDP**	Northing: **4821674**	Date Started: **Mar 10/23**
Drilling Location:	**See Borehole Location Plan**	Reviewed By:	**GW**	Easting: **595597.8**	Date Completed: **Mar 10/23**
Local Benchmark:					

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						189.3
0.2	TOPSOIL: 180 mm	SS	1	75	3	189.2
0.6	FILL: Silty sand, trace organics, very loose, brown, wet					188.7
	SANDY CLAYEY SILT: stiff, brown, wet	SS	2	100	8	
		SS	3	100	14	
2.3						187.1
	SANDY SILT GLACIAL TILL: Trace gravel, trace clay, cobbles and boulders, compact, brownish grey, wet	SS	4	85	12	
		SS	5	100	12	
5.0		SS	6	85	18	184.3
	Borehole Terminated at 5.0 m					

FIELD TESTING: Shear Strength Testing (kPa) — Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded); 40 80 120 160. Penetration Testing — SPT; DCPT; 10 20 30 40. Plotted values: 3, 8, 14, 12, 12, 18.

LAB TESTING: Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); 100 200 300 400. Atterberg Limits — PL; LL; Water Content (%); 10 20 30 40. Plotted values: 22, 23, 26, 14, 13, 11.

Instrumentation Installation

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

First Water Strike SS2

GR | SA | SI | CL

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Groundwater depth encountered on completion of drilling: 0.9 m. Cave depth after auger removal: 3.6 m.

Groundwater depth observed on: Groundwater Elevation:

RECORD OF BOREHOLE No. 52

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Buggy Mount**
Logged By: **SDP** Northing: **4821642** Date Started: **Mar 13/23**
Reviewed By: **GW** Easting: **595642.0** Date Completed: **Mar 13/23**

Depth	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Elevation (m)
0.0						188.7
	TOPSOIL: 50 mm	SS	1	100	5	
0.8	FILL: Sand and silt, trace clay, trace organics, loose, brown, wet					187.9
	CLAY AND SILT: Trace sand, trace gravel, stiff to very stiff, brown, wet	SS	2	100	9	
		SS	3	100	16	
		SS	4	100	12	
3.0						185.6
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact, brown to brownish grey, wet to moist	SS	5	100	21	
5.0		SS	6	100	12	183.6
	Borehole Terminated at 5.0 m					

FIELD TESTING: Shear Strength Testing (kPa) — Other Test; Pocket Penetrometer; Field Vane (Intact); Field Vane (Remolded); Penetration Testing: SPT, DCPT

LAB TESTING: Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits (PL, LL); Water Content (%)

Instrumentation Installation: First Water Strike SS2

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
1	3	54	42

Groundwater depth encountered on completion of drilling: 4.7 m. Cave depth after auger removal: 5.6 m.
Groundwater depth observed on: Jun 22/23 at depth of: --- Groundwater Elevation:

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Scale: **1 :100**

RECORD OF BOREHOLE No. 53

GEI Consultants

Project Number:	2300805		
Project Client:	Anatolia Invesments Corporation		
Project Name:	Proposed Commercial Warehouse	Drilling Method: Solid Stem Augers	Drilling Machine: Buggy Mount
Project Location:	6728 Sixth Line, Milton, ON	Logged By: SDP	Northing: 4821599	Date Started: Mar 13/23
Drilling Location:	See Borehole Location Plan	Reviewed By: GW	Easting: 595754.3	Date Completed: Mar 13/23
Local Benchmark:			

LITHOLOGY PROFILE | SOIL SAMPLING | FIELD TESTING | LAB TESTING | COMMENTS & GRAIN SIZE DISTRIBUTION (%)

Field Testing – Shear Strength Testing (kPa): × Other Test; + Pocket Penetrometer; ▲ Field Vane (Intact); △ Field Vane (Remolded) — scale 40, 80, 120, 160. Penetration Testing: ○ SPT; ● DCPT — scale 10, 20, 30, 40.

Lab Testing: △ Combustible Organic Vapour (ppm); ▲ Combustible Organic Vapour (%LEL); ◇ Total Organic Vapour (ppm) — scale 100, 200, 300, 400. Atterberg Limits: PL ├─┤ LL. ○ Water Content (%) — scale 10, 20, 30, 40.

Depth (m)	Elevation (m)	Description	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	Water Content (%)	GR	SA	SI	CL
0.0	183.6										
0.2	183.5	TOPSOIL: 150 mm									
		FILL: Sand and silt, some clay, loose, brown, wet	SS	1	70	5	24				
		- - - Silty sand, very loose - - -	SS	2	100	2	29				
1.5	182.1	SAND AND GRAVEL: Some silt, trace clay, compact, brown, wet	SS	3	45	10	16				
2.3	181.4	SANDY SILT GLACIAL TILL: Some clay trace gravel, cobbles and boulders, loose, brownish grey, wet	SS	4	75	8	14	8	31	41	20
			SS	5	100	8	12				
		- - - Grey - - -	SS	6	15	4	23				
5.0	178.6	Borehole Terminated at 5.0 m									

Groundwater depth encountered on completion of drilling: 0.9 m.

Cave depth after auger removal: 3.3 m.

Groundwater depth observed on:

Groundwater Elevation:

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Scale: 1 :100

RECORD OF BOREHOLE No. 54

Project Number: **2300805**
Project Client: **Anatolia Invesments Corporation**
Project Name: **Proposed Commercial Warehouse**
Project Location: **6728 Sixth Line, Milton, ON**
Drilling Location: **See Borehole Location Plan**
Local Benchmark:

Drilling Method: **Solid Stem Augers** Drilling Machine: **Track Mount**
Logged By: **SDP** Northing: **4821712** Date Started: **May 1/23**
Reviewed By: **GW** Easting: **595698.9** Date Completed: **May 1/23**

Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value	DEPTH (m)	ELEVATION (m)	FIELD TESTING (Shear Strength Testing (kPa); Penetration Testing SPT/DCPT)	LAB TESTING (Combustible Organic Vapour (ppm); Combustible Organic Vapour (%LEL); Total Organic Vapour (ppm); Atterberg Limits PL–LL; Water Content (%))	Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	0.0 / 183.7										
	0.2 / 183.6 TOPSOIL: 150 mm										
	FILL: Clayey silt, some sand, firm, brown, moist	SS	1	65	4	0		4	18, 19		
	1.0 / 182.7 - - - Silty sand seam and gravel, wet - - -	SS	2	100	13			13			
	SANDY SILT GLACIAL TILL: Some clay, trace gravel, inferred cobbles and boulders, compact to loose, brown, wet	SS	3	100	16	2	182	16	11		First Water Strike SS3
		SS	4	90	9			9	11		
		SS	5	85	17			17	13		
						4	180				
	- - - Dense - - -	SS	6	100	36			36	9		
	5.0 / 178.7 Borehole Terminated at 5.0 m										

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Groundwater depth encountered on completion of drilling: 0.9 m. Cave depth after auger removal: 0.6 m.
Groundwater depth observed on: Groundwater Elevation:

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

Scale: **1 :100**
Page: **1 of 1**

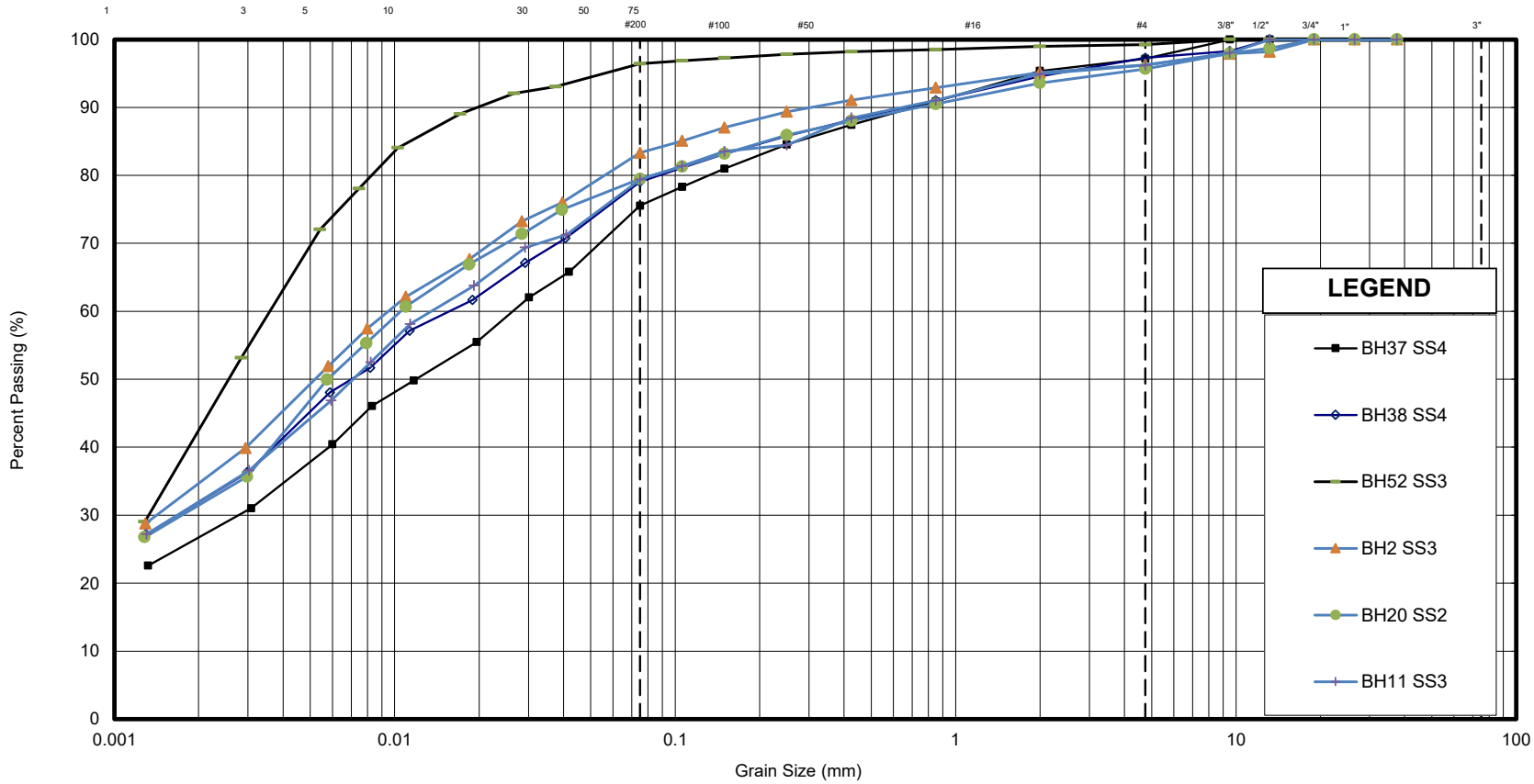
Appendix C

Geotechnical Laboratory Testing

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse

GRAIN SIZE IN MICROMETERS — SIEVE DESIGNATION (IMPERIAL)



Sample	Description	Gr.	Sa.	Si.	Cl.	D_{10}	D_{30}	D_{60}	C_u	C_c
BH37 SS4	SANDY CLAYEY SILT, Trace Gravel	3	22	49	26	-	0.003	0.026	-	-
BH38 SS4	CLAYEY SILT, Some Sand, Trace Gravel	3	18	47	32	-	0.002	0.016	-	-
BH52 SS3	CLAY AND SILT, Trace Sand, Trace Gravel	1	3	54	42	-	0.001	0.004	-	-
BH2 SS3	CLAY AND SILT, Some Sand, Trace Gravel	4	13	48	35	-	0.001	0.009	-	-
BH20 SS2	CLAYEY SILT, Some Sand, Trace Gravel	4	16	48	32	-	0.002	0.011	-	-
BH11 SS3	CLAYEY SILT, Some Sand, Trace Gravel	4	17	47	32	-	0.002	0.014		

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GRAIN SIZE DISTRIBUTION - 6728 6TH Line, Milton

CLAY AND SILT / CLAYEY SILT

FIGURE No. C1

REF. No. 2300805

DATE January 2024

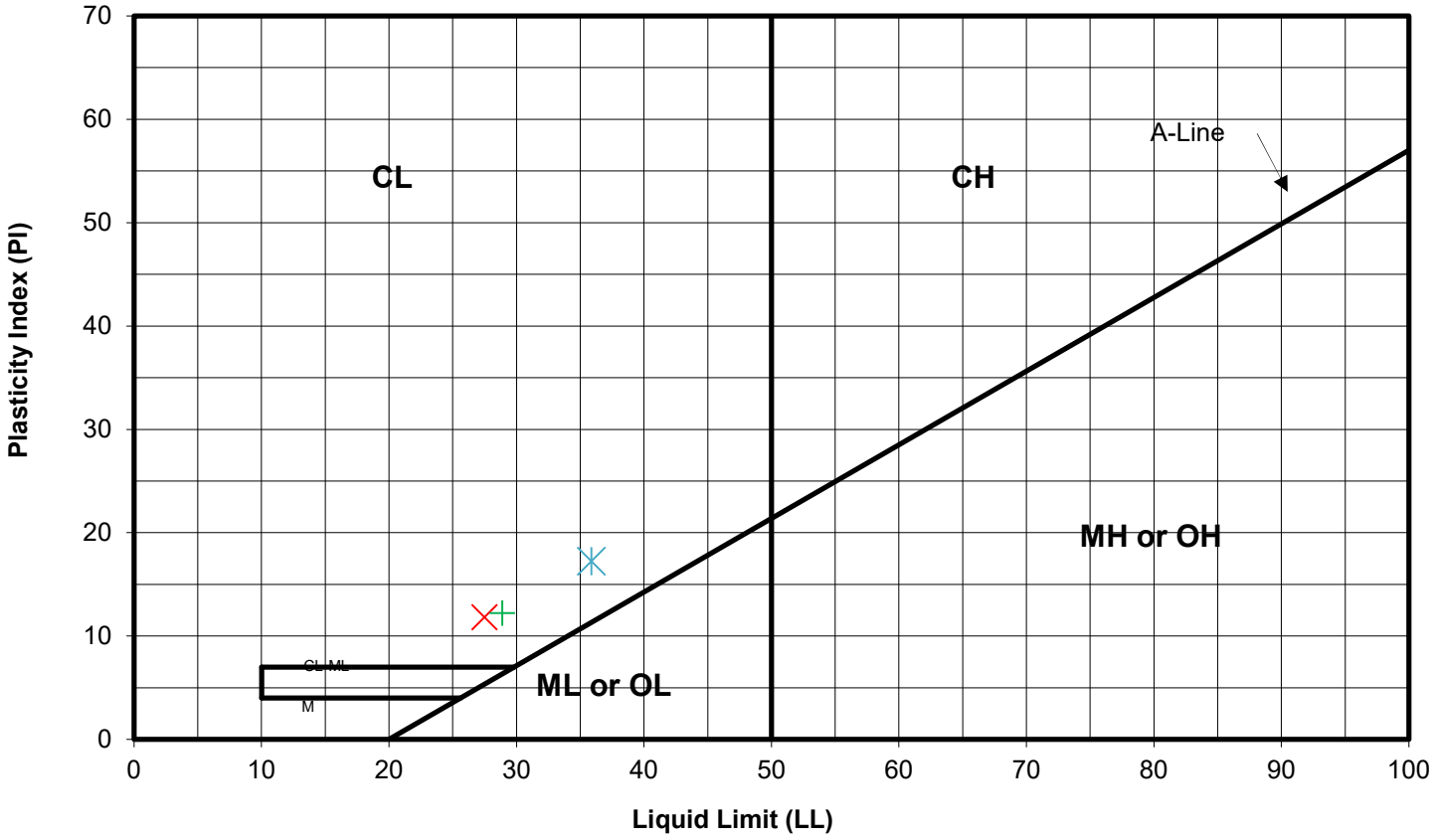
Atterberg Limits Report

Project Name: Slope Stability - 6728 Sixth Line Milton
Project No.: 2300805
Client: Anatolia Investments Corporation

Figure No.: C2
Date Tested: June 8, 2023
Date Sampled: -

SAMPLE INFORMATION								
SAMPLE ID	BH38 SS4	LIQUID LIMIT (LL):	27.5	PLASTIC LIMIT (PL)	15.7	PLASTIC INDEX (PI)	11.8	X
SAMPLE ID	BH52 SS3	LIQUID LIMIT (LL):	35.9	PLASTIC LIMIT (PL)	18.7	PLASTIC INDEX (PI)	17.2	✳
SAMPLE ID	BH11 SS3	LIQUID LIMIT (LL):	28.9	PLASTIC LIMIT (PL)	16.7	PLASTIC INDEX (PI)	12.2	+

Plasticity Chart

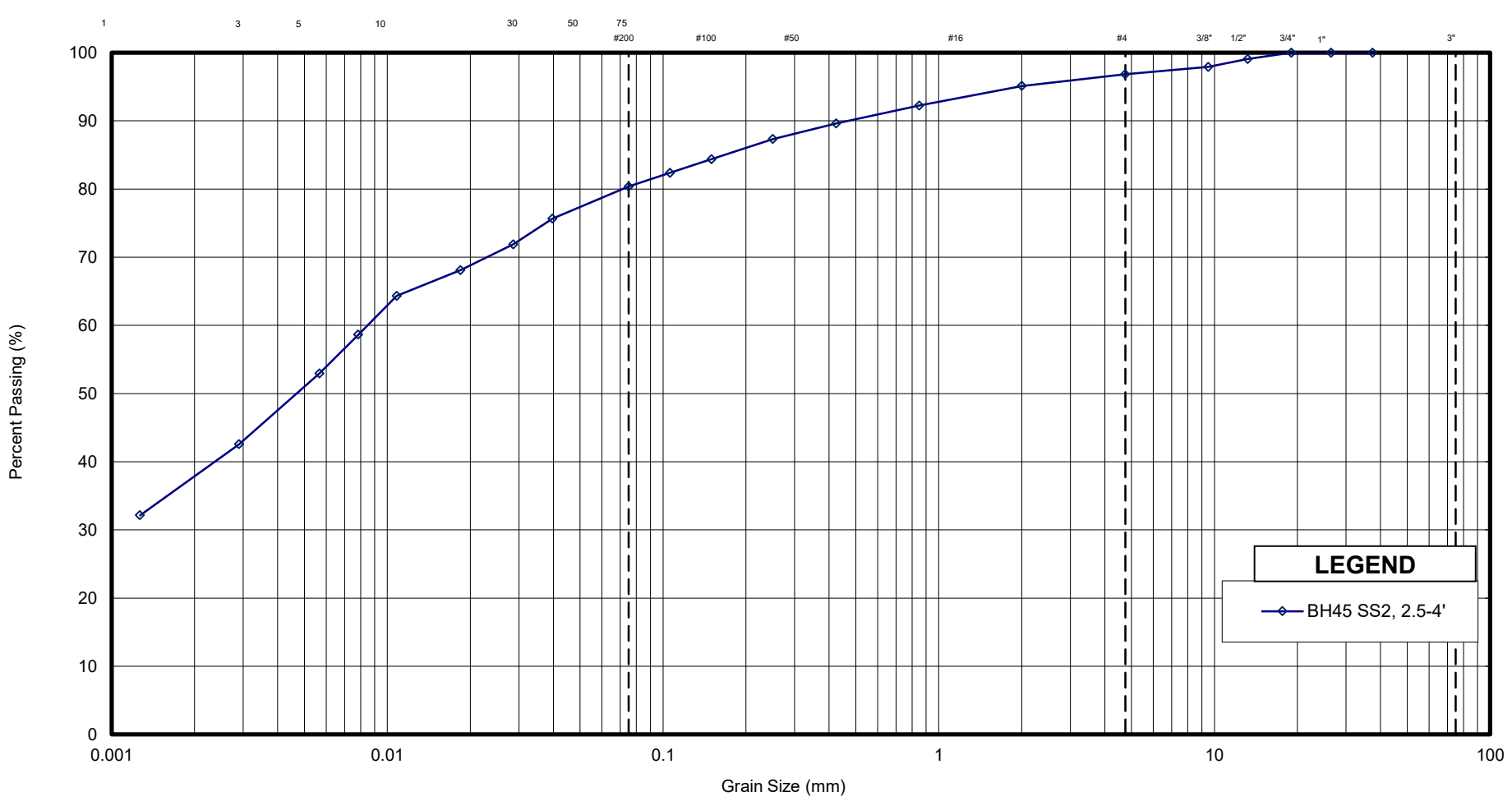


DISTRIBUTION:	Prepared By: D. Gorry	Checked By:

Report No. _____

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



Sample	Description	Gr.	Sa.	Si.	Cl.	D_{10}	D_{30}	D_{60}	C_u	C_c
BH45 SS2	CLAY AND SILT, Some Sand, Trace Gravel	3	16	42	39	-	-	0.008	-	-

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GRAIN SIZE DISTRIBUTION - Slope Stability - 6728 Sixth Line

CLAY AND SILT

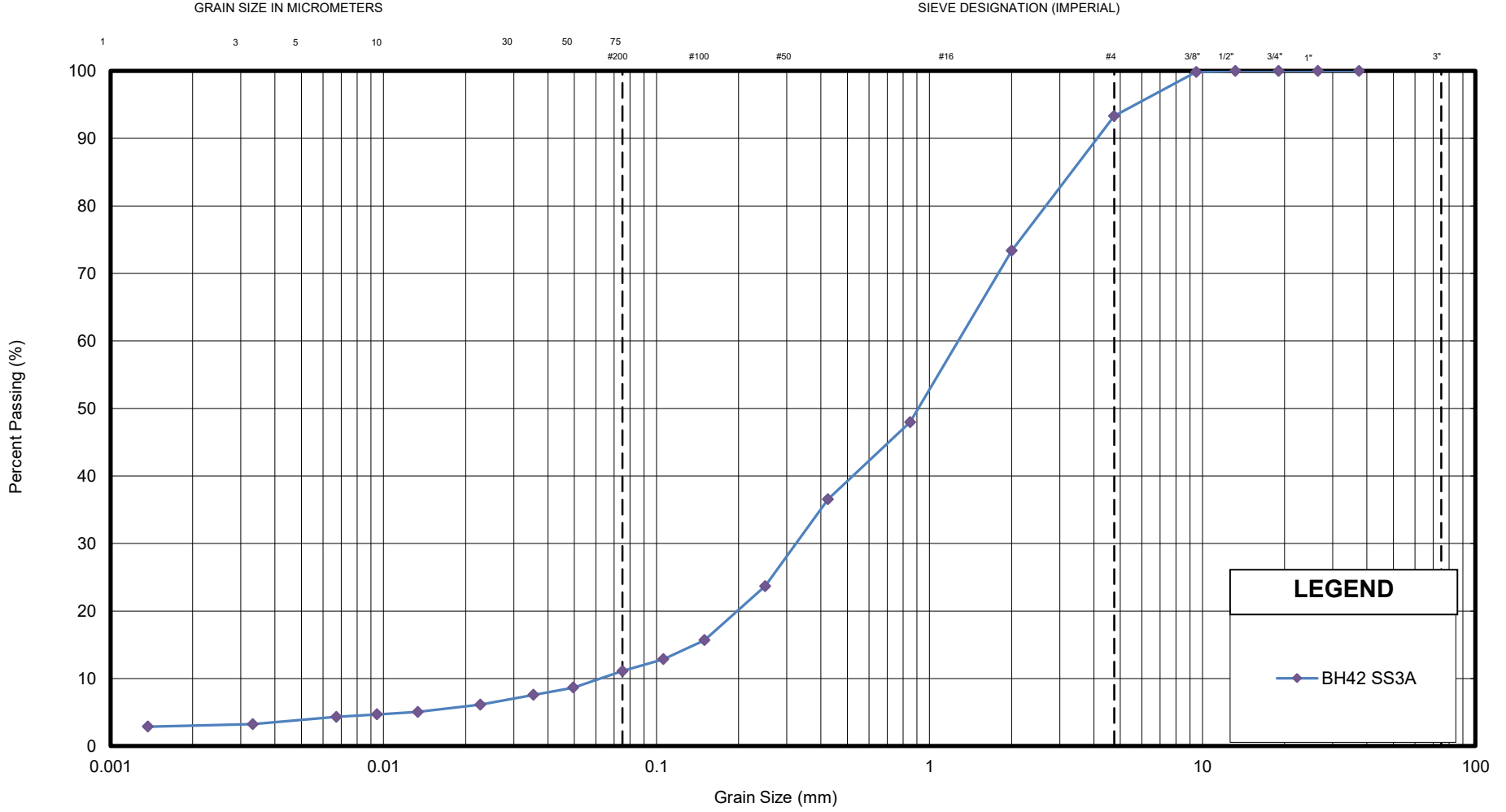
FIGURE No. C3

REF. No. 2300805

DATE January 2024

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



Sample	Description	Gr.	Sa.	Si.	Cl.	D_{10}	D_{30}	D_{60}	C_u	C_c
BH42 SS3A	SAND, Trace Silt, Trace Gravel, Trace Clay	7	82	8	3	0.062	0.324	1.275	20.6	1.3

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GRAIN SIZE DISTRIBUTION - 6728 6TH Line, Milton

SAND

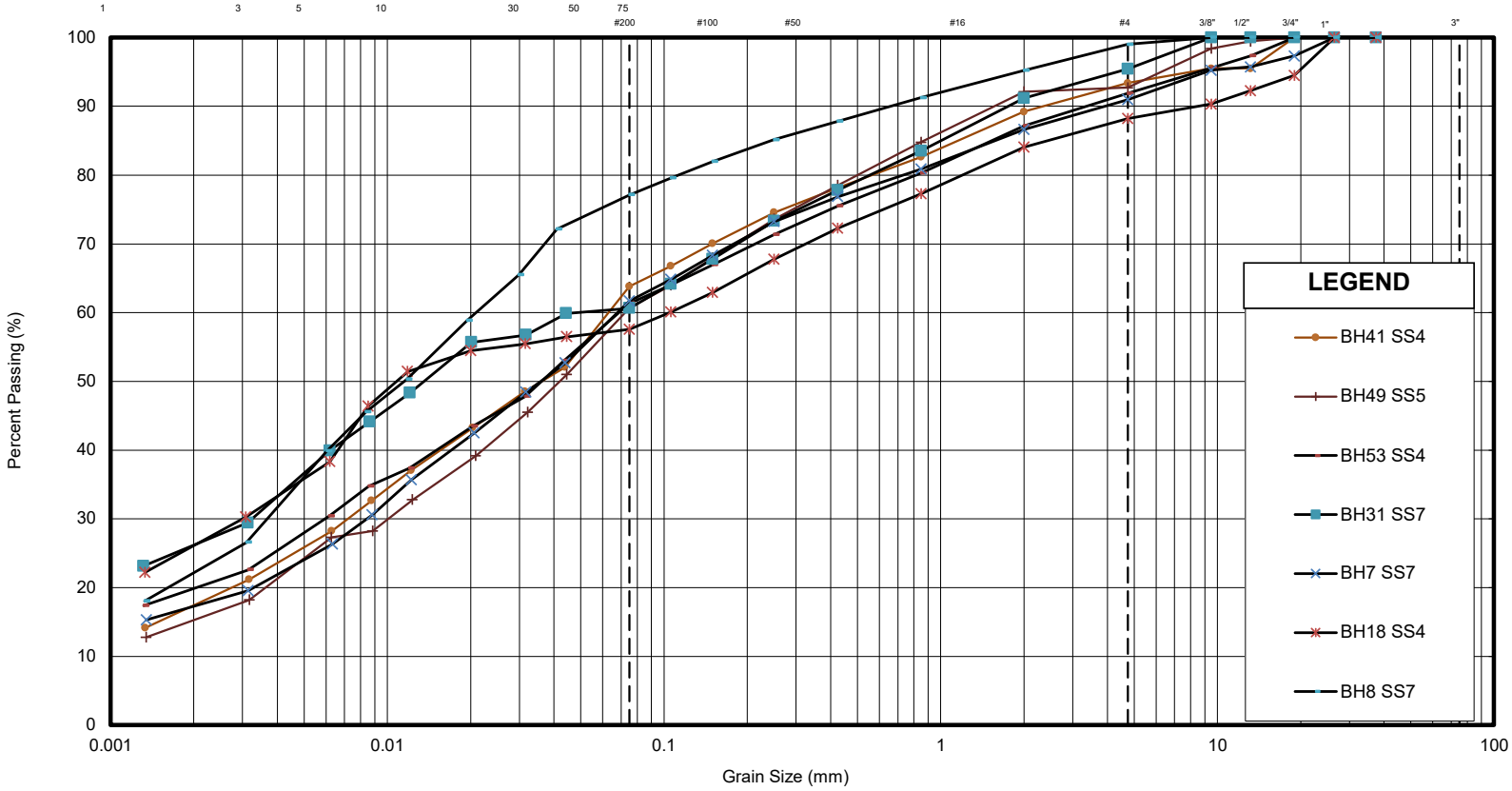
FIGURE No.	C4
REF. No.	2300805
DATE	January 2024

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse

GRAIN SIZE IN MICROMETERS

SIEVE DESIGNATION (IMPERIAL)



Sample	Description	Gr.	Sa.	Si.	Cl.	D_{10}	D_{30}	D_{60}	C_u	C_c
BH41 SS4	SANDY SILT, Some Clay, Trace Gravel	7	30	46	17	-	0.007	0.063	-	-
BH49 SS5	SANDY SILT, Some Clay, Trace Gravel	7	32	45	16	-	0.010	0.072	-	-
BH53 SS4	SANDY SILT, Some Clay, Trace Gravel	8	31	41	20	-	0.006	0.069	-	-
BH31 SS7	CLAYEY SILTY SAND, Trace Gravel	5	35	34	26	-	0.003	0.047	-	-
BH7 SS6	SANDY SILT, Some Clay, Trace Gravel	9	29	44	18	-	0.008	0.068	-	-
BH18 SS4	CLAYEY SAND AND SILT, Some Gravel	12	31	31	26	-	0.003	0.104		
BH8 SS7	CLAYEY SANDY SILT, Trace Gravel	1	22	55	22	-	0.004	0.021	-	-

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GRAIN SIZE DISTRIBUTION - 6728 6TH Line, Milton

GLACIAL TILL

FIGURE No. B5

REF. No. 2300805

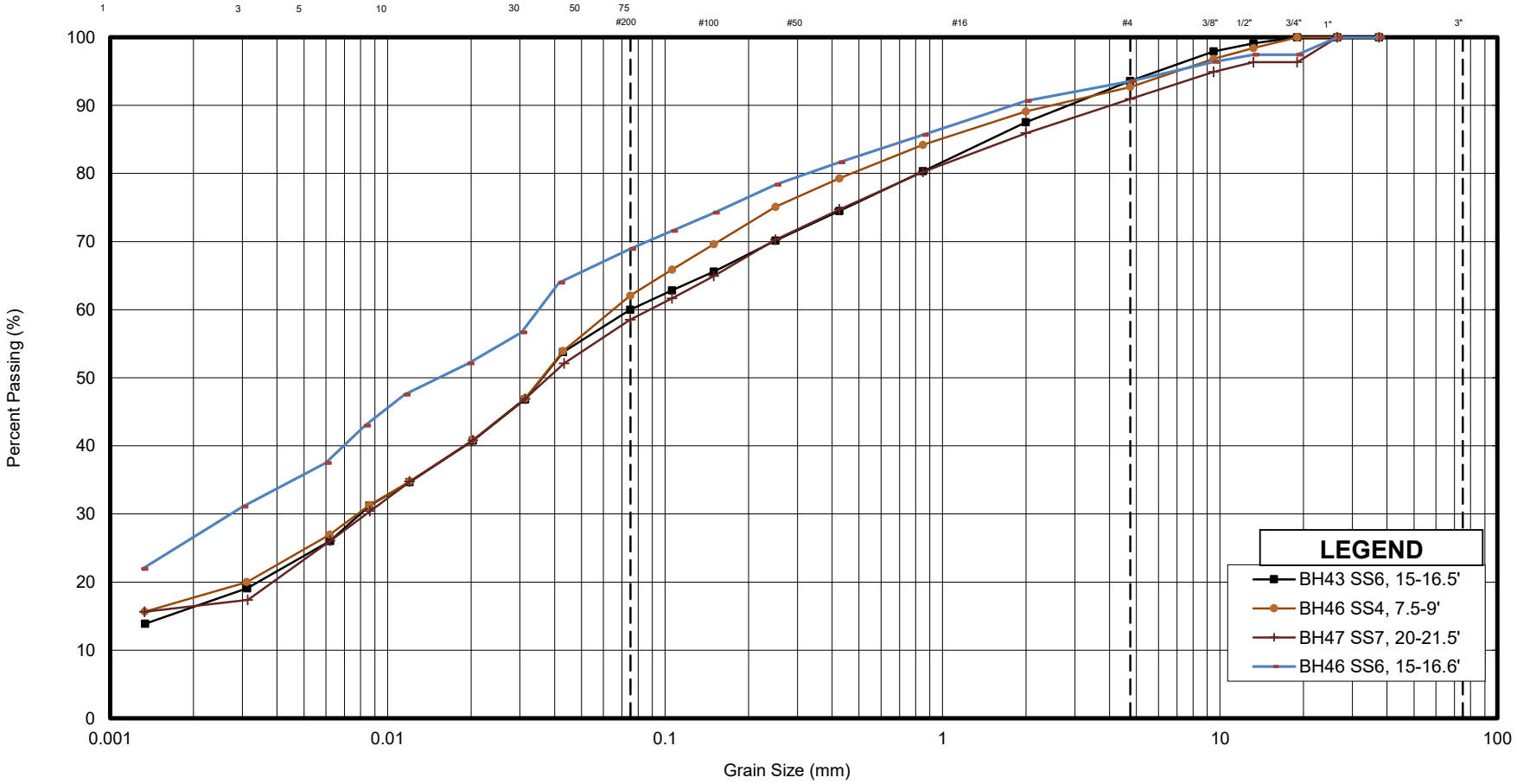
DATE January 2024

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse

GRAIN SIZE IN MICROMETERS

SIEVE DESIGNATION (IMPERIAL)



Sample	Description	Gr.	Sa.	Si.	Cl.	D_{10}	D_{30}	D_{60}	C_u	C_c
BH43 SS6	SANDY SILT, Some Clay, Trace Gravel	6	34	44	16	-	0.008	0.075	-	-
BH46 SS4	SANDY SILT, Some Clay, Trace Gravel	7	31	44	18	-	0.008	0.065	-	-
BH46 SS6	SANDY CLAYEY SILT, Trace Gravel	6	25	42	27	-	0.003	0.035	-	-
BH47 SS7	SANDY SILT, Some Clay, Trace Gravel	9	32	42	17	-	0.008	0.088	-	-

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GRAIN SIZE DISTRIBUTION - Slope Stability - 6728 Sixth Line

GLACIAL TILL

FIGURE No. C6

REF. No. 2300805

DATE January 2024

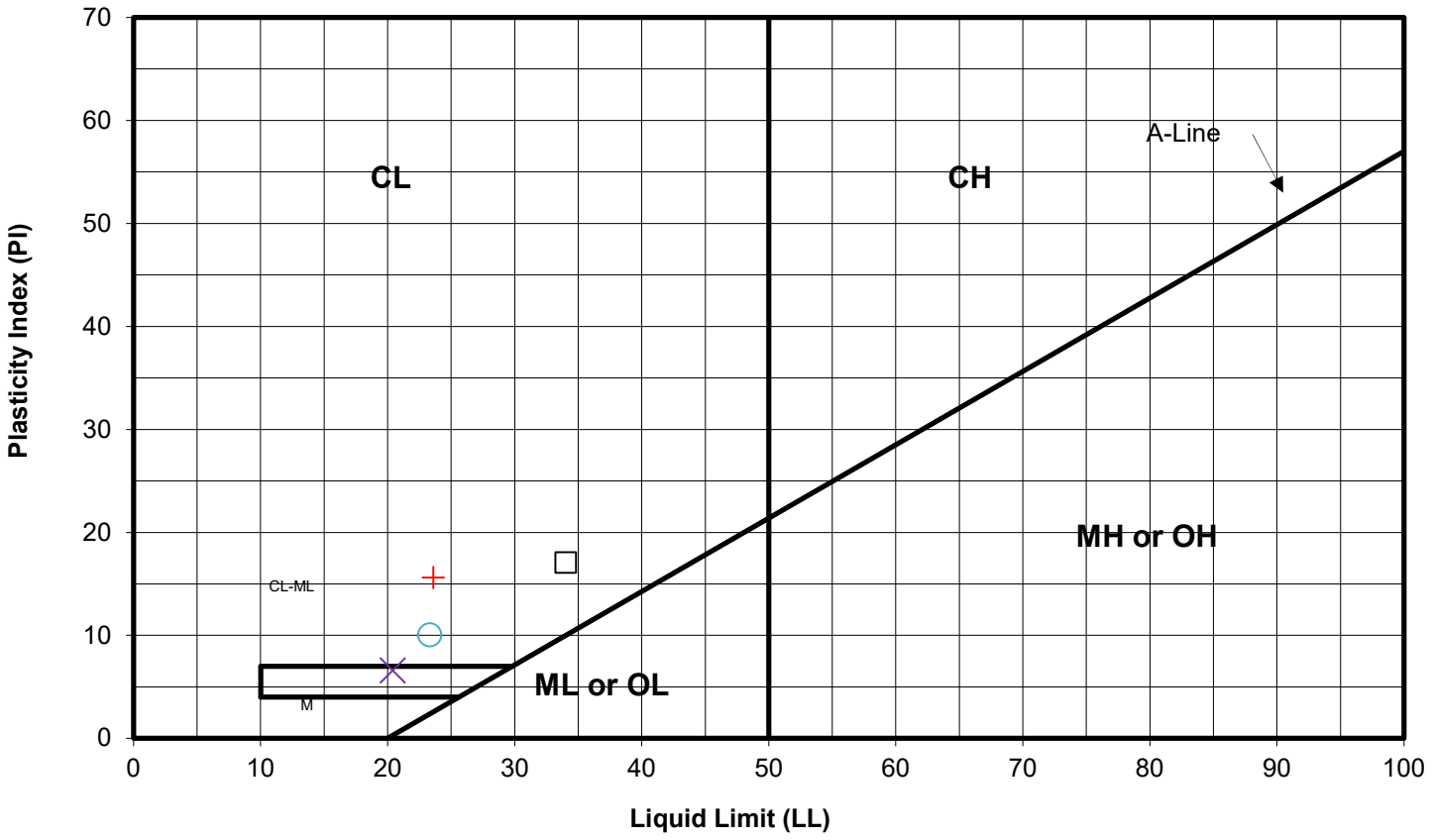
Atterberg Limits Report

Project Name: 6728 Sixth Line, Milton
roject No.: 2300805
Client: Anatolia Investments Corporation

Figure No.: C7
Date Tested: March 23, 2023
Date Sampled: -

SAMPLE INFORMATION								
SAMPLE ID	BH43 SS6, 15-16.6'	LIQUID LIMIT (LL):	20.4	PLASTIC LIMIT (PL)	13.8	PLASTIC INDEX (PI)	6.6	X
SAMPLE ID	BH45 SS2, 2.5-4'	LIQUID LIMIT (LL):	34	PLASTIC LIMIT (PL)	16.9	PLASTIC INDEX (PI)	17.1	□
SAMPLE ID	BH46 SS4, 7.5-9'	LIQUID LIMIT (LL):	23.3	PLASTIC LIMIT (PL)	13.2	PLASTIC INDEX (PI)	10.1	○
SAMPLE ID	BH46 SS6, 15-16.6'	LIQUID LIMIT (LL):	23.6	PLASTIC LIMIT (PL)	8.0	PLASTIC INDEX (PI)	15.6	+

Plasticity Chart



DISTRIBUTION:	Prepared By: D. Gorry	Checked By: M. H-Cabal

Report No. _____

Appendix D

Hydraulic Conductivity Testing

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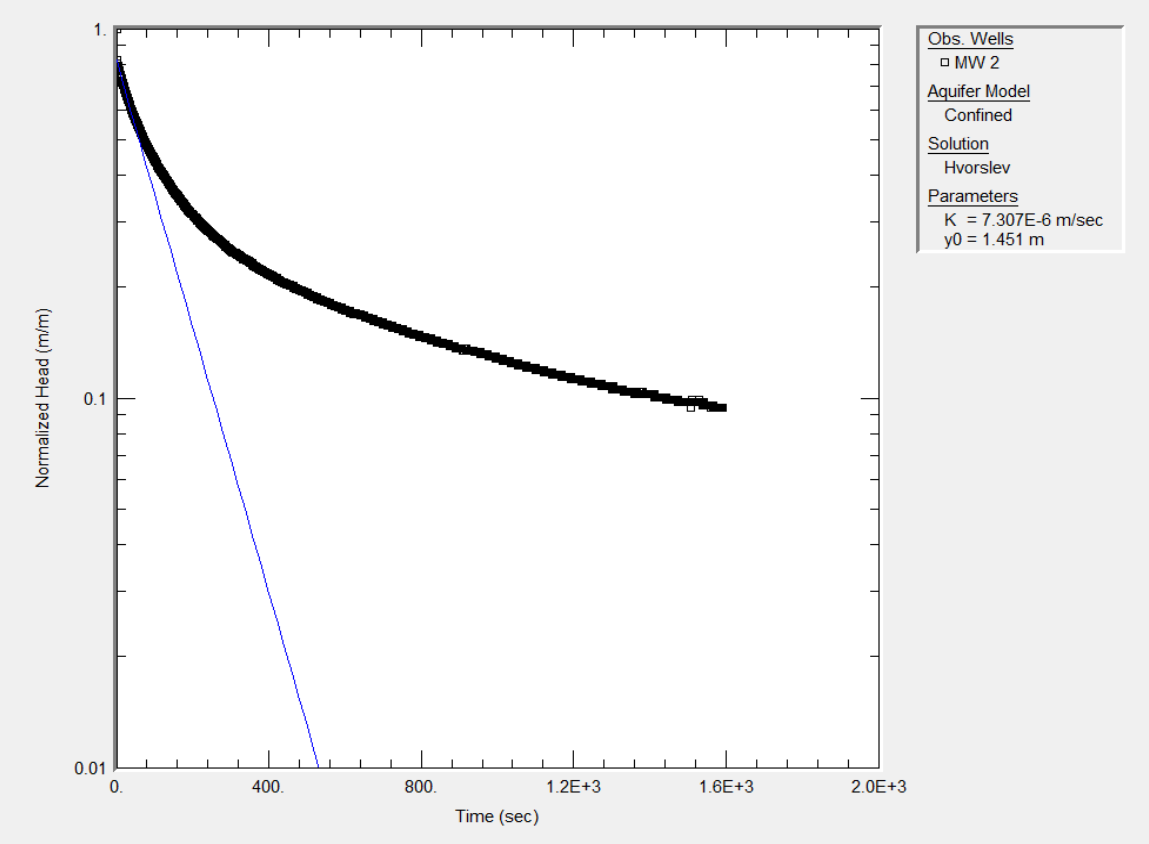
Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 31, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 2	
Well Screen Bottom:	4.57	mbgs
Top of Pipe:	0.86	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	191.2	masl
Static Water Level:	0.71	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$7.3x10^{-6}$**	m/s

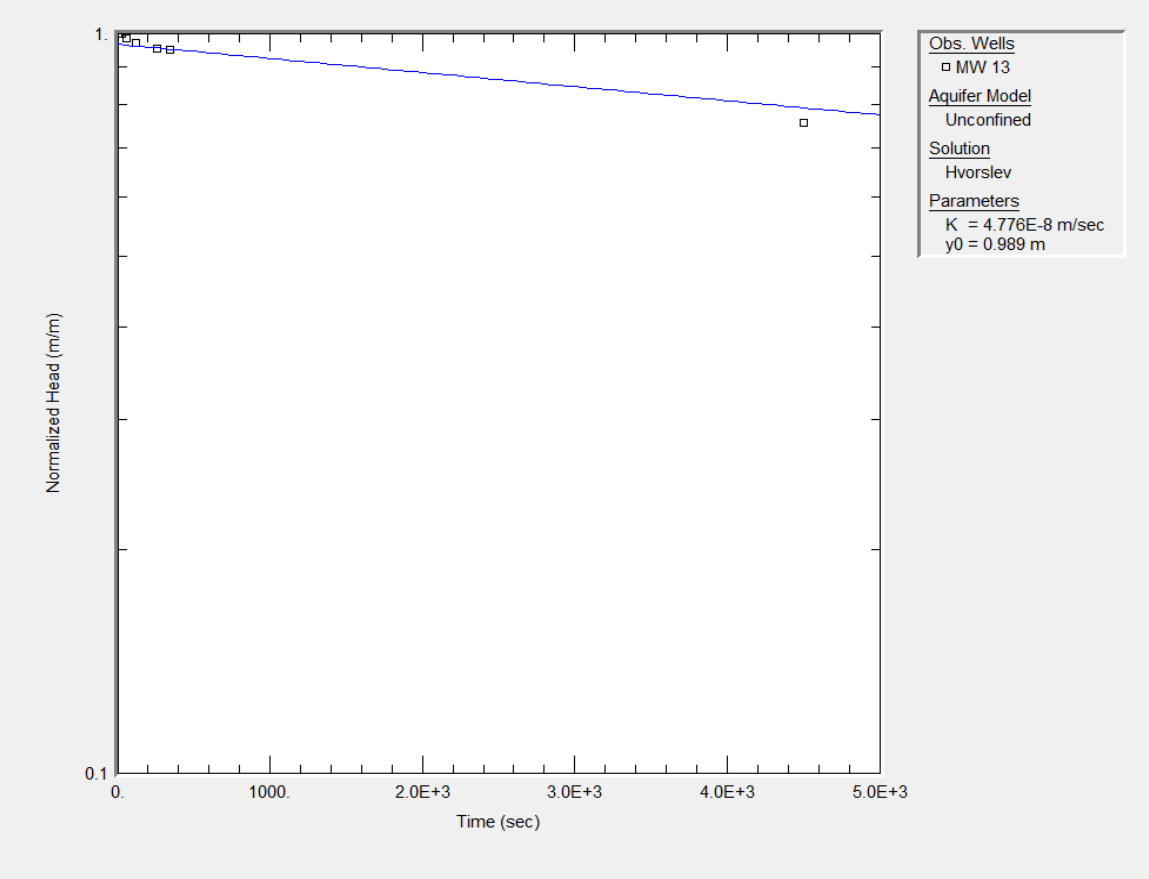


GEI Consultants

Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 24, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 13	
Well Screen Bottom:	3.05	mbgs
Top of Pipe:	0.90	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	190.3	masl
Static Water Level:	0.99	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$4.8x10^{-8}$**	m/s

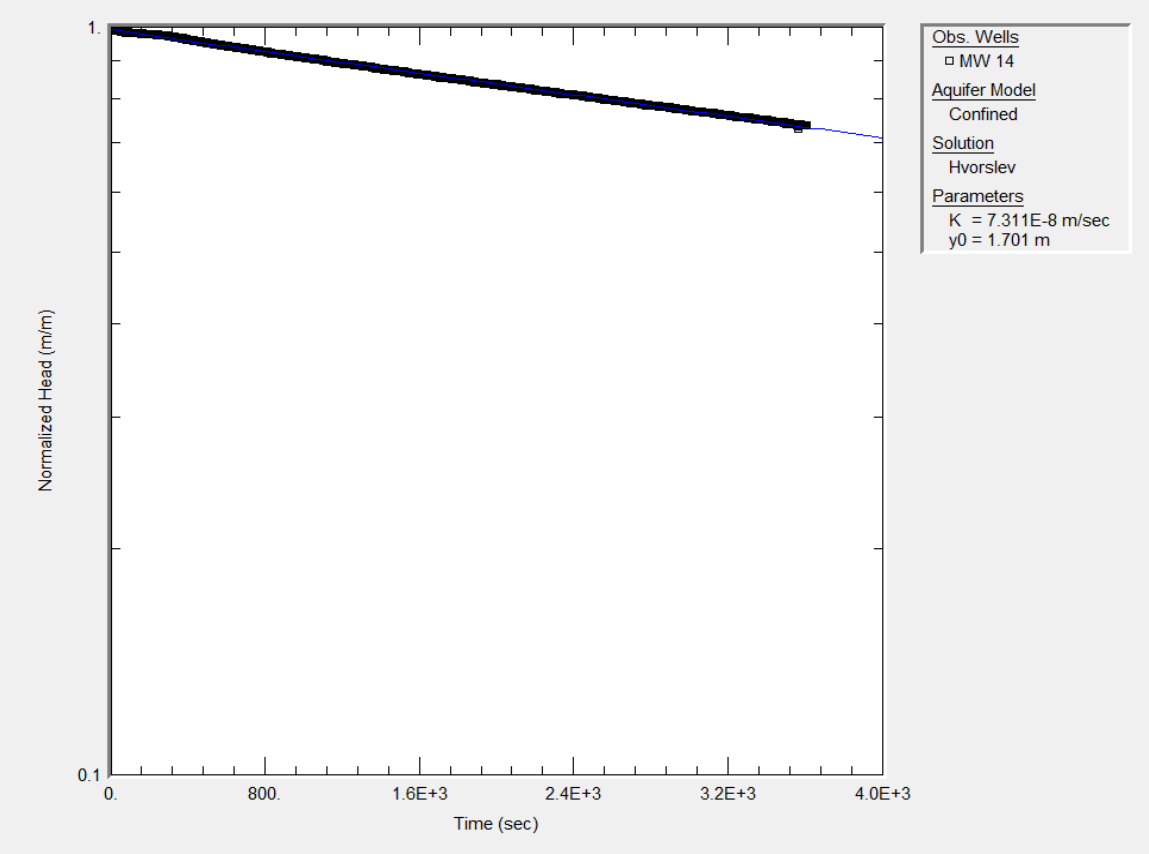


GEI Consultants

Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 31, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 14	
Well Screen Bottom:	3.96	mbgs
Top of Pipe:	0.87	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	190.0	masl
Static Water Level:	0.59	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$7.3x10^{-8}$**	m/s

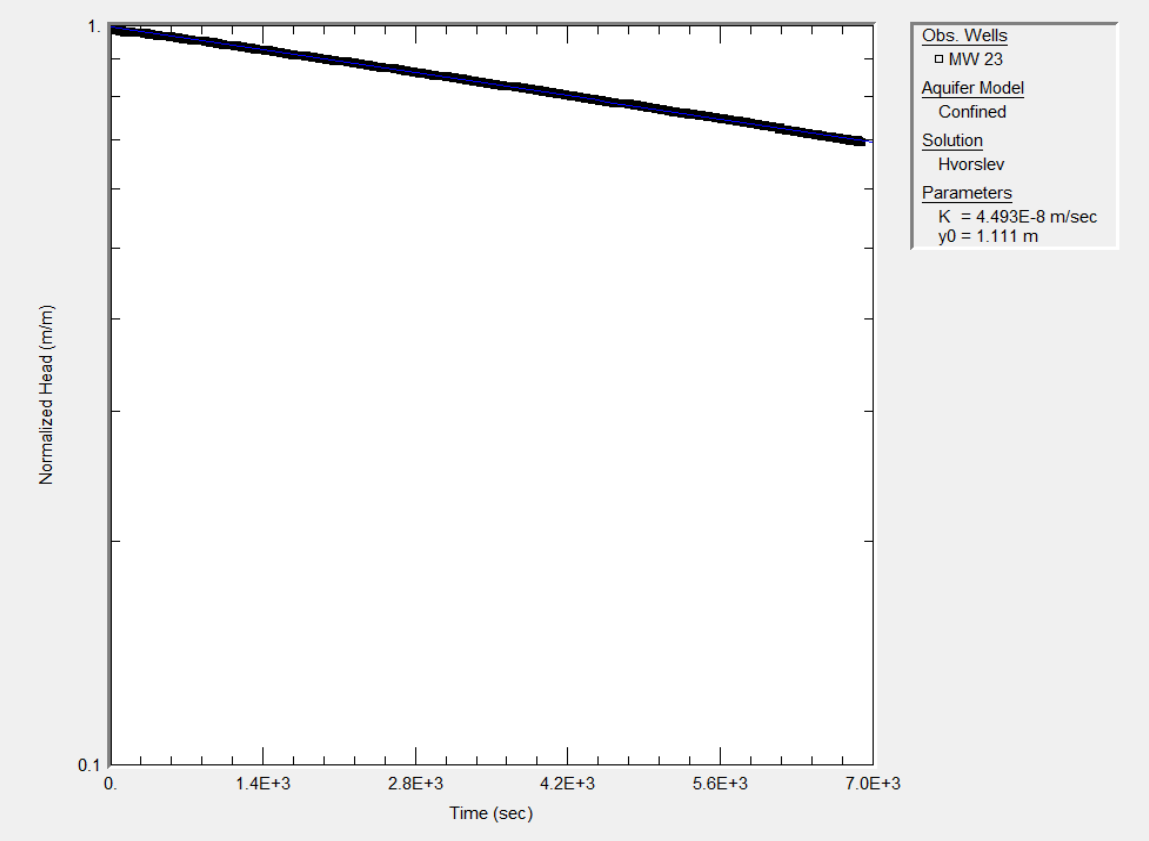


GEI Consultants

Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 24, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 23	
Well Screen Bottom:	6.10	mbgs
Top of Pipe:	0.80	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	189.3	masl
Static Water Level:	2.77	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$4.5x10^{-8}$**	m/s

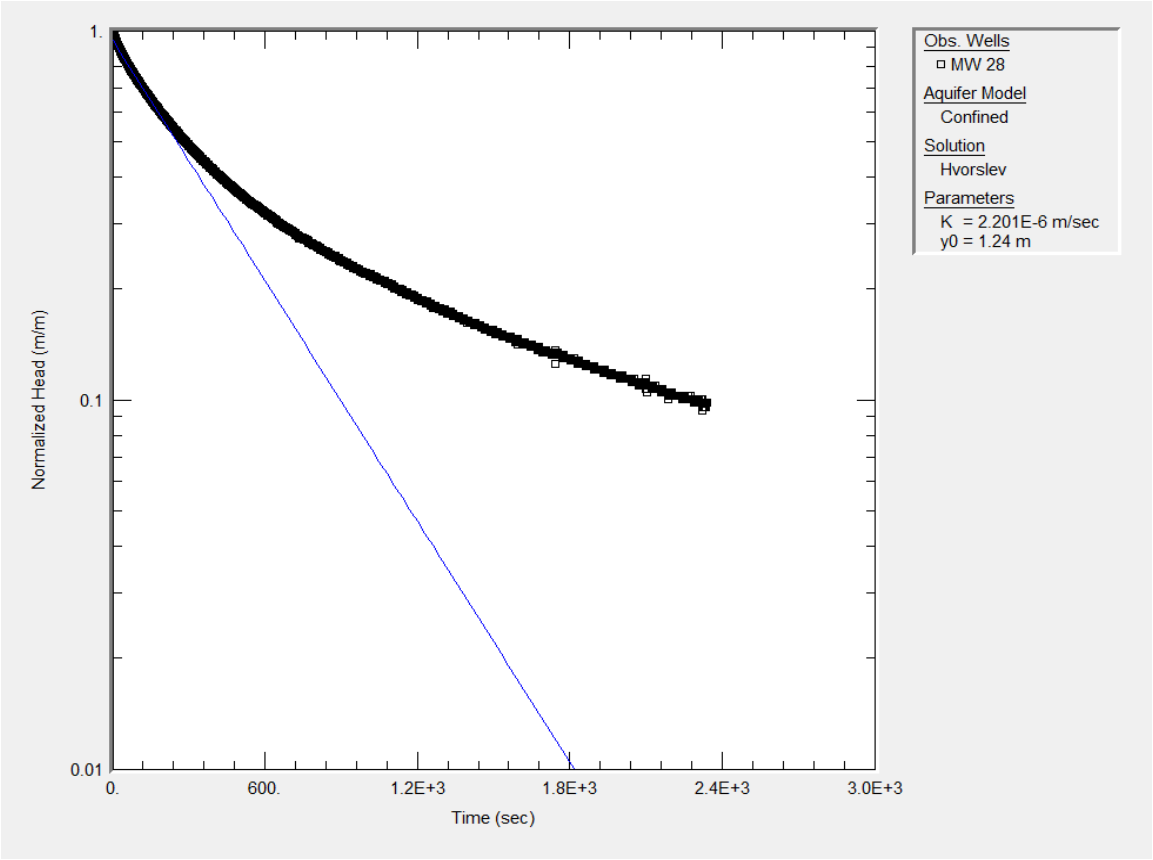


GEI Consultants

Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 24, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 28	
Well Screen Bottom:	4.57	mbgs
Top of Pipe:	0.99	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	189.5	masl
Static Water Level:	0.94	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$2.2x10^{-6}$**	m/s

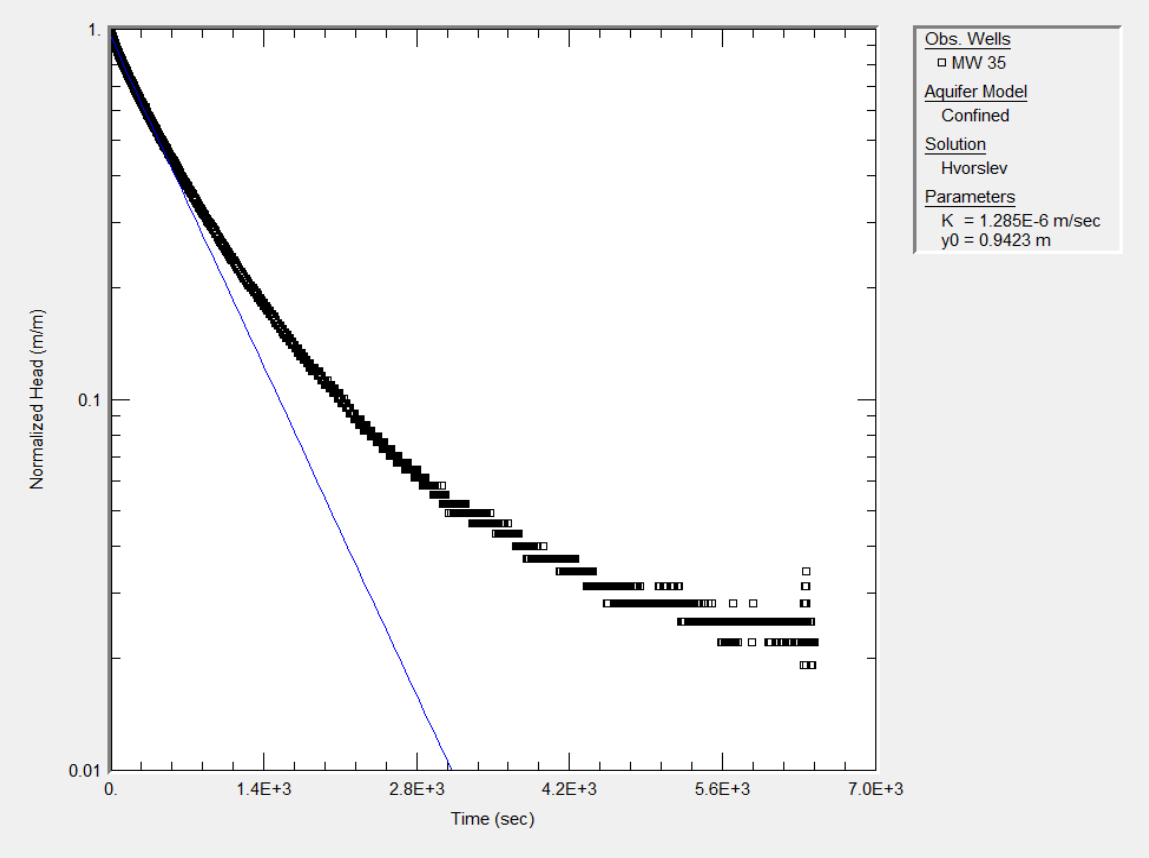


GEI Consultants

Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 24, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 35	
Well Screen Bottom:	3.05	mbgs
Top of Pipe:	0.95	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	191.4	masl
Static Water Level:	0.43	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$1.3x10^{-6}$**	m/s

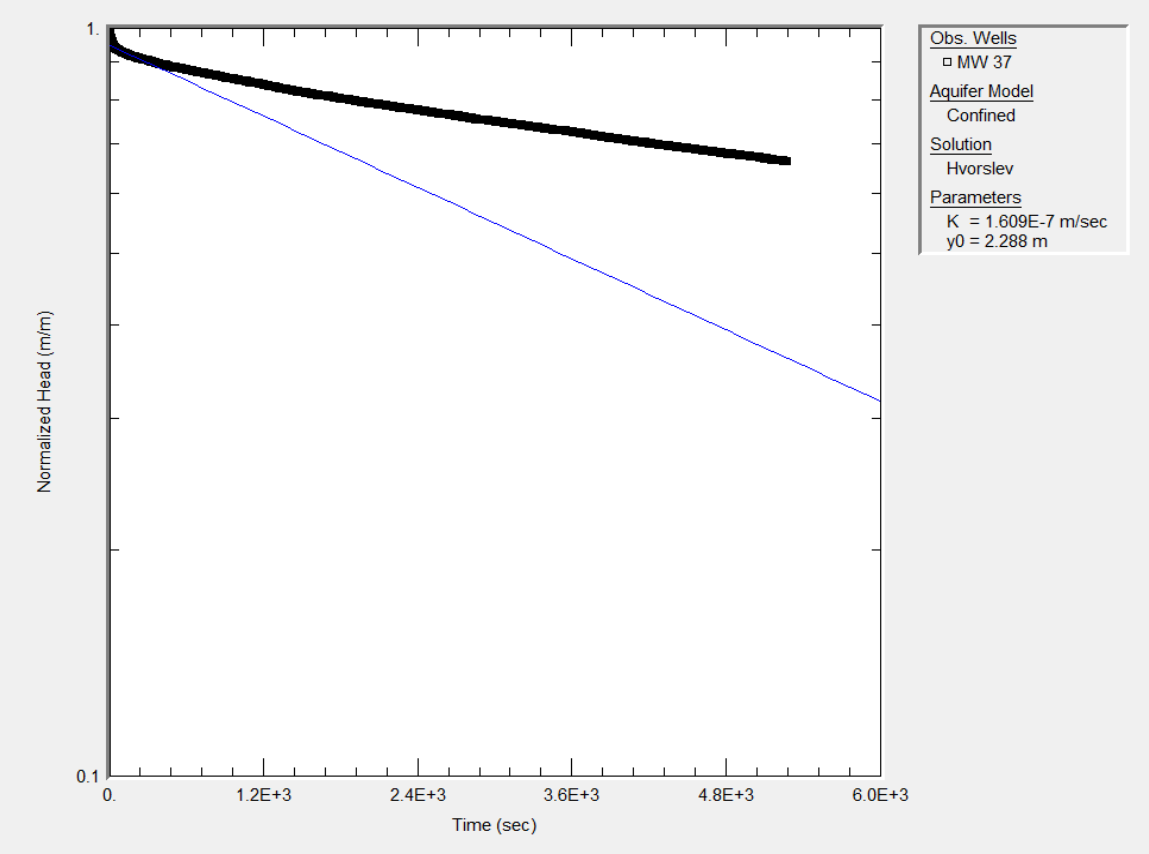


GEI Consultants

Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 24, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 37	
Well Screen Bottom:	7.62	mbgs
Top of Pipe:	0.83	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	192.0	masl
Static Water Level:	1.96	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$1.6x10^{-7}$**	m/s

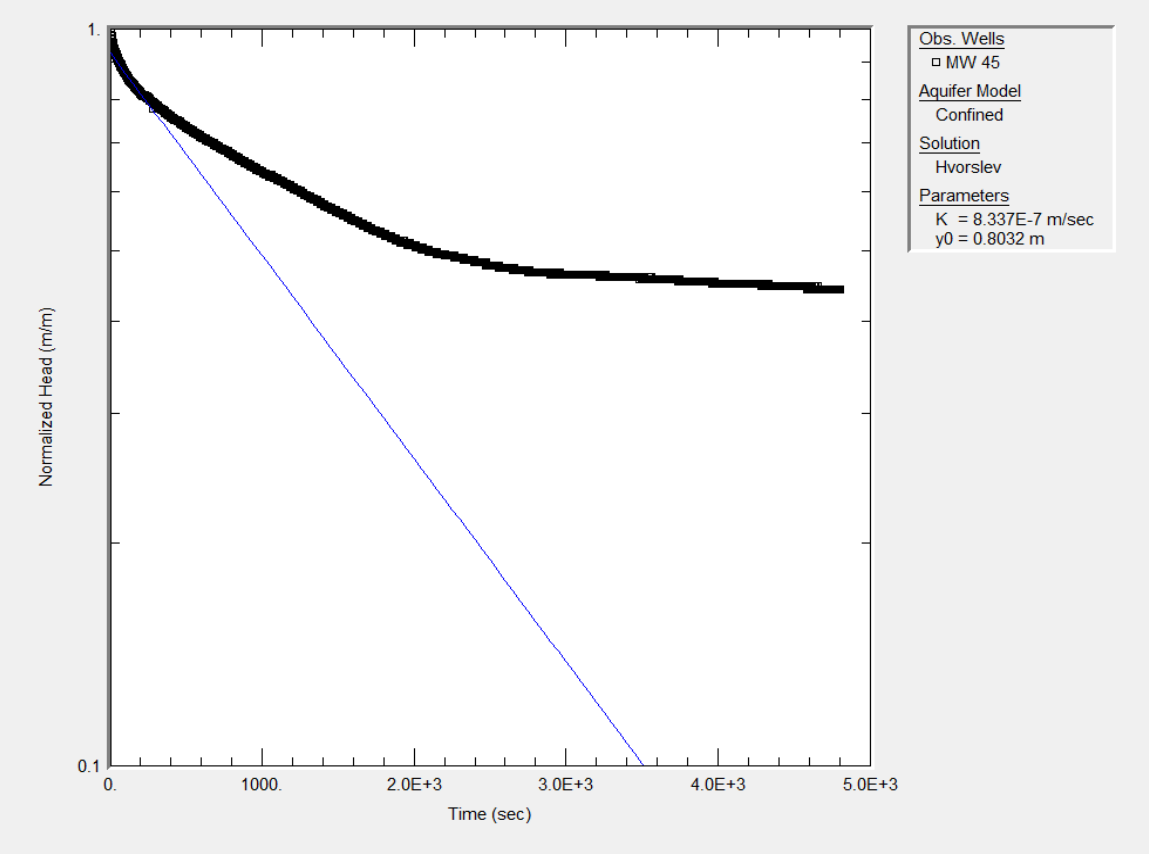


GEI Consultants

Estimation of K by Slug Test, based on Hvorslev's equation

Date:	May 30, 2023
Conducted by:	S. Patrick

Well Number:	BH/MW 45	
Well Screen Bottom:	4.57	mbgs
Top of Pipe:	1.02	mags
Well Casing Diameter:	5.08	cm
Local Well Elevation:	188.5	masl
Static Water Level:	3.42	mbgs
$K = r^2\ln(L/R)/(2LTo) =$	**$8.3x10^{-7}$**	m/s



Appendix E

Water Quality Laboratory Certificate of Analysis and Chain of Custody

Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

Dear Sarah Griffith:

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

Report Comments:

APPROVAL: R Zafari Raheleh Zafari 2023.06.08 15:41:49 -04'00'

Raheleh Zafari, Environmental Chemist

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

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

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

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

Certificate of Analysis

eurofins | Environment Testing

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

				Lab I.D.	1689689
				Sample Matrix	WW
				Sample Type	
				Sampling Date	2023-05-30
				Sample I.D.	MW23
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Anions	F	0.10	mg/L	MAC 10	0.38
	SO4	1	mg/L	MAC 1500	175
General Chemistry	BOD5	1	mg/L	MAC 300	<1
	Cyanide (total)	0.005	mg/L	MAC 2	<0.005
	pH	1.00		6.0-10.0	8.03
	Phenols	0.002	mg/L	MAC 1.0	<0.002
	Total Suspended Solids	2	mg/L	MAC 350	19
Mercury	Hg	0.0001	mg/L	MAC 0.05	<0.0001
Metals	Ag	0.01	mg/L	MAC 5	<0.01
	Al	0.1	mg/L	MAC 50	<0.1
	Aqua-Regia Digest		mg/L		y
	As	0.02	mg/L	MAC 1	<0.02
	Be	0.01	mg/L	MAC 5	<0.01
	Cd	0.008	mg/L	MAC 1.0	<0.008
	Co	0.01	mg/L	MAC 5	<0.01
	Cr	0.05	mg/L	MAC 3	<0.05
	Cu	0.01	mg/L	MAC 3	<0.01
	Fe	0.1	mg/L	MAC 50	0.1
	Mn	0.01	mg/L	MAC 5	0.16
	Mo	0.01	mg/L	MAC 5	<0.01
	Ni	0.01	mg/L	MAC 3	<0.01
	Pb	0.01	mg/L	MAC 3	<0.01
	Sb	0.01	mg/L	MAC 5	<0.01
	Se	0.02	mg/L	MAC 5	<0.02
	Sn	0.1	mg/L	MAC 5	<0.1

Guideline = Sanitary Sewer - Halton *** = Guideline Exceedence**

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

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

Certificate of Analysis

eurofins | Environment Testing

Client: GEI Consultants Inc.
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Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1689689 WW 2023-05-30 MW23
Metals	Ti	0.1	mg/L	MAC 5	<0.1
	Zn	0.04	mg/L	MAC 3	0.05
Microbiology	Escherichia Coli	0	ct/100mL		0
Nutrients	Total Kjeldahl Nitrogen	0.100	mg/L	MAC 100	0.170
	Total P	0.020	mg/L	MAC 10	<0.020
Oil and Grease	Oil & Grease - Mineral	1	mg/L	MAC 15	<1
	Oil & Grease - Non-mineral	1	mg/L	MAC 150	<1
	Oil & Grease - Total	1	mg/L		<1
PAH	Naphthalene	0.1	ug/L	MAC 140	<0.1
VOCs Surrogates	1,2-dichloroethane-d4	0	%		119
	4-bromofluorobenzene	0	%		100
	Toluene-d8	0	%		96
Volatiles	1,4-dichlorobenzene	0.4	ug/L	MAC 80	<0.4
	Benzene	0.5	ug/L	MAC 10	<0.5
	Chloroform	0.5	ug/L	MAC 40	<0.5
	Dichloromethane	4.0	ug/L	MAC 2000	<4.0
	Ethylbenzene	0.5	ug/L	MAC 160	<0.5
	Tetrachloroethylene	0.3	ug/L	MAC 1000	<0.3
	Toluene	0.4	ug/L	MAC 16	<0.4
	Trichloroethylene	0.3	ug/L	MAC 400	<0.3

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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 442075 **Analysis/Extraction Date** 2023-06-07 **Analyst** C M **Method** P 8270			
Naphthalene	<0.1 ug/L	58	50-140
Run No 442783 **Analysis/Extraction Date** 2023-06-03 **Analyst** DRA **Method** AMBCOLM1			
Escherichia Coli			
Run No 442812 **Analysis/Extraction Date** 2023-06-07 **Analyst** M E **Method** SM 5210B			
BOD5	<1 mg/L	98	75-125
Run No 442816 **Analysis/Extraction Date** 2023-06-03 **Analyst** AsA **Method** SM2320,2510,4500H/F			
F	<0.10 mg/L	101	90-110
pH		100	90-110
Run No 442840 **Analysis/Extraction Date** 2023-06-05 **Analyst** SKH **Method** EPA 365.1			
Total P	<0.020 mg/L	104	80-120
Run No 442853 **Analysis/Extraction Date** 2023-06-05 **Analyst** SKH **Method** EPA 351.2			
Total Kjeldahl Nitrogen	<0.100 mg/L	111	70-130

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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 442859 **Analysis/Extraction Date** 2023-06-05 **Analyst** Z S **Method** SM4500-CNC/MOE E3015			
Cyanide (total)	<0.005 mg/L	84	61-139
Run No 442864 **Analysis/Extraction Date** 2023-06-03 **Analyst** PJ **Method** EPA 8260			
Dichlorobenzene, 1,4-	<0.4 ug/L	100	60-130
Benzene	<0.5 ug/L	84	60-130
Chloroform	<0.5 ug/L	103	60-130
Methylene Chloride	<4.0 ug/L	107	60-130
Ethylbenzene	<0.5 ug/L	80	60-130
Tetrachloroethylene	<0.3 ug/L	110	60-130
Toluene	<0.4 ug/L	108	60-130
Trichloroethylene	<0.3 ug/L	99	60-130
Run No 442896 **Analysis/Extraction Date** 2023-06-06 **Analyst** R T **Method** C SM2540			
Total Suspended Solids	<2 mg/L	98	90-110
Run No 442920 **Analysis/Extraction Date** 2023-06-06 **Analyst** SD **Method** EPA 200.8			
Silver	<0.01 mg/L	100	70-130

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Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Aluminum	<0.1 mg/L	91	70-130
Arsenic	<0.02 mg/L	91	70-130
Beryllium	<0.01 mg/L	87	70-130
Cadmium	<0.008 mg/L	91	70-130
Cobalt	<0.01 mg/L	94	70-130
Chromium Total	<0.05 mg/L	96	70-130
Copper	<0.01 mg/L	101	70-130
Iron	<0.1 mg/L	82	70-130
Manganese	<0.01 mg/L	97	70-130
Molybdenum	<0.01 mg/L	88	70-130
Nickel	<0.01 mg/L	96	70-130
Lead	<0.01 mg/L	93	70-130
Antimony	<0.01 mg/L	97	70-130
Selenium	<0.02 mg/L	93	70-130
Sn	<0.1 mg/L	75	70-130
Titanium	<0.1 mg/L	77	70-130

Run No 442945 **Analysis/Extraction Date** 2023-06-06 **Analyst** IP
Method SM5530D/EPA420.2

Guideline = Sanitary Sewer - Halton *** = Guideline Exceedence**

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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Phenols	<0.002 mg/L	103	50-120
Run No 442981 **Analysis/Extraction Date** 2023-06-06 **Analyst** AaN **Method** SM 4110			
SO4	<1 mg/L	100	90-110
Run No 443046 **Analysis/Extraction Date** 2023-06-07 **Analyst** AaN **Method** EPA 200.8			
Aqua-Regia Digest	0 mg/L		
Zinc	<0.04 mg/L	109	70-130
Run No 443065 **Analysis/Extraction Date** 2023-06-08 **Analyst** ACN **Method** SM 5520B/F			
Oil & Grease - Mineral	<1 mg/L	120	70-130
Oil & Grease - Non-mineral	<1 mg/L		70-130
Oil & Grease - Total	<1 mg/L	115	70-130
Run No 443106 **Analysis/Extraction Date** 2023-06-08 **Analyst** AaN **Method** M SM3112B-3500B			
Mercury	<0.0001 mg/L	108	76-123

Guideline = Sanitary Sewer - Halton *** = Guideline Exceedence**

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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997699
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904774

Sample Comment Summary

Sample ID: 1689689 MW23 Phenols MRL elevated due to matrix interference (dilution was done). Deviation from standard protocol,bacti analysis past hold time.

Guideline = Sanitary Sewer - Halton *** = Guideline Exceedence**

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

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

Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997702
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904775

Dear Sarah Griffith:

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

Report Comments:

R Zafari

Raheleh Zafari 2023.06.08 15:44:01 -04'00'

APPROVAL: _____

Raheleh Zafari, Environmental Chemist

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

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

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Certificate of Analysis

eurofins | Environment Testing

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997702
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904775

				Lab I.D.	1689692
				Sample Matrix	WW
				Sample Type	
				Sampling Date	2023-05-30
				Sample I.D.	MW37
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Anions	F	0.10	mg/L	MAC 10	0.26
	SO4	1	mg/L	MAC 1500	172
General Chemistry	BOD5	1	mg/L	MAC 300	<1
	Cyanide (total)	0.005	mg/L	MAC 2	<0.005
	pH	1.00		6.0-10.0	8.00
	Phenols	0.002	mg/L	MAC 1.0	<0.002
	Total Suspended Solids	2	mg/L	MAC 350	163
Mercury	Hg	0.0001	mg/L	MAC 0.05	<0.0001
Metals	Ag	0.01	mg/L	MAC 5	<0.01
	Al	0.1	mg/L	MAC 50	3.8
	Aqua-Regia Digest		mg/L		y
	As	0.02	mg/L	MAC 1	<0.02
	Be	0.01	mg/L	MAC 5	<0.01
	Cd	0.008	mg/L	MAC 1.0	<0.008
	Co	0.01	mg/L	MAC 5	<0.01
	Cr	0.05	mg/L	MAC 3	<0.05
	Cu	0.01	mg/L	MAC 3	0.02
	Fe	0.1	mg/L	MAC 50	1.6
	Mn	0.01	mg/L	MAC 5	0.17
	Mo	0.01	mg/L	MAC 5	<0.01
	Ni	0.01	mg/L	MAC 3	<0.01
	Pb	0.01	mg/L	MAC 3	0.01
	Sb	0.01	mg/L	MAC 5	<0.01
	Se	0.02	mg/L	MAC 5	<0.02
	Sn	0.1	mg/L	MAC 5	<0.1

Guideline = Sanitary Sewer - Halton *** = Guideline Exceedence**

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Certificate of Analysis

eurofins | Environment Testing

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997702
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904775

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D. 1689692 / WW / 2023-05-30 / MW37
Metals	Ti	0.1	mg/L	MAC 5	<0.1
	Zn	0.04	mg/L	MAC 3	<0.04
Microbiology	Escherichia Coli	0	ct/100mL		0
Nutrients	Total Kjeldahl Nitrogen	0.100	mg/L	MAC 100	0.306
	Total P	0.020	mg/L	MAC 10	0.060
Oil and Grease	Oil & Grease - Mineral	1	mg/L	MAC 15	<1
	Oil & Grease - Non-mineral	1	mg/L	MAC 150	<1
	Oil & Grease - Total	1	mg/L		<1
PAH	Naphthalene	0.1	ug/L	MAC 140	<0.1
VOCs Surrogates	1,2-dichloroethane-d4	0	%		103
	4-bromofluorobenzene	0	%		77
	Toluene-d8	0	%		95
Volatiles	1,4-dichlorobenzene	0.4	ug/L	MAC 80	<0.4
	Benzene	0.5	ug/L	MAC 10	<0.5
	Chloroform	0.5	ug/L	MAC 40	<0.5
	Dichloromethane	4.0	ug/L	MAC 2000	<4.0
	Ethylbenzene	0.5	ug/L	MAC 160	<0.5
	Tetrachloroethylene	0.3	ug/L	MAC 1000	<0.3
	Toluene	0.4	ug/L	MAC 16	<0.4
	Trichloroethylene	0.3	ug/L	MAC 400	<0.3

Guideline = Sanitary Sewer - Halton *** = Guideline Exceedence**

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 442075 **Analysis/Extraction Date** 2023-06-07 **Analyst** C M **Method** P 8270			
Naphthalene	<0.1 ug/L	58	50-140
Run No 442783 **Analysis/Extraction Date** 2023-06-03 **Analyst** DRA **Method** AMBCOLM1			
Escherichia Coli			
Run No 442812 **Analysis/Extraction Date** 2023-06-07 **Analyst** M E **Method** SM 5210B			
BOD5	<1 mg/L	98	75-125
Run No 442816 **Analysis/Extraction Date** 2023-06-03 **Analyst** AsA **Method** SM2320,2510,4500H/F			
F	<0.10 mg/L	101	90-110
pH		100	90-110
Run No 442840 **Analysis/Extraction Date** 2023-06-05 **Analyst** SKH **Method** EPA 365.1			
Total P	<0.020 mg/L	104	80-120
Run No 442853 **Analysis/Extraction Date** 2023-06-05 **Analyst** SKH **Method** EPA 351.2			
Total Kjeldahl Nitrogen	<0.100 mg/L	111	70-130

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 442859 **Analysis/Extraction Date** 2023-06-05 **Analyst** Z S **Method** SM4500-CNC/MOE E3015			
Cyanide (total)	<0.005 mg/L	84	61-139
Run No 442864 **Analysis/Extraction Date** 2023-06-03 **Analyst** PJ **Method** EPA 8260			
Dichlorobenzene, 1,4-	<0.4 ug/L	100	60-130
Benzene	<0.5 ug/L	84	60-130
Chloroform	<0.5 ug/L	103	60-130
Methylene Chloride	<4.0 ug/L	107	60-130
Ethylbenzene	<0.5 ug/L	80	60-130
Tetrachloroethylene	<0.3 ug/L	110	60-130
Toluene	<0.4 ug/L	108	60-130
Trichloroethylene	<0.3 ug/L	99	60-130
Run No 442896 **Analysis/Extraction Date** 2023-06-06 **Analyst** R T **Method** C SM2540			
Total Suspended Solids	<2 mg/L	98	90-110
Run No 442920 **Analysis/Extraction Date** 2023-06-06 **Analyst** SD **Method** EPA 200.8			
Silver	<0.01 mg/L	100	70-130

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Aluminum	<0.1 mg/L	91	70-130
Arsenic	<0.02 mg/L	91	70-130
Beryllium	<0.01 mg/L	87	70-130
Cadmium	<0.008 mg/L	91	70-130
Cobalt	<0.01 mg/L	94	70-130
Chromium Total	<0.05 mg/L	96	70-130
Copper	<0.01 mg/L	101	70-130
Iron	<0.1 mg/L	82	70-130
Manganese	<0.01 mg/L	97	70-130
Molybdenum	<0.01 mg/L	88	70-130
Nickel	<0.01 mg/L	96	70-130
Lead	<0.01 mg/L	93	70-130
Antimony	<0.01 mg/L	97	70-130
Selenium	<0.02 mg/L	93	70-130
Sn	<0.1 mg/L	75	70-130
Titanium	<0.1 mg/L	77	70-130

Run No 442945 **Analysis/Extraction Date** 2023-06-06 **Analyst** IP
Method SM5530D/EPA420.2

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Phenols	<0.002 mg/L	103	50-120
Run No 443041 **Analysis/Extraction Date** 2023-06-08 **Analyst** AaN **Method** SM 4110			
SO4	<1 mg/L	95	90-110
Run No 443046 **Analysis/Extraction Date** 2023-06-07 **Analyst** AaN **Method** EPA 200.8			
Aqua-Regia Digest	0 mg/L		
Zinc	<0.04 mg/L	109	70-130
Run No 443065 **Analysis/Extraction Date** 2023-06-08 **Analyst** ACN **Method** SM 5520B/F			
Oil & Grease - Mineral	<1 mg/L	120	70-130
Oil & Grease - Non-mineral	<1 mg/L		70-130
Oil & Grease - Total	<1 mg/L	115	70-130
Run No 443106 **Analysis/Extraction Date** 2023-06-08 **Analyst** AaN **Method** M SM3112B-3500B			
Mercury	<0.0001 mg/L	108	76-123

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Sample Comment Summary

Sample ID: 1689692 MW37 Phenols MRL elevated due to matrix interference (dilution was done). Deviation from standard protocol, bacti analysis past hold time.

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Report Number:	1997730
Date Submitted:	2023-06-01
Date Reported:	2023-06-07
Project:	2300805
COC #:	904776
Temperature (C):	5
Custody Seal:	

Dear Sarah Griffith:

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

Report Comments:

Raheleh Zafari 2023.06.07 14:56:41 -04'00'

Raheleh Zafari, Environmental Chemist

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at https://directory.cala.ca/

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

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Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria

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Guideline = O.Reg 153-T1-Groundwater

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689789 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW23
PHC's F1	442864	20	ug/L	STD 420	<20
PHC's F1-BTEX	442894	20	ug/L		<20
PHC's F2	443014	20	ug/L	STD 150	<20
PHC's F3	443014	50	ug/L	STD 500	<50
PHC's F4	443014	50	ug/L	STD 500	<50

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689789 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW23
Acetone	442864	5	ug/L	STD 2700	<5
Benzene	442864	0.5	ug/L	STD 0.5	<0.5
Bromodichloromethane	442864	0.3	ug/L	STD 2	<0.3
Bromoform	442864	0.4	ug/L	STD 5	<0.4
Bromomethane	442864	0.5	ug/L	STD 0.89	<0.5
Carbon Tetrachloride	442864	0.2	ug/L	STD 0.2	<0.2
Chlorobenzene	442864	0.5	ug/L	STD 0.5	<0.5
Chloroform	442864	0.5	ug/L	STD 2	<0.5
Dibromochloromethane	442864	0.3	ug/L	STD 2	<0.3
Dichlorobenzene, 1,2-	442864	0.4	ug/L	STD 0.5	<0.4
Dichlorobenzene, 1,3-	442864	0.4	ug/L	STD 0.5	<0.4
Dichlorobenzene, 1,4-	442864	0.4	ug/L	STD 0.5	<0.4
Dichlorodifluoromethane	442864	0.5	ug/L	STD 590	<0.5

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Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689789 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW23
Dichloroethane, 1,1-	442864	0.4	ug/L	STD 0.5	<0.4
Dichloroethane, 1,2-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloroethylene, 1,1-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloroethylene, 1,2-cis-	442864	0.4	ug/L	STD 1.6	<0.4
Dichloroethylene, 1,2-trans-	442864	0.4	ug/L	STD 1.6	<0.4
Dichloropropane, 1,2-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloropropene,1,3-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloropropene,1,3-cis-	442864	0.5	ug/L		<0.5
Dichloropropene,1,3-trans-	442864	0.5	ug/L		<0.5
Ethylbenzene	442864	0.5	ug/L	STD 0.5	<0.5
Ethylene dibromide	442864	0.2	ug/L	STD 0.2	<0.2
Hexane (n)	442864	5	ug/L	STD 5	<5
Methyl Ethyl Ketone	442864	2	ug/L	STD 400	<2
Methyl Isobutyl Ketone	442864	5	ug/L	STD 640	<5
Methyl tert-Butyl Ether (MTBE)	442864	2	ug/L	STD 15	<2
Methylene Chloride	442864	4.0	ug/L	STD 5	<4.0
Styrene	442864	0.5	ug/L	STD 0.5	<0.5
Tetrachloroethane, 1,1,1,2-	442864	0.5	ug/L	STD 1.1	<0.5
Tetrachloroethane, 1,1,2,2-	442864	0.5	ug/L	STD 0.5	<0.5
Tetrachloroethylene	442864	0.3	ug/L	STD 0.5	<0.3
Toluene	442864	0.4	ug/L	STD 0.8	<0.4
Trichloroethane, 1,1,1-	442864	0.4	ug/L	STD 0.5	<0.4
Trichloroethane, 1,1,2-	442864	0.4	ug/L	STD 0.5	<0.4

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Guideline = O.Reg 153-T1-Groundwater

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689789 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW23
Trichloroethylene	442864	0.3	ug/L	STD 0.5	<0.3
Trichlorofluoromethane	442864	0.5	ug/L	STD 150	<0.5
Vinyl Chloride	442864	0.2	ug/L	STD 0.5	<0.2
Xylene Mixture	442872	0.5	ug/L	STD 72	<0.5
Xylene, m/p-	442864	0.4	ug/L		<0.4
Xylene, o-	442864	0.4	ug/L		<0.4

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689789 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW23
Alpha-androstrane	443014	0	%		105

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Guideline = O.Reg 153-T1-Groundwater

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689789 / Sample Matrix GW153 / Sample Type / Sample Date 2023-05-30 / Sampling Time / Sample I.D. MW23
1,2-dichloroethane-d4	442864	0	%		110
4-bromofluorobenzene	442864	0	%		77
Toluene-d8	442864	0	%		97

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
442864	Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	88	60-130	109	50-140	0	0-30
442864	Trichloroethane, 1,1,1-	<0.4 ug/L	81	60-130	113	50-140	0	0-30
442864	Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	109	60-130	110	50-140	0	0-30
442864	Trichloroethane, 1,1,2-	<0.4 ug/L	87	60-130	107	50-140	0	0-30
442864	Dichloroethane, 1,1-	<0.4 ug/L	102	60-130	119	50-140	0	0-30
442864	Dichloroethylene, 1,1-	<0.5 ug/L	91	60-130	112	50-140	0	0-30
442864	Dichlorobenzene, 1,2-	<0.4 ug/L	104	60-130	102	50-140	0	0-30
442864	Dichloroethane, 1,2-	<0.5 ug/L	82	60-130	124	50-140	0	0-30
442864	Dichloropropane, 1,2-	<0.5 ug/L	82	60-130	120	50-140	0	0-30
442864	Dichlorobenzene, 1,3-	<0.4 ug/L	100	60-130	101	50-140	0	0-30
442864	Dichloropropene,1,3-							
442864	Dichlorobenzene, 1,4-	<0.4 ug/L	100	60-130	101	50-140	0	0-30
442864	Acetone	<5 ug/L	80	60-130	71	50-140	0	0-30
442864	Benzene	<0.5 ug/L	84	60-130	120	50-140	0	0-30
442864	Bromodichloromethane	<0.3 ug/L	102	60-130	121	50-140	0	0-30
442864	Bromoform	<0.4 ug/L	84	60-130	101	50-140	0	0-30
442864	Bromomethane	<0.5 ug/L	101	60-130	112	50-140	0	0-30
442864	Dichloroethylene, 1,2-cis-	<0.4 ug/L	110	60-130	119	50-140	0	0-30
442864	Dichloropropene,1,3-cis-	<0.5 ug/L	102	60-130	112	50-140	0	0-30
442864	Carbon Tetrachloride	<0.2 ug/L	83	60-130	113	50-140	0	0-30
442864	Chloroform	<0.5 ug/L	103	60-130	119	50-140	0	0-30
442864	Dibromochloromethane	<0.3 ug/L	83	60-130	103	50-140	0	0-30
442864	Dichlorodifluoromethane	<0.5 ug/L	92	60-130	101	50-140	0	0-30
442864	Methylene Chloride	<4.0 ug/L	107	60-130	103	50-140	0	0-30
442864	Ethylbenzene	<0.5 ug/L	80	60-130	112	50-140	0	0-30
442864	Ethylene dibromide	<0.2 ug/L	89	60-130	100	50-140	0	0-30
442864	PHC's F1	<20 ug/L	92	60-140	87	60-140	0	0-30
442864	Hexane (n)	<5 ug/L	100	60-130	107	50-140	0	0-30
442864	Xylene, m/p-	<0.4 ug/L	102	60-130	112	50-140	0	0-30
442864	Methyl Ethyl Ketone	<2 ug/L	120	60-130	121	50-140	0	0-30
442864	Methyl Isobutyl Ketone	<5 ug/L	110	60-130	107	50-140	0	0-30
442864	Methyl tert-Butyl Ether (MTBE)	<2 ug/L	100	60-130	114	50-140	0	0-30

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

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997730
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904776

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
442864	Chlorobenzene	<0.5 ug/L	83	60-130	109	50-140	0	0-30
442864	Xylene, o-	<0.4 ug/L	102	60-130	113	50-140	0	0-30
442864	Styrene	<0.5 ug/L	99	60-130	111	50-140	0	0-30
442864	Dichloroethylene, 1,2-trans-	<0.4 ug/L	103	60-130	118	50-140	0	0-30
442864	Dichloropropene,1,3-trans-	<0.5 ug/L	96	60-130	111	50-140	0	0-30
442864	Tetrachloroethylene	<0.3 ug/L	110	60-130	112	50-140	0	0-30
442864	Toluene	<0.4 ug/L	108	60-130	125	50-140	0	0-30
442864	Trichloroethylene	<0.3 ug/L	99	60-130	112	50-140	0	0-30
442864	Trichlorofluoromethane	<0.5 ug/L	110	60-130	105	50-140	0	0-30
442864	Vinyl Chloride	<0.2 ug/L	99	60-130	111	50-140	0	0-30
442872	Xylene Mixture							
442894	PHC's F1-BTEX							
443014	PHC's F2	<20 ug/L	80	60-140		60-140		0-30
443014	PHC's F3	<50 ug/L	80	60-140		60-140		0-30
443014	PHC's F4	<50 ug/L	80	60-140		60-140		0-30

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Certificate of Analysis

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Report Number: 1997730
Date Submitted: 2023-06-01
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Project: 2300805
COC #: 904776

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
442864	Tetrachloroethane, 1,1,1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichloroethane, 1,1,1-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Tetrachloroethane, 1,1,2,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichloroethane, 1,1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethane, 1,1-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethylene, 1,1-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichlorobenzene, 1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethane, 1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropane, 1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichlorobenzene, 1,3-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropene,1,3-	GC-MS	2023-06-02	2023-06-02	PJ	EPA 8260
442864	Dichlorobenzene, 1,4-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Acetone	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Benzene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Bromodichloromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Bromoform	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Bromomethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethylene, 1,2-cis-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropene,1,3-cis-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Carbon Tetrachloride	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Chloroform	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dibromochloromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichlorodifluoromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methylene Chloride	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Ethylbenzene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Ethylene dibromide	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	PHC's F1	GC/FID	2023-06-02	2023-06-02	PJ	CCME O.Reg 153/04
442864	Hexane (n)	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Xylene, m/p-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methyl Ethyl Ketone	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methyl Isobutyl Ketone	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methyl tert-Butyl Ether (MTBE)	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260

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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
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L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997730
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904776

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
442864	Chlorobenzene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Xylene, o-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Styrene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethylene, 1,2-trans-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropene,1,3-trans-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Tetrachloroethylene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Toluene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichloroethylene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichlorofluoromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Vinyl Chloride	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442872	Xylene Mixture	GC-MS	2023-06-05	2023-06-05	PJ	EPA 8260
442894	PHC's F1-BTEX	GC/FID	2023-06-05	2023-06-05	PJ	CCME O.Reg 153/04
443014	PHC's F2	GC/FID	2023-06-07	2023-06-07	SS	CCME O.Reg 153/04
443014	PHC's F3	GC/FID	2023-06-07	2023-06-07	SS	CCME O.Reg 153/04
443014	PHC's F4	GC/FID	2023-06-07	2023-06-07	SS	CCME O.Reg 153/04

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

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CWS for Petroleum Hydrocarbons in Soil - Tier 1

Notes:

1. The laboratory method complies with CCME Tier 1 reference method for PHC in soil. It is validated for laboratory use.
2. Where the F1 fraction (C6 to C10) and BTEX are both measured, F1-BTEX is reported.
3. Where the F2 fraction (C10 to C16) and naphthalene are both measured, F2-naphthalene is reported.
4. Where the F3 fraction (C16 to C34) and PAHs* are both measured, F3-PAH is reported.
5. F4G is analyzed if the chromatogram does not descend to baseline before C50. Where F4 (C34 to C50) and F4G are both reported, the higher result is compared to the standard.
6. Unless otherwise stated in the sample comments, the following criteria have been met where applicable:

   - nC6 and nC10 response factors within 30% of response factor for toluene;
   - nC10, nC16, and nC34 response factors within 10% of each other;
   - C50 response factors within 70% of nC10 + nC16 + nC34 average; and,
   - Linearity is within 15%.

7. Unless otherwise stated in the sample comments, sampling requirements and analytical holding times have been met.
8. Gravimetric heavy hydrocarbons (F4G) cannot be added to the C6 and C50 hydrocarbons.
9. *PAHs = phenanthrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene and pyrene.

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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
Invoice to: GEI Consultants Inc.
PO#:

Report Number:	1997731
Date Submitted:	2023-06-01
Date Reported:	2023-06-07
Project:	2300805
COC #:	904777
Temperature (C):	5
Custody Seal:	

Dear Sarah Griffith:

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

Report Comments:

R Zafari

Raheleh Zafari 2023.06.07 14:57:48 -04'00'

Raheleh Zafari, Environmental Chemist

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

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

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

Certificate of Analysis

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647 Welham Rd Unit 14
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L4N 0B7
Attention: Ms. Sarah Griffith
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Report Number: 1997731
Date Submitted: 2023-06-01
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Project: 2300805
COC #: 904777

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria

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647 Welham Rd Unit 14
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Attention: Ms. Sarah Griffith
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Report Number: 1997731
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

Guideline = O.Reg 153-T1-Groundwater

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689790 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW37
PHC's F1	442864	20	ug/L	STD 420	<20
PHC's F1-BTEX	442894	20	ug/L		<20
PHC's F2	443014	20	ug/L	STD 150	<20
PHC's F3	443014	50	ug/L	STD 500	<50
PHC's F4	443014	50	ug/L	STD 500	<50

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689790 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW37
Acetone	442864	5	ug/L	STD 2700	<5
Benzene	442864	0.5	ug/L	STD 0.5	<0.5
Bromodichloromethane	442864	0.3	ug/L	STD 2	<0.3
Bromoform	442864	0.4	ug/L	STD 5	<0.4
Bromomethane	442864	0.5	ug/L	STD 0.89	<0.5
Carbon Tetrachloride	442864	0.2	ug/L	STD 0.2	<0.2
Chlorobenzene	442864	0.5	ug/L	STD 0.5	<0.5
Chloroform	442864	0.5	ug/L	STD 2	<0.5
Dibromochloromethane	442864	0.3	ug/L	STD 2	<0.3
Dichlorobenzene, 1,2-	442864	0.4	ug/L	STD 0.5	<0.4
Dichlorobenzene, 1,3-	442864	0.4	ug/L	STD 0.5	<0.4
Dichlorobenzene, 1,4-	442864	0.4	ug/L	STD 0.5	<0.4
Dichlorodifluoromethane	442864	0.5	ug/L	STD 590	<0.5

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Guideline = O.Reg 153-T1-Groundwater

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689790 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW37
Dichloroethane, 1,1-	442864	0.4	ug/L	STD 0.5	<0.4
Dichloroethane, 1,2-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloroethylene, 1,1-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloroethylene, 1,2-cis-	442864	0.4	ug/L	STD 1.6	<0.4
Dichloroethylene, 1,2-trans-	442864	0.4	ug/L	STD 1.6	<0.4
Dichloropropane, 1,2-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloropropene,1,3-	442864	0.5	ug/L	STD 0.5	<0.5
Dichloropropene,1,3-cis-	442864	0.5	ug/L		<0.5
Dichloropropene,1,3-trans-	442864	0.5	ug/L		<0.5
Ethylbenzene	442864	0.5	ug/L	STD 0.5	<0.5
Ethylene dibromide	442864	0.2	ug/L	STD 0.2	<0.2
Hexane (n)	442864	5	ug/L	STD 5	<5
Methyl Ethyl Ketone	442864	2	ug/L	STD 400	<2
Methyl Isobutyl Ketone	442864	5	ug/L	STD 640	<5
Methyl tert-Butyl Ether (MTBE)	442864	2	ug/L	STD 15	<2
Methylene Chloride	442864	4.0	ug/L	STD 5	<4.0
Styrene	442864	0.5	ug/L	STD 0.5	<0.5
Tetrachloroethane, 1,1,1,2-	442864	0.5	ug/L	STD 1.1	<0.5
Tetrachloroethane, 1,1,2,2-	442864	0.5	ug/L	STD 0.5	<0.5
Tetrachloroethylene	442864	0.3	ug/L	STD 0.5	<0.3
Toluene	442864	0.4	ug/L	STD 0.8	<0.4
Trichloroethane, 1,1,1-	442864	0.4	ug/L	STD 0.5	<0.4
Trichloroethane, 1,1,2-	442864	0.4	ug/L	STD 0.5	<0.4

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Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

Guideline = O.Reg 153-T1-Groundwater

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689790 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW37
Trichloroethylene	442864	0.3	ug/L	STD 0.5	<0.3
Trichlorofluoromethane	442864	0.5	ug/L	STD 150	<0.5
Vinyl Chloride	442864	0.2	ug/L	STD 0.5	<0.2
Xylene Mixture	442872	0.5	ug/L	STD 72	<0.5
Xylene, m/p-	442864	0.4	ug/L		<0.4
Xylene, o-	442864	0.4	ug/L		<0.4

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689790 Sample Matrix GW153 Sample Type Sample Date 2023-05-30 Sampling Time Sample I.D. MW37
Alpha-androstrane	443014	0	%		107

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Certificate of Analysis

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Guideline = O.Reg 153-T1-Groundwater

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1689790 / Sample Matrix GW153 / Sample Type / Sample Date 2023-05-30 / Sampling Time / Sample I.D. MW37
1,2-dichloroethane-d4	442864	0	%		108
4-bromofluorobenzene	442864	0	%		77
Toluene-d8	442864	0	%		92

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
442864	Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	88	60-130	109	50-140	0	0-30
442864	Trichloroethane, 1,1,1-	<0.4 ug/L	81	60-130	113	50-140	0	0-30
442864	Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	109	60-130	110	50-140	0	0-30
442864	Trichloroethane, 1,1,2-	<0.4 ug/L	87	60-130	107	50-140	0	0-30
442864	Dichloroethane, 1,1-	<0.4 ug/L	102	60-130	119	50-140	0	0-30
442864	Dichloroethylene, 1,1-	<0.5 ug/L	91	60-130	112	50-140	0	0-30
442864	Dichlorobenzene, 1,2-	<0.4 ug/L	104	60-130	102	50-140	0	0-30
442864	Dichloroethane, 1,2-	<0.5 ug/L	82	60-130	124	50-140	0	0-30
442864	Dichloropropane, 1,2-	<0.5 ug/L	82	60-130	120	50-140	0	0-30
442864	Dichlorobenzene, 1,3-	<0.4 ug/L	100	60-130	101	50-140	0	0-30
442864	Dichloropropene,1,3-							
442864	Dichlorobenzene, 1,4-	<0.4 ug/L	100	60-130	101	50-140	0	0-30
442864	Acetone	<5 ug/L	80	60-130	71	50-140	0	0-30
442864	Benzene	<0.5 ug/L	84	60-130	120	50-140	0	0-30
442864	Bromodichloromethane	<0.3 ug/L	102	60-130	121	50-140	0	0-30
442864	Bromoform	<0.4 ug/L	84	60-130	101	50-140	0	0-30
442864	Bromomethane	<0.5 ug/L	101	60-130	112	50-140	0	0-30
442864	Dichloroethylene, 1,2-cis-	<0.4 ug/L	110	60-130	119	50-140	0	0-30
442864	Dichloropropene,1,3-cis-	<0.5 ug/L	102	60-130	112	50-140	0	0-30
442864	Carbon Tetrachloride	<0.2 ug/L	83	60-130	113	50-140	0	0-30
442864	Chloroform	<0.5 ug/L	103	60-130	119	50-140	0	0-30
442864	Dibromochloromethane	<0.3 ug/L	83	60-130	103	50-140	0	0-30
442864	Dichlorodifluoromethane	<0.5 ug/L	92	60-130	101	50-140	0	0-30
442864	Methylene Chloride	<4.0 ug/L	107	60-130	103	50-140	0	0-30
442864	Ethylbenzene	<0.5 ug/L	80	60-130	112	50-140	0	0-30
442864	Ethylene dibromide	<0.2 ug/L	89	60-130	100	50-140	0	0-30
442864	PHC's F1	<20 ug/L	92	60-140	87	60-140	0	0-30
442864	Hexane (n)	<5 ug/L	100	60-130	107	50-140	0	0-30
442864	Xylene, m/p-	<0.4 ug/L	102	60-130	112	50-140	0	0-30
442864	Methyl Ethyl Ketone	<2 ug/L	120	60-130	121	50-140	0	0-30
442864	Methyl Isobutyl Ketone	<5 ug/L	110	60-130	107	50-140	0	0-30
442864	Methyl tert-Butyl Ether (MTBE)	<2 ug/L	100	60-130	114	50-140	0	0-30

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

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

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997731
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
442864	Chlorobenzene	<0.5 ug/L	83	60-130	109	50-140	0	0-30
442864	Xylene, o-	<0.4 ug/L	102	60-130	113	50-140	0	0-30
442864	Styrene	<0.5 ug/L	99	60-130	111	50-140	0	0-30
442864	Dichloroethylene, 1,2-trans-	<0.4 ug/L	103	60-130	118	50-140	0	0-30
442864	Dichloropropene,1,3-trans-	<0.5 ug/L	96	60-130	111	50-140	0	0-30
442864	Tetrachloroethylene	<0.3 ug/L	110	60-130	112	50-140	0	0-30
442864	Toluene	<0.4 ug/L	108	60-130	125	50-140	0	0-30
442864	Trichloroethylene	<0.3 ug/L	99	60-130	112	50-140	0	0-30
442864	Trichlorofluoromethane	<0.5 ug/L	110	60-130	105	50-140	0	0-30
442864	Vinyl Chloride	<0.2 ug/L	99	60-130	111	50-140	0	0-30
442872	Xylene Mixture							
442894	PHC's F1-BTEX							
443014	PHC's F2	<20 ug/L	80	60-140		60-140		0-30
443014	PHC's F3	<50 ug/L	80	60-140		60-140		0-30
443014	PHC's F4	<50 ug/L	80	60-140		60-140		0-30

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

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

Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997731
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
442864	Tetrachloroethane, 1,1,1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichloroethane, 1,1,1-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Tetrachloroethane, 1,1,2,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichloroethane, 1,1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethane, 1,1-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethylene, 1,1-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichlorobenzene, 1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethane, 1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropane, 1,2-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichlorobenzene, 1,3-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropene,1,3-	GC-MS	2023-06-02	2023-06-02	PJ	EPA 8260
442864	Dichlorobenzene, 1,4-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Acetone	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Benzene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Bromodichloromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Bromoform	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Bromomethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethylene, 1,2-cis-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropene,1,3-cis-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Carbon Tetrachloride	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Chloroform	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dibromochloromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichlorodifluoromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methylene Chloride	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Ethylbenzene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Ethylene dibromide	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	PHC's F1	GC/FID	2023-06-02	2023-06-02	PJ	CCME O.Reg 153/04
442864	Hexane (n)	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Xylene, m/p-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methyl Ethyl Ketone	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methyl Isobutyl Ketone	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Methyl tert-Butyl Ether (MTBE)	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260

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

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

Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997731
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
442864	Chlorobenzene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Xylene, o-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Styrene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloroethylene, 1,2-trans-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Dichloropropene,1,3-trans-	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Tetrachloroethylene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Toluene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichloroethylene	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Trichlorofluoromethane	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442864	Vinyl Chloride	GC-MS	2023-06-02	2023-06-03	PJ	EPA 8260
442872	Xylene Mixture	GC-MS	2023-06-05	2023-06-05	PJ	EPA 8260
442894	PHC's F1-BTEX	GC/FID	2023-06-05	2023-06-05	PJ	CCME O.Reg 153/04
443014	PHC's F2	GC/FID	2023-06-07	2023-06-07	SS	CCME O.Reg 153/04
443014	PHC's F3	GC/FID	2023-06-07	2023-06-07	SS	CCME O.Reg 153/04
443014	PHC's F4	GC/FID	2023-06-07	2023-06-07	SS	CCME O.Reg 153/04

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

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Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997731
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

CWS for Petroleum Hydrocarbons in Soil - Tier 1

Notes:

1. The laboratory method complies with CCME Tier 1 reference method for PHC in soil. It is validated for laboratory use.
2. Where the F1 fraction (C6 to C10) and BTEX are both measured, F1-BTEX is reported.
3. Where the F2 fraction (C10 to C16) and naphthalene are both measured, F2-naphthalene is reported.
4. Where the F3 fraction (C16 to C34) and PAHs* are both measured, F3-PAH is reported.
5. F4G is analyzed if the chromatogram does not descend to baseline before C50. Where F4 (C34 to C50) and F4G are both reported, the higher result is compared to the standard.
6. Unless otherwise stated in the sample comments, the following criteria have been met where applicable:

   - nC6 and nC10 response factors within 30% of response factor for toluene;
   - nC10, nC16, and nC34 response factors within 10% of each other;
   - C50 response factors within 70% of nC10 + nC16 + nC34 average; and,
   - Linearity is within 15%.

7. Unless otherwise stated in the sample comments, sampling requirements and analytical holding times have been met.
8. Gravimetric heavy hydrocarbons (F4G) cannot be added to the C6 and C50 hydrocarbons.
9. *PAHs = phenanthrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene and pyrene.

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

Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997704
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904776

Dear Sarah Griffith:

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

Report Comments:

R Zafari

Raheleh Zafari 2023.06.08 13:41:41 -04'00'

APPROVAL: _____

Raheleh Zafari, Environmental Chemist

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

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

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Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

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

Certificate of Analysis

eurofins | Environment Testing

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997704
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904776

Group	Analyte	MRL	Units	Guideline	1689695 SURF W 2023-05-30 MW23	1689696 SURF W 2023-05-30 MW23 Filtered
	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.					
General Chemistry	Total Suspended Solids	2	mg/L		10	<2
Metals	Ag	0.0001	mg/L	PWQO 0.0001	<0.0001	<0.0001
	Al	0.01	mg/L		0.07	<0.01
	As	0.001	mg/L	PWQO 0.100	0.003	0.003
	B	0.01	mg/L	IPWQO 0.200	0.23*	0.25*
	Ba	0.01	mg/L		0.06	0.06
	Be	0.0005	mg/L	PWQO 0.011	<0.0005	<0.0005
	Cd	0.0001	mg/L	PWQO 0.0002	<0.0001	<0.0001
	Co	0.0002	mg/L	PWQO 0.0009	0.0005	0.0005
	Cr	0.001	mg/L		<0.001	<0.001
	Cu	0.001	mg/L	PWQO 0.005	<0.001	<0.001
	Fe	0.03	mg/L	PWQO 0.30	0.11	<0.03
	Hg	0.0001	mg/L	PWQO 0.0002	<0.0001	<0.0001
	Mo	0.005	mg/L	IPWQO 0.040	0.005	0.006
	Ni	0.005	mg/L	PWQO 0.025	<0.005	<0.005
	Pb	0.001	mg/L	PWQO 0.005	<0.001	<0.001
	Sb	0.0005	mg/L	IPWQO 0.020	<0.0005	<0.0005
	Se	0.001	mg/L	PWQO 0.100	<0.001	<0.001
	Tl	0.0001	mg/L	IPWQO 0.0003	<0.0001	<0.0001
	U	0.001	mg/L	IPWQO 0.005	0.003	0.003
	V	0.001	mg/L	IPWQO 0.006	<0.001	<0.001
	W	0.002	mg/L	IPWQO 0.030	<0.002	<0.002
	Zn	0.01	mg/L	PWQO 0.030	<0.01	<0.01
	Zr	0.002	mg/L	IPWQO 0.004	<0.002	<0.002

Guideline = PWQO - Ontario

*** = Guideline Exceedence**

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

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

Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997704
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904776

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 442857 **Analysis/Extraction Date** 2023-06-05 **Analyst** SD **Method** EPA 200.8			
Silver	<0.0001 mg/L	82	80-120
Aluminum	<0.01 mg/L	116	80-120
Arsenic	<0.001 mg/L	93	80-120
Boron (total)	<0.01 mg/L	108	80-120
Barium	<0.01 mg/L	90	80-120
Beryllium	<0.0005 mg/L	110	80-120
Cadmium	<0.0001 mg/L	103	80-120
Cobalt	<0.0002 mg/L	99	80-120
Chromium Total	<0.001 mg/L	100	80-120
Copper	<0.001 mg/L	101	80-120
Iron	<0.03 mg/L	98	80-120
Mercury	<0.0001 mg/L	105	80-120
Molybdenum	<0.005 mg/L	95	80-120
Nickel	<0.005 mg/L	101	80-120
Lead	<0.001 mg/L	100	80-120
Antimony	<0.0005 mg/L	115	80-120

Guideline = PWQO - Ontario *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997704
Date Submitted: 2023-06-01
Date Reported: 2023-06-08
Project: 2300805
COC #: 904776

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Selenium	<0.001 mg/L	100	80-120
Thallium	<0.0001 mg/L	97	80-120
Uranium	<0.001 mg/L	94	80-120
Vanadium	<0.001 mg/L	98	80-120
W	<0.002 mg/L	89	80-120
Zinc	<0.01 mg/L	106	80-120
Zr	<0.002 mg/L	89	80-120
Run No 442896 **Analysis/Extraction Date** 2023-06-06 **Analyst** R T **Method** C SM2540			
Total Suspended Solids	<2 mg/L	98	90-110
Run No 443074 **Analysis/Extraction Date** 2023-06-08 **Analyst** SD **Method** EPA 200.8			
Mercury	<0.0001 mg/L	104	80-120

Guideline = PWQO - Ontario *** = Guideline Exceedence**

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

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

Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997705
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

Dear Sarah Griffith:

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

Report Comments:

R Zafari

Raheleh Zafari 2023.06.07 12:31:47 -04'00'

APPROVAL: _____

Raheleh Zafari, Environmental Chemist

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

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Certificate of Analysis

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Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997705
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1689697 / SURF W / / 2023-05-30 / MW37	1689699 / SURF W / / 2023-05-30 / MW37 Filtered
General Chemistry	Total Suspended Solids	2	mg/L		89	<2
Metals	Ag	0.0001	mg/L	PWQO 0.0001	<0.0001	<0.0001
	Al	0.01	mg/L		0.23	<0.01
	As	0.001	mg/L	PWQO 0.100	0.002	0.002
	B	0.01	mg/L	IPWQO 0.200	0.73*	0.75*
	Ba	0.01	mg/L		0.03	0.03
	Be	0.0005	mg/L	PWQO 0.011	<0.0005	<0.0005
	Cd	0.0001	mg/L	PWQO 0.0002	<0.0001	<0.0001
	Co	0.0002	mg/L	PWQO 0.0009	0.0006	0.0003
	Cr	0.001	mg/L		<0.001	<0.001
	Cu	0.001	mg/L	PWQO 0.005	0.001	<0.001
	Fe	0.03	mg/L	PWQO 0.30	0.51*	<0.03
	Hg	0.0001	mg/L	PWQO 0.0002	<0.0001	<0.0001
	Mo	0.005	mg/L	IPWQO 0.040	0.006	0.008
	Ni	0.005	mg/L	PWQO 0.025	<0.005	<0.005
	Pb	0.001	mg/L	PWQO 0.005	<0.001	<0.001
	Sb	0.0005	mg/L	IPWQO 0.020	<0.0005	<0.0005
	Se	0.001	mg/L	PWQO 0.100	<0.001	<0.001
	Tl	0.0001	mg/L	IPWQO 0.0003	<0.0001	<0.0001
	U	0.001	mg/L	IPWQO 0.005	0.002	0.002
	V	0.001	mg/L	IPWQO 0.006	<0.001	<0.001
	W	0.002	mg/L	IPWQO 0.030	<0.002	<0.002
	Zn	0.01	mg/L	PWQO 0.030	<0.01	<0.01
	Zr	0.002	mg/L	IPWQO 0.004	<0.002	<0.002

Guideline = PWQO - Ontario *** = Guideline Exceedence**

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

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

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Certificate of Analysis

Client: GEI Consultants Inc.
647 Welham Rd Unit 14
Barrie, ON
L4N 0B7
Attention: Ms. Sarah Griffith
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 1997705
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 442857 **Analysis/Extraction Date** 2023-06-05 **Analyst** SD **Method** EPA 200.8			
Silver	<0.0001 mg/L	82	80-120
Aluminum	<0.01 mg/L	116	80-120
Arsenic	<0.001 mg/L	93	80-120
Boron (total)	<0.01 mg/L	108	80-120
Barium	<0.01 mg/L	90	80-120
Beryllium	<0.0005 mg/L	110	80-120
Cadmium	<0.0001 mg/L	103	80-120
Cobalt	<0.0002 mg/L	99	80-120
Chromium Total	<0.001 mg/L	100	80-120
Copper	<0.001 mg/L	101	80-120
Iron	<0.03 mg/L	98	80-120
Mercury	<0.0001 mg/L	105	80-120
Molybdenum	<0.005 mg/L	95	80-120
Nickel	<0.005 mg/L	101	80-120
Lead	<0.001 mg/L	100	80-120
Antimony	<0.0005 mg/L	115	80-120

Guideline = PWQO - Ontario *** = Guideline Exceedence**

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

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

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Attention: Ms. Sarah Griffith
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Invoice to: GEI Consultants Inc.

Report Number: 1997705
Date Submitted: 2023-06-01
Date Reported: 2023-06-07
Project: 2300805
COC #: 904777

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Selenium	<0.001 mg/L	100	80-120
Thallium	<0.0001 mg/L	97	80-120
Uranium	<0.001 mg/L	94	80-120
Vanadium	<0.001 mg/L	98	80-120
W	<0.002 mg/L	89	80-120
Zinc	<0.01 mg/L	106	80-120
Zr	<0.002 mg/L	89	80-120
Run No 442896 **Analysis/Extraction Date** 2023-06-06 **Analyst** R T **Method** C SM2540			
Total Suspended Solids	<2 mg/L	98	90-110

Guideline = PWQO - Ontario *** = Guideline Exceedence**

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

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

Appendix F

Construction Dewatering Calculations

GEI Consultants

Construction Dewatering Rate Estimate

Proposed Commercial Warehouse Development - 6728 Sixth Line, Milton, ON

Temporary Construction Dewatering Rates - General Site Servicing

Description	Symbol	Values	Unit	Explanation
Input Data: Excavation				
Lowest Ground Elevation		183.6	m asl	Lowest ground elevation on site at Borehole 53
Lowest Proposed Excavation		179.6	m asl	Assummed excavation extending 4 m below Lowest Ground Elevation
Length of Excavation	x	100	m	Assumed Trenching Sections
Width of Excavation	a	4	m	Assumed
Input Data: Aquifer				
Highest Groundwater Level		-0.4	m	Highest groundwater level measured on site from Monitoring Well 43 on May 23, 2023
Target Water Level		179.1	m asl	0.5 m below Lowest Propsed Excavation
Aquifer Bottom		178.1	m asl	Assumed 1.0 m below Target Water Level
Hydraulic Conductivity	K	7.3E-06	m/s	Maxmium hydraulic conductivitu measured on site (Monitoring Well 2)
Output				
Top of Aquifer		184.0	m asl	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Water Level above Aquifer Bottom before dewatering	H	5.9	m	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Target Water Level above Aquifer Bottom after dewatering	h	1.0	m	Assumed 1.0 m below Target Water Level
Radius of Influence	R_0	40	m	Sichardt Equation
Precipitation	p	4000	L/day	10 mm rain event
Construction Dewatering Flow Rate - Steady State	Q	112	m^3/day	Construction Dewatering Rate - Dupuit Equation
Maximum Construction Flow Rate (safety factor of 2)	2Q	223	m^3/day	

Construction Dewatering Flow Rate - Steady State	Q	**111,700**	L/day
Maximum Construction Flow Rate (safety factor of 2)	2Q	**223,400**	L/day
Maximum Construction Flow Rate (safety factor of 2) with 10 mm rainfall event	2Q + p	**227,400**	L/day

GEI Consultants

Construction Dewatering Rate Estimate

Proposed Commercial Warehouse Development - 6728 Sixth Line, Milton, ON

Temporary Construction Dewatering Rates - General Creek Realignment

Description	Symbol	Values	Unit	Explanation
Input Data: Excavation				
Lowest Ground Elevation		183.6	m asl	Lowest ground elevation on site at Borehole 53
Lowest Proposed Excavation		182.6	m asl	Assumed 1 m Bankful Depth via the Topographic Sketeches by Vujeva Surveys Ltd (2018)
Length of Excavation	x	100	m	Assumed Trenching Sections
Width of Excavation	a	5	m	Assumed 5 m Bankful Depth via the Topographic Sketeches by Vujeva Surveys Ltd (2018)
Input Data: Aquifer				
Highest Groundwater Level		-0.4	m	Highest groundwater level measured on site from Monitoring Well 43 on May 23, 2023
Target Water Level		182.1	m asl	0.5 m below Lowest Propsed Excavation
Aquifer Bottom		181.1	m asl	Assumed 1.0 m below Target Water Level
Hydraulic Conductivity	K	7.3E-06	m/s	Maxmium hydraulic conductivity measured on site (Monitoring Well 2)
Output				
Top of Aquifer		184.0	m asl	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Water Level above Aquifer Bottom before dewatering	H	2.9	m	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Target Water Level above Aquifer Bottom after dewatering	h	1.0	m	Assumed 1.0 m below Target Water Level
Radius of Influence	R_0	15	m	Sichardt Equation
Precipitation	p	5000	L/day	10 mm rain event
Construction Dewatering Flow Rate - Steady State	Q	64	m^3/day	Construction Dewatering Rate - Dupuit Equation
Maximum Construction Flow Rate (safety factor of 2)	2Q	127	m^3/day	

Construction Dewatering Flow Rate - Steady State	Q	**63,700**	L/day
Maximum Construction Flow Rate (safety factor of 2)	2Q	**127,400**	L/day
Maximum Construction Flow Rate (safety factor of 2) with 10 mm rainfall event	2Q + p	**132,400**	L/day

Construction Dewatering Rate Estimate

Proposed Commercial Warehouse Development - 6728 Sixth Line, Milton, ON

Temporary Construction Dewatering Rates - Stormwater Management Pond (Building 2)

Description	Symbol	Values	Unit	Explanation
Input Data: Excavation				
Lowest Ground Elevation		187.3	m asl	Lowest ground elevation in the vicinity at Borehole 34
Lowest Proposed Excavation		181.3	m asl	Assumed 6 m below Lowest Ground Elevation
Length of Excavation	x	300	m	SWM Pond Length via the Conceptual Site Plan by Ware Malcomb (2023)
Width of Excavation	a	80	m	SWM Pond Width via the Conceptual Site Plan by Ware Malcomb (2023)
Input Data: Aquifer				
Highest Groundwater Level		-0.4	m	Highest groundwater level measured on site from Monitoring Well 43 on May 23, 2023
Target Water Level		180.8	m asl	0.5 m below Lowest Propsed Excavation
Aquifer Bottom		179.8	m asl	Assumed 1.0 m below Target Water Level
Hydraulic Conductivity	K	7.3E-06	m/s	Maxmium hydraulic conductivity measured on site (Monitoring Well 2)
Output				
Top of Aquifer		187.7	m asl	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Water Level above Aquifer Bottom before dewatering	H	7.9	m	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Target Water Level above Aquifer Bottom after dewatering	h	1.0	m	Assumed 1.0 m below Target Water Level
Radius of Influence	R_0	56	m	Sichardt Equation
Precipitation	p	240000	L/day	10 mm rain event
Construction Dewatering Flow Rate - Steady State	Q	526	m^3/day	Construction Dewatering Rate - Dupuit Equation
Maximum Construction Flow Rate (safety factor of 2)	2Q	1053	m^3/day	

Construction Dewatering Flow Rate - Steady State	Q	**526,300**	L/day
Maximum Construction Flow Rate (safety factor of 2)	2Q	**1,052,600**	L/day
Maximum Construction Flow Rate (safety factor of 2) with 10 mm rainfall event	2Q + p	**1,292,600**	L/day

GEI Consultants

Construction Dewatering Rate Estimate

Proposed Commercial Warehouse Development - 6728 Sixth Line, Milton, ON

Temporary Construction Dewatering Rates - Stormwater Management Pond (Building 3)

Description	Symbol	Values	Unit	Explanation
Input Data: Excavation				
Lowest Ground Elevation		183.6	m asl	Lowest ground elevation in the vicinity at Borehole 53
Lowest Proposed Excavation		177.6	m asl	Assumed 6 m below Lowest Ground Elevation
Length of Excavation	x	110	m	SWM Pond Length via the Conceptual Site Plan by Ware Malcomb (2023)
Width of Excavation	a	90	m	SWM Pond Width via the Conceptual Site Plan by Ware Malcomb (2023)
Input Data: Aquifer				
Highest Groundwater Level		0.9	m	Highest groundwater level measured in the vicinity from Monitoring Well 28 on May 23, 2023
Target Water Level		177.1	m asl	0.5 m below Lowest Propsed Excavation
Aquifer Bottom		176.1	m asl	Assumed 1.0 m below Target Water Level
Hydraulic Conductivity	K	7.3E-06	m/s	Maxmium hydraulic conductivity measured on site (Monitoring Well 2)
Output				
Top of Aquifer		182.7	m asl	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Water Level above Aquifer Bottom before dewatering	H	6.6	m	Assummed via lowest Proposed Excavation and Highest Groundwater Level
Target Water Level above Aquifer Bottom after dewatering	h	1.0	m	Assumed 1.0 m below Target Water Level
Radius of Influence	R_0	45	m	Sichardt Equation
Precipitation	p	99000	L/day	10 mm rain event
Construction Dewatering Flow Rate - Steady State	Q	237	m^3/day	Construction Dewatering Rate - Dupuit Equation
Maximum Construction Flow Rate (safety factor of 2)	2Q	473	m^3/day	

Construction Dewatering Flow Rate - Steady State	Q	**236,600**	L/day
Maximum Construction Flow Rate (safety factor of 2)	2Q	**473,200**	L/day
Maximum Construction Flow Rate (safety factor of 2) with 10 mm rainfall event	2Q + p	**572,200**	L/day

Appendix G

Groundwater Taking Plan

This plan, as required under O.Reg.63/16, provides a general outline of the dewatering plan for the site to satisfy the PTTW requirements and that a detailed plan will be generated as needed by the contractor and their dewatering subcontractor that will include detailed treatment and monitoring measures.

Based on the conditions at and around the site, the target receiver for any dewatering discharge will be the Sixteen Mile Creek subwatershed. It is understood that any discharge will be released at a minimum distance of 30 m from any watercourse(s) and that appropriate measures will be put in place to minimize the potential for discharge to generate erosion and contribute sediment into the nearby unnamed tributaries of Sixteen Mile Creek and will encourage discharge to recharge back into the subsurface prior to reaching the tributaries.

As parts of the surrounding area appear to be serviced by sanitary and storm sewers, either of these options may be possible as a backup receiver for dewatering discharge if for some reason, the watershed is not a viable option. Should discharge be planned for either of the sewer systems, the contractor and/or its dewatering subcontractor will need to ensure that all permissions and/or permits are obtained to allow for discharge to that sewer and that all dewatering discharge meets the appropriate chemistry and discharge flow requirements imposed for that system.

Ultimately, the method(s) employed to complete the dewatering will be left up to the contractor and/or its dewatering contractor to determine what will work best for them to achieve the dry working conditions that they require.

Construction Dewatering Discharge Rates and Zones of Influence

The Radii of Influence were estimated in Section 5.1 and the details are summarized below.

Dewatering Zone	Description	ROI (m)
1: General Site Servicing per 100 m	Sanitary, storm, and water servicing for Buildings 1 to 3 Removal of existing channel below grade between Buildings 2 and 3	40
2: General Creek Realignment per 100 m	Future watercourse channel proposed between Buildings 2 and 3 and along south of Buildings 1 and 2	15
3: General Stormwater Management Pond	South of Building 2	56

4: General Stormwater Management Pond	South of Building 3	45

The estimated water taking rates are below.

Location and Scenario	Construction Dewatering Flow Rate without a Safety Factor	Construction Dewatering Flow Rate Including Safety Factor of 2.0	Construction Dewatering Flow Rate Including Safety Factor of 2.0 with a 10 mm Rainfall Event
	L/day		
1: General Site Servicing per 100 m	111,700	223,400	227,400
2: General Creek Realignment per 100 m	63,700	127,400	132,400
3: General Stormwater Management Pond (Building 2)	526,300	1,052,600	1,292,600
4: General Stormwater Management Pond (Building 3)	236,600	473,200	572,200

Impact Assessment

Land Stability and Settlement

For the assumed maximum groundwater drawdown of 4.9 to 6.9 m for construction dewatering, settlement of the soil within the zone of influence must be calculated based on the increase in effective stress (10 kPa per m of drawdown) from reducing the pore water pressures. The maximum settlement will occur adjacent to the dewatering system where the maximum drawdown occurs. Settlement has the potential to damage buried utilities, building foundations, or cause subsidence in adjacent lands. The amount of settlement will decrease exponentially to zero towards the radius of influence limit.

The estimated maximum drawdown is 4.9 to 6.9 m and will occur within the firm to hard cohesive soils, the loose to compact cohesionless soils, and the very dense / firm to hard glacial tills. The ROIs were calculated to be 15 to 56 m. The estimated total settlement of the soil is assessed to be as much as 10 mm at the dewatering location. Due to the cohesive nature of some of the soils, settlement may not occur immediately. A review of aerial mapping shows that buildings are typically 45 m or more from the site boundaries. Due to the exponential decrease in drawdown

with distance, the estimated settlement for the buildings neighbouring the site is 5 mm or less.

Based on the above, settlement related impacts to nearby buildings are not expected.

As only temporary dewatering is expected during site development including servicing, removing the existing channel below grade between Buildings 2 and 3, realigning the creek into the future channel, and developing two above ground stormwater management ponds, no impacts are expected as related to dewatering settlement.

Another cause of significant dewatering related settlement is due to pumping of fines through the system. It is imperative that any dewatering systems (e.g., sump pumps) shall be installed adequately to ensure no soil is conveyed through the system. Sufficient filtering techniques are incorporated at the entry point to avoid migration fines in the pumping/dewatering system. The turbidity of pumped water should be monitored daily to ensure that only minimal fines are being conveyed through the system.

Potential Impact on Nearby Groundwater Users

One (1) record of a domestic water supply well was found on-site (Well ID: 2808031) installed in 1991 for the use of the golf course club house. Twenty-two (22) domestic water supply well records were identified within 500 m of the site, installed from 1953 to 2008. Two (2) public water supply well records were identified within 500 m of the site for a test hole installed in 1986 for future irrigation / public supply use (Well ID: 2806503) and a water supply well installed in 2006 for the Radha Soami Society Beas Canada (Well ID: 2810623). Of these twenty-five (25) domestic and public wells:

- Only one (1) well record (Well ID: 2808624) indicated the installed depth of screen, at 16 to 18 m below grade within the overburden.
- Fourteen (14) well records indicated that fresh water was encountered 2 to 60 m below grade within the overburden.
- Eight (8) well records indicated that fresh water was encountered 7 to 20 m below grade within shale bedrock.
- Two (2) well records (Well IDs: 2808031 and 2808394) indicated that salty water was encountered 25 to 27 m below grade within shale bedrock.
- One (1) well record indicated that water of unknown quality was encountered at 2 m below grade within the overburden.

It is unknown if domestic or public water supply wells within 500 m of the site have been abandoned or are no longer in use for domestic supply since some of the surrounding area is developed and serviced by the Town of Milton. However, one (1) domestic well installed in 1959 (Well ID: 2802600) may be within estimated radius of influence for drawdown and may be impacted by the temporary dewatering that is occurring near the ground surface.

As the total estimated drawdown during dewatering will be 4.9 to 6.9 m below current grade, a door-to-door well survey should be undertaken to determine if any the domestic or public water wells within the estimated radius of influence for drawdown are still in use.

Potential Impact on Nearby Waterbodies or Other Surface Water Features

Minimal impacts to groundwater levels or flow directions, deeper aquifers, or other impacts to environmental features are expected due to the construction dewatering being a temporary (short-term) condition.

Given that site is adjacent to unevaluated wetlands, contains tributaries of the Sixteen Mile Creek and is adjacent to the Sixteen Mile Creek, it is possible the proposed construction dewatering activity will negatively impact the groundwater flow to the unnamed tributaries of Sixteen Mile Creek and Sixteen Mile Creek itself. However, the site is not located in nor within 500 m of an ANSI and the water removed will ultimately be returned back to the Sixteen Mile Creek subwatershed.

Water Quantity, Quality and Groundwater Level Monitoring Program

Discharge Options

Based on the groundwater quality analysis to date, dewatering discharge can be directed to the surface and/or the Halton Region Combined Sewer provided groundwater quality during dewatering activities complies with the applicable PWQO and/or Halton Region Combined Sewer Use By-Law Criteria.

If the groundwater quality of the construction dewatering discharge does not meet the applicable standards treatment options should be evaluated and/or the system should be shut down.

If the dewatering discharge water is treated by filtration (a decantation tank and silt bag at a minimum) to remove sediment and fines, the water quality is expected to improve to likely meet the PWQO and the Halton Region Combined Sewer Use By-Law Criteria. However, the contractor must treat the discharge using their own means and methods to ensure it meets the applicable standard.

Water Quality Monitoring and Potential Treatment Plan

The monitoring plan for discharge to the surface is outlined on Table G-1.

Groundwater Level Monitoring Program

The ground water level monitoring program is outlined on Table G-2.

Discharge Rate Monitoring

The total groundwater volume pumped must be measured and recorded daily by the dewatering contractor. The water taking rates should be measured using an electronic device, and the daily

water volumes must be reported to MECP on the Water Taking and Reporting System (WTRS) or through the Regulatory Self Reporting System. The volume of water taken daily for each dewatered work area shall be reported to the ministry on or before March 31 in each year, for each location from which water was taken in the previous calendar year. If no water is taken, then a “no taking” report must be entered.

The contractor will maintain a record of all water takings. This record will include the dates and duration of water takings, and the total measured volume of water pumped per day for each day that water is taken and will be updated and reported to the Client weekly. Daily precipitation must also be recorded by the contractor. The records must be kept up to date and available at or near the site and provided to the MECP upon request.

Summary of Qualifications

Sarah Griffith, G.I.T.

Ms. Sarah Griffith, G.I.T. is a geoscientist-in-training registered with the Professional Geoscientists of Ontario with more than two years of experience of experience specializing in geoenvironmental and hydrogeological investigations.

She has been trained in to complete local scale ground water assessments, well feasibility studies, water budgets, supervising the installation, development, sampling and decommissioning of monitoring wells, in-situ borehole permeability testing, determination of ground water flow characteristics, surface water sampling, and preparation of hydrogeological reports and compliance monitoring programs in accordance with the applicable MECP requirements.

Kimberly Gilder, P.Geo.

Ms. Kimberly Gilder is a senior hydrogeologist with twenty years of experience specializing in hydrogeological investigations and dewatering assessments and permitting.

Her background includes hydrogeological investigations, construction dewatering assessments, Permit To Take Water and EASR applications and renewals, Class EA investigations, groundwater under influence of surface water investigations, Source Water Protection studies, groundwater supply explorations, large-scale groundwater monitoring programs, and water balances.

Geoffrey White, P.Eng.

Mr. Geoffrey White, P.Eng., is a senior geotechnical engineer with 27 years of interdisciplinary professional experience Mr. White specializes in geotechnical engineering, with experience in geoenvironmental project, hydrogeological projects and support for materials inspection and testing.

His hydrogeological experience includes long-term/short-term groundwater and surface water monitoring, local scale groundwater assessments, water budgets, supervising the installation,

development, sampling and decommissioning of monitoring wells, and determination of groundwater flow characteristics.

Date of Plan Preparation

This plan prepared on the date January 17, 2024

TABLE G-1

WATER QUALITY MONITORING PLAN FOR DEWATERING DISCHARGE TO SURFACE OR SEWERS[1]

Period	Monitoring Location	Parameters[2]	Monitoring Frequency[3]	Trigger For Mitigation	Mitigation Measures / Comments
Trial Dewatering or at the Start of Construction	Dewatering discharge	PWQO Metals and O.Reg. 153/04 PHCs and VOCs Halton Region Combined Sewer Use By-Law Criteria	Once during trial dewatering or on the first day of dewatering (with rushed samples)	Exceeds the PWQO, O.Reg. 153/04, and/or Halton Region Combined Sewer Use By-Law Criteria □ No □ Yes – Proceed to Mitigation Measures / Comments	Modify treatment method and/or shut down.
During Construction Dewatering	Dewatering system discharge location	PWQO Metals and O.Reg. 153/04 PHCs and VOCs Halton Region Combined Sewer Use By-Law Criteria	Weekly then every four weeks after 3 consecutive weekly compliant samples[3]	Exceeds the PWQO, O.Reg. 153/04, and/or Halton Region Combined Sewer Use By-Law Criteria □ No □ Yes – Proceed to Mitigation Measures / Comments	Modify treatment method and/or shut down.
		Turbidity	Daily until stable (minimum 5 samples) then weekly[3]	Exceeds 15 NTU □ No □ Yes – Proceed to Mitigation Measures / Comments	
		Hydrocarbon sheen in discharge	Daily	Hydrocarbon sheen observed □ No □ Yes – Proceed to Mitigation Measures / Comments	Stop dewatering until the source can be determined and remediate prior to continuing to discharge.
		Total groundwater pumping / discharge rate	Daily with electronic device	Flows exceeds 400,000 L/day (e.g., due to heavy rainfall event) □ No □ Yes – Proceed to Mitigation Measures / Comments	Temporarily reduce pumping rate or shorten the length of trench being dewatered until rate drops below 1,300,000 L/day.
		Record the daily precipitation at the construction site	Daily	N/A	N/A

TABLE G-1

WATER QUALITY MONITORING PLAN FOR DEWATERING DISCHARGE TO SURFACE OR SEWERS[1]

Period	Monitoring Location	Parameters[2]	Monitoring Frequency[3]	Trigger For Mitigation	Mitigation Measures / Comments
	Within the ROI from the Dewatering Location / Excavation / Trench	Signs of erosion, sediment, or flooding	Daily	Sedimentation, erosion, flooding observed. □ No □ Yes – Proceed to Mitigation Measures / Comments	Reduce pumping and/or improve sediment/erosion control measures.
		Settlement / Subsidence of nearby land	Daily	Visual indication of settlement/subsidence □ No □ Yes – Proceed to Mitigation Measures / Comments	Reduce pumping and consult both dewatering contractor and geotechnical engineer
		N/A	N/A	Complaint received with respect to water taking and pertains to natural environment. □ No □ Yes – Proceed to Mitigation Measures / Comments	Document and evaluate if actually related to dewatering, implement mitigation measures. Submit complaint and mitigation measures to local MECP office

Notes:
All items and observations during dewatering should be recorded in a log on site, accessible for inspection.

(1) It is recommended that discharge be treated by a sediment control facility such as a decantation tank and filtration bags at a minimum. Means and methods determined by the contractor.

(2) Parameters may be removed from future testing after three consecutive compliant results and with agreement by QP. If dewatering moves to a different location all initial parameters may need to be retested at the discretion of the QP.

(3) If dewatering moves to a different location or a non-compliant result is detected, the sampling may need to return to the initial frequency at the QP's discretion.

TABLE G-2

SUMMARIZED GROUNDWATER LEVEL MONITORING PLAN

Period	Monitoring Location	Method	Monitoring Frequency	Trigger For Mitigation	Mitigation Measures / Comments
Trial Dewatering or at the Start of Construction	On-Site Monitoring Wells	Water Level Meter	At a minimum, once prior to dewatering	None.	Together with previous measurement(s) establish baseline water levels.
During Construction	On-Site Monitoring Wells	Water Level Meter	Every two weeks	Water level drops more than 2 m below the target dewatering elevation	Reduce pumping
Post-Construction	On-Site Monitoring Wells	Water Level Meter	Every two weeks for four weeks, then every four weeks until 90% recovery	Water level recovery less than 90% of baseline level	Continue monitoring

Appendix H

Discharge Plan

This plan, as required under O.Reg.63/16, provides a general outline of the discharge plan for the site to satisfy the PTTW requirements and a detailed plan will be generated as needed by the contractor and their dewatering subcontractor that will include detailed treatment and monitoring measures.

Based on the conditions at and around the site, the target receiver for any dewatering discharge will be the Sixteen Mile Creek subwatershed. It is understood that any discharge will be released at a minimum distance of 30 m from any watercourse(s) and that appropriate measures will be put in place to minimize the potential for discharge to generate erosion and contribute sediment into the unnamed tributaries of the Sixteen Mile Creek and will encourage discharge to recharge back into the subsurface prior to reaching the tributaries.

As the surrounding area is serviced by sanitary and storm sewers, either of these options may be possible as a backup receiver for dewatering discharge if for some reason, the watershed is not a viable option. Should discharge be planned for the sewer system, the contractor and/or its dewatering subcontractor will need to ensure that all permissions and/or permits are obtained to allow for discharge to that sewer and that all dewatering discharge meets the appropriate chemistry and discharge flow requirements imposed for that system.

Ultimately the treatment and discharge method(s) employed during dewatering will be left up to the contractor and/or its dewatering contractor to determine.

Construction Dewatering Discharge Rate

The temporary dewatering discharge rates were estimated in Section 5.1 and the details are summarized below.

Location and Scenario	Construction Dewatering Flow Rate without a Safety Factor	Construction Dewatering Flow Rate Including Safety Factor of 2.0	Construction Dewatering Flow Rate Including Safety Factor of 2.0 with a 10 mm Rainfall Event
	L/day		
1: General Site Servicing per 100 m	111,700	223,400	227,400
2: General Creek Realignment per 100 m	63,700	127,400	132,400

Location and Scenario	Construction Dewatering Flow Rate without a Safety Factor	Construction Dewatering Flow Rate Including Safety Factor of 2.0	Construction Dewatering Flow Rate Including Safety Factor of 2.0 with a 10 mm Rainfall Event
	L/day		
3: General Stormwater Management Pond (Building 2)	526,300	1,052,600	1,292,600
4: General Stormwater Management Pond (Building 3)	236,600	473,200	572,200

Proposed Discharge Method and Location

It is understood that the preferred discharge location would be to the surface or the sewer. Dewatering discharge will be directed by hose or pipe from the dewatering system to any pre-treatment systems (such as a sediment tank and silt bag), and then by hose or pipe to the preferred discharge location.

In the event of a significant rainfall event (100-year storm event), on-site excavation will cease until the dewatering system can be re-evaluated and/or storm water flow subsides.

Erosion and Sediment Control Measures

The construction dewatering setup will include sediment and erosion control measures, and sufficient filtration to ensure removal of suspended solids prior to discharge in accordance with typical Best Management Practices and to be sufficient to meet relevant receptor requirements.

Statements

If discharge is directed to the surface with adherence to the water quantity and quality monitoring program outlined in the Water Taking Plan in Appendix G, no adverse effect on the environment is expected.

The discharge water temperature was considered in determining the method of transfer and discharge and is not expected to have an adverse impact.

Summary of Qualifications

Sarah Griffith, G.I.T.

Ms. Sarah Griffith is a geoscientist-in-training registered with the Professional Geoscientists of Ontario with over two years of experience of experience specializing in geoenvironmental and hydrogeological investigations.

She has been trained in to complete local scale ground water assessments, well feasibility studies, water budgets, supervising the installation, development, sampling and decommissioning

of monitoring wells, in-situ borehole permeability testing, determination of ground water flow characteristics, surface water sampling, and preparation of hydrogeological reports and compliance monitoring programs in accordance with the applicable MECP requirements.

Kimberly Gilder, P.Geo.

Ms. Kimberly Gilder is a senior hydrogeologist with twenty years of experience specializing in hydrogeological investigations and dewatering assessments and permitting.

Her background includes hydrogeological investigations, construction dewatering assessments, Permit To Take Water and EASR applications and renewals, Class EA investigations, groundwater under influence of surface water investigations, Source Water Protection studies, groundwater supply explorations, large-scale groundwater monitoring programs, and water balances.

Geoffrey White, P.Eng.

Mr. Geoffrey White, P.Eng., is a senior geotechnical engineer with 27 years of interdisciplinary professional experience Mr. White specializes in geotechnical engineering, with experience in geoenvironmental project, hydrogeological projects and support for materials inspection and testing.

His hydrogeological experience includes long-term/short-term groundwater and surface water monitoring, local scale groundwater assessments, water budgets, supervising the installation, development, sampling and decommissioning of monitoring wells, and determination of groundwater flow characteristics.

Date of Plan Preparation

This plan prepared on the date January 17, 2024

Appendix I

Preliminary Water Balance

Hydrogeological Investigation
Proposed Commercial Warehouse Development
6728 Sixth Line, Milton, Ontario
Project No. 2300805, January 2024

Preliminary Pre-to-Post Development Water Balance

MONTHLY AND YEARLY WATER BALANCE COMPONENTS (POST-DEVELOPMENT CONDITION)

			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Potential Evapotranspiration Calculation	Average Temperature: T (^{o}C)		-6.3	-5.2	-0.9	6.0	12.3	17.4	20.0	19.0	14.8	8.4	2.8	-2.9	7.1
	Heat Index: i=(T/5)$^{1.514}$		0.00	0.00	0.00	1.32	3.91	6.61	8.16	7.55	5.17	2.19	0.42	0.00	35.3
	Unadjusted Daily Potential Evapotranspiration: U (mm)		0.0	0.0	0.0	28.0	60.0	86.6	100.3	95.0	72.9	40.0	12.5	0.0	495.5
	Adjusting Factor for U (Latitude 44^{o})		0.81	0.81	1.02	1.13	1.27	1.28	1.30	1.20	1.04	0.94	0.80	0.76	-
	Adjusted Potential Evapotranspiration: PET (mm)		0.0	0.0	0.0	31.7	76.2	110.8	130.4	114.0	75.9	37.6	10.0	0.0	586.7
Pervious Components	Precipitation: P (mm)		67.8	60	57.2	76.5	79.3	74.8	73.5	79.3	86.2	68.3	88.5	65.9	877.3
	Adjusted Potential Evapotranspiration: PET (mm)		0.0	0.0	0.0	31.7	76.2	110.8	130.4	114.0	75.9	37.6	10.0	0.0	586.7
	P - PET		67.8	60.0	57.2	44.8	3.1	-36.0	-56.9	-34.7	10.3	30.7	78.5	65.9	290.6
	Change in Soil Moisture Storage (mm)		0.0	0.0	0.0	0.0	0.0	-36.0	-56.9	-34.7	10.3	30.7	78.5	0.0	-
	Water Holding Capacity (max. 125 mm)		125.0	125.0	125.0	125.0	125.0	89.0	32.0	0.0	10.3	41.0	119.5	125.0	-
	Water Surplus Available for Infiltration or Runoff		67.8	60.0	57.2	44.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	60.4	293.3
	Treed	Potential Infiltration based on MECP Infiltration Factor (mm)	33.9	30.0	28.6	22.4	1.6	0.0	0.0	0.0	0.0	0.0	0.0	30.2	146.7
		Potential Surface Water Runoff (mm)	33.9	30.0	28.6	22.4	1.6	0.0	0.0	0.0	0.0	0.0	0.0	30.2	146.7
	Lawn	Potential Infiltration based on MECP Infiltration Factor (mm)	27.1	24.0	22.9	17.9	1.3	0.0	0.0	0.0	0.0	0.0	0.0	24.2	117.3
		Potential Surface Water Runoff (mm)	40.7	36.0	34.3	26.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	36.2	176.0
Impervious Components	Precipitation: P (mm)		-												877.3
	Potential Evaporation: PE (mm), Assume 15%		-												131.6
	Potential Surface Water Runoff: P - PE (mm)		-												745.7

PRE- AND POST-DEVELOPMENT WATER BALANCE

		Total Land Area (m^2)	Impervious Factor	Impervious Area (m^2)	Pervious Area (m2)	Runoff (m^3/annum)	Infiltration (m^3/annum)	**Runoff Increase Pre to Post**
Existing Land Use (Pre-Development)	Woodland Area (approx. 5% of total)	31800.0	0%	0.0	31800.0	4663.9	4663.9	
	Pasture/Lawn Area	595800.0	0%	0.0	595800.0	104857.9	69905.3	155%
	Paved Areas	7500.0	100%	7500.0	0.0	5592.8	0.0	**Infiltration Decrease Pre to Post**
	Rooftop Area	1550.0	100%	1550.0	0.0	1155.8	0.0	-51%
	TOTAL (approx. 63.66 ha)	636,650	1%	9,050	627,600	116,270	74,569	
Proposed Land Use (Post-Development No Mitigation)	Woodland Area	0.0	0%	0.0	0.0	0.0	0.0	**Infiltration Required to Meet Pre-Development Conditions (m^3)**
	Pasture/Lawn Area	313250.0	0%	0.0	313250.0	55130.5	36753.6	
	Paved Areas	161500.0	100%	161500.0	0.0	120431.4	0.0	37,815
	Rooftop Area	161900.0	100%	161900.0	0.0	120729.6	0.0	
	TOTAL (approx. 63.66 ha)	636,650	51%	323,400	313,250	296,291	36,754	

Notes
1. Both potential infiltration and surface water runoff are independent of temperature
2. Assumption is in January maximum soil moisture storage value is present (125mm)
3. Water Holding Capacity & Infiltration Factors taken from Table 3.1 of MOE SWMPDM, 2003

4. Average Temp. and Precip. taken from Environment Canada station "Georgetown WWTP" between 1981 and 2010
5. Adjusting Factor for U based on Lorente, 1961

Infiltration Criteria	**Site Description**	**Infiltration Factor**	**Site Description**	**Infiltration Factor**
Topography	Steeply Rolling Land - Average Slope 3.8 m/km to 28 m/km	0.15	Steeply Rolling Land - Average Slope 3.8 m/km to 28 m/km	0.15
Soils	Tills	0.15	Tills	0.15
Cover	Woodland/FOM/FOD/FOC/SWM/SWD/CUT	0.2	Cultivated Land/AGR/ANTH/CGL	0.1
	Sum of Infiltration Factors	**0.5**	**Sum of Infiltration Factors**	**0.4**

Appendix J

Long Term High Groundwater Level Monitoring (to date)

Monitoring Well ID	High Groundwater Level / Depth (m) / Elev.							
	May 2023	June 2023	July 2023	Aug 2023	Sept 2023	Oct 2023	Nov 2023	Dec 2023[2]
BH/MW 1	0.8 / 191.5	0.8 / 191.5	1.0 / 191.3	0.9 / 191.4	1.1 / 191.2	1.4 / 190.9	1.7 / 190.6	1.6 / 190.7
BH/MW 2	0.7 / 190.5	0.6 / 190.6	0.7 / 190.5	0.7 / 190.5	1.1 / 190.1	1.4 / 189.8	1.7 / 189.5	1.7 / 189.6
BH/MW 13	1.0 / 189.3	1.1 / 189.2	1.2 / 189.1	1.2 / 189.1	1.6 / 188.7	2.0 / 188.3	2.4 / 187.9	2.4 / 188.0
BH/MW 14	0.5 / 189.6[3]	0.6 / 189.5	0.7 / 189.4	0.6 / 189.5	1.0 / 189.1	1.3 / 188.8	1.7 / 188.4	1.8 / 188.3
BH/MW 22[1]	0.5 / 189.0	0.6 / 188.9	0.6 / 188.9	0.6 / 188.8	1.4 / 188.1	0.9 / 188.5	0.8 / 188.6	0.6 / 188.9
BH/MW 23	1.6 / 187.8	1.1 / 188.3	1.3 / 188.1	1.3 / 188.1	1.8 / 187.7	2.2 / 187.2	2.5 / 186.9	2.6 / 186.8
BH/MW 24	0.6 / 188.9[3]	0.9 / 188.7[3]	0.8 / 188.7[3]	0.8 / 188.7[3]	1.0 / 188.5	1.1 / 188.4	1.0 / 188.5	0.7 / 188.8
BH/MW 26[1]	1.1 / 188.2	1.3 / 188.0	1.3 / 188.0	1.3 / 188.0	1.5 / 187.9	1.8 / 187.6	1.6 / 187.7	1.4 / 187.9
BH/MW 28	1.0 / 188.6	1.0 / 188.6	0.9 / 188.7	0.9 / 188.7	1.2 / 188.4	1.4 / 188.2	1.4 / 188.2	1.2 / 188.4
BH/MW 31[1]	1.0 / 189.5	1.2 / 189.3	1.2 / 189.3	1.2 / 189.4	1.4 / 189.2	1.8 / 188.8	2.0 / 188.6	2.0 / 188.5
BH/MW 35	0.6 / 190.8	0.5 / 190.9	0.5 / 190.9	0.6 / 190.8	1.3 / 190.1	1.9 / 189.5	1.7 / 189.7	1.4 / 190.0
BH/MW 37	1.7 / 190.4	1.3 / 190.7	1.3 / 190.7	1.3 / 190.7	1.5 / 190.5	1.9 / 190.1	2.3 / 189.7	2.5 / 189.5
BH/MW 40[1]	0.5 / 189.7	0.9 / 189.3	1.0 / 189.2	1.0 / 189.2	1.4 / 188.8	1.9 / 188.3	2.0 / 188.2	1.5 / 188.7
BH/MW 43[1]	-0.4 / 186.5	-0.1 / 186.3	-0.2 / 186.4	-0.3 / 186.4	-0.0 / 186.2	0.3 / 185.8	0.5 / 185.7	0.4 / 185.7
BH/MW 45	3.5 / 185.0	3.3 / 185.2	3.3 / 185.2	3.3 / 185.2	3.5 / 185.0	3.7 / 184.8	3.8 / 184.7	3.8 / 184.7
BH/MW 52[1]	Well Destroyed	Well Destroyed	Well Destroyed	Well Destroyed	Well Destroyed	Well Destroyed	Well Destroyed	Well Destroyed

1. Manual measurements – no logger monitoring in BH/MWs 22, 26, 31, 40, 43, and 52
2. Preliminary manual measurements – December 2023
3. Manual measurement - Loggers installed at a later date