Milton Link Phase Three, Milton, Ontario

Preliminary Hydrogeological Investigation and Water Balance Assessment

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1 Executive Summary

The Proponent, Tribal Development Management Services Inc. (doing business as "Matthews"), is advancing the development of lands located adjacent to the CN Logistics Hub in the Town of Milton. Official Plan and Zoning By-law Amendments are being pursued to designate the subject lands as Industrial Area to be included within the Sustainable Halton Plan (SHP) Urban Area Boundary. The site will seek the entitlements associated with the Employment Zone, with site-specific provisions to support the intended development.

A Preliminary Hydrogeological Investigation and Water Balance Assessment was completed in support of the proposed Phase Three industrial development at Milton Link, Ontario. The study evaluates groundwater conditions, construction dewatering requirements, potential environmental impacts, and compliance with municipal, conservation authority, and provincial requirements.

The site is located within the Peel Plain, underlain primarily by clayey silt till to silty clay till, which is generally low permeability. Groundwater levels are shallow and seasonally variable, with depths typically ranging from approximately 0.15 mbgs (185.50 masl) to 6.0 mbgs (175.98 masl). Groundwater flow is primarily southeastward, consistent with regional drainage patterns, with minor localized variation. The site is located within the Halton Region Source Protection Area but not located within a Wellhead Protection Area, Significant Groundwater Recharge Area, or other vulnerable source protection zones.

The following parameters exceeded the PWQO parameters: Dissolved and Total Boron (B), Total Cobalt (Co), Total Iron (Fe), Total Phosphorus, Total Sulphide, Sulphide (as H_2S), Dissolved and Total Uranium (U) and based on the water quality test results, a suitable pre-treatment and conservation authority approval will be required for the short-term dewatering discharge (natural environment).

Based on water balance assessment for the Site there will be an infiltration deficit in post-development. To fully mitigate the infiltration deficit of approximately 23,740 m^3/yr in post-development conditions the feasible LIDs measures should be implemented. The LID area is based on the estimated design infiltration rate of 6 mm/hr, on the assumption that precipitation is evenly distributed during the year over two-week intervals, and bi-weekly volumes from roof will be infiltrated in 48-hour. The area of feasible LID that is required to offset the water balance deficit is approximately 5,150 m^2. The infiltration system will need to have a minimum storage of 1,484 m^3 to store two weeks of precipitation to meet the pre-development infiltration levels. The water balance assessment will be updated once the site plan is finalized.

Based on the assumptions outlined in this report, the estimated peak dewatering rate for proposed construction activities is approximately 34,880 L/day and 35,410 L/day for the industrial building (one at a time) and utility trench (services), respectively at any given time. Dewatering of an industrial building (one at a time) and an utility trench (services) should not occur concurrently. This is the rate which will be required to be discharged to the natural environment system. As the dewatering flow rate estimate is less than 50,000 L/day, EASR will not be required to facilitate the construction dewatering program for the Site.

Based on the geotechnical report dated April 20, 2026, section 5.4, it is our understanding that the underfloor drains will not be required since the proposed buildings are slab-on-grade. As such, there will be no long-term (post construction) dewatering.

2 Introduction

2.1 Project Description

EXP Services Inc. (EXP) was retained by Tribal Development Management Services Inc. (TDMSI) to prepare a Preliminary Hydrogeological Investigation and Water Balance Assessment Report associated with the proposed development located at Milton Link Phase Three, Milton, Ontario (hereinafter referred to as the 'Site').

The Proponent, Tribal Development Management Services Inc. (doing business as "Matthews"), is advancing the development of lands located adjacent to the CN Logistics Hub in the Town of Milton. Official Plan and Zoning By-law Amendments are being pursued to designate the subject lands as Industrial Area to be included within the Sustainable Halton Plan (SHP) Urban Area Boundary. The site will seek the entitlements associated with the Employment Zone, with site-specific provisions to support the intended development. The Site is currently agricultural land. It is our understanding that the proposed development plan is to construct four (4) industrial slab on grade buildings (Buildings 3A, 3B, 3C and 3D) without basement, associated access roads, loading and parking areas. The Site location plan is shown in Figure 1.

EXP conducted a Preliminary Geotechnical Investigation and an Environmental Site Assessment in conjunction with this investigation. The pertinent information gathered from the noted investigations is utilized for this report.

2.2 Project Objectives

The main objectives of the Preliminary Hydrogeological Investigation and Water Balance Assessment are as follows:

- Establish the local hydrogeological settings within the Site;
- Provide recommendations on construction and long-term dewatering;
- Assess groundwater quality; and
- Prepare a Preliminary Hydrogeological Investigation and Water Balance Assessment Report.

2.3 Scope of Work

To achieve the investigation objectives, EXP has completed the following scope of work:

- Reviewed available geological and hydrogeological information for the Site;
- Drilled and installed eighteen (18) monitoring wells and four (4) piezometers to an approximate depth ranging from 7.25 meter below ground surface (mbgs) to 8.11 mbgs;
- Installed 50 mm diameter monitoring wells in the geotechnical boreholes;
- Developed and conducted Single Well Response Tests (SWRT) in monitoring wells to assess hydraulic conductivities of the saturated soils at the Site;
- Completed eight (8) rounds of groundwater level measurements at all monitoring wells for seasonal monitoring;
- Collected one (1) groundwater sample for analyses of parameters for the routine comprehensive analysis package (RCMP) and compare results to Provincial Water Quality Objectives (PWQO);
- Evaluated the information collected during the field investigation program, including borehole geological information, Water Well Records (WWR), SWRT results, groundwater level measurements and groundwater water quality;

- Prepared a site plan, cross sections, geological mapping and groundwater contour mapping for the Site;
- Provided recommendations on the requirements for construction and (short-term) dewatering;
- Provided recommendations on the Ministry of Environment, Conservation and Parks (MECP) Water Taking Permits and Halton Region Sewer Discharge Agreements (SDA) for the construction phases;
- Conducted pre- and post-development water balance and conducted preliminary sizing of LIDs; and
- Prepared a Preliminary Hydrogeological Investigation and Water Balance Assessment Report.

The Preliminary Hydrogeological Investigation and Water Balance Assessment was prepared in accordance with the Ontario Water Resources Act and Ontario Regulation 387/04. The scope of work outlined above was made to assess dewatering and did not include a review of Environmental Site Assessments (ESA).

2.4 Review of Previous Reports

The following reports were reviewed as part of this Preliminary Hydrogeological Investigation and Water Balance Assessment:

- EXP Services Inc. (April 20, 2026), Preliminary Geotechnical Investigation, Britannia Road and First Line, Phase Three Land, Milton, ON, prepared for Tribal Development Management Services Inc.
- EXP Services Inc. (October 22, 2024), Preliminary Hydrogeological Investigation (Draft), Britannia Road and First Line, Phase Three Land, Milton, ON, prepared for Tribal Development Management Services Inc.

Any past and/or future geotechnical, hydrogeological, environmental and risk assessments, and updated development/architectural plans should be provided to update this hydrogeological report prior to submission of permits and approvals by the municipalities and agencies.

3 Hydrogeological Setting

3.1 Regional Setting

3.1.1 Regional Physiography

The Site is within a physiographic region known as the Peel Plain, and the physiographic landform is named Bevelled Till Plains as shown in Figures 2B and 2C.

The plain is the lake bottom of former glacial Lake Peel, which was created between the front of the ice-lobe and the Niagara Escarpment. The Peel Plain is a level-to-undulating area of clay soils. The topography of the Plain gradually slopes down southeast, toward Lake Ontario, following the topography of the underlying till. A calm lake environment resulted in the deposition of silts and clays, particularly in depressions of the till. These sediments are quite thin, which suggests Lake Peel had a brief existence (Chapman & Putnam, 2007).

3.1.2 Regional Geology and Hydrogeology

The surficial geology can be described as fine-textured glaciolacustrine deposits consisting of silt and clay, minor sand and gravel interbedded silt and clay and gritty pebbly flow till and rainout deposits (Ministry of Northern Development and Mines, 2012). The surficial geology of the Site and surrounding areas is shown in Figure 2A. Figure 2D shows the bedrock geology of the Site.

Based on the available regional geology maps, the subsurface stratigraphy of the Site from top to bottom is summarized in Table 3-1 (TRCA, 2008 and Oak Ridge Moraine Groundwater Program, 2023). The overburden thickness is approximately 13 m.

Table 3-1: Summary of Subsurface Stratigraphy

Stratigraphic Unit	General Description	Top Elevation of Stratigraphic Unit
Undifferentiated Upper Sediments	Fine-textured glaciolacustrine deposits consisting of silt and clay.	182
Halton Till or Equivalent (Aquitard)	This lithologic unit typically consists of sandy silt to clayey silt till interbedded with silt, clay, sand and gravel.	175
Oak Ridges Moraine or Equivalent (Aquifer)	This geology unit mainly consists of interbedded fine-grained sand and silt deposits where coarse-grained sand and gravel along with clay laminae are locally reported.	170
Queenston Formation	Bedrock primarily consists of shale, limestone, dolostone and siltstone (Ministry of Northern Development and Mines, 2012).	169

Groundwater across the area flows southeast, towards Lake Ontario (Oak Ridge Moraine Groundwater Program, 2023). Local deviation from the regional groundwater flow pattern may occur in response to changes in topography and/or soils, as well as the presence of surface water features and/or existing subsurface infrastructure.

3.1.3 Existing Water Well Survey

Water Well Records (WWRs) were compiled from the database maintained by the Ministry of the Environment, Conservation and Parks (MECP) and reviewed to determine the number of water wells documented within a 500-m radius of the Site

boundaries. The locations of the MECP WWRs within 500 m of the Site are shown in Figure 3. A summary of the WWR is included in Appendix A.

The MECP WWR database indicates that seventy-four (74) records within a 500 m radius from the Site centroid where seventeen (17) well record is identified onsite (Figure 3 and Appendix A). Well distances are calculated relative to the Site centroid, therefore some distances in Appendix A exceed 500 m.

All wells were reportedly identified as monitoring wells/test holes (14), water supply wells (43), abandoned wells (9) and/or listed with unknown use (8).

The Well Identification Numbers (Well ID No.) of the domestic (41) and livestock (2) water supply wells are 2802455, 2802457, 2803467, 2803468, 2804123, 2804458, 2809051, 2802241, 2802246, 2802247, 2802248, 2802251, 2802257, 2802261, 2802262, 2802263, 2802264, 2802265, 2802268, 2802454, 2802458, 2802459, 2802471, 2802472, 2802473, 2802474, 2802809, 2803181, 2803224, 2803250, 2803314, 2803535, 2804113, 2806273, 2806544, 2806549, 2808011, 2808194, 2808915, 7156448, 7200058, 7333615 and 7352719, located between 101 m to 1,059 m from the Site centroid. It is recommended to complete a baseline residential well survey to verify results of the MECP WWR searches and to confirm current conditions and use of the wells in the 500 m zone around the Site.

The reported water levels ranged from depths of 2.1 m to 32.0 meters below ground surface (mbgs).

Based on the date of installation of the water supply well (1954 to 2020), and that the area is not municipally serviced, it is likely that the noted water supply wells are still active. It is recommended to complete a baseline residential well survey to verify results of the MECP WWR searches and to confirm current conditions and use of the wells in the 500 m zone around the Site.

The Site is located within Halton Region Source Protection Area and Conservation Halton. The Site is not located within a Wellhead Protection Area (WHPA), Intake Protection Area (IPA), Issue Contributing Area (ICA), Significant Groundwater Recharge Area (SGRA), Highly Vulnerable Area (HVA) or Event Based Area (EBA).

3.2 Site Setting

3.2.1 Site Topography

The Site is agricultural land. The topography has a gradual southeast slope towards Sixteen Miles Creek and Lake Ontario. The surface elevation of the Site ranges between approximately 179.15 to 185.65 meters above sea level (masl).

3.2.2 Local Surface Water Features

The Site is within the Bronte Creek watershed. The nearest surface water feature is a tributary of Bronte Creek, approximately located 1.3 kilometers south of the Site boundary. Lake Ontario is approximately 15.3 km from the Site boundary to the south.

3.2.3 Local Geology and Hydrogeology

A summary of subsurface soil stratigraphy is provided in the following paragraphs. The soil descriptions are based on the geotechnical investigation report (EXP, June 17, 2026). They are summarized for hydrogeological interpretations. As such, the information provided in this section shall not be used for construction design purposes.

The detailed soil profiles encountered in each borehole and the results of moisture content determinations are presented on the attached borehole logs (Appendix B). 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 for the Preliminary Hydrogeological Investigation and Water Balance Assessment and shall not be interpreted as exact planes of geological change.

The "Notes on Sample Description" preceding the borehole logs form an integral part of and should be read in conjunction with this report. The following is a brief description of the soil conditions encountered during the investigation.

Based on the results of the geotechnical investigation, the general subsurface soil stratigraphy consists of the following units from top to bottom:

Topsoil

Topsoil with thicknesses ranging from 100 mm to 350 mm was encountered surficially in all boreholes. The thickness of the topsoil in each borehole is shown on the borehole log.
It should be noted that topsoil measurements were carried out at the borehole locations only and could differ at other locations on the site. If required, a more detailed test pit program should be carried out to more accurately quantify the amount of topsoil to be removed for construction purposes.

Fill Material

Localized fill material consists of sand and gravel as encountered in Borehole 3-18 below the topsoil. The fill material should be expected in the area where the existing farm dwellings and facilities exist.

Reworked Till

Reworked till was encountered in all boreholes below the topsoil, except for Borehole 3-18. The reworked till is considered to be disturbed parent material. The reworked till was fully penetrated at depth of ~0.7 m. This material generally comprises brown silty clay with trace gravel and trace sand. Moisture contents in the reworked native soil varied between approximately 14 and 32 percent.

Clayey Silt to Silty Clay Till

Deposits of clayey silt till to silty clay till (clayey till) were encountered in all boreholes below the fill or reworked till. All boreholes were terminated in this stratum at approximately 7.7 to 8.2 m depth (~Elevation 171.2 to 177.4 m). The clayey till contains silty sand layers/seams, trace gravel, some sand and occasional cobbles and boulders. The clayey till is brown in colour with oxidized pockets, changing to grey with depth. The consistency of the clayey till was assessed as stiff to hard, but generally very stiff to hard. Moisture content of the clayey till ranges from approximately 7 to 30 percent.

Grain size analyses on three (3) clayey till samples from Boreholes 3-6 and 3-23 indicated 3% to 11% gravel, 20% to 31% sand, 40 to 46% silt and 18% to 37% clay.
The Atterberg Limits testing carried out on the same samples from yield 13 to 16% Plastic Limits (PL), 22 to 30% Liquid Limit (LL) and corresponding Plastic Index (PI) 9 to 14. The measured moisture content of these samples is near or below the Plastic Limits of the samples, indicating an over consolidated state.

The borehole and monitoring well locations are shown in Figure 4. Geological cross-sections were generated based on the available borehole logs completed as part of the previous and current investigations and shown in Figures 5A and 5B (Cross-sections A-A’ and B-B’). The cross-sections show a simplified representation of soil conditions and soil deposits may be interconnected differently than represented. Borehole logs used to generate both cross-sections are provided in Appendix B.

4 Results

4.1 Monitoring Well Details

The monitoring well network was installed as part of the Geotechnical Investigation at the Site. It consists of the following:

- Eighteen (18) monitoring wells (BH3-2, BH3-3, BH3-5, BH3-8, BH3-9, BH3-10, BH3-12, BH3-13, BH3-17, BH3-18, BH3-19, BH3-20, BH3-21, BH3-23, BH3-25, BH3-26, BH3-27 and BH3-28) were installed;
- Four (4) piezometers (Piezo BH3-1, Piezo BH3-4, Piezo BH3-29 and Piezo BH3-33) were installed.

The diameter of all monitoring wells is 50 mm. All wells were installed with monument casing protective casings (stick-ups). Borehole logs and monitoring well installation details are provided in Appendix B. The monitoring well locations are shown in Figure 4.

4.2 Water Level Monitoring

As part of the Preliminary Hydrogeological Investigation and Water Balance Assessment, static water levels in the monitoring wells were recorded in eight (8) monitoring events between July 30, 2024 and November 13, 2025. A summary of all static water level data as it relates to the elevation survey is given in Table 4-1 appended in the List of Tables including water level hydrographs.

The groundwater elevation recorded in the intermediate wells ranged from 175.98 masl (5.94 mbgs at BH3-27 on August 8, 2024) to 185.50 masl (0.15 mbgs at BH3-5 on May 23, 2025).

During the seasonal groundwater monitoring from July 30, 2024 to November 13, 2025, the water level fluctuated from 0.97 m (BH3-12) to 4.98 m (BH3-2). It is interpreted that seasonal high groundwater elevations were observed during the May 23 of 2025 monitoring event.

One (1) map was created for the Site to show groundwater contours of the intermediate zone (Figure 6). Accordingly, the groundwater flow direction in the intermediate zone is generally interpreted to be southeast of the Site except at north corner of the Site where the flow direction is northeast.

Groundwater levels are expected to show seasonal fluctuations and vary in response to prevailing climate conditions. This may also affect the direction and rate of flow.

4.3 Hydraulic Conductivity Testing

Seventeen (17) Single Well Response Tests (SWRT's) were completed on monitoring wells on August 8, 2024. The tests were completed to estimate the saturated hydraulic conductivity (K) of the soils at the well screen depths utilizing data loggers, preprogramed to take measurement on one second intervals.

The static water level within each monitoring well was measured prior to the start of testing. In advance of performing SWRTs, each monitoring well underwent development to remove fines introduced into the screens following construction. The development process involved purging of the monitoring wells to induce the flow of fresh formation water through the screen. Each monitoring well was permitted to fully recover prior to performing SWRTs.

Hydraulic conductivity values were calculated from the SWRT and constant rate test data as per Hvorslev's solution included in the Aqtesolv Pro. V.4.5 software package. The semi-log plots for normalized drawdown versus time are included in Appendix C.

A summary of the hydraulic conductivities (K-values) estimated from the SWRTs are provided in Table 4-2 appended in the List of Tables.

SWRTs provide K-estimates of the geological formation surrounding the well screens and may not be representative of bulk formation hydraulic conductivity. As shown in Table 4-2, the highest K-value of the tested water-bearing zone is 8.1E-7 m/s, and the arithmetic and geometric mean of the K-values are 1.1E-7 m/s and 1.5E-8 m/s, respectively.

4.4 Groundwater Quality

To assess the suitability for discharging pumped groundwater into the natural environment during dewatering activities, one (1) groundwater sample was collected from selected monitoring well (BH3-13) using a peristaltic pump. Prior to collecting the noted water sample, approximately three (3) standing well volumes of groundwater were purged from the referred well. The samples were collected unfiltered 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 groundwater samples were submitted for analysis to Bureau Veritas Laboratory, a CALA certified independent laboratory in Mississauga, Ontario. Analytical results are provided in Appendix D.

Table 4-3 summarizes exceedance(s) of the Provincial Water Quality Objectives (PWQO) parameters.

The following parameters exceeded the PWQO parameters: Dissolved and Total Boron (B), Total Cobalt (Co), Total Iron (Fe), Total Phosphorus, Total Sulphide, Sulphide (as H2S), Dissolved, and Total Uranium (U).

Reporting detection limits (RDLs) were exceeded for PWQO parameter for Dissolved Cadmium (Cd), Dissolved Cobalt (Co), Dissolved Iron (Fe), Dissolved Silver (Ag) and Dissolved Zirconium (Zr).

Table 4-3: Summary of Analytical Results

Parameter	Units	Provincial Water Quality Objectives (PWQO) Limit	Concentration BH3-13 8-August-24
Dissolved Boron (B)	µg/L	200	**660**
Total Boron (B)	µg/L	200	**610**
Dissolved Cobalt (Co)*	µg/L	0.9	<2.5
Total Cobalt (Co)	µg/L	0.9	**2.1**
Total Phosphorous (P)	mg/L	0.01	**0.041**
Total Sulphide	mg/L	0.002	**0.023**
Sulphide (as H_2S)	mg/L	0.002	**0.025**
Dissolved Uranium (U)	µg/L	5	**21**
Total Uranium (U)	µg/L	5	**21**
Dissolved Cadmium (Cd)*	µg/L	0.2	<0.45
Dissolved Iron (Fe)*	µg/L	300	<500
Dissolved Silver (Ag)*	µg/L	0.1	<0.45
Dissolved Zirconium (Zr)*	µg/L	4	<5.0

Bold – Exceeds PWQO Limit.
*Exceeds Detection Limits.

For the short-term dewatering system (construction phase), it is anticipated that TSS levels and some other parameters (for example, Total Metals) in the pumped groundwater may become elevated and exceed PWQO limits. To control the concentration of TSS and associated metals, it is recommended that a suitable treatment method be implemented (filtration or decantation facilities and/ or any other applicable treatment system) during construction dewatering activities to discharge to

the applicable sewer system. The specifications of the treatment system will need to be adjusted to the reported water quality results by the treatment contractor/process engineer.

For the short-term dewatering discharge (natural environment) and based on the water quality test results, it is recommended to implement a suitable pre-treatment, as required.

To discharge to the natural environment (e.g.: surface water, drainage feature), the treatment systems will require Environmental Compliance Approvals (ECA) for construction and post construction phases.

The Environmental Site Assessment Report(s) shall be reviewed for more information on the groundwater quality conditions at the Site.

4.5 Infiltration Testing

EXP completed one (1) infiltration test (INF 3 -13) within the Site area on July 30, 2024. This test was conducted in proximity of monitoring well BH3-13.

The infiltration test was conducted at depth of 0.70 mbgs, depending on the measured groundwater elevation at the testing location. The reported water levels at BH3-13 were 0.32 and 0.52 mbgs on July 30 and August 8, 2024.

The stratigraphy of the shallow subsurface comprises a clayey silt till matrix. Table 4.4 below shows a summary of field saturated hydraulic conductivity (K_{fs}) testing and a design infiltration rate, based on the Low Impact Development (LID) Stormwater Management Planning and Design Guide, CVC – TRCA, 2010, Appendix G. The estimated field saturated hydraulic conductivities were correlated to infiltration rates based on the relationship provided in Appendix D of the guideline.

The infiltration test location is shown in Figure 4. The infiltration rate analysis is provided in Appendix E.

Table 4.4: Summary of Infiltration Testing Results

Test Location/ MW ID	Depth of Hole (mbgs)	Formation	Field Saturated Hydraulic Conductivity, K_{fs} (cm/s)	Infiltration Rate (mm/hr)
INF 3-13	0.70	Clayey Silt to Silty Clay	1.6×10^{-6}	15
		Design Infiltration Rate*		**6 (15/2.5)**

Notes:
*Safety Factor of 2.5 was applied to calculate the design infiltration rate (Low Impact Development (LID) Stormwater Management Planning and Design Guide, CVC – TRCA, 2010, Appendix D).
The estimated design infiltration rate based on percolation rate testing for the Site is 6 mm/hr.

5 Water Balance Assessment (Site Specific)

5.1 Methodology

The Thornthwaite water balance (Thornthwaite, 1948; Mather, 1978; 1979) is a counting method used to analyze the allocation of water among various components of the hydrologic cycle. This methodology was used to complete the pre-construction (existing conditions) and post-development water balance. Inputs to the model are monthly temperature, precipitation, and Site latitude. Outputs include monthly potential and actual evapotranspiration, soil moisture storage, soil moisture storage change, surplus, infiltration, and runoff.

When precipitation (P) occurs, it can either runoff (R) through the surface water system, infiltrate (I) to the water table including an interflow component, or evapo-transpire (ET) from the earth's surface and vegetation. The difference between total precipitation (P) and the total of evaporation and evapotranspiration (ET) is defined to be the water surplus (S) which is available for both infiltration (recharge to the groundwater system including interflow) and for runoff. When long-term averages of P, R, I and ET are used, no net change in groundwater storage (ST) is assumed. Annually, however, there is a potential for small changes in ST. The annual water budget can be stated as follows:

$$P = ET + R + I + ST$$

Where:

P = precipitation
ET = evapotranspiration
R = surface water runoff
I = infiltration
ST = change in groundwater storage

For this assessment, the Thornthwaite and Mather method was used to estimate average annual infiltration rates.

Infiltration is governed by the surficial soil types, topography, and land cover. If the water table is at surface, as measured in shallow monitoring wells, then the percolation rate of precipitation into the shallow soils is considered negligible.

For ease of calculation, a spreadsheet was used for the computation. A graphical user interface (Thornthwaite Monthly Water-Balance program, 2020) developed by the United Stated Geological Survey (USGS) was applied for the Thornthwaite and Mather Model.

5.2 Meteorological Data

Meteorological data including average monthly precipitation and average temperatures were obtained from the National Climate Data and Information Archive (Environment Canada) for the Georgetown WWTP (Station ID No. 6152695) climatic station (elevation 221.0 masl).

Meteorological data of 30 years from 1981 to 2010 was utilized for the assessment. Summary of input data is provided in Appendix F-1.

5.3 Pre- and Post-Development Site Characteristics

5.3.1 Pre-Development Site Characteristics

The property occupies an area of approximately 77.0283 hectares (190.34 acres).). The construction of four (4) industrial slab-on-grade buildings (Buildings 3A, 3B, 3C and 3D) without basement, associated access roads, loading and parking areas is proposed. A summary of the existing (pre-development) landscape features is provided in Table 5-1:

Table 5-1: Pre-Development (Existing) Land Use

Description	Pre-Construction (Existing) (m^2)	Percentage %
Buildings	3,300	0.4%
Site Area Available for Infiltration (Landscaped)	368,383	47.8%
Areas with Depth to Water Table < 1.0 m	397,200	51.6%
Impervious (Pavement, water bodies) Surfaces	1,400	0.2%
Total Site Area	770,283	100%

The areas provided in Table 5-1 above were determined based on a review of available Site plan (Appendix H). These estimates are considered appropriate for assessing the water balance. According to Table 5.1, under pre-development conditions 47.8% of the Site area is pervious and available for groundwater infiltration (Figure 7).

5.3.2 Post-Development Site Characteristics

Table 5-2 provides a summary of the post-development Site characteristics based on the provided site plan (Appendix H).

Table 5-2: Post-Development Site Characteristics

Description	Impervious Areas m^2	Pervious Areas available for Infiltration m^2	Total Areas Post-Construction (Proposed) m^2
Paved Surfaces (roads, sidewalks, parking and also areas with Depth to Water Table <1.0m)	249,563	0	249,563
Building roofs	312,420	0	312,420
SWM	51,900	0	51,900
Landscaped and woodlot areas	0	156,400	156,400
Totals	613,883	156,400	770,283
Percentage %	79.7	20.3	100.0

Under post-development conditions, the total pervious area is reduced from 47.8% to 20.3% of the total Site area (Tables 5-1 and 5-2, and Figure 8).

5.4 Pre-Development Water Balance Estimates

5.4.1 Climate Data Analysis

The mean annual water surplus was calculated by using the Thornthwaite and Mather (1955) method. Monthly average precipitation values were obtained for 30 years (1981 to 2010) from the National Climate Data and Information Archive (Environment Canada) for the Georgetown WWTP (Station ID No. 6152695) climatic station (elevation 221.0 masl).

Moisture storage of 135 mm/year was assumed for soils and considered to be representative of pre-construction Site conditions. The closest latitude to the Site is 44^0, which was used in the USGS model (2020).

Table 5.3 summarizes the climatic water balance analysis. Appendix F-1 and F-2 provide the model input and output, respectively.

Table 5.3: Climatic Water Balance Analysis in Pre-Development Conditions

Soil Moisture Storage (mm/yr)	Precipitation (mm/yr)	Actual ET (mm/yr)	Surplus (mm/yr)
135 mm/yr	877.3	542.0	335.30

Note: ET = Evapotranspiration

The results of the climatic water balance analysis for the Site suggest that a surplus of 335.30 mm/year of water is available for surface runoff and infiltration.

5.4.2 Infiltration

The infiltration is expected to be controlled by soil type, topography, and soil cover type. Surplus water is portioned between runoff and infiltration based on the controlling factors provided by MOE (1995). The controlling factors provided by the MOE were used for estimating infiltration factors.

Using this method, a total infiltration factor for the Site was estimated by using the individual sub-factors, which are representative of the topography, soil type and land cover conditions (Figures 2 and 7). Appendix F-3 provides a summary of the sub factors and total factor based on the Site conditions. The infiltration sub-factors were determined for estimating pre-development infiltration rates of the entire Site.

The estimated pre-development total infiltration factor of 0.33 (or 33%) represents the fraction of the water surplus available for infiltration. The complementary fraction of the available water for runoff is 0.67. The infiltration factor is utilized to calculate the amount of annual infiltration (in units of m^3/yr) at the Site by multiplying it with the average yearly water surplus estimate and with the Site area available for infiltration.

Applying the infiltration factor of 0.33 and a water surplus of 335.30 mm/yr, the estimated pre-development infiltration rate of the whole Site is 111.99 mm/yr.

In areas with water table at or above surface and less than approximately 1.0 m below surface, the infiltration rate would be considered negligible for existing and proposed grade. Water levels above ground surface or less than 1 m below ground surface were reported at Piezometers 3-1, 3-29 and 3-33 and BH3-3, BH3-5, BH3-8, BH3-9, BH3-10, BH3-12, BH3-13, BH3-17, BH3-18, BH3-20, BH3-21, BH3-23, BH3-25, BH3-26, and BH3-28. The area of high water levels was mapped and excluded for infiltration in pre-development conditions.

5.4.3 Pre-Development Water Balance Analysis

The water balance analysis is based on available information on a regional scale and deemed representative for the Site. Table 5-4 provides the water balance analysis for the Site.

Table 5-4: Pre-Development Water Balance Results

Location	Total Site Area (m^2)	Area Available for Infiltration (m^2)	Total Precipitation (m^3/yr)	Actual Evapo-transpiration (m^3/yr)	Runoff (m^3/yr)	Infiltration (m^3/yr)
Total Site	770,283	368,383	675,769	417,493	217,021	41,255
Percentage of Total Precipitation			100%	62%	32%	6%

The total property area was used to estimate the annual precipitation volume of the Site (Appendix F-4). As summarized in Table 5-4, the breakdown of the pre-development water balance is as follows: 62% of the total precipitation is subject to evapotranspiration, 32% to runoff, and 6% to infiltration.

The pre-development water balance, on a weighted average depth basis (in mm/year) is as follows:

$$P\ (877.30) = ET\ (542.00) + R\ (281.74) + I\ (53.56) + ST\ (0)$$

5.5 Post-Development Water Balance Estimates

5.5.1 Post-Development Water Balance

Based on the proposed development drawings (Site Plan - Appendix H), the total area of pervious surfaces under post-development conditions is approximately 156,400 m^2, representing approximately 20.3% of the total Site area of 770,283 m^2 (Table 5-2). The remaining 613,883 m^2 will not contribute to infiltration in the post-development phase (approximately 79.7% of the total land area).

Post-development infiltration sub-factors were determined in a similar manner as for estimating infiltration sub-factors for pre-development Site conditions, both based on the method recommended by MOE (1995). For post-development infiltration sub-factors, the landscaped areas were assumed to be consistent with cultivated cover with an infiltration sub-factor of 0.13 (Appendix F-3). The estimated post-development total infiltration factor of 0.33 (or 33%).

Table 5-5 presents a summary of the overall post-development water balance assessment.

Table 5-5: Post-Development Water Balance Forecast

Location	Total Site Area (m^2)	Area Available for Infiltration (m^2)	Total Precipitation (m^3/yr)	Evapo-transpiration (m^3/yr)	Runoff (m^3/yr)	Infiltration (m^3/yr)
Total Site	770,283	156,400	675,769	112,899	545,355	17,515
Percentage of Total Precipitation			100%	16.7	80.7%	2.6%

If no remedial measures are implemented to maintain infiltration, it is expected that the annual infiltration volume will be reduced from approximately 41,255 m^3/year to 17,515 m^3/year in post-development, resulting in a deficit of 23,740 m^3/year (Appendix F-4).

Infiltration deficits based on pre- and post-development Site conditions can be utilized to guide mitigation measures under idealized soil and groundwater conditions. If suitable mitigation measures are implemented, it is expected that the infiltration deficit of 17,515 m^3/year can be mitigated under the post-development Site conditions under engineered conditions. Reasonable

mitigation measures onsite are therefore recommended to maintain the pre-development infiltration under post-development Site conditions.

Under unmitigated post-development conditions, a reduction in annual infiltration volume may occur, as compared to pre-development conditions. Consequently, water contribution from infiltration to downgradient drainage features would decrease.

The post-development water balance, on a weighted average depth basis (in mm/year) is as follows:

$$P\ (877.30) = ET\ (146.57) + R\ (707.99) + I\ (22.74) + ST\ (0)$$

5.6 Impact and Proposed Mitigation Measures

Mitigation measures should be implemented to balance the estimated post-development infiltration rate deficit of 23,740 m^3/year (Appendix F-4). To offset the noted deficit, approximately 13% from the available runoff from roof-top water of 187,724 m^3/year (in 8 months) would need be infiltrated. This could be accommodated in Low Impact Development (LID) facilities, such as infiltration galleries and enhanced grass swales implemented onsite to maintain the pre-development infiltration rates during the post-development phase.

As per the CA and MECP guidelines, the invert of the infiltration system needs to be 1.0 m above the highest water level or top of bedrock measured at location of the infiltration system, as a minimum.

The following mitigation measures are proposed to be implemented onsite to maintain the pre-development infiltration rates during the post-development phase:

- **Infiltration Galleries**

To balance the infiltration deficit in 8 months per year a LID system (infiltration gallery) with a total of approximately 5,150 m^2 in size would be required. The LID area is based on the estimated design infiltration rate of 6 mm/hr, on the assumption that precipitation is evenly distributed during the year over two-week interval, and bi-weekly volumes from roof will be infiltrated in 48-hour. The infiltration system will need to have a minimum storage of 1,484 m^3 to store two weeks of precipitation to meet the pre-development infiltration levels (Appendix F-5).

As per regulatory requirements, the invert of the infiltration system needs to be 1.0 m above the highest water level measured at the location of the proposed infiltration system, as a minimum.

- **Enhanced Grass Swales and Rain Gardens**

To increase the post-development infiltration onsite, enhanced grass swales and / or rain gardens are also recommended where feasible.

These facilities are recommended to be designed to mimic current shallow groundwater (interflow). Where possible, selected areas can also be used as rain gardens to enhance groundwater infiltration.

6 Dewatering Assessment

6.1 Dewatering Flow Rate Estimate

The Dupuit equation for steady linear flow to both sides of an excavation through an unconfined aquifer resting on a horizontal impervious surface was used to obtain a flow rate estimate. Dewatering flow rate is expressed as follows:

$$Q_w = xK(H^2 - h^2)/Lo$$

Where:

Qw = Rate of pumping (m^3/s)
X = Length of excavation (m)
K = Hydraulic conductivity (m/s)
H = Hydraulic head beyond the influence of pumping (static groundwater elevation) (m)
h = Hydraulic head above the base of aquifer in an excavation (m)
Lo = Distance of influence (m)

It is expected that the initial dewatering rate will be higher to remove groundwater from within the overburden formation. The dewatering rates are expected to decrease once the target water level is achieved in the excavation footprint as groundwater will have been removed, primarily from storage, resulting in lower seepage rates into the excavation.

6.2 Sichardt's Radius of Influence

The radius of influence (Rs) for the construction dewatering was calculated based on Sichardt's equation. This equation is used to predict the distance at which the drawdown resulting from pumping is negligible. This empirical formula was developed to provide representative flow rates using the steady state flow dewatering equations, as discussed below.

The estimated radius of influence due to pumping is based on Sichardt's formula as follows:

$$R_s = C(H - h)\sqrt{(K)}$$

Where:

Rs = Estimated Sichardt's radius of influence (m)
H = Hydraulic head in aquifer (static water level or saturated depth) (m)
h = Dynamic water level (m)
K = Hydraulic conductivity (m/sec)
C = Constant (3,000)

Based on Sichardt's formula and the highest K-value, the calculated distance of influence (Lo = Ro/2) is provided in Appendix G.

6.3 Stormwater

Additional pumping capacity may be required to maintain dry conditions within the excavation during and following significant precipitation events. Therefore, the dewatering rates at the Site should also include removing stormwater from the excavation.

A 25 mm precipitation event was utilized for estimating the stormwater volume. The calculation of the stormwater volume is included in Appendix G.

The estimate of the stormwater volume only accounts for direct precipitation into the excavation. The dimensions of the excavation are considered in the dewatering calculations. Runoff which originated outside of the excavation's footprint is excluded and it should be directed away from the excavation.

During precipitation events greater than 25 mm (ex: 100-year storm), measures should be taken by the contractor to retain stormwater onsite in a safe manner to not exceed the allowable water taking and discharge limits, as necessary. A two (2) and a one hundred (100) year storm event over a 24-hour period are approximately 57.3 and 124.9 mm.

6.4 Results of Dewatering Rate Estimates

6.4.1 Construction Dewatering Rate Estimate

Short-term (construction) dewatering calculations are presented in Appendix G. Based on the assumptions provided in this report, the results of the dewatering rate estimate can be summarized as follows:

Table 6-1 Summary of Construction Dewatering Assumptions and Rate

Input Parameter	Industrial Buildings	Utility Trench	Units	Notes
Number of Subgrade Levels	Slab-on-grade without basement	Not applicable	-	
Ground Elevations	185.65	185.65	masl	The highest BH3-5 elevation
Lowest Footing Elevation	182.65	181.65	masl	Assumed to be approximately 3 mbgs and 4 mbgs for the building and utility trench respectively
Excavation Area (Length x Width)	60 (30 x 2)	60 (30 x 3)	m^2 (m x m)	At one time 30 m trench will be excavated for the building footings and the utility trench
Short Term Dewatering				
With Safety Factor and Precipitation	34,880	35,410	L/day	25 mm of precipitation
With Safety Factor	33,380	33,160	L/day	Safety factor of 2 and without precipitation
Without Safety Factor	16,690	16,580	L/day	Without precipitation

The contractor is responsible for the design of the dewatering systems (depth of wells, screen length, number of wells, spacing sand pack around screens, prevent soil loss etc.) to ensure that dry conditions are always maintained within the excavation at all costs.

6.4.2 Post-Construction Dewatering Rate Estimate

Based on the geotechnical report dated June 17, 2026, section 5.4, it is our understanding that the underfloor drains will not be required since the proposed buildings are slab-on-grade and the slabs will be positioned above the groundwater table and surrounding grades. As such, there will be no long-term (post construction) dewatering.

6.5 MECP Water Taking Permits

6.5.1 Short-Term Discharge Rate (Construction Phase)

In accordance with the Ontario Water Resources Act, if the water taking for the construction dewatering is more than 50,000 L/day, then an online registration in the Environmental Activity and Sector Registry (EASR) with the MECP will be required.

As of July 1, 2025, an amendment of O. Reg. 63/16 has come into effect and replaced the former subsection 7 (5) such that the EASR water taking limit of 400,000 L/day would no longer apply to groundwater takings of each dewatered work area only, excluding stormwater.

The dewatering estimate including a safety factor is less than 50,000 L/day as shown in Table 6-1. The MECP construction dewatering rate excludes the precipitation amount and is the rate used for the permit application. Based on the MECP construction dewatering an EASR will not be required to facilitate the construction dewatering program of the Site.

A Discharge Plan (dewatering sketch, sewer discharge agreement) must be developed and applied for any discharges from the Site. Monitoring of both water quantity and water quality must be carried out for the entire duration of the construction dewatering phase. During this phase, the Discharge Plan and the daily water taking records must be available onsite.

The Discharge Plan, hydrogeological investigation report, and geotechnical assessment of settlements must also be available at the construction Site during the entire construction dewatering. EXP should be notified immediately about any changes to the construction dewatering schedule or design, since the EASR may be required to be updated to reflect these modifications. Altogether, the hydrogeological report, EASR (if required), Discharge Plan and geotechnical assessment constitute the Water Taking Plan which needs to be available onsite during the construction dewatering.

6.5.2 Long-Term Discharge Rate (Post Construction Phase)

Based on the geotechnical report dated June 17, 2026, section 5.4, it is our understanding that the underfloor drains will not be required since the proposed buildings are slab-on-grade. As such, there will be no long-term (post construction) dewatering and no PTTW is required.

7 Environmental Impact

7.1 Surface Water Features

The Site is located within the Bronte Creek watershed. The nearest surface water feature is a tributary of Bronte Creek, approximately located 1.3 kilometers south of the Site boundary. Lake Ontario is approximately 15.3 km from the Site boundary to the south.

Since the tributary of Bronte Creek is outside the anticipated zone of influence (ZOI) of approximately 5 m, no surface water level monitoring plan in the creek during the construction is required. No impacts to the surface water feature are anticipated.

7.2 Groundwater Sources

Well Records from the MECP Water Well Record (WWR) Database were reviewed to determine the presence and number of water supply wells within a 500 m radius of the Site boundaries. The MECP WWR database indicates that seventy-four (74) records within a 500 m radius from the Site centroid where seventeen (17) well record is identified onsite (Figure 3 and Appendix A). Well distances are calculated relative to the Site centroid, therefore some distances in Appendix A exceed 500 m.

All wells were reportedly identified as monitoring wells/test holes (14), water supply wells (43), abandoned wells (9) and/or listed with unknown use (8).

The Well Identification Numbers (Well ID No.) of the domestic (41) and livestock (2) water supply wells are 2802455, 2802457, 2803467, 2803468, 2804123, 2804458, 2809051, 2802241, 2802246, 2802247, 2802248, 2802251, 2802257, 2802261, 2802262, 2802263, 2802264, 2802265, 2802268, 2802454, 2802458, 2802459, 2802471, 2802472, 2802473, 2802474, 2802809, 2803181, 2803224, 2803250, 2803314, 2803535, 2804113, 2806273, 2806544, 2806549, 2808011, 2808194, 2808915, 7156448, 7200058, 7333615 and 7352719, located between 101 m to 1,059 m from the Site centroid.

It is recommended to complete a baseline residential well survey to verify results of the MECP WWR searches and to confirm current conditions and use of wells in 500 m zone of the Site.

7.3 Geotechnical Considerations

A letter related to geotechnical issues as it pertains to the Site is required to be completed under a separate cover.

7.4 Groundwater Quality

It is our understanding that the potential effluent from the dewatering system during the construction will be released to the natural environment system. As such, the quality of groundwater discharge is required to conform the PWQO criteria.

Dewatering (short-term) may induce migration of contaminants within the zone of influence and beyond due to changing hydraulic gradients, hydrogeological conditions beyond Site boundaries and preferential pathways in utility beddings etc. The water quality sampling conducted as part of this assessment was performed under static conditions. As a result, monitoring may be required during dewatering activities (short-term) to monitor potential migration, and this should be performed more frequently during early dewatering stages.

For the short-term dewatering discharge (natural environment) and based on the water quality test results, it is recommended to implement a suitable pre-treatment, as required.

For discharge to the natural environment (e.g.: surface water, drainage feature), the treatment systems will require Environmental Compliance Approvals (ECA) for construction and post construction phases.

The Environmental Site Assessment Report(s) shall be reviewed for more information on the groundwater quality conditions at the Site.

7.5 Well Decommissioning

In conformance with Regulation 903 of the Ontario Water Resources Act, the installation and eventual decommissioning of any dewatering system wells or monitoring wells must be completed by a licensed well contractor. This will be required for all wells that are no longer in use.

8 Conclusions and Recommendations

Based on the findings of the Preliminary Hydrogeological Investigation and Water Balance Assessment, the following conclusions and recommendations are provided:

- The Site is within the Bronte Creek watershed. The Site is located in the physiographic region known as Peel Plain and physiographic landform known as Bevelled Till Plains.
- The main overburden soil types encountered during on-site drilling program include clayey silt till to silty clay till.
- The nearest surface water feature is a tributary of Bronte Creek, approximately located 1.3 kilometers south of the Site boundary. Lake Ontario is approximately 15.3 km from the Site boundary to the south.
- The Site is located within Halton Region Source Protection Area and Conservation Halton. The Site is not located within a Wellhead Protection Area (WHPA), Intake Protection Area (IPA), Issue Contributing Area (ICA), Significant Groundwater Recharge Area (SGRA), Highly Vulnerable Area (HVA), nor an Event Based Area (EBA).
- MECP WWR database indicates seventy-four (74) records within a 500 m radius of the Site with forty-three (43) of these WWRs reportedly completed as water supply wells.
- It is recommended to complete a baseline residential well survey prior construction to verify results of the MECP WWR searches and to confirm current conditions and use of the wells within the 500 m zone around the Site.
- The groundwater elevation recorded in the intermediate wells ranged from 175.98 masl (5.94 mbgs at BH3-27 on August 8, 2024) to 185.50 masl (0.15 mbgs at BH3-5 on May 23, 2025). During the seasonal groundwater monitoring program from July 30, 2024 to November 13, 2025, the water levels fluctuated from 0.97 m (BH3-12) to 4.98 m (BH3-2). It is interpreted that seasonal high groundwater elevations were observed during the May 23 of 2025 monitoring event.
- The direction of groundwater flow is interpreted to follow topographic relief and to be directed to be southeast of the Site.
- The highest estimated bulk hydraulic conductivity is approximately 8.1×10^{-7} m/s.
- The estimated design infiltration rate from the site-specific infiltration tests is 6 mm/hr
- The following parameters exceeded the PWQO parameters: Dissolved and Total Boron (B), Total Cobalt (Co), Total Iron (Fe), Total Phosphorus, Total Sulphide, Sulphide (as H2S), Dissolved, and Total Uranium (U).
- Additional groundwater quality sampling is recommended and comparison to final grades to assess water quality of discharge during construction.
- Based on water balance assessment for the Site there will be an infiltration deficit in post-development. To fully mitigate the infiltration deficit of approximately 23,740 m^3/yr in post-development conditions the feasible LIDs measures should be implemented. The LID area is based on the estimated design infiltration rate of 6 mm/hr, on the assumption that precipitation is evenly distributed during the year over two-week intervals, and bi-weekly volumes from roof will be infiltrated in 48-hour. The area of feasible LID that is required to offset the water balance deficit is approximately 5,150 m^2. The infiltration system will need to have a minimum storage of 1,484 m^3 to store two weeks of precipitation to meet the pre-development infiltration levels.
- Based on the assumptions outlined in this report, the estimated peak dewatering rate for proposed construction activities is approximately 34,880 L/day and 35,410 L/day for the industrial building (one at a time) and utility trench (services), respectively at any given time. Dewatering of an industrial building (one at a time) and an utility trench (services) should not occur concurrently. This is the rate which will be required to be discharged to the natural environment system.
- As the dewatering flow rate estimate is less than 50,000 L/day for one at a time, an EASR will not be required to facilitate the construction dewatering program for the Site.

- Based on the geotechnical report dated June 17, 2026, section 5.4, it is our understanding that the underfloor drains will not be required since the proposed buildings are slab-on-grade. As such, there will be no long-term (post construction) dewatering. A PTTW will not be required for long-term discharge.
- The construction dewatering is based on the assumptions outlined in this report. Any variations in hydrogeological conditions beyond those encountered as part of this preliminary investigation may significantly influence the discharge volumes.
- For the short-term dewatering system (construction phase), it is anticipated that TSS levels and some other parameters (for example, Total Metals) in the pumped groundwater may become elevated and exceed PWQO limits. To control the concentration of TSS and associated metals, it is recommended that a suitable treatment method be implemented (filtration or decantation facilities and/ or any other applicable treatment system) during construction dewatering activities to discharge to the natural environment system. The specifications of the treatment system will need to be adjusted to the reported water quality results by the treatment contractor/process engineer.
- For the short-term dewatering discharge (natural environment) and based on the water quality test results, it is recommended to implement a suitable pre-treatment, as required.
- For discharge to the natural environment (e.g.: surface water, drainage feature), the treatment systems will require Environmental Compliance Approvals (ECA) for construction and post construction phases.
- A letter related to geotechnical issues as it pertains to the Site is required to be completed under a separate cover.
- A Discharge Plan (dewatering sketch, sewer discharge agreement) must be developed and applied for any discharges from the Site. The Discharge Plan and monitoring for both water quantity and water quality must be carried at the Site during the entire construction dewatering phase. The daily water taking records must be maintained onsite for the entire construction dewatering phase. The Discharge Plan, hydrogeological investigation report, and geotechnical assessment of settlements must always also be available at the construction Site for the entire construction dewatering. EXP should be notified immediately about any changes to the construction dewatering schedule or design, since EASR may be required to be updated to reflect these modifications. The hydrogeological report, Discharge Plan and geotechnical assessment constitutes the Water Taking Plan which needs to be available onsite for the duration of construction dewatering.
- In conformance with Regulation 903 of the Ontario Water Resources Act, the installation and eventual decommissioning of any dewatering system wells or monitoring wells must be completed by a licensed well contractor. This will be required for all wells that are no longer in use.

The conclusions and recommendations provided above should be reviewed in conjunction with the entirety of the report. They assume that the present design concept described throughout the report will proceed to construction. This report is solely intended for the construction and long-term dewatering assessments. Any changes to the design concept may result in a modification to the recommendations provided in this report.

9 Limitations

This report is based on a limited investigation designed to provide information to support an assessment of the current hydrogeological conditions within the study area. The conclusions and recommendations presented within this report reflect Site conditions existing at the time of the assessment. EXP must be contacted immediately, if any unforeseen Site conditions are experienced during construction activities. This will allow EXP to review the new findings and provide appropriate recommendations to allow the construction to proceed in a timely and cost-effective manner.

Our undertaking at EXP, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the geoscience/engineering profession. No other warranty or representation, either expressed or implied, is included or intended in this report.

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

Sincerely,

EXP Services Inc.

Amar Neku, Ph.D., P.Eng., P.Geo.
Senior Hydrogeologist
Environmental Services

Francois Chartier, M.Sc., P.Geo.,
Discipline Manager, Hydrogeology
Environmental Services

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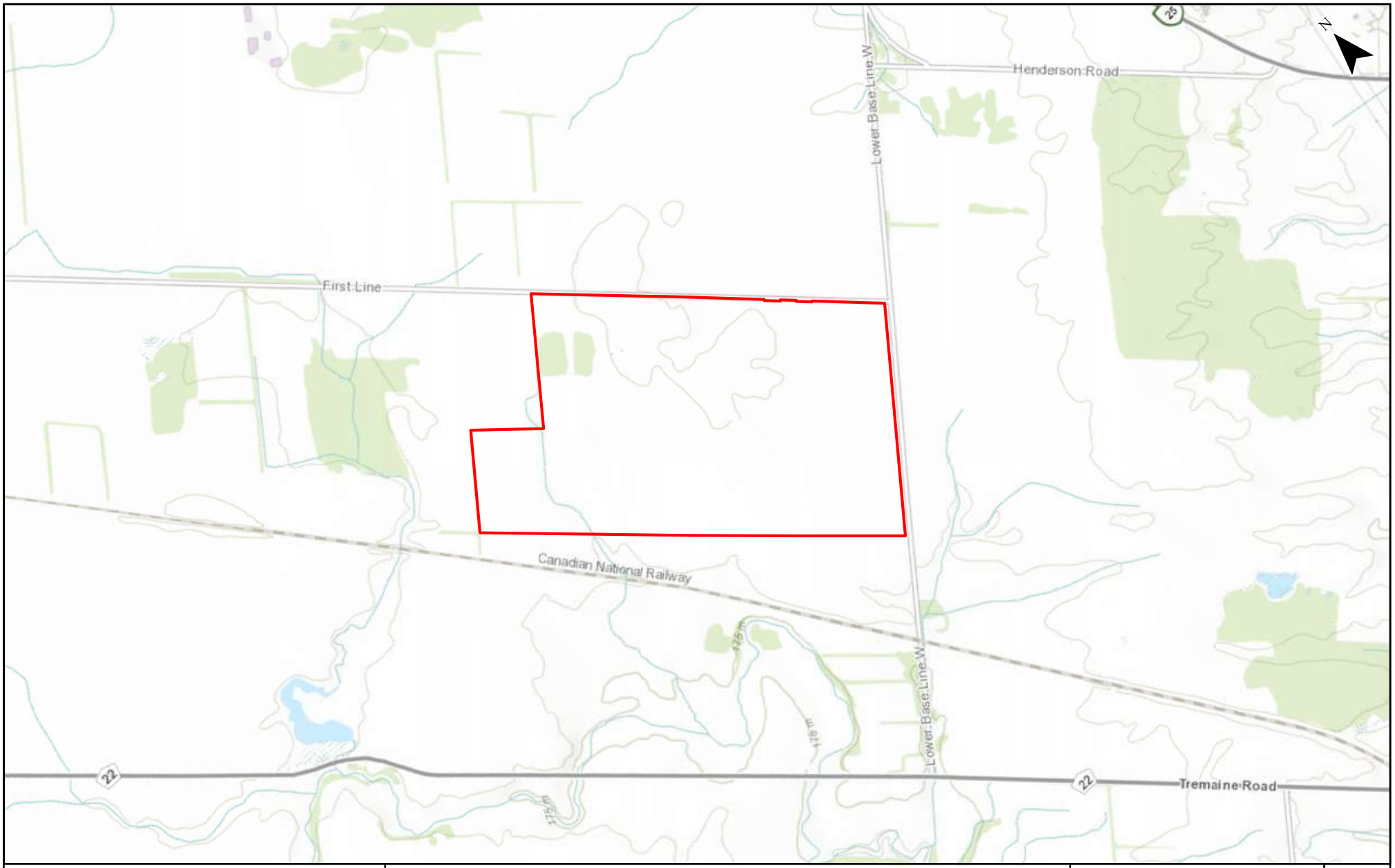
Figures



SCALE:

0 150 300 450 600 750 m

LEGEND:

APPROXIMATE SITE BOUNDARY

SITE LOCATION PLAN

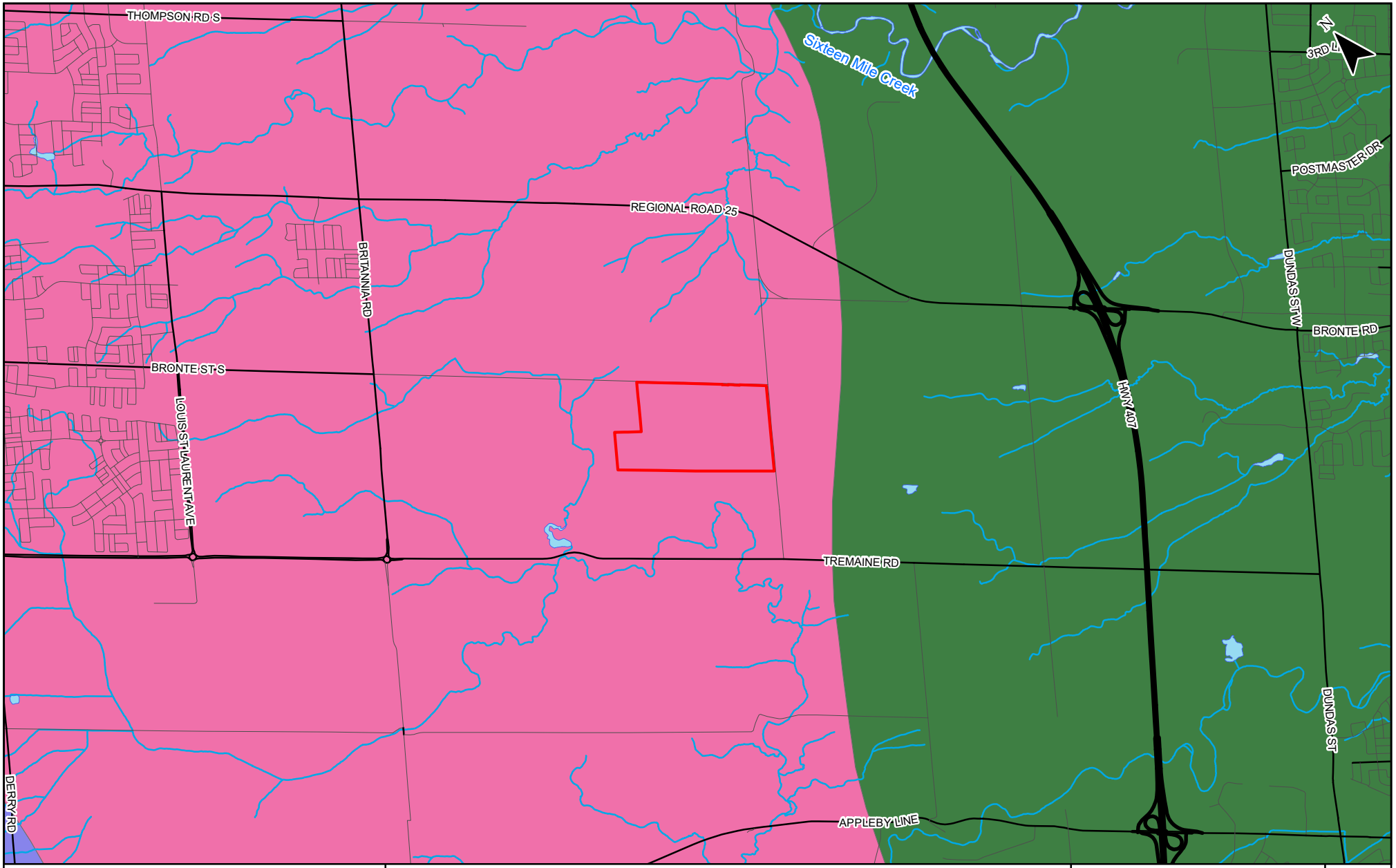
FIGURE: 1

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

DRAWN BY:	CHECKED BY:
AC	AN

PROJECT NUMBER: BRM-23015226-A0

DATE: AUGUST 2024



SCALE:

0 500 1,000 1,500 2,000 2,500 m

SOURCE:

BASED ON ONTARIO GEOLOGICAL SURVEY DATA PUBLISHED IN 2007

exp.

DRAWN BY:	CHECKED BY:
AC	AN

LEGEND:

- NIAGARA ESCARPMENT
- PEEL PLAIN
- SOUTH SLOPE
- APPROXIMATE SITE BOUNDARY

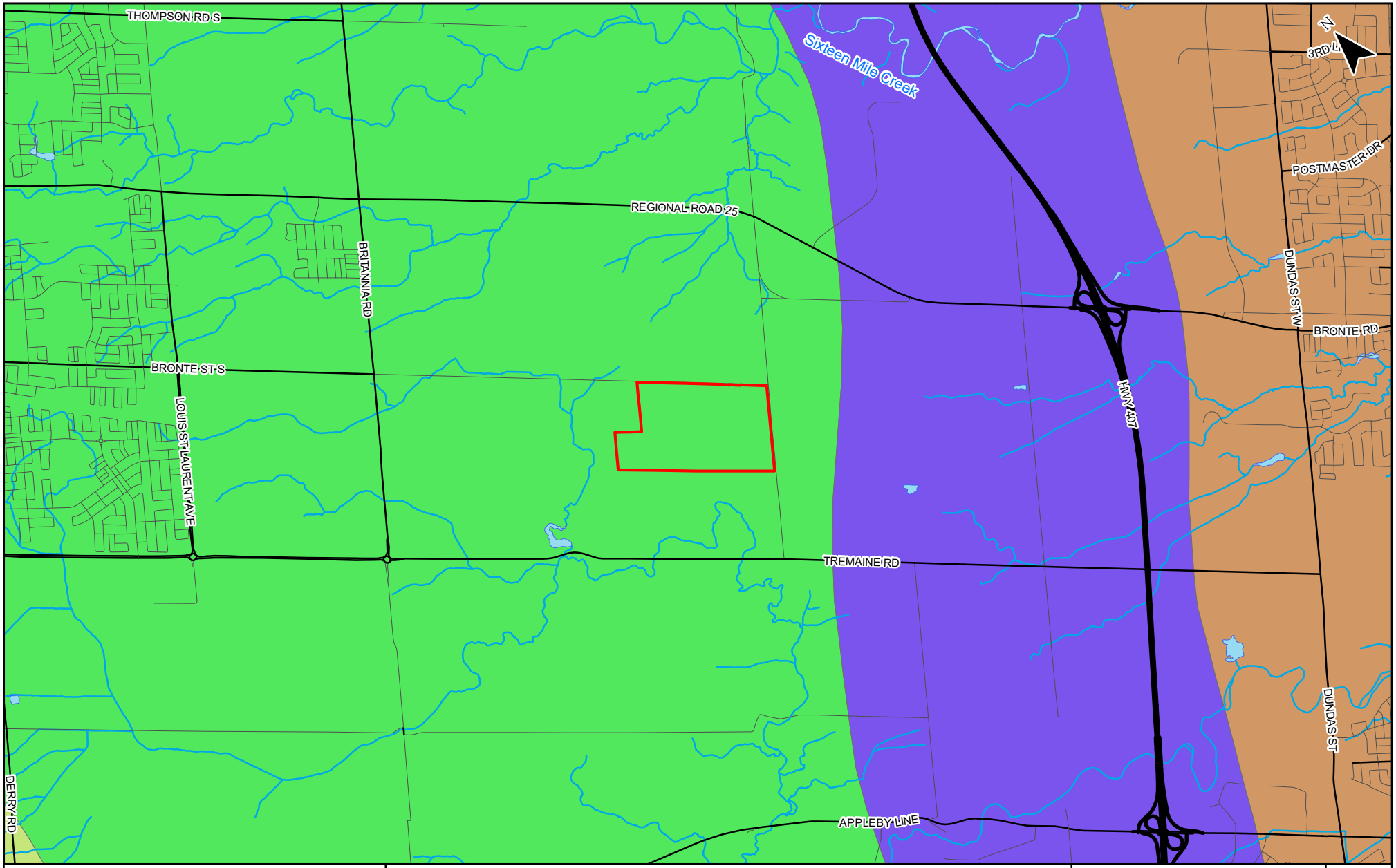
PHYSIOGRAPHIC REGIONS

FIGURE: 2A

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0

DATE: AUGUST 2024



SCALE:
0 500 1,000 1,500 2,000 2,500 m

SOURCE:
BASED ON ONTARIO GEOLOGICAL SURVEY DATA PUBLISHED IN 2007

exp.

DRAWN BY:	CHECKED BY:
AC	AN

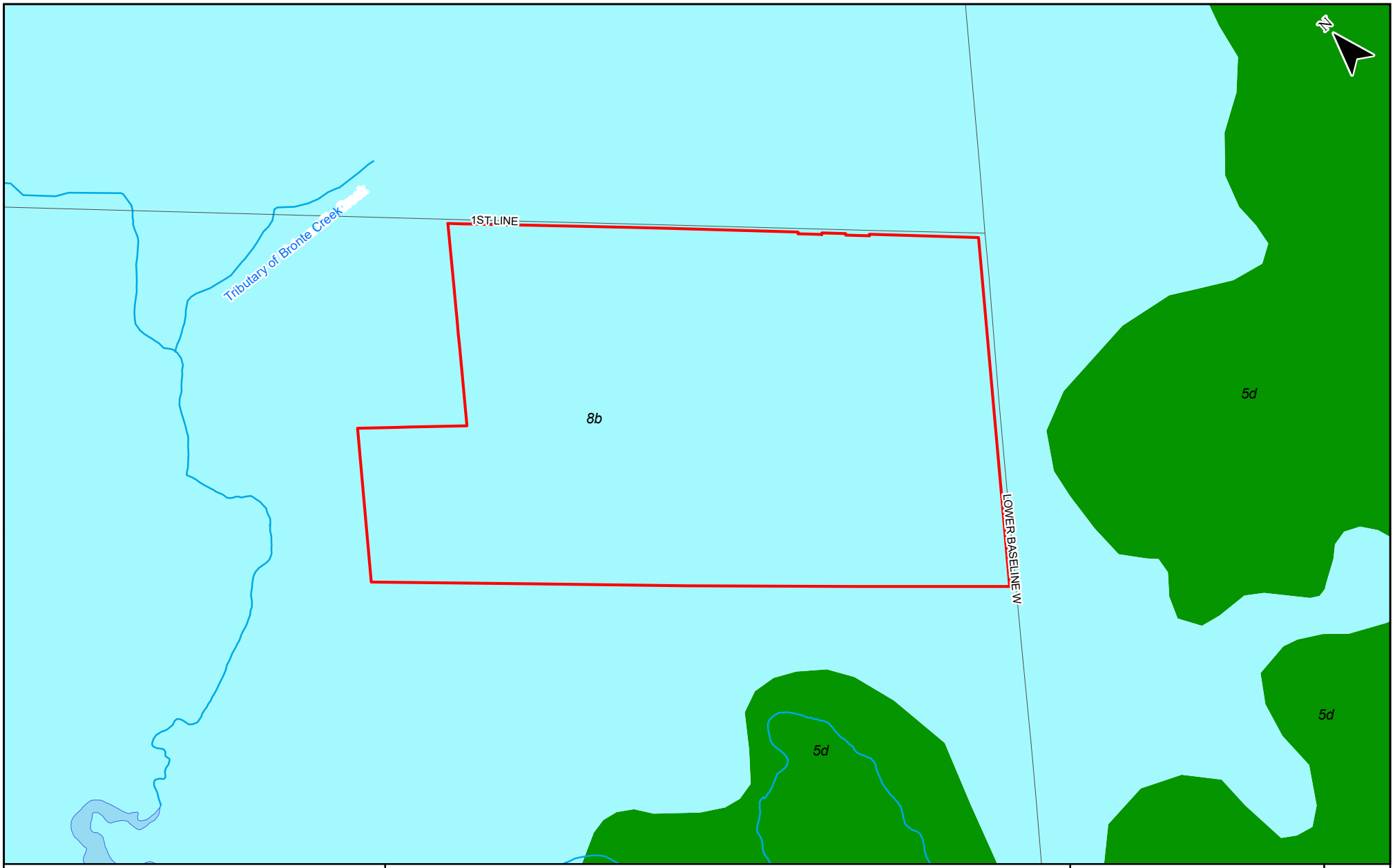
LEGEND:
- BEVELLED TILL PLAINS
- ESCARPMENTS
- TILL MORAINES
- TILL PLAINS (DRUMLINIZED)
- APPROXIMATE SITE BOUNDARY

PHYSIOGRAPHIC LANDFORMS

FIGURE: 2B

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0 | DATE: AUGUST 2024



SCALE:

0 100 200 300 400 500 m

SOURCE:

BASED ON ONTARIO GEOLOGICAL SURVEY DATA PUBLISHED IN 2010

exp.

DRAWN BY:	CHECKED BY:
AC	AN

LEGEND:

- 8B: FINE-TEXTURED GLACIOLACUSTRINE DEPOSITS
- 5D: GLACIOLACUSTRINE-DERIVED SILTY TO CLAYEY TILL
- APPROXIMATE SITE BOUNDARY

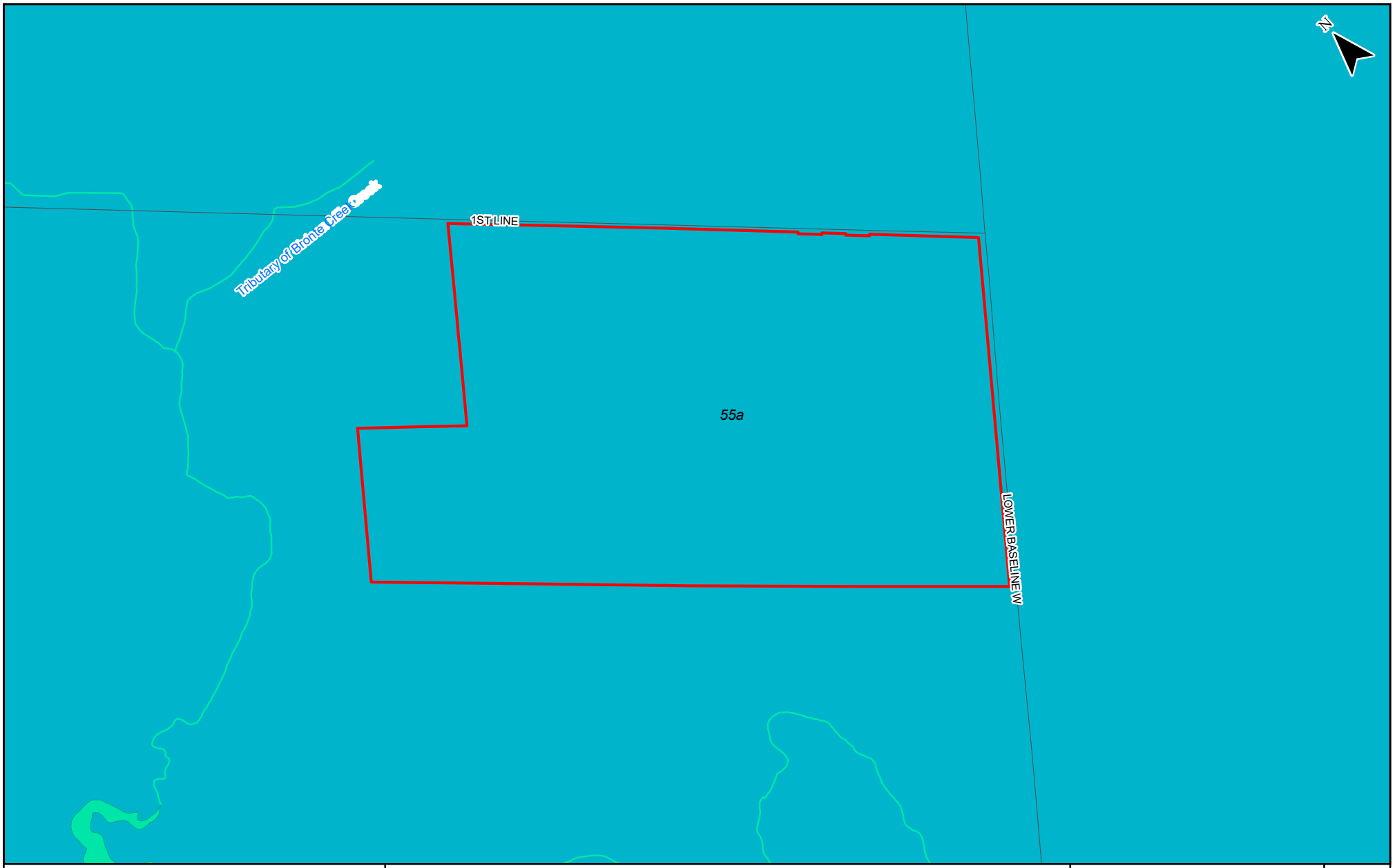
QUATERNARY GEOLOGY

FIGURE: 2C

HYDROGEOLOGICAL INVESTIGATION AND
WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0

DATE: AUGUST 2024



SCALE:

0 100 200 300 400 500 m

SOURCE:

BASED ON ONTARIO GEOLOGICAL SURVEY DATA PUBLISHED IN 2011

exp.

DRAWN BY:	CHECKED BY:
AC	AN

LEGEND:

- APPROXIMATE SITE BOUNDARY
- 55a: SHALE, LIMESTONE, DOLOSTONE, SILTSTONE
  Queenston Formation

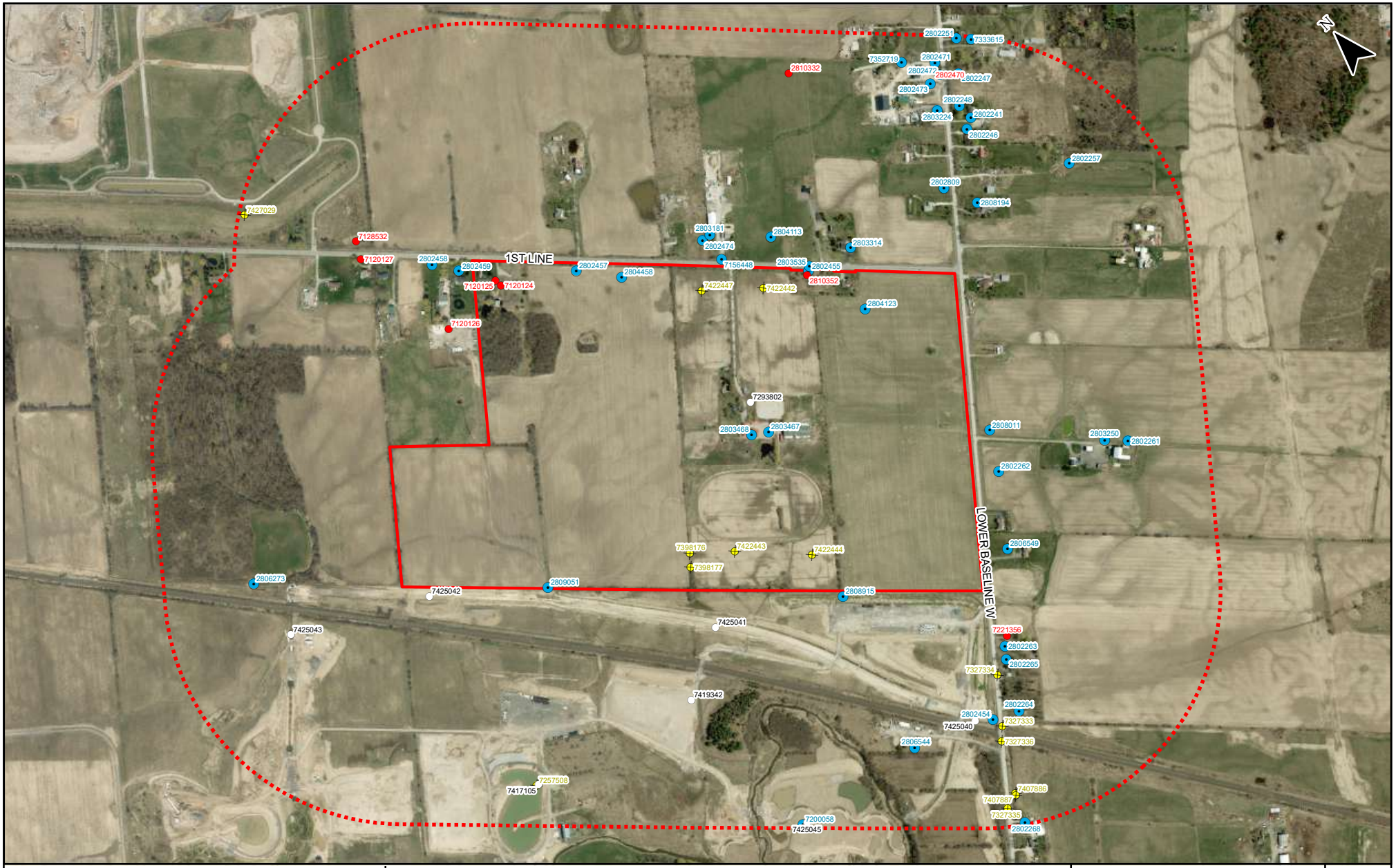
BEDROCK GEOLOGY

FIGURE: 2D

HYDROGEOLOGICAL INVESTIGATION AND
WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0

DATE: AUGUST 2024



SCALE:

0 100 200 300 400 500 m

SOURCE:

BASED ON GOOGLE EARTH IMAGERY DATED 2023,
AVAILABLE WELL RECORD INFORMATION AS OF JUNE 2023.

exp.

DRAWN BY:	CHECKED BY:
AC	AN

LEGEND:

- MONITORING WELL / TEST HOLE
- WATER SUPPLY WELL
- ABANDONED WELL
- UNCLASSIFIED / UNFINISHED WELL
- APPROXIMATE SITE BOUNDARY
- 500 m ZONE

MECP WATER WELL RECORDS MAP

FIGURE: 3

HYDROGEOLOGICAL INVESTIGATION AND
WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0 | DATE: AUGUST 2024

SCALE:

0 50 100 150 200 250 m

LEGEND:

- APPROXIMATE SITE BOUNDARY
- CROSS SECTION AXIS
- BOREHOLE (EXP, 2024)
- BOREHOLE / MONITORING WELL (EXP, 2024)
- PIEZOMETER (EXP, 2024)

DRAWN BY:	CHECKED BY:
AC	AN

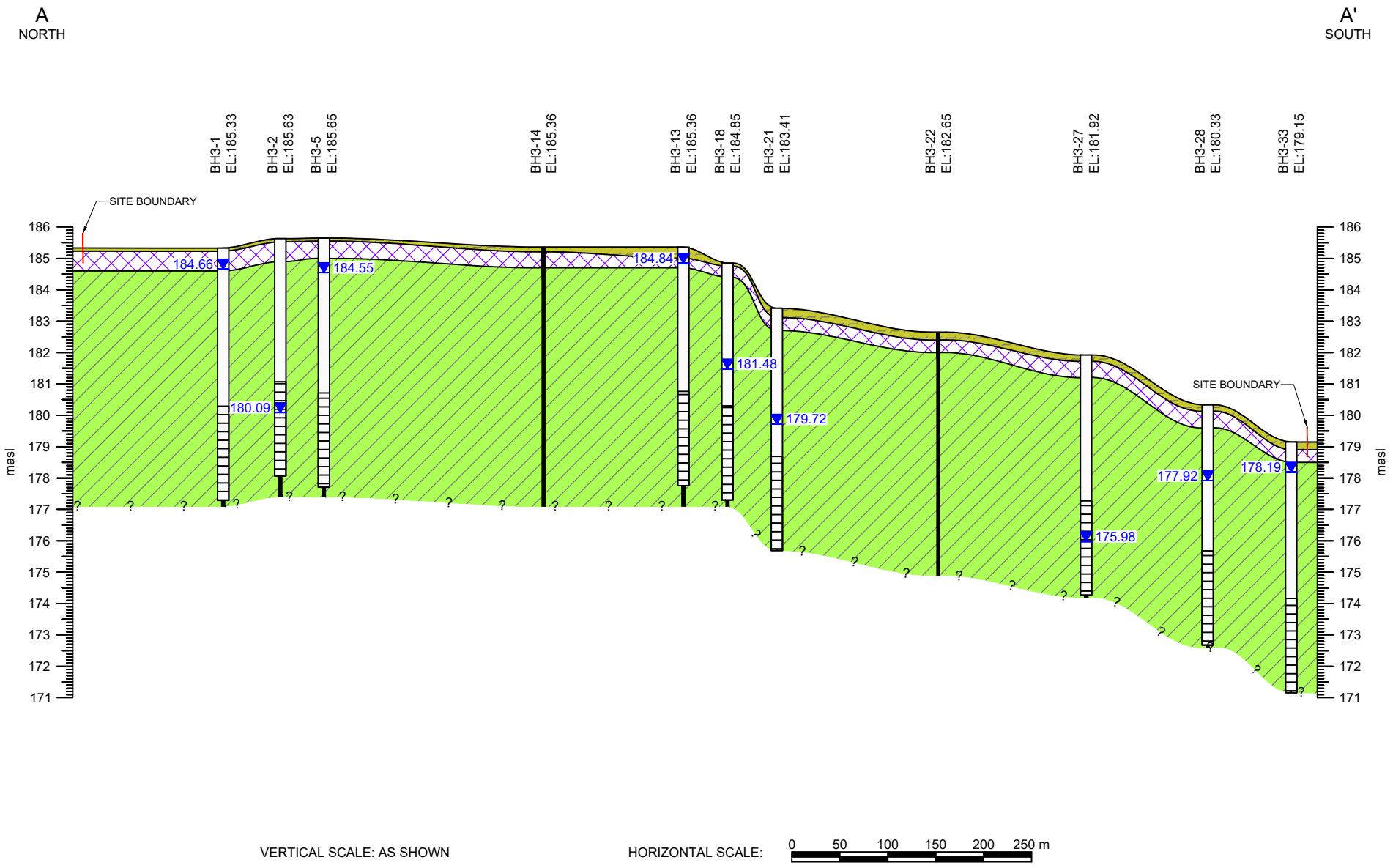
BOREHOLE / MONITORING WELL LOCATION PLAN

FIGURE: 4A

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0

DATE: AUGUST 2024



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LEGEND:
- TOPSOIL
- REWORKED TILL
- CLAYEY SILT TILL TO SILTY CLAY TILL
- GROUNDWATER ELEVATION (masl) AS MEASURED ON AUGUST 8, 2024

TITLE AND LOCATION:

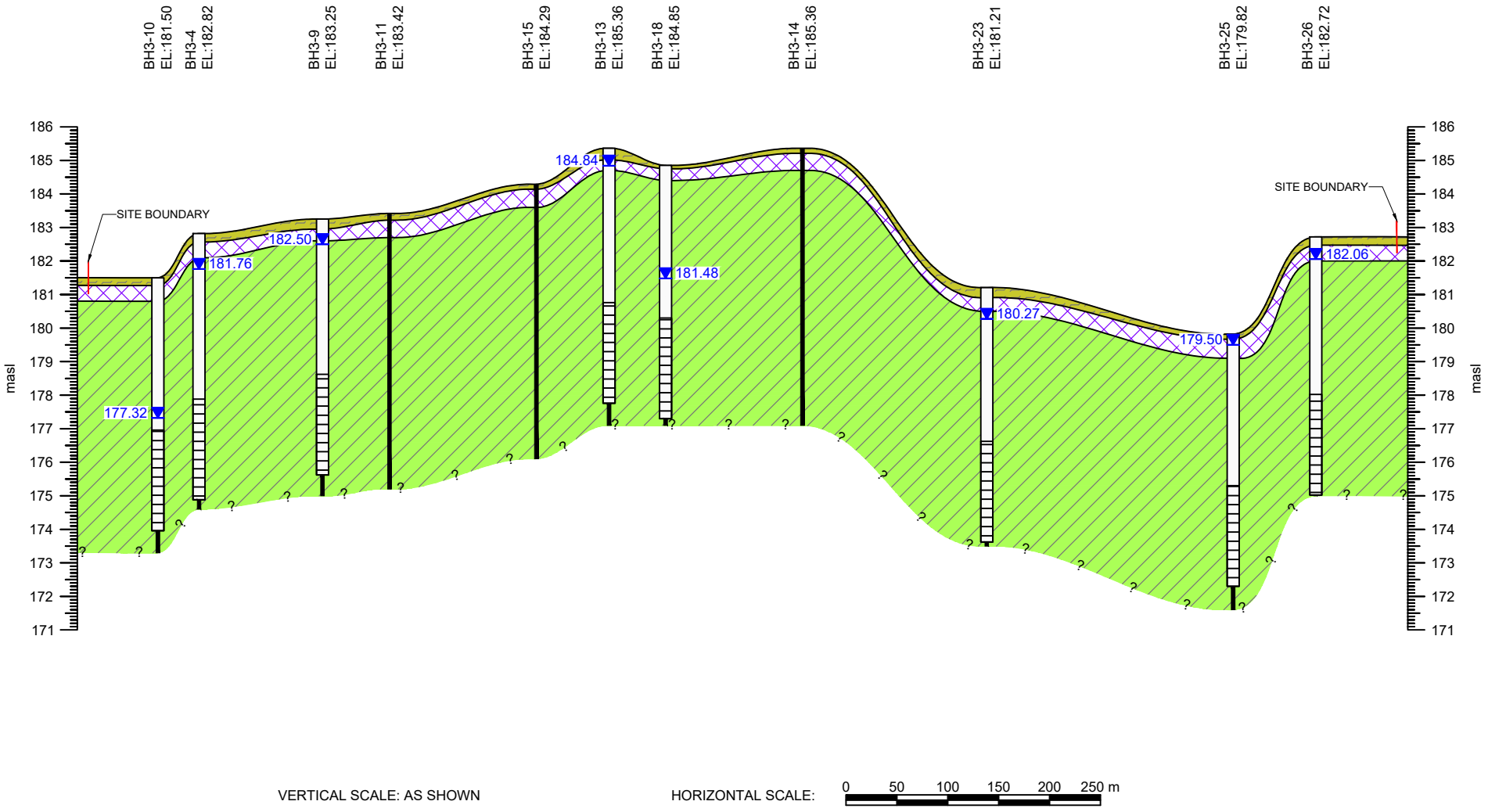
CROSS SECTION A-A'
HYDROGEOLOGICAL INVESTIGATION
AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NO.:	DWN.:
BRM-23015226-A0	JA
SCALE: AS NOTED	CK: AN
DATE: SEPTEMBER 2024	FIG. NO.: 5A

E:\BRM\BRM-23015226-A0\60 Execution\68 ArcGIS_HG\Phase 3\Cross Sections\BRM-23015226-A0.dwg

B
EAST

B'
WEST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE: 0 50 100 150 200 250 m

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LEGEND:

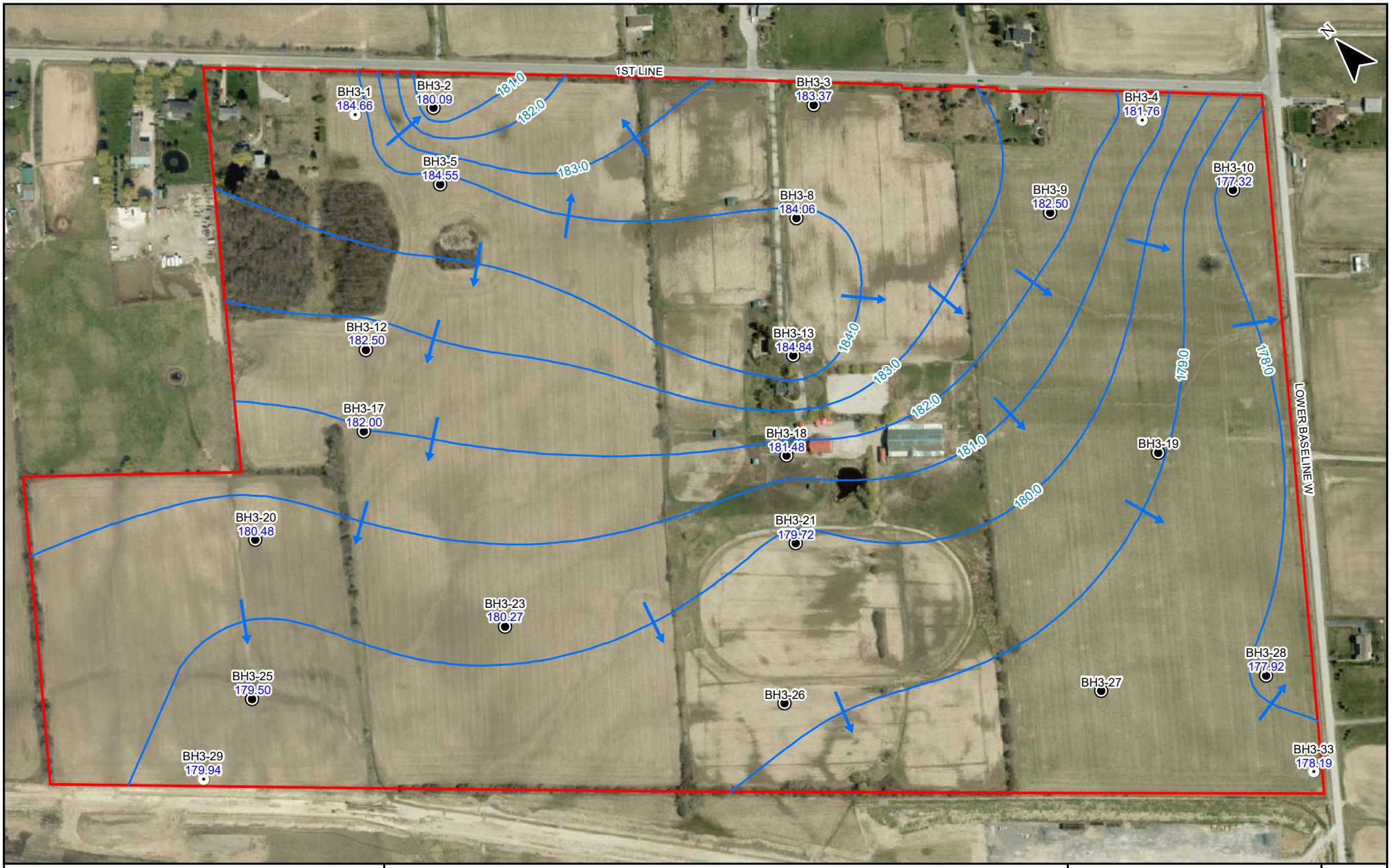
- TOPSOIL
- REWORKED TILL
- CLAYEY SILT TILL TO SILTY CLAY TILL
- GROUNDWATER ELEVATION (masl) AS MEASURED ON AUGUST 8, 2024

TITLE AND LOCATION:

CROSS SECTION B-B'
HYDROGEOLOGICAL INVESTIGATION
AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NO.:	DWN.:
BRM-23015226-A0	JA
SCALE: AS NOTED	CK: AN
DATE: SEPTEMBER 2024	FIG. NO.: 5B

E:\BRM\BRM-23015226-A0\60 Execution\68 ArcGIS_HG\Phase 3\Cross Sections\BRM-23015226-A0.dwg



SCALE:

0 50 100 150 200 250 m

LEGEND:

- BOREHOLE / MONITORING WELL (EXP, 2024)
- PIEZOMETER (EXP, 2024)
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- [XX.XX] GROUNDWATER ELEVATION (m asl) AS MEASURED ON AUGUST 8, 2024
- APPROXIMATE SITE BOUNDARY

exp.

DRAWN BY:	CHECKED BY:
AC	AN

GROUNDWATER CONTOUR PLAN

FIGURE: 6

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0 | DATE: AUGUST 2024

SCALE:

0 90 180 270 360 450 m

LEGEND:

- AGRICULTURAL / LANDSCAPE
- BUILDING
- PAVEMENT
- WATER
- WOODLOT
- APPROXIMATE SITE BOUNDARY
- HIGH WATER LEVEL AREA

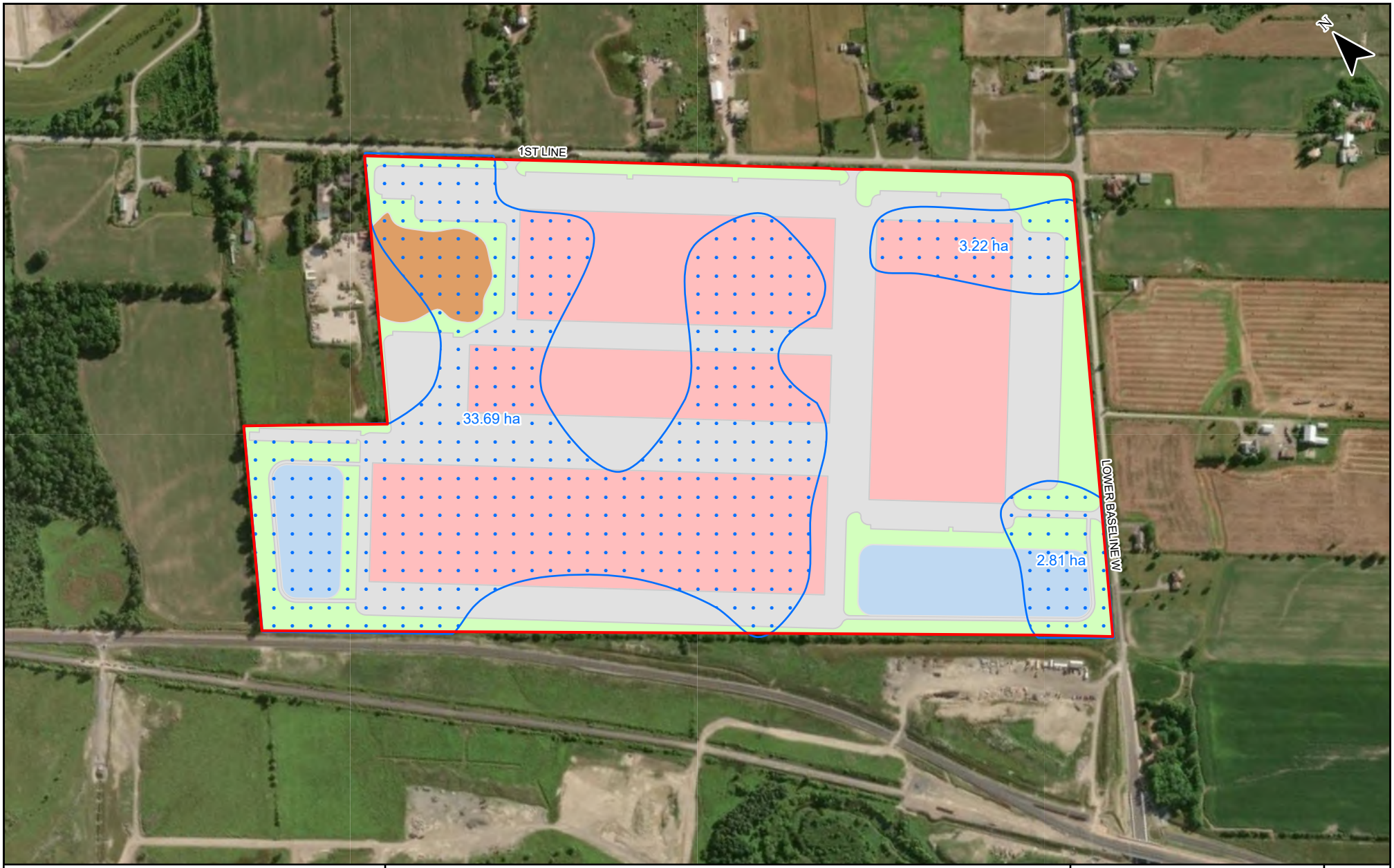
DRAWN BY:	CHECKED BY:
AC	AN

EXISTING LAND USE AND HIGH WATER LEVEL AREAS

FIGURE: 7

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0 DATE: AUGUST 2024



SCALE:
0 100 200 300 400 500 m

SOURCE:
PROPOSED LAND USE BASED ON MILTON LINK SITE PLAN, JUNE 2 2026

exp.

DRAWN BY:	CHECKED BY:
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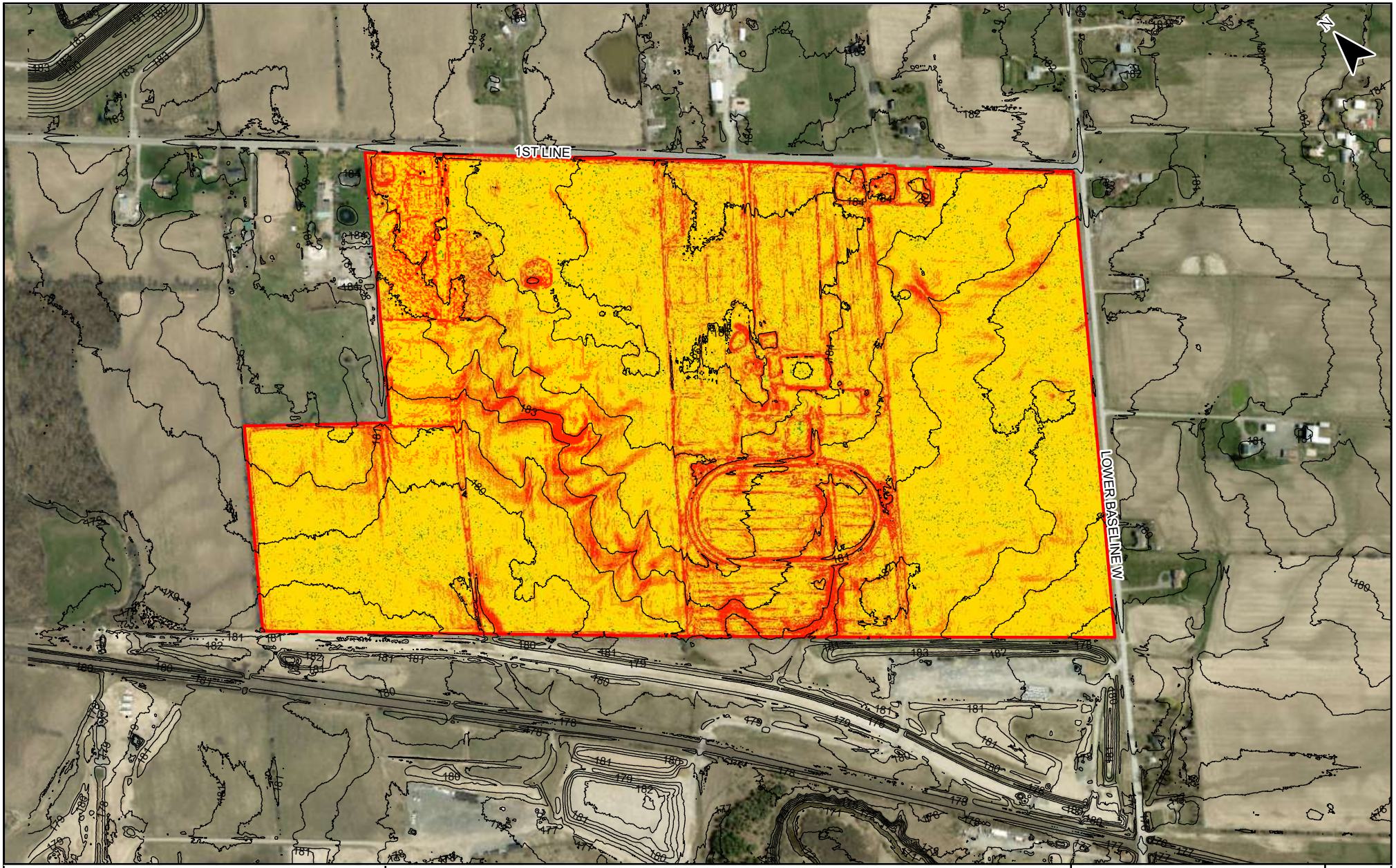
LEGEND:
- BUILDING
- LANDSCAPE
- PAVEMENT
- STORMWATER MANAGEMENT POND
- WOODLOT
- APPROXIMATE SITE BOUNDARY
- HIGH WATER LEVEL AREA

PROPOSED LAND USE AND HIGH WATER LEVEL AREAS

FIGURE: 8

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0 DATE: JUNE 2026



SCALE:
0 100 200 300 400 500 m

SOURCE:
TOPOGRAPHIC CONTOURS BASED ON HIGH RESOLUTION DIGITAL ELEVATION MODEL (HRDEM)
MADE AVAILABLE UNDER THE OPEN GOVERNMENT LICENCE - CANADA.

exp.

DRAWN BY:	CHECKED BY:
AC	AN

LEGEND:

TOPOGRAPHIC CONTOUR (m asl)

APPROXIMATE SITE BOUNDARY

EXISTING SLOPE (INFILTRATION FACTOR):

- <0.06% (0.30)
- 0.06 - 0.28% (0.25)
- 0.28 - 0.38% (0.20)
- 0.38 - 2.8% (0.15)
- 2.8 - 4.7% (0.10)
- >4.7% (0.05)

EXISTING SLOPE

FIGURE: 9

HYDROGEOLOGICAL INVESTIGATION AND WATER BALANCE ASSESSMENT
DEVELOPMENT LANDS (PHASE 3)
AT BRITANNIA ROAD AND FIRST LINE
MILTON, ONTARIO

PROJECT NUMBER: BRM-23015226-A0 | DATE: AUGUST 2024

List of Tables (Groundwater Elevations, Hydrographs and Summary of K Values)

TABLE 4-1: Groundwater Elevation Summary
Britannia Rd & First Line Phase 3
BRM-23015226-A0

Monitoring Well ID	Ground Surface Elevation (masl)	Stick Up (m)	Approximate Full Well Depth (mbTOP)	Approximate Full Well Depth (mbgs)	Minimum GW Elevation (masl)	Maximum GW Elevation (masl)	Depth	30-Jul-24	8-Aug-24	30-Jan-25	28-Mar-25	23-May-25	11-Jul-25	16-Sep-25	13-Nov-25
Piezo 3-1	185.33	1.01	9.05	8.04	183.63	185.10	mbTOP	1.47	1.68	1.74	1.38	1.24	1.37	2.71	2.56
							mbgs	0.46	0.67	0.73	0.37	0.23	0.36	1.70	1.55
							masl	184.87	184.66	184.60	184.96	185.10	184.97	183.63	183.78
BH3-2	185.63	0.97	8.53	7.56	180.09	185.07	mbTOP	2.74	6.51	1.65	1.55	1.62	1.53	2.38	2.89
							mbgs	1.77	5.54	0.68	0.58	0.65	0.56	1.41	1.92
							masl	183.86	180.09	184.95	185.05	184.98	185.07	184.22	183.71
BH3-3	183.74	1.03	8.59	7.56	182.03	183.65	mbTOP	1.12	1.40	1.67	1.28	1.21	1.31	1.94	2.74
							mbgs	0.09	0.37	0.64	0.25	0.18	0.28	0.91	1.71
							masl	183.65	183.37	183.10	183.49	183.56	183.46	182.83	182.03
Piezo 3-4	182.82	1.04	8.98	7.94	179.86	182.28	mbTOP	4.00	2.10	1.85	2.01	1.83	1.58	1.78	2.28
							mbgs	2.96	1.06	0.81	0.97	0.79	0.54	0.74	1.24
							masl	179.86	181.76	182.01	181.85	182.03	182.28	182.08	181.58
BH3-5	185.65	0.96	8.70	7.74	183.39	185.50	mbTOP	1.60	2.06	1.66	1.35	1.11	1.58	2.89	3.22
							mbgs	0.64	1.10	0.70	0.39	0.15	0.62	1.93	2.26
							masl	185.01	184.55	184.95	185.26	185.50	185.03	183.72	183.39
BH3-8	184.64	1.00	8.58	7.58	182.69	184.27	mbTOP	1.37	1.58	1.93	1.51	1.41	1.58	2.18	2.95
							mbgs	0.37	0.58	0.93	0.51	0.41	0.58	1.18	1.95
							masl	184.27	184.06	183.71	184.13	184.23	184.06	183.46	182.69
BH3-9	183.25	1.06	8.69	7.63	181.61	183.11	mbTOP	1.20	1.81	1.84	1.47	1.58	1.35	2.18	2.70
							mbgs	0.14	0.75	0.78	0.41	0.52	0.29	1.12	1.64
							masl	183.11	182.50	182.47	182.84	182.73	182.96	182.13	181.61
BH3-10	181.50	1.04	8.58	7.54	177.32	181.02	mbTOP	1.85	5.22	1.59	1.90	1.78	1.52	1.62	1.89
							mbgs	0.81	4.18	0.55	0.86	0.74	0.48	0.58	0.85
							masl	180.69	177.32	180.95	180.64	180.76	181.02	180.92	180.65
BH3-12	183.47	0.96	8.37	7.41	181.87	182.84	mbTOP	1.59	1.93	1.88	1.97	1.91	1.71	2.20	2.56
							mbgs	0.63	0.97	0.92	1.01	0.95	0.75	1.24	1.60
							masl	182.84	182.50	182.55	182.46	182.52	182.72	182.23	181.87
BH3-13	185.36	1.01	8.61	7.60	183.51	185.21	mbTOP	1.33	1.53	1.93	1.16	1.35	1.61	2.54	2.86
							mbgs	0.32	0.52	0.92	0.15	0.34	0.60	1.53	1.85
							masl	185.04	184.84	184.44	185.21	185.02	184.76	183.83	183.51
BH3-17	182.53	1.04	8.29	7.25	180.29	182.19	mbTOP	1.38	1.57	1.94	1.81	1.73	1.58	2.56	3.28
							mbgs	0.34	0.53	0.90	0.77	0.69	0.54	1.52	2.24
							masl	182.19	182.00	181.63	181.76	181.84	181.99	181.01	180.29
BH3-18	184.85	1.06	8.61	7.55	181.48	184.37	mbTOP	1.69	4.43	1.73	1.54	1.73	1.94	2.32	2.61
							mbgs	0.63	3.37	0.67	0.48	0.67	0.88	1.26	1.55
							masl	184.22	181.48	184.18	184.37	184.18	183.97	183.59	183.30
Peizo 3-19	181.36	0.96	8.67	7.71	179.84	180.93	mbTOP	-	-	1.90	1.62	1.65	1.39	2.07	2.48
							mbgs	-	-	0.94	0.66	0.69	0.43	1.11	1.52
							masl	-	-	180.42	180.70	180.67	180.93	180.25	179.84
BH3-20	180.66	1.00	8.42	7.42	178.96	180.51	mbTOP	1.15	1.18	1.62	1.41	1.41	1.45	2.16	2.70
							mbgs	0.15	0.18	0.62	0.41	0.41	0.45	1.16	1.70
							masl	180.51	180.48	180.04	180.25	180.25	180.21	179.50	178.96
BH3-21	183.41	1.00	8.72	7.72	179.72	182.95	mbTOP	1.79	4.69	1.68	1.46	1.59	1.53	2.41	2.91
							mbgs	0.79	3.69	0.68	0.46	0.59	0.53	1.41	1.91
							masl	182.62	179.72	182.73	182.95	182.82	182.88	182.00	181.50
BH3-23	181.21	1.05	8.64	7.59	179.25	180.55	mbTOP	1.71	1.99	2.20	2.21	2.17	2.06	2.58	3.01
							mbgs	0.66	0.94	1.15	1.16	1.12	1.01	1.53	1.96
							masl	180.55	180.27	180.06	180.05	180.09	180.20	179.68	179.25
BH3-25	179.82	1.01	8.53	7.52	178.51	179.58	mbTOP	1.25	1.33	1.59	1.68	1.61	1.56	1.95	2.32
							mbgs	0.24	0.32	0.58	0.67	0.60	0.55	0.94	1.31
							masl	179.58	179.50	179.24	179.15	179.22	179.27	178.88	178.51
BH3-26	182.72	1.00	8.70	7.70	180.41	182.38	mbTOP	1.40	1.66	1.67	1.34	1.60	1.64	2.71	3.31
							mbgs	0.40	0.66	0.67	0.34	0.60	0.64	1.71	2.31
							masl	182.32	182.06	182.05	182.38	182.12	182.08	181.01	180.41
BH3-27	181.92	1.09	8.74	7.65	175.98	180.92	mbTOP	4.98	7.03	2.12	2.20	2.14	2.09	2.79	3.27
							mbgs	3.89	5.94	1.03	1.11	1.05	1.00	1.70	2.18
							masl	178.03	175.98	180.89	180.81	180.87	180.92	180.22	179.74
BH3-28	180.33	1.05	8.70	7.65	177.92	179.45	mbTOP	1.93	3.46	2.10	2.40	2.56	2.06	2.17	2.66
							mbgs	0.88	2.41	1.05	1.35	1.51	1.01	1.12	1.61
							masl	179.45	177.92	179.28	178.98	178.82	179.32	179.21	178.72
Peizo 3-29	180.54	1.04	9.15	8.11	176.00	180.03	mbTOP	1.55	1.64	5.58	2.00	2.00	1.82	2.43	3.07
							mbgs	0.51	0.60	4.54	0.96	0.96	0.78	1.39	2.03
							masl	180.03	179.94	176.00	179.58	179.58	179.76	179.15	178.51
Peizo 3-33	179.15	1.07	9.06	7.99	177.31	178.29	mbTOP	2.03	2.03	2.35	2.45	2.14	1.93	2.22	2.91
							mbgs	0.96	0.96	1.28	1.38	1.07	0.86	1.15	1.84
							masl	178.19	178.19	177.87	177.77	178.08	178.29	178.00	177.31

Notes:
mbTOP - meters below top of the pipe
mbgs - meters below ground surface
masl - meters above mean sea level
*Well not found during field visits. Site inaccessible due to corn

	Min. GW Elev.	Max. Gw Elev.
Shallow Wells	175.98	185.5
Deep Wells	0	0

Tribal Phase 3 Hydrograph

January 2025 - November 2025

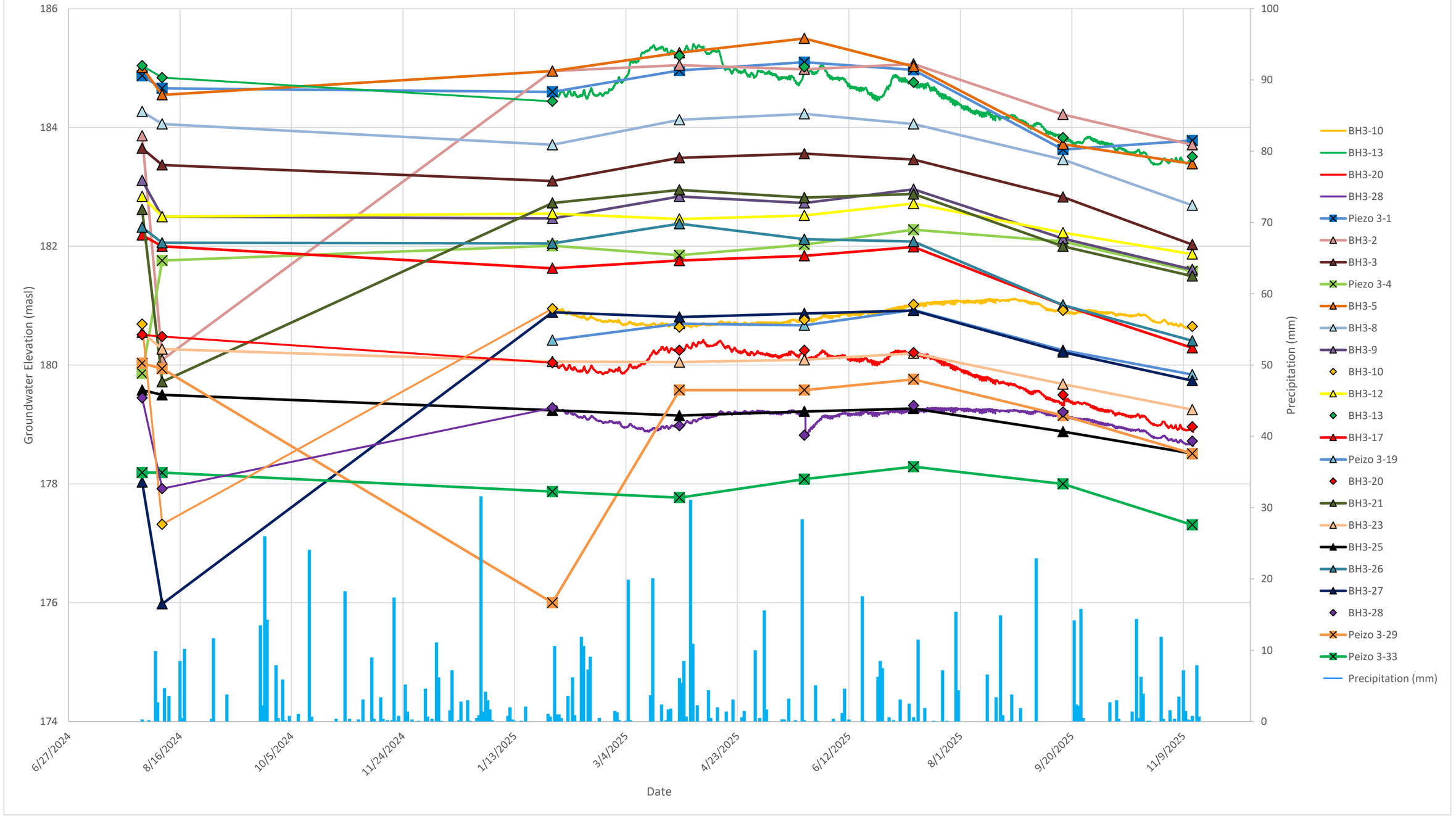


Table 4-2: Summary of Hydraulic Conductivity Testing Results
Britannia Rd & First Line Phase 3
BRM-23015226-A0

Monitoring Well	Well Depth (mbgs)	Screen Interval (mbgs)		Soil Formation Screened	Estimated Hydraulic Conductivity (m/s)
		from	to		
BH3-2	**7.56**	**4.56**	**7.56**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	4.6E-09
BH3-3	**7.56**	**4.56**	**7.56**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	6.0E-09
BH3-5	**7.74**	**4.74**	**7.74**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	2.0E-08
BH3-8	**7.58**	**4.58**	**7.58**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	9.0E-09
BH3-9	**7.63**	**4.63**	**7.63**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	5.7E-09
BH3-10	**7.54**	**4.54**	**7.54**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	6.4E-09
BH3-12	**7.41**	**4.41**	**7.41**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	7.1E-09
BH3-13	**7.60**	**4.6**	**7.6**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	4.6E-08
BH3-17	**7.25**	**4.25**	**7.25**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	1.0E-08
BH3-18	**7.55**	**4.55**	**7.55**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	2.3E-09
BH3-20	**7.42**	**4.42**	**7.42**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	8.0E-07
BH3-21	**7.72**	**4.72**	**7.72**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	2.8E-09
BH3-23	**7.59**	**4.59**	**7.59**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	9.7E-09
BH3-25	**7.52**	**4.52**	**7.52**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	8.1E-07
BH3-26	**7.70**	**4.7**	**7.7**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	1.3E-08
BH3-27	**7.65**	**4.65**	**7.65**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	5.0E-08
BH3-28	**7.65**	**4.65**	**7.65**	**CLAYEY SILT TILL TO SILTY CLAY TILL**	3.5E-09
				Highest Estimated K Value	8.1E-07
				Arithmetic Mean of Estimated K Values	1.1E-07
				Geometric Mean of Estimated K Values	1.5E-08

Appendix A – MECP WWR Summary Table

On-Site

BORE_HOLE_ID	WELL_ID	DATE	EAST83	NORTH83	ELEVATION (m ASL)	LOCATION ACCURACY	STREET	CITY	DISTANCE FROM SITE CENTROID (m)	CONSTRUCTION METHOD	WELL DEPTH (m bgs)	WATER FOUND (m bgs)	CASING DIAMETER (cm)	1st USE	2nd USE	FINAL STATUS
10149005	2802455	2/1/1967	595367	4812507	183.7	margin of error : 100 - 300 m			412	Cable Tool	29.0	19.8	12.7	Domestic		Water Supply
10149007	2802457	4/7/1965	595007	4812837	185.2	margin of error : 100 - 300 m			439	Boring	18.0	15.2	76.2	Domestic		Water Supply
10150007	2803467	6/1/1970	595075	4812313	183.8	margin of error : 30 - 100 m			137	Boring	17.1	16.8	76.2	Domestic		Water Supply
10150008	2803468	5/29/1970	595045	4812333	184.4	margin of error : 30 - 100 m			101	Boring	18.3	16.5	76.2	Domestic		Water Supply
10150647	2804123	3/7/1972	595400	4812367	182.9	margin of error : 30 - 100 m			433	Boring	16.2	11.6	76.2	Domestic		Water Supply
10150976	2804458	8/21/1973	595068	4812762	184.8	margin of error : 30 - 100 m			375	Boring	16.8	15.5	76.2	Domestic		Water Supply
10155308	2809051	8/29/1999	594512	4812385	178.8	Lot centroid			457	Boring	11.3	6.4	91.4	Domestic		Water Supply
11319307	2810352	3/30/2005	595358	4812502	183.7	on Water Well Record	5082 1ST LINE, R.R. 1	MILTON	403							Abandoned-Other
1002028703	7120124	1/14/2009	594869	4812921	184.2	on Water Well Record	5258 FIRST LINE		530					Domestic		Abandoned-Supply
1002028706	7120125	1/14/2009	594867	4812936	184.2	on Water Well Record	5258 FIRST LINE		546							Abandoned-Supply
1006715989	7293802	1/22/2013	595089	4812385	184.5	on Water Well Record	5122 1ST LINE	Milton	122	Air Percussion	18.6	14.0	20.3	Domestic		
1008785632	7398176	8/18/2021	594780	4812237	182.1	on Water Well Record	5202 First Line	Milton	249	Diamond	16.5	10.7	5.1	Monitoring and Test Hole		Monitoring and Test Hole
1008785635	7398177	8/17/2021	594761	4812214	181.5	on Water Well Record	5202 First Line	Milton	278	Rotary (Convent.)	22.7	10.7	5.1	Monitoring and Test Hole		Monitoring and Test Hole
1009106204	7422442	6/6/2022	595271	4812544	183.4	on Water Well Record	5122 First Line	Milton	335	Rotary (Convent.)	7.6	6.1	5.1	Monitoring		Observation Wells
1009106207	7422443	6/7/2022	594852	4812176	182.6	on Water Well Record	5122 First Line	Milton	252	Auger	7.6	6.1	5.1	Monitoring		Observation Wells
1009106210	7422444	6/8/2022	594967	4812061	181.8	on Water Well Record	5122 First Line	Milton	339	Rotary (Convent.)	6.1	4.6	5.1	Monitoring		Observation Wells
1009106219	7422447	6/7/2022	595172	4812627	183.7	on Water Well Record	5122 First Line	Milton	305	Auger	6.1	6.1	5.1	Monitoring		Observation Wells

Off-Site

BORE_HOLE_ID	WELL_ID	DATE	EAST83	NORTH83	ELEVATION (m ASL)	LOCATION ACCURACY	STREET	CITY	DISTANCE FROM SITE CENTROID (m)	CONSTRUCTION METHOD	WELL DEPTH (m bgs)	WATER FOUND (m bgs)	CASING DIAMETER (cm)	1st USE	2nd USE	FINAL STATUS
10148795	2802241	7/18/1954	595836	4812514	182.3	unknown UTM			875	Cable Tool	16.2	15.2	15.2	Domestic		Water Supply
10148800	2802246	2/28/1957	595814	4812502	181.8	unknown UTM			851	Cable Tool	16.8	14.6	15.2	Domestic		Water Supply
10148801	2802247	11/1/1958	595880	4812600	181.1	unknown UTM			933	Cable Tool	18.0	17.4	15.2	Domestic		Water Supply
10148802	2802248	11/5/1958	595836	4812549	181.7	unknown UTM			880	Cable Tool	18.9	18.0	15.2	Domestic		Water Supply
10148805	2802251	6/10/1959	595927	4812658	180.7	margin of error : 100 - 300 m			992	Cable Tool	18.3	15.2	15.2	Domestic		Water Supply
10148811	2802257	10/13/1956	595924	4812303	181.4	unknown UTM			960	Cable Tool	25.3	12.2	15.2	Domestic		Water Supply
10148815	2802261	11/18/1961	595620	4811789	180.5	margin of error : 100 - 300 m			893	Boring	15.8	15.8	76.2	Domestic		Water Supply
10148816	2802262	9/4/1967	595376	4811925	179.8	margin of error : 100 - 300 m			626	Cable Tool	17.4	15.2	15.2	Domestic		Water Supply
10148817	2802263	6/12/1960	595137	4811645	178.3	margin of error : 100 - 300 m			773	Cable Tool	18.3	12.2	15.2	Domestic		Water Supply
10148818	2802264	10/5/1960	595067	4811524	178.0	margin of error : 100 - 300 m			881	Cable Tool	19.2	17.7	15.2	Domestic		Water Supply
10148819	2802265	1/21/1964	595120	4811622	178.2	margin of error : 100 - 300 m			792	Cable Tool	11.6	9.1	15.2	Domestic		Water Supply
10148822	2802268	4/19/1962	594917	4811342	175.6	margin of error : 30 - 100 m			1059	Cable Tool	17.4	14.6	15.2	Domestic		Water Supply
10149004	2802454	6/29/1963	595014	4811548	176.3	margin of error : 100 - 300 m			853	Boring	16.5	16.5	76.2	Livestock	Domestic	Water Supply
10149008	2802458	6/18/1965	594792	4813051	182.9	margin of error : 100 - 300 m			675	Cable Tool	22.9	21.3	15.2	Domestic		Water Supply
10149009	2802459	7/11/1966	594825	4813004	183.9	margin of error : 100 - 300 m			621	Boring	16.5	16.5	76.2	Domestic		Water Supply
10149020	2802470	7/18/1957	595844	4812642	181.2	unknown UTM			908	Cable Tool	18.3	17.7	15.2	Not Used		Abandoned-Quality
10149021	2802471	8/1/1957	595859	4812650	181.2	unknown UTM			925	Cable Tool	17.4	16.5	15.2	Domestic		Water Supply
10149022	2802472	2/22/1961	595850	4812624	181.3	margin of error : 100 - 300 m			909	Cable Tool	18.3	16.8	15.2	Domestic		Water Supply
10149023	2802473	3/3/1961	595822	4812624	181.5	margin of error : 100 - 300 m			882	Cable Tool	18.0	16.8	15.2	Domestic		Water Supply
10149024	2802474	4/28/1966	595246	4812705	183.7	margin of error : 100 - 300 m			412	Boring	14.0	14.0	76.2	Domestic		Water Supply
10149356	2802809	4/23/1968	595695	4812443	181.5	margin of error : 30 - 100 m			728	Boring	14.9	14.6	76.2	Domestic		Water Supply
10149723	2803181	6/30/1969	595265	4812703	183.7	margin of error : 30 - 100 m			424	Cable Tool	12.8	12.5	76.2	Domestic		Water Supply
10149766	2803224	7/24/1969	595795	4812573	181.6	margin of error : 30 - 100 m			844	Boring	15.5	15.2	76.2	Domestic		Water Supply
10149792	2803250	10/31/1969	595585	4811823	180.2	margin of error : 30 - 100 m			844	Boring	12.5	11.0	76.2	Livestock		Water Supply
10149856	2803314	12/9/1969	595465	4812483	183.7	margin of error : 30 - 100 m			503	Boring	13.7	13.1	76.2	Domestic		Water Supply
10150074	2803535	8/15/1970	595375	4812513	183.7	margin of error : 30 - 100 m			422	Boring	14.0	13.4	76.2	Domestic		Water Supply
10150637	2804113	10/4/1972	595357	4812613	183.1	margin of error : 30 - 100 m			443	Boring	17.4	16.2	76.2	Domestic		Water Supply
10152551	2806273	3/17/1984	594061	4812809	179.0	Lot centroid			996	Boring	15.8	15.2	76.2	Domestic		Water Supply
10152813	2806544	6/9/1986	594852	4811615	176.7	from gps			793	Boring	18.3	10.7	76.2	Domestic		Water Supply
10152818	2806549	3/18/1986	595279	4811792	179.3	from gps			683	Boring	15.5	15.2	76.2	Domestic		Water Supply
10154268	2808011	7/27/1992	595420	4812002	180.0	from gps			602	Boring	15.2	6.1	91.4	Domestic		Water Supply
10154451	2808194	10/6/1993	595725	4812373	181.7	from gps			757	Cable Tool	21.3	16.5	15.2	Domestic		Water Supply
10155172	2808915	10/2/1998	594957	4811952	181.0	Lot centroid			448	Cable Tool	33.8	32.0	15.2	Domestic		Water Supply
11319287	2810332	8/26/2005	595617	4812842	181.6	on Water Well Record	N.W CORNER HWY 25 & LOWER BASELINE		785	Cable Tool	19.8		13.2			Abandoned-Supply
1002028709	7120126	1/14/2009	594726	4812928	183.6	on Water Well Record	5258 FIRST LINE		581							Abandoned-Supply
1002028712	7120127	1/14/2009	594689	4813161	182.9	on Water Well Record	5324 FIRST LINE		811							Abandoned-Supply
1002700346	7128532	7/25/2009	594706	4813195	182.9	on Water Well Record	5324 1ST LINE	Milton	837	Not Known				Domestic		Abandoned-Other
1003436587	7156448	11/26/2010	595248	4812648	183.5	on Water Well Record	5121 FIRST LINE	MILTON	374	Boring	13.0	3.0	91.4	Domestic		Water Supply
1004273015	7200058	4/19/2012	594570	4811655	175.7	on Water Well Record	5127 JREMOUINE RD	HALTON	845	Cable Tool	25.0		15.9	Domestic		Water Supply
1004893139	7221356	8/13/2013	595155	4811658	178.0	on Water Well Record			765							Abandoned-Other
1005882125	7257508	6/15/2015	594212	4812094	177.7	on Water Well Record	5269 TREMAINE RD	MILTON	816	Rotary (Convent.)	9.1	2.1	5.1	Monitoring and Test Hole		Monitoring and Test Hole
1007360812	7327333	12/21/2018	595018	4811524	177.9	on Water Well Record	Lower Base Line	Milton	877	Boring	15.2		5.1	Monitoring		Monitoring and Test Hole
1007360815	7327334	12/21/2018	595084	4811611	177.7	on Water Well Record	Lower Base Line	Milton	797	Boring	9.1		5.1	Monitoring		Monitoring and Test Hole
1007360818	7327335	12/21/2018	594910	4811389	173.8	on Water Well Record	Lower Base Line	Milton	1013	Boring	10.7		5.1	Monitoring		Monitoring and Test Hole
1007360821	7327336	12/21/2018	594996	4811502	174.6	on Water Well Record	Lower Base Line	Milton	898	Boring	15.2		5.1	Monitoring		Monitoring and Test Hole
1007496002	7333615	3/29/2019	595948	4812636	180.3	on Water Well Record	2638 LOWER BASE LINE	Milton	1008	Cable Tool	26.3	19.0	15.9	Domestic		Water Supply
1008058782	7352719	1/10/2020	595807	4812698	180.2	on Water Well Record	2655 LOWER BASE LINE	Oakville	890	Cable Tool	21.6	20.0	15.9	Domestic		Water Supply
1008915733	7407886	12/22/2021	594943	4811401	175.0	on Water Well Record	0 Lower Base Line & Tremaine Road	Milton	999	Boring	19.8		5.1	Monitoring		Monitoring and Test Hole
1008915736	7407887	12/22/2021	594941	4811398	175.0	on Water Well Record	0 Lower Base Line & Tremaine Road	Milton	1002	Boring	23.6		5.1	Monitoring		Monitoring and Test Hole
1009021177	7417105	3/18/2022	594216	4812092	177.7	on Water Well Record			813							
1009055345	7419342	5/31/2022	594574	4812007	177.9	on Water Well Record			557							
1009158351	7425040	4/7/2022	594985	4811571	177.0	on Water Well Record			829							
1009158354	7425041	4/7/2022	594714	4812085	179.0	on Water Well Record			405							
1009158357	7425042	4/7/2022	594315	4812540	180.6	on Water Well Record			668							
1009158360	7425043	4/7/2022	594046	4812677	178.5	on Water Well Record			963							
1009158366	7425045	6/17/2022	594579	4811652	175.7	on Water Well Record			843							
1009169930	7427029	6/27/2022	594571	4813395	189.0	on Water Well Record	5400 Regional Rd 25	Milton	1071	Other Method	15.5	14.6	15.2	Test Hole		Test Hole

	COUNT
Monitoring Well / Test Hole	14
Dewatering Well	0
Water Supply Well	43
Abandoned Well	9
Unclassified / Unfinished Well	8
TOTAL	74

Appendix B – Borehole Logs

Log of Borehole 3 - 1

Project No. BRM-23015226-A0 | Drawing No. 2

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

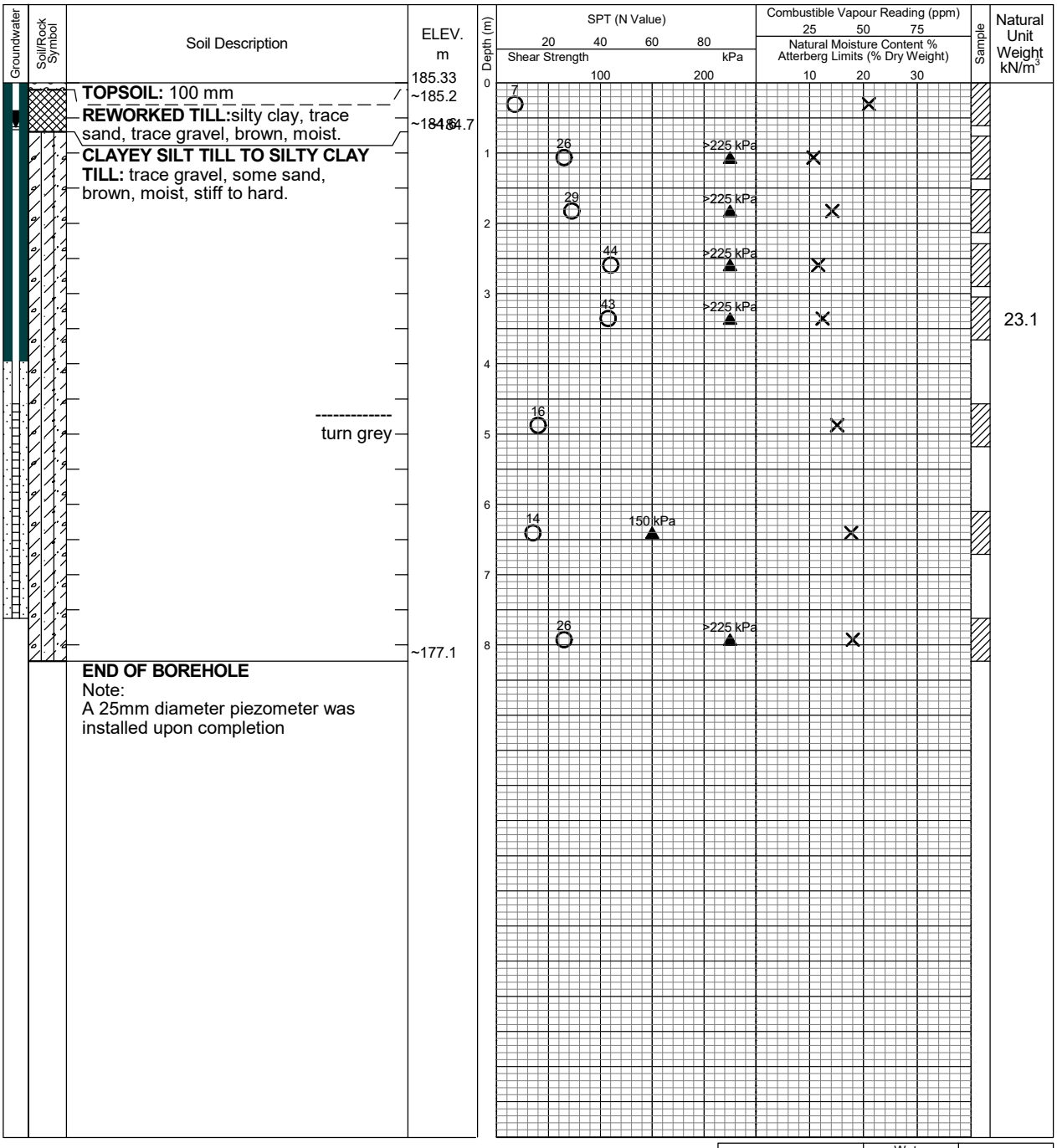
Date Drilled: June 17, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.46	
Aug 8, 2024	0.67	

exp.
New identity of Trow Associates Inc.

Log of Borehole 3 - 2

Project No. BRM-23015226-A0 | Drawing No. 3

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

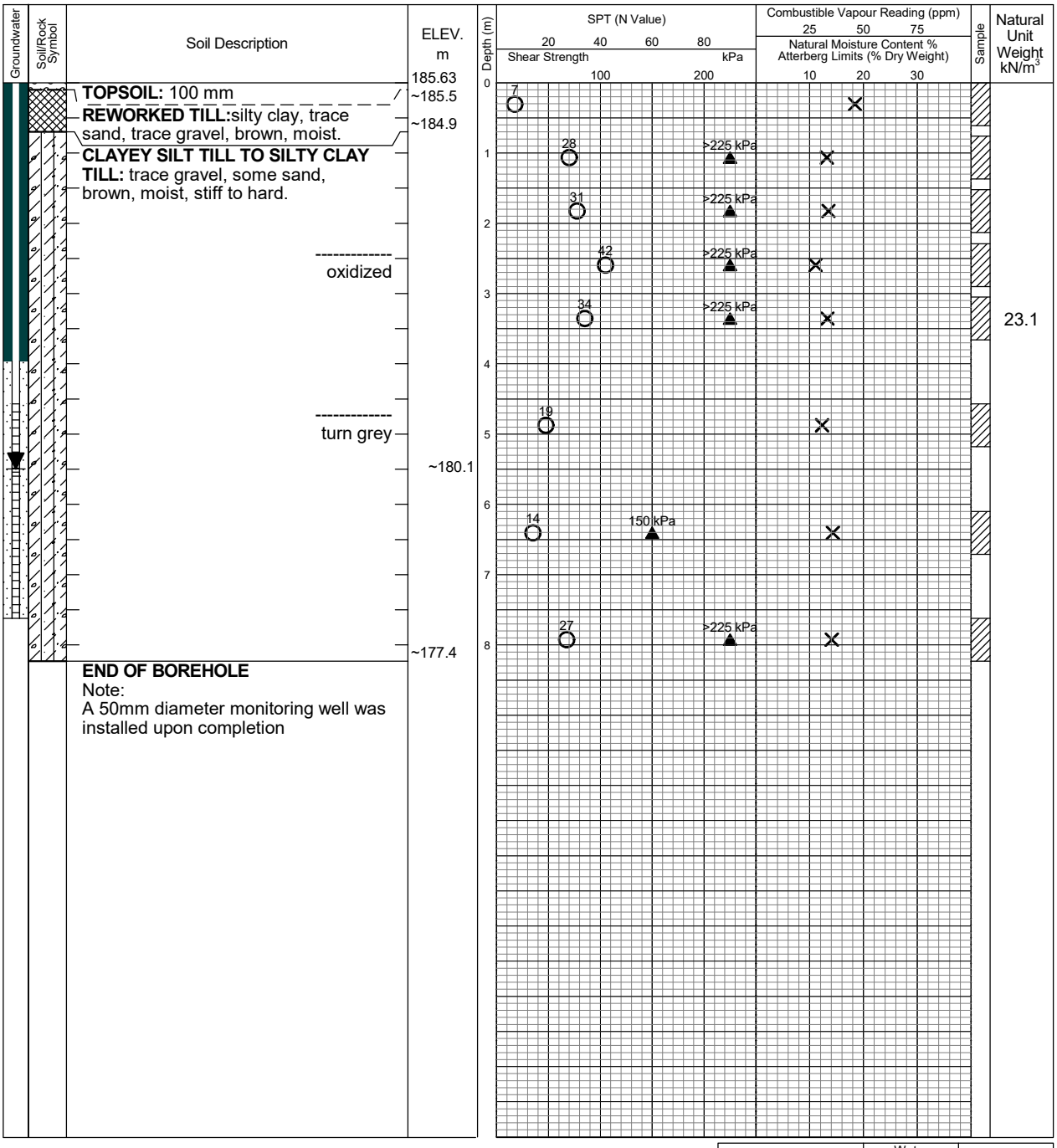
Date Drilled: June 17, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	1.77	
Aug 8, 2024	5.54	

exp.
New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 3

Project No. BRM-23015226-A0 | Drawing No. 4

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

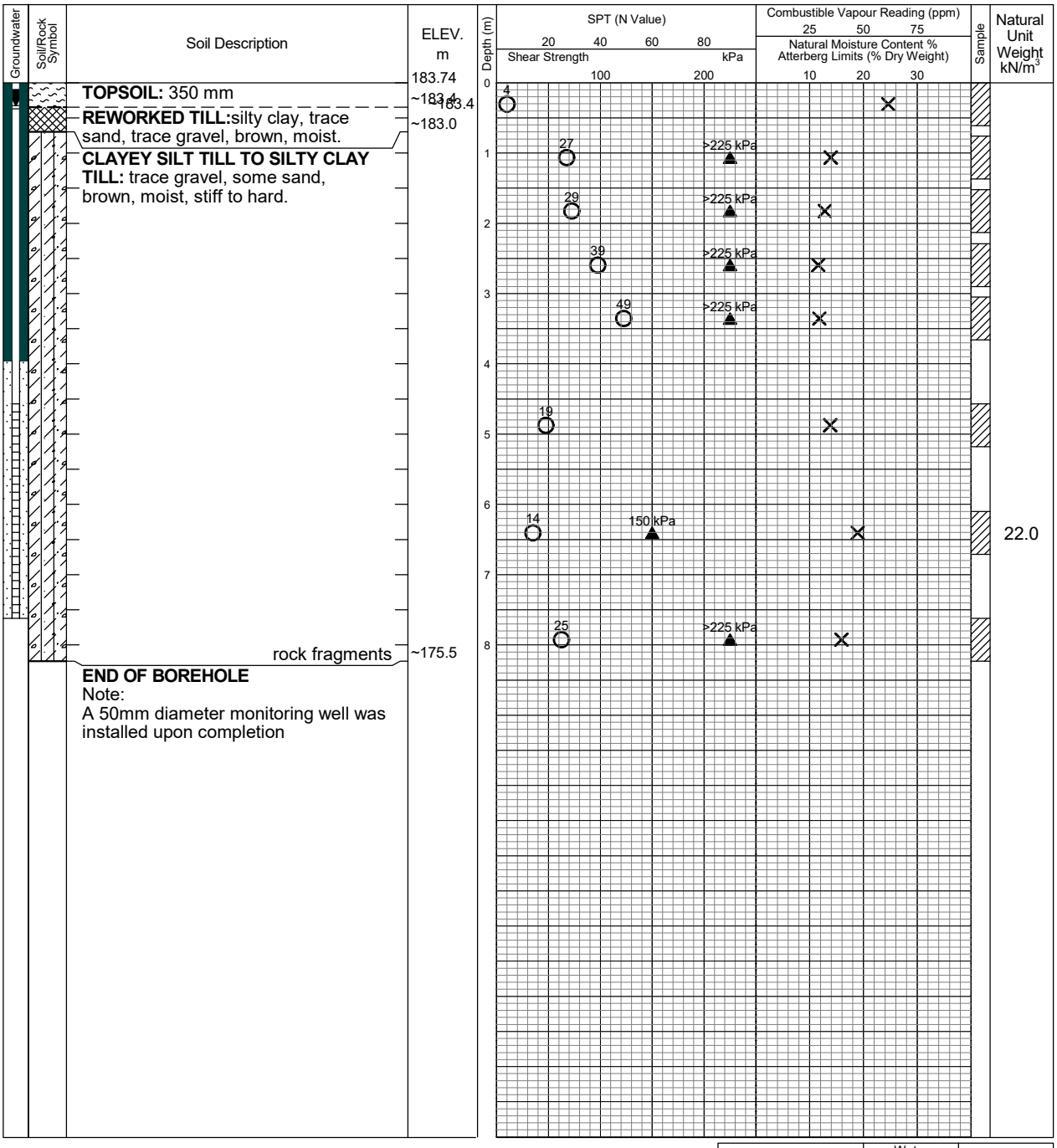
Date Drilled: June 20, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample | SPT (N) Value | Dynamic Cone Test | Shelby Tube | Field Vane Test (S)

Combustible Vapour Reading | Natural Moisture | Plastic and Liquid Limit | Undrained Triaxial at % Strain at Failure | Penetrometer



EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.09	
Aug 8, 2024	0.37	

exp.
New identity of Trow Associates Inc.

Log of Borehole 3 - 4

Project No. BRM-23015226-A0 | Drawing No. 5

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 25, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
			182.82	0
		TOPSOIL: 250 mm	~182.6	
		REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~182.1	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	~181.8	1
		oxidized		3
		turn grey		5
			~174.6	8
		END OF BOREHOLE Note: A 25mm diameter piezometer was installed upon completion		

SPT (N Value): 20 40 60 80
Shear Strength: 100 200 kPa
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Depth (m)	SPT (N)	Shear Strength	Natural Moisture
0	5		
1	27	>225 kPa	
2	28	>225 kPa	
2.5	43	>225 kPa	
3	44	>225 kPa	
5	15		
6	13	150 kPa	
8	33	>225 kPa	

Sample | Natural Unit Weight kN/m³: 23.4

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	2.96	
Aug 8, 2024	1.06	

exp.
New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 5

Project No. BRM-23015226-A0 Drawing No. 6

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 17, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m	Depth (m)
TOPSOIL: 100 mm	185.65	0
	~185.6	
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~185.0	
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, very stiff to hard.	~184.6	1
		2
		3
		4
---------- turn grey		5
		6
		7
	~177.4	8
END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		

SPT (N Value): 5, 27, 29, 38, 30, 23, 21, 23

Shear Strength (kPa): >225 kPa, >225 kPa, >225 kPa, >225 kPa, 200 kPa, >225 kPa

Natural Moisture Content % / Atterberg Limits (% Dry Weight)

Natural Unit Weight kN/m³: 23.5

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.64	
Aug 8, 2024	1.1	

exp.
New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 6

Project No. BRM-23015226-A0 Drawing No. 7

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 17, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Natural Unit Weight kN/m³
TOPSOIL: 150 mm	184.64	0	6		
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~184.5				
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	~183.9	1	23, >225 kPa		
		2	31, >225 kPa		
			36, >225 kPa		
		3	29, >225 kPa		22.7
turn grey		4			
		5	15		
		6	10		
		7	>100 kPa		
		8	20		
END OF BOREHOLE	~176.4				

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

exp.
New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 7

Project No. BRM-23015226-A0 | Drawing No. 8

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 21, 2024

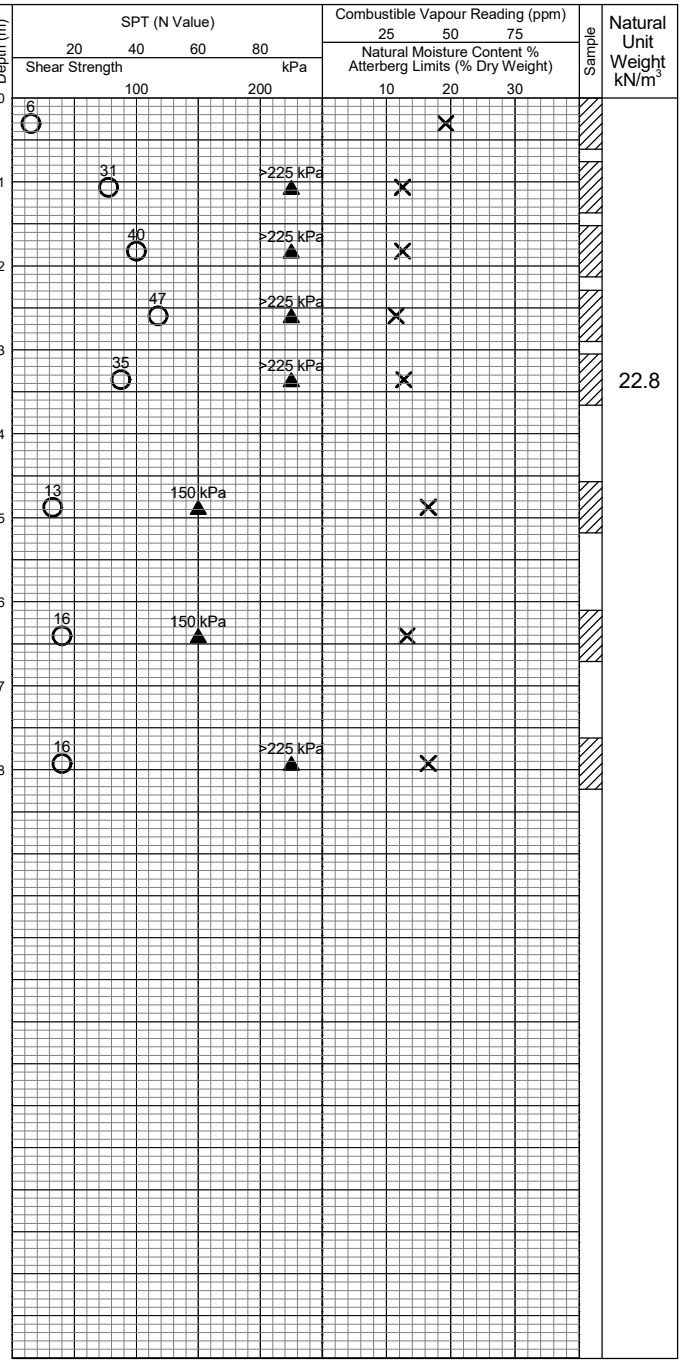
Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m
	184.53
TOPSOIL: 300 mm	~184.2
REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~183.8
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	
END OF BOREHOLE	~176.3



Natural Unit Weight kN/m³: 22.8

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 8

Project No. BRM-23015226-A0 | Drawing No. 9

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

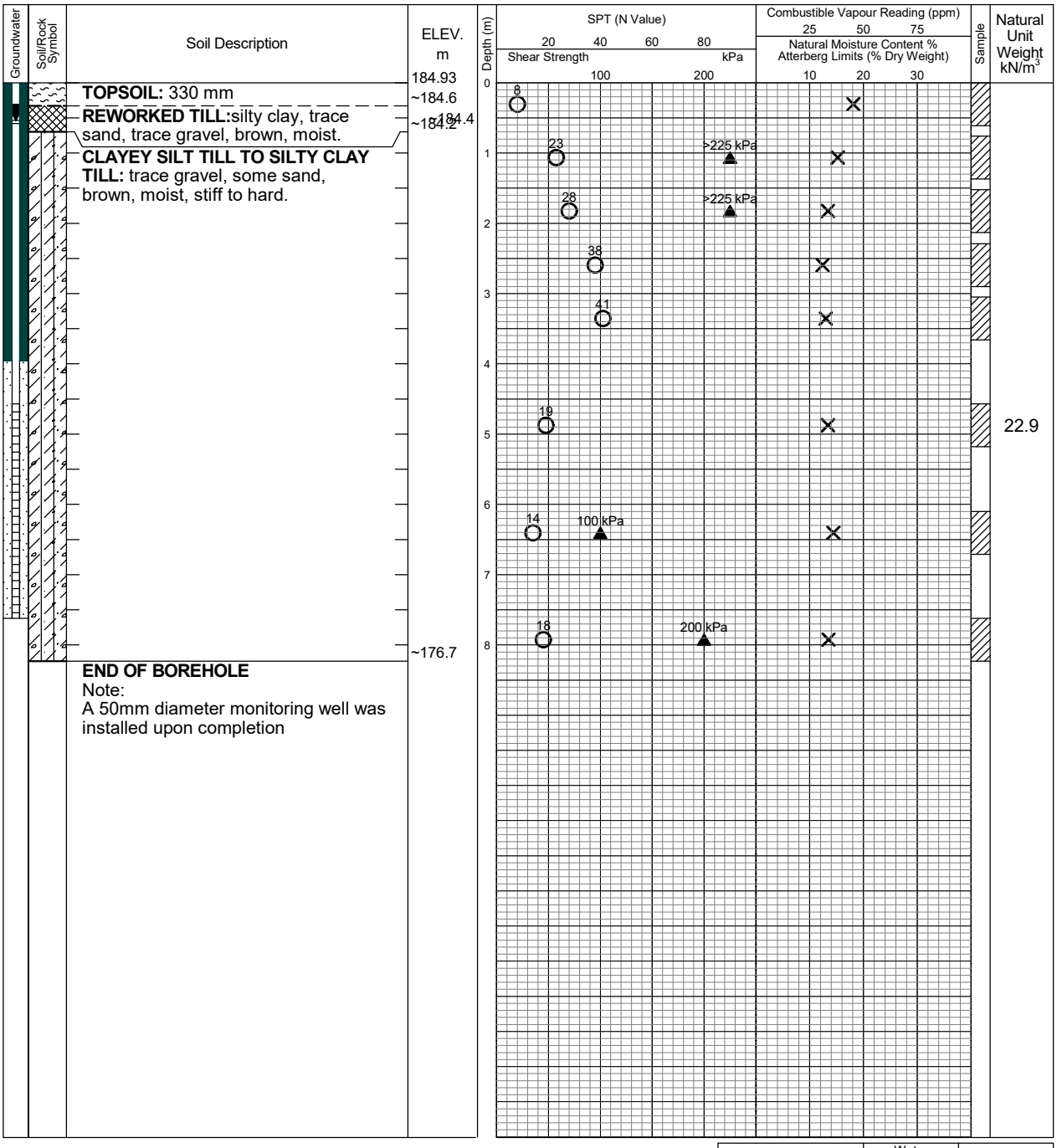
Date Drilled: June 20, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



TOPSOIL: 330 mm

REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.

CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.

END OF BOREHOLE

Note:
A 50mm diameter monitoring well was installed upon completion

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.37	
Aug 8, 2024	0.58	

New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 9

Project No. BRM-23015226-A0 | Drawing No. 10

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

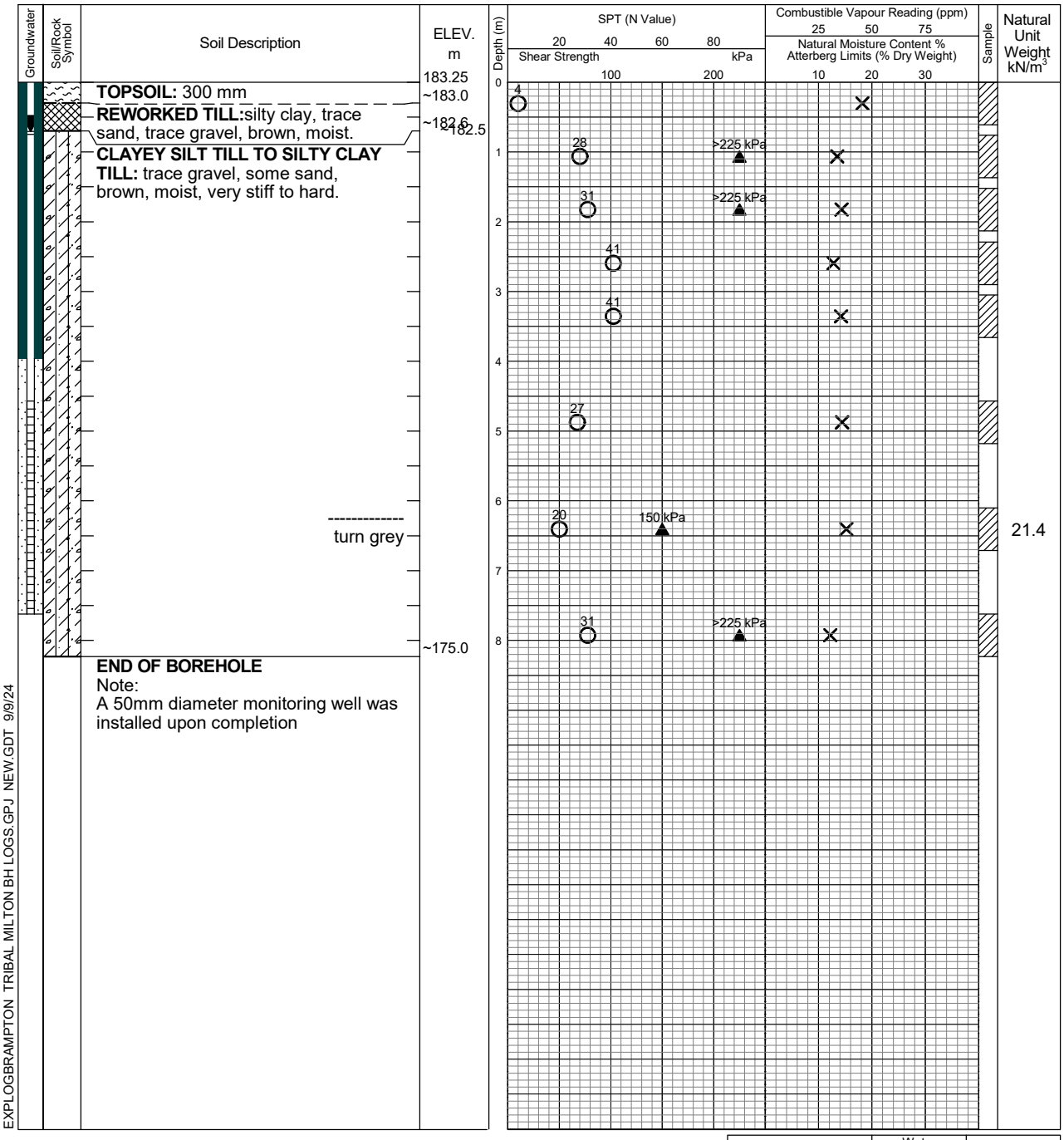
Date Drilled: June 25, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.14	
Aug 8, 2024	0.75	

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

New identity of Trow Associates Inc.

Log of Borehole 3 - 10

Project No. BRM-23015226-A0 Drawing No. 11

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 25, 2024

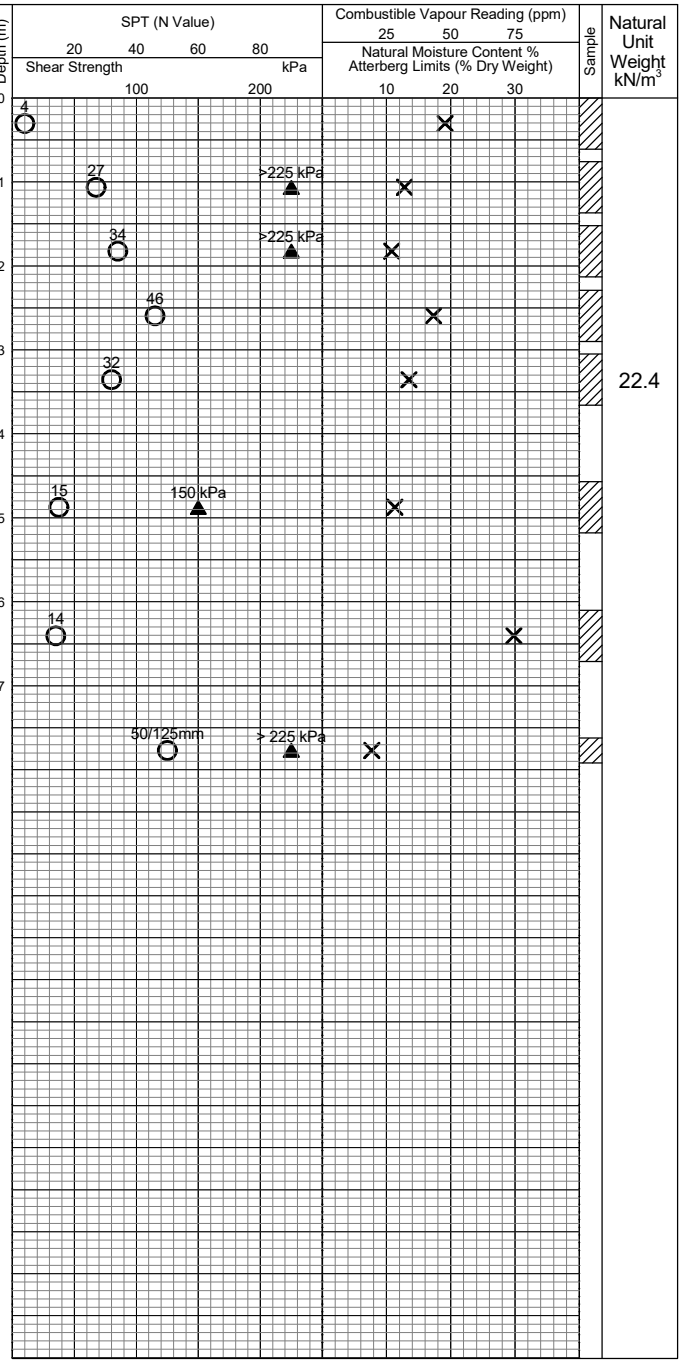
Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m
TOPSOIL: 230 mm	181.50
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~181.3
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	~180.8
turn grey	~177.3
END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion	~173.3



Natural Unit Weight kN/m³: 22.4

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.81	
Aug 8, 2024	4.18	

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EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 11

Project No. BRM-23015226-A0 Drawing No. 12

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 25, 2024

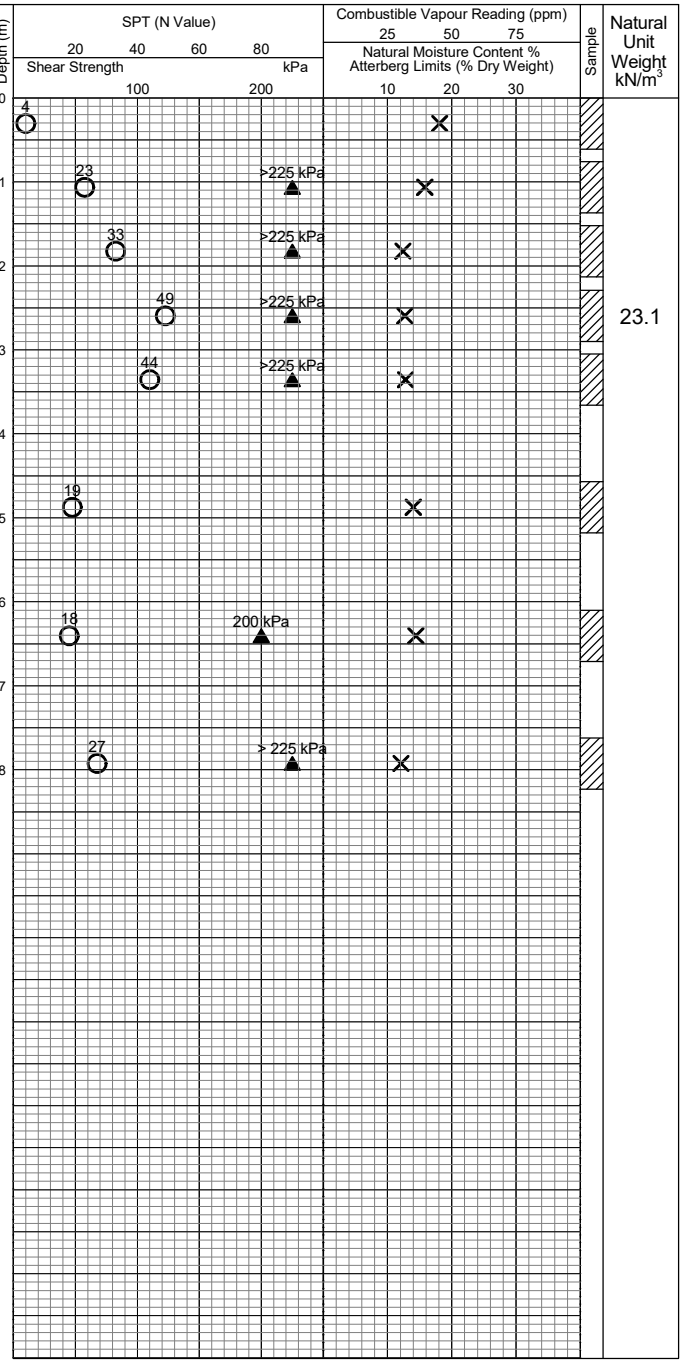
Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m
	183.42
TOPSOIL: 200 mm	~183.2
REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~182.7
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, very stiff to hard.	
turn grey	
rock fragments	~175.2
END OF BOREHOLE	



Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

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New identity of Trow Associates Inc.

Log of Borehole 3 - 12

Project No. BRM-23015226-A0 Drawing No. 13

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 18, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
		TOPSOIL: 100 mm	183.47	0
		REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~183.4	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, containing shale fragments, brown, moist, stiff to hard.	~182.8	
			~182.5	1
				2
				3
				4
				5
		turn grey		6
				7
			~175.2	8
		END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		

SPT (N Value): 20 40 60 80
Shear Strength kPa: 100 200
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Depth (m)	SPT (N)	Shear Strength kPa	Natural Moisture %
0	6		
1	26	>225 kPa	
2	31	>225 kPa	
2	37	>225 kPa	
3	22	>225 kPa	
4			
5	13	100 kPa	
6	17	200 kPa	
7			
8	62	>225 kPa	

Sample

Natural Unit Weight kN/m³: 22.3

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.63	
Aug 8, 2024	0.97	

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New identity of Trow Associates Inc.

Log of Borehole 3 - 13

Project No. BRM-23015226-A0 | Drawing No. 14

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 20, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
		TOPSOIL: 350 mm	185.36	0
		REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~185.0 ~184.8 ~184.7	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.		1 2 3 4 5 6 7
			~177.1	8
		END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		

SPT (N Value): 20 40 60 80
Shear Strength kPa: 100 200
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Depth (m)	SPT (N)	Shear Strength kPa	Natural Moisture %
0	19		
1	18	>225 kPa	
2	29	>225 kPa	
	34	>225 kPa	
3	23	>225 kPa	
4			
5	20		
6	100	50 kPa	
7			
8	18	>225 kPa	

Sample | Natural Unit Weight kN/m³: 23.0

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.32	
Aug 8, 2024	0.52	

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Log of Borehole 3 - 14

Project No. BRM-23015226-A0 Drawing No. 15

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 20, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
		TOPSOIL: 150 mm	185.36	0				
		REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~185.2					
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	~184.7	1	6			
		---------- oxidized		2	29 >225 kPa			
				3	31 >225 kPa			
				4	42 >225 kPa			
				5	36 >225 kPa			
				6	12 75 kPa			
				7	15			
				8	27 > 225 kPa			21.6
		END OF BOREHOLE	~177.1					

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 15

Project No. BRM-23015226-A0 Drawing No. 16

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 21, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
		TOPSOIL: 150 mm	184.29	0
		REWORKED TILL: silty clay, trace sand, trace gravel, trace root fragment, brown, moist.	~184.1	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, very stiff to hard.	~183.6	1
				2
				3
				4
				5
				6
				7
		END OF BOREHOLE	~176.1	8

SPT (N Value) 20 40 60 80
Shear Strength kPa 100 200

8
16 >225 kPa
32 >225 kPa
37 >225 kPa
34 >225 kPa
15 100 kPa
20
25 >225 kPa

Combustible Vapour Reading (ppm) 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight) 10 20 30

Sample

Natural Unit Weight kN/m³

23.0

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

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New identity of Trow Associates Inc.

Log of Borehole 3 - 16

Project No. BRM-23015226-A0 Drawing No. 17

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 18, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
			182.77	0
		TOPSOIL: 100 mm	~182.7	
		REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~182.1	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, containing shale fragments, brown, moist, very stiff to hard.		1
				2
				3
				4
				5
				6
		rock fragments		7
			~174.5	8
		END OF BOREHOLE		

SPT (N Value) — Shear Strength (kPa): 20 40 60 80 / 100 200

Combustible Vapour Reading (ppm): 25 50 75

Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Depth (m)	SPT (N)	Shear Strength (kPa)	Natural Moisture / Atterberg Limits (% Dry Weight)
0	7		
1	20	>225 kPa	
2	25	>225 kPa	
2	35	>225 kPa	
3	27	>225 kPa	
4			
5	16	75 kPa	
6	59		
8	62	>225 kPa	

Sample

Natural Unit Weight kN/m³: 22.2

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

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Log of Borehole 3 - 17

Project No. BRM-23015226-A0 | Drawing No. 18

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 18, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
		TOPSOIL: 100 mm	182.53	0
		REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~182.4	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, containing shale fragments, brown, moist, stiff to hard.	~182.0	
		---------- oxidized	~181.8	1
				2
				3
				4
		---------- turn grey		5
				6
				7
			~174.8	
		END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		

SPT (N Value) — Shear Strength kPa: 20 40 60 80 / 100 200

Combustible Vapour Reading (ppm): 25 50 75

Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Sample

Natural Unit Weight kN/m³: 23.2

Depth (m)	SPT (N)	Shear Strength (kPa)
0	7	
1	22	>225 kPa
2	27	>225 kPa
3	38	>225 kPa
3	23	>225 kPa
5	14	175 kPa
6	45	>225 kPa
7	50	

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.34	
Aug 8, 2024	0.53	

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New identity of Trow Associates Inc.

Log of Borehole 3 - 18

Project No. BRM-23015226-A0 Drawing No. 19

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

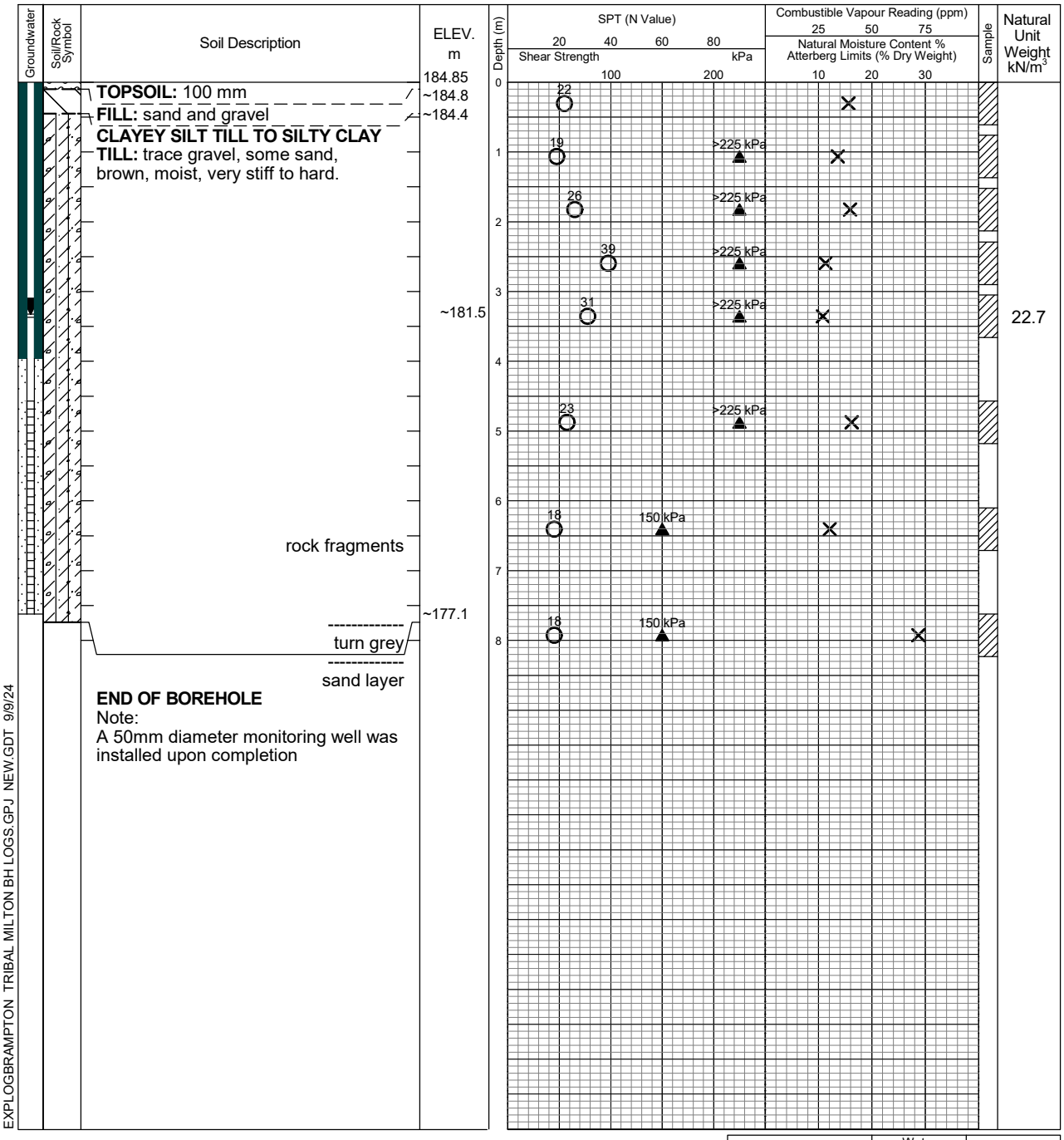
Date Drilled: June 21, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.63	
Aug 8, 2024	3.37	

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New identity of Trow Associates Inc.

Log of Borehole 3 - 19

Project No. BRM-23015226-A0 Drawing No. 20

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 26, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m	Depth (m)
	181.36	0
TOPSOIL: 200 mm	~181.2	
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~180.7	
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.		1
		2
		3
---------- turn grey		4
		5
		6
		7
	~173.6	8
END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		

SPT (N Value): 20 40 60 80
Shear Strength kPa: 100 200
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Depth (m)	SPT (N)	Shear Strength
0	5	
1	30	150 kPa
2	34	150 kPa
2	44	150 kPa
3	59	150 kPa
5	14	
6	11	150 kPa
8	35	> 225 kPa

Natural Unit Weight kN/m³: 23.6

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 20

Project No. BRM-23015226-A0 Drawing No. 21

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 19, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Natural Unit Weight kN/m³
TOPSOIL: 150 mm	180.66	0			
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~180.5				
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, containing shale fragments, brown, moist, stiff to hard.	~180.0	1	7		
		2	23, > 225 kPa		
		3	27, > 225 kPa		
		4	33, > 225 kPa		
		5	28, > 225 kPa		23.6
		6	14, > 225 kPa		
		7	78, > 225 kPa		
	~172.9	8	50/150mm, > 225 kPa		
END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion					

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	6.1	6.1
July 30, 2024	0.15	
Aug 8, 2024	0.18	

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New identity of Trow Associates Inc.

Log of Borehole 3 - 21

Project No. BRM-23015226-A0 | Drawing No. 22

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

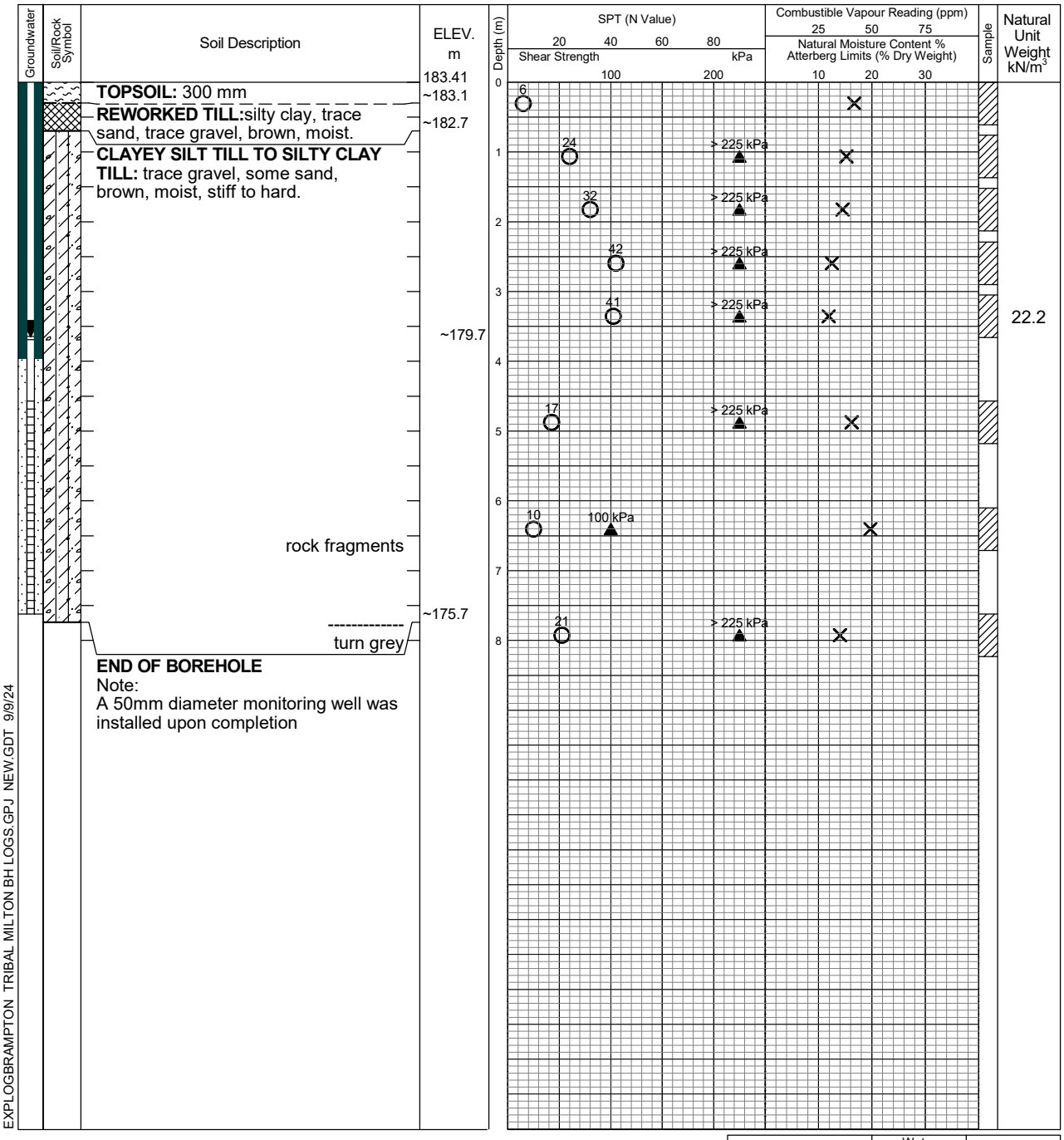
Date Drilled: June 21, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.79	
Aug 8, 2024	3.69	

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New identity of Trow Associates Inc.

Log of Borehole 3 - 22

Project No. BRM-23015226-A0 Drawing No. 23

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 26, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
			182.65	0
		TOPSOIL: 250 mm	~182.4	
		REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~182.0	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.		1
				2
				3
		---------- turn grey		4
				5
				6
				7
			~174.9	8
		END OF BOREHOLE		

SPT (N Value): 20 40 60 80
Shear Strength: 100 200 kPa
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Sample | Natural Unit Weight kN/m³

4 > 225 kPa
29 > 225 kPa
39 > 225 kPa
47 > 225 kPa
46 > 225 kPa
22.9
13 > 225 kPa
8
100 kPa
18
27 > 225 kPa

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

exp.
New identity of Trow Associates Inc.

Log of Borehole 3 - 23

Project No. BRM-23015226-A0 Drawing No. 24

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

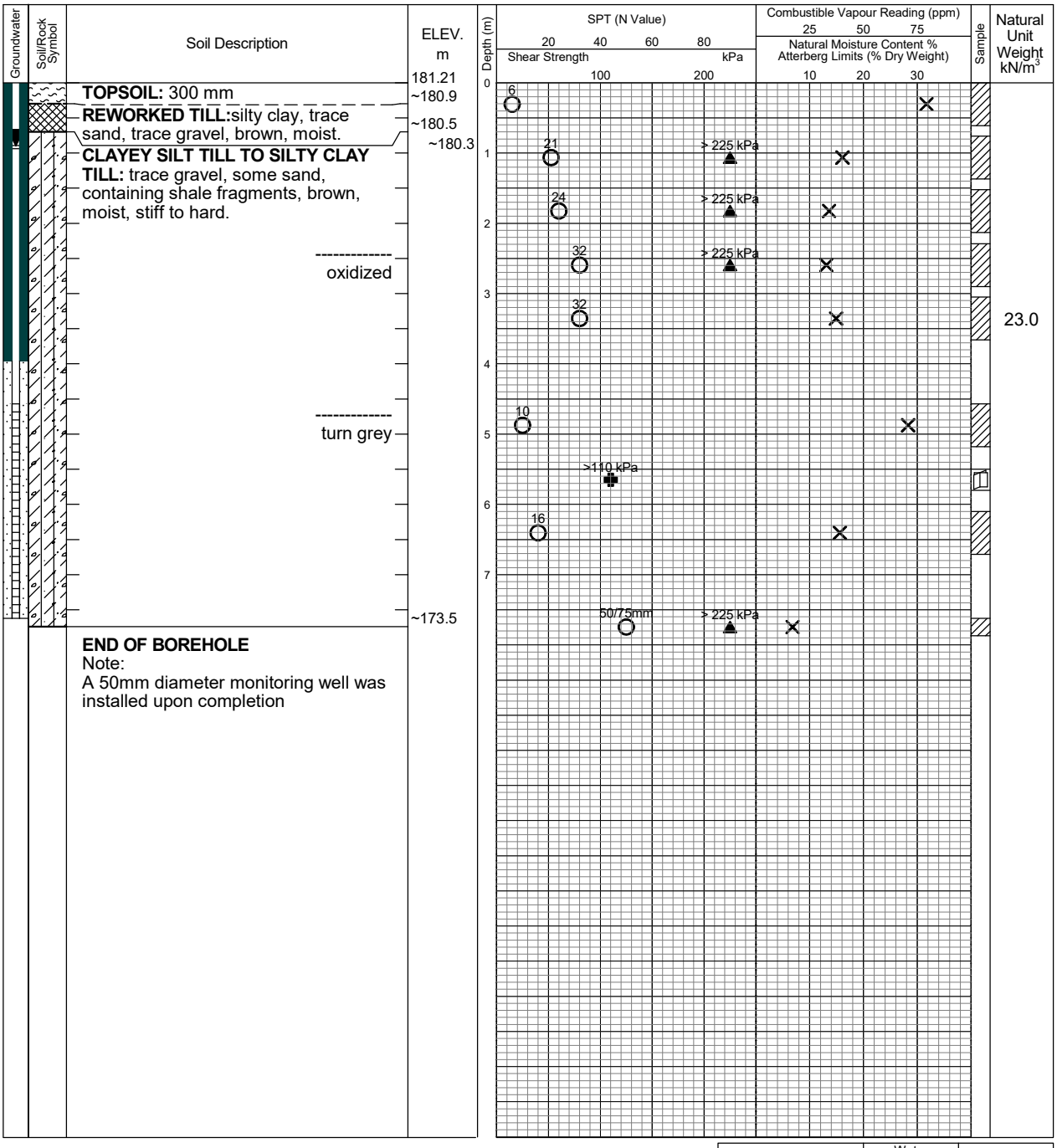
Date Drilled: June 19, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer



Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.66	
Aug 8, 2024	0.94	

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

New identity of Trow Associates Inc.

Log of Borehole 3 - 24

Project No. BRM-23015226-A0 Drawing No. 25

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 24, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
		TOPSOIL: 200 mm	181.51	0				
		REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~181.3					
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, very stiff to hard.	~180.8					
		---------- oxidized		1	24	> 225 kPa		
				2	33	> 225 kPa		
					36	> 225 kPa		
				3	34	> 225 kPa		23.3
		---------- turn grey		4				
				5	18	> 225 kPa		
				6	21	> 225 kPa		
				7				
			~173.8	8	30	> 225 kPa		
		END OF BOREHOLE						

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

exp.
New identity of Trow Associates Inc.

Log of Borehole 3 - 25

Project No. BRM-23015226-A0 Drawing No. 26

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 18, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
		TOPSOIL: 150 mm	179.82	0				
		REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~179.7 / ~179.5					
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, very stiff to hard.	~179.1	1	13; 15; > 225 kPa			
				2	31; 34; > 225 kPa			
				3	24; > 225 kPa			22.7
		---------- turn grey		4				
				5	23; > 225 kPa			
				6	42; > 225 kPa			
		---------- spoon wet	~171.6	7				
		END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		8	34; > 225 kPa			

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	7.46	Open
July 30, 2024	0.24	
Aug 8, 2024	0.32	

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

exp.
New identity of Trow Associates Inc.

Log of Borehole 3 - 26

Project No. BRM-23015226-A0 Drawing No. 27

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 24, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)
		TOPSOIL: 250 mm	182.72	0
			~182.5	
		REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~182.1	
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.		1
				2
				3
		turn grey		4
				5
				6
				7
			~175.0	8
		END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		

SPT (N Value): 20 40 60 80
Shear Strength: 100 200 kPa
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Depth (m)	SPT (N)	Shear Strength	Natural Moisture
0	6		
1	23	> 225 kPa	
2	32	> 225 kPa	
2	37	> 225 kPa	
3	32	> 225 kPa	
5	12	100 kPa	
6	17		
8	29	> 225 kPa	

Sample

Natural Unit Weight kN/m³: 22.5

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.40	
Aug 8, 2024	0.66	

New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 27

Project No. BRM-23015226-A0 | Drawing No. 28

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 26, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample | SPT (N) Value | Dynamic Cone Test | Shelby Tube | Field Vane Test (S)

Combustible Vapour Reading | Natural Moisture | Plastic and Liquid Limit | Undrained Triaxial at % Strain at Failure | Penetrometer

Soil Description	ELEV. m	Depth (m)
	181.92	0
TOPSOIL:200 mm	~181.7	
REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~181.2	
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.		1
		2
		3
turn grey		4
	~176.0	5
		6
		7
	~174.2	8
rock fragments		
END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		

SPT (N Value): 4, 21, 30, 42, 40, 10, 13, 32

Shear Strength (kPa): > 225 kPa; >110 kPa

Combustible Vapour Reading (ppm) 25 50 75

Natural Moisture Content % Atterberg Limits (% Dry Weight) 10 20 30

Natural Unit Weight kN/m³: 23.5

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	3.89	
Aug 8, 2024	5.94	

exp.

New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 28

Project No. BRM-23015226-A0 | Drawing No. 29

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 27, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m	Depth (m)
TOPSOIL: 200 mm	180.33	0
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~180.1	
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	~179.6	1
oxidized	~177.9	2
turn grey		3
sand layer		4
		5
		6
	~172.6	7
END OF BOREHOLE Note: A 50mm diameter monitoring well was installed upon completion		8

SPT (N Value): 5, 25, 28, 40, 31, 15, 11, 37
Shear Strength (kPa): > 225 kPa; 100 kPa
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30
Sample
Natural Unit Weight kN/m³

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.88	
Aug 8, 2024	2.41	

exp.
New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 29

Project No. BRM-23015226-A0 | Drawing No. 30

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 19, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
		TOPSOIL: 200 mm	180.54	0	7			
		REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~180.3					
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, very stiff to hard.	~179.8	1	21, > 225 kPa			
				2	25, > 225 kPa; 38, > 225 kPa			
		oxidized		3	34, > 225 kPa			
				4				
				5	15, 175 kPa			23.5
				6	16, 150 kPa			
			~172.8	7				
		sand and gravel layer		8	35, > 225 kPa			
		END OF BOREHOLE						
		Note: A 25mm diameter piezometer was installed upon completion						

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.51	
Aug 8, 2024	0.6	

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Log of Borehole 3 - 30

Project No. BRM-23015226-A0 Drawing No. 31

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 19, 2024

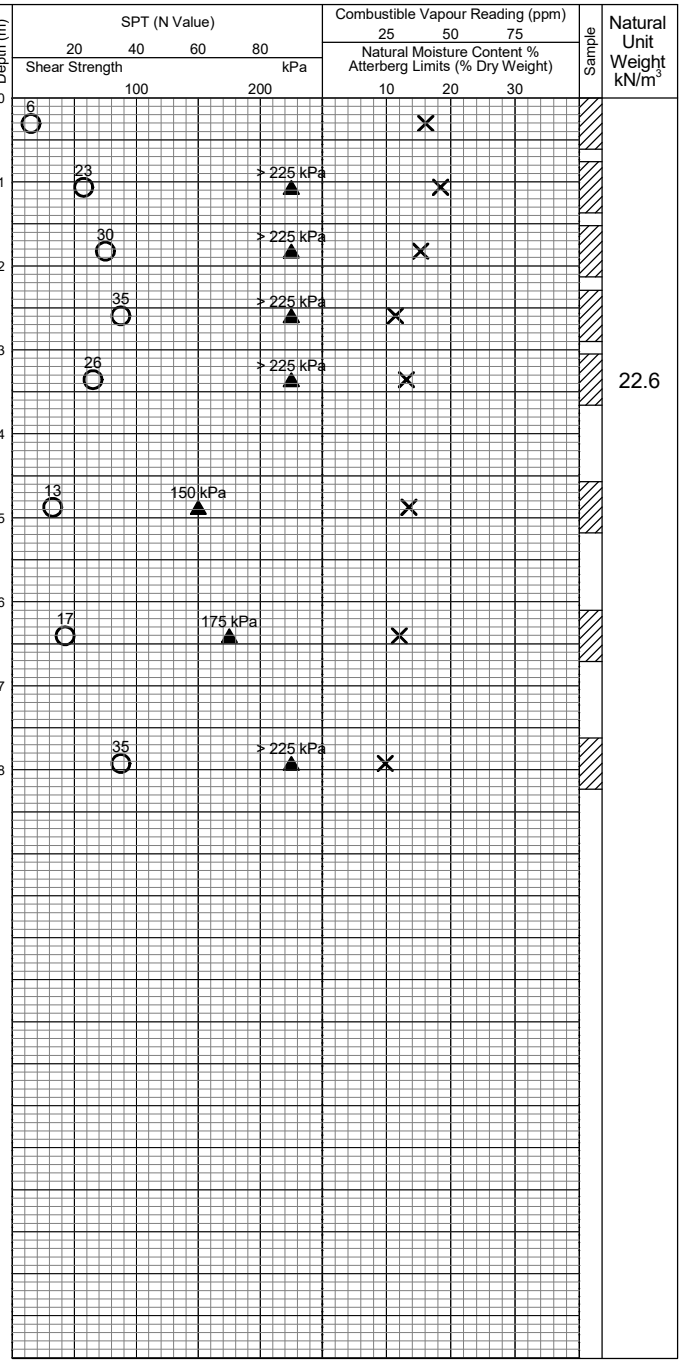
Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m
			181.12
		TOPSOIL: 150 mm	~181.0
		REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~180.4
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	
		oxidized	
			~173.4
		END OF BOREHOLE	



Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

exp.
New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 31

Project No. BRM-23015226-A0 Drawing No. 32

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 24, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m	Depth (m)	Sample	Natural Unit Weight kN/m³
TOPSOIL: 250 mm	182.10	0		
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~181.9			
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	~181.4			
oxidized				
turn grey				22.6
END OF BOREHOLE	~174.4	8		

SPT (N Value) / Shear Strength (kPa): 5; 28 > 225 kPa; 31 > 225 kPa; 37 > 225 kPa; 37 > 225 kPa; 14 100 kPa; 12 100 kPa; 24 200 kPa

Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

exp.
New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 32

Project No. BRM-23015226-A0 Drawing No. 33

Project: Geotechnical and Hydrogeoligical Investigation Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 26, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Groundwater	Soil/Rock Symbol	Soil Description	ELEV. m	Depth (m)	SPT (N Value) / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	Sample	Natural Unit Weight kN/m³
		TOPSOIL: 150 mm	180.54	0				
		REWORKED TILL:silty clay, trace sand, trace gravel, brown, moist.	~180.4					
		CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, brown, moist, stiff to hard.	~179.8	1	4			
		---------- oxidized		2	29 > 225 kPa			
				3	36 > 225 kPa			
				4	44 > 225 kPa			
		---------- turn grey		5	40 > 225 kPa			22.2
				6	15			
				7	14 100 kPa			
			~172.8	8	38 > 225 kPa			
		END OF BOREHOLE						

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open

New identity of Trow Associates Inc.

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

Log of Borehole 3 - 33

Project No. BRM-23015226-A0 | Drawing No. 34

Project: Geotechnical and Hydrogeoligical Investigation | Sheet No. 1 of 1

Location: Britannia rd and First line, Milton (Phase 3)

See Borehole Location Plan

Date Drilled: June 27, 2024

Drill Type: Solid Auger 110mm

Datum: Geodetic

Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Combustible Vapour Reading
Natural Moisture
Plastic and Liquid Limit
Undrained Triaxial at % Strain at Failure
Penetrometer

Soil Description	ELEV. m	Depth (m)
TOPSOIL: 250 mm	179.15 ~178.9	0
REWORKED TILL: silty clay, trace sand, trace gravel, brown, moist.	~178.5	
CLAYEY SILT TILL TO SILTY CLAY TILL: trace gravel, some sand, containing shale fragments, brown, moist, very stiff to hard.	~178.2	1
turn grey		5
sand layer		6
END OF BOREHOLE Note: A 25mm diameter piezometer was installed upon completion	~171.2	8

SPT (N Value): 20 40 60 80 | Shear Strength kPa: 100 200
Combustible Vapour Reading (ppm): 25 50 75
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

5, 27, 33, 45, 40, 21, 16, 81/225mm

> 225 kPa
175 kPa
225 kPa

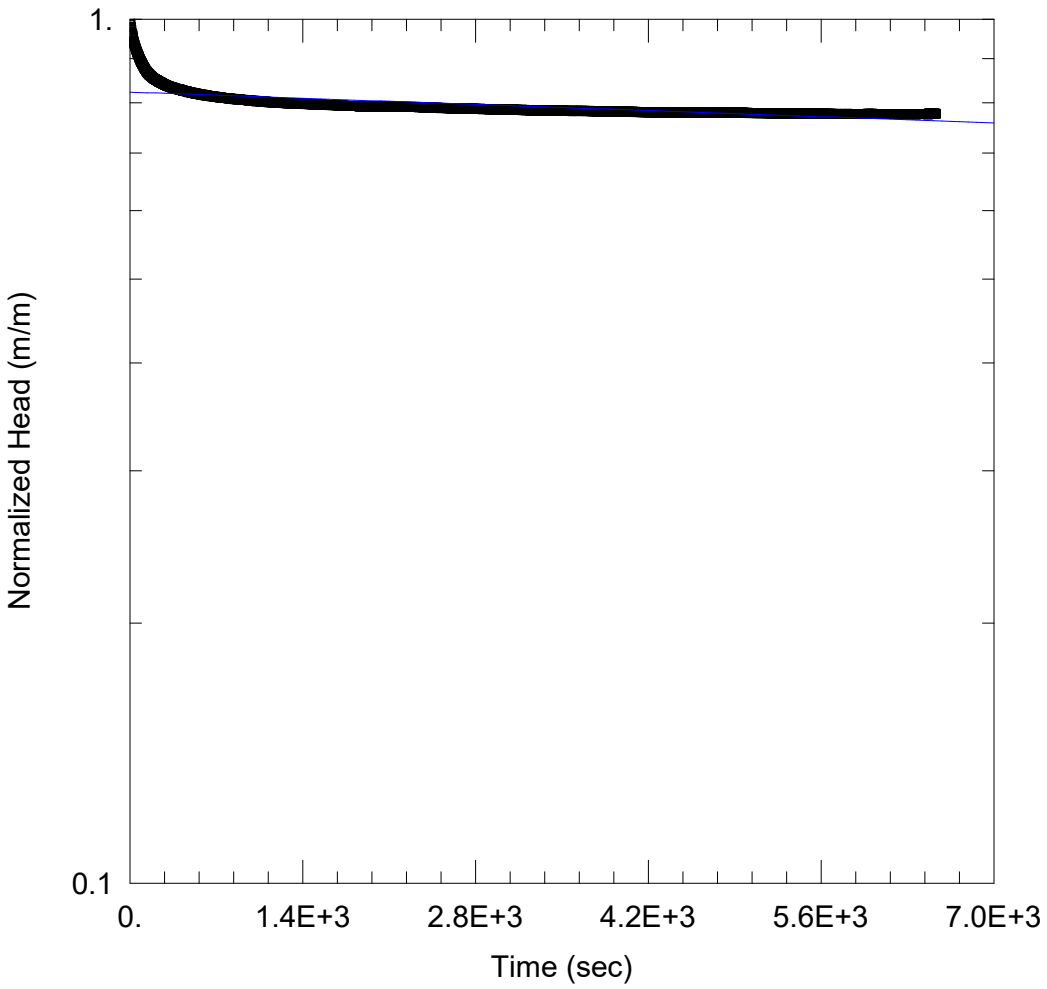
Sample | Natural Unit Weight kN/m³

Elapsed Time	Water Level (m)	Hole Open to (m)
Upon Completion	Dry	Open
July 30, 2024	0.96	
Aug 8, 2024	0.96	

EXPLOGBRAMPTON TRIBAL MILTON BH LOGS.GPJ NEW.GDT 9/9/24

New identity of Trow Associates Inc.

Appendix C – SWRT Procedures and Results



BH 3-2 RISING HEAD

Data Set: \...\BH 3-2.aqt
Date: 09/20/24 Time: 12:03:41

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-2 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

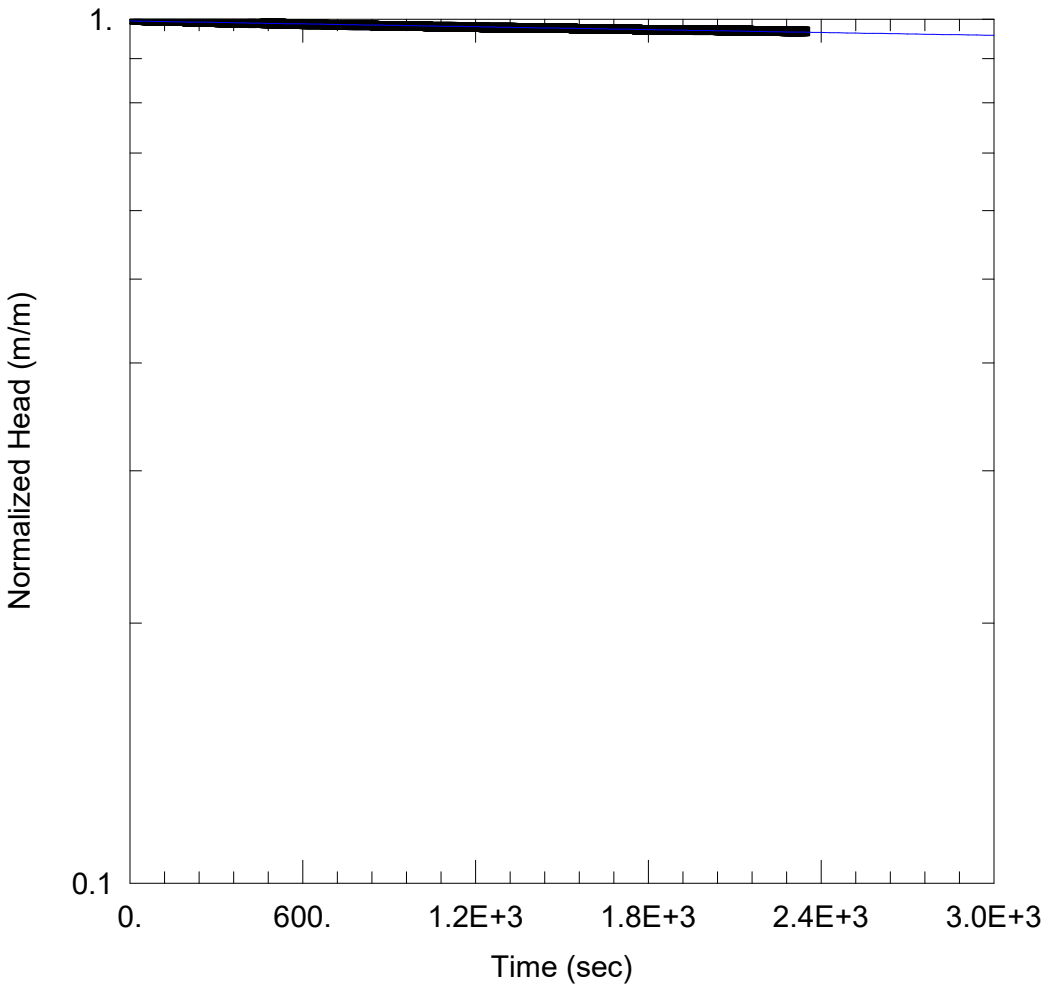
Saturated Thickness: 2020. m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-2 Rising Head)

Initial Displacement: 1. m
Total Well Penetration Depth: 3. m
Casing Radius: 0.0254 m
Static Water Column Height: 2.02 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 4.629E-9 m/sec
y0 = 0.8232 m



BH 3-3 RISING HEAD

Data Set: \...\BH 3-3.aqt
Date: 09/20/24 Time: 12:03:13

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-3 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

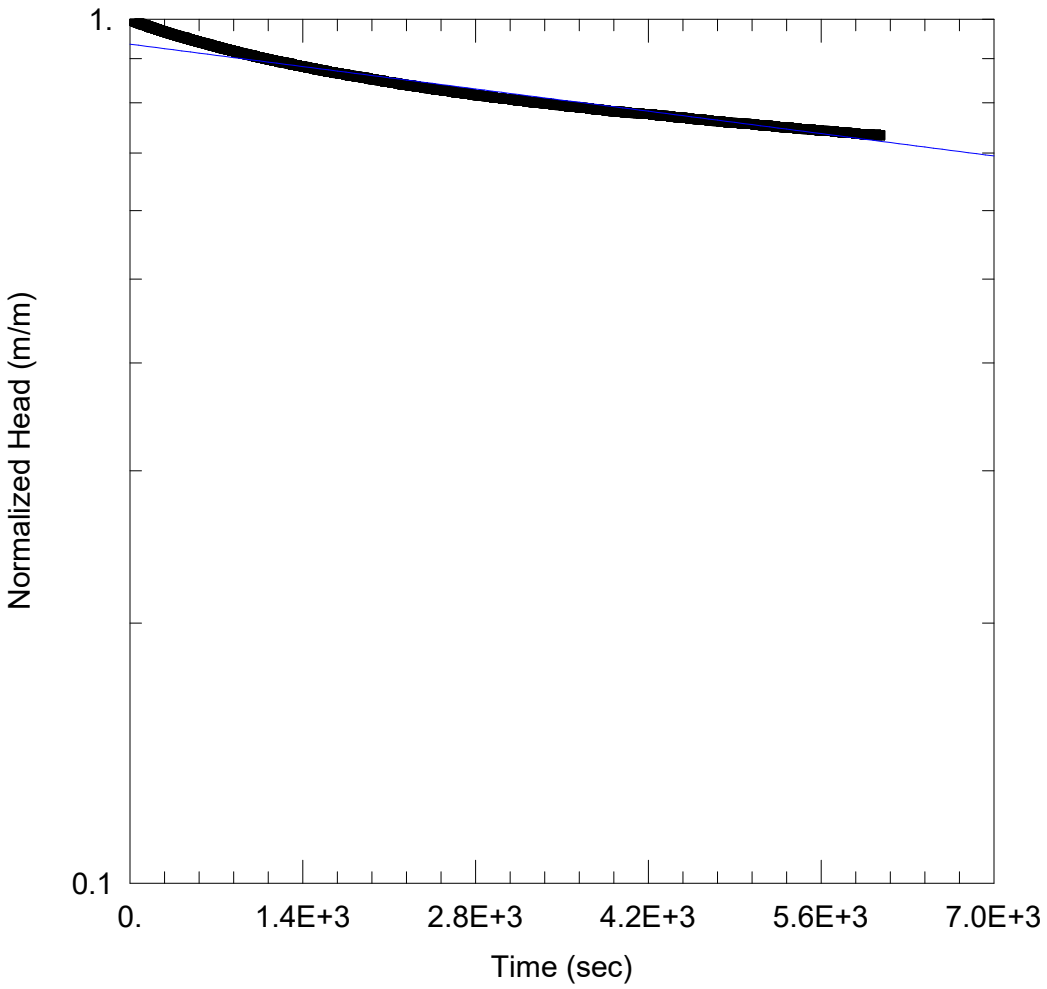
Saturated Thickness: 7.19 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-3 Rising Head)

Initial Displacement: 2.583 m
Total Well Penetration Depth: 7.19 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.19 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 5.985E-9 m/sec
y0 = 2.57 m



BH 3-5 RISING HEAD

Data Set: \...\BH 3-5.aqt
Date: 09/20/24 Time: 12:12:55

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-5 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

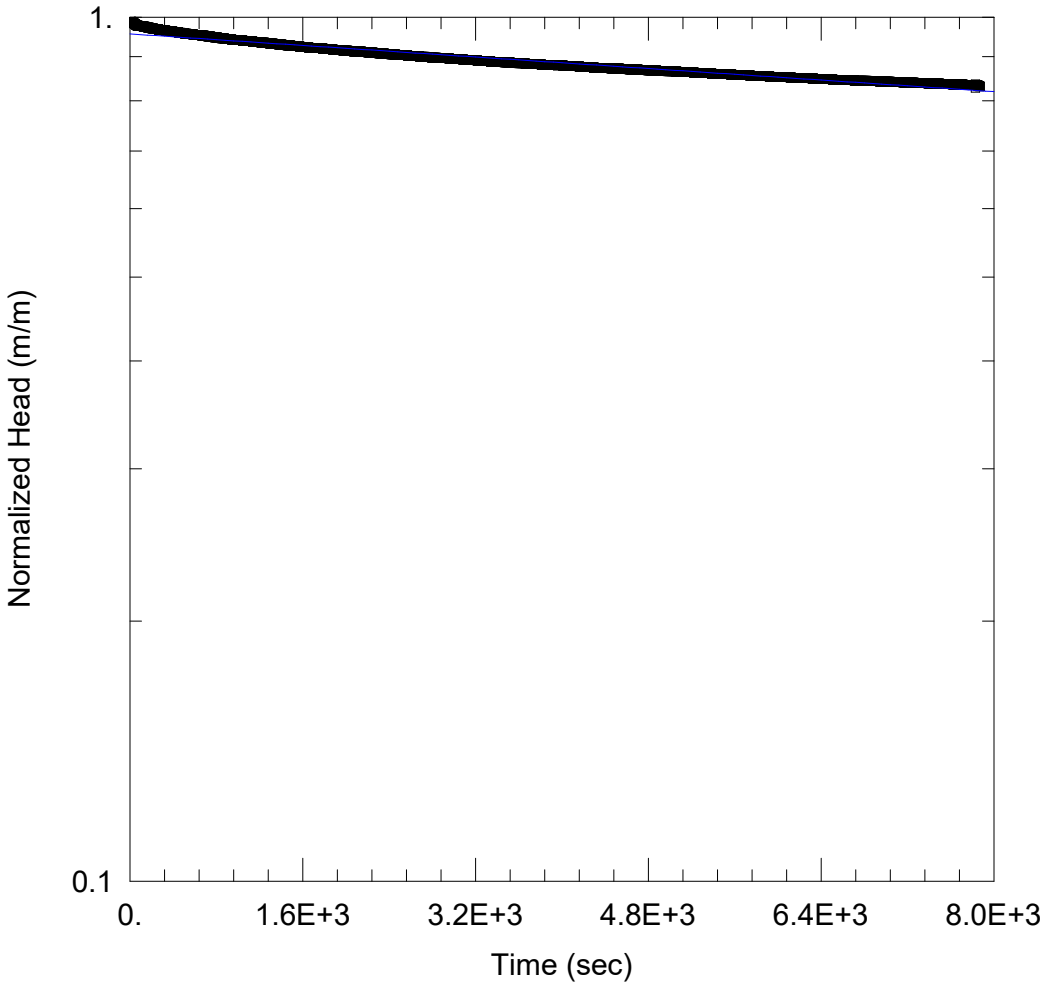
Saturated Thickness: 6.64 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-5 Rising Head)

Initial Displacement: 2.367 m
Total Well Penetration Depth: 6.64 m
Casing Radius: 0.0254 m
Static Water Column Height: 6.64 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 2.0E-8 m/sec
y0 = 2.214 m



BH 3-8 RISING HEAD

Data Set: \...\BH 3-8.aqt
Date: 09/20/24 Time: 12:11:05

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-8 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

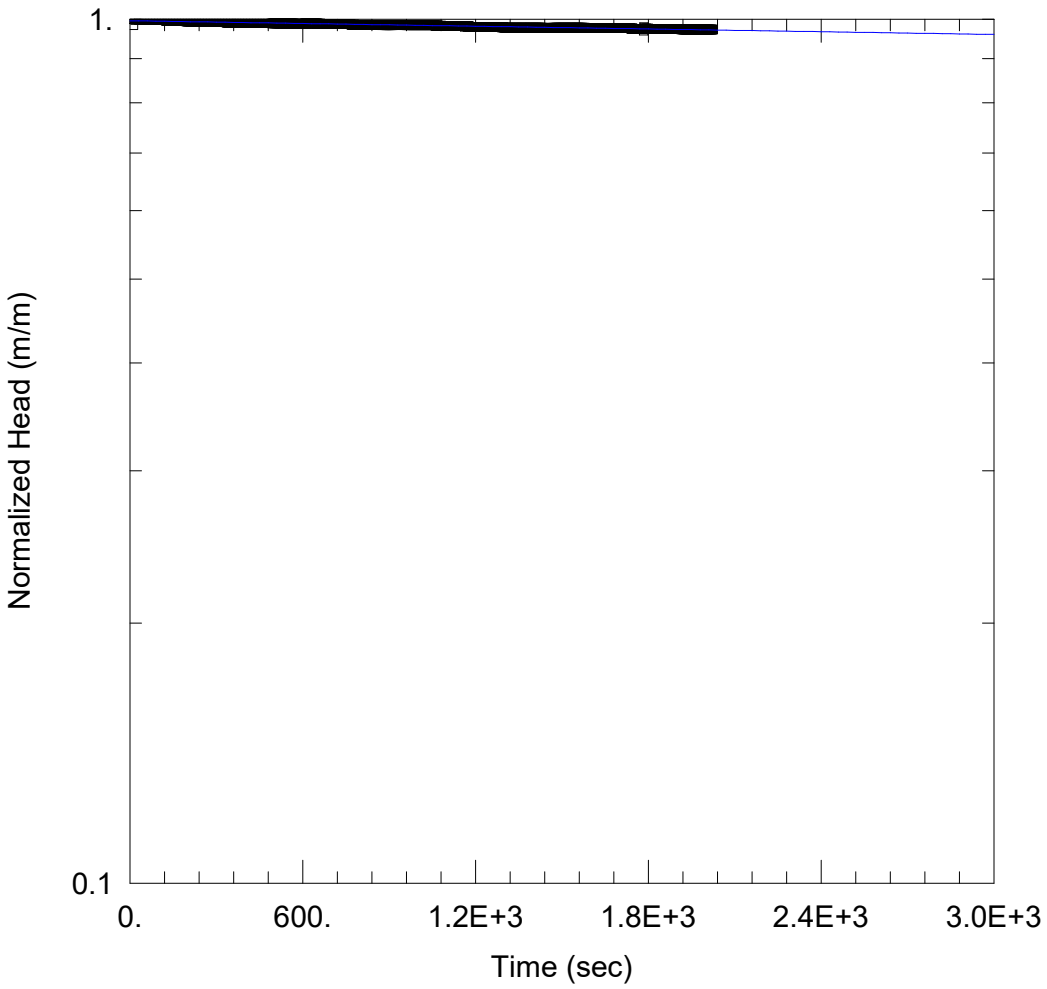
Saturated Thickness: 7. m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-8 Rising Head)

Initial Displacement: 2.736 m
Total Well Penetration Depth: 7. m
Casing Radius: 0.0254 m
Static Water Column Height: 7. m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 9.024E-9 m/sec
y0 = 2.616 m



BH 3-9 RISING HEAD

Data Set: \...\BH 3-9.aqt
Date: 09/20/24 Time: 12:10:38

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-9 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

Saturated Thickness: 6.88 m Anisotropy Ratio (Kz/Kr): 1.

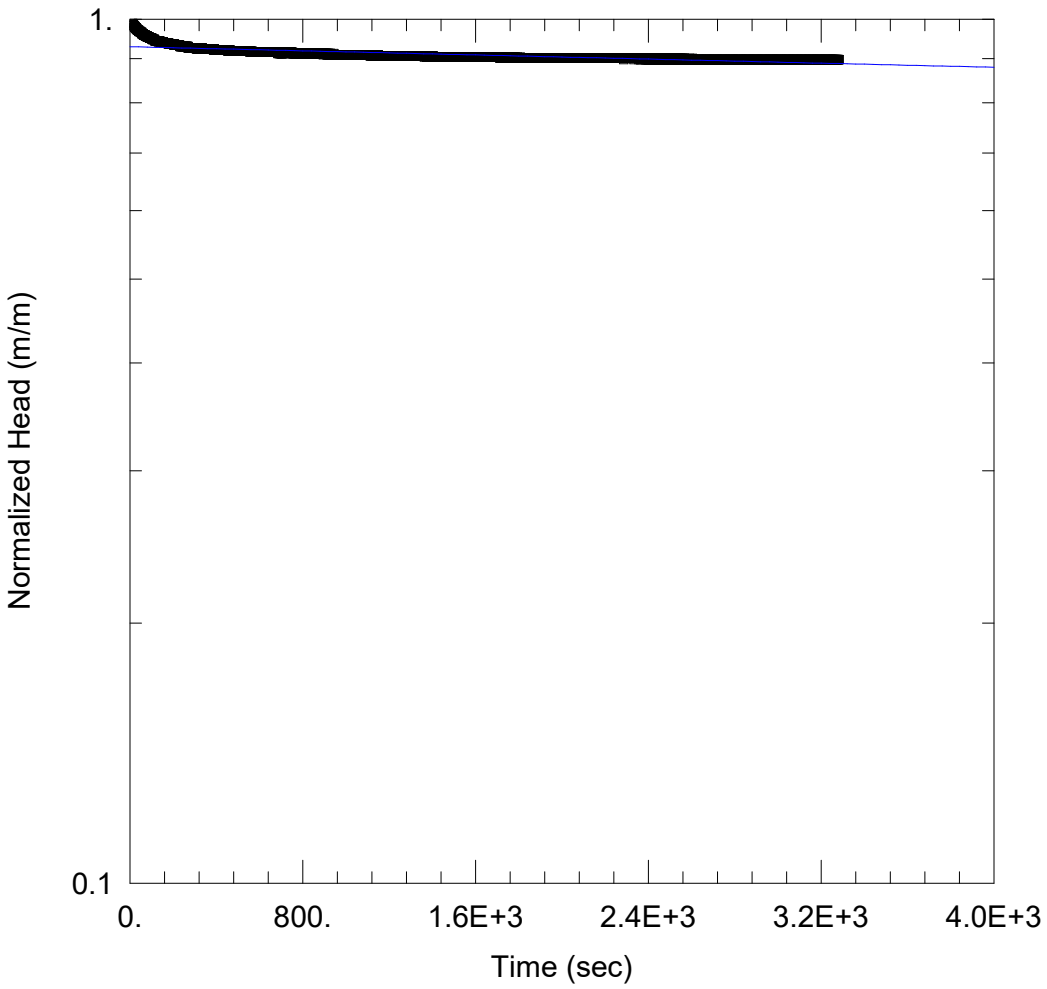
WELL DATA (BH 3-9 Rising Head)

Initial Displacement: 1.776 m
Total Well Penetration Depth: 6.88 m
Casing Radius: 0.0254 m
Static Water Column Height: 6.88 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 5.714E-9 m/sec y0 = 1.768 m



BH 3-10 RISING HEAD

Data Set: \...\BH 3-10.aqt
Date: 09/20/24 Time: 12:10:09

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-10 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

Saturated Thickness: 3.36 m Anisotropy Ratio (Kz/Kr): 1.

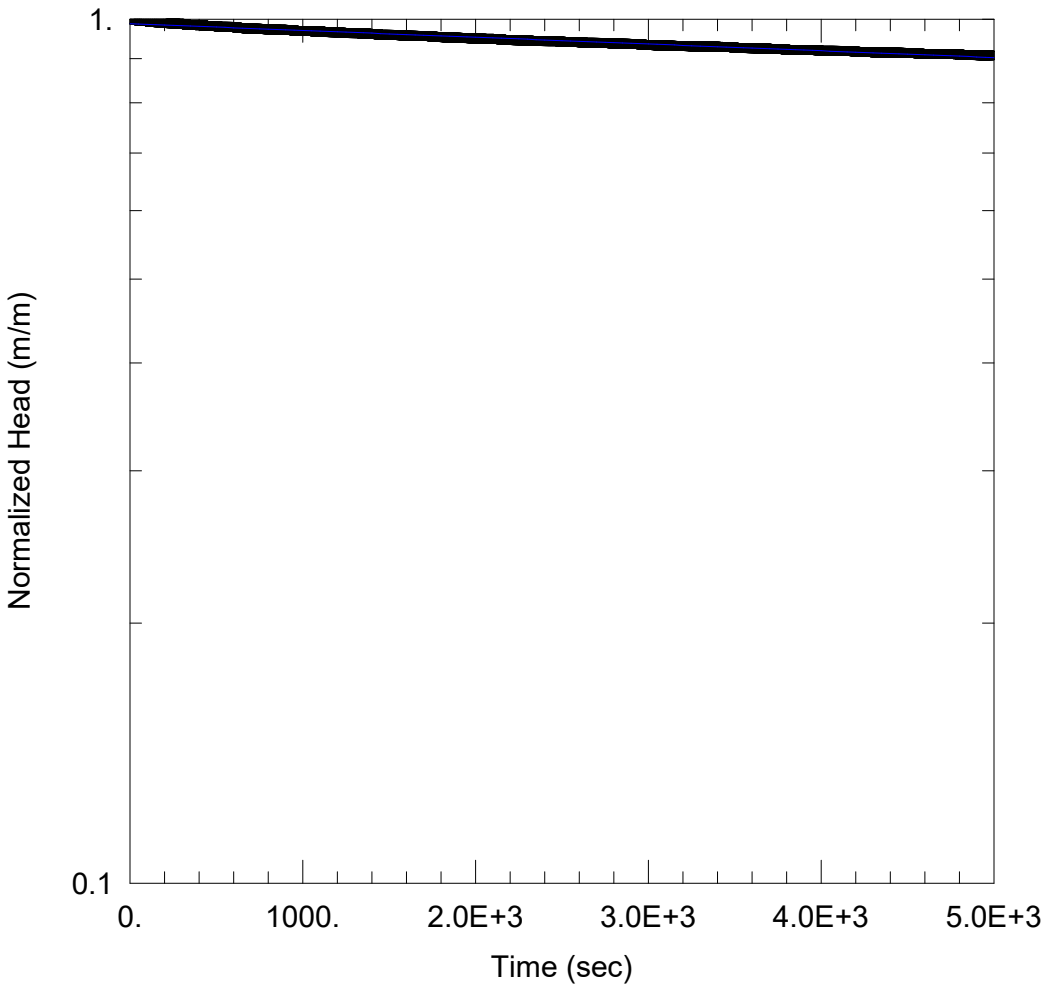
WELL DATA (BH 3-10 Rising Head)

Initial Displacement: 1.026 m
Total Well Penetration Depth: 3.36 m
Casing Radius: 0.0254 m
Static Water Column Height: 3.36 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 6.434E-9 m/sec y0 = 0.9532 m



BH 3-12 RISING HEAD

Data Set: \...\BH 3-12.aqt
Date: 09/20/24 Time: 12:09:38

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-12 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

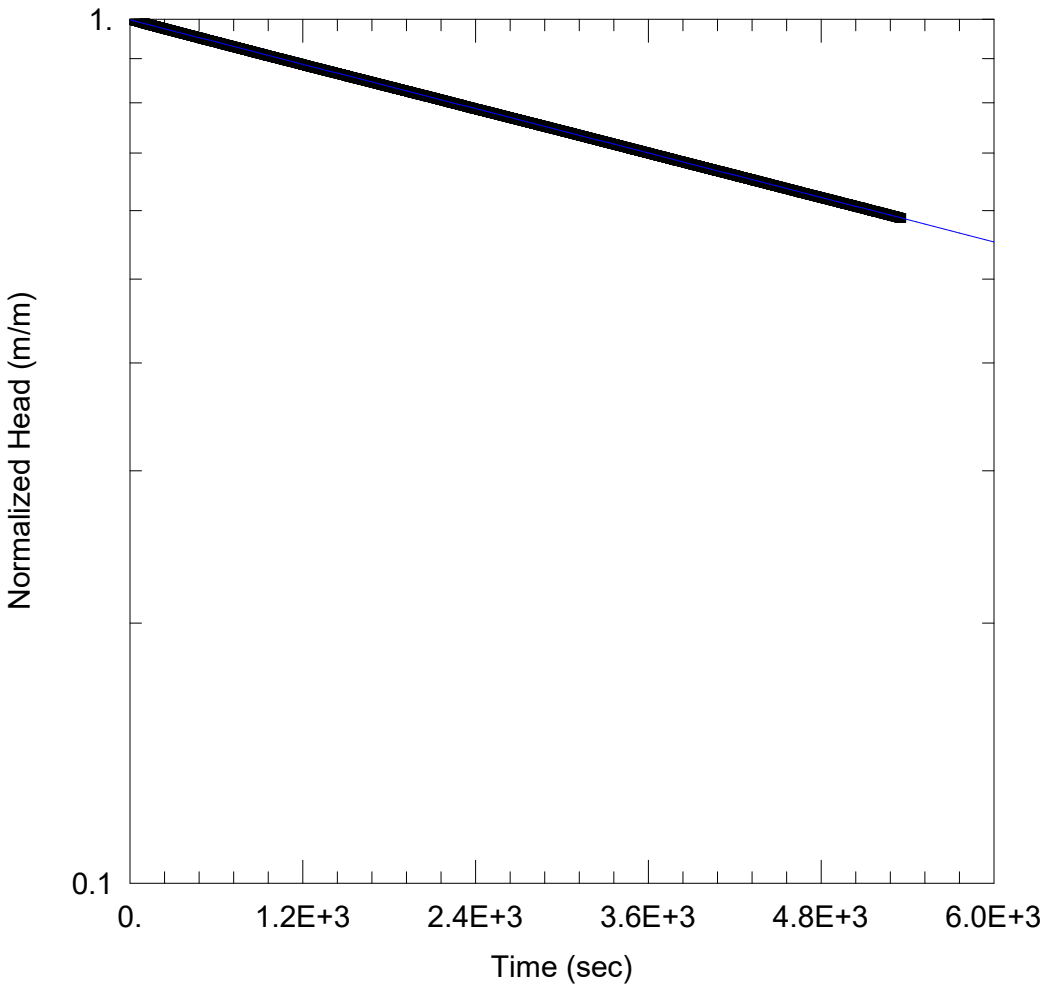
Saturated Thickness: 6.44 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-12 Rising Head)

Initial Displacement: 2.079 m
Total Well Penetration Depth: 6.44 m
Casing Radius: 0.0254 m
Static Water Column Height: 6.44 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 7.128E-9 m/sec
y0 = 2.054 m



BH 3-13 RISING HEAD

Data Set: \...\BH 3-13.aqt
Date: 09/20/24 Time: 12:09:11

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-13 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

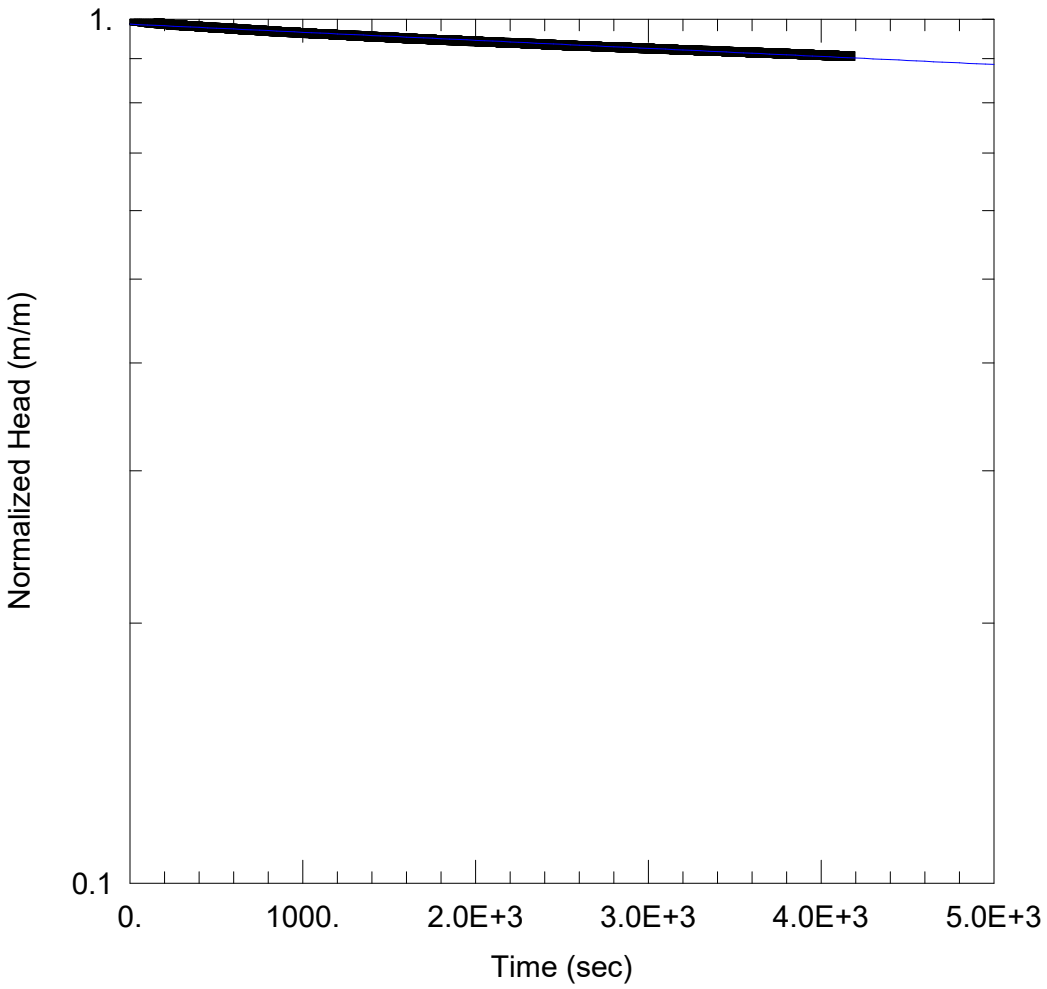
Saturated Thickness: 7.08 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-13 Rising Head)

Initial Displacement: 4.047 m
Total Well Penetration Depth: 7.08 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.08 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 4.628E-8 m/sec
y0 = 4.038 m



BH 3-17 RISING HEAD

Data Set: \...\BH 3-17.aqt
Date: 09/20/24 Time: 12:08:49

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-17 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

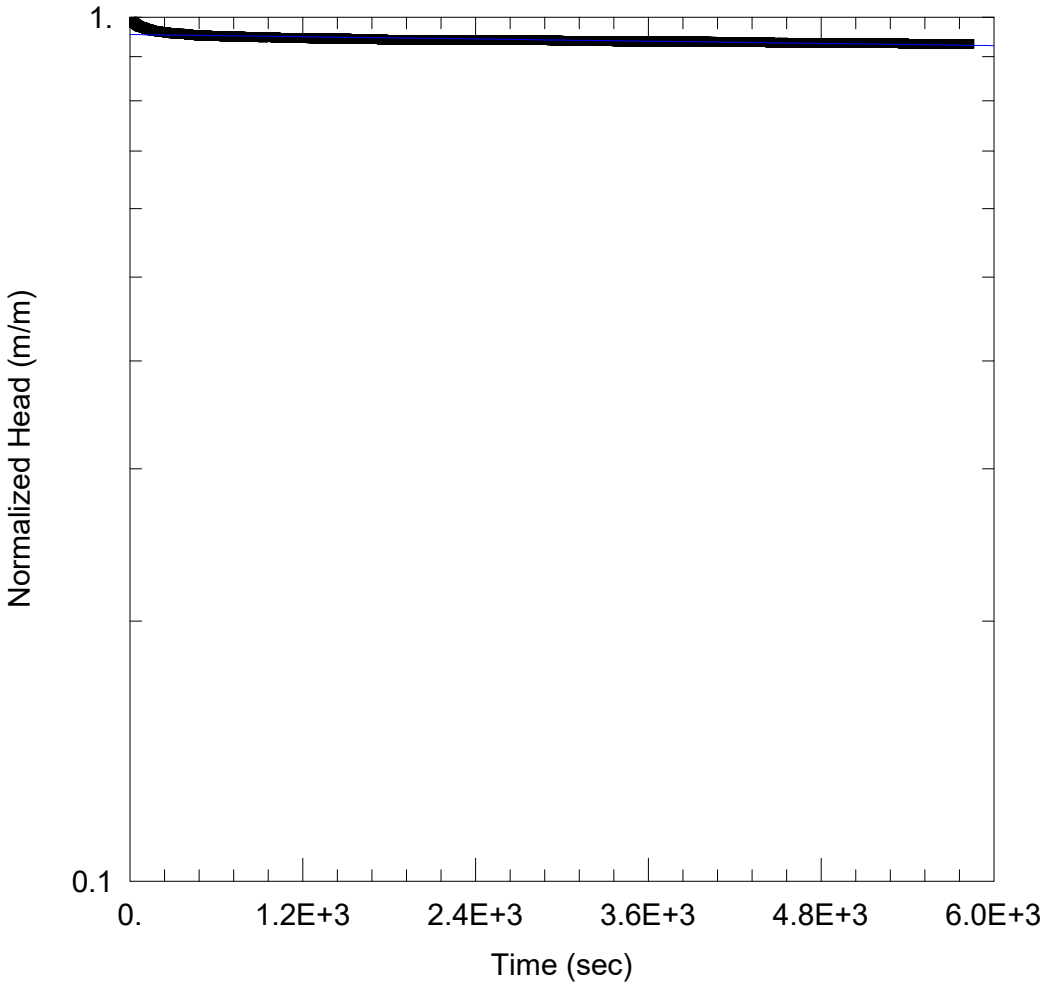
Saturated Thickness: 6.72 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-17 Rising Head)

Initial Displacement: 2.22 m
Total Well Penetration Depth: 6.72 m
Casing Radius: 0.0254 m
Static Water Column Height: 6.72 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 1.009E-8 m/sec
y0 = 2.19 m



BH 3-18 RISING HEAD

Data Set: \...\BH 3-18.aqt
Date: 09/20/24 Time: 12:08:20

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-18 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

Saturated Thickness: 4.18 m Anisotropy Ratio (Kz/Kr): 1.

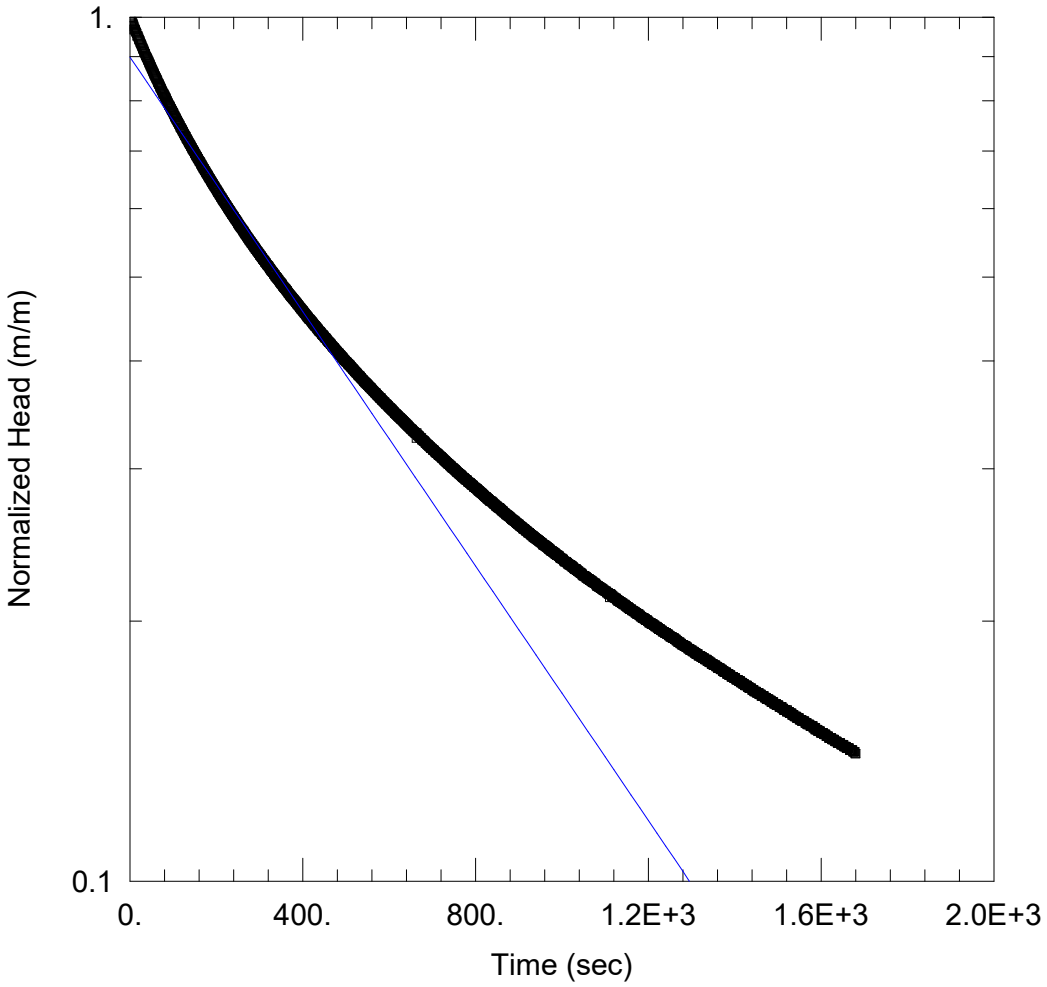
WELL DATA (BH 3-18 Rising Head)

Initial Displacement: 1.956 m
Total Well Penetration Depth: 4.18 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.18 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.312E-9 m/sec y0 = 1.867 m



BH 3-20 RISING HEAD

Data Set: \...\BH 3-20.aqt
Date: 09/20/24 Time: 12:07:49

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-20 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

Saturated Thickness: 7.24 m Anisotropy Ratio (Kz/Kr): 1.

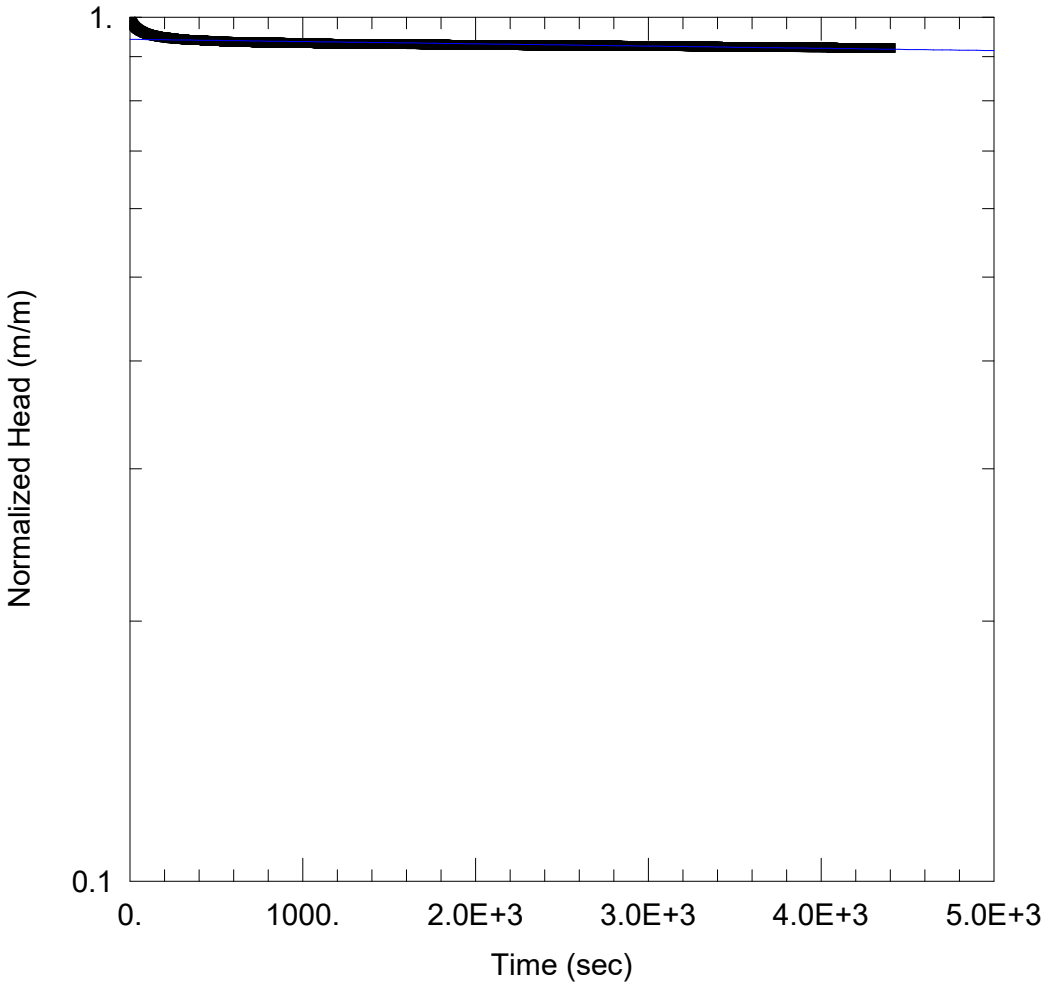
WELL DATA (BH 3-20 Rising Head)

Initial Displacement: 1.502 m
Total Well Penetration Depth: 7.24 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.24 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 7.959E-7 m/sec y0 = 1.35 m



BH 3-21 RISING HEAD

Data Set: \...\BH 3-21.aqt
Date: 09/20/24 Time: 12:06:56

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-21 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

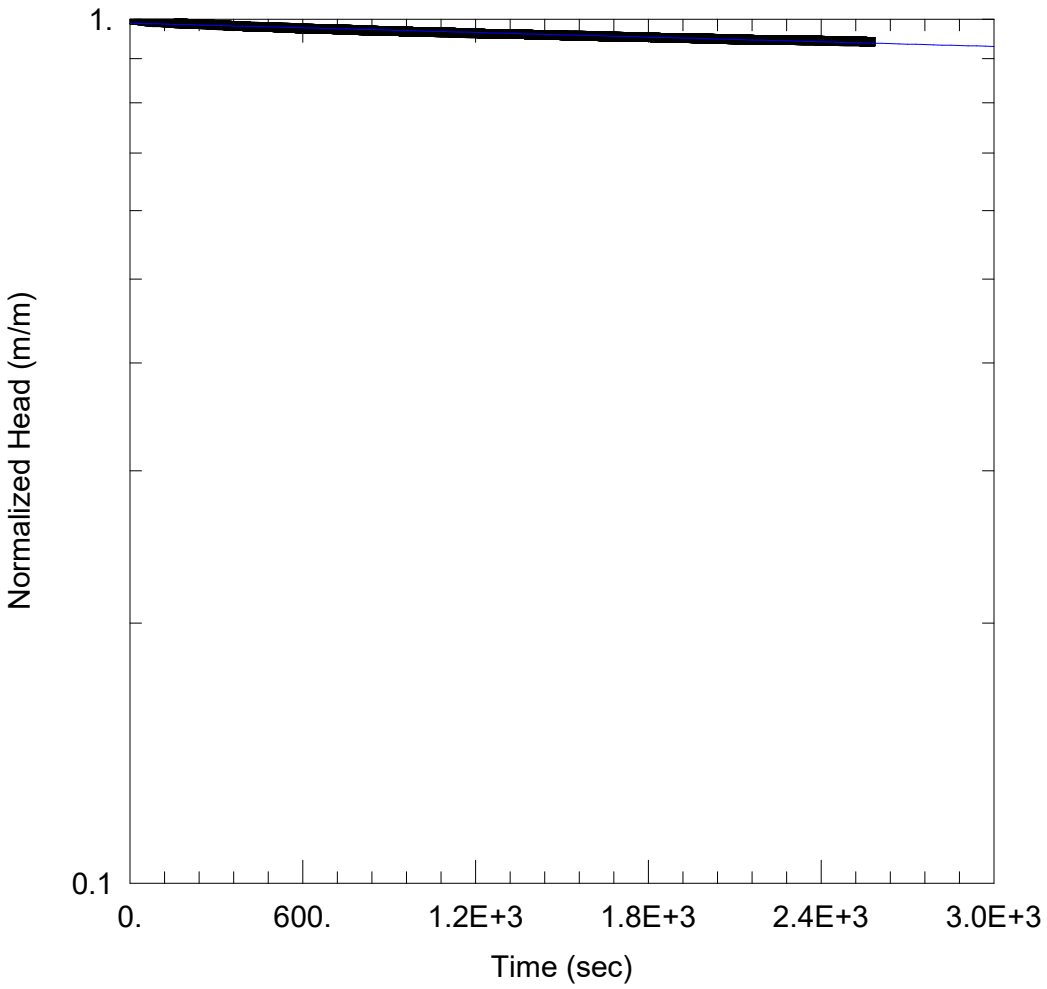
Saturated Thickness: 4.03 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-21 Rising Head)

Initial Displacement: 1.808 m
Total Well Penetration Depth: 4.03 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.03 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 2.822E-9 m/sec
y0 = 1.704 m



BH 3-23 RISING HEAD

Data Set: \...\BH 3-23.aqt
Date: 09/20/24 Time: 12:06:37

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-23 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

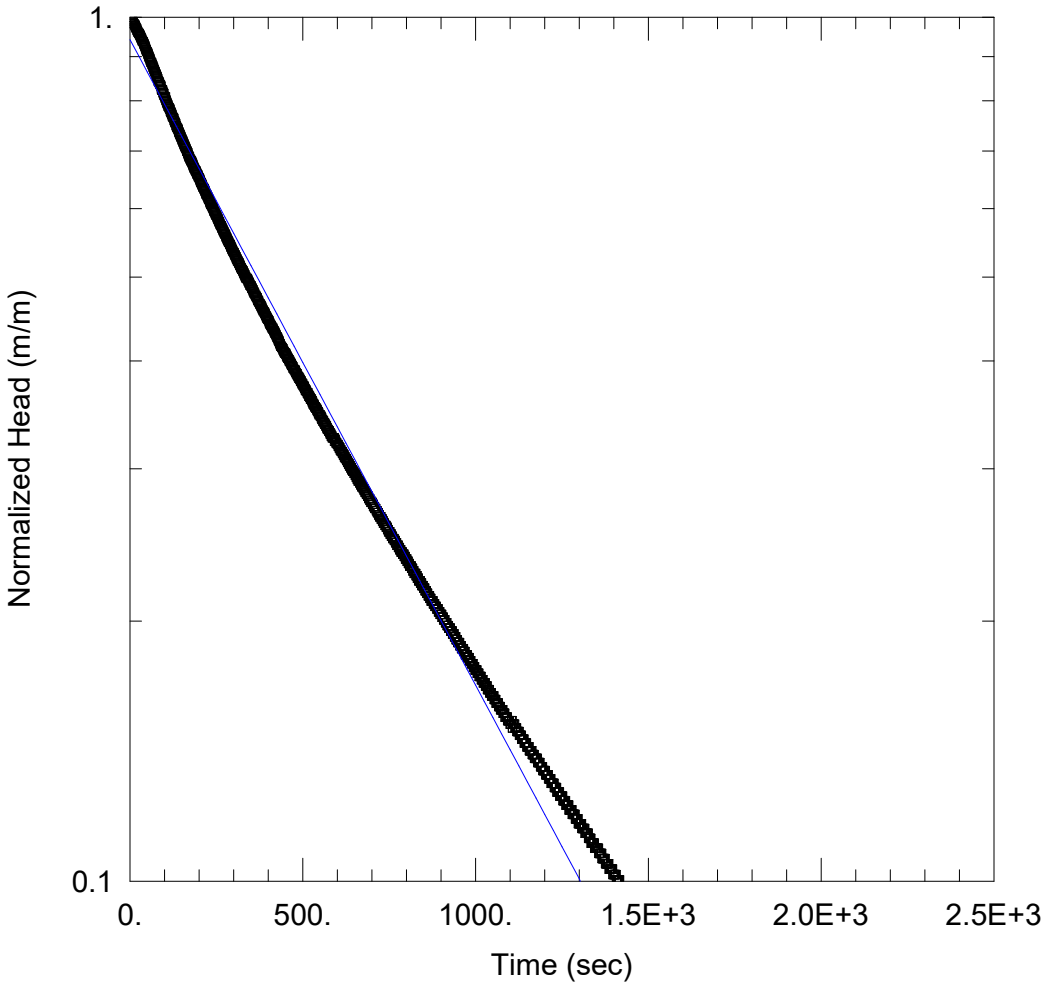
Saturated Thickness: 6.65 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-23 Rising Head)

Initial Displacement: 2.919 m
Total Well Penetration Depth: 6.65 m
Casing Radius: 0.0254 m
Static Water Column Height: 6.65 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 9.726E-9 m/sec
y0 = 2.888 m



BH 3-25 RISING HEAD

Data Set: \...\BH 3-25.aqt
Date: 09/20/24 Time: 12:06:12

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-25 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

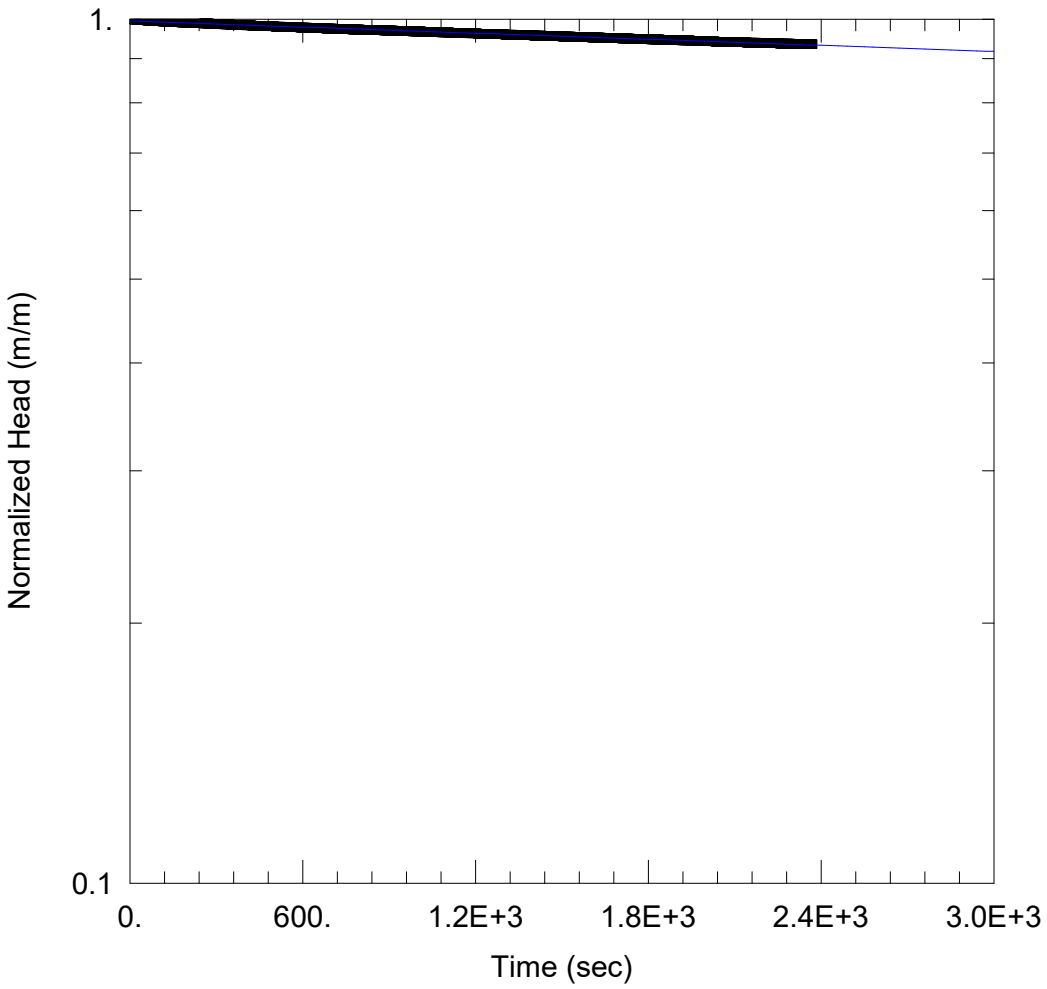
Saturated Thickness: 7.2 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-25 Rising Head)

Initial Displacement: 2.034 m
Total Well Penetration Depth: 7.2 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.2 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 8.077E-7 m/sec
y0 = 1.915 m



BH 3-26 RISING HEAD

Data Set: \...\BH 3-26.aqt
Date: 09/20/24 Time: 12:05:02

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-26 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

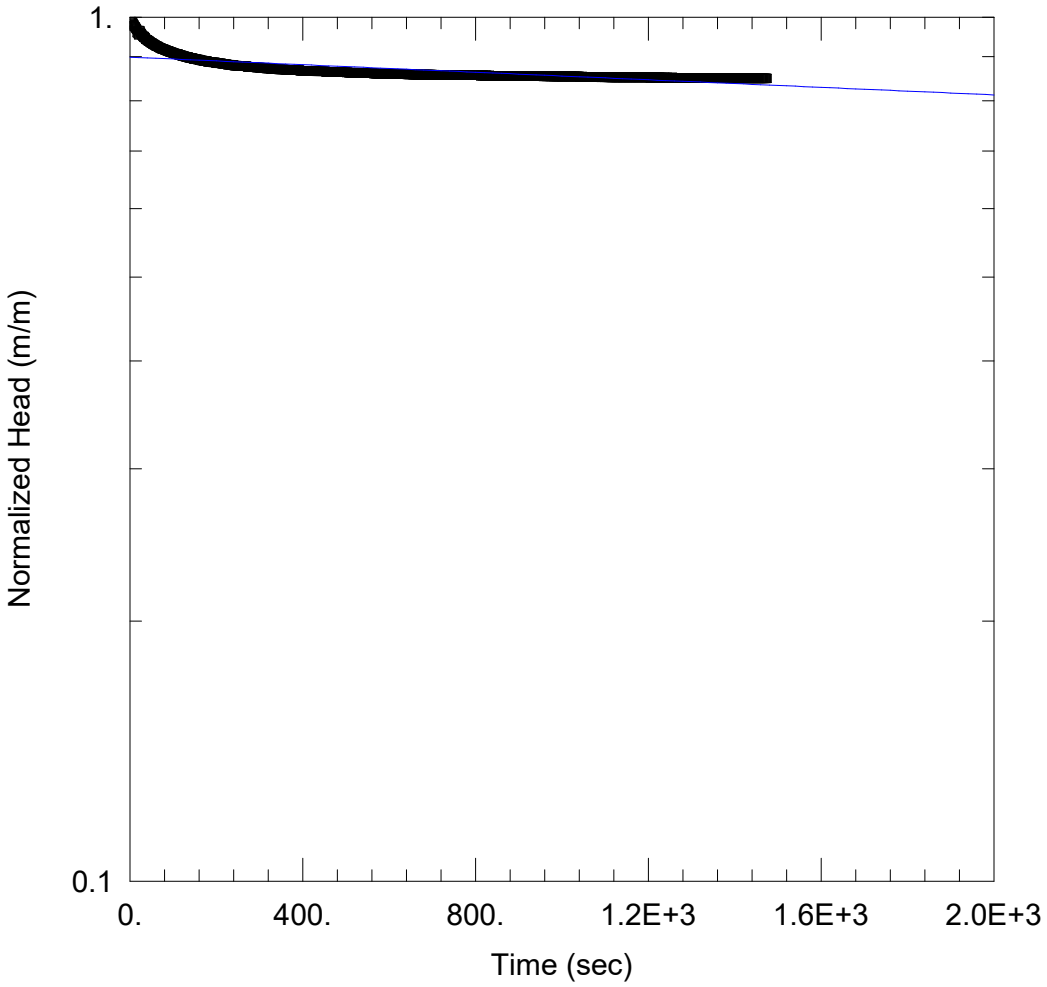
Saturated Thickness: 7.04 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-26 Rising Head)

Initial Displacement: 2.45 m
Total Well Penetration Depth: 7.04 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.04 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 1.268E-8 m/sec
y0 = 2.437 m



BH 3-27 RISING HEAD

Data Set: \...\BH 3-27.aqt
Date: 09/20/24 Time: 12:04:35

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-27 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

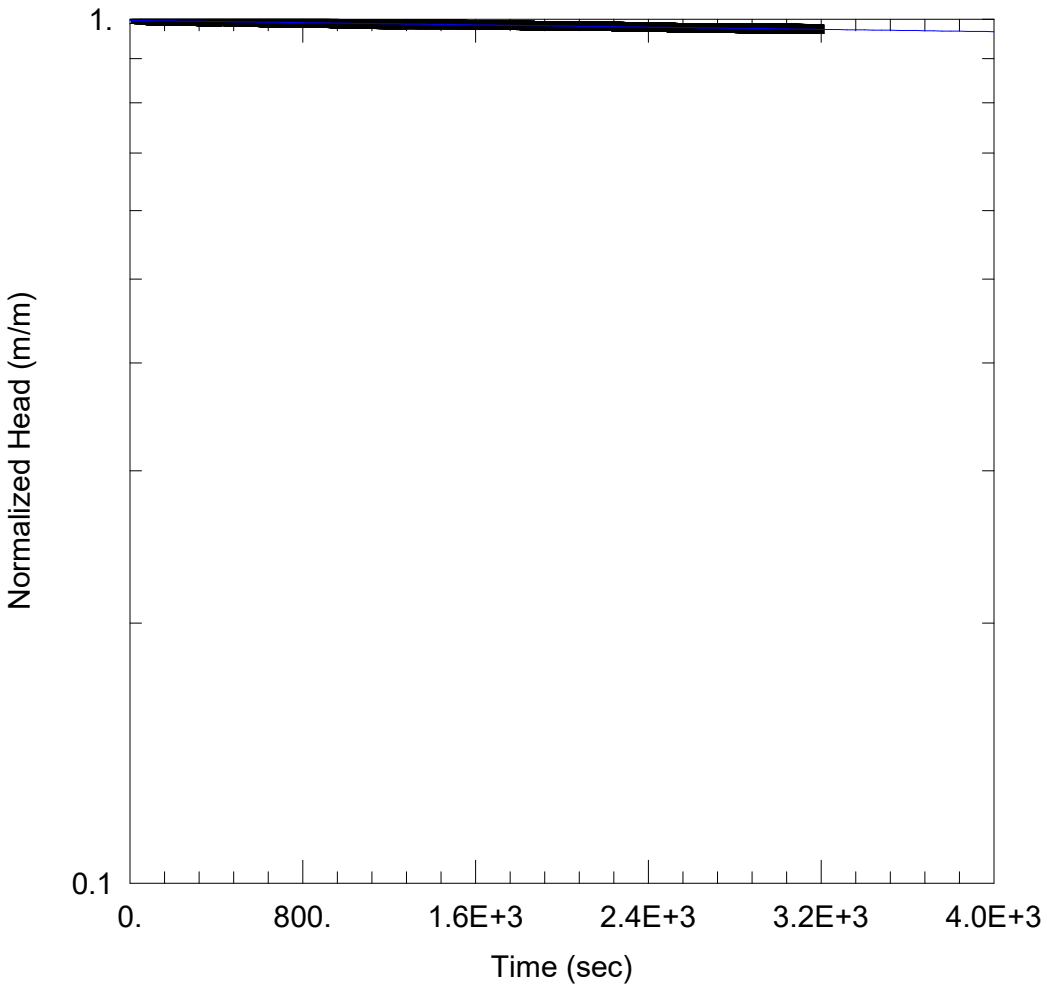
Saturated Thickness: 1.71 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-27 Rising Head)

Initial Displacement: 1.009 m
Total Well Penetration Depth: 3. m
Casing Radius: 0.0254 m
Static Water Column Height: 1.71 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 5.027E-8 m/sec
y0 = 0.9069 m



BH 3-28 RISING HEAD

Data Set: \...\BH 3-28.aqt
Date: 09/20/24 Time: 12:04:09

PROJECT INFORMATION

Company: EXP Services Inc.
Client: Tribal Development
Project: BRM-23015226-A0
Location: Tribal Milton Phase 3
Test Well: BH 3-28 Rising Head
Test Date: August 8, 2024

AQUIFER DATA

Saturated Thickness: 5.24 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH 3-28 Rising Head)

Initial Displacement: 1.701 m
Total Well Penetration Depth: 5.24 m
Casing Radius: 0.0254 m
Static Water Column Height: 5.24 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

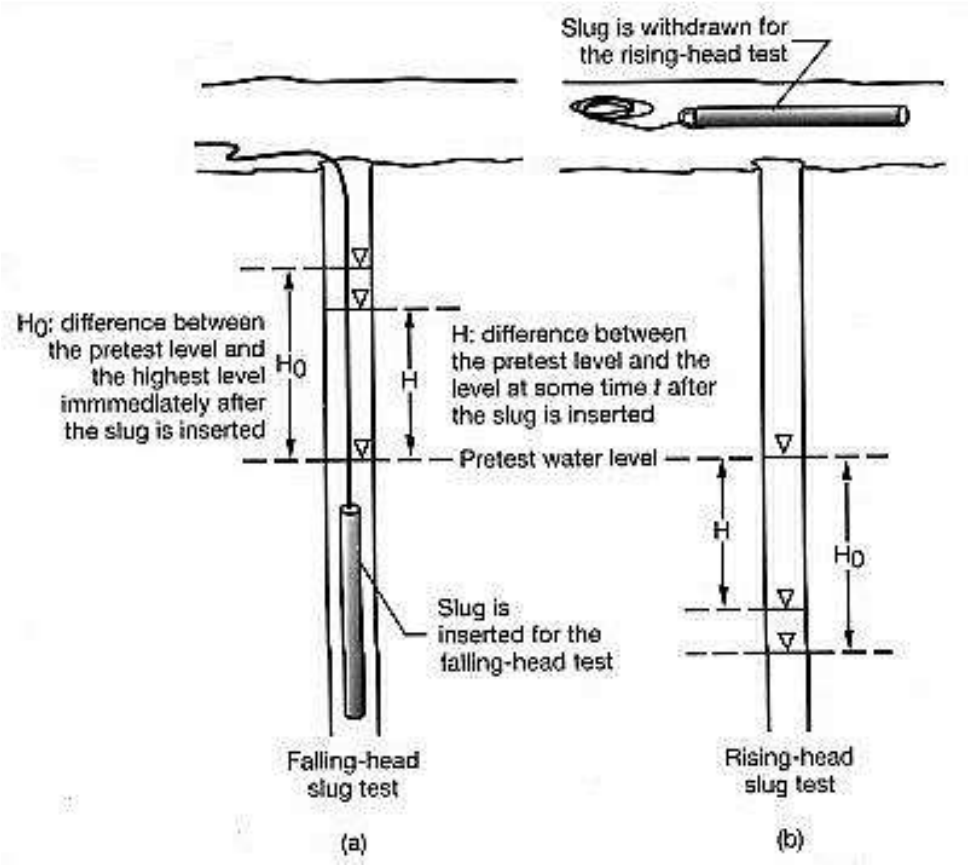
K = 3.515E-9 m/sec y0 = 1.695 m

Single Well Response Test Procedure

A Single Well Response Test (SWRT), also known as a bail test or a slug test, is conducted in order to determine the saturated hydraulic conductivity (K) of an aquifer. The method of the SWRT is to characterize the change of groundwater level in a well or borehole over time.

In order to ensure consistency and repeatability, all **exp** employees are to follow the procedure outlined in this document when conducting SWRTs.

The figure below depicts a schematic of a slug and bail test and the respective water level changes.



Initials ___

Slug Test Procedure

Equipment Required

- Copy of a signed health and safety plan
- Copy of the work program
- PPE as required by Site-Specific HASP
- Copy of the monitoring well location plan/site plan
- Waterproof pen and bound field note book
- SWRT field data Entry form
- Disposable gloves
- Duct tape
- Deionized water
- Alconox (phosphate free detergent)
- Spray bottles
- Electronic water level meter and spare batteries
- Solid PVC or stainless steel slug of known volume or clean water
- String (nylon)
- Water pressure transducer (data logger) and baro-logger
- Watch or stop watch with second hand
- Plastic sheeting

Testing Procedure

1. Remove cap from well and collect static water level
2. Remove waterra tubing/bailer and place in garbage bag. Record static water level measurement again.
3. Lower the slug into the well and record the dynamic water level.
4. Record the drawdown (for the slug test) at set five (5) second intervals for the first five (5) minutes, then reduce to every one (1) minute.
5. Continue recording the drawdown until 95% recovery is reached. To calculate this value: Find the difference between the dynamic water level and the static water level, then multiply by 95% (.95). Add the resulting value to the dynamic water level.

   (Static Water Level – Dynamic Water Level).95 + Static Water Level = 95% Recovery Value
6. Once complete, replace the waterra tubing/bailer and re-secure the well cap.

Note: If the well is deep, more than one slug may be inserted by attaching the slugs to a series.

Slugs must be washed with methanol, then lab grade soap, and then rinsed with de-ionized water after each use.

Based on the recorded observations, the hydraulic conductivity (in m/s) of the aquifer will be determined. In order to determine the hydraulic conductivity; the well diameter, radius of the borehole and length of the screen will also be required.

Bail Test Procedure

Equipment Required

- 20 L (5 gal) Graduated pail
- Stop watch or watch with seconds
- Garbage bags
- Water level meter
- Field sheets/log book
- Latex Gloves
- Bailer and Rope

Procedure

1. Remove cap from well and collect static water level.
2. If using a **bailer**:
    a. Affix the rope to the bailer.
    b. Remove the waterra tubing and place in garbage bag
    c. Record static water level measurement again.
    d. Record how much water was removed by either counting the number of full bailers or emptying removed water into a container.
    e. Quickly lower the bailer into the well and remove.
    f. Continue this process until the water level will reduce no further.
    g. Record the dynamic water level.
3. If using **waterra** to bail the water:
    a. Pump the water into graduated bucket until the water level will reduce no further.
    b. Record how much water has been removed.
    c. Record the dynamic water level.
4. Record the recovery at set five (5) second intervals for the first (5) minutes, then reduce to every one (1) minute.
5. Continue recording the drawdown/recovery until 95% recovery is reached.
6. Once complete, replace any waterra tubing that may have been removed from the well and re-secure the well cap.

Appendix D – Laboratory's Certificates of Analysis

Your P.O. #: ENV-BRM
Your Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your C.O.C. #: C#1005086-01-01

Attention: Francois Chartier

exp Services Inc
1595 Clark Blvd
Brampton, ON
CANADA L6T 4V1

Report Date: 2024/08/15
Report #: R8278498
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4O4439
Received: 2024/08/08, 17:30

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Aluminum (0.2 u, clay free)	1	N/A	2024/08/14	CAM SOP-00447	EPA 6020B m
Alkalinity	1	N/A	2024/08/10	CAM SOP-00448	SM 24 2320 B m
Chromium (VI) in Water	1	N/A	2024/08/14	CAM SOP-00436	EPA 7199 m
Free (WAD) Cyanide	1	N/A	2024/08/13	CAM SOP-00457	OMOE E3015 m
Dissolved Oxygen	1	2024/08/09	2024/08/09	CAM SOP-00427	SM 24 4500 O G m
Hardness (calculated as CaCO3)	1	N/A	2024/08/13	CAM SOP 00102/00408/00447	SM 2340 B
Mercury	1	2024/08/14	2024/08/14	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	1	N/A	2024/08/13	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	1	2024/08/14	2024/08/14	CAM SOP-00447	EPA 6020B m
Sulphide (as H2S) (1)	1	N/A	2024/08/11	AB WI-00065	Auto Calc
Total Sulphide (1)	1	N/A	2024/08/11	AB SOP-00080	SM 24 4500 S2-A D Fm
Total Ammonia-N	1	N/A	2024/08/15	CAM SOP-00441	USGS I-2522-90 m
pH (2)	1	2024/08/09	2024/08/10	CAM SOP-00413	SM 24th - 4500H+ B
Phenols (4AAP)	1	N/A	2024/08/13	CAM SOP-00444	OMOE E3179 m
Field Measured pH (3)	1	N/A	2024/08/13		Field pH Meter
Field Temperature (3)	1	N/A	2024/08/13		Field Thermometer
Total Phosphorus (Colourimetric)	1	2024/08/09	2024/08/13	CAM SOP-00407	SM 24 4500-P I
Turbidity	1	N/A	2024/08/09	CAM SOP-00417	SM 24 2130 B
Un-ionized Ammonia (4)	1	2024/08/09	2024/08/15	Auto Calc.	PWQO

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or

Your P.O. #: ENV-BRM
Your Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your C.O.C. #: C#1005086-01-01

Attention: Francois Chartier

exp Services Inc
1595 Clark Blvd
Brampton, ON
CANADA L6T 4V1

Report Date: 2024/08/15
Report #: R8278498
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4O4439
Received: 2024/08/08, 17:30

implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary (19th), 4000 19th Street NE , Calgary, AB, T2E 6P8
(2) "The CCME method and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME and Analytical Protocol (O. Reg 153/04, O. Reg. 406/19) holding time. Bureau Veritas endeavors to analyze samples as soon as possible after receipt."

(3) This is a field test, therefore, the results relate to items that were not analysed at Bureau Veritas.
(4) Un-ionized ammonia is calculated using the total ammonia result and field data provided by the client for pH and temperature.

Encryption Key

Bureau Veritas
15 Aug 2024 17:14:05

Please direct all questions regarding this Certificate of Analysis to:
Patricia Legette, Project Manager
Email: Patricia.Legette@bureauveritas.com
Phone# (905)817-5799

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

PWQO METALS AND INORGANICS (WATER)

Bureau Veritas ID			ZYK222			ZYK222		
Sampling Date			2024/08/08 11:30			2024/08/08 11:30		
COC Number			C#1005086-01-01			C#1005086-01-01		
	UNITS	Criteria	BH 3 - 13	RDL	QC Batch	BH 3 - 13 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Hardness (CaCO3)	mg/L	-	4500	1.0	9565944			
Sulphide (as H2S)	mg/L	0.002	**0.025**	0.0020	9574441			
Total Un-ionized Ammonia	mg/L	0.02	0.00073	0.00061	9566214			
Field Measurements								
Field Temperature	Celsius	-	17.6	N/A	ONSITE			
Field Measured pH	pH	6.5:8.5	7.11		ONSITE			
Inorganics								
Total Ammonia-N	mg/L	-	0.14	0.050	9567773			
Dissolved Oxygen	mg/L	-	5.85	0.050	9567785	5.86	0.050	9567785
pH	pH	6.5:8.5	7.72		9567711			
Phenols-4AAP	mg/L	0.001	ND	0.0010	9572526			
Total Phosphorus	mg/L	0.01	**0.041**	0.004	9567423			
Total Sulphide	mg/L	0.002	**0.023 (1)**	0.0018	9577197			
Turbidity	NTU	-	11	0.1	9567815	12	0.1	9567815
WAD Cyanide (Free)	ug/L	5	ND	1	9569900			
Alkalinity (Total as CaCO3)	mg/L	-	440	1.0	9568026			
Metals								
Dissolved (0.2u) Aluminum (Al)	ug/L	15	7	5	9573903			
Chromium (VI)	ug/L	1	ND	0.50	9574937			
Mercury (Hg)	ug/L	0.2	ND	0.10	9574939			
Total Antimony (Sb)	ug/L	20	ND	0.50	9575522			
Total Arsenic (As)	ug/L	100	ND	1.0	9575522			
Total Beryllium (Be)	ug/L	11	ND	0.40	9575522			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) Sample pH <9, preservation incomplete. Due to volatility of analyte, a low bias in the results is likely.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

PWQO METALS AND INORGANICS (WATER)

Bureau Veritas ID			ZYK222			ZYK222		
Sampling Date			2024/08/08 11:30			2024/08/08 11:30		
COC Number			C#1005086-01-01			C#1005086-01-01		
	UNITS	Criteria	BH 3 - 13	RDL	QC Batch	BH 3 - 13 Lab-Dup	RDL	QC Batch
Total Boron (B)	ug/L	200	**610**	10	9575522			
Total Cadmium (Cd)	ug/L	0.2	ND	0.090	9575522			
Total Chromium (Cr)	ug/L	-	ND	5.0	9575522			
Total Cobalt (Co)	ug/L	0.9	**2.1**	0.50	9575522			
Total Copper (Cu)	ug/L	5	ND	0.90	9575522			
Total Iron (Fe)	ug/L	300	140	100	9575522			
Total Lead (Pb)	ug/L	5	ND	0.50	9575522			
Total Molybdenum (Mo)	ug/L	40	2.4	0.50	9575522			
Total Nickel (Ni)	ug/L	25	7.7	1.0	9575522			
Total Selenium (Se)	ug/L	100	ND	2.0	9575522			
Total Silver (Ag)	ug/L	0.1	ND	0.090	9575522			
Total Thallium (Tl)	ug/L	0.3	0.063	0.050	9575522			
Total Tungsten (W)	ug/L	30	ND	1.0	9575522			
Total Uranium (U)	ug/L	5	**21**	0.10	9575522			
Total Vanadium (V)	ug/L	6	0.94	0.50	9575522			
Total Zinc (Zn)	ug/L	30	25	5.0	9575522			
Total Zirconium (Zr)	ug/L	4	ND	1.0	9575522			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			ZYK222		
Sampling Date			2024/08/08 11:30		
COC Number			C#1005086-01-01		
	UNITS	Criteria	BH 3 - 13	RDL	QC Batch
Metals					
Dissolved Aluminum (Al)	ug/L	-	ND	25	9569960
Dissolved Antimony (Sb)	ug/L	20	ND	2.5	9569960
Dissolved Arsenic (As)	ug/L	100	ND	5.0	9569960
Dissolved Barium (Ba)	ug/L	-	20	10	9569960
Dissolved Beryllium (Be)	ug/L	11	ND	2.0	9569960
Dissolved Bismuth (Bi)	ug/L	-	ND	5.0	9569960
Dissolved Boron (B)	ug/L	200	**660**	50	9569960
Dissolved Cadmium (Cd)	ug/L	0.2	**ND (1)**	0.45	9569960
Dissolved Calcium (Ca)	ug/L	-	440000	1000	9569960
Dissolved Chromium (Cr)	ug/L	-	ND	25	9569960
Dissolved Cobalt (Co)	ug/L	0.9	**ND (1)**	2.5	9569960
Dissolved Copper (Cu)	ug/L	5	ND	4.5	9569960
Dissolved Iron (Fe)	ug/L	300	**ND (1)**	500	9569960
Dissolved Lead (Pb)	ug/L	5	ND	2.5	9569960
Dissolved Lithium (Li)	ug/L	-	270	25	9569960
Dissolved Magnesium (Mg)	ug/L	-	820000	250	9569960
Dissolved Manganese (Mn)	ug/L	-	500	10	9569960
Dissolved Molybdenum (Mo)	ug/L	40	2.5	2.5	9569960
Dissolved Nickel (Ni)	ug/L	25	8.9	5.0	9569960
Dissolved Phosphorus (P)	ug/L	-	ND	500	9569960
Dissolved Potassium (K)	ug/L	-	16000	1000	9569960
Dissolved Selenium (Se)	ug/L	100	ND	10	9569960
Dissolved Silicon (Si)	ug/L	-	5700	250	9569960
Dissolved Silver (Ag)	ug/L	0.1	**ND (1)**	0.45	9569960
Dissolved Sodium (Na)	ug/L	-	250000	500	9569960

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) RDL exceeds criteria

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Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			ZYK222		
Sampling Date			2024/08/08 11:30		
COC Number			C#1005086-01-01		
	UNITS	Criteria	BH 3 - 13	RDL	QC Batch
Dissolved Strontium (Sr)	ug/L	-	9000	5.0	9569960
Dissolved Tellurium (Te)	ug/L	-	ND	5.0	9569960
Dissolved Thallium (Tl)	ug/L	0.3	ND	0.25	9569960
Dissolved Tin (Sn)	ug/L	-	ND	5.0	9569960
Dissolved Titanium (Ti)	ug/L	-	ND	25	9569960
Dissolved Tungsten (W)	ug/L	30	ND	5.0	9569960
Dissolved Uranium (U)	ug/L	5	**21**	0.50	9569960
Dissolved Vanadium (V)	ug/L	6	ND	2.5	9569960
Dissolved Zinc (Zn)	ug/L	30	27	25	9569960
Dissolved Zirconium (Zr)	ug/L	4	**ND (1)**	5.0	9569960

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) RDL exceeds criteria

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Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

TEST SUMMARY

Bureau Veritas ID: ZYK222
Sample ID: BH 3 - 13
Matrix: Water

Collected: 2024/08/08
Shipped:
Received: 2024/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Aluminum (0.2 u, clay free)	ICP/MS	9573903	N/A	2024/08/14	Azita Fazaeli
Alkalinity	AT	9568026	N/A	2024/08/10	Nachiketa Gohil
Chromium (VI) in Water	IC	9574937	N/A	2024/08/14	Harpuneet Kaur
Free (WAD) Cyanide	SKAL/CN	9569900	N/A	2024/08/13	Prgya Panchal
Dissolved Oxygen	DO	9567785	2024/08/09	2024/08/09	Amrutha Anilkumar
Hardness (calculated as CaCO3)		9565944	N/A	2024/08/13	Automated Statchk
Mercury	CV/AA	9574939	2024/08/14	2024/08/14	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9569960	N/A	2024/08/13	Nan Raykha
Total Metals Analysis by ICPMS	ICP/MS	9575522	2024/08/14	2024/08/14	Indira HarryPaul
Sulphide (as H2S)	CALC	9574441	N/A	2024/08/11	Automated Statchk
Total Sulphide	SPEC	9577197	N/A	2024/08/11	Ly Vu
Total Ammonia-N	SKAL/NH4	9567773	N/A	2024/08/15	Massarat Jan
pH	AT	9567711	2024/08/09	2024/08/10	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9572526	N/A	2024/08/13	Sachi Patel
Field Measured pH	PH	ONSITE	N/A	2024/08/13	Michael Damianidis
Field Measured pH	PH	ONSITE	N/A	2024/08/13	Michael Damianidis
Total Phosphorus (Colourimetric)	SKAL/P	9567423	2024/08/09	2024/08/13	Vidhi Khatri
Turbidity	AT	9567815	N/A	2024/08/09	Kien Tran
Un-ionized Ammonia	CALC/NH3	9566214	2024/08/15	2024/08/15	Automated Statchk

Bureau Veritas ID: ZYK222 Dup
Sample ID: BH 3 - 13
Matrix: Water

Collected: 2024/08/08
Shipped:
Received: 2024/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Oxygen	DO	9567785	2024/08/09	2024/08/09	Amrutha Anilkumar
Turbidity	AT	9567815	N/A	2024/08/09	Kien Tran

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C

Sample ZYK222 [BH 3 - 13] : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9567423	Total Phosphorus	2024/08/13	99	80 - 120	102	80 - 120	ND, RDL=0.004	mg/L	7.0	20	102	80 - 120
9567711	pH	2024/08/10			102	98 - 103			0.71	N/A		
9567773	Total Ammonia-N	2024/08/15	90	75 - 125	92	80 - 120	ND, RDL=0.050	mg/L	NC	20		
9567785	Dissolved Oxygen	2024/08/09							0.17	30		
9567815	Turbidity	2024/08/09			94	80 - 120	ND, RDL=0.1	NTU	9.0	20		
9568026	Alkalinity (Total as CaCO3)	2024/08/10			99	85 - 115	ND, RDL=1.0	mg/L	0.45	20		
9569900	WAD Cyanide (Free)	2024/08/13	99	80 - 120	99	80 - 120	ND,RDL=1	ug/L	NC	20		
9569960	Dissolved Aluminum (Al)	2024/08/13	98	80 - 120	96	80 - 120	ND, RDL=4.9	ug/L	NC	20		
9569960	Dissolved Antimony (Sb)	2024/08/13	103	80 - 120	100	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9569960	Dissolved Arsenic (As)	2024/08/13	100	80 - 120	99	80 - 120	ND, RDL=1.0	ug/L	NC	20		
9569960	Dissolved Barium (Ba)	2024/08/13	100	80 - 120	100	80 - 120	ND, RDL=2.0	ug/L	2.8	20		
9569960	Dissolved Beryllium (Be)	2024/08/13	106	80 - 120	102	80 - 120	ND, RDL=0.40	ug/L	NC	20		
9569960	Dissolved Bismuth (Bi)	2024/08/13	96	80 - 120	95	80 - 120	ND, RDL=1.0	ug/L				
9569960	Dissolved Boron (B)	2024/08/13	101	80 - 120	102	80 - 120	ND, RDL=10	ug/L	4.9	20		
9569960	Dissolved Cadmium (Cd)	2024/08/13	101	80 - 120	98	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9569960	Dissolved Calcium (Ca)	2024/08/13	NC	80 - 120	98	80 - 120	ND, RDL=200	ug/L	0.44	20		
9569960	Dissolved Chromium (Cr)	2024/08/13	98	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9569960	Dissolved Cobalt (Co)	2024/08/13	99	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9569960	Dissolved Copper (Cu)	2024/08/13	102	80 - 120	103	80 - 120	ND, RDL=0.90	ug/L	NC	20		
9569960	Dissolved Iron (Fe)	2024/08/13	103	80 - 120	102	80 - 120	ND, RDL=100	ug/L	0.49	20		
9569960	Dissolved Lead (Pb)	2024/08/13	97	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9569960	Dissolved Lithium (Li)	2024/08/13	114	80 - 120	105	80 - 120	ND, RDL=5.0	ug/L				
9569960	Dissolved Magnesium (Mg)	2024/08/13	NC	80 - 120	101	80 - 120	ND, RDL=50	ug/L	0.54	20		
9569960	Dissolved Manganese (Mn)	2024/08/13	97	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L	1.9	20		
9569960	Dissolved Molybdenum (Mo)	2024/08/13	107	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9569960	Dissolved Nickel (Ni)	2024/08/13	96	80 - 120	97	80 - 120	ND, RDL=1.0	ug/L	NC	20		
9569960	Dissolved Phosphorus (P)	2024/08/13	110	80 - 120	103	80 - 120	ND, RDL=100	ug/L	NC	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9569960	Dissolved Potassium (K)	2024/08/13	104	80 - 120	104	80 - 120	ND, RDL=200	ug/L	0.27	20		
9569960	Dissolved Selenium (Se)	2024/08/13	98	80 - 120	98	80 - 120	ND, RDL=2.0	ug/L	NC	20		
9569960	Dissolved Silicon (Si)	2024/08/13	101	80 - 120	98	80 - 120	ND, RDL=50	ug/L	0.81	20		
9569960	Dissolved Silver (Ag)	2024/08/13	102	80 - 120	101	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9569960	Dissolved Sodium (Na)	2024/08/13	NC	80 - 120	103	80 - 120	ND, RDL=100	ug/L	0.61	20		
9569960	Dissolved Strontium (Sr)	2024/08/13	99	80 - 120	97	80 - 120	ND, RDL=1.0	ug/L	0.24	20		
9569960	Dissolved Tellurium (Te)	2024/08/13	101	80 - 120	99	80 - 120	ND, RDL=1.0	ug/L				
9569960	Dissolved Thallium (Tl)	2024/08/13	99	80 - 120	101	80 - 120	ND, RDL=0.050	ug/L	NC	20		
9569960	Dissolved Tin (Sn)	2024/08/13	103	80 - 120	101	80 - 120	ND, RDL=1.0	ug/L				
9569960	Dissolved Titanium (Ti)	2024/08/13	99	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9569960	Dissolved Tungsten (W)	2024/08/13	102	80 - 120	102	80 - 120	ND, RDL=1.0	ug/L				
9569960	Dissolved Uranium (U)	2024/08/13	99	80 - 120	97	80 - 120	ND, RDL=0.10	ug/L	5.0	20		
9569960	Dissolved Vanadium (V)	2024/08/13	100	80 - 120	98	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9569960	Dissolved Zinc (Zn)	2024/08/13	99	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L	2.1	20		
9569960	Dissolved Zirconium (Zr)	2024/08/13	104	80 - 120	101	80 - 120	ND, RDL=1.0	ug/L				
9572526	Phenols-4AAP	2024/08/13	102	80 - 120	101	80 - 120	ND, RDL=0.0010	mg/L	NC	20		
9573903	Dissolved (0.2u) Aluminum (Al)	2024/08/14	100	80 - 120	99	80 - 120	ND,RDL=5	ug/L	0.66	20		
9574937	Chromium (VI)	2024/08/14	92	80 - 120	105	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9574939	Mercury (Hg)	2024/08/14	88	75 - 125	94	80 - 120	ND, RDL=0.10	ug/L	NC	20		
9575522	Total Antimony (Sb)	2024/08/14	104	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9575522	Total Arsenic (As)	2024/08/14	99	80 - 120	100	80 - 120	ND, RDL=1.0	ug/L	NC	20		
9575522	Total Beryllium (Be)	2024/08/14	98	80 - 120	101	80 - 120	ND, RDL=0.40	ug/L	NC	20		
9575522	Total Boron (B)	2024/08/14	94	80 - 120	94	80 - 120	ND, RDL=10	ug/L	8.3	20		
9575522	Total Cadmium (Cd)	2024/08/14	99	80 - 120	98	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9575522	Total Chromium (Cr)	2024/08/14	100	80 - 120	103	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9575522	Total Cobalt (Co)	2024/08/14	99	80 - 120	100	80 - 120	ND, RDL=0.50	ug/L	10	20		
9575522	Total Copper (Cu)	2024/08/14	100	80 - 120	100	80 - 120	ND, RDL=0.90	ug/L	14	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9575522	Total Iron (Fe)	2024/08/14	103	80 - 120	102	80 - 120	ND, RDL=100	ug/L	9.5	20		
9575522	Total Lead (Pb)	2024/08/14	96	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	8.5	20		
9575522	Total Molybdenum (Mo)	2024/08/14	105	80 - 120	102	80 - 120	ND, RDL=0.50	ug/L	19	20		
9575522	Total Nickel (Ni)	2024/08/14	94	80 - 120	97	80 - 120	ND, RDL=1.0	ug/L	4.6	20		
9575522	Total Selenium (Se)	2024/08/14	100	80 - 120	104	80 - 120	ND, RDL=2.0	ug/L	NC	20		
9575522	Total Silver (Ag)	2024/08/14	97	80 - 120	97	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9575522	Total Thallium (Tl)	2024/08/14	97	80 - 120	100	80 - 120	ND, RDL=0.050	ug/L	NC	20		
9575522	Total Tungsten (W)	2024/08/14	101	80 - 120	103	80 - 120	ND, RDL=1.0	ug/L	NC	20		
9575522	Total Uranium (U)	2024/08/14	99	80 - 120	101	80 - 120	ND, RDL=0.10	ug/L	9.0	20		
9575522	Total Vanadium (V)	2024/08/14	97	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L	6.2	20		
9575522	Total Zinc (Zn)	2024/08/14	97	80 - 120	103	80 - 120	ND, RDL=5.0	ug/L	7.5	20		
9575522	Total Zirconium (Zr)	2024/08/14	104	80 - 120	100	80 - 120	ND, RDL=1.0	ug/L	NC	20		
9577197	Total Sulphide	2024/08/11	92	80 - 120	98	80 - 120	ND, RDL=0.0018	mg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Louise Harding, Team Lead

Michael Damianidis, Project Manager Assistant

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

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Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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C4O4439
2024/08/08 17:30

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NONT-2024-08-1835

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#30554 exp Services Inc	Company Name:	EXP Services Inc	Quotation #:	C41494
Attention:	Accounts Payable	Attention:	Francois Chartier	P.O. #:	ENV-BRM STREAM 2
Address:	1595 Clark Blvd Brampton ON L6T 4V1	Address:	Thabiso.Modise@exp.com	Project:	BRM-23015226-A0
Tel:	(905) 793-9800 Fax: (905) 793-0641	Tel:	(905) 793-9800 Ext: 2523 Fax:	Project Name:	
Email:	AP@exp.com; Karen.Burke@exp.com	Email:	francois.chartier@exp.com, amar.neku@exp.com	Site #:	Britannia Rd & First Line - Ph 3
				Sampled By:	Thabiso Modise

COC #: C#1005086-01-01

Bottle Order #: 1005086

Project Manager: Patricia Legette

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- [ ] Table 1 [ ] Res/Park [ ] Medium/Fine
- [ ] Table 2 [ ] Ind/Comm [ ] Coarse
- [ ] Table 3 [ ] Agr/Other [ ] For RSC
- [ ] Table ___

Other Regulations
- [ ] CCME [ ] Sanitary Sewer Bylaw
- [ ] Reg 558 [ ] Storm Sewer Bylaw
- [ ] MISA Municipality ___
- [X] PWQO [ ] Reg 406 Table ___
- [ ] Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? Y

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Field Filtered (please circle): Metals / Hg / Cr VI

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	PWQO Metals and Inorganics	Dissolved Metals by ICPMS	# of Bottles	Comments
1		BH 3-13	Aug 8/2024	11:30	GW	X	X	11	Please meet 5 Day TAT
2									
3									Please include COC in COA
4									
5									
6									Dissolved metals bottle is field filtered.
7									
8									Field parameters
9									pH: 7.11
10									Temp: 17.6 °C

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
THABISO MODISE	24/08/08	17:25	Ashitha Sukumaran	2024/08/08	17:30	

Laboratory Use Only
Time Sensitive | Temperature (°C) on Recei: 3/7/6 | Custody Seal Present / Intact: Yes [ ] No [✓]

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Job #: C4O4439
Report Date: 2024/08/15

exp Services Inc
Client Project #: BRM-23015226-A0
Site Location: BRITANNIA RD & FIRST LINE - PH 3
Your P.O. #: ENV-BRM
Sampler Initials: TM

Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
BH 3 - 13	ZYK222-04	Dissolved Boron (B)	200	660	50	ug/L
BH 3 - 13	ZYK222-03	Total Boron (B)	200	610	10	ug/L
BH 3 - 13	ZYK222-03	Total Cobalt (Co)	0.9	2.1	0.50	ug/L
BH 3 - 13	ZYK222-05	Total Phosphorus	0.01	0.041	0.004	mg/L
BH 3 - 13	ZYK222-08	Total Sulphide	0.002	0.023	0.0018	mg/L
BH 3 - 13	ZYK222-08	Sulphide (as H2S)	0.002	0.025	0.0020	mg/L
BH 3 - 13	ZYK222-04	Dissolved Uranium (U)	5	21	0.50	ug/L
BH 3 - 13	ZYK222-03	Total Uranium (U)	5	21	0.10	ug/L

Detection Limit Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
BH 3 - 13	ZYK222-04	Dissolved Cadmium (Cd)	0.2	<0.45	0.45	ug/L
BH 3 - 13	ZYK222-04	Dissolved Cobalt (Co)	0.9	<2.5	2.5	ug/L
BH 3 - 13	ZYK222-04	Dissolved Iron (Fe)	300	<500	500	ug/L
BH 3 - 13	ZYK222-04	Dissolved Silver (Ag)	0.1	<0.45	0.45	ug/L
BH 3 - 13	ZYK222-04	Dissolved Zirconium (Zr)	4	<5.0	5.0	ug/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Appendix E – In-Situ Infiltration Tests Results

Location:	Tribal Milton Phase 3
Date:	30-Jul-24
Weather:	Overcast
Analyst:	IB

Borehole radius (cm):	2.5
Soil class:	Default

12.0 2.074 0.093 0.754

Measurement	Start depth of water (cm)	End depth of water (cm)	Start time (*decimal min)	End time (*decimal min)	Elapsed time (min)	Change in head (cm)	Perc test result (min/cm)	Perc test (hr/mm)	mean head (m)	H/a (unitless)	2H^2 (m2)	2H/* (unitless)	C (unitless)	Ca2 (m2)	Denom	K_{fs} (mm/hr)	**Kfs (m/sec)**	**Kfs (cm/sec)**
INF 3-13	42.28	40.26	0.0	103.2	103.17	2.0	51.1	0.0851	0.413	16.508	0.341	0.069	3.1467	0.00197	0.035018152	0.1	1.6E-08	1.6E-06

Tribal Milton Phase 3
BRM-23015226-A0
Low Impact Design (LID) Calculations for Infiltration Gallery

Test Location	Hydraulic Conductivity (K_{fs}) (m/s)	Hydraulic Conductivity (K_{fs}) (cm/s)	Infiltration Rate (IR) (mm/hr)	Discrete Design Infiltration Rate(DIR) (mm/hr)	Percolation Time (min/cm)
INF 3-13	1.6E-08	1.6E-06	15	6	99

Geology Units	Geometric Mean of K_{fs} (m/s)	Geometric Mean of K_{fs} (cm/s)	Infiltration Rate (I) (mm/hr)*	Ratio of Mean Measured Infiltration Rates	Safety Correction Factor (SCF)
Overlying Geology Unit	1.56E-08	1.56E-06	15	1.0	2.5
Underlying Geology Unit (1.5 m below the bottom of trench)	1.56E-08	1.56E-06	15		

Design Infiltration Rate(DIR) (mm/hr)	Minimum	6	**Percolation Time (min/cm)**	99
	Maximum	6		99
	Geometric Mean	**6**		**99**

Note:
Analytical Solutions (CVC and TRCA 2010)

$$Infiltration\ Rate\ (IR) = \left(\frac{K_{fs}}{6x10^{-11}}\right)^{\frac{1}{3.7363}}$$

$$Design\ Infiltration\ Rate\ (DIR) = \frac{IR}{SCF}$$

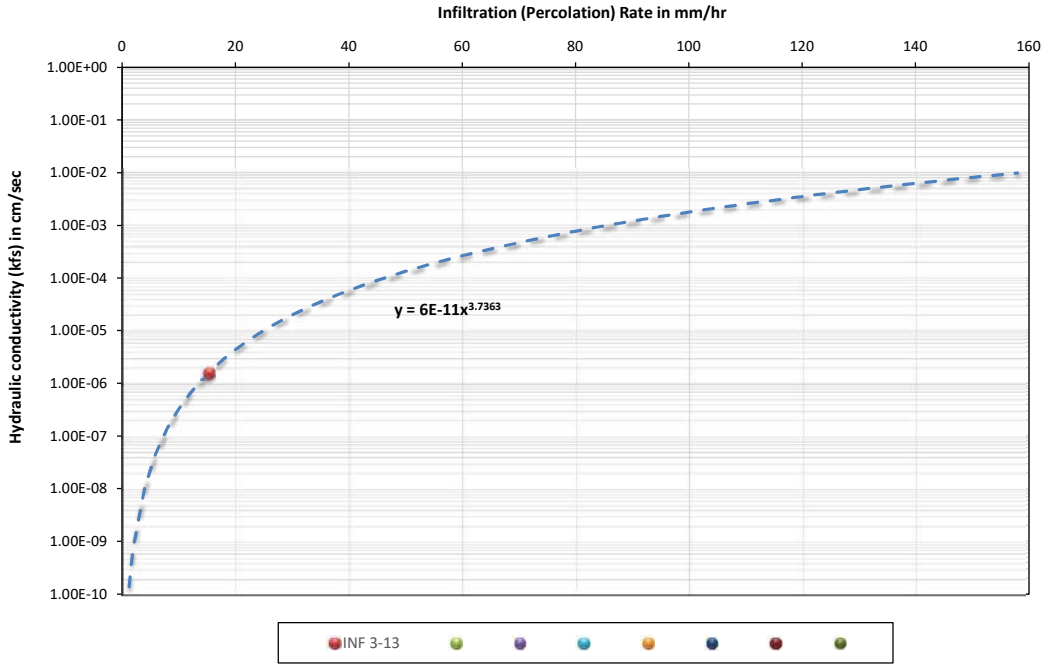
Kfs: hydraulic conductivity (cm/sec)

IR: infiltration rate (mm/hr)

DIR: design infiltration rate (mm/hr)

SCF: Safety Correction Factor (based on the chart recommended by CVC and TRCA, 2010)

Figure : Approximate relationship between infiltration rate and hydraulic conductivity (LID SWM planning and Design Guide, Appendix C1)



Appendix F – Water Balance Assessment (Site Specific)

Appendix F-1: Model Input

Britannia Road and First Line, Milton (Phase 3)
BRM-23015226-A0

Period	Month	Average Temperature (^{0}C)	Average Precipitation (mm)
1981-2010	1	-6.30	52.77
1981-2010	2	-5.20	60.00
1981-2010	3	-0.90	57.20
1981-2010	4	6.00	76.50
1981-2010	5	12.30	79.30
1981-2010	6	17.40	74.80
1981-2010	7	20.00	73.50
1981-2010	8	19.00	79.30
1981-2010	9	14.80	86.20
1981-2010	10	8.40	68.30
1981-2010	11	2.80	88.50
1981-2010	12	-2.90	65.90

Note:

Station Name	Gerogetown WWTP	
Station ID	6152695	
Longitude	-79.88	
Latitude	43.64	
Elevation	221.0	masl

Appendix F-2: Model Output

Britannia Road and First Line, Milton (Phase 3)
BRM-23015226-A0

Date	Month	PET	P	P-PET	Soil Moisture	AET	PET-AET	Snow Storage	Surplus
1981-2010	January	8.4	67.8	24.7	135.0	8.4	0.0	34.7	39.7
1981-2010	February	10.3	60.0	38.7	135.0	10.3	0.0	45.8	38.7
1981-2010	March	19.2	57.2	64.8	135.0	19.2	0.0	18.9	64.8
1981-2010	April	36.8	76.5	58.6	135.0	36.8	0.0	0.0	58.6
1981-2010	May	67.7	79.3	11.6	135.0	67.7	0.0	0.0	11.6
1981-2010	June	98.6	74.8	-23.8	111.2	98.6	0.0	0.0	0.0
1981-2010	July	114.6	73.5	-41.1	77.3	107.4	7.2	0.0	0.0
1981-2010	August	91.6	79.3	-12.3	70.3	86.3	5.2	0.0	0.0
1981-2010	September	54.0	86.2	32.2	102.6	54.0	0.0	0.0	0.0
1981-2010	October	28.7	68.3	39.6	135.0	28.7	0.0	0.0	7.1
1981-2010	November	15.1	88.5	73.4	135.0	15.1	0.0	0.0	73.4
1981-2010	December	9.5	65.9	42.8	135.0	9.5	0.0	13.6	42.8
Annual rate (mm/yr)		**554.50**	**877.30**			**542.00**		**113.00**	**335.30**

Note:

Station Name	Gerogetown WWTP	
Station ID	6152695	
Longitude	-79.88	
Latitude	43.64	
Elevation	221.0	masl

APPENDIX F-3
Average Infiltration Factors

Britannia Road and First Line, Milton (Phase 3)
BRM-23015226-A0

F-3-1. Average Infiltration Factor – Pre Development Conditions

Un-Mitigated

Category	Weighted Infiltration Factor
Topography/Slope	0.13
Soil Type Glaciolacustrine deposits (Silty to Clayey)	0.10
Cover Landscaped Areas	0.10
Total weighted Infiltration factor	**0.33**

F-3-2. Average Infiltration Factor – Post Development Conditions

Un-Mitigated

Category	Weighted IInfiltration Factor
Topography/Slope	0.134
Soil Type Glaciolacustrine deposits (Silty to Clayey)	0.10
Cover Landscaped areas	0.10
Total weighted Infiltration factor	**0.33**

Notes:
Landscaped area considered equivalent to Cultivated Cover
Assumed existing and proposed slopes are similar

Appendix F-4

Summary of Pre and Post-Development Water Balance

Britannia Road and First Line, Milton (Phase 3)

BRM-23015226-A0

F-4-1. Climate Data

Item	Pre-Development mm/a		Post-Development mm/a
Precipitation	877.30		877.30
Evapotranspiration	542.00		542.00
Water Surplus	335.30		335.30
Infiltration Rate	111.99		111.99
Runoff	223.31		223.31

F-4-2. Pre-Developed Area Statistics

Open spaces/Landscaped	368,383	sq.m.	47.8%
Building	3,300	sq.m.	0.4%
Areas with depth of water table < 1.0 m (impervious)	397,200	sq.m.	51.6%
Impervious (Pavement) Surfaces	1,400	sq.m.	0.2%
TOTAL	770,283	sq.m.	100%

F-4-3. Post Development Area Statistics

Commercial Development

Building Roofs	312,420	sq.m.	40.6%
ROW (roads, sidewalks, parking and also with watertable<1m) - Paved	249,563	sq.m.	32.4%
SWM	51,900	sq.m.	6.7%
Landscaped and Woodlot Areas	156,400	sq.m.	20.3%
TOTAL	770,283	sq.m.	

F-4-4-1. Annual Pre-Development Water Balance

Land Use	**Area (sq.m.)**	**Precipitation (cu.m.)**	**Actual Evapotranspiration (cu.m.)**	**Infiltration Rate (cu.m.)**	**Run-off (cu.m.)**
Building	3,300	2,895	1,789	0	1,106
Total Impervious (Pavement and high water level areas)	398,600	349,692	216,041	0	133,651
Open Spaces	368,383	323,182	199,664	41,255	82,264
TOTAL	770,283	675,769	417,493	41,255	217,021
	Pre-development Infiltration Rate		**542.000**	**53.559**	**281.741**
		100	62	6	32

F-4-5-1. Annual Post-Development Water Balance

Land Use	**Area (sq.m.)**	**Precipitation (cu.m.)**	**Actual Evapotranspiration (cu.m.)**	**Infiltration Rate (cu.m.)**	**Run-off (cu.m.)**
Building Roofs	312,420	274,086	0	0	274,086
ROW (roads, sidewalks, parking and also with watertable<1m) - Paved	249,563	218,942	0	0	218,942
SWM	51,900	45,532	28,130	0	17,402
Landscaped and Woodlot Areas	156,400	137,210	84,769	17,515	34,926
TOTAL	770,283	675,769	112,899	17,515	545,355
	Post-development Infiltration Rate		**146.568**	**22.74**	**707.99**
		100.0	16.7	2.6	80.7

F-4-6-1. Comparison of Pre-Development and Post-Development

Item	**Precipitation (cu.m.)**	**Actual Evapotranspiration (cu.m.)**	**Run-off (cu.m.)**	**Infiltration Rate (cu.m.)**
Pre-Development	675,769	417,493	217,021	41,255
Post Development	675,769	112,899	545,355	17,515
			Pre-development Infiltration Rate	**53.6**
			Post-development Infiltration Rate	**22.7**
			Deficit Post Development	**23,740**

APPENDIX F-5

Britannia Road and First Line, Milton (Phase 3)

BRM-23015226-A0

Estimate of Area for Infiltration System

1. Design Infilteration Rate

Item	Value	Unit
Geometric mean of design infiltration rates	6	mm/h
	144.00	mm/day
	0.14	m/day/m^2
	0.29	m/48 hrs/m^2

2. Climate Data

Total precipitation based on weather station records	877.30	mm/yr
Total rain in an eight (8) month precipitation period	584.87	mm/8 months
Based on a 16-week precipitation period	36.55	mm/2 week
Based on a 16-week precipitation period	0.037	m/2 weeks

3. Roof and Resulted Runoff Volume

Total roof area	312,420	m^2
Rooftop runoff volume in an eight (8) month precipitation period	182,724	m^3/year
Total rooftop runoff volume per 2 week	11,420	m^3/2 week

4. Estimated Deficit Volume

Estimated deficit based on water balance calculations	23,740	m^3/yr
Deficit over available water (roof runoff)	13%	-
Min. Storage to infiltrate to meet deficit	1,483.75	m^3/2 week
mm Retention	1.9	mm

Area of infiltration system required to mitigate infiltrate deficit (rounded)	**5,150**	m^2
% of total site area	**1%**	

Note: only roof water to be infiltrated (clean water)

Appendix G – Construction Flow Rate Calculations

APPENDIX G: Construction Dewatering Calculations

Britannia Rd & First Line Phase 3
BRM-23015226-A0

Table G-1: Flow all Sides of the Excavation

Parameters	Symbols	Unit	Four Industrial Buildings one at a time (slab-on-grade)	Utility Trench
Ground Elevation	-	mASL	185.65	185.65
Highest Groundwater Elevation	-	mASL	185.65	185.65
Lowest Footing Elevation		mASL	182.65	181.65
Dewatered Elevation Target	-	mASL	181.65	180.65
Top of the Water-Bearing Zone	-	mASL	185.65	185.65
Base of the Water-Bearing Zone	-	mASL	170.00	170.00
Height of Water Table Above the Base of Water-Bearing Zone	**H**	m	15.65	15.65
Height of Dewatering Target Above the Base of Water-Bearing Zone	**h_w**	m	11.65	10.65
Drawdown	**s**	m	4.00	5.00
Dupuit Check (>45%)		%	74%	68%
Hydraulic Conductivity	**K**	m/s	1.10E-07	1.10E-07
Length of Excavation	-	m	30.00	30.00
Width of Excavation	-	m	2.00	3.00
Method to Calculate Radius of Influence	-	-	**Sichardt**	**Sichardt**
Radius of Influence from Sides of Excavation	**Ro**	m	3.98	4.97
Distance to Linear Source from Sides of excavation	**Lo=Ro/2**	m	1.99	2.49
Dewatering Flow Rate (unconfined linear flow component)	**Q**	m^3/day	16.69	16.58
Factor of Safety	**FS**	-	2.00	2.00
Dewatering Flow Rate (multiplied by factor of safety)	**Q.FS**	m^3/day	33.38	33.16
Precipitation Event	-	mm/day	25	25
Volume from Precipitation	-	m3/day	1.5	2.25
Dewatering Flow Rate **Without Safety Factor** (including rainwater collection)	-	m3/day	18.19	18.83
Dewatering Flow Rate **With Safety Factor** (including rainwater collection)	-	m3/day	34.88	35.41

Precipitation Event 2 year storm (~57.3 mm)	-	m^3/day	3.438	5.157
Precipitation Event 100 year storm (~124.9 mm)	-	m^3/day	7.494	11.241

Notes:

mASL - meters above sea level

Analytical Solution for Estimating Plane Flow from an Unconfined Aquifer to a Fully-Penetrating Excavation

$$Q_w = Kx\frac{H^2 - {h_w}^2}{L_o}$$

(Based on the Dupuit Equation)

Where:

Q_w = Flow rate per unit length of excavation (m^3/s)

K = Hydraulic conductivity (m/s)

H = Height of static water table above base of water-bearing zone (m)

h_w = Height of target water level above the base of water-bearing zone (m)

Appendix H – Site Plan

Hwy 25

Britannia Rd

Lower Base Line W

First Line St

TREMAINE RD

1.A
Area: 55,164 m²
593,780 sqf
301.68
183.00
300.00
Swm

Wood Lot

Swm

1.B
Area:94,804 m²
1,020,461 sqf
486.04
195.34

1.C
Area: 94,804 m²
1,020,461 sqf
486.04
195.34
30.15
30

All Movement
Trucks / Cars

Potential Community Space

2.A
Area:
68,646 m²
738,899 sqf
146.28
469.28
38.00

2.B
Area:
67,420 m²
725,704 sqf
134.09
502.60
38.00
64.00

Wet Land

Wood Lot

2.C
Area:
45,764 m²
492,599 sqf
97.52
469.28
38.00

Swm

Pipeline

Wood Lot

3.A
Area: 71,711 m²
771,890 sqf
452.52
158.47
30.00

3.B
Area: 50,667 m²
545,375 sqf
519.56
97.52
38.00

3.C
Area: 111,590 m²
1,201,133 sqf
653.77
170.69
38.00

Swm

3.D
Area: 78,452 m²
844,449 sqf
195.04
402.24
60.00

SWM

SWM

4.A Area: 73,039 m²
786,184 sqf
234.64
19.02
19.80
170.47
170.47
19.80
536.32
109.52

Pipeline

0 100 200 400