TORONTO INSPECTION LTD.
GEO-ENVIRONMENTAL CONSULTANTS

PRELIMINARY
HYDROGEOLOGICAL INVESTIGATION
TULLAMORE LANDS
0 & 12245 TORBRAM ROAD
CALEDON, ONTARIO

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1 Introduction

1.1 Project Background

Toronto Inspection Ltd. (TIL) was retained by the Tullamore Industrial GP Limited (the Client) to conduct a hydrogeological investigation for the lands on the northwest corner of Airport Road and Mayfield Road in Caledon, Ontario, otherwise known as the “Tullamore Lands” and which will herein be referred to as the Site. This preliminary hydrogeological investigation has been completed in accordance with the Conservation Authority Guidelines for Development Applications – Hydrogeological Assessment Submissions (June 2013) and the Regional Municipality of Peel (Region of Peel) guidance document Guidelines for Hydrogeological Assessment and Reporting Requirements – New Developments on Municipal Services (July 2009), using the information available at the time of its preparation.

The purpose of the current hydrogeological investigation report was to provide a summary of the regulatory environmental framework relevant to the development of the Site and an overview of soil and groundwater conditions at the Site for consideration in detailed design. Information reviewed on the proposed development plan for the Site included a Site Plan prepared by Turner Fleisher Architects Inc., dated July 14, 2021, as well as a DRAFT Functional Servicing and Stormwater Management Report by C.F. Crozier and Associates Inc. inclusive of Preliminary Site Grading Plan (Crozier, 2021). These were reviewed for consideration and inclusion within a preliminary qualitative assessment of groundwater control requirements during construction and corresponding impact and mitigation assessment at this preliminary design stage. Quantitative assessments for requirements for groundwater control during construction will be prepared in the detailed design stage and presented in a future revision to this report.

1.2 Description of Proposed Development

The Site Plan and Site Servicing and Grading Plan that formed the basis for the understanding of the proposed development and the development of the scope of the preliminary hydrogeological investigation report is provided in **Appendix A**. It is our understanding that an industrial subdivision is proposed for the Site which will be constructed in phases and which will include a total of twelve (12) buildings of various sizes. It is understood that the buildings will each be constructed as slab-on-grade with no underground levels. It was assumed for this investigation that the footings for the foundations will be completed within 1.2 m below the future established grade. Concerning water and wastewater servicing for the Site, water service will be provided by municipal watermains on Airport Road/Torbram Road and Mayfield Road; sanitary service will be provided via existing municipal sewers on Airport Road and future municipal sewers on Mayfield Road. Stormwater will be managed on-Site via a wet pond which is proposed to discharge to a tributary of the West Humber River which passes through the Site.

1.3 Site Description

The Site is irregular in shape within an approximate total area of 146.86 ha. The Site is bounded by Airport Road to the east, Mayfield Road to the south, Torbram Road to the west, and private lands to the north. At the time of the investigation, the Site was occupied by two agricultural

farmhouses each with accessory buildings to support agricultural operations on shallow-rooted crops for the majority of the lands.

The Site is approximately flat over most of its area except for lands within the floodplains of existing perennial watercourses where topography steepens significantly. Two perennial streams, each reaches of regional drainage for the Humber River Watershed, are located within the Site boundaries. Additionally, a number of streams, assumed ephemeral based on observations of historical satellite imagery from Google Earth, drain the agricultural lands to two on-Site ponds of unknown depth. Additional discussion of land drainage and topography is provided in **Section 3.1**.

Surrounding land uses include residential, commercial, and industrial. The location of the Site with context for the land-uses in the surrounding area is shown in **Figure 1**.

1.4 Objectives of the Hydrogeological Investigation

The report herein identifies regulations which may be relevant to the development of the Site from a groundwater perspective. The report also develops a conceptual understanding of the Site setting by characterizing the existing geological and hydrogeological conditions at the Site; including groundwater elevations, groundwater flow direction, hydraulic properties of soils and groundwater quality. Based on the conceptual understanding of the Site and proposed development, a preliminary assessment of potential impacts from construction and options for mitigation, as may be necessary, are provided.

1.5 Scope of Work

1.5.1 Conceptual Understanding

A conceptual understanding of the proposed development in the context of the regional and local geological and hydrogeological systems was developed through the review of existing reports and available geological and hydrogeological data. These included:

- Mapping and reports by the Toronto and Region Conservation Authority (TRCA);
- Geological information from the Ontario Geological Survey (OGS);
- Geological and hydrogeological data from the Oak Ridges Moraine Groundwater Program (ORMGP);
- Mapping from the Ontario Ministry of Natural Resources and Forestry (MNRF);
- Source water protection information for the Credit Valley -Toronto and Region-Central Lake Ontario Source Protection Region;
- Ministry of the Environment, Conservation, and Parks (MECP) Water Well Information System (WWIS) and Permit to Take Water (PTTW) database;
- DRAFT Functional Servicing and Stormwater Management Report – Tullamore Lands (Crozier, 2021); and
- Geotechnical Investigation Airport Road and Mayfield Road (TIL, 2021)

1.5.2 Field Investigation

The soil and groundwater conditions at the Site as reported on herein were investigated and characterized during TIL's 2021 geotechnical drilling program for the Site. In total, 38 boreholes were advanced across the Site between May 21, 2021, and June 3, 2021. Boreholes were completed using continuous-flight solid-stem augers to depths ranging from 2.44 m below ground surface to 6.63 mbgs. Of the 38 boreholes, 16 were completed as monitoring wells and constructed of 0.051 m (2 in) diameter polyvinyl chloride (PVC) riser pipe and 10 ft (3.048 m) long PVC slotted screens, except for one (21BH-22 (MW)) where a shallow monitoring well with a 1 m screen was installed. All monitoring wells were installed with stick-up above ground and protected within monument casings. Monitoring wells were installed according to the relevant provisions of Reg. 903 by a licensed drilling contractor with TIL field staff in attendance. Monitoring wells were used to measure static groundwater levels, to conduct in-situ hydraulic conductivity testing and to collect representative groundwater quality samples.

Additional borehole investigations have been proposed by TIL upon confirmation of building locations and as part of the detailed design for proposed stormwater management facilities.

Once it is determined that monitoring wells installed on the Site are no longer required, they should be properly abandoned by a licensed well contractor as per Reg. 903 with the abandonment logs submitted to the Ministry of the Environment, Conservation, and Parks (MECP).

1.5.3 Data Analysis

The data analysis component of this study included the following tasks:

- Determination of soil stratigraphy and hydrostratigraphy;
- Determination of preliminary groundwater level elevations;
- Determination of the hydraulic conductivity of soils;
- Assessment of groundwater quality;
- Evaluation of potential dewatering requirements during and after construction;
- Evaluation of potential impacts to surrounding receptors within the anticipated dewatering and construction zones of influence.

2 Relevant Regulations and Policies

Environmental regulations and policies which may be relevant to the development of the Site and for which this investigation has been completed in accordance with are listed below and discussed briefly:

- Town of Caledon Official Plan – Office Consolidation April 2018;
- Region of Peel Official Plan – Office Consolidation December 2018;
- Durham Region Sewer Use By-Law Number 55-2013;
- Lake Simcoe Protection Plan (2009);
- Ontario Water Resource Act (1990);
- O.Reg. 387/04: Water Taking and Transfer;
- The Clean Water Act (2006); and
- South Georgian Bay Lake Simcoe Source Protection Plan (2019).

Town of Caledon Official Plan

The Town of Caledon (Town) Official Plan identifies development and land-use objectives within the Town and conforms to the Region of Peel Official Plan as an overall framework, including respecting the protection of the natural environment by identifying key Environmental Policy Areas (EPAs) where new development is prohibited. Based on Official Plan mapping (Schedule 'A'), the Site is located within the Town's designated Rural Lands and a portion of the Site, where an existing tributary (West Tributary) is located, is within the Provincial Greenbelt Plan Area and by association, also the Town's Environmental Policy Areas.

The Regional Municipality of Peel Official Plan

The Region of Peel Official Plan identifies development and land-use objectives for the long-term economic and sustainable growth of the Region of Peel. To that end, recognizing that integral to sustainable growth is a healthy environmental ecosystem, the Region of Peel Official Plan identifies environmental policies for new development in and around sensitive environmental areas of the regional Greenlands System which focus on protecting, restoring, and enhancing those sensitive environmental areas. Based on a review of the Official Plan maps (Schedule 'D' and Schedule 'D4'), the Site is located within the Region of Peel's Rural System and Natural Heritage System of the Greenbelt Plan. The Site is not located within any vulnerable drinking water areas of the Region of Peel's groundwater drinking systems.

It is our understanding that the Region of Peel is currently undergoing a Settlement Area Boundary Expansion which includes the Site and identifies the subject lands as future employment area (Crozier, 2021).

The Regional Municipality of Peel Wastewater By-Law

The Region of Peel, under the provisions and powers of By-Law Number 53-2010, is responsible for managing the discharge of private water, including groundwater and stormwater, to their municipal sanitary and combined sewers and storm sewers by either direct or indirect routes. If any private water on the Site will require discharge to the Region of Peel's sanitary and combined sewers, a discharge agreement with the Region of Peel will be required.

TRCA Policies and Regulations (O.Reg. 166/06)

Under Section 28 of the Conservation Authorities Act, the local conservation authorities are mandated to protect the health and integrity of the regional greenspace system and to maintain or improve the hydrological and ecological functions performed by valley and stream corridors. The Toronto and Region Conservation Authority (TRCA), through its regulatory mandate, is responsible for issuing permits under Ontario Regulation (O.Reg.) 166/06, Development, Interference with Wetlands and Alterations to Shorelines and Watercourses for development proposals or site alteration work within the regulated areas.

A preliminary review indicates that areas of the Site which are within the floodplain and/or erosion hazard limits of the numerous perennial and ephemeral streams that traverse through the Site are located within TRCA regulated areas. As such, a permit under O.Reg. 166/06 will be required for the development of these areas.

Ontario Water Resource Act (1990)

Under Section 34 of the OWRA, a PTTW is required from the MECP for any water taking that is greater than 50,000 L/day. For construction site dewatering or road construction, water takings of more than 50,000 L/day but less than 400,000 L/day may be registered on the Environmental Activity and Sector Registry (EASR) under O.Reg. 63/16: *Registrations Under Part II.2 of the Act – Water Taking*. Water takings during construction that will exceed more than 400,000 L/day will require a PTTW issued by the MECP as will water takings post-construction that will exceed 50,000 L/day.

O.Reg. 387/04: Water Taking and Transfer Regulation

O.Reg. 387/04 under the OWRA outlines prohibited water taking and transfer activities, which must be evaluated by the MECP prior to issuing a PTTW or applicants who are self-registering on the EASR. The regulation also clarifies which activities are exempt from water taking permit requirements and outlines the data collection and reporting commitments for PTTW and EASR registration holders. Any water taking activity that is regulated by the OWRA will need to be undertaken in accordance with O.Reg. 387/04.

The Clean Water Act, 2006

The MECP mandates the protection of existing and future sources of drinking water under the CWA. Initiatives undertaken under the CWA include the delineation vulnerable areas including: Well Head Protection Areas (WHPAs); Significant Groundwater Recharge Areas (SGRAs); Intake Protection Zones (IPZs); and Highly Vulnerable Aquifer areas (HVAs). Other initiatives include the assessment of drinking water quantity threats (WHPA Q1 & Q2 and IPZ-Q) within Source Protection Regions. Source Protection Plans are developed under the CWA which include the restriction and prohibition of certain types of activities and land-uses within vulnerable drinking water areas where the activity or land-use would become a significant threat to drinking water. Regional and local municipalities are responsible for the implementation of Source Water Protection policies and initiatives with support from the relevant conservation authorities within their jurisdictions.

Based on a review of the MECP Source Water Protection Information Atlas, the Site falls within the Toronto and Region Source Protection Area (TRSPA) within the CTC Source Protection Region. Per the Approved Source Protection Plan: CTC Source Protection Region Plan amended March 25, 2019, (CTC SPP, 2019), the Site is not located within any areas where

restrictive land-use policies associated with vulnerable drinking water areas apply. Instead, best management practices with respect to materials handling are encouraged, these include salt and snow management as well as the management and appropriate containment of potential sources of contamination at the surface.

3 Regional Geological and Hydrogeological Understanding

3.1 Topography and Drainage

The Site is located within a tributary area of the West Branch of the West Humber River Subwatershed belonging to the main Humber River Watershed. The regional topography within the Humber River Watershed slopes from the topographic highs associated with the Oak Ridges Moraine to the north, where the headwaters of the watershed originate, to the topographic lows of Lake Ontario in the south. A topographic map of the area surrounding the Site is shown in **Figure 2**.

Based on a review of the topographic contours in the area of the Site, the topographic relief is shown to have a gentle slope (1-2%) in a southeasterly direction towards the tributaries of the West Humber River and steeping in the riparian areas of those tributaries. Elevation change across the Site ranges from approximate elevation 248 masl to 230 masl between the north and south with an approximate average elevation of 241-242 masl. There are two (2) main tributary branches of the West Humber River that are present on-Site which, for consistency with concurrent studies for the proposed development, will be referred to as the West Tributary and East Tributary. The West Tributary flows through the Greenbelt Plan Area while the East Tributary traverses through the centre of the Site and drains the agricultural lands on and just north of the Site. The West Tributary and East Tributary are identified in **Figure 1**.

3.2 Physiography

The Site is located within the South Slope physiographic region. The South Slope physiographic region is located on the southern flank of the Oak Ridges Moraine and is characterized by rolling terrain which is underlain by glacial till deposits of clay and loam texture. As a result of the terrain and relative imperviousness of the fine-grained overburden materials, runoff rates over the South Slope physiographic region are comparatively higher than groundwater recharge rates. Therefore, total annual flows and water quality within the local tributaries over this till plain are predominantly influenced by overland drainage and changes thereto that are occurring in the area (TRCA, 2008).

A physiographic map of the Site and the surrounding area is presented in **Figure 3**.

3.3 Surficial Geology

Mapping of regional surficial geological deposits by the OGS (2003), available through OGSEarth, has identified predominantly glaciofluvial-derived deposits of silty to clayey till occurring over the study area while the floodplains of the watercourses are occupied by modern alluvial deposits which will be comprised of heterogeneous mixtures of sand, silt, clay and gravel.

The surficial geology at the Site and in the surrounding area is presented in **Figure 4**.

3.4 Bedrock Geology

Regional geological mapping from the OGS (2011), available through OGSEarth, indicates that shale bedrock of the Georgian Bay Formation and Queenston Formation underlies the overburden soils in this area. A shallow bedrock environment (<20 m) is expected at the Site where bedrock elevations are sloping in a southeasterly direction from approximate elevation 235 masl to 220 masl across the Site in this direction from the north to the south. (ORMGP, 2021).

The bedrock geology at the Site and in the surrounding area is presented in **Figure 5**.

3.5 Hydrogeology

The understanding of regional geology and hydrogeology under which the current report has been prepared is based on the related information and mapping prepared by the TRCA (2008) and the Oak Ridges Moraine Groundwater Program (ORMGP). The ORMGP, through its online mapping portal, provides the most accessible and up-to-date consensus on regional hydrogeological mapping and a comprehensive compilation of pertinent hydrogeological data relevant to the current investigation.

3.5.1 Hydrostratigraphy

The following hydrostratigraphic units overlie the bedrock (from youngest to oldest) in the area of the Site:

A. Recent Deposits
B. Halton Till (Aquitard)
C. Oak Ridges Moraine (Aquifer)
D. Newmarket Till (Aquitard)

Lower Sediments

E. Thorncliffe Formation (Aquifer)
F. Sunnybrook Drift (Aquitard)
G. Scarborough Formation (Aquifer)

A conceptualization of the regional hydrostratigraphy through the subwatershed is depicted in **Figure 6**. The cross-section illustrates the hydrostratigraphic profile through the subwatershed which was adopted for regional groundwater flow modelling studies in the Humber River Watershed (Earthfx, 2006). A description of each hydrostratigraphic unit depicted in **Figure 6** and a determination of its presence in the study area is provided below:

- **Recent Deposits** – Consists of the surficial geologic deposits described in **Section 3.3**.
- **Halton Till** – The Halton Till was deposited approximately 13,000 years before present (B.P.) during the last glacial advance in the area and occurs at or near the ground surface over most of the study area. The Halton Till is texturally variable; however, is generally characterized by sandy silt to clayey silt till units with interbeds of silt, clay, sand and gravel. Based on ORMGP mapping, the deposits of the Halton Till aquitard are expected at the ground surface and to an approximate average depth of 9-10 mbgs.
- **Oak Ridges Moraine Aquifer Complex (ORMAC)** – The materials of the ORMAC were deposited approximately 12,000 to 13,000 years B.P. Regionally, the aquifer is 160 km long and 5 to 20 km wide with a thickness of approximately 150 m. The prototypical deposits of the ORMAC consist of glaciofluvial to glaciolacustrine-derived deposits of stratified fine sands and silts, with coarse sand and gravel occurring locally. Based on ORMGP mapping, the deposits of the ORMAC are expected to be encountered from approximate elevations of 240 masl to 230 masl from north to south across the development area and may be absent from the hydrostratigraphic progression toward the southeast portion of the Site. At the Site, the deposits of the ORMAC are expected to be confined below the overlying deposits of the Halton Till aquitard.

- **Newmarket Till** – The Newmarket Till Aquitard was deposited by the Laurentide ice sheet approximately 18,000 to 20,000 years B.P. and is a massive, dense, over-consolidated formation consisting of sandy silt to silty sand diamicton marking the separation between the overlying ORMAC and the Thorncliffe Aquifer, Sunnybrook Aquitard, and Scarborough Aquifer, collectively the Lower Sediments. The Newmarket Till formation is expected to be encountered as a thin material deposit (<5 m) overlying the bedrock.
- **Lower Sediments** – The aquifer and aquitard formations of the Lower Sediments are not expected in the hydrostratigraphic progression of unconsolidated sediments between the ground surface and top of bedrock at the Site based on mapping presented by the ORMGP and shallow depth of bedrock.

3.5.2 Groundwater Flow

At a regional scale, groundwater flows generally in a southeasterly direction through the watershed towards Lake Ontario. Shallow groundwater flow will be influenced locally by variations in surficial geological materials as these are known to offer limited recharge potential, and by the many watercourses that meander within the subwatershed and which may have minor contributions from groundwater discharge.

4 Site Geology and Hydrogeology

The current understanding of the geological materials and hydrogeological characteristics of the Site is based on the investigations conducted at the Site by TIL in 2021. The findings from TIL's investigations of soil and groundwater conditions at the Site are described in the following sections.

4.1 Overburden

The overburden deposits at the Site were investigated to a maximum depth of 6.63 mbgs across the Site. From the discrete points of investigation, a top-course of soil/reworked fill from existing agricultural land uses was encountered generally within a depth of 1 mbgs. Underlying these was a laterally continuous fine-grained aquitard comprised fairly consistently of clayey silt textured materials in a stiff to very stiff consistency. Exceptions to this general observation of the underlying Site geology are found in areas slightly removed from the tributaries on-Site where deposits of sandy silt were encountered. Also, of note from the drilling investigation was a single instance of sand and gravel encountered below the clayey silt mantle at 21BH-6 at an approximate depth of 4.73 mbgs. Based on the spread of boreholes completed across the Site and the observations and characterizations of the soils from those boreholes, the deposit of sand and gravel encountered at 21BH-6 is anticipated to be isolated to this area. Considering the understanding of regional hydrostratigraphy from the previous section, the sand gravel deposits and like deposits of the ORMAC may become more prevalent in areas north of the Site where the deposits of the ORMAC may be expected at shallower elevations and in greater thicknesses.

A comprehensive detailing of the soils encountered during the drilling investigation on-Site is provided in the geotechnical investigation report by TIL (2021) provided under separate cover. The borehole logs included in TIL's geotechnical investigation are attached as **Appendix B**.

4.2 Bedrock

Bedrock was not encountered at the terminal depths of the borehole investigation.

4.3 Groundwater Conditions

4.3.1 On-Site Monitoring Network

A monitoring network consisting of 16 on-Site monitoring wells was established as part of the subsurface investigation undertaken by TIL and included in the testing, sampling and monitoring programs for the current hydrogeological study. The locations of the monitoring wells included in the current investigation are illustrated together with static water level elevations from a monitoring event on June 22, 2021, in plan view in **Figure 7**. Cross-section illustrations of the underlying geological environment for the Site are provided in **Figure 8** and **Figure 9** in an east-west and north-south orientation through the Site, respectively. A summary of the monitoring well construction details is provided in **Table 4-1**.

Table 4-1 Monitoring Well Construction Details

Well ID	Ground Elevation	Screen Interval	Well Diameter	Screen Length	Screened Unit
	(masl)	(mbgs / masl)	(m)	(m)	
21BH-02 (MW)	232.99	3.05 - 6.1 / 229.94 - 226.89	0.051	3.048	Clayey SIlt
21BH-03 (MW)	235.52	3.05 - 6.1 / 232.47 - 229.42	0.051	3.048	Clayey SIlt
21BH-07 (MW)	240.17	3.05 - 6.1 / 237.12 - 234.07	0.051	3.048	Clayey Silt
21BH-10 (MW)	243.38	3.05 - 6.1 / 240.33 - 237.28	0.051	3.048	Sandy to Clayey Silt
21BH-13 (MW)	248.37	3.05 - 6.1 / 245.32 - 242.27	0.051	3.048	Clayey Silt/Sandy Silt
21BH-16 (MW)	239.92	3.05 - 6.1 / 236.87 - 233.82	0.051	3.048	Sandy Silt
21BH-18 (MW)	240.63	3.05 - 6.1 / 237.58 - 234.53	0.051	3.048	Clayey Silt
21BH-20 (MW)	245.32	3.05 - 6.1 / 242.27 - 239.22	0.051	3.048	Clayey Silt to Sandy Silt
21BH-22 (MW)	242.39	1.44 - 2.44 / 240.95 - 239.95	0.051	1	Fill
21BH-23 (MW)	247.76	3.05 - 6.1 / 244.71 - 241.66	0.051	3.048	Clayey Silt
21BH-25 (MW)	247.05	3.05 - 6.1 / 244 - 240.95	0.051	3.048	Clayey Silt
21BH-29 (MW)	243.27	3.05 - 6.1 / 240.22 - 237.17	0.051	3.048	Clayey Silt
21BH-30 (MW)	240.55	3.05 - 6.1 / 237.5 - 234.45	0.051	3.048	Clayey Silt
21BH-33 (MW)	238.48	3.05 - 6.1 / 235.43 - 232.38	0.051	3.048	Clayey Silt/Sandy Silt
21BH-36 (MW)	242.22	3.05 - 6.1 / 239.17 - 236.12	0.051	3.048	Sandy Silt
21BH-37 (MW)	240.13	3.05 - 6.1 / 237.08 - 234.03	0.051	3.048	Sandy Silt

4.3.2 Groundwater Levels

All monitoring wells included in the current investigation were installed between May 25th and June 3rd, 2021, and groundwater levels from all monitoring wells were collected each week for the following 3 weeks for inclusion in this report. Based on observations during this time, a delayed response from the groundwater system was observed at several monitoring wells due to the low permeability materials encountered on-Site. A summary of static groundwater level measurements is presented in **Table 4-2** in mbgs and **Table 4-3** in masl, respectively.

Based on the observations from the groundwater level monitoring undertaken on June 22, 2021, groundwater levels varied between two distinct areas, including one, in areas adjacent to the surface drainage features observed in the agricultural fields and tributary valleys, and two, in areas removed from those features. In areas believed nearer to the drainage features, including 21BH-13 (MW), 21BH-16 (MW), 21BH-20 (MW), 21BH-22 (MW), 21BH-23 (MW) and 21BH-33 (MW), the depths to groundwater from the monitoring wells at these locations were recorded between 0.9 mbgs to 2.46 mbgs. One exception to this general observation was observed at 21BH-3 along the south portion of the East Tributary where the monitoring well was reported as dry over the current monitoring period. By comparison, at the location of wells completed at locations more removed from these features, the depths to groundwater were reported between 3.19 mbgs and 5.87 mbgs, and an average of approximately 5 mbgs.

It should be noted that the shallow groundwater table at the Site will fluctuate coincidentally with seasonal trends in precipitation and snowmelt, which both supply recharge to the groundwater system. Correspondingly, the groundwater table is typically highest in the spring, when recharge is higher, and lowest in the summer and late fall/early winter when recharge is lower. The variability as a cause of recharge can vary from 1 m to 3 m throughout the year. As current

monitoring has been conducted only in the month of June, it is anticipated that groundwater levels on-Site at the time of monitoring had already begun trending down. Additionally, considering the dry weather that has persisted in Southern Ontario during the period of monitoring, it possible that groundwater levels are lower now than they may otherwise be under normal climatic conditions at this time.

A long-term groundwater level monitoring program is underway at the Site to capture the seasonal variability in the shallow groundwater system and to determine the high groundwater level for this Site. Monitoring is scheduled to be completed monthly for a period of 12 months and will be supplemented by continuous hourly readings from level loggers instrumented in two wells on-Site. The results of long-term monitoring will be reported in a future revision of this report.

Table 4-2 Groundwater Levels (mbgs)

Well ID	Screen Interval	7-Jun-21	14-Jun-21	14-Jun-21
21BH-2 (MW)	3.05 - 6.1	NA	5.34	5.36
21BH-3 (MW)	3.05 - 6.1	Dry	NA	Dry
21BH-7 (MW)	3.05 - 6.1	4.63	4.72	4.52
21BH-10 (MW)	3.05 - 6.1	4.48	4.01	3.19
21BH-13 (MW)	3.05 - 6.1	2.26	1.81	1.87
21BH-16 (MW)	3.05 - 6.1	0.71	0.76	0.90
21BH-18 (MW)	3.05 - 6.1	5.07	4.98	3.96
21BH-20 (MW)	2.75 - 5.8	NA	1.15	1.28
21BH-22 (MW)	1.44 - 2.44	1.08	1.11	1.41
21BH-23 (MW)	3.05 - 6.1	1.54	1.55	1.60
21BH-25 (MW)	3.05 - 6.1	Dry	NA	5.87
21BH-29 (MW)	3.05 - 6.1	Dry	NA	5.53
21BH-30 (MW)	3.05 - 6.1	Dry	NA	5.71
21BH-33 (MW)	3.05 - 6.1	NA	2.34	2.46
21BH-36 (MW)	3.05 - 6.1	Dry	5.26	4.58
21BH-37 (MW)	3.05 - 6.1	Dry	Dry	5.61

Notes:
1. water levels measured from existing ground surface
2. NA indicates water levels not taken.

Table 4-3 Groundwater Elevations (masl)

Well ID	Screen Interval	7-Jun-21	14-Jun-21	14-Jun-21
21BH-2 (MW)	229.94 - 226.89	NA	227.65	227.63
21BH-3 (MW)	232.47 - 229.42	Dry	NA	Dry
21BH-7 (MW)	237.12 - 234.07	235.54	235.45	235.65
21BH-10 (MW)	240.33 - 237.28	238.90	239.37	240.19
21BH-13 (MW)	245.32 - 242.27	246.11	246.56	246.50
21BH-16 (MW)	236.87 - 233.82	239.21	239.16	239.02
21BH-18 (MW)	237.58 - 234.53	235.56	235.65	236.67
21BH-20 (MW)	242.57 - 239.52	NA	244.17	244.04
21BH-22 (MW)	240.95 - 239.95	241.31	241.28	240.98

Table 4-3 Groundwater Elevations (masl)

Well ID	Screen Interval	7-Jun-21	14-Jun-21	14-Jun-21
21BH-23 (MW)	244.71 - 241.66	246.22	246.21	246.16
21BH-25 (MW)	244 - 240.95	Dry	NA	241.18
21BH-29 (MW)	240.22 - 237.17	Dry	NA	237.74
21BH-30 (MW)	237.5 - 234.45	Dry	NA	234.84
21BH-33 (MW)	235.43 - 232.38	NA	236.14	236.02
21BH-36 (MW)	239.17 - 236.12	Dry	236.96	237.64
21BH-37 (MW)	237.08 - 234.03	Dry	Dry	234.52

Notes:
1. water levels measured from existing ground surface
2. NA indicates water levels not taken.

4.3.3 Groundwater Flow

Based on preliminary monitoring results, local groundwater flow is anticipated to be influenced by the existing West Tributary and East Tributary as well as the land drainage features which currently assist in draining the agricultural lands. The available data suggest the general direction for local groundwater flow direction is to the southeast and is generally a subdued reflection of the land topography and underlying bedrock surface.

The groundwater flow direction will be discussed further in a future revision to this report in light of additional monitoring information which will be gathered during the long-term monitoring program.

4.3.4 Hydraulic Conductivity

Single well hydraulic response testing in the form of rising-head tests was conducted between June 14th and June 22nd, 2021, to measure the in-situ hydraulic conductivity (K) of the screened overburden materials. Testing could only be completed at select monitoring wells which had sufficient water column at the time of testing to register a drawdown response to complete the testing. At the time of writing, select monitoring wells had either not fully recovered from a test previously started or had testing initiated on the final monitoring event included in this report. The results from the testing of these outstanding monitoring wells will therefore be included in a future revision to this report.

Prior to testing, each well was developed in order to mitigate the influence of native, near-well materials disturbed during the drilling program. During the rising head test, a pseudo-instantaneous drop in the water level was achieved by extracting water from the well using a manual inertial pump. The water level recovery was measured by a datalogger taking readings at pre-programmed intervals and left in place to record recovery. For the test, sufficient recovery to conclude the testing was considered to be at or above approximately 85% of the pre-test water column.

The hydraulic conductivity was estimated using the Hvorslev (1951) method with the data recorded by the dataloggers. The corresponding analyses are presented in **Appendix C**. A summary of hydraulic conductivities is presented in **Table 4-4**.

Table 4-4 Summary of Hydraulic Conductivity Calculations

Well ID	Screen Interval (mbgs)	Material Tested	Hvorslev Method K (m/s)
21BH-2 (MW)	3.05 - 6.1	Clayey SIlt	Pending
21BH-7 (MW)	3.05 - 6.1	Clayey Silt	3.6×10^{-9}
21BH-10 (MW)	3.05 - 6.1	Sandy to Clayey Silt	2.4×10^{-9}
21BH-13 (MW)	3.05 - 6.1	Clayey Silt/Sandy Silt	1.5×10^{-9}
21BH-16 (MW)	3.05 - 6.1	Sandy Silt	2.2×10^{-6}
21BH-18 (MW)	3.05 - 6.1	Clayey Silt	1.5×10^{-9}
21BH-20 (MW)	2.75 - 5.8	Clayey Silt to Sandy Silt	3.6×10^{-7}
21BH-22 (MW)	1.44 - 2.44	Fill	6.1×10^{-6}
21BH-23 (MW)	3.05 - 6.1	Clayey Silt	5.5×10^{-6}
21BH-25 (MW)	3.05 - 6.1	Clayey Silt	Pending
21BH-29 (MW)	3.05 - 6.1	Clayey Silt	Pending
21BH-30 (MW)	3.05 - 6.1	Clayey Silt	Pending
21BH-33 (MW)	3.05 - 6.1	Clayey Silt/Sandy Silt	1.4×10^{-8}
21BH-36 (MW)	3.05 - 6.1	Sandy Silt	Pending
21BH-37 (MW)	3.05 - 6.1	Sandy Silt	Pending

The results of in-situ testing suggest that the clayey silt to sandy silt materials screened by most of the monitoring wells on-Site are of low to very low hydraulic conductivity. Estimates of saturated horizontal hydraulic conductivity for these materials ranged from 1.5×10^{-9} m/s and 3.7×10^{-7} m/s, with a geometric mean of 6.8×10^{-9} m/s. Meanwhile, testing results from 21BH-16 (MW), 21BH-20 (MW) and 21BH-23 have indicated that there is potential for zones of moderately higher permeability to be encountered as well, including within the fill deposits and native deposits with reduced clay percentage; however, these zones are expected to be limited in extent and not indicative of the prevailing bulk response of the overburden under an induced flow gradient. Textbook figures for a glacial till material described as clayey silt to sandy silt range on the order of 10^{-12} m/s to 10^{-6} m/s (Freeze & Cherry, 1979); therefore, the results of testing for this investigation are within the range of literature.

Based on the understanding of the local Site hydrogeology, anticipated depths of excavation for construction of services, and range in hydraulic conductivity estimates, the hydraulic conductivity which is assumed to be representative of the overburden for evaluating requirements for groundwater control during construction, is approximately 6×10^{-8} m/s. This is considered representative of ground conditions within the anticipated depth of construction at the time of writing; however, following a review of testing results from those tests that are outstanding, a revision to this figure may be warranted.

4.3.5 Groundwater Quality

Unfiltered groundwater quality samples were collected from 21BH-7 (MW) on June 7, 2021. The collected samples were sent to SGS Environmental Services in Lakefield, Ontario. The samples were analyzed for the parameters and against their corresponding sanitary and storm sewer discharge criteria listed in the Region of Peel *Wastewater By-Law Number 53-2010* (By-Law 53-

2010). A summary of groundwater quality results relative to By-Law 53-2010 is provided in **Table 4-5**. The laboratory Certificates of Analysis and Chain of Custody are provided in **Appendix D**.

The laboratory analytical results indicated that both Manganese (total) and Zinc (total) were above the concentrations for discharge to the municipal storm sewers per the *Table 2 – Limits for Storm Sewer Discharge* of By-Law 53-2010. Additionally, the parameter Sulphate was found at concentrations exceeding the discharge criteria outlined in the *Table 1 – Limits for Sanitary Sewer Discharge* of By-Law 53-2010. It is anticipated that the elevated concentrations of Sulphate identified by this sample are a result of the recent and historical uses of the Site for agriculture purposes and potential application of fertilizers and animal waste that have taken place. It is recommended that additional groundwater samples, distributed spatially across the Site, be collected to determine the extent of elevated concentrations for sulphate in groundwater and identify potential alternative on-Site or off-Site sources.

Table 4-5 Groundwater Quality Results

Sample ID	Units	Peel Sanitary By-law Limit	Peel Storm By-law Limit	RL	21BH-7 (MW)
					07-Jun-21
E. Coli	cfu/100mL	---	200	2	0
pH	no unit	5.5-10.0	6.0-9.0	0.05	7.27
Biochemical Oxygen Demand (BOD5)	mg/L	300	15	2	< 4 ↑
Total Suspended Solids	mg/L	350	15	2	13
Fluoride	mg/L	10	---	0.06	0.17
Cyanide (total)	mg/L	2	0.02	0.01	< 0.01
Total Kjeldahl Nitrogen	as N mg/L	100	1	0.5	< 0.5
4AAP-Phenolics	mg/L	1.0	0.008	0.002	< 0.002
Sulphate	mg/L	1500	---	2	3500
Oil & Grease (total)	mg/L	---	---	2	< 2
Oil & Grease (animal/vegetable)	mg/L	150	---	4	< 4
Oil & Grease (mineral/synthetic)	mg/L	15	---	4	< 4
Mercury (total)	mg/L	0.01	0.0004	0.000010	< 0.00001
Aluminum (total)	mg/L	50	---	0.001	0.271
Antimony (total)	mg/L	5	---	0.0009	< 0.0009
Arsenic (total)	mg/L	1	0.02	0.0002	0.0010
Cadmium (total)	mg/L	0.7	0.008	0.000003	0.000025
Chromium (total)	mg/L	5	0.08	0.00008	0.00087
Copper (total)	mg/L	3	0.05	0.0002	0.0027
Cobalt (total)	mg/L	5	---	0.000004	0.00732
Lead (total)	mg/L	3	0.120	0.00001	0.00042
Manganese (total)	mg/L	5	0.05	0.00001	0.429
Molybdenum (total)	mg/L	5	---	0.00004	0.00190
Nickel (total)	mg/L	3	0.08	0.0001	0.0187

Table 4-5 Groundwater Quality Results

Sample ID	Units	Peel Sanitary By-law Limit	Peel Storm By-law Limit	RL	21BH-7 (MW)
					07-Jun-21
Phosphorus (total)	mg/L	10	0.4	0.003	0.017
Selenium (total)	mg/L	1	0.02	0.00004	0.00134
Silver (total)	mg/L	5	0.12	0.00005	<0.00005
Tin (total)	mg/L	5	---	0.00006	0.00238
Titanium (total)	mg/L	5	---	0.00005	0.00998
Zinc (total)	mg/L	3	0.04	0.002	0.063
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.001	0.0004	0.0001	< 0.0001
Benzene	mg/L	0.01	0.002	0.0005	< 0.0005
Chloroform	mg/L	0.04	0.002	0.0005	< 0.0005
1,2-Dichlorobenzene	mg/L	0.05	0.0056	0.0005	< 0.0005
1,4-Dichlorobenzene	mg/L	0.08	0.0068	0.0005	< 0.0005
cis-1,2-Dichloroethene	mg/L	4	0.0056	0.0005	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.14	0.0056	0.0005	< 0.0005
Ethylbenzene	mg/L	0.016	0.002	0.0005	< 0.0005
Methylene Chloride	mg/L	2	0.0052	0.0005	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	1.4	0.017	0.0005	< 0.0005
Methyl ethyl ketone	mg/L	8.0	---	0.02	< 0.02
Styrene	mg/L	0.2	---	0.0005	< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	1	0.0044	0.0005	< 0.0005
Toluene	mg/L	0.27	0.002	0.0005	< 0.0005
Trichloroethylene	mg/L	0.4	0.008	0.0005	< 0.0005
Xylene (total)	mg/L	1.4	0.0044	0.0005	< 0.0005
m-p-xylene	mg/L	---	---	0.0005	< 0.0005
o-xylene	mg/L	---	---	0.0005	< 0.0005
di-n-Butyl Phthalate	mg/L	0.08	0.015	0.002	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.012	0.0088	0.002	< 0.002
Nonylphenol	mg/L	0.02	---	0.001	< 0.001
Nonylphenol Ethoxylates	mg/L	0.2	---	0.01	< 0.01
Nonylphenol diethoxylate	mg/L	---	---	0.01	< 0.01
Nonylphenol monoethoxylate	mg/L	---	---	0.01	< 0.01

Notes: Highlighted cells indicate an exceedance of storm sewer criteria.
Highlighted cells indicate an exceedance of both storm and sanitary criteria.
↑ Reporting limit increased

5 Short-Term and Long-Term Groundwater Control

The assessment of short-term and long-term groundwater control is deferred to a future stage in the detailed design of the site servicing and stormwater management pond where the details around potential excavation dimensions and methods of construction may be available. At that time, it is anticipated that additional groundwater level monitoring data will be available as well, including data representative of seasonal high groundwater conditions to inform the assessment. Moreover, information that may become available from concurrent environmental impact studies being undertaken for the proposed development, will be critical to the development of a groundwater and dewatering management plan during construction which respects the sensitivities of the surrounding natural environment, namely the West Tributary and East Tributary areas and downstream terrestrial and aquatic habitats.

The underlying hydrogeological conditions of the Site describe by an unconfined clayey silt to sandy silt aquitard formation of very low permeability and in areas nearer to existing drainage features may contain discrete and disconnected deposits of moderately higher permeability. In general, the response of the groundwater system during construction is anticipated to be dominated by the very low permeability materials. The aquitard materials were found to extend to the terminal depths of the current investigation, a depth of 6.63 mbgs. The representative bulk hydraulic conductivity of the aquitard unit within the anticipated depths of excavation for the proposed development was assumed equivalent to 6×10^{-8} m/s. Under these conditions, the Zone of Influence (ZOI) of dewatering activities is not likely to expand more than 10 m from any excavation. Based on the anticipated areas of dewatering, impacts from water takings, including to land stability and sensitive receptors are not expected.

Based on our understanding of the proposed development and requirements for construction at this time, the soil and groundwater conditions observed at the time of writing suggest the groundwater dewatering effort during construction will likely not be significant for the construction of services as well as the stormwater management pond. It is anticipated that adequate control for construction may be provided by strategically placed filtered sumps within the excavations. Notwithstanding, the most effective dewatering measures for the prevalent ground conditions and the design of the dewatering operations are the sole responsibility of the dewatering contractor on-Site at that time.

Long-term groundwater dewatering is not expected for the proposed development considering buildings will be constructed slab-on-grade. Recommendations from TIL's concurrent geotechnical investigation should be reviewed for foundation preparation and construction of the floor slabs for future buildings.

Potential dewatering rates and the necessary regulatory permitting instruments to facilitate groundwater takings and discharge will be provided in a future revision of this report which will be prepared in the detailed design stage. The assessment will include further resolution of potential impacts from dewatering and a monitoring plan, if necessary, to mitigate and/or manage potential impacts.

6 Potential Receptors and Impacts

6.1 Potential Receptors

Sensitive groundwater receptors are classified as those receptors, either natural or anthropogenic, which rely on either the quantity or quality of groundwater inputs and which may be impacted by activities for groundwater control. From a groundwater perspective, potential receptors might include domestic and/or permitted water takers, vulnerable drinking water areas, and ecological receptors and their habitat. An understanding of the prevalence of these receptors near the Site area was ascertained by:

- Identifying potential ecological receptors and their habitats within a 500 m radius of the Site by reviewing relevant background documentation and accessing the MNRF's Natural Heritage Areas mapping and querying the Natural Heritage Information Centre (NHIC);
- Identifying vulnerable drinking water areas susceptible to impacts to groundwater quantity or quality by accessing the MECPs Source Water Protection Information Atlas;
- Identifying individual domestic water wells within a 500 m radius of the Site which may still be active by querying the MECP (2020b) Water Well Information System; and
- Identifying permitted water takers under the OWRA within a 500 m radius of the Site by querying the MECP (2020c) PTTW database.

6.2 Ecological Receptors

Based on a review of the MNRF's Natural Heritage Areas mapping portal, the Site is located within 500 m of woodlots, watercourses, and wetlands which are located in or traverse through the Site, including areas protected under the Greenbelt Plan as Protected Countryside. The Site is not shown to be located within or near Areas of Natural Scientific Interest (ANSIs). The NHIC Report for a 1 square km area inclusive of the Site suggests that Redside Dace habitat exists near the Site. An export from the MNRF Natural Heritage Area mapping portal is provided as **Figure 10**.

It is our understanding that this habitat has been identified in the West Tributary while the East Tributary is contributing habitat to Redside Dace (Crozier, 2021).

The discharge of groundwater and stormwater to a natural watercourse can alter the habitat of sensitive species like Redside Dace, particularly impacts from sediment loading and changes to the thermal regime, which are harmful to their prosperity in those habitats and is therefore warranted in a dewatering discharge plan if needed. We understand the detailed design stage for the stormwater management system for the Site will include provisions to maintain the habitat of Redside Dace in the area which are being developed in coordination with the aquatic ecologists on the consultant team (Crozier, 2021).

6.3 Vulnerable Drinking Water Areas

Based on a review of the CTC Source Protection Plan, the Site is not located within any vulnerable drinking water areas defined by the CWA. An export from the Source Water Protection Information Atlas is provided as **Figure 11** for illustration purposes.

6.4 MECP Water Well Record Search

A query of the MECP's WWIS for a 500 m search radius around the Site returned a total of 53 well records which are categorized based on their last known status in **Table 6-1**. **Appendix E** provides the list of MECP water well records returned by the search.

Table 6-1 Water Well Records within 500 m Buffer

Primary Well Use	Number of Wells within 500 m Buffer of Study Area	Percentage of Total
Water Supply	25	47%
Monitoring/Observation/Test Hole	8	15%
Abandoned/Unfinished	10	19%
Unknown	10	19%
Total	**53**	100%

Water supply wells comprise 47% of all well records found within a 500 m buffer of the Site, the majority of which were filed for domestic water supply wells. The records show that these wells were installed between 1956 and 2008 and, considering surrounding rural residential land uses, some are presumed to be active for other uses considering municipal water service is available to the areas with the sear radius.

It is recommended that a private water well survey be undertaken during the detailed design stage in accordance with the Region of Peel guidance document *Guidelines for Hydrogeological Assessment and Reporting Requirements – New Developments on Municipal Services* (July 2009). The private water well survey will document existing private wells, if any, that remain active in the areas near the Site and the details of their construction. Monitoring of private wells may be required during construction at the discretion of the well owner to document potential impacts during construction to their well, both from a quantity and quality perspective.

6.5 Permitted Water Users

A search was conducted of the MECP (2020c) PTTW database to identify the permitted groundwater takers within 500 m of the Site boundary. There are no active groundwater PTTWs currently identified within the search area.

7 Impact Assessment and Mitigation

7.1 Potential Short-Term Impacts

Groundwater System

Impacts to the groundwater system during construction can include a temporary lowering of the groundwater table during construction dewatering or the introduction of contamination from dry and wet weather spills. Based on the current findings of this investigation, limited groundwater dewatering is anticipated during construction. However, construction sites that store and handle fuels and other chemicals in the short-term are susceptible to spill risks and groundwater contamination.

A Spill Prevention and Response Plan is recommended during construction to mitigate potential spills and it is recommended that potentially hazardous materials be stored in designated areas with appropriate containment as well as away from areas of high vehicle traffic. Assuming protocols are in place for managing construction-related sources of groundwater contamination, no short-term impacts to the groundwater system are anticipated.

Surface Water System

Short-term impacts to the surface water system include changes in the hydrologic regime caused by land grading changes or the deposition of sediment, hazardous materials, or other deleterious substances into waterbodies and watercourses. As the development area is adjacent to sensitive ecological habitat for Redside Dace, potential impacts to these receptors are warranted during construction.

Potential impacts are anticipated to be effectively mitigated where a Site-specific Spill Prevention and Response Plan as well as an Erosion and Sediment Control (ESC) Plan are in place. Where a Groundwater and Dewatering Discharge Plan is required during construction, it should also consider the potential impacts of discharge to these habitats and includes strategies for mitigation and contingency action. Routine monitoring of ESC measures will ensure the form and function of these controls in preventing off-Site impacts to the sensitive surface water system adjacent to the Site. No unacceptable impacts to the surface water system during construction are anticipated where environmental controls are stabilized and monitored during the construction period.

Other Groundwater Users

Impacts to other groundwater users include impacts to both the quantity and quality of groundwater available to private water supplies as well as permitted groundwater takers through the reduction in recharge or introduction of contamination to the water supply aquifer.

In the short-term, limited groundwater takings within the development area are proposed nor are unacceptable losses to groundwater recharge anticipated. Therefore, no impacts to the quantity of groundwater available are anticipated. Impacts from contamination are expected to be mitigable where a Spill Prevention and Response Plan is in place and best management practices for the storage and use of potential sources of contamination are followed. Correspondingly, no unacceptable impacts to other groundwater users during construction are expected.

7.2 Potential Long-Term Impacts

Groundwater System

Long-term impacts to the groundwater system may include reductions in annual recharge which have a compounding effect on groundwater levels as well as from land-uses where high-risk activities are proposed, including, for example, industrial and commercial areas where hazardous materials may be stored/used, where hazardous waste is generated, and where significant quantities of road salt are used for winter ice management. Best management practices for the storage and handling of chemicals and road salt over the long-term are encouraged.

Considering the results of the in-situ conductivity testing of this study and the textures of the underlying soils, the Site is not anticipated to be an area of significant groundwater recharge. Therefore, adverse impacts to the component of groundwater recharge in the Site's water balance are not anticipated following the development of the Site. However, as existing watercourses on-Site are anticipated to rely more strongly on surface runoff, the retention and release of overland drainage at a quantity and quality appropriate to the ultimate receptor will be integral to maintaining the Site's water balance over the long-term.

Surface Water System

Potential long-term impacts to the surface water system from new development can include reductions in the catchments which are tributary to the system as well as the introduction of urban contaminants from the new development area which may alter the quality of surface water.

It is our understanding that the water balance for the Site is forthcoming as the criteria for the water balance are under development at the current conceptual design stage. The factual soil and groundwater data of this hydrogeological investigation and future monitoring may be used to inform the Low Impact Development (LID) Mitigation Plan for the Site's water balance. The assessment and mitigation of long-term impacts is being undertaken by others.

Potential Long-Term Impacts to Other Groundwater Users

As no long-term water takings from local water supply aquifers are required in the long-term and no adverse reductions in groundwater recharge are expected, no unacceptable long-term impacts to other groundwater users identified in this investigation are expected.

8 Summary

A summary of the hydrogeological investigation, completed in support of the proposed development is included below:

- The Site falls within the CTC Source Protection Region; however, no vulnerable drinking water areas are present at the Site.
- The Site is located within the West Humber River Subwatershed, which is under the jurisdiction of the TRCA. Two tributaries of the West Humber River, named the West Tributary and East Tributary in this study, are conveyed through the Site and are located within the TRCA's regulated areas. A permit from the TRCA will be required for construction in these areas. No ground-disturbing works are proposed with the vegetation buffer for the West Tributary, which is located within Protected Countryside of the Greenbelt Plan.
- The proposed development area of the Site slopes gently towards the southeast from approximately 250 masl to 230 masl except in areas adjacent to the watercourses and land drainage features on-Site where topography steepens.
- The Site is situated in the South Slope physiographic region. In the area of the Site, this physiographic region is characterized at the surface by relatively impermeable deposits of glacial origin comprised of clay and loam. Groundwater infiltration across the South Slope physiographic region is limited by these soils; therefore, the total annual flow of the watercourses that are conveyed through this area is supported primarily by surface runoff.
- The overburden material generally consists of topsoil or fill up to a depth of approximately 1 mbgs, and is underlain by fine-grained glacial deposits of clayey silt to sandy silt. With the exception of an isolated deposit of sand and gravel at the north boundary of the Site, these fine-grained deposits were encountered to the maximum depth of investigation of 6.63 mbgs.
- Groundwater levels have been monitored at the Site in June of 2021, including weekly for three weeks after monitoring well installation. Based on the observations from the groundwater level monitoring undertaken on June 22, 2021, groundwater levels varied between two distinct areas. In areas adjacent to the surface drainage features observed in the agricultural fields and tributary valleys, the depths to groundwater from the monitoring wells at these locations were recorded between 0.9 mbgs to 2.46 mbgs. By comparison, at the location of wells completed at locations more removed from these features, the depths to groundwater were reported between 3.19 mbgs and 5.87 mbgs, and an average of approximately 5 mbgs. A long-term monitoring program is currently underway and will investigate the shallow groundwater system and corresponding variability further for a future assessment of requirements for groundwater control during construction.
- The underlying hydrogeological conditions of the Site describe an unconfined clayey silt to sandy silt aquitard formation of very low permeability and in areas nearer to existing drainage features may contain discrete and disconnected deposits of moderately higher permeability. In general, the response of the groundwater system during construction is anticipated to be dominated by the very low permeability materials. The representative

bulk hydraulic conductivity of the aquitard unit within the anticipated depths of excavation for the proposed development was assumed equivalent to 6 x 10^{-8} m/s.

- Based on laboratory analyses, the groundwater quality does not meet the discharge criteria for the Table 1 Limits for Sanitary Sewer Discharge or Table 2 Limits for Storm Sewer Discharge of the Region of Peel Wastewater By-Law 55-2013. Based on the analytical results, both Manganese (total) and Zinc (Total) were detected at concentrations above the Table 2 criteria, while sulphate, which does not have a limit in Table 2, was found at a concentration above the Table 1 criteria.
- Based on our understanding of the proposed development and requirements for construction at this time, the soil and groundwater conditions suggest that the groundwater dewatering effort during construction will likely not be significant for the construction of services as well as the stormwater management pond. The assessment of short-term requirements for groundwater control has been deferred to the detailed design stage where further information for this assessment will be available, including sensitivities for dewatering discharge planning and results of the long-term monitoring program. The permitting instrument for groundwater takings and discharge, should any be required, will also be identified during that assessment.
- A review of the MECP WWIS for the area within a 500 m radius of the Site identified a total of 53 records, including 25 for water supply.
- Potential long-term impacts to the groundwater system and surface water system identified in this investigation are the subject of future assessments being undertaken by other members of the consultant team. The West Tributary is identified as Redside Dace habitat while the East Tributary is identified as contributing habitat for Redside Dace. The mitigation of impact to the water balance of these features and the quality of future inputs to these features are proposed to be addressed by the implementation of LIDs and end of pipe controls.

Based on the findings of the current report, the following recommendations are offered:

- It is recommended that additional groundwater samples, distributed spatially across the Site, be collected to determine the extent of elevated concentrations for sulphate in groundwater and identify potential alternative on-Site or off-Site sources. These samples should be supplemented by surface water quality samples in the watercourses on-Site if they will be proposed as a receptor to discharge of construction water, direct or indirect.
- A private water well survey is recommended for this area prior to construction activities to verify and document the status of active private water wells and to establish a monitoring program for these wells with the owners for the construction period.
- A Spill Prevention and Response Plan, ESC Plan, and Dewatering Management Plan should be implemented with routine monitoring during construction to limit potential impacts to the groundwater system and surface water system as well as the off-Site release of sediment during open excavation.

9 References

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York, Peel, Durham, Toronto and The Conservation Authorities Moraine Coalition (YPDT-CAMC). 2006. Groundwater Modelling of the Oak Ridges Moraine Area. CAMC-YPDT Technical Report # 01-06. Prepared by Earthfx Inc. (Earthfx, 2006)

10 General Statement of Limitation

The comments presented in this report are based on the soil and groundwater samples gathered from the borehole/monitoring well locations indicated on the plan of this report. There is no warranty expressed or implied or representations made by Toronto Inspection Ltd. that this program has discovered all potential environmental risks or liabilities associated with the subject site.

Although we consider this report to be representative of the subsurface conditions at the subject property in the areas investigated, any interpretation of factual data or unexpected soil conditions which exhibit noticeable discolouration, odour, etc. in areas not investigated in this report, should be discussed in consultation with us prior to any initiation of activity. Our responsibility is limited to an accurate assessment of the soil condition prevailing at the locations investigated at the time of the study.

To the fullest extent permitted by law, the client's maximum aggregate recovery against Toronto Inspection Ltd., its directors, employees, sub-contractors and representatives, for any and all claims by Tullamore Industrial GP Limited for all causes including, but not limited to, claims of breach of contract, breach of warranty and/or negligence, shall be the amount of fees paid to Toronto Inspection Ltd. for its professional engineering services rendered with respect to the particular site which is the subject of the claim by the client.

Any use and/or interpretation of the data presented in this report, and any decisions made on it by the third party are responsibility of the third party. Toronto Inspection Ltd. accepts no responsibility for loss of time and damages, if any, suffered by the third party as a result of decisions or actions based on this report.

Any legal actions arising directly or indirectly from this work and/or Toronto Inspection Ltd.'s performance of the services shall be filed no longer than two years from the date of Toronto Inspection Ltd.'s substantial completion of the services. Toronto Inspection Ltd. shall not be responsible to the client for lost revenues, loss of profits, cost of content, claims of customers, or other special indirect, consequential, or punitive damages.

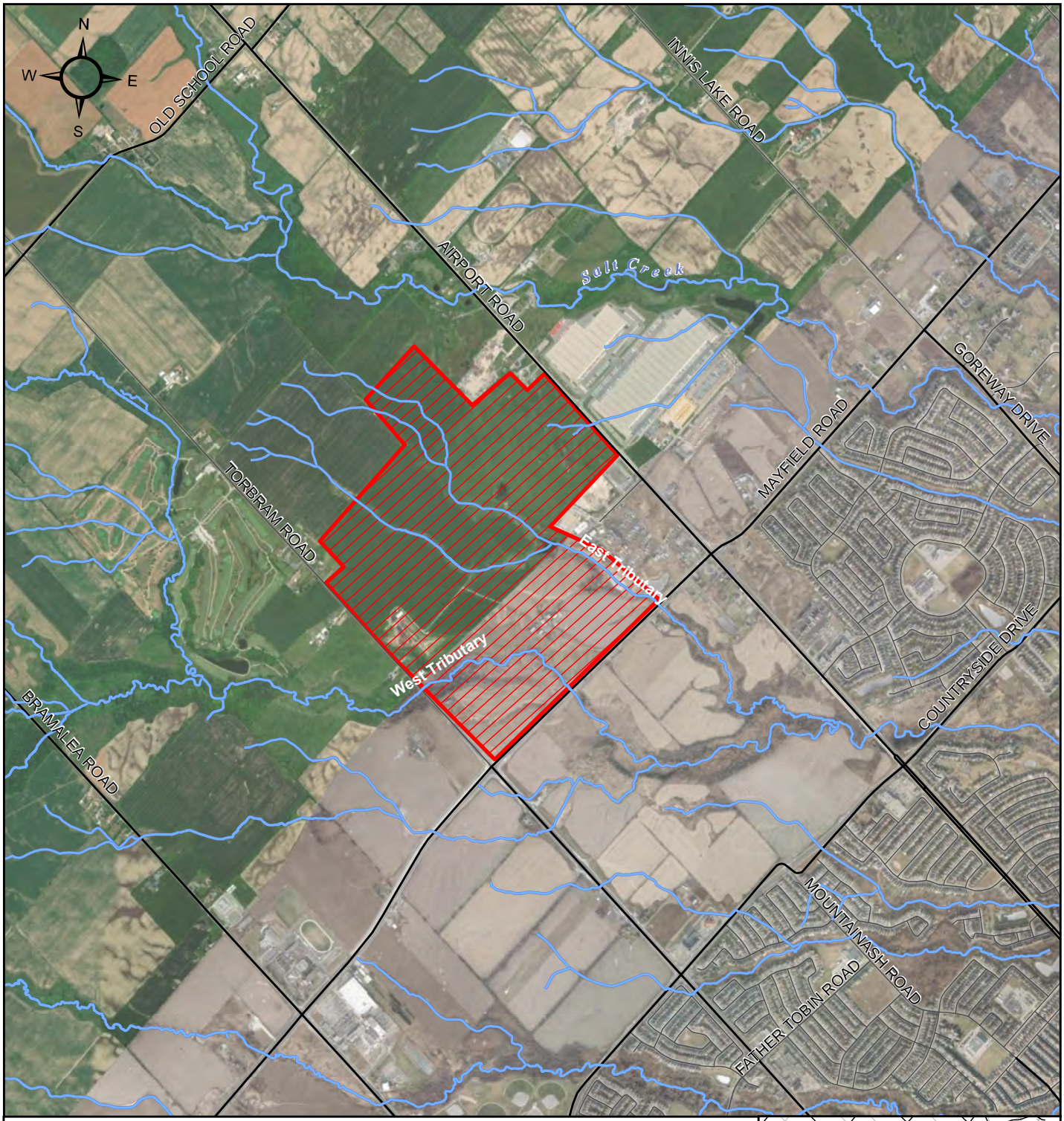
Yours truly,

Toronto Inspection Ltd.

Sanjay Goel, B.E.S.
Environmental Scientist
Vice-President

Tabitha Lee, M.A.Sc., P.Eng.
Senior Hydrogeologist

FIGURES

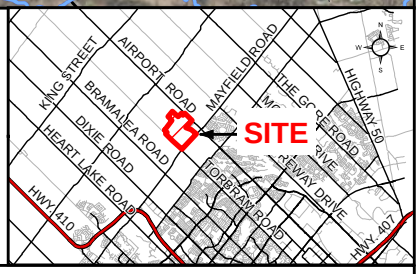


Legend

- Watercourse
- Site Location
- Highway
- Arterial Road
- Local Road

0 125 250 500 750 1,000 m

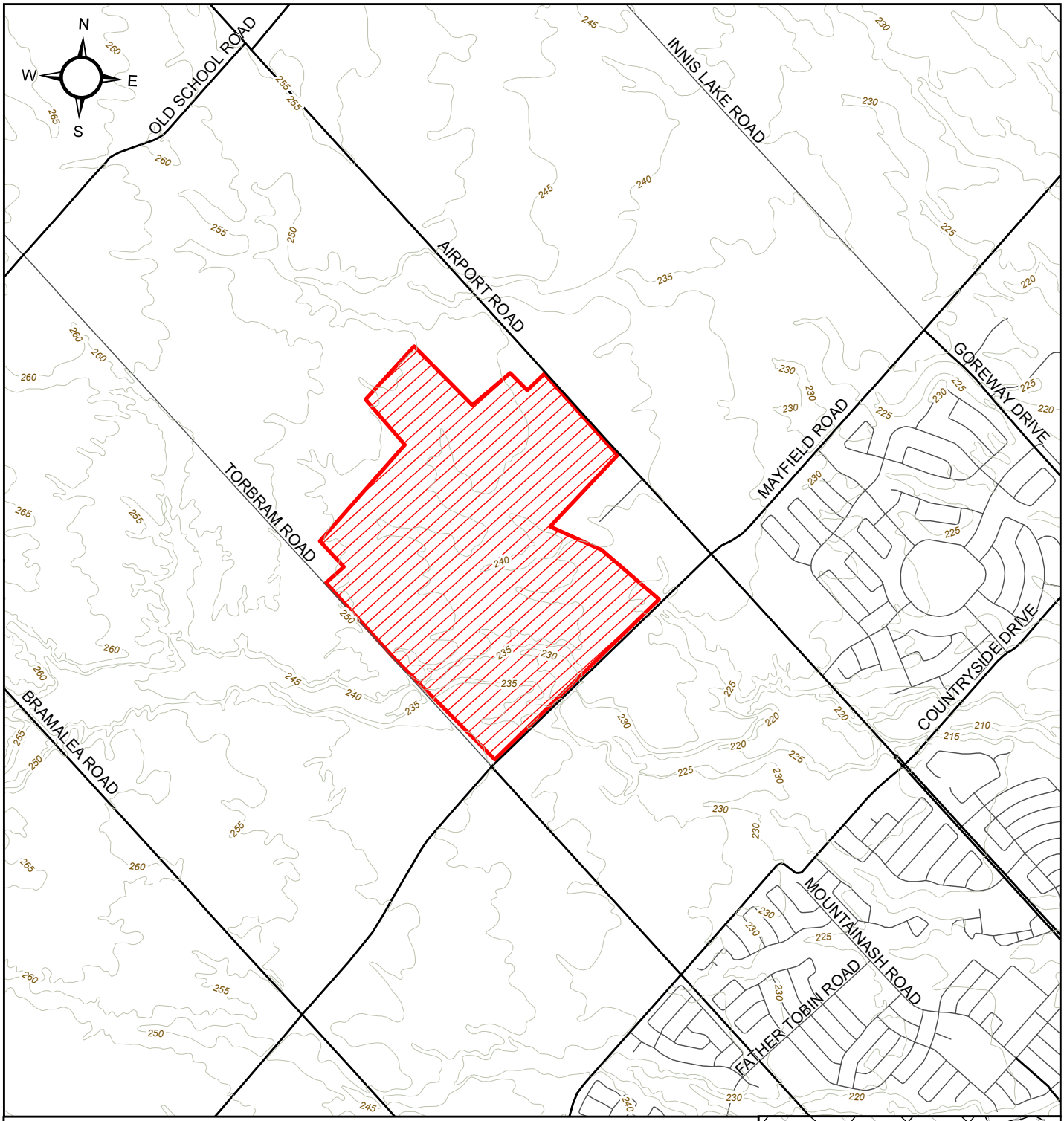
1:25,000



TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, On L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192

TITLE: Site Location		
LOCATION: Tullamore Lands, Caledon, Ontario		
PROJECT NO. 5552-21-HC	DATE: June 2021	FIGURE NO. 1

REFERENCE

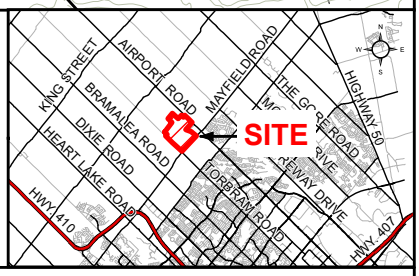


Legend

- Ground Surface Topography (5m Contour)
- Site Location
- Highway
- Arterial Road
- Local Road

0 125 250 500 750 1,000 m

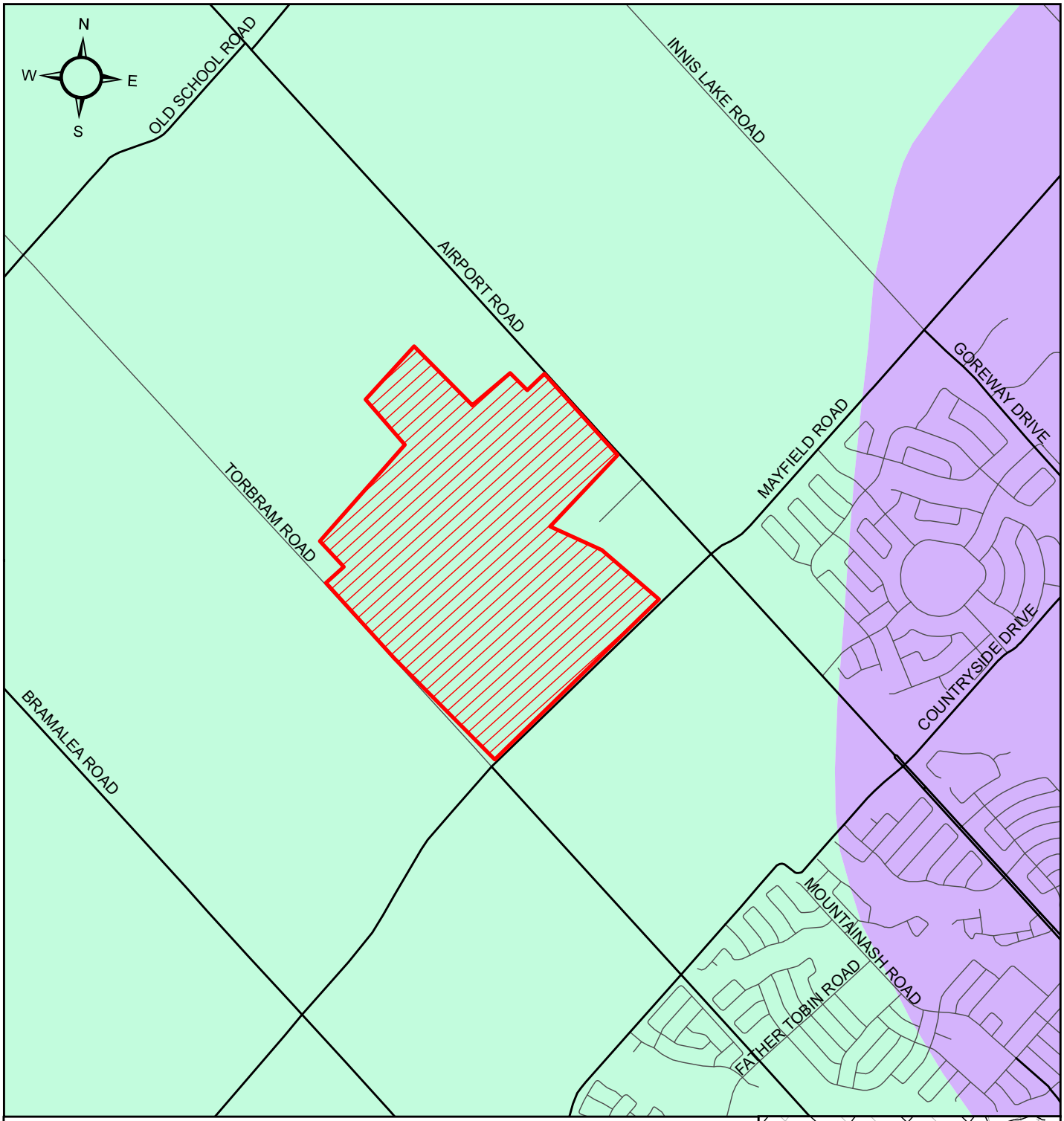
1:25,000



TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, On L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192

TITLE:	Topography
LOCATION:	Tullamore Lands, Caledon, Ontario
PROJECT NO.	5552-21-HC
DATE:	June 2021
FIGURE NO.	2

REFERENCE



Legend

- Highway
- Arterial Road
- Local Road

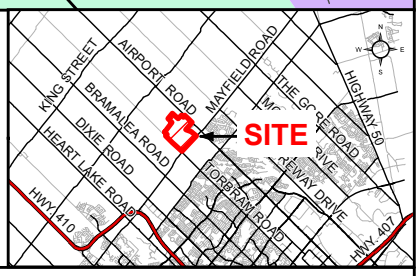
Physiography

- Peel Plain
- South Slope

Site Location

0 125 250 500 750 1,000 m

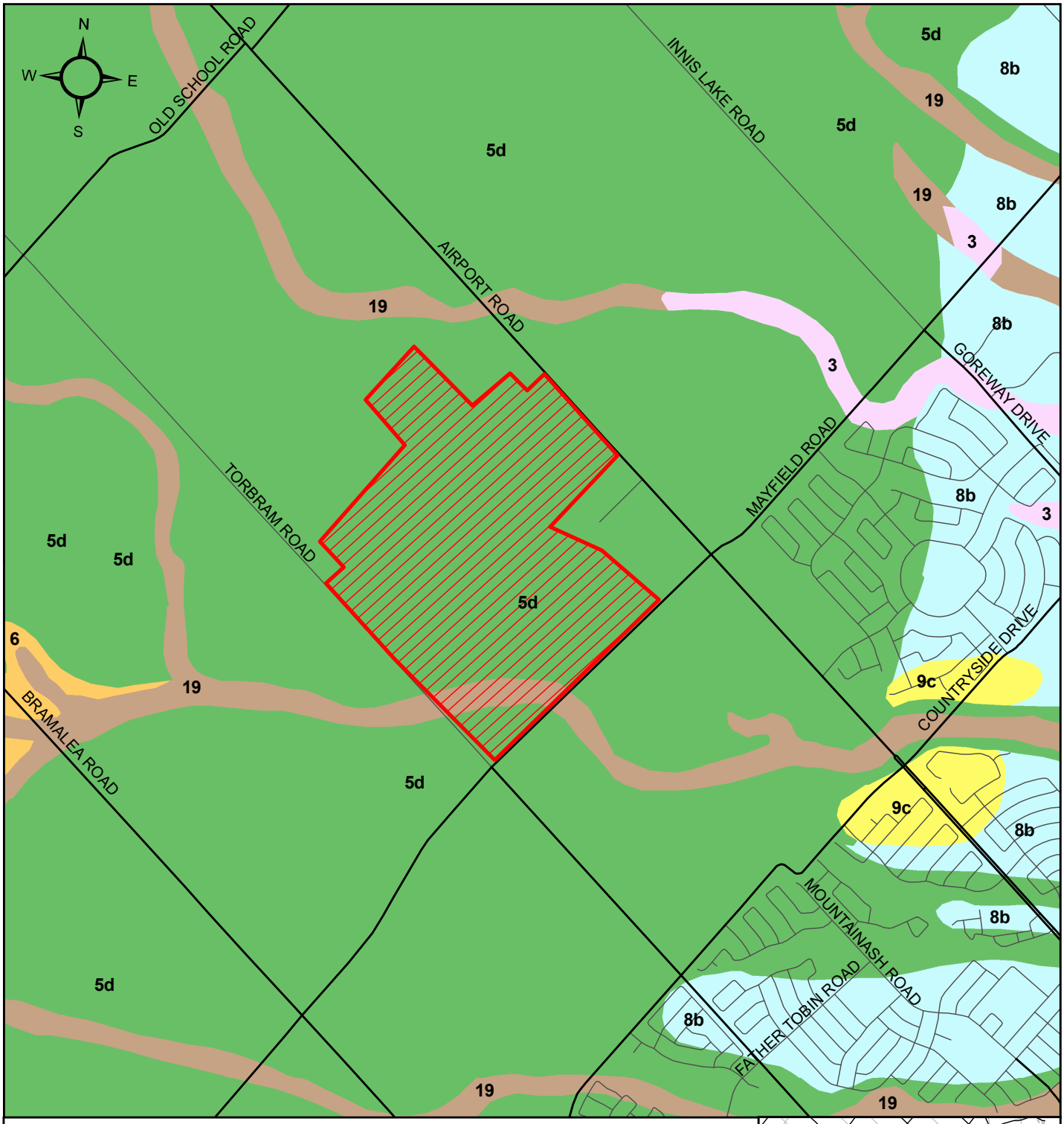
1:25,000



TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, On L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192

TITLE:	Physiography
LOCATION:	Tullamore Lands, Caledon, Ontario
PROJECT NO.	5552-21-HC
DATE:	June 2021
FIGURE NO.	3

REFERENCE



Legend

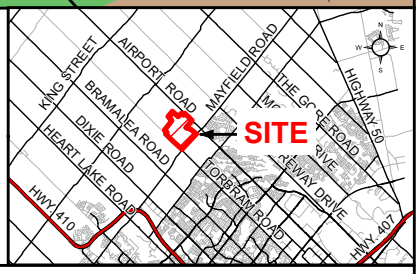
- Highway
- Arterial Road
- Local Road
- Site Location

Surficial Geology

- 3: Paleozoic bedrock
- 5d: Glaciolacustrine-derived silty to clayey till
- 6: Ice-contact stratified deposits
- 8b: Interbedded flow till, rainout deposits and silt and clay
- 9c: Foreshore-basinal deposits
- 19: Modern alluvial deposits

0 125 250 500 750 1,000 m

1:25,000

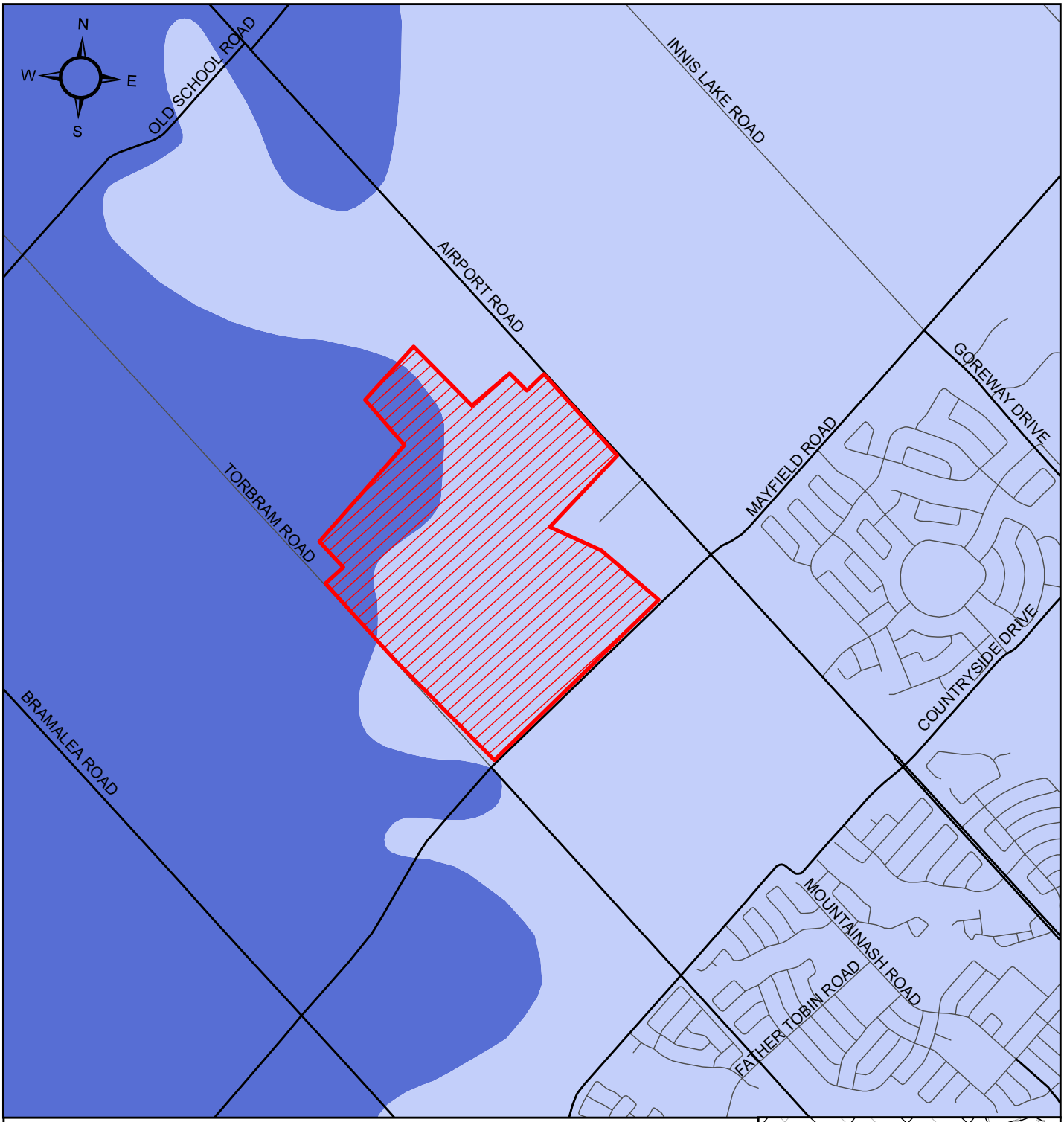


TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, On L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192

TITLE: Surficial Geology

LOCATION: Tullamore Lands, Caledon, Ontario

PROJECT NO.	DATE:	FIGURE NO.
5552-21-HC	June 2021	4



Legend

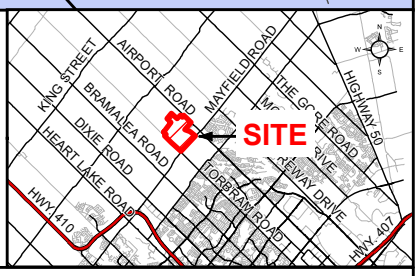
- Site Location
- Highway
- Arterial Road
- Local Road

Bedrock Geology

- 16: Queenston
- 14: Georgian Bay

0 125 250 500 750 1,000 m

1:25,000



TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, On L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192

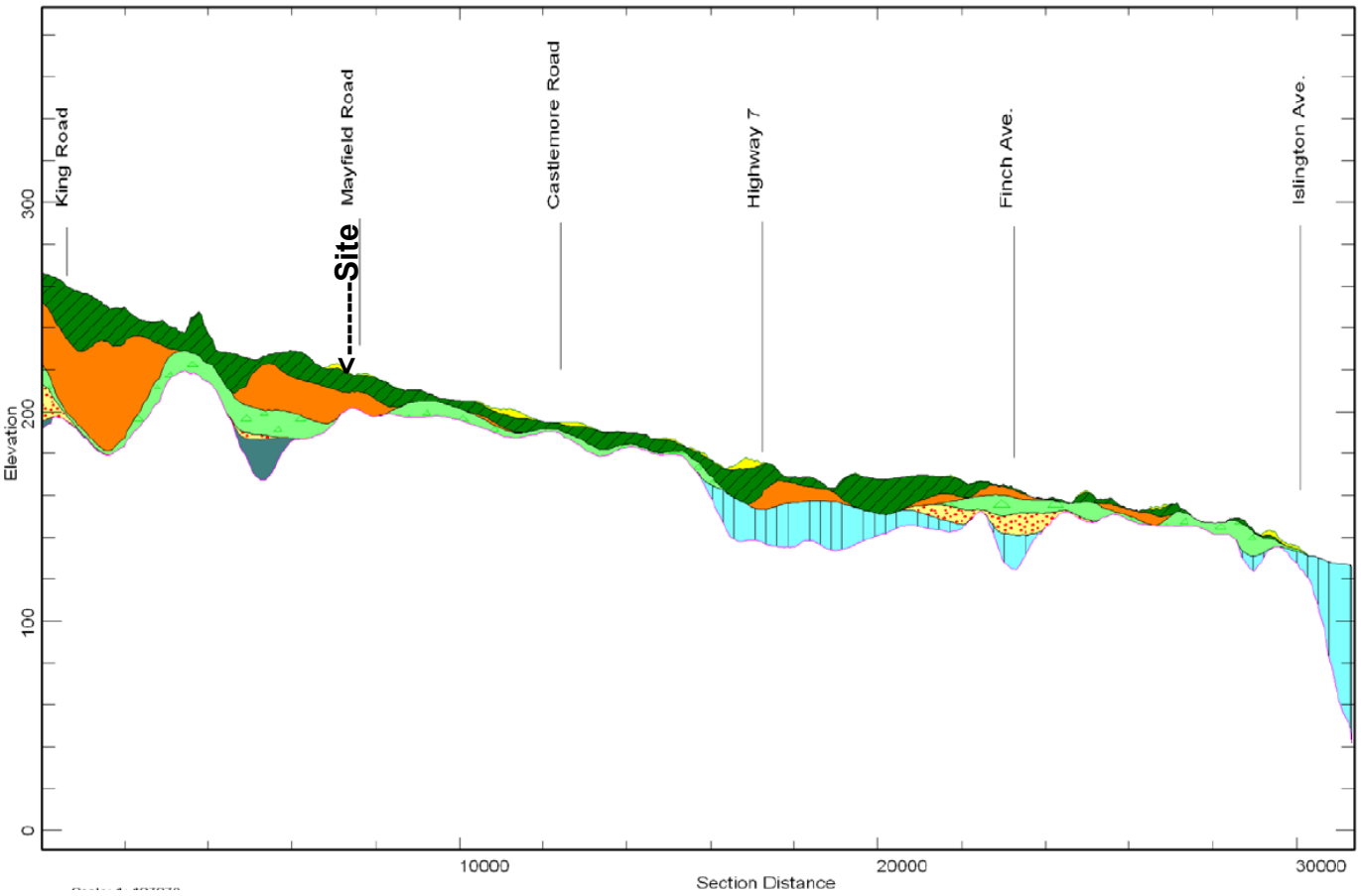
TITLE:	Bedrock Geology
LOCATION:	Tullamore Lands, Caledon, Ontario

PROJECT NO.	DATE:	FIGURE NO.
5552-21-HC	June 2021	5

REFERENCE

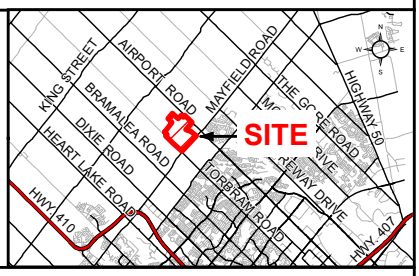
Service Layer Credits: Source: Armstrong, D.K. and Dodge, J.E.P. 2007. Paleozoic geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 219.

West Humber River Watershed Cross-Section



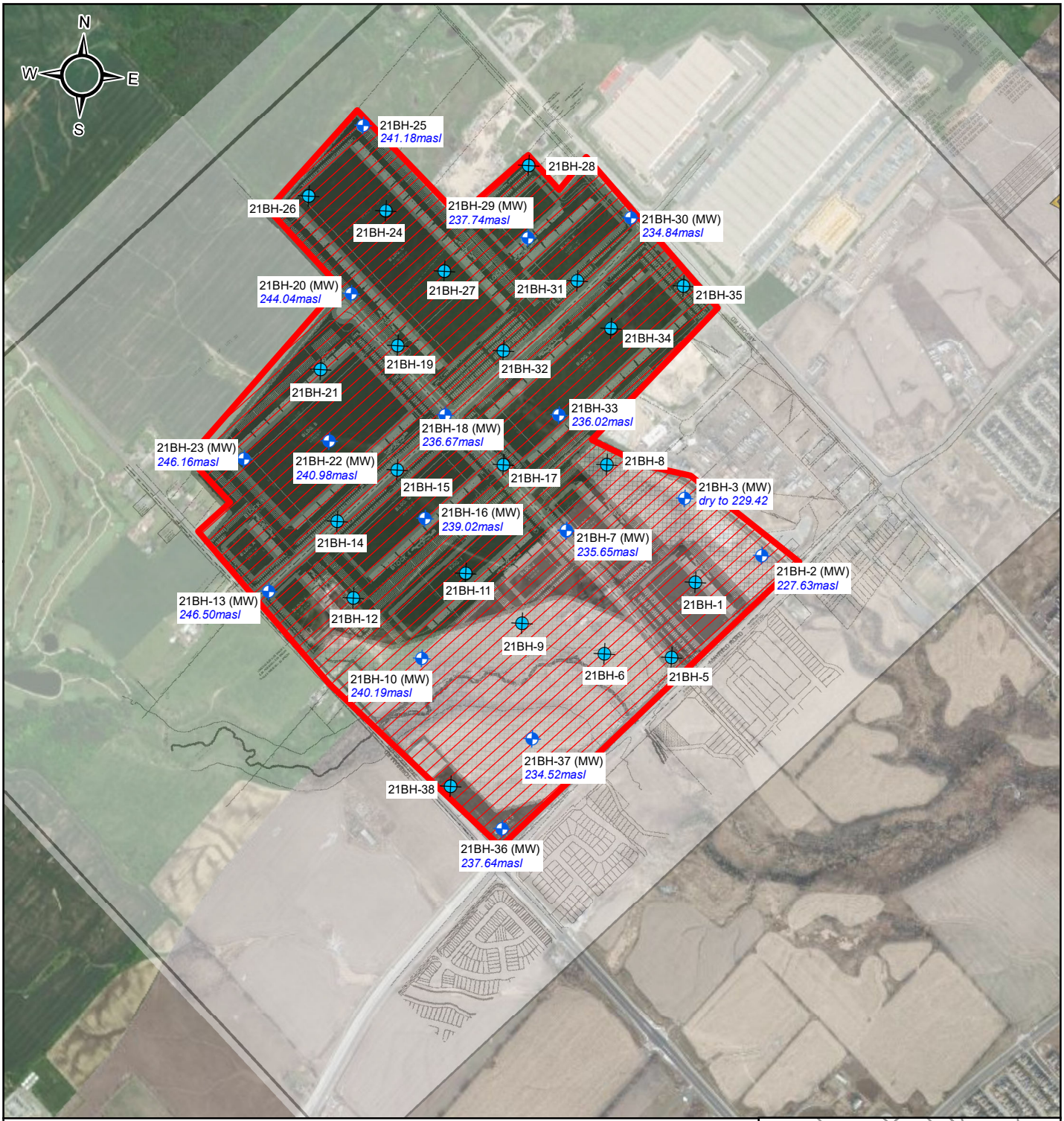
Source: Toronto and Region Conservation Authority. 2008. Humber River Watershed Scenario Modelling and Analysis Report

Legend:
- Recent Sediments
- Halton Aquitard
- Oak Ridges Aquifer
- Newmarket Aquitard
- Thorncliffe Aquifer
- Sunnybrook Aquitard
- Scarborough Aquifer
- Top of Bedrock (masl)



TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, On L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192

TITLE:	Regional Hydrostratigraphic Cros-Section
LOCATION:	Tullamore Lands, Caledon, Ontario
PROJECT NO.	5552-21-HC
DATE:	June 2021
FIGURE NO.	6

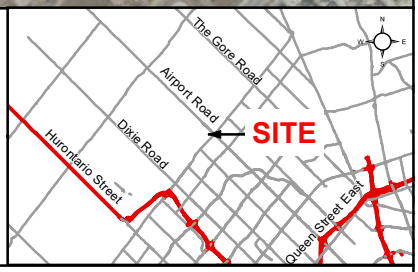


Legend

- Site Outline
- Borehole
- Monitoring Well
- 237.64masl Water Levels taken June 22, 2021

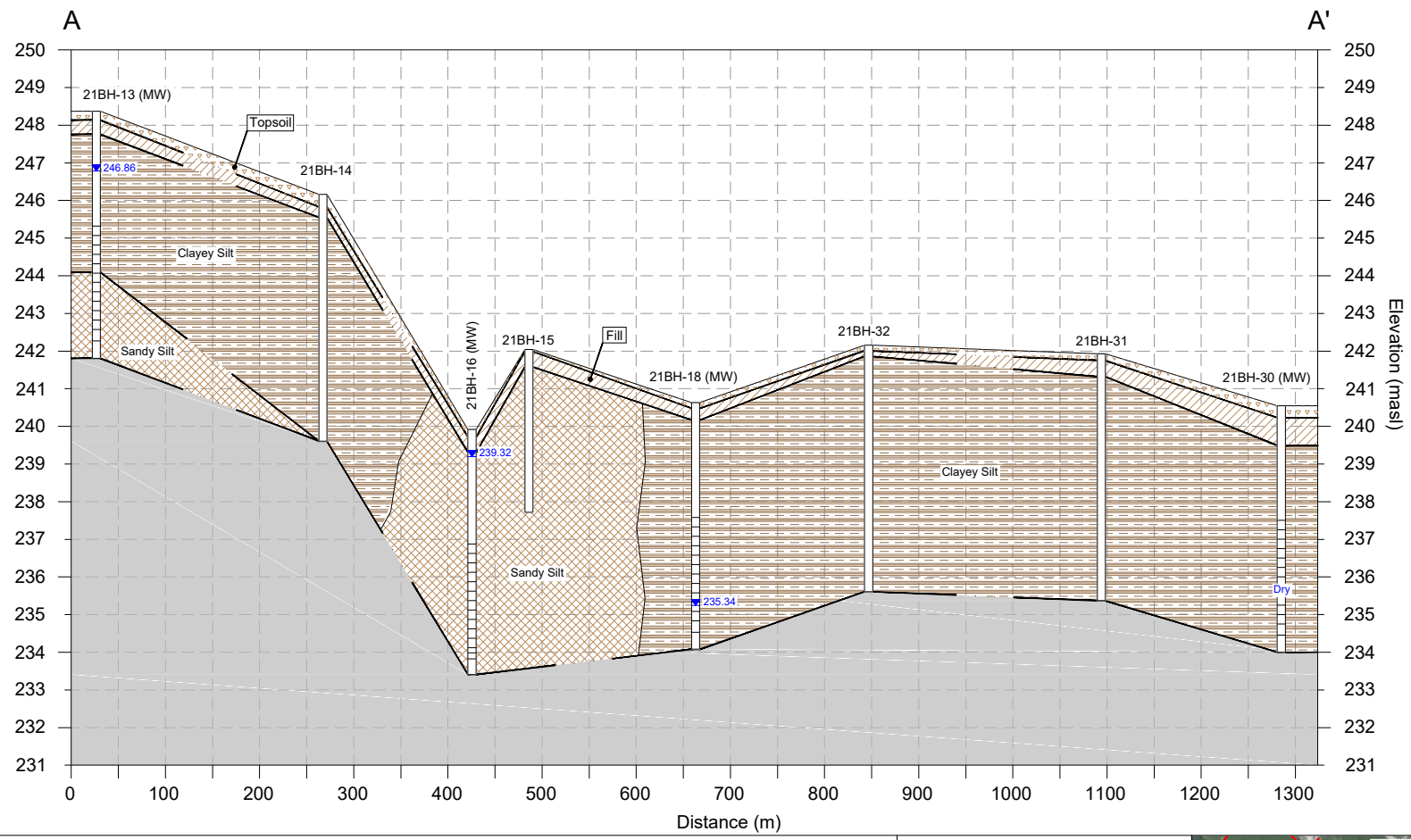
0 50 100 200 300 400 m

1:14,000



TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16, Markham, On L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192

TITLE:	Borehole and Monitoring Well Locations
LOCATION:	Tullamore Lands, Caledon, Ontario
PROJECT NO.	5552-21-HC
DATE:	June 2021
FIGURE NO.	7

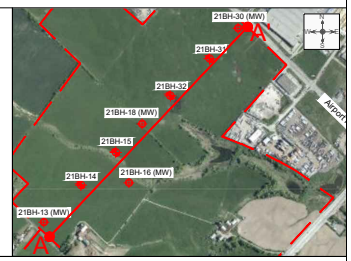


LEGEND:

- Topsoil
- Fill
- Clayey Silt
- Sandy Silt
- Inferred Geological Boundary
- Site Boundary
- Borehole and Monitoring Well Location
- Section A-A'
- Water Level Measurement (masl) measured on June 3, 2021
- Monitoring Well Screen

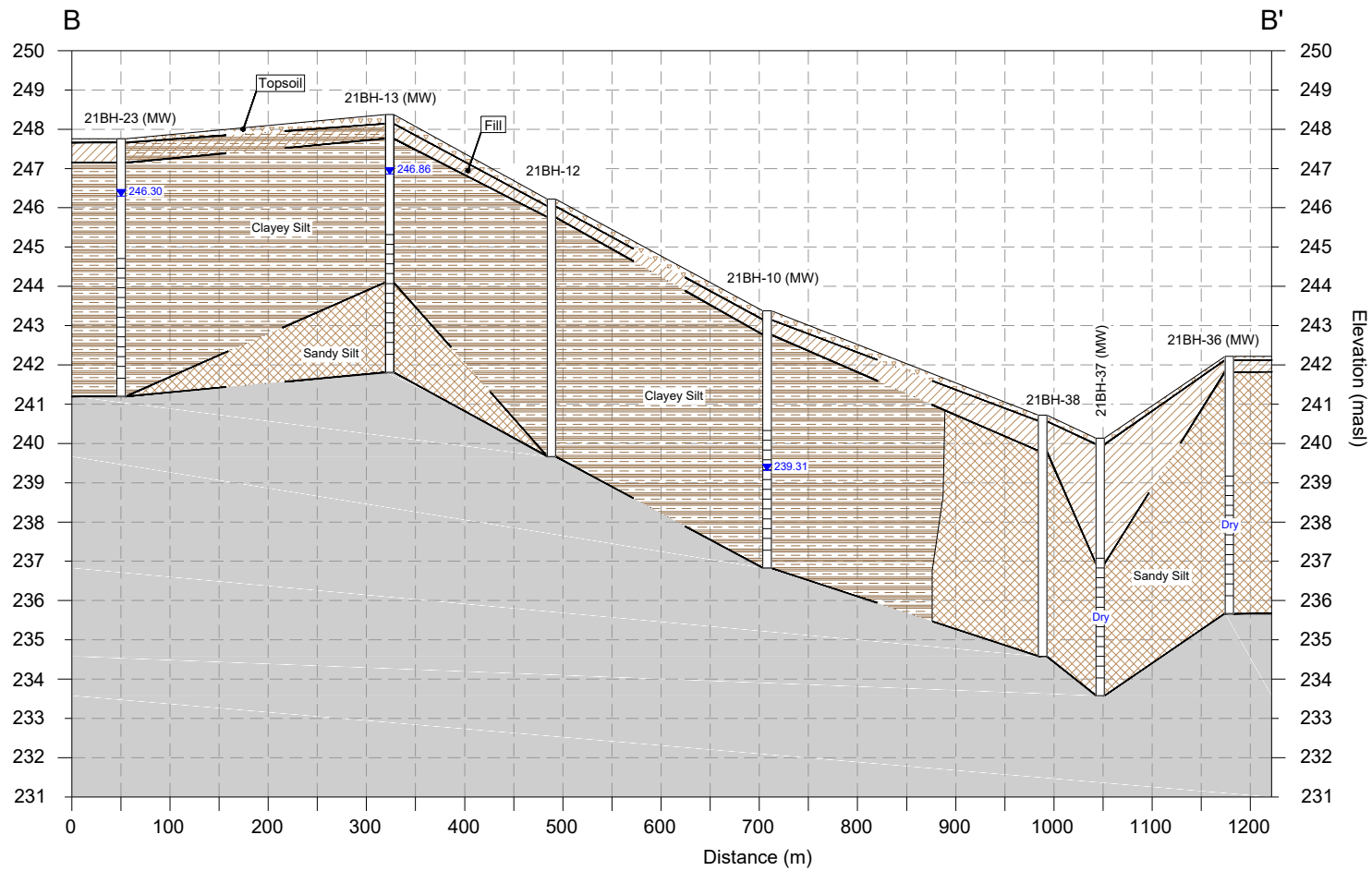
DRAWING NOTES:

Vertical Exaggeration: 40x
Drawn By: C.C 6/21/2021
Reviewed By: S.P 6/21/2021



TorontoInspection LTD
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent,
Unit 16
Markham, Ontario
L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192 Email : TIL@torontoinspection.com

TITLE:	Local Geological Section A-A'
LOCATION:	Tullamore Lands, Caledon, Ontario
PROJECT NO.	5552-21-HC
DATE :	June 2021
FIGURE NO :	8

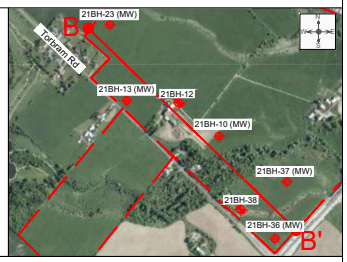


LEGEND:

- Topsoil
- Fill
- Clayey Silt
- Sandy Silt
- Inferred Geological Boundary
- Site Boundary
- Borehole and Monitoring Well Location
- Section B-B'
- Water Level Measurement (masl) measured on June 3, 2021
- Monitoring Well Screen

DRAWING NOTES:

Vertical Exaggeration: 40x
Drawn By: C.C 6/21/2021
Reviewed By: S.P 6/21/2021



TorontoInspection LTD.
GEO-ENVIRONMENTAL CONSULTANTS
110 Konrad Crescent, Unit 16
Markham, Ontario
L3R 9X2
Tel: 905-940 8509 Fax: 905-940 8192 Email : TIL@torontoinspection.com

TITLE:	Local Geological Section B-B'
LOCATION:	Tullamore Lands, Caledon, Ontario
PROJECT NO.	5552-21-HC
DATE :	June 2021
FIGURE NO :	9

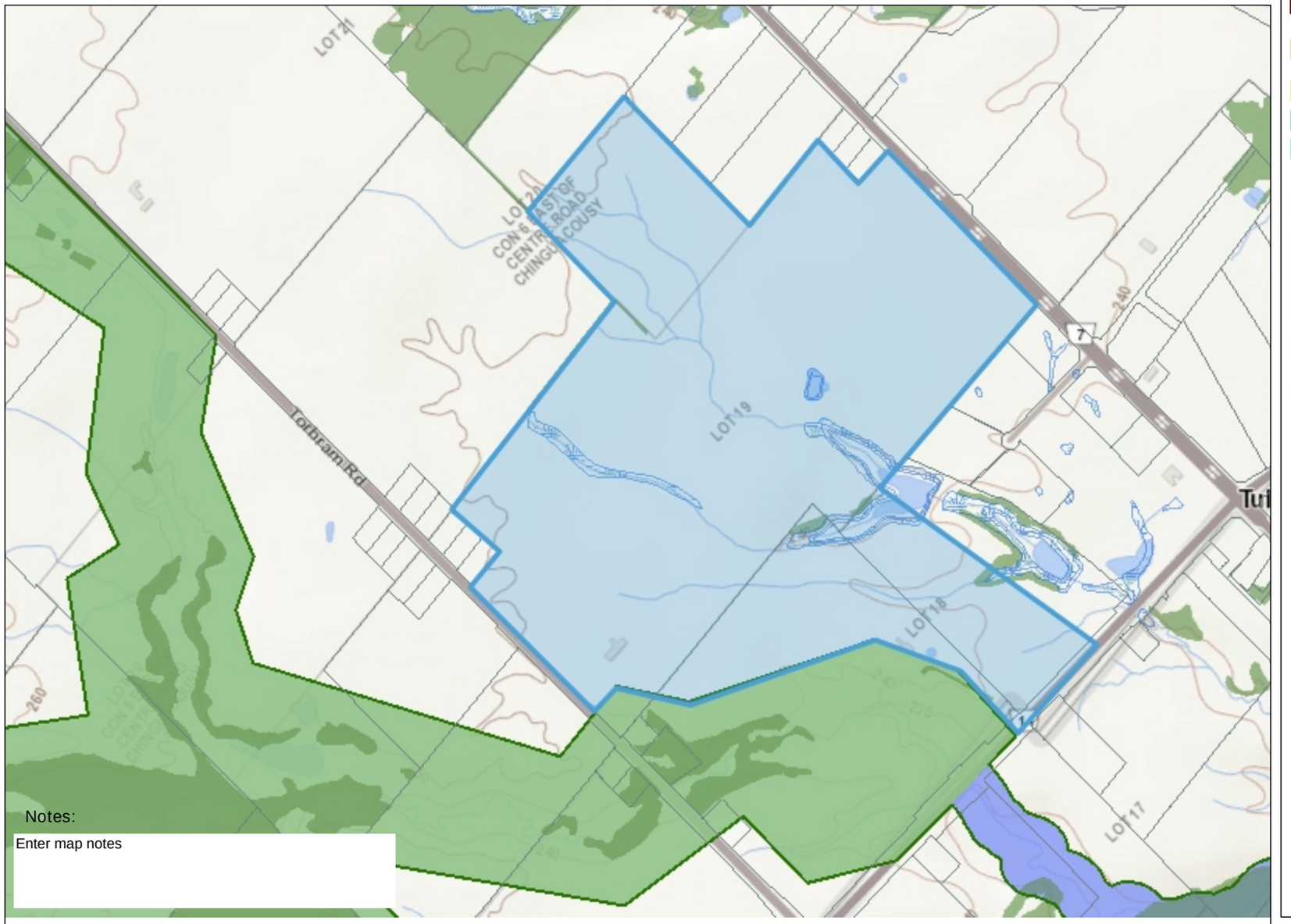
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

Figure 10 Environmental Features

Map created:6/24/2021



Notes:

Enter map notes

Legend

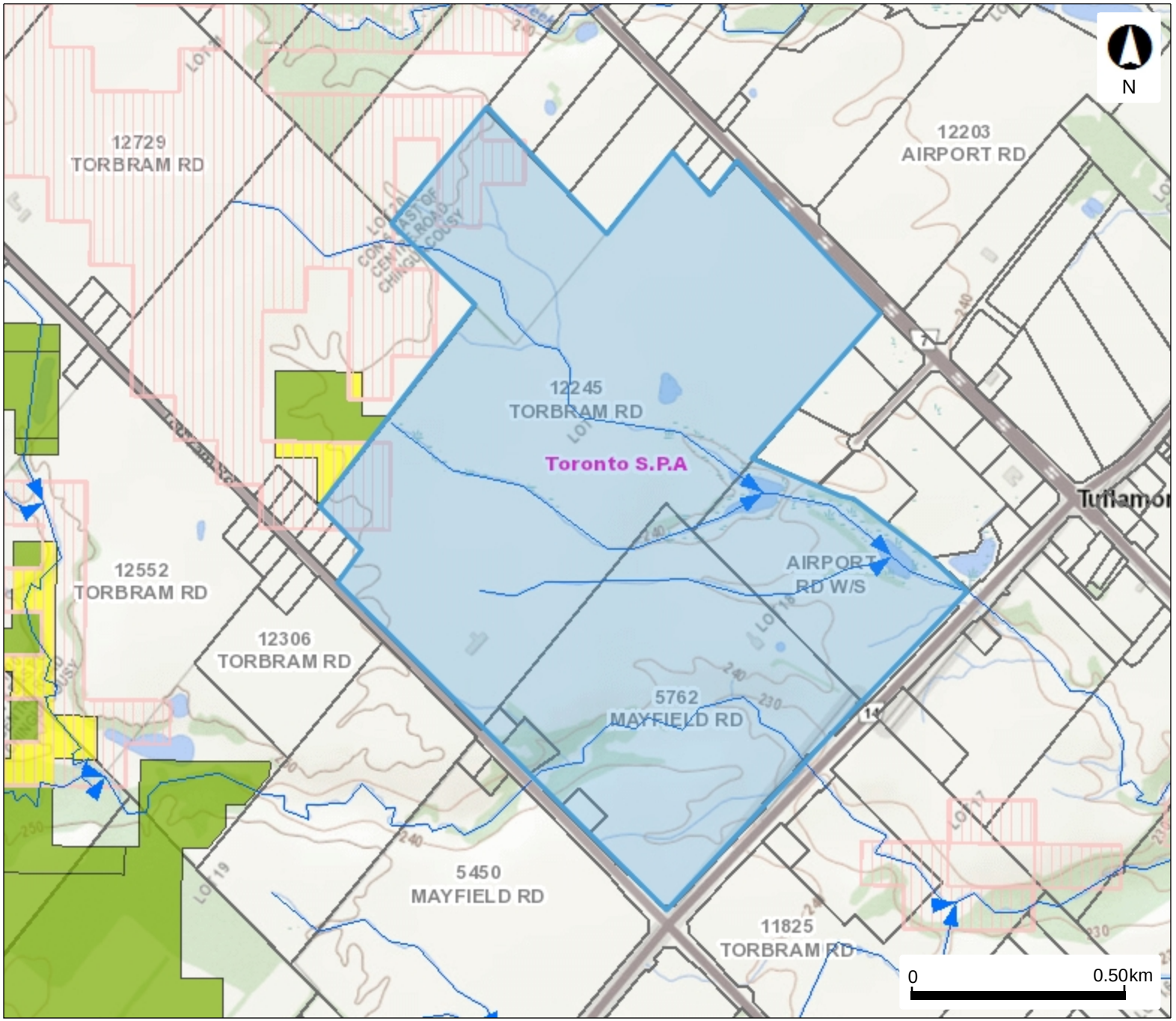
- Assessment Parcel
- Greenbelt Area Boundary
- ORM Boundary
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Greenbelt Land Use Designation
- Protected Countryside/campagne protégé
- Urban River Valley/vallée fluviale urbaine

0.7 0 0.33 0.7 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

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

Figure 11 Vulnerable Drinking Water Areas



Legend

- Source Protection Areas
- Watercourse Direction
- Wellhead Protection Area Q1
- Wellhead Protection Area Q2
- Issue Contributing Areas
- Highly Vulnerable Aquifers
- Significant Groundwater Recharge Area
  - 0
  - 2
  - 4
  - 6
- WHPA Groundwater Under Direct Influence (WHPA-E)
- Wellhead Protection Area
  - A
  - B
  - C
  - C1
  - D
  - F
- Intake Protection Zone 1
- Event Based Areas
- Intake Protection Zone 2
- Intake Protection Zone 3
- Assessment Parcel

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

Ontario

Map Created: 6/29/2021
Map Center: 43.79098 N, -79.77419 W

APPENDIX A

Site Plan and Preliminary Site Grading Plan

TURNER FLEISCHER

Turner Fleischer Architects Inc.

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com

STATISTICS

SITE STATS

BLOCK 1	±52.28 ACRES
BUILDING A AREA	±97,722 S.F.
LOADING SPACE	23 SPACES
CAR PARKING	134 SPACES
TRAILER PARKING	22 SPACES
BUILDING B AREA	±952,000 S.F.
LOADING SPACE	176 SPACES
CAR PARKING	605 SPACES
TRAILER PARKING	206 SPACES
BLOCK 2	±78.00 ACRES
BUILDING C AREA	±1,248,365 S.F.
LOADING SPACE	240 SPACES
CAR PARKING	803 SPACES
TRAILER PARKING	323 SPACES
BUILDING D AREA	±165,200 S.F.
LOADING SPACE	37 SPACES
CAR PARKING	206 SPACES
TRAILER PARKING	38 SPACES
BUILDING E AREA	±240,800 S.F.
LOADING SPACE	52 SPACES
CAR PARKING	250 SPACES
TRAILER PARKING	33 SPACES
BLOCK 3	±67.32 ACRES
BUILDING H AREA	±768,600 S.F.
LOADING SPACE	228 SPACES
CAR PARKING	517 SPACES
TRAILER PARKING	223 SPACES
BUILDING K AREA	±192,000 S.F.
LOADING SPACE	51 SPACES
CAR PARKING	191 SPACES
TRAILER PARKING	67 SPACES
BUILDING L AREA	±248,500 S.F.
LOADING SPACE	56 SPACES
CAR PARKING	265 SPACES
TRAILER PARKING	48 SPACES
BLOCK 4	±61.38 ACRES
BUILDING F AREA	±138,600 S.F.
LOADING SPACE	33 SPACES
CAR PARKING	159 SPACES
TRAILER PARKING	44 SPACES
BUILDING G AREA	±441,000 S.F.
LOADING SPACE	82 SPACES
CAR PARKING	335 SPACES
TRAILER PARKING	162 SPACES
BUILDING I AREA	±343,200 S.F.
LOADING SPACE	74 SPACES
CAR PARKING	272 SPACES
TRAILER PARKING	141 SPACES
BUILDING J AREA	±99,000 S.F.
LOADING SPACE	29 SPACES
CAR PARKING	140 SPACES
TRAILER PARKING	15 SPACES
BLOCK 5	±5.19 ACRES
CHANNEL	±6.43 ACRES
ROAD NETWORK	±17.04 ACRES
SWMP	±16.93 ACRES
GREEN BELT/ SWMP	±64.77 ACRES
TOTAL SITE AREA	**±362.91 ACRES**
TOTAL BUILDING AREA	**±4,934,987 S.F.**
TOTAL LOADING SPACE	**1081 SPACES**
TOTAL CAR PARKING	**3877 SPACES**
TOTAL TRAILER PARKING	**1322 SPACES**

#	DATE	DESCRIPTION	BY
9	2021-07-14	ISSUED FOR COORDINATION	YSK
8	2021-07-09	ISSUED FOR COORDINATION	YSK
6	2021-06-21	ISSUED FOR COORDINATION	YSK
5	2021-06-07	ISSUED FOR REVIEW	YSK
4	2021-03-05	ISSUED FOR REVIEW	HHO
3	2021-02-26	ISSUED FOR REVIEW	HHO

PROJECT

TULLAMORE LANDS

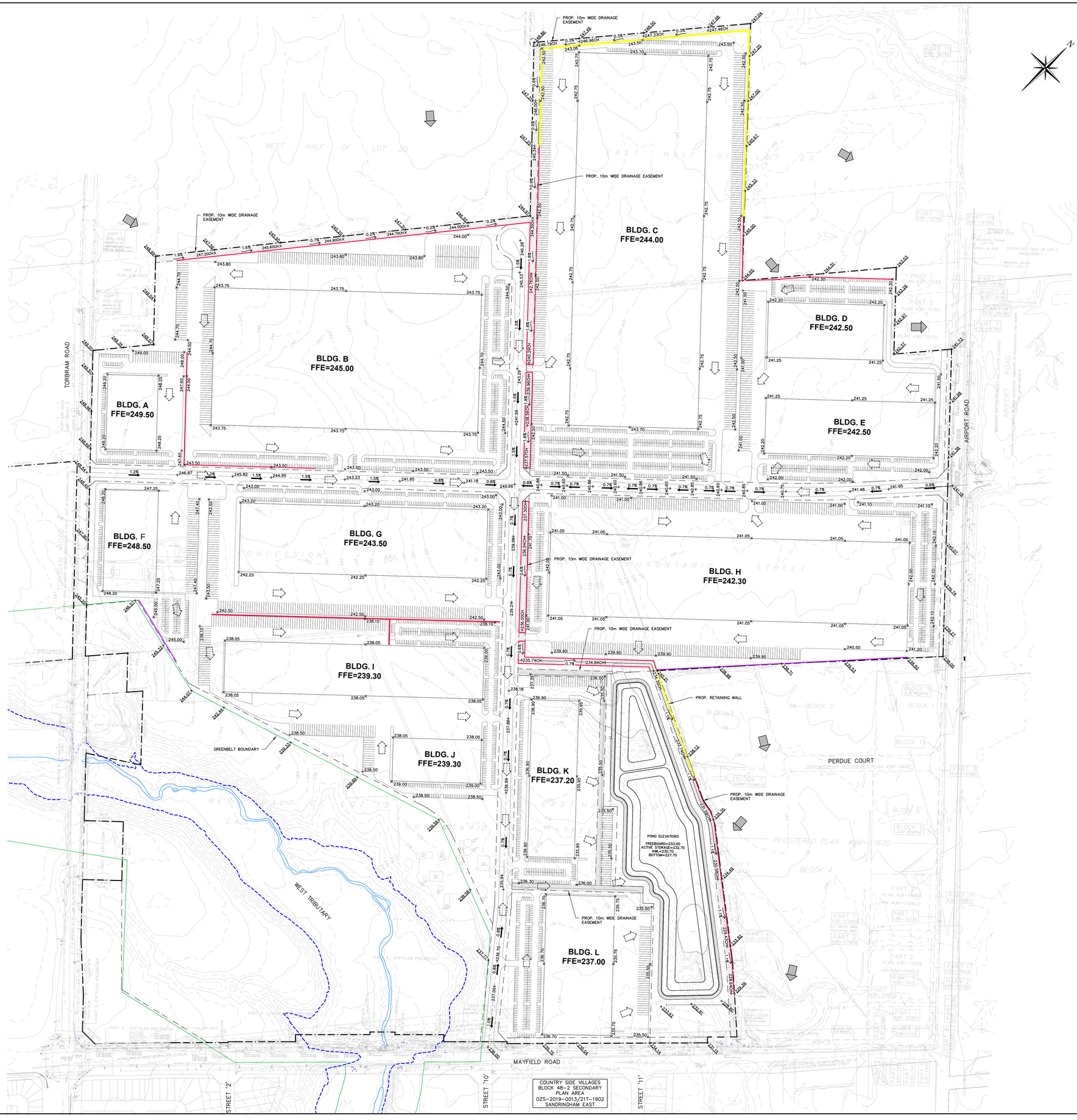
CALEDON, ON

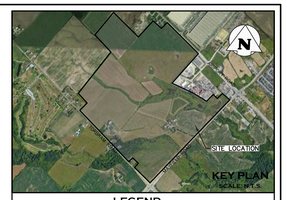
DRAWING

SITE PLAN

PROJECT NO.	20.302SD
PROJECT DATE	2021-03-05
DRAWN BY	HHO
CHECKED BY	JJK
SCALE	1 : 3500
DRAWING NO.	A100

2021-07-15 2:32:13 PM





LEGEND

- PROPERTY LINE
- GREENBELT BOUNDARY
- REGIONAL ENGINEERED FLOODPLAIN (TRCA, 2021)
- RETAINING WALL – 0.5m – 2.0m
- RETAINING WALL – 2.0m – 4.0m
- RETAINING WALL – 4.0m – 6.0m
- EXISTING CONTOUR (1.0m)
- EXISTING CONTOUR (2.0m)
- x245.00 PROPOSED GRADE
- x245.00 PROPOSED OPEN CHANNEL GRADE
- x245.00 PROPOSED GRADE (TO MATCH EXISTING)
- 2.0% PROPOSED MINOR FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DIRECTION
- DRAINAGE EASEMENT

SCALE: 1:2000

No.	ISSUE / REVISION	YYYY/MMM/DD
OA	ISSUED FOR GRADING COORDINATION	2021/JUN/23

Stamp

Stamp

BEARING NOTE:

BEARINGS ARE UTM GRID, DERIVED FROM GPS OBSERVATION USING THE "TOPNET" GPS NETWORK OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (1997.0)

ELEVATION NOTE:

ELEVATIONS HEREIN ARE GEODETIC IN ORIGIN AND WERE DERIVED FROM GPS OBSERVATION USING THE "TOPNET" GPS NETWORK AND REFERED TO THE CGVD-1928: 1987 DATUM

SITE BENCHMARK:

A CUT CROSS HAVING ELEVATION 242.51 m WAS SET ON THE NORTHEAST CORNER OF THE INTERSECTION BETWEEN MAYFIELD ROAD AND TORBRAM ROAD

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY TURNER FLEISHER ARCHITECT INC.
DRAWING No.: A1-18 REV54 (2021/JUN/06)
PROJECT No.: 20-30250

DRAWING NOTES:

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT. DO NOT SCALE THIS DRAWING.

ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

Project

TULLAMORE LANDS
TOWN OF CALEDON

Drawing

PRELIMINARY GRADING PLAN

CROZIER CONSULTING ENGINEERS
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905-875-0026 T
905-875-4915 F
WWW.CFCROZIER.CA

Drawn	V.M./J.P.	Design	A.D.F./J.S.	Project No.	2020-5842
Check	J.S.	Check	T.E./J.F.	Scale	1:2000
				Dwg	C103

APPENDIX B

Borehole Logs

Project No. 5552-21-GB

Log of Borehole 21BH-01

Dwg No. 2

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

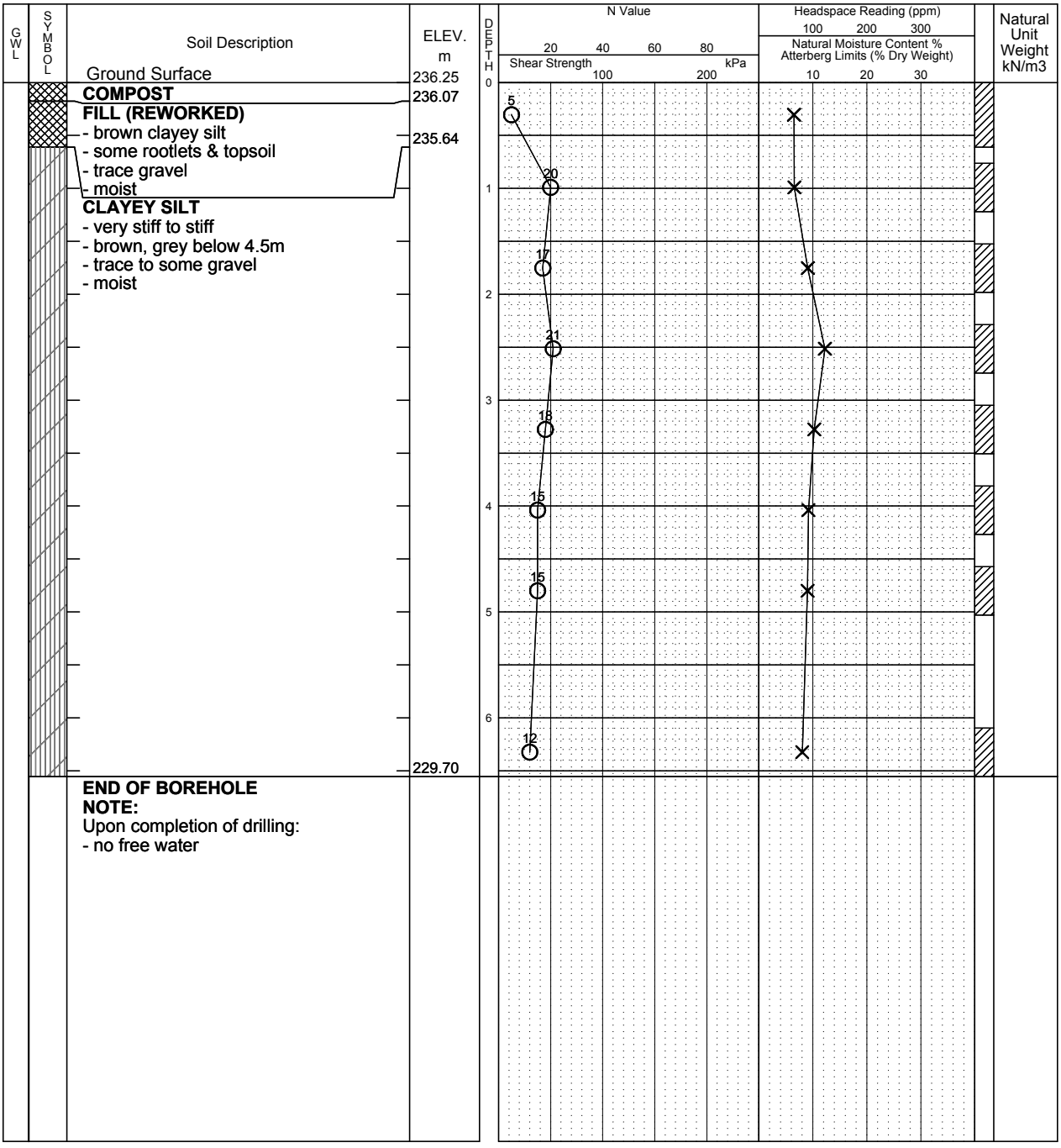
Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-02 (MW)

Dwg No. 3

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

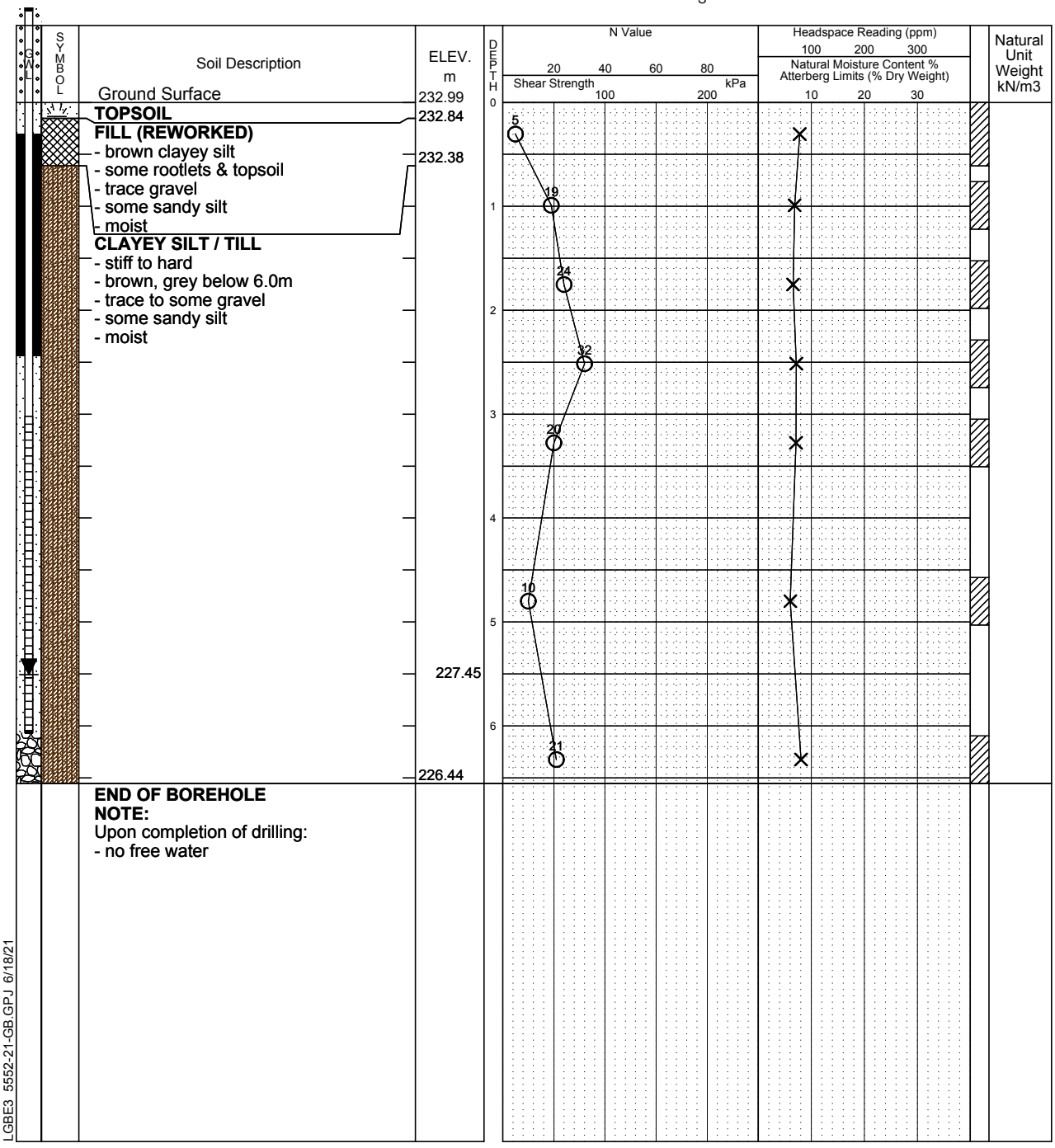
Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	5.54m	

Project No. 5552-21-GB

Log of Borehole 21BH-03 (MW)

Dwg No. 4

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

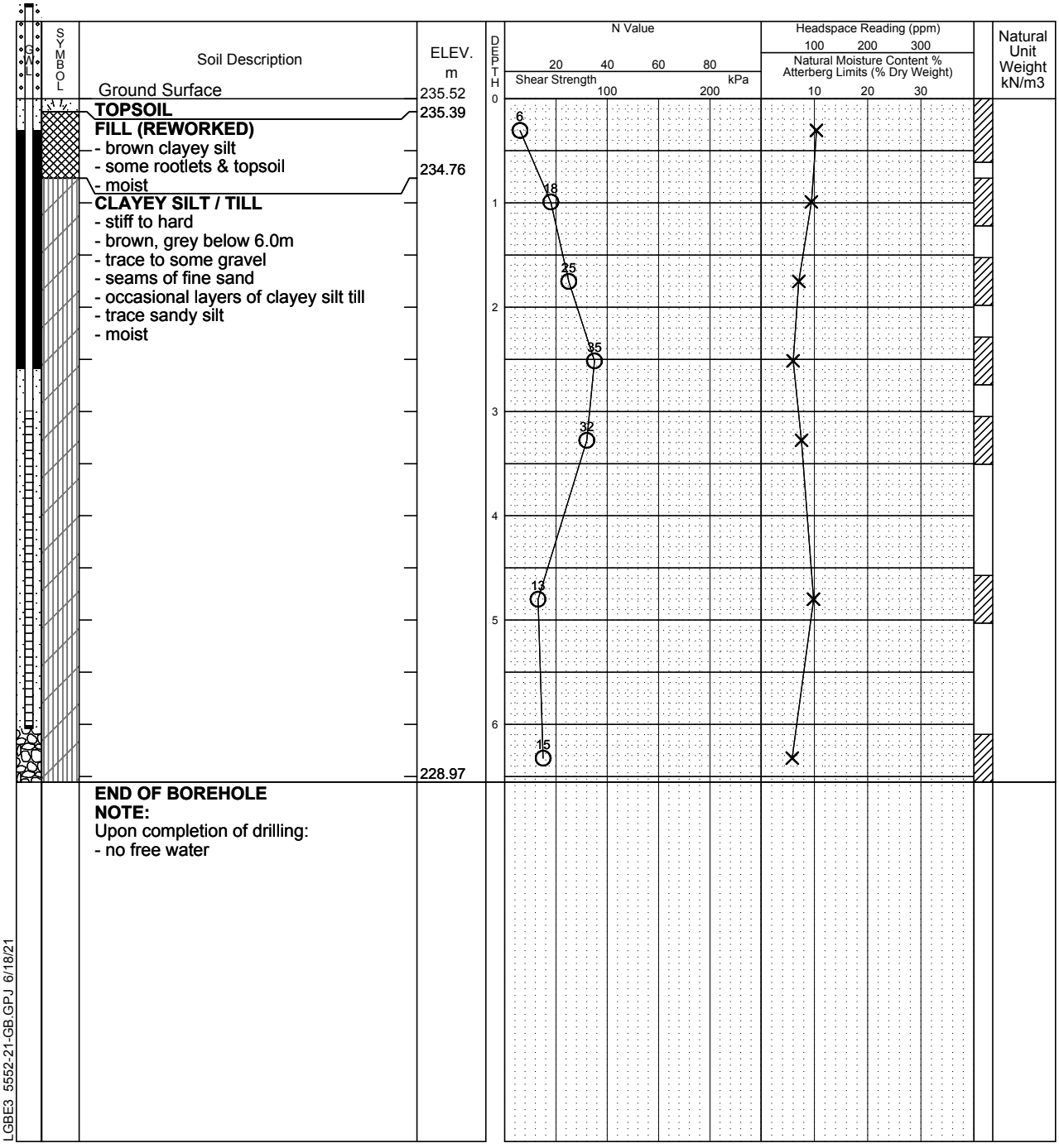
Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-04

Dwg No. 5

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

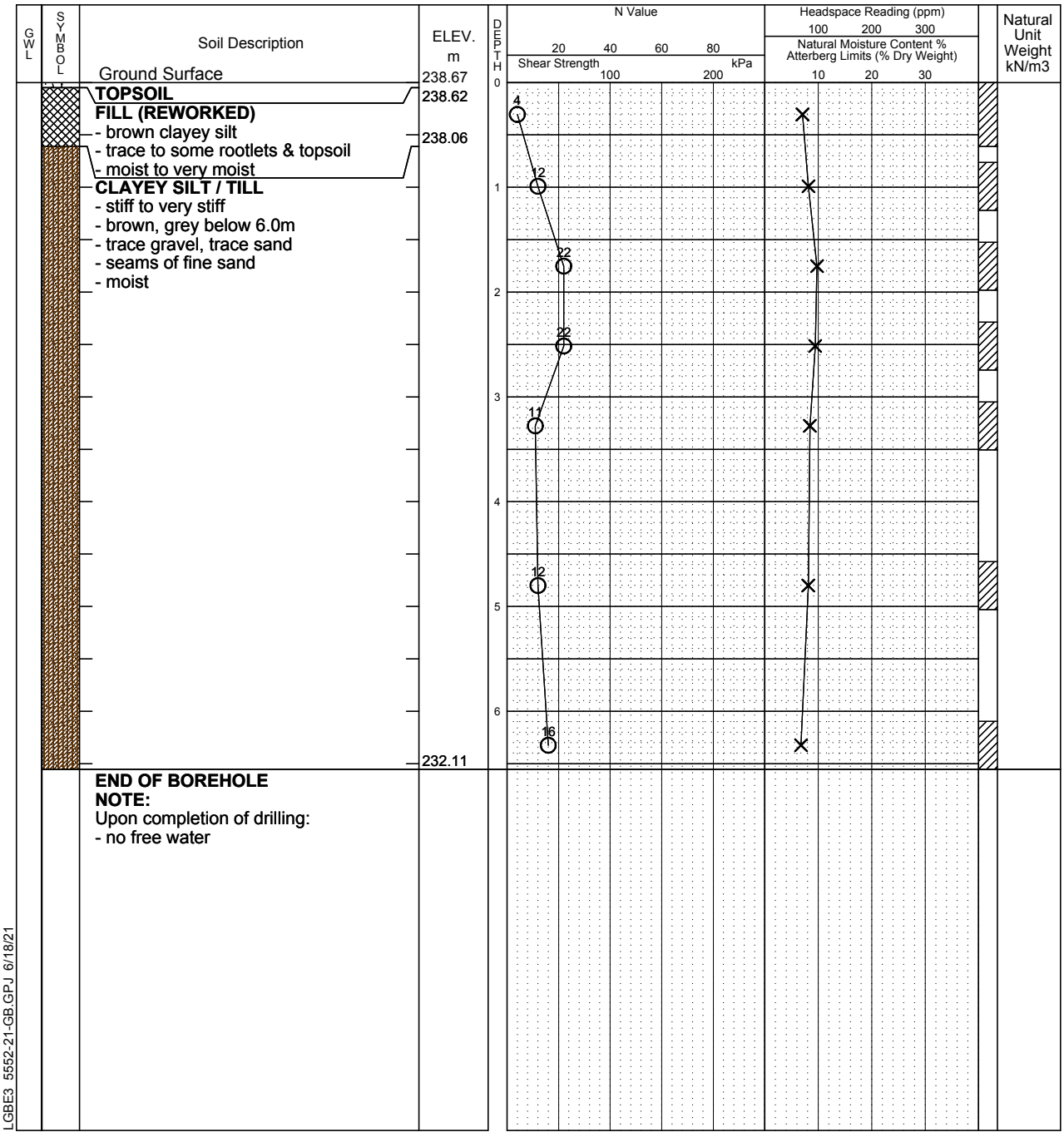
Date Drilled: 5/21/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-05

Dwg No. 6

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

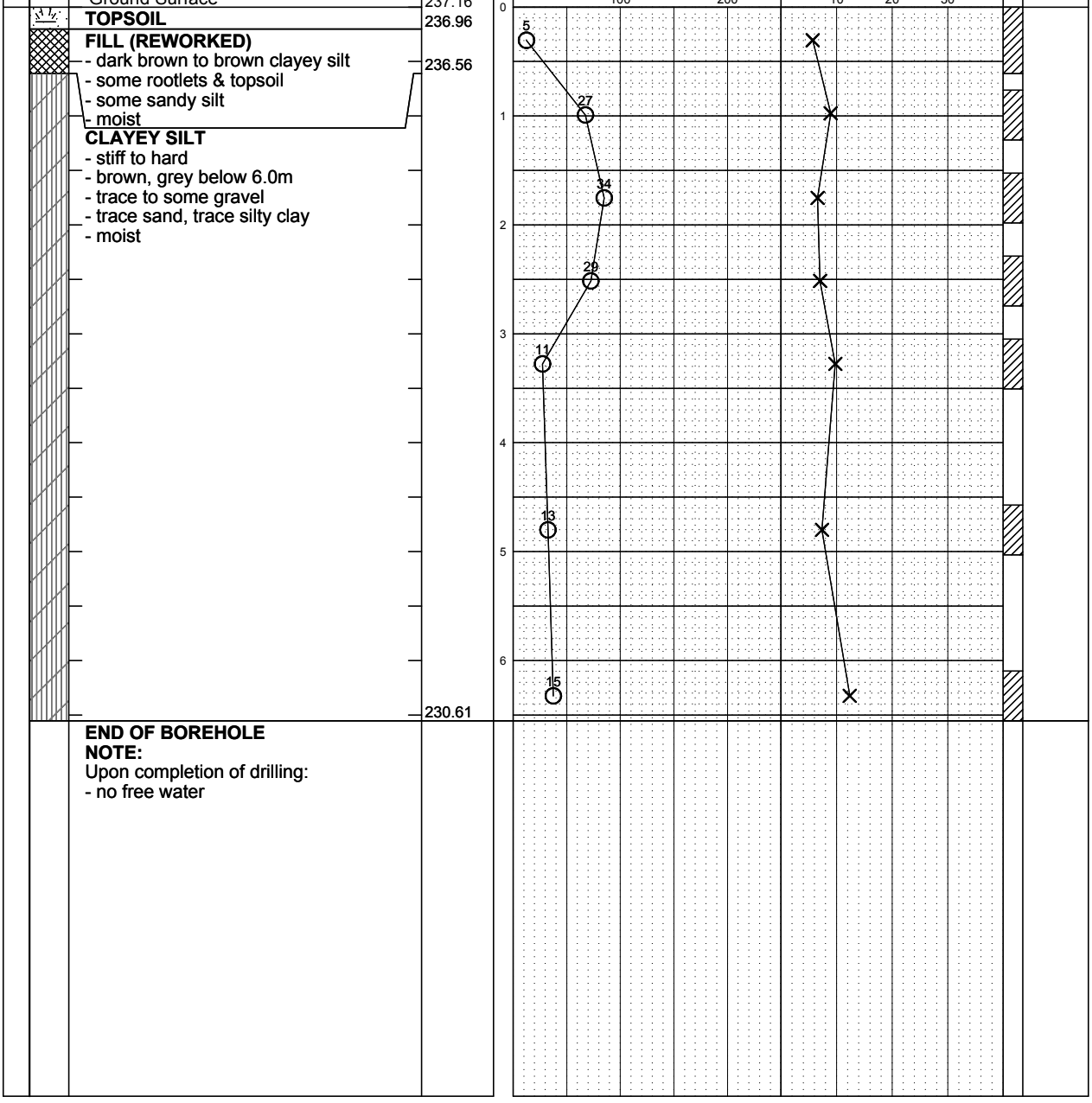
Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	237.16	0
		TOPSOIL	236.96	
		FILL (REWORKED) - dark brown to brown clayey silt - some rootlets & topsoil - some sandy silt - moist	236.56	
		CLAYEY SILT - stiff to hard - brown, grey below 6.0m - trace to some gravel - trace sand, trace silty clay - moist		1
				2
				3
				4
				5
				6
			230.61	
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-06

Dwg No. 7

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	277.78	0
		TOPSOIL	277.53	
		FILL (REWORKED) - brown sandy silt - some rootlets & topsoil - trace clayey silt - moist	277.32	
▼		**SILTY SAND** - dense to very dense - brown, grey below 1.5m - some gravel, some sandy silt - gravelly at 2.3m - possible cobbles or boulders at 3.2m - moist to very moist	276.38	1
			274.45	2
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - refusal to augery on probable cobbles or boulders - water level at 1.4m		3

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30
Natural Unit Weight kN/m3

3
29
41
50/50mm
50/75mm

LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-07 (MW)

Dwg No. 8

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

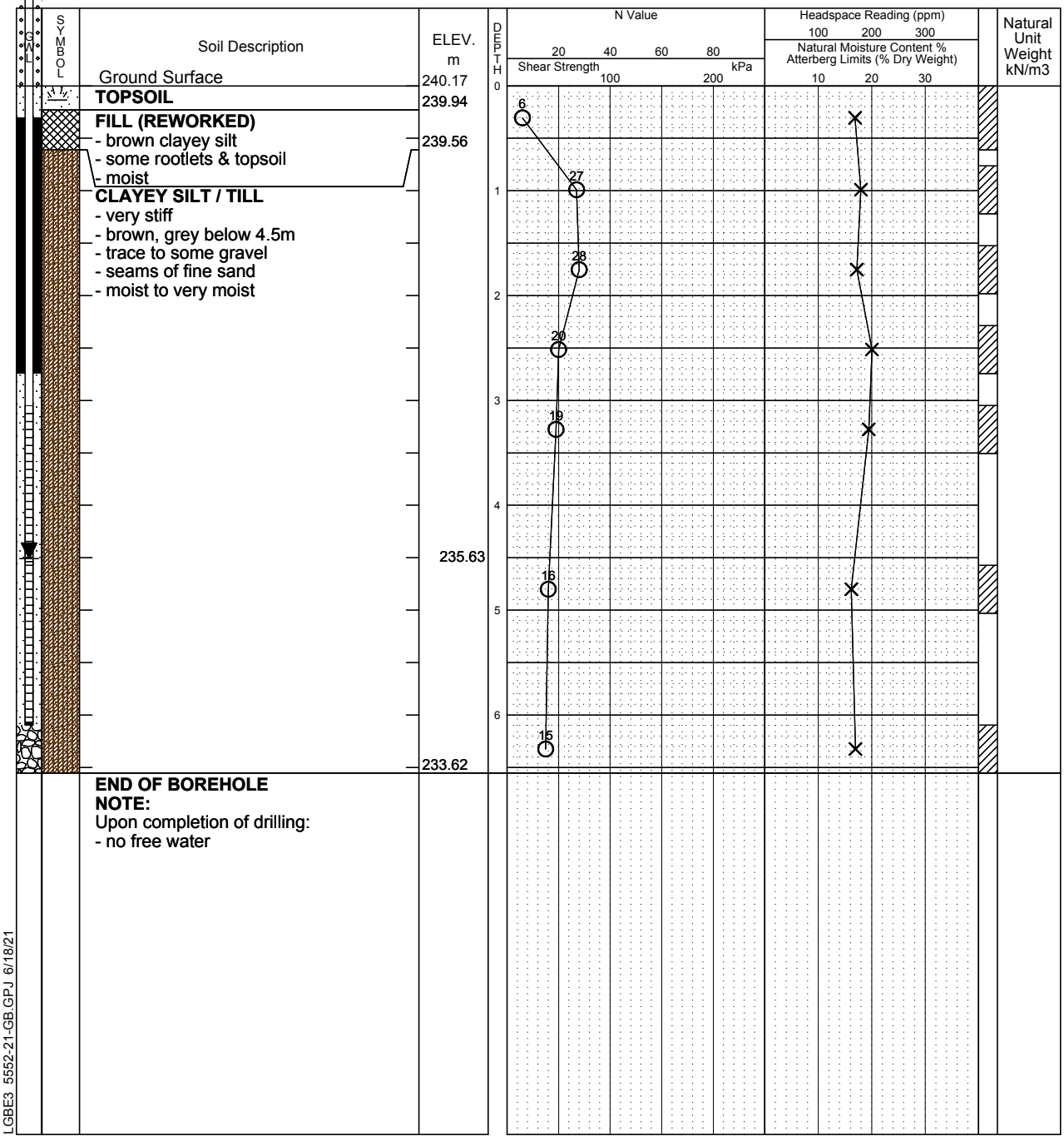
Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	4.54m	

Project No. 5552-21-GB

Log of Borehole 21BH-08

Dwg No. 9

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

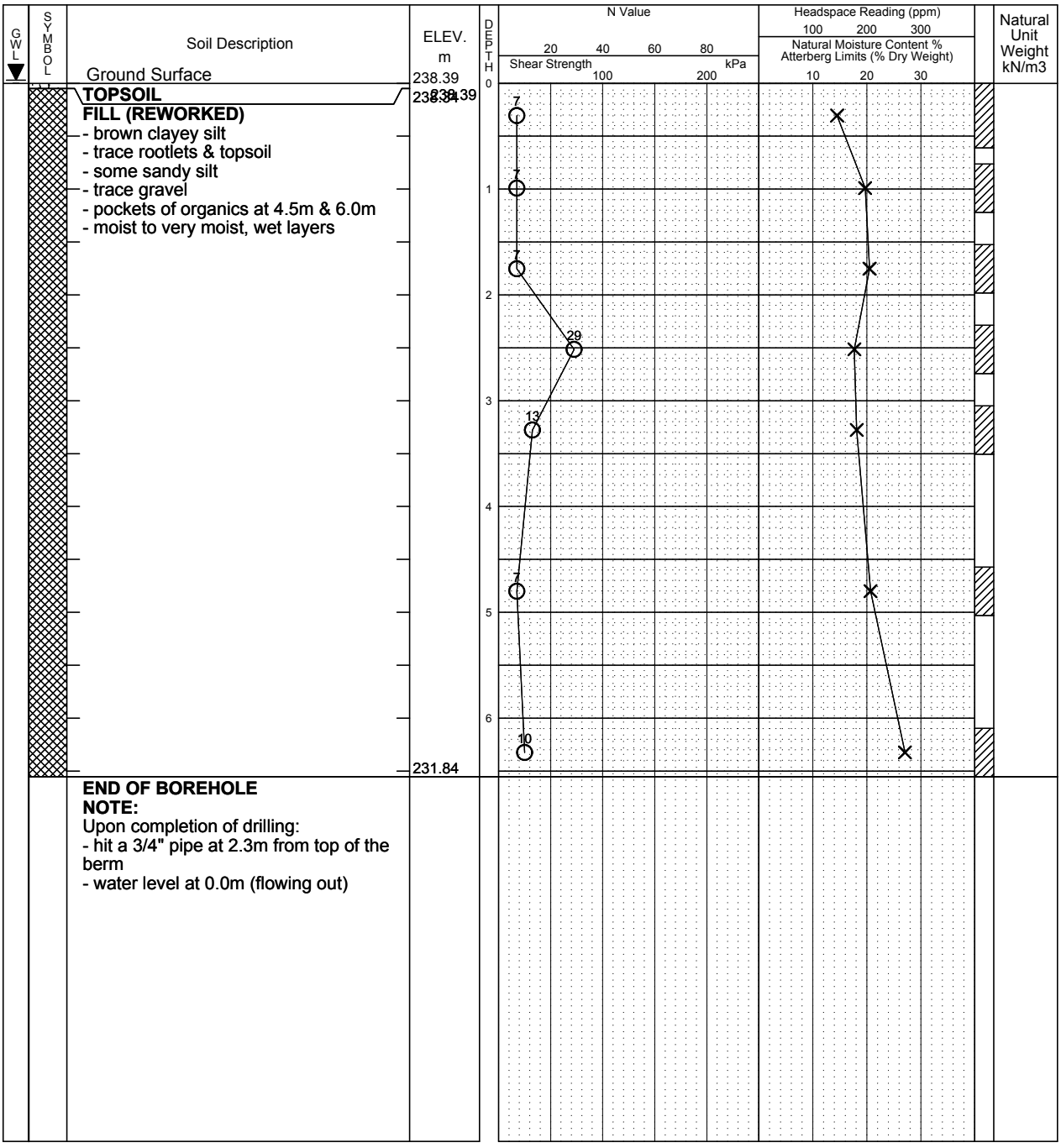
Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-09

Dwg No. 10

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/25/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

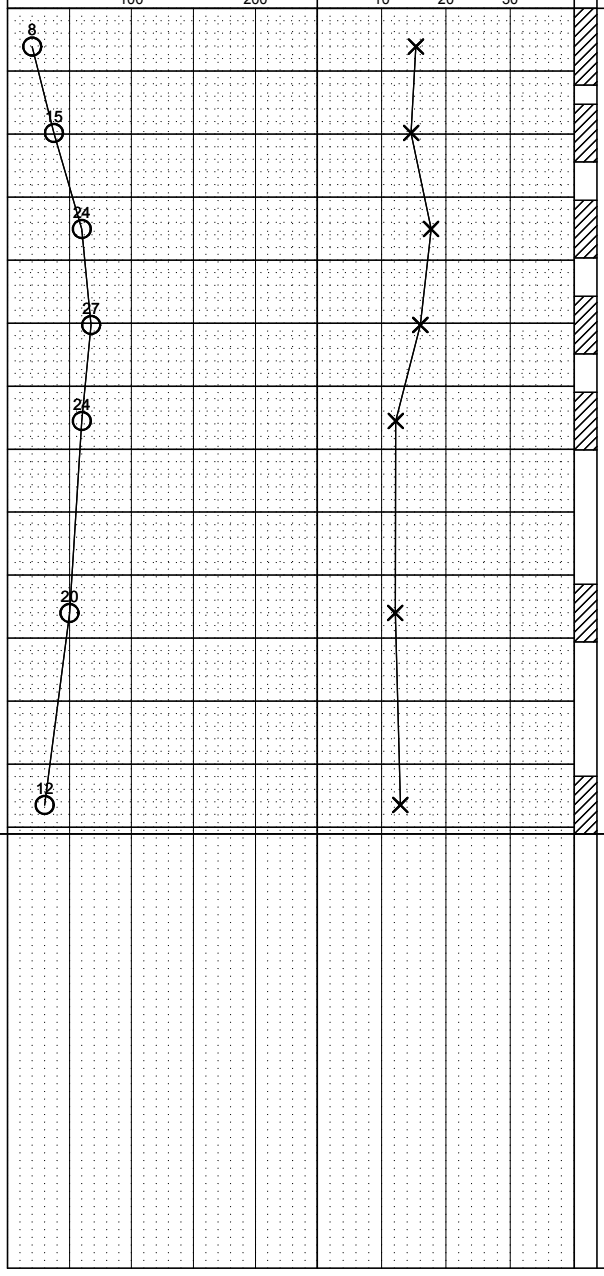
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Field Vane Test (S)

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	239.51
		TOPSOIL	239.28
		FILL (REWORKED) - brown sandy silt to clayey silt - some rootlets & topsoil - moist	238.74
		CLAYEY / SANDY SILT TILL - soft to very stiff / compact - brown, grey below 6.0m - some gravel - seams of fine sand - moist to very moist	232.95
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water	

DEPTH 0 1 2 3 4 5 6

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30



Natural Unit Weight kN/m3

LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-10 (MW)

Dwg No. 11

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

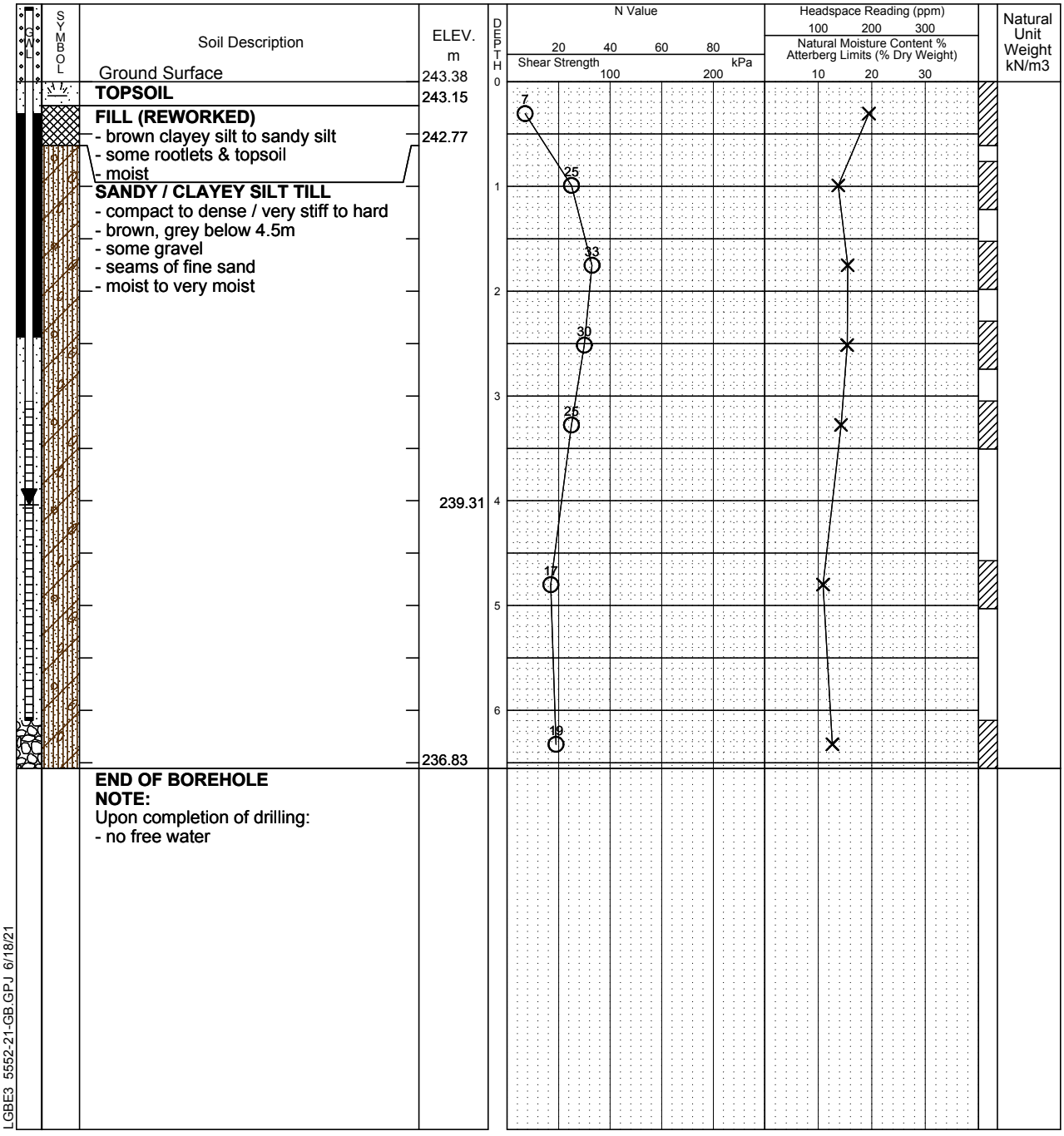
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	4.07m	

Project No. 5552-21-GB

Log of Borehole 21BH-11

Dwg No. 12

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

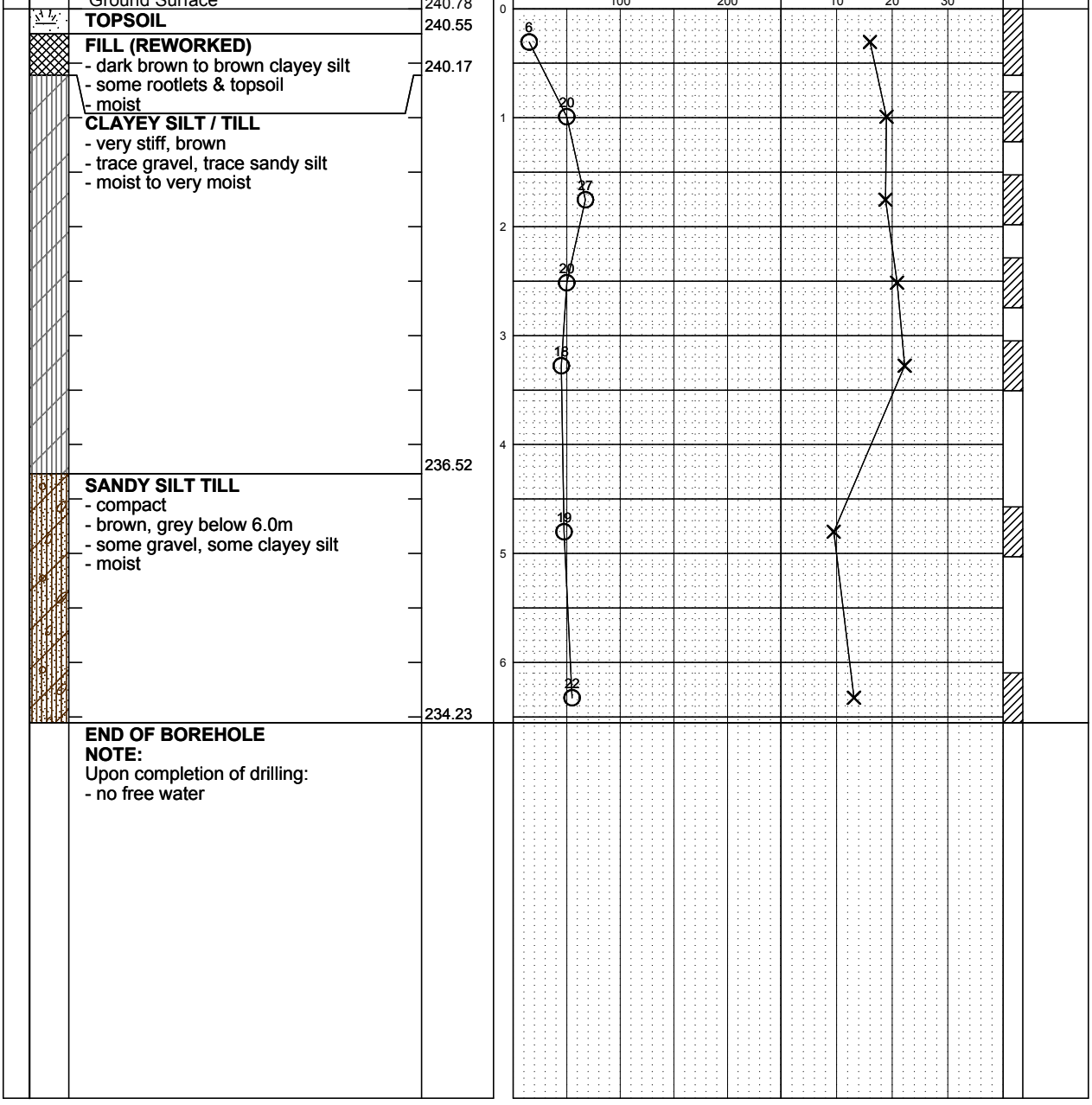
GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	240.78
		TOPSOIL	240.55
		FILL (REWORKED) - dark brown to brown clayey silt - some rootlets & topsoil - moist	240.17
		CLAYEY SILT / TILL - very stiff, brown - trace gravel, trace sandy silt - moist to very moist	
			236.52
		SANDY SILT TILL - compact - brown, grey below 6.0m - some gravel, some clayey silt - moist	
			234.23
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water	

DEPTH

N Value: 20 40 60 80
Shear Strength: 100 200 kPa

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-12

Dwg No. 13

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

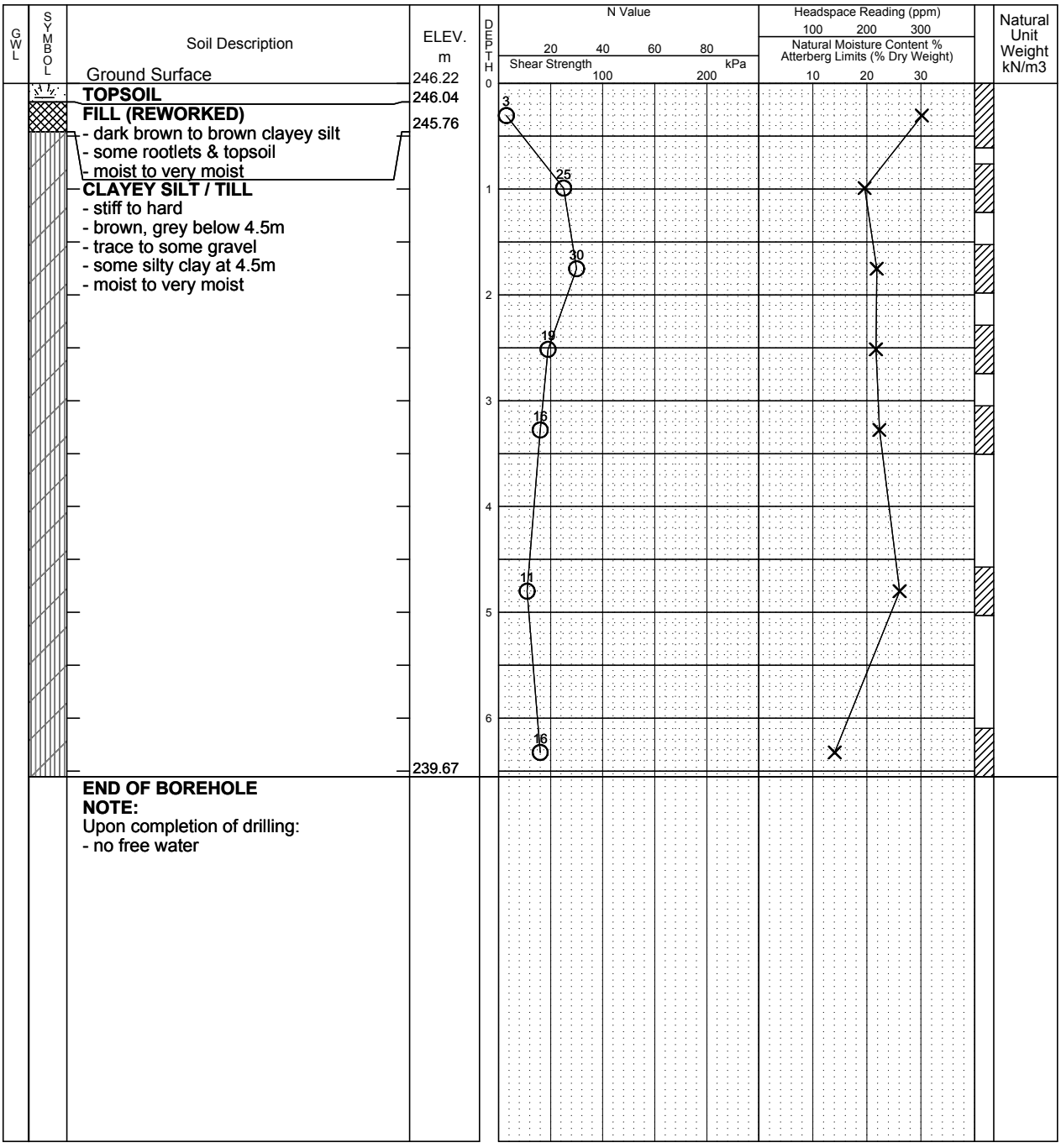
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-13 (MW)

Dwg No. 14

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

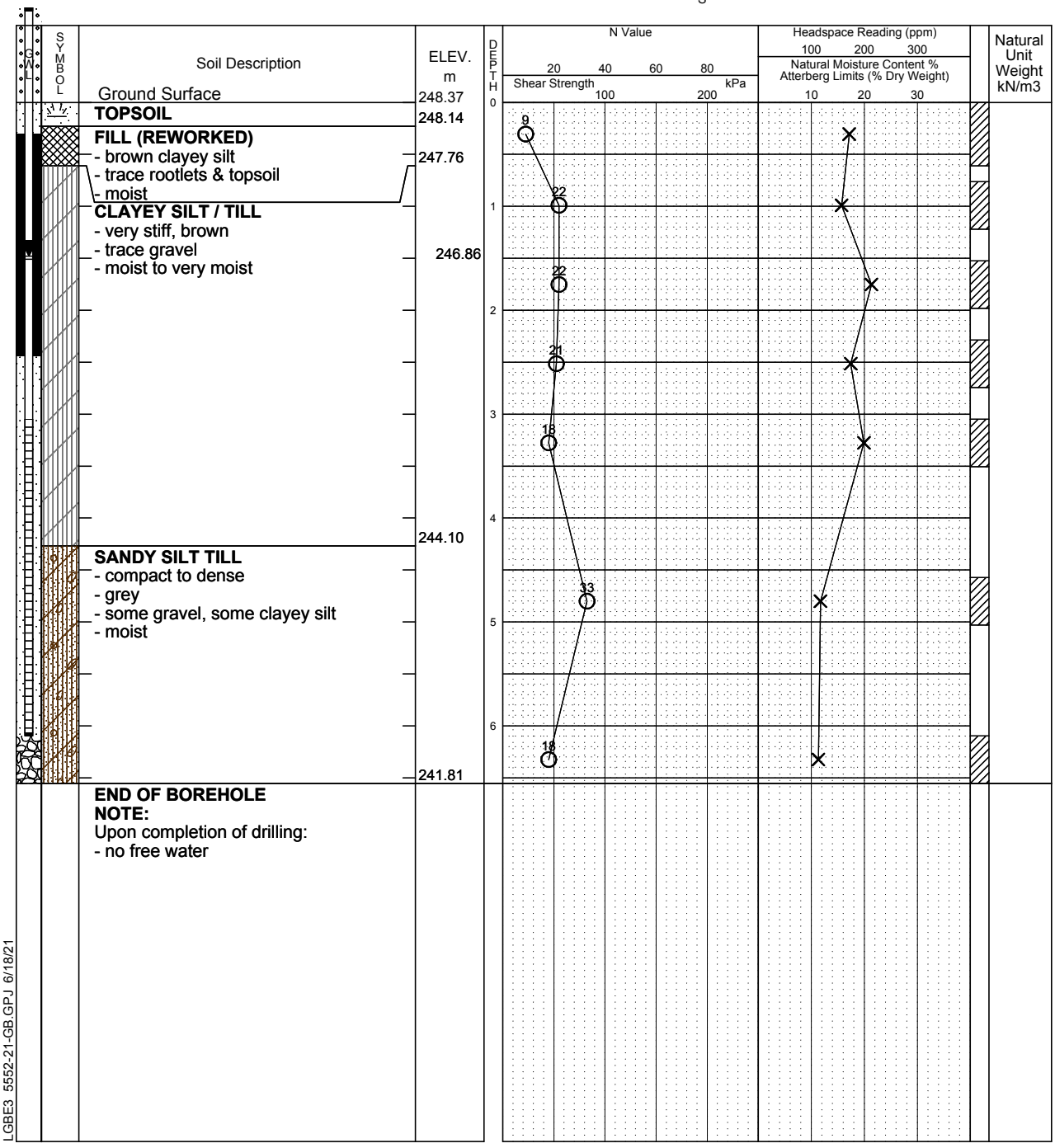
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.51m	

Project No. 5552-21-GB

Log of Borehole 21BH-14

Dwg No. 15

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

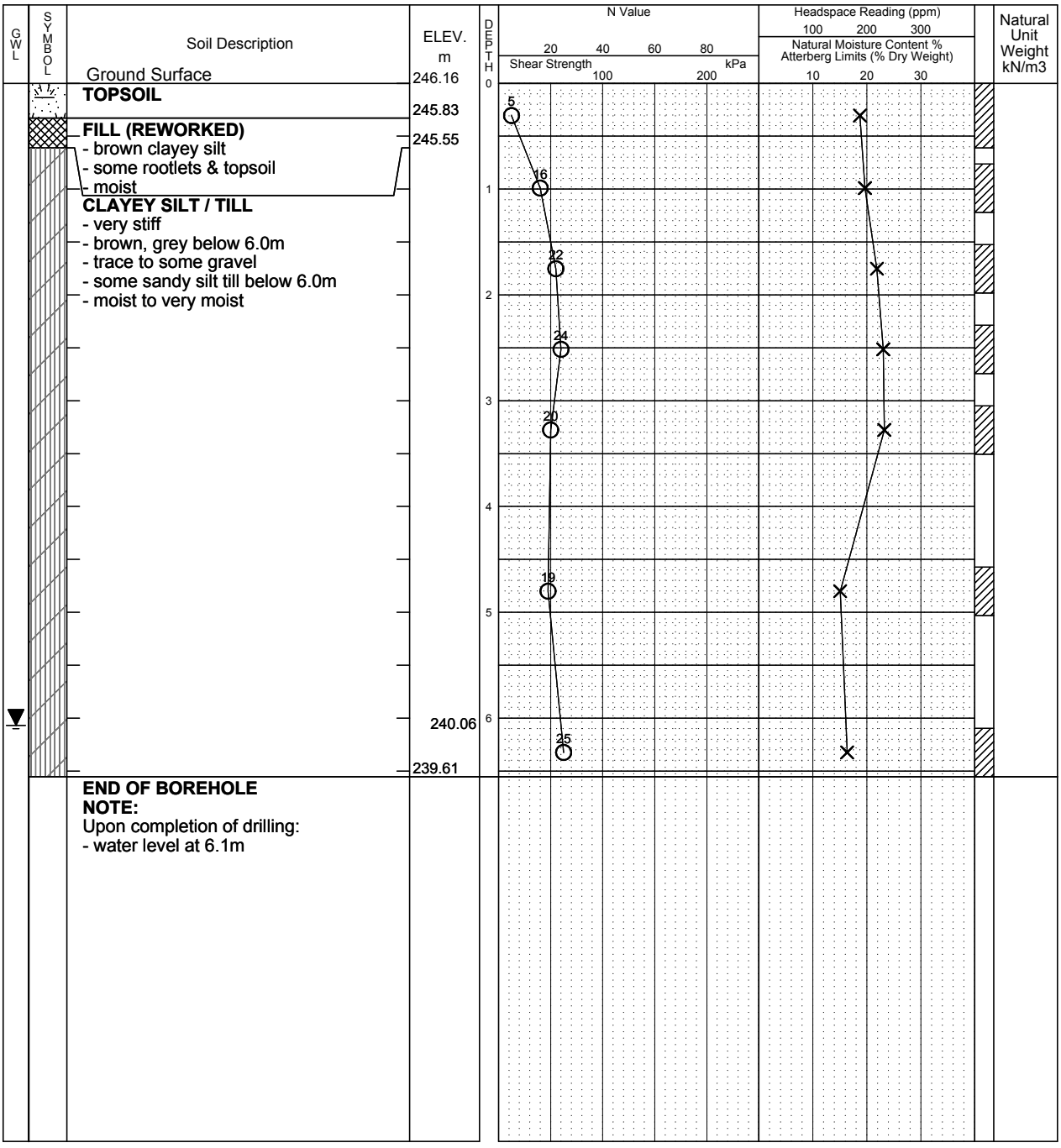
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-15

Dwg No. 16

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

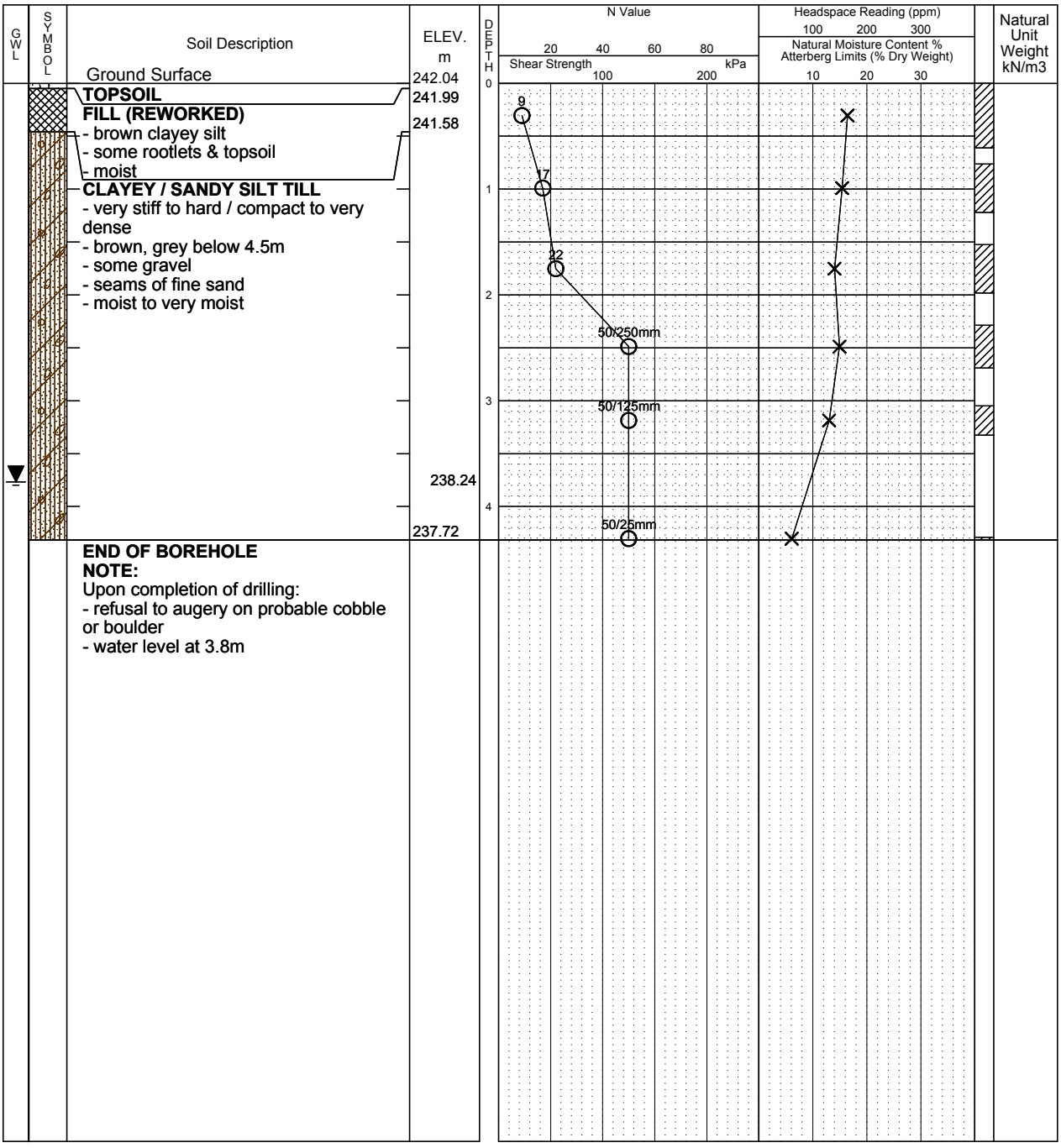
Date Drilled: 5/26/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-16 (MW)

Dwg No. 17

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

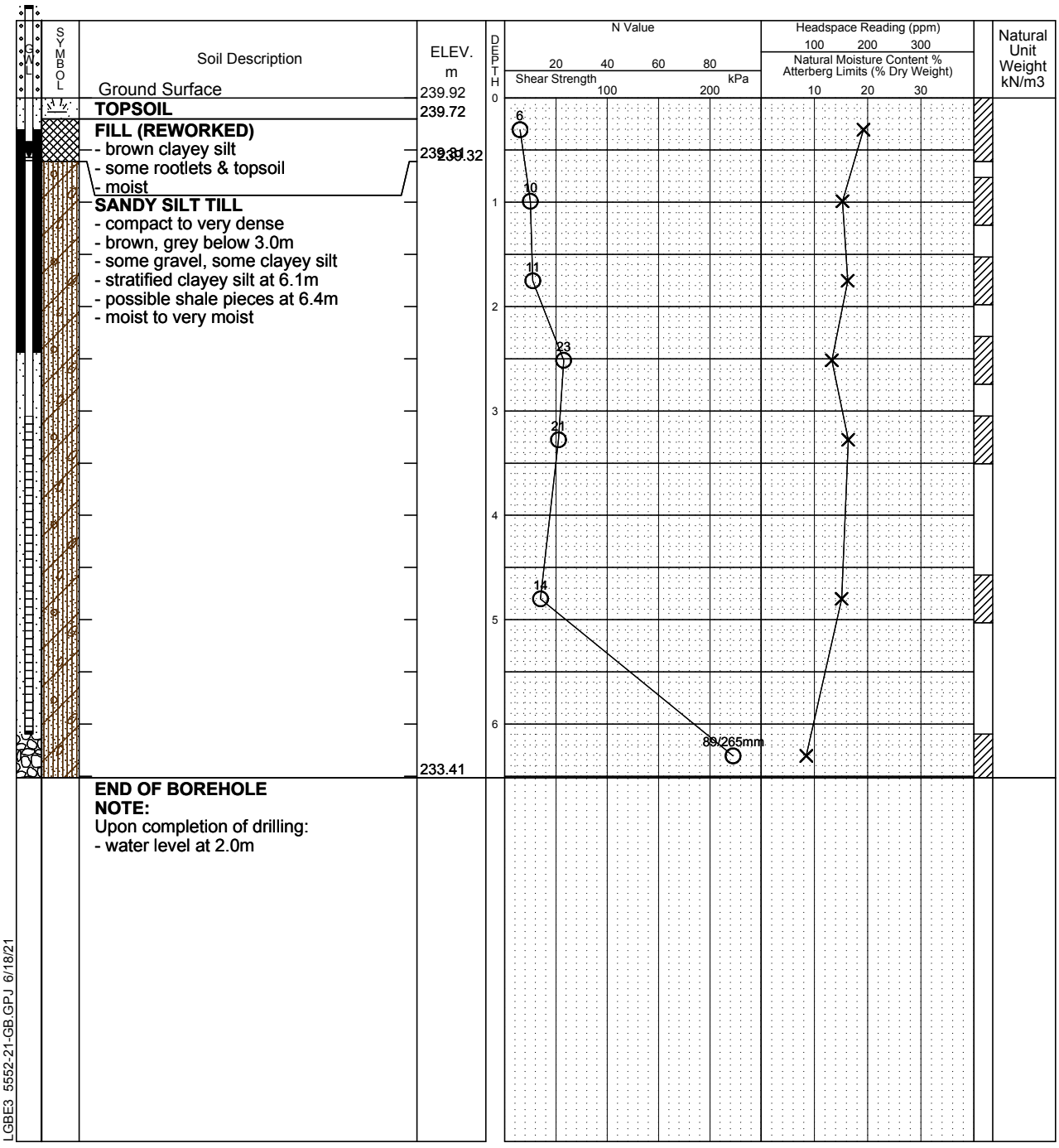
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	0.6m	

Project No. 5552-21-GB

Log of Borehole 21BH-17

Dwg No. 18

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

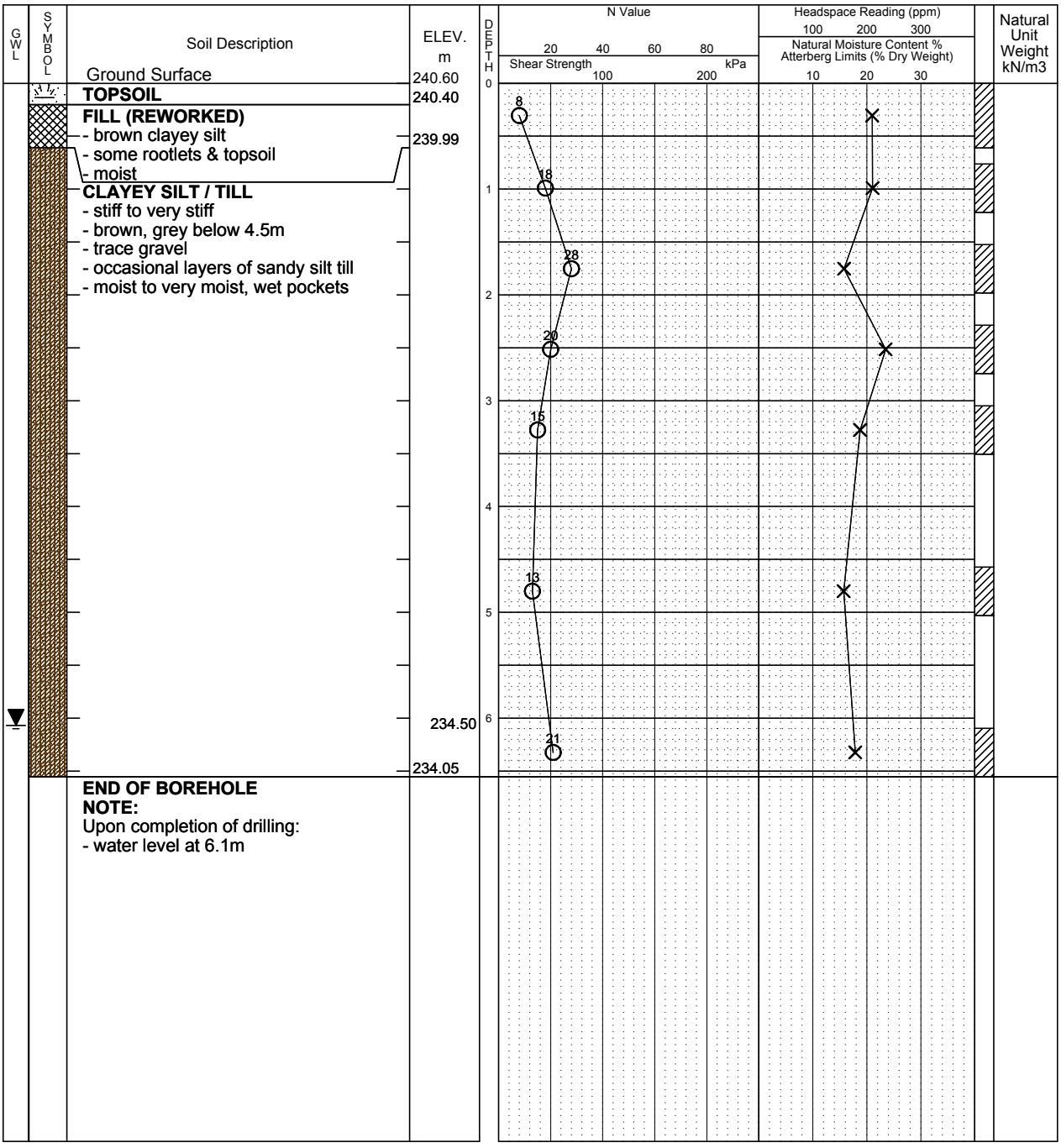
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-18 (MW)

Dwg No. 19

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

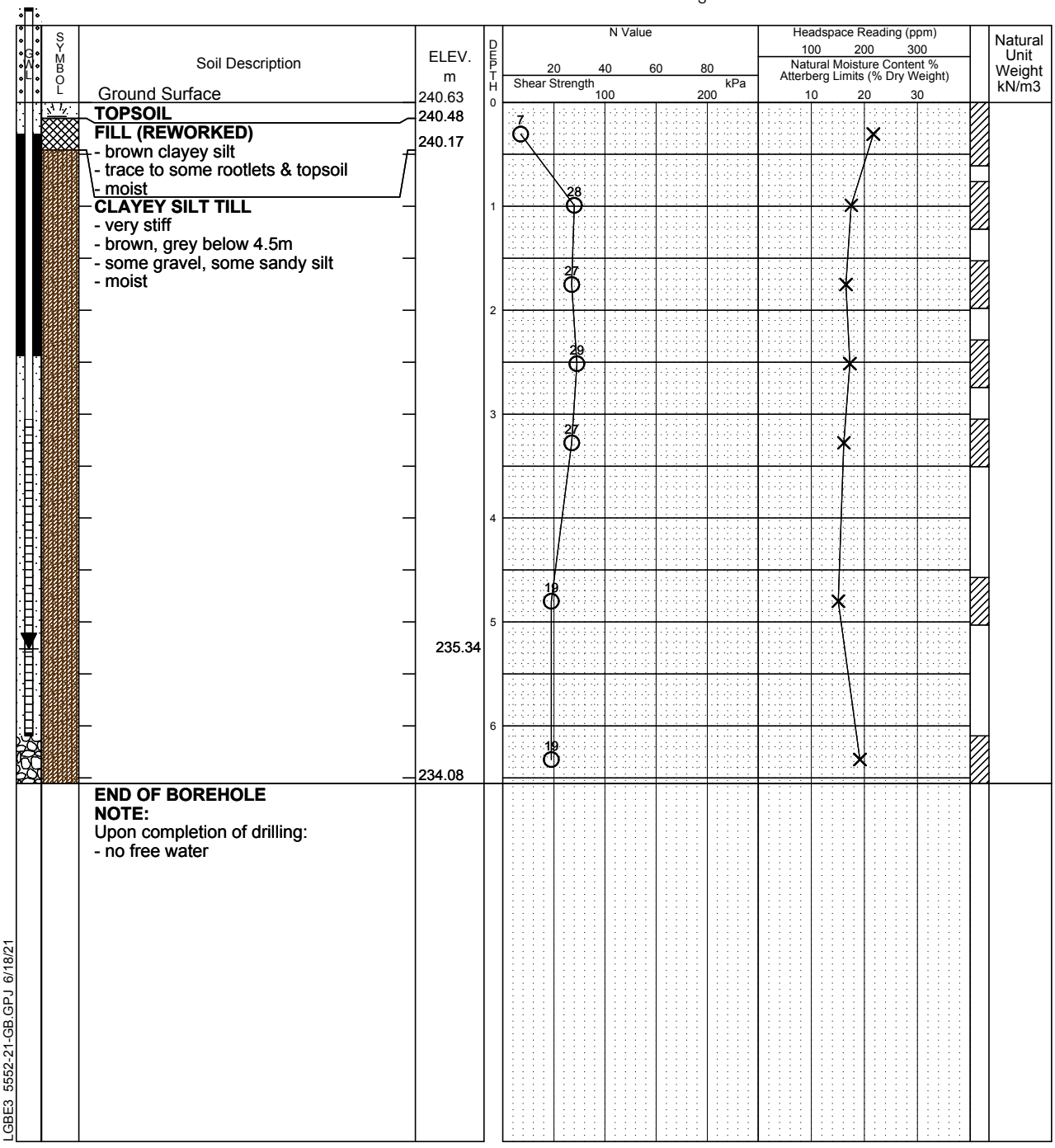
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	5.29m	

Project No. 5552-21-GB

Log of Borehole 21BH-19

Dwg No. 20

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

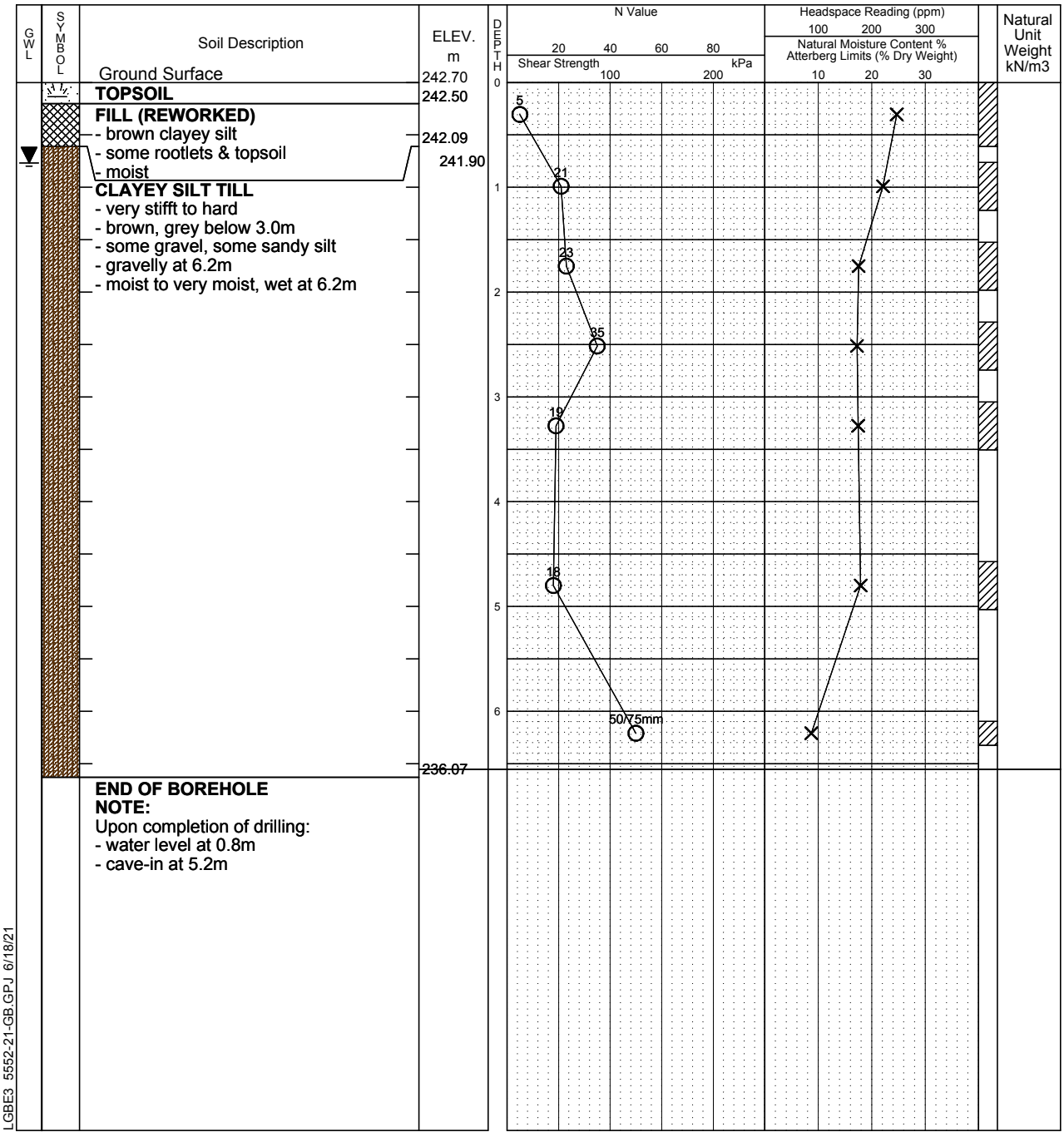
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-20 (MW)

Dwg No. 21

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

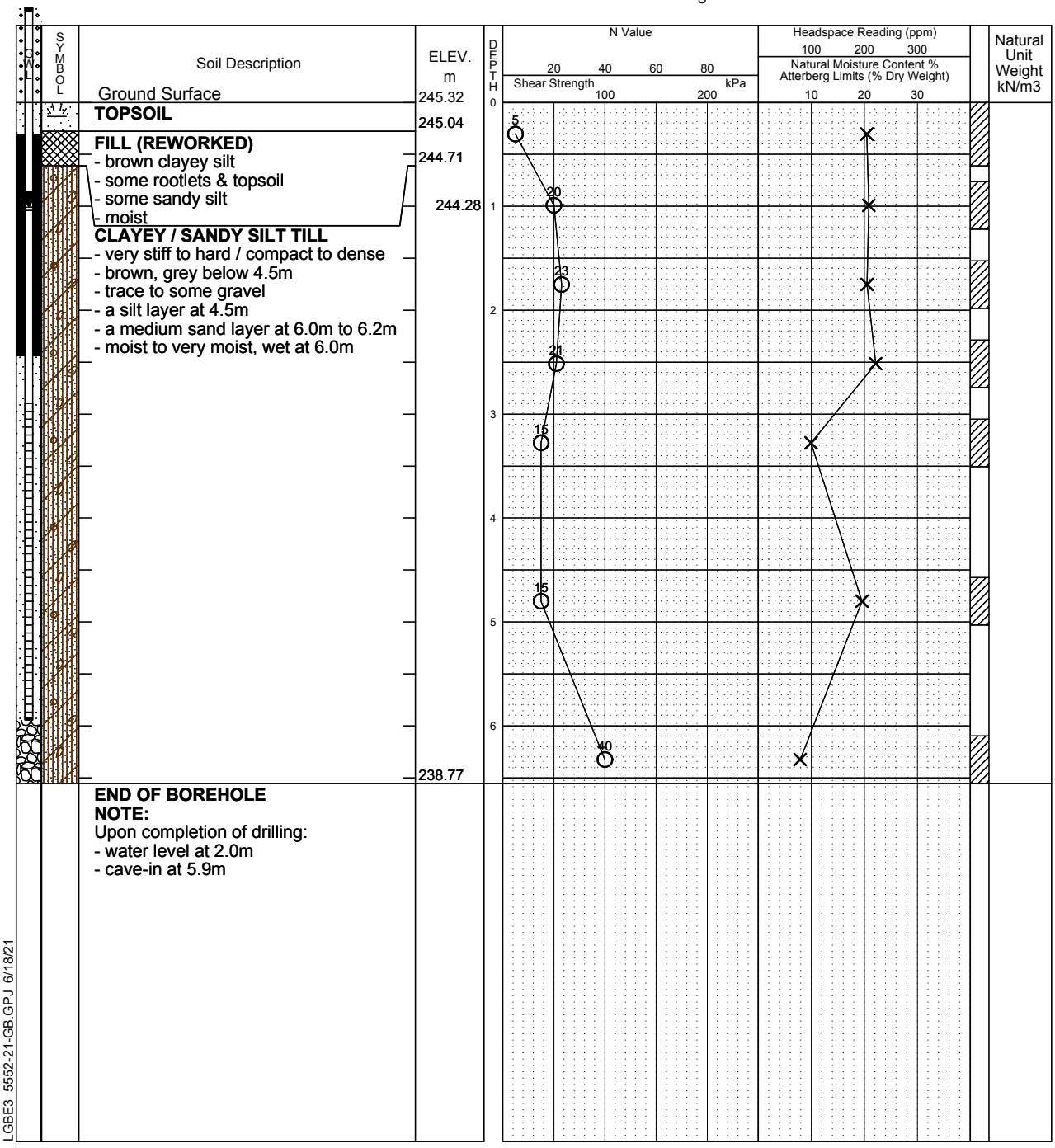
Date Drilled: 5/27/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.04m	

Project No. 5552-21-GB

Log of Borehole 21BH-21

Dwg No. 22

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

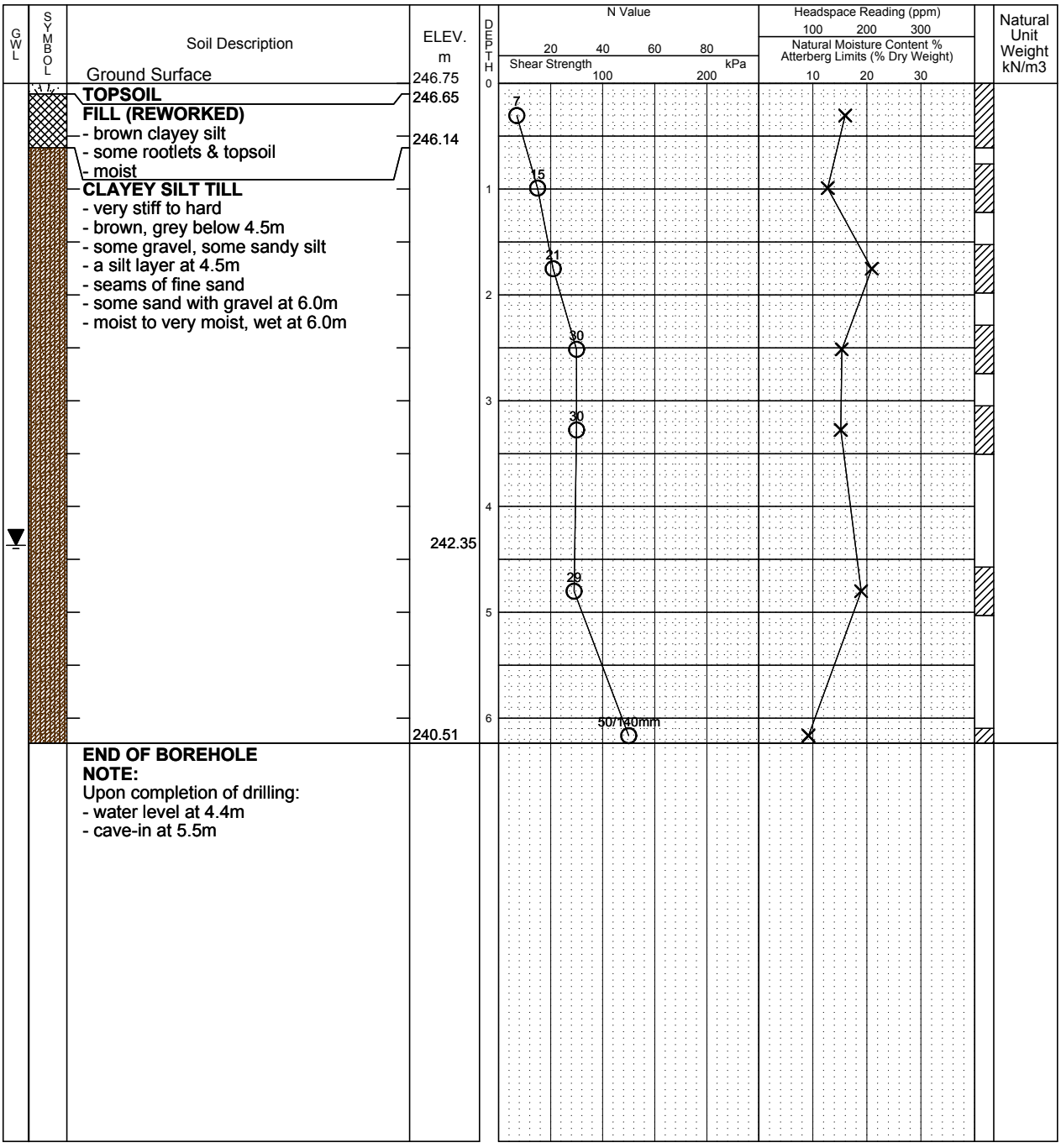
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-22 (MW)

Dwg No. 23

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

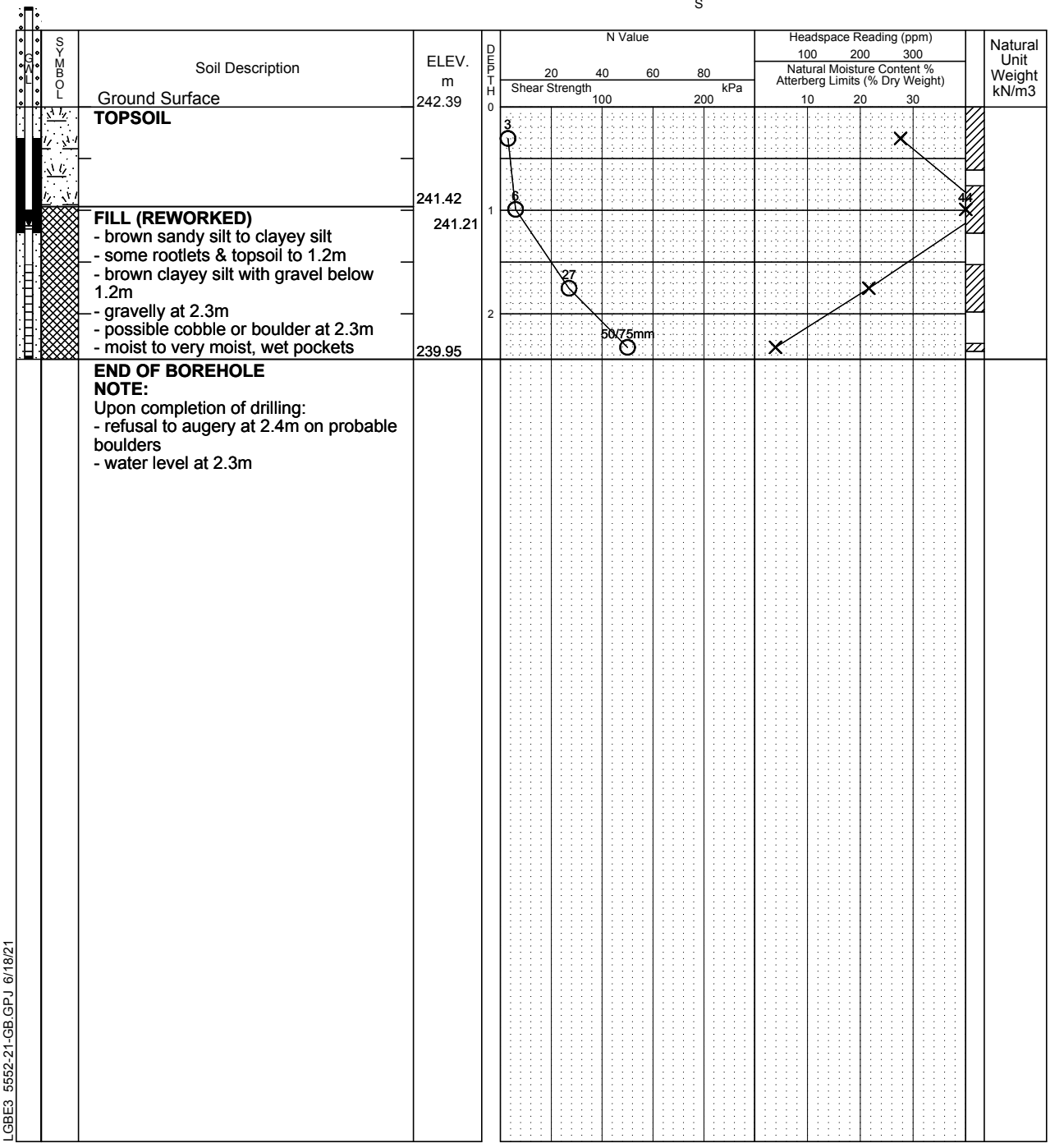
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.18m	

Project No. 5552-21-GB

Log of Borehole 21BH-23 (MW)

Dwg No. 24

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

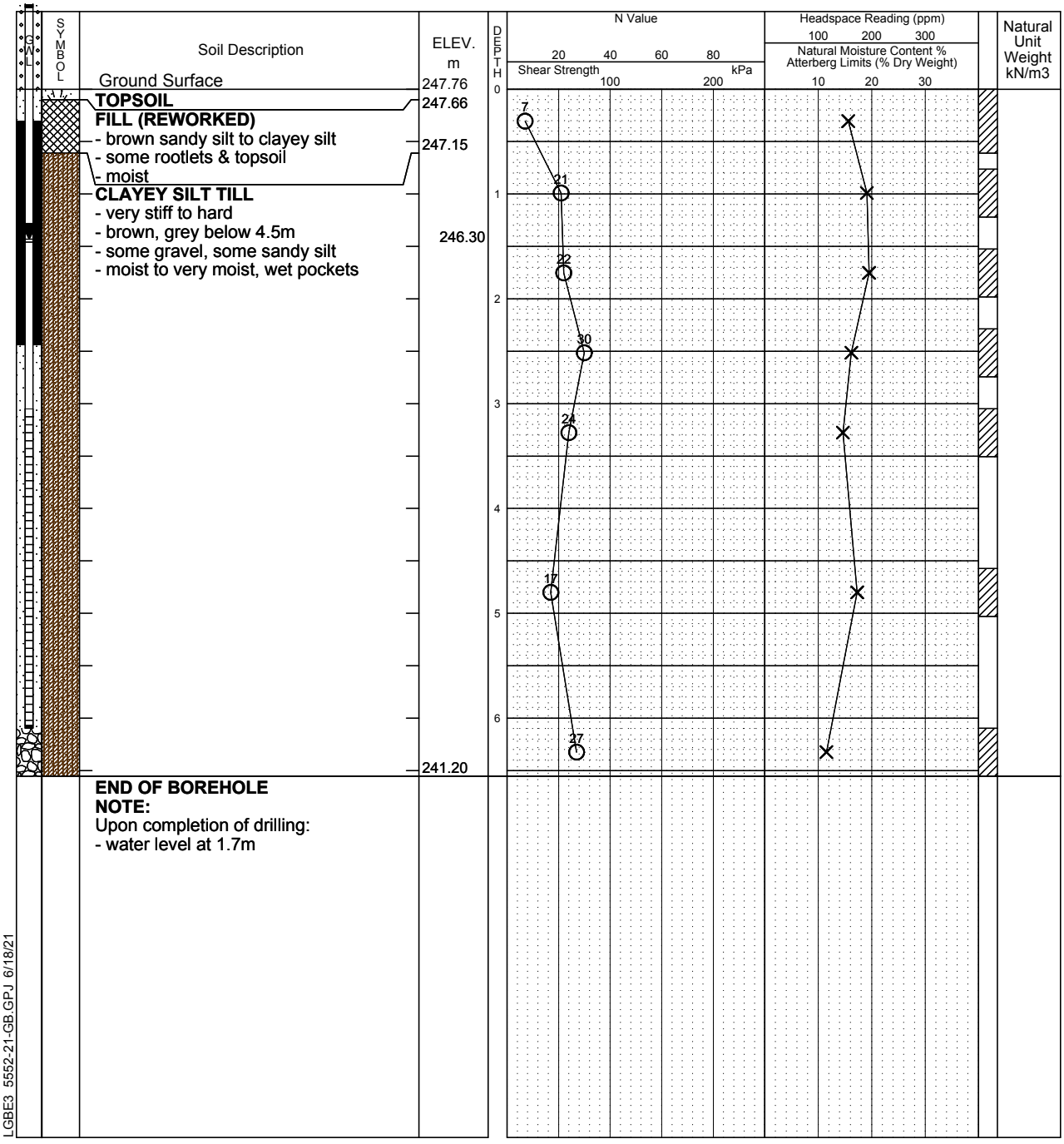
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	1.46m	

Project No. 5552-21-GB

Log of Borehole 21BH-24

Dwg No. 25

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

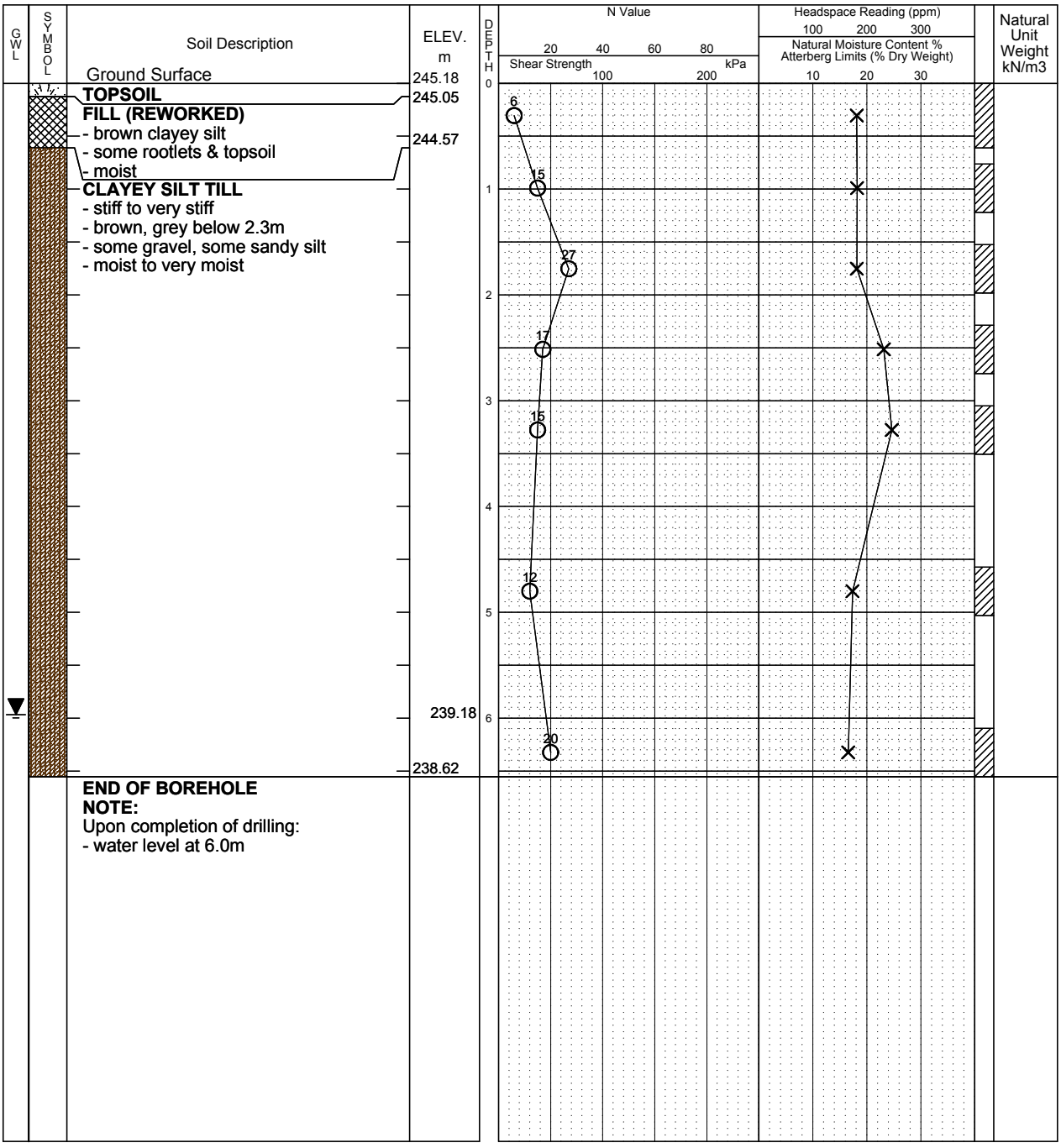
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-25 (MW)

Dwg No. 26

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

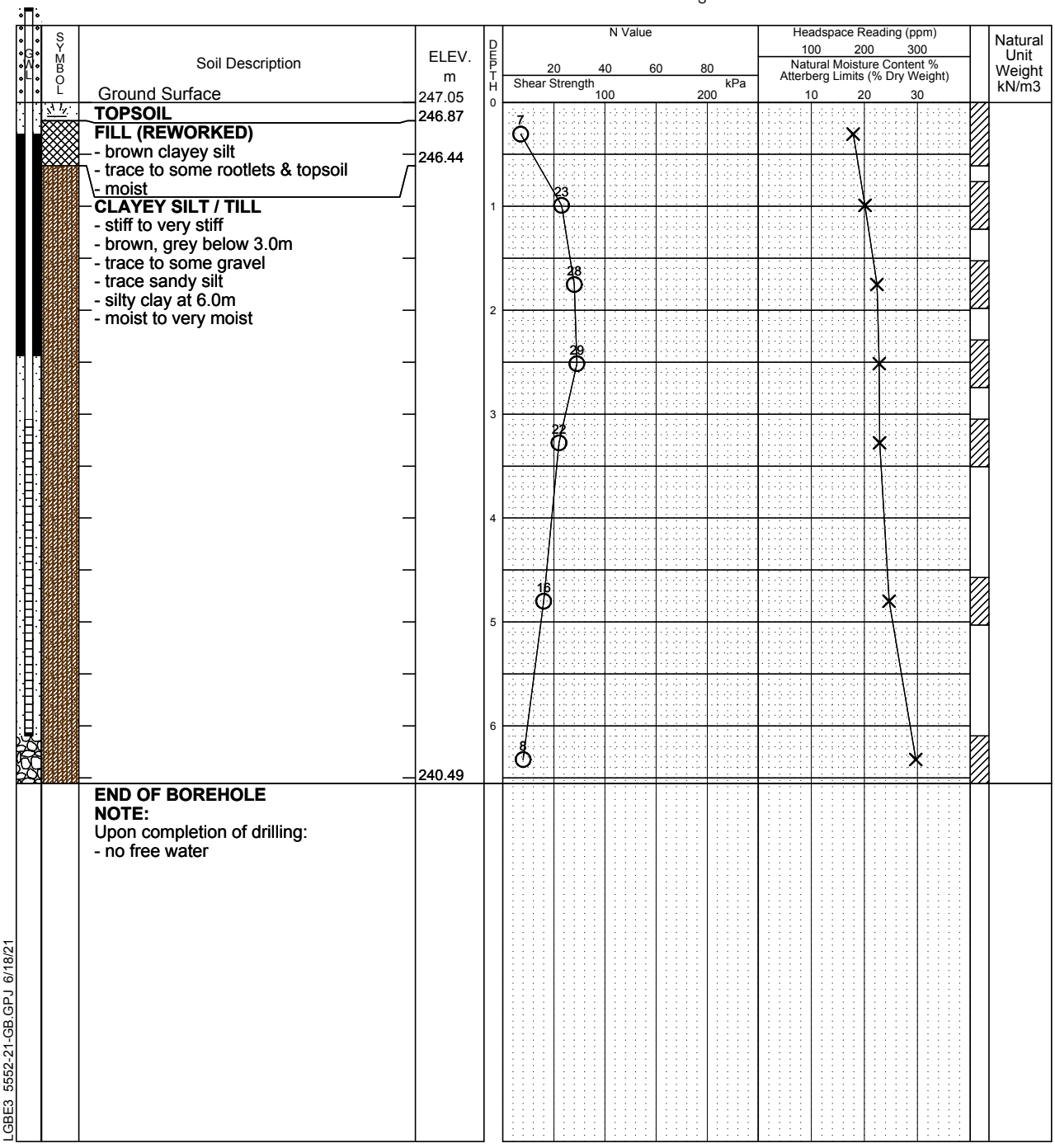
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-26

Dwg No. 27

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

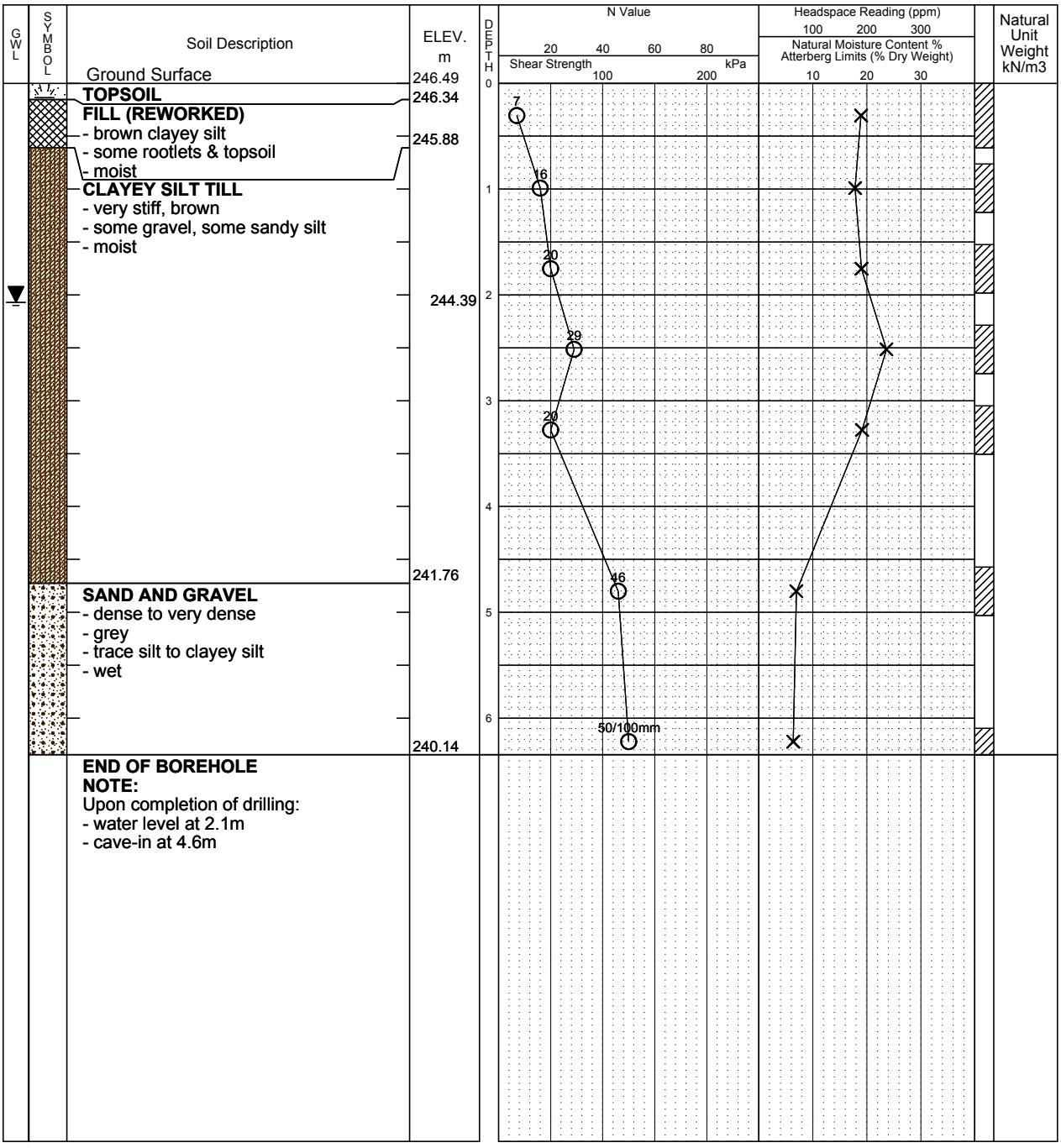
Date Drilled: 5/31/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-27

Dwg No. 28

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

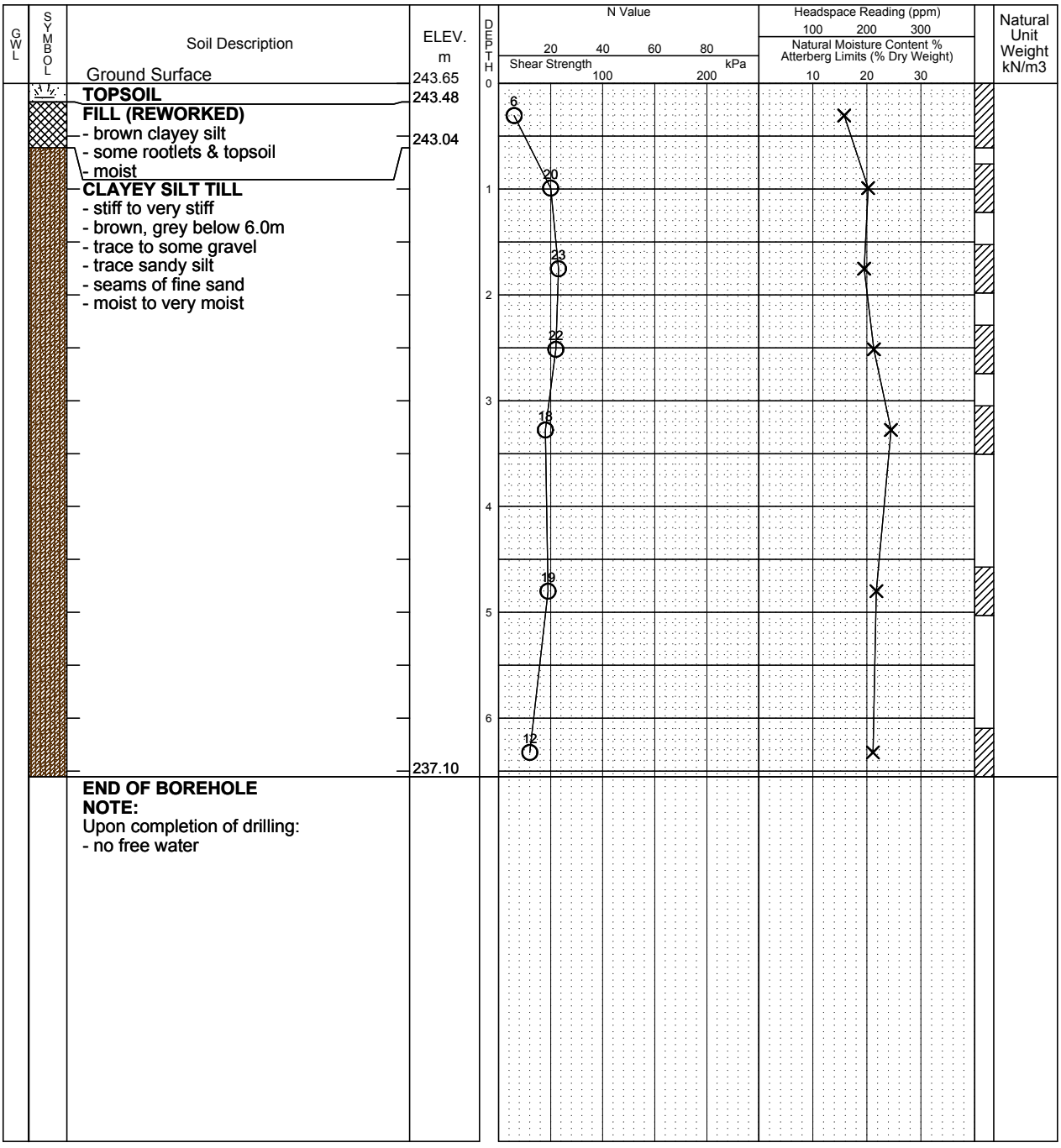
Date Drilled: 6/1/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-28

Dwg No. 29

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

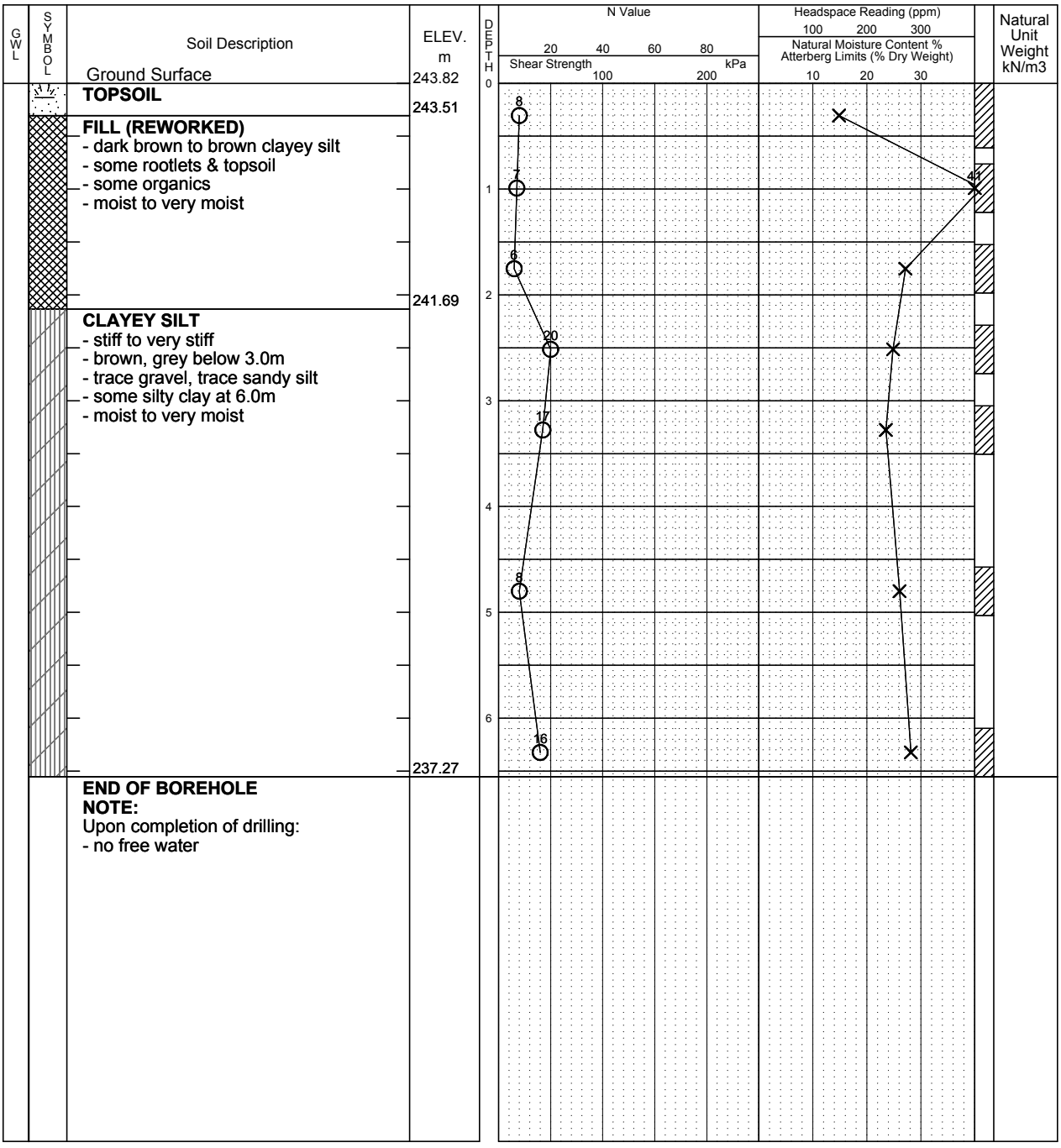
Date Drilled: 6/1/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-29 (MW)

Dwg No. 30

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

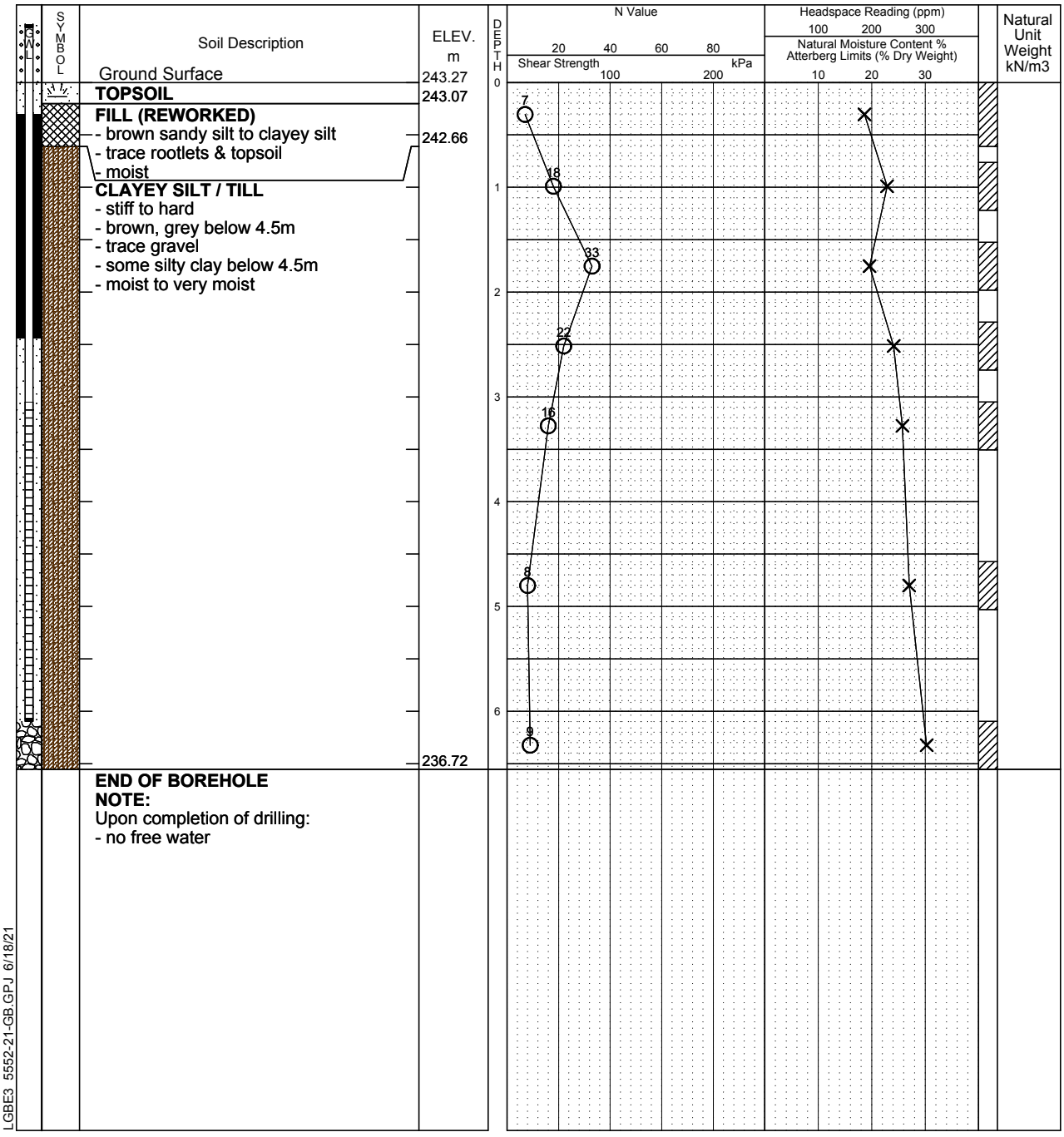
Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-30 (MW)

Dwg No. 31

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

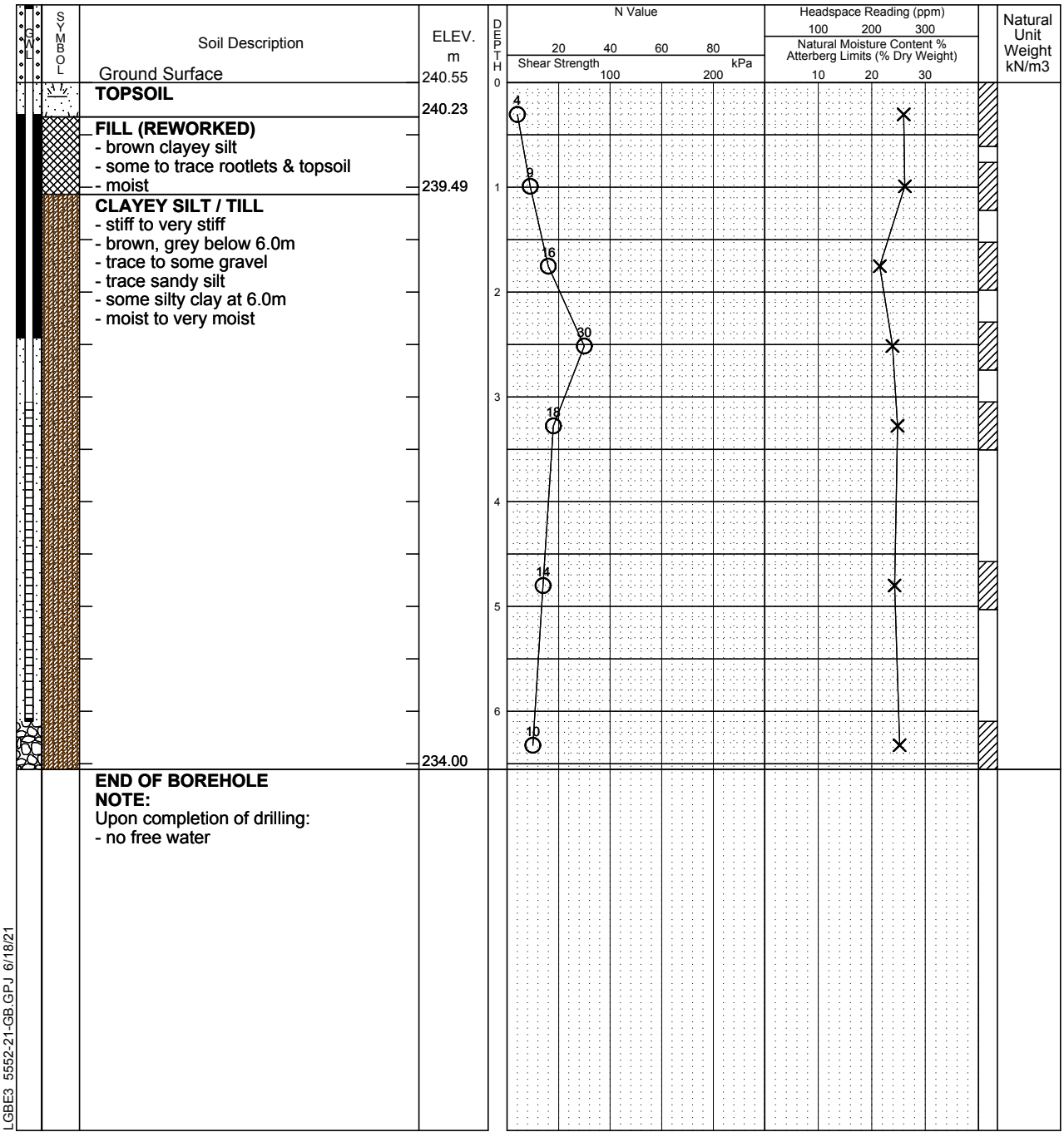
Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-31

Dwg No. 32

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

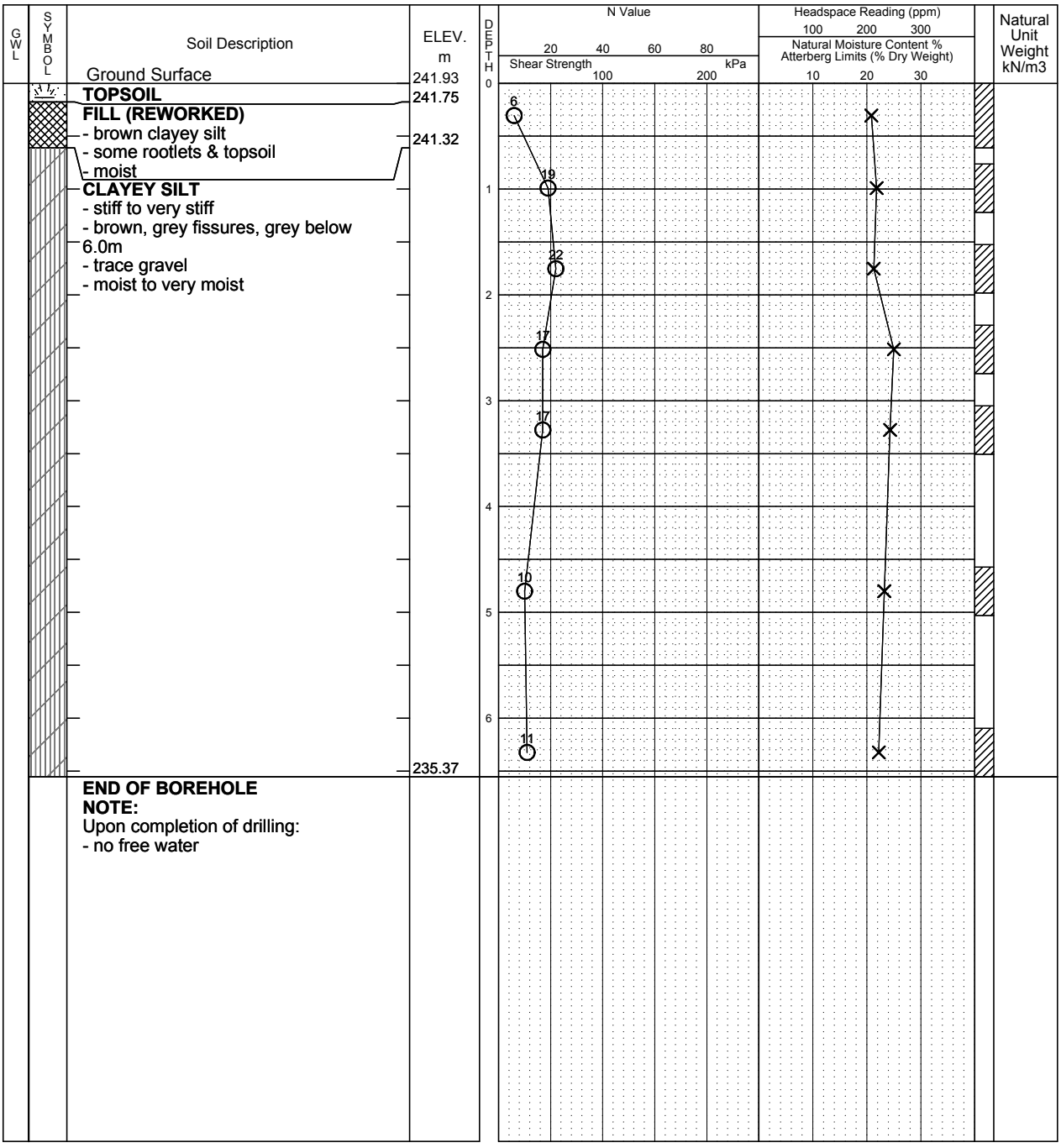
Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-32

Dwg No. 33

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	242.16	0
		TOPSOIL	242.01	
		FILL (REWORKED)	241.86	
		- brown clayey silt		
		- trace rootlets & topsoil		
		- moist		
		CLAYEY SILT		
		- stiff to very stiff		
		- brown, grey below 2.3m		
		- trace gravel		
		- moist		
			235.61	6
		END OF BOREHOLE		
		NOTE:		
		Upon completion of drilling:		
		- no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3

8
26
28
29
14
12
18

LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-33 (MW)

Dwg No. 34

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

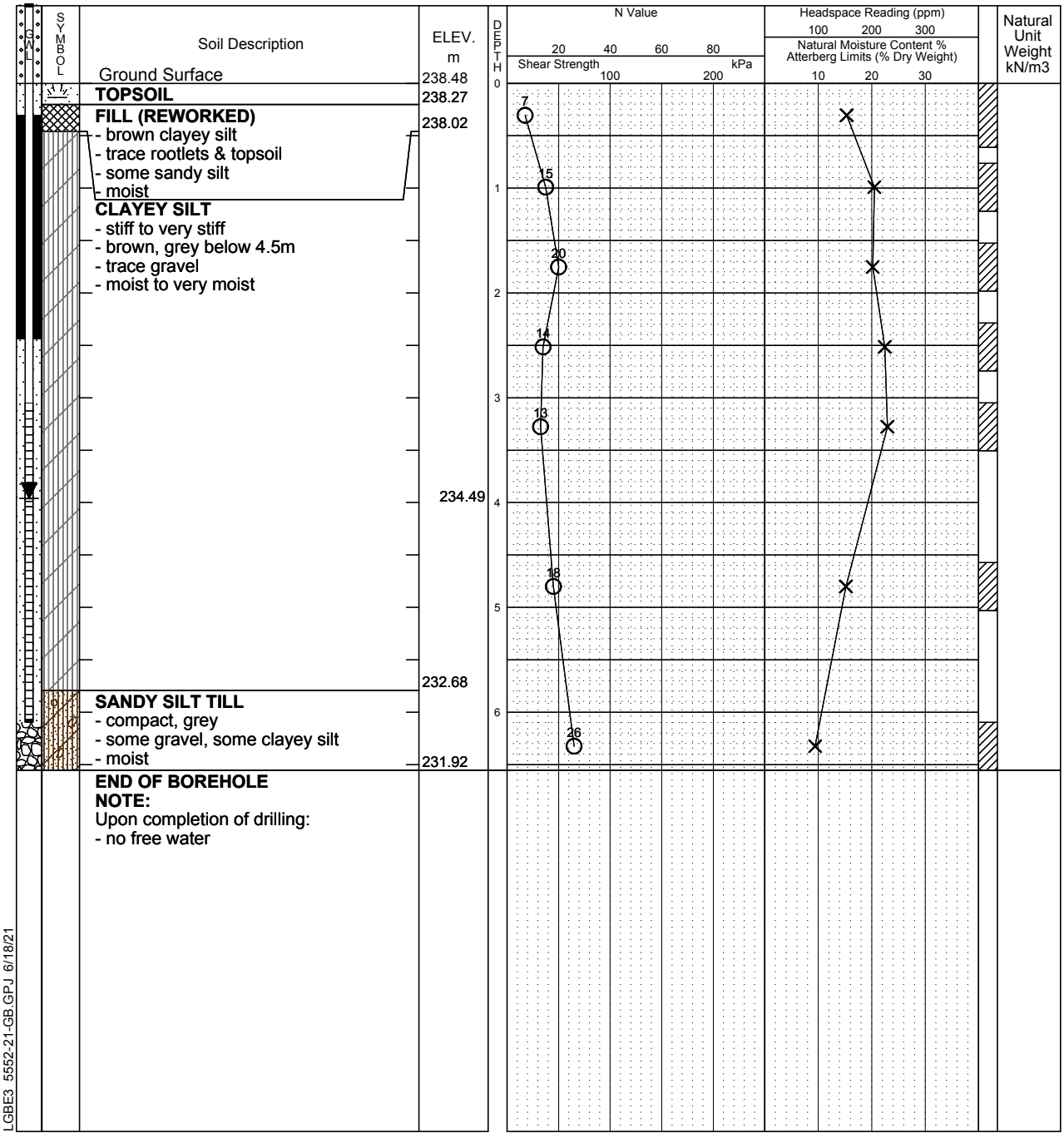
Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 3, 2021	3.99m	

Project No. 5552-21-GB

Log of Borehole 21BH-34

Dwg No. 35

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

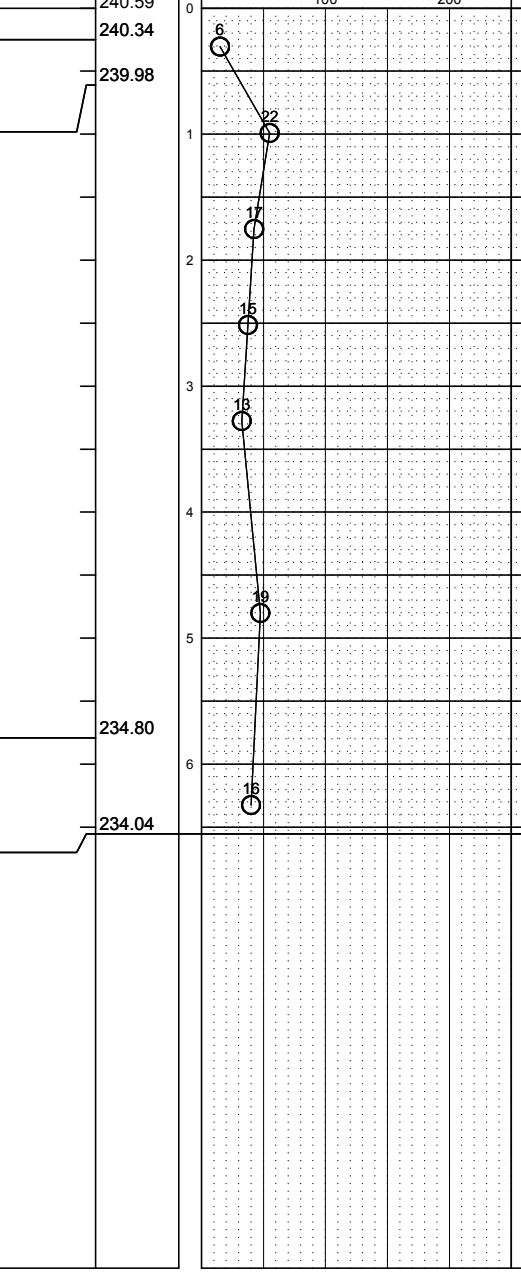
GWL	SYMBOL	Soil Description	ELEV. m
		Ground Surface	240.59
		TOPSOIL	240.34
		FILL (REWORKED) - brown clayey silt to sandy silt - trace rootlets & topsoil - moist	239.98
		CLAYEY SILT / TILL - stiff to very stiff - brown - trace to some gravel - moist	
			234.80
		SANDY SILT TILL - compact, brown - some gravel, some silty sand - trace clay - moist	234.04
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water	

DEPTH

N Value: 20 40 60 80
Shear Strength: 100 200 kPa

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-35

Dwg No. 36

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/2/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

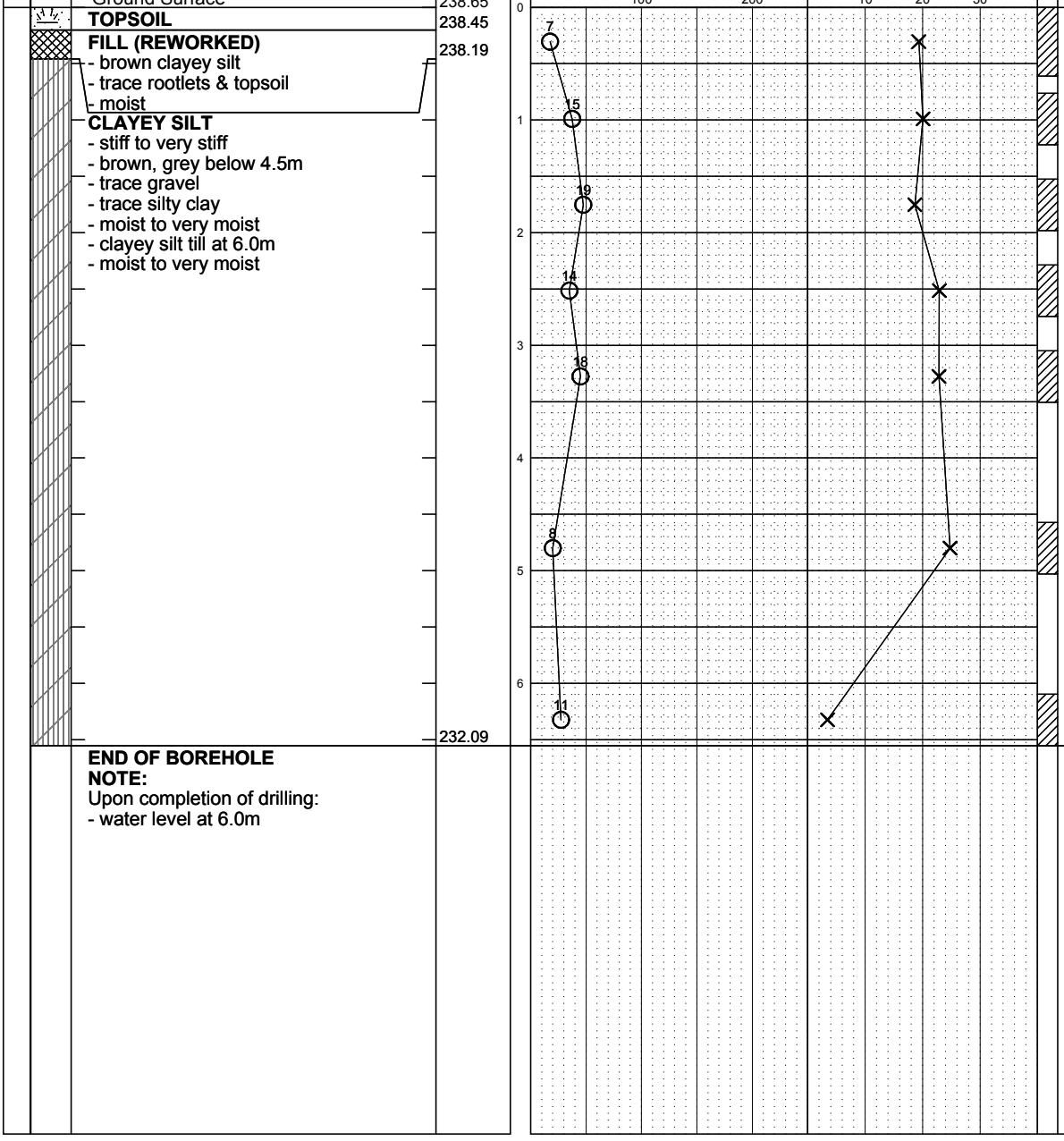
Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	238.65	0
		TOPSOIL	238.45	
		FILL (REWORKED) - brown clayey silt - trace rootlets & topsoil - moist	238.19	
		CLAYEY SILT - stiff to very stiff - brown, grey below 4.5m - trace gravel - trace silty clay - moist to very moist - clayey silt till at 6.0m - moist to very moist		1 2 3 4 5 6
			232.09	
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - water level at 6.0m		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa

Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30

Natural Unit Weight kN/m3



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 5552-21-GB

Log of Borehole 21BH-36 (MW)

Dwg No. 37

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

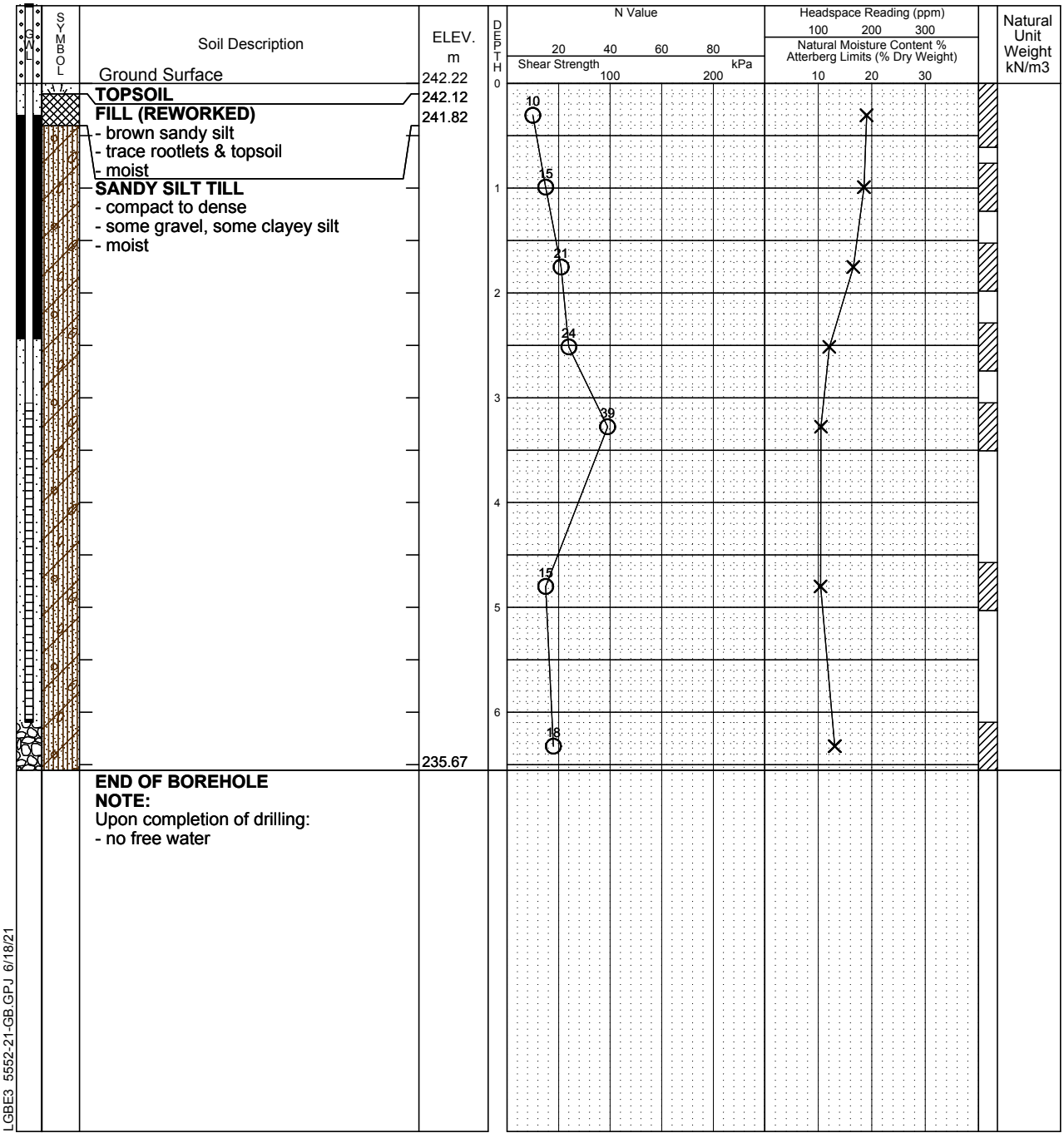
Date Drilled: 6/3/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 7, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-37 (MW)

Dwg No. 38

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

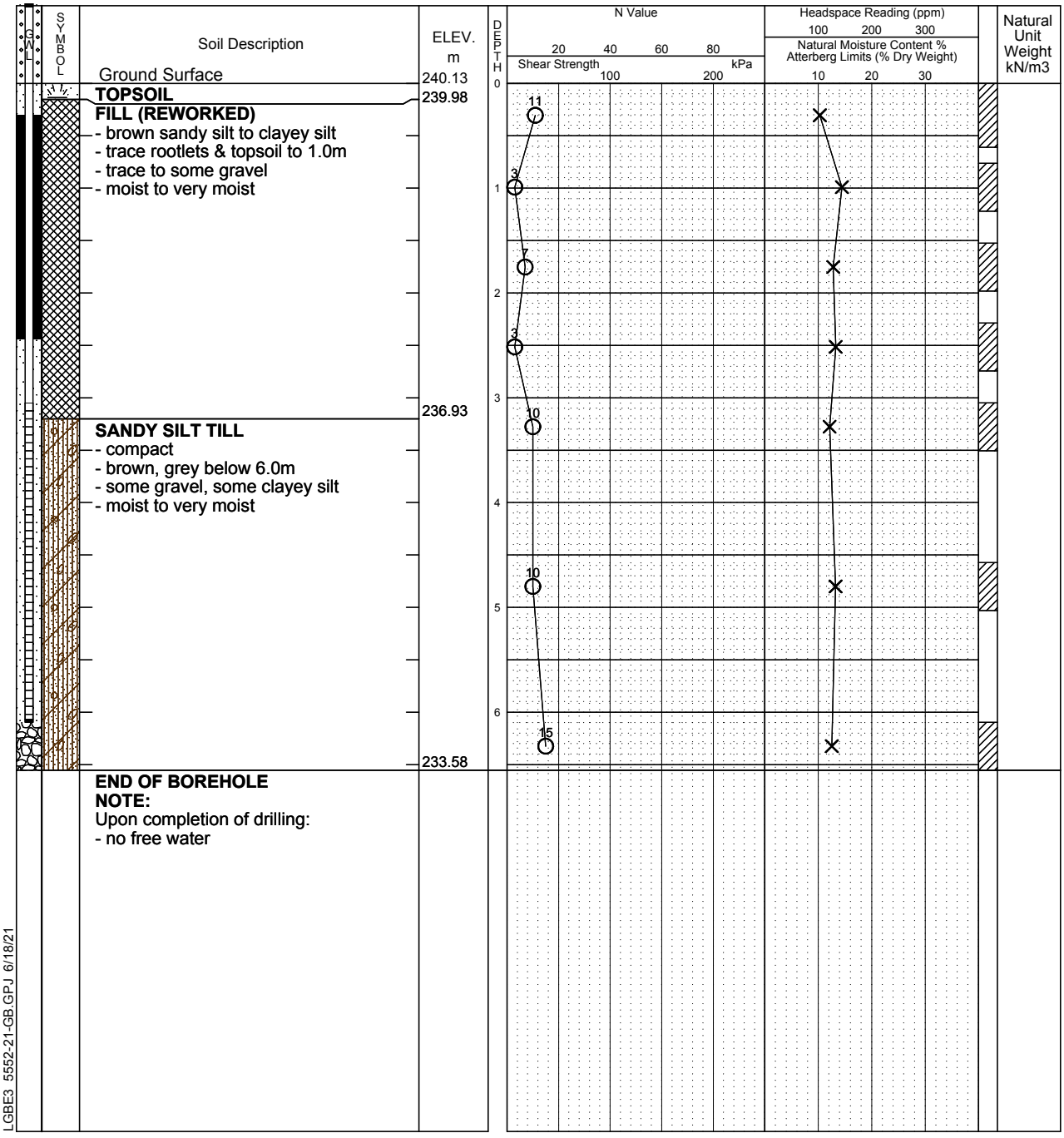
Date Drilled: 6/3/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression
% Strain at Failure
Penetrometer



LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)
June 7, 2021	Dry	

Project No. 5552-21-GB

Log of Borehole 21BH-38

Dwg No. 39

Project: Geotechnical Investigation

Sheet No. 1 of 1

Location: Aiport Road and Mayfield Road, Caledon, Ontario

Date Drilled: 6/3/21

Drill Type: Track Mounted Drill Rig

Datum: Geodetic

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

Headspace Reading (ppm)
Natural Moisture
Plastic and Liquid Limit
Unconfined Compression % Strain at Failure
Penetrometer

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH
		Ground Surface	240.72	0
		TOPSOIL	240.57	
		FILL (REWORKED) - brown clayey silt to sandy silt - trace rootlets & topsoil - moist	239.81	
		SANDY SILT TILL - compact - brown, grey below 4.5m - some gravel, some clayey silt - possible cobbles at 6.0m - moist	234.58	6
		END OF BOREHOLE **NOTE:** Upon completion of drilling: - no free water		

N Value: 20 40 60 80
Shear Strength: 100 200 kPa
Headspace Reading (ppm): 100 200 300
Natural Moisture Content % Atterberg Limits (% Dry Weight): 10 20 30
Natural Unit Weight kN/m3

N Value: 7, 11, 21, 21, 27, 17, 50/50mm

LGBE3 5552-21-GB.GPJ 6/18/21

NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

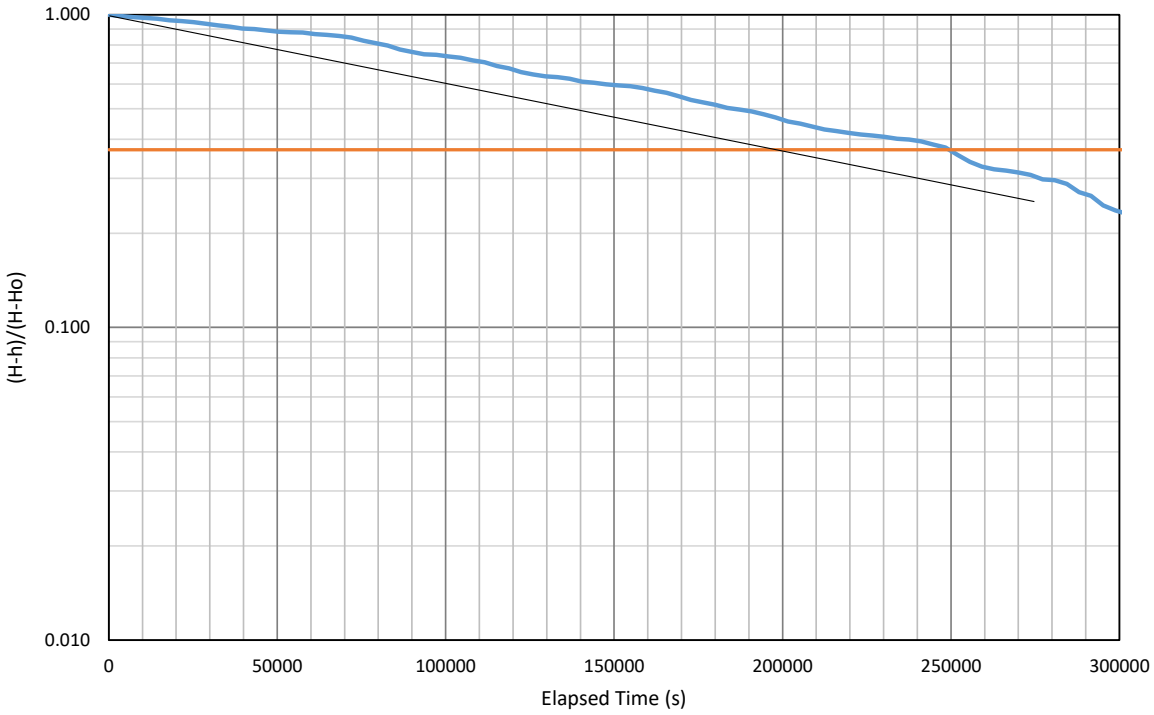
Time	Water Level (m)	Depth to Cave (m)

APPENDIX C

Hydraulic Conductivity Analysis

In-Situ Hydraulic Conductivity Analyses: 21BH-7 (MW)

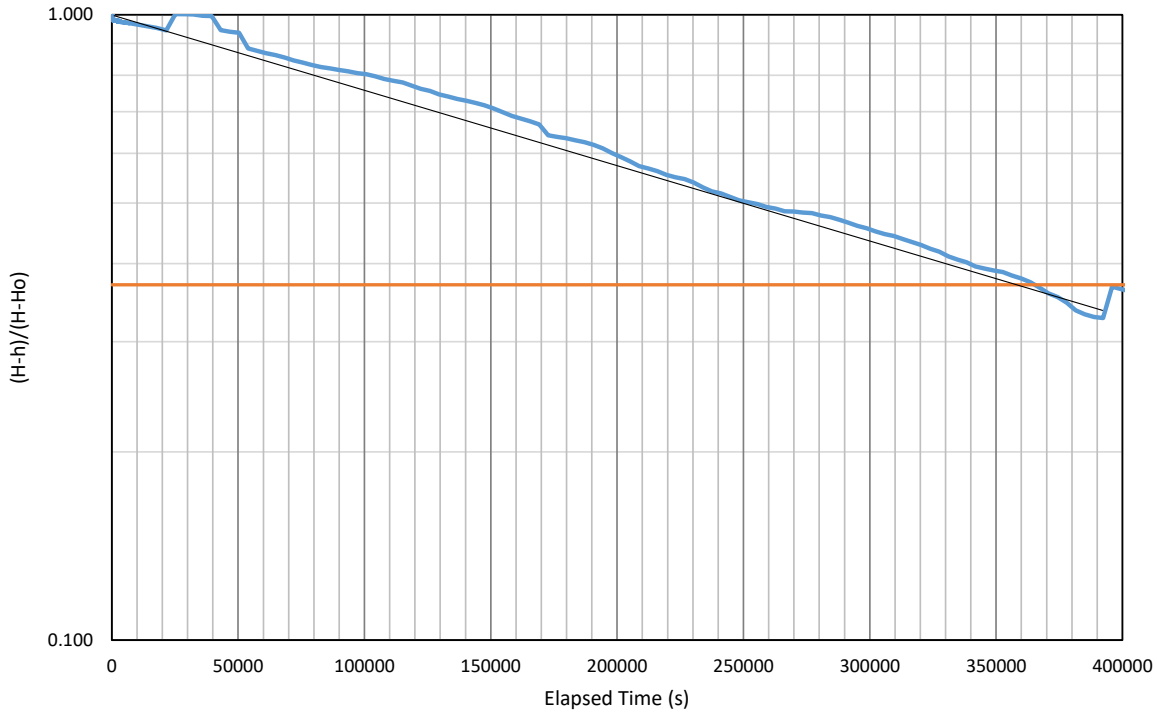
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-7 (MW)
Test Date:	June 9, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	6.10	**Screened Unit:**	Clayey Silt
Initial Water Level (mbgs) (H):	4.54	**Screen Length (m) (L_e):**	1.560
Available Drawdown (m):	1.56	**Head at Time = 0 (m) (H_o):**	0.79
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	77%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	3.6E-09	**Mid To (s):**	200000
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-10 (MW)

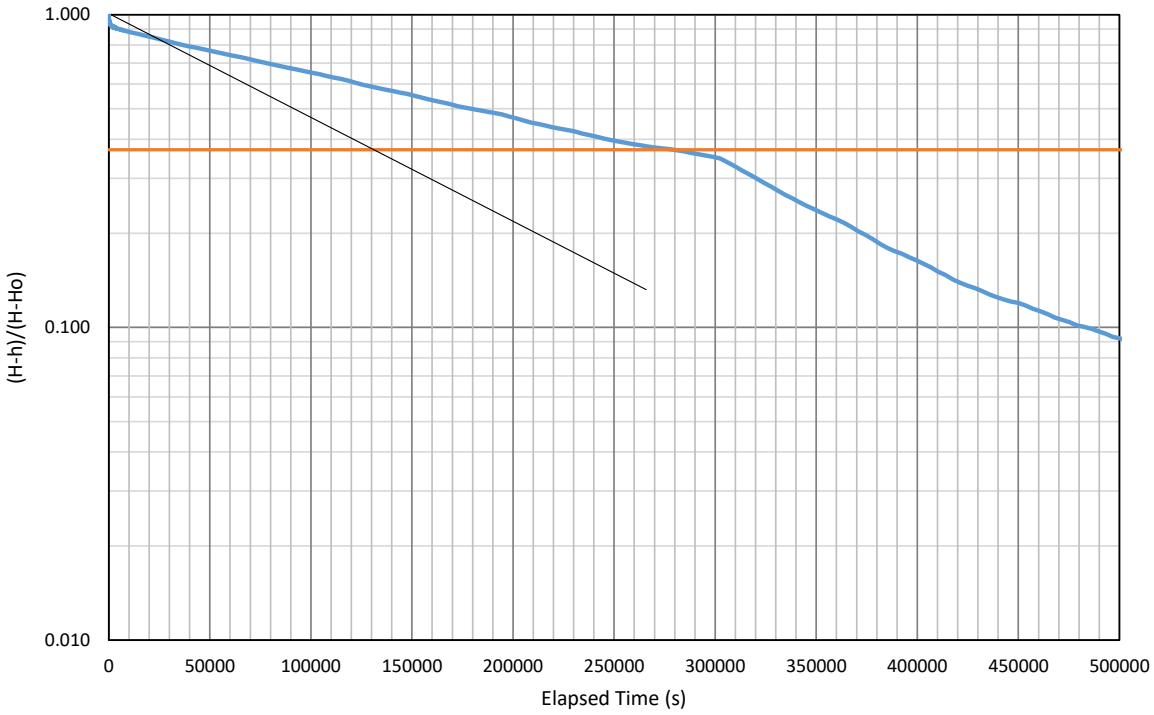
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-10 (MW)
Test Date:	June 7, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	6.10	**Screened Unit:**	Sandy to Clayey Silt
Initial Water Level (mbgs) (H):	3.88	**Screen Length (m) (L_e):**	2.220
Available Drawdown (m):	2.22	**Head at Time = 0 (m) (H_o):**	1.83
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	93%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	1.5E-09	**Mid To (s):**	360000
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-13 (MW)

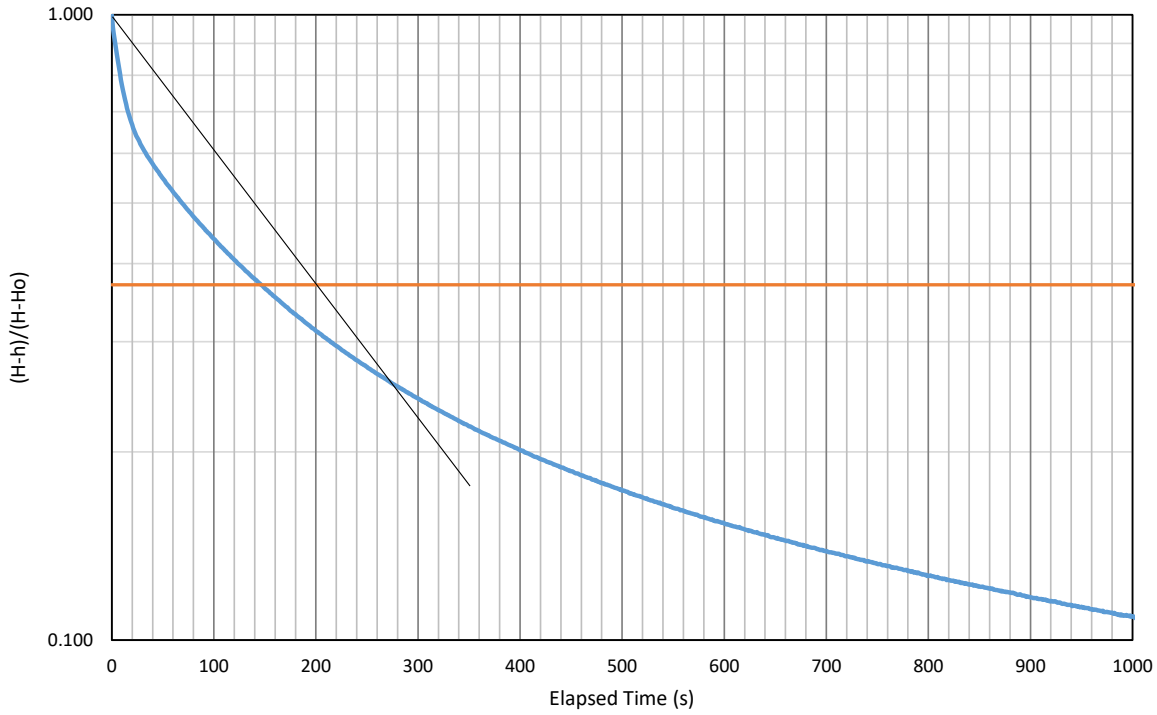
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-13 (MW)
Test Date:	June 7, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	6.10	**Screened Unit:**	Sandy Silt/Clayey Silt
Initial Water Level (mbgs) (H):	1.51	**Screen Length (m) (L_e):**	3.048
Available Drawdown (m):	4.59	**Head at Time = 0 (m) (H_o):**	4.24
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	93%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	3.4E-09	**Mid To (s):**	130000
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-16 (MW)

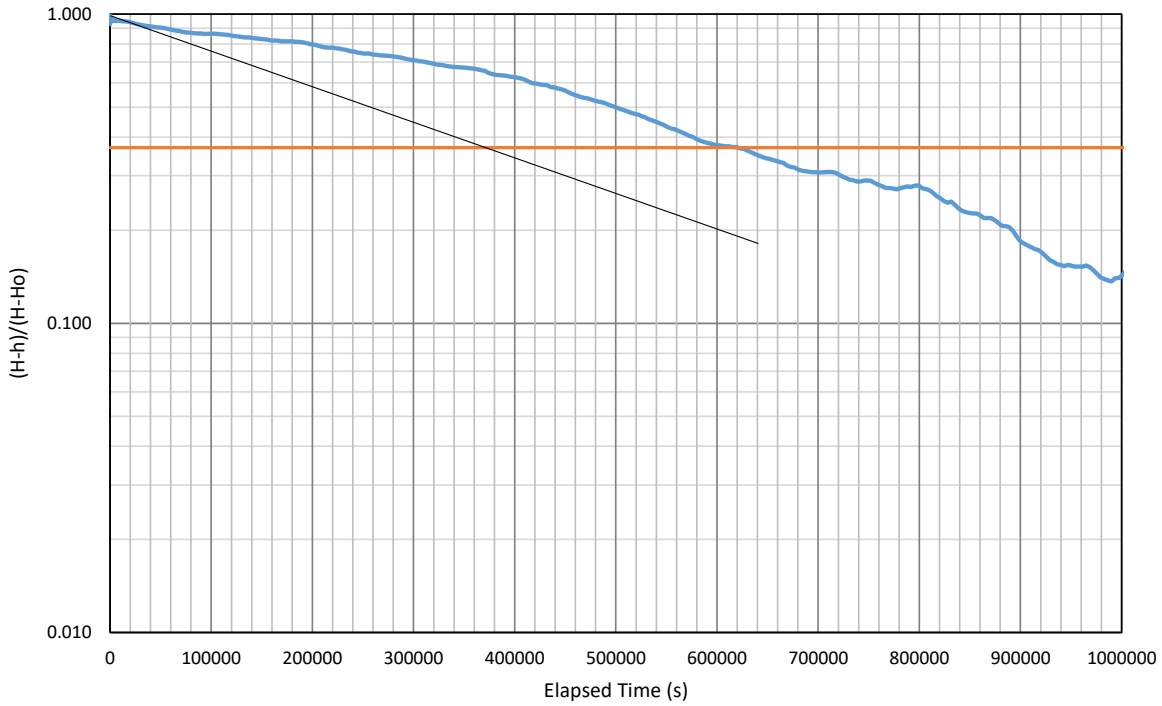
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-16 (MW)
Test Date:	June 9, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	6.10	**Screened Unit:**	Sandy Silt
Initial Water Level (mbgs) (H):	0.68	**Screen Length (m) (L_e):**	3.048
Available Drawdown (m):	5.42	**Head at Time = 0 (m) (H_o):**	1.21
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	100%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	2.2E-06	**Mid To (s):**	200
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-18 (MW)

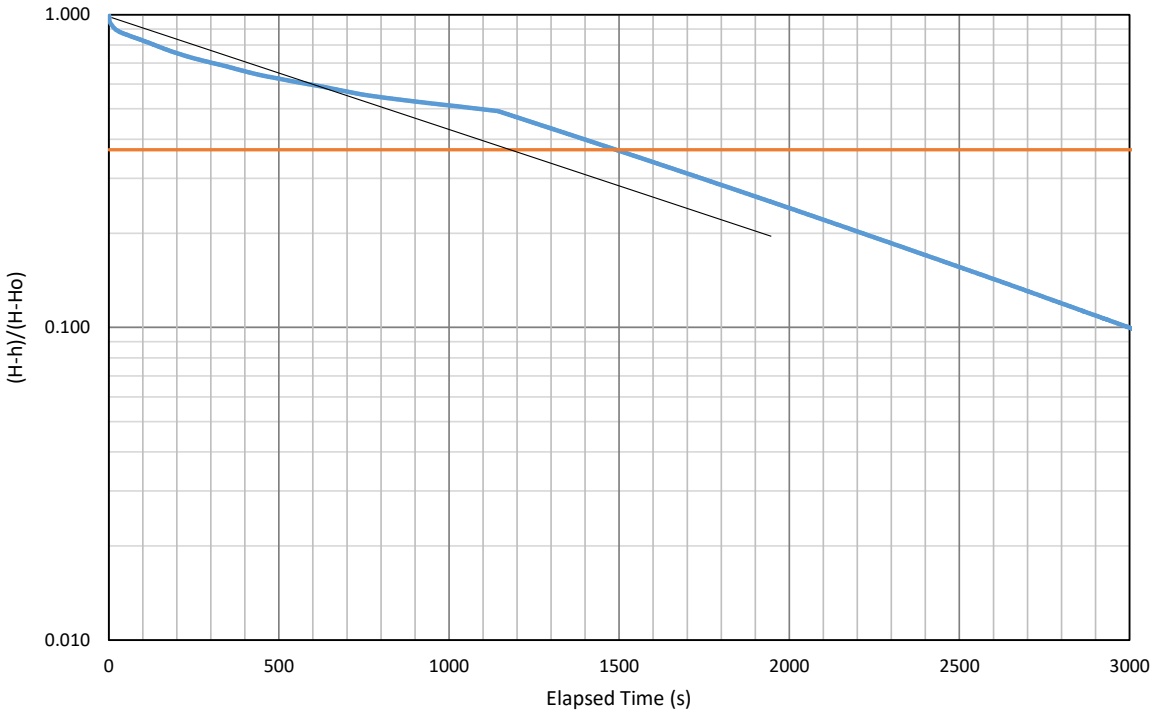
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-18 (MW)
Test Date:	June 9, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	6.10	**Screened Unit:**	Clayey Silt
Initial Water Level (mbgs) (H):	3.96	**Screen Length (m) (L_e):**	2.140
Available Drawdown (m):	2.14	**Head at Time = 0 (m) (H_o):**	1.83
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	100%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	1.5E-09	**Mid To (s):**	380000
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-20 (MW)

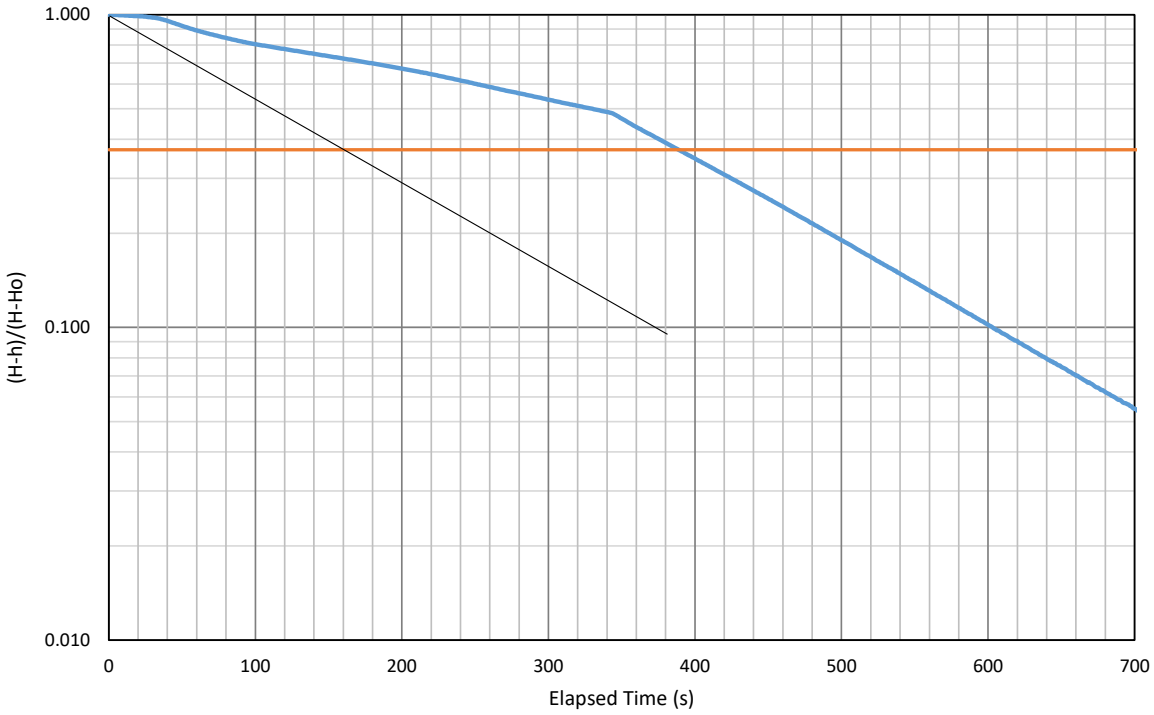
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-20 (MW)
Test Date:	June 9, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	5.80	**Screened Unit:**	Sandy to Clayey Silt
Initial Water Level (mbgs) (H):	1.08	**Screen Length (m) (L_e):**	3.048
Available Drawdown (m):	4.72	**Head at Time = 0 (m) (H_o):**	4.69
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	100%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	3.6E-07	**Mid To (s):**	1200
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-22 (MW)

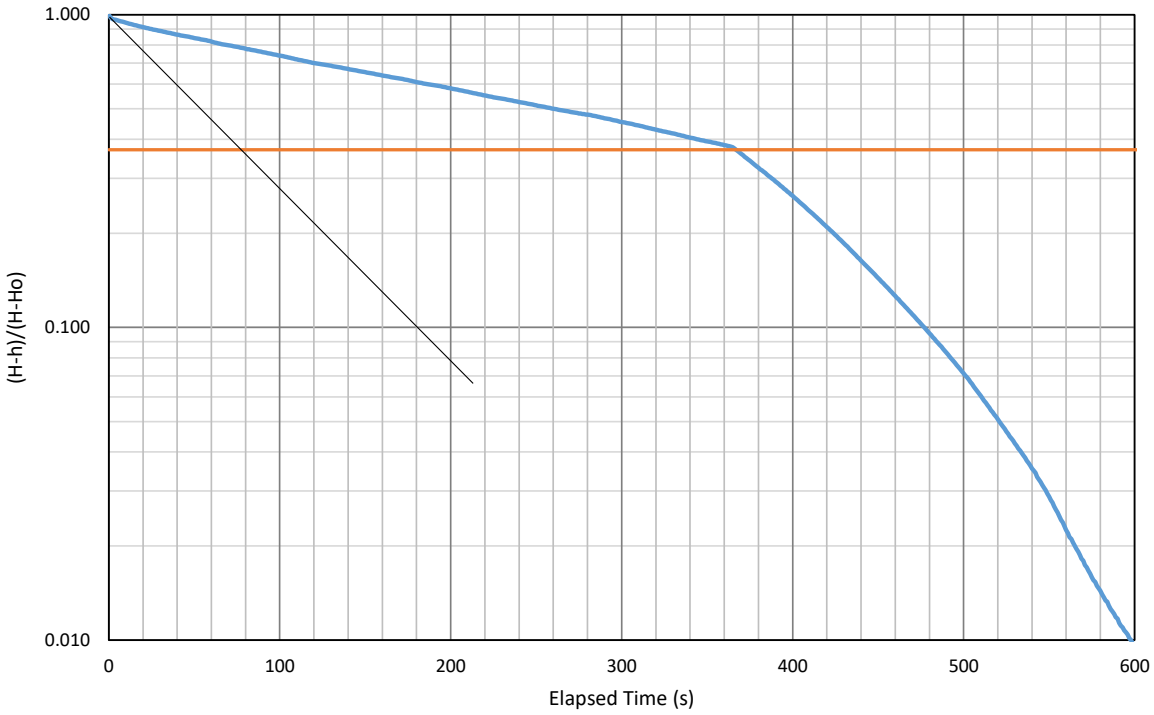
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-22 (MW)
Test Date:	June 7, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	2.44	**Screened Unit:**	Fill
Initial Water Level (mbgs) (H):	1.13	**Screen Length (m) (L_e):**	1.000
Available Drawdown (m):	1.31	**Head at Time = 0 (m) (H_o):**	1.11
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	100%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	6.1E-06	**Mid To (s):**	160
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-23 (MW)

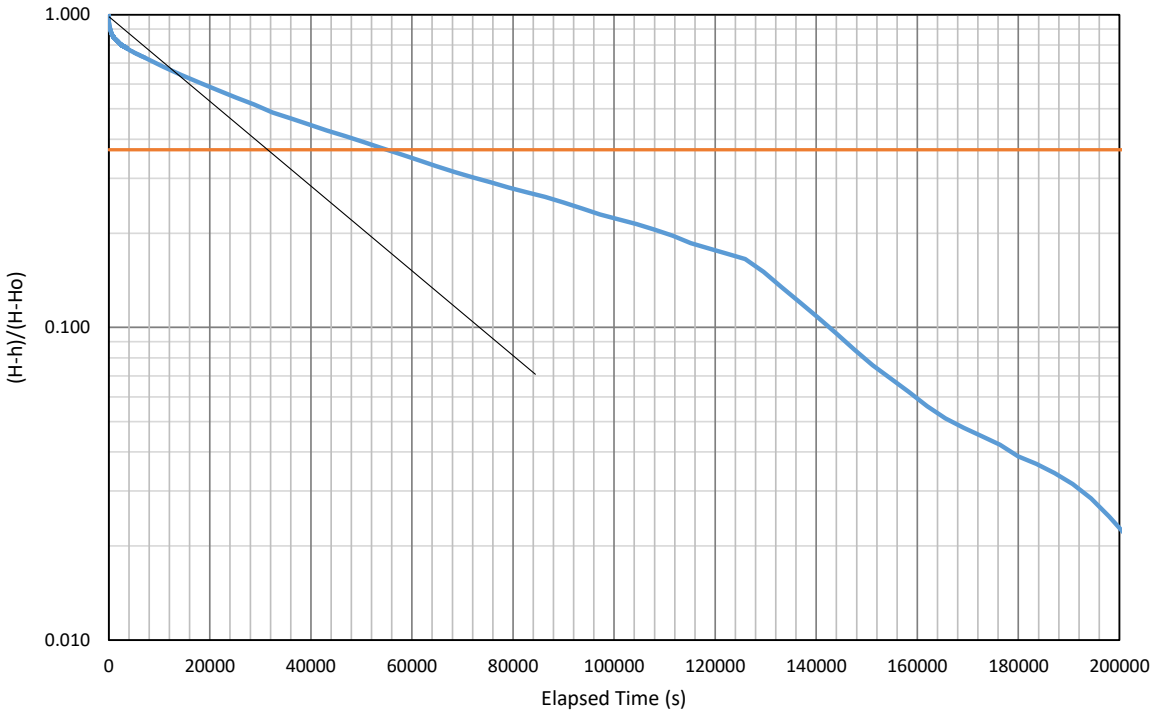
Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-23 (MW)
Test Date:	June 7, 2021
Test Conducted By:	CM
Test Analyzed By:	PG



Effective Well Depth (mbgs):	6.10	**Screened Unit:**	Clayey Silt
Initial Water Level (mbgs) (H):	1.54	**Screen Length (m) (L_e):**	3.048
Available Drawdown (m):	4.56	**Head at Time = 0 (m) (H_o):**	4.18
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	100%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	5.5E-06	**Mid To (s):**	80
Late K (m/s)	NA	**Late To (s):**	NA

In-Situ Hydraulic Conductivity Analyses: 21BH-33 (MW)

Company:	Toronto Inspection Ltd.
Client:	Tullamore Industrial GP Limited
Project:	5552-21-HC
Location:	Tullamore Lands, Caledon, ON
Test Well:	21BH-33 (MW)
Test Date:	June 14, 2021
Test Conducted By:	PG
Test Analyzed By:	PG



Effective Well Depth (mbgs):	6.10	**Screened Unit:**	Clayey Silt / Sandy Silt
Initial Water Level (mbgs) (H):	2.39	**Screen Length (m) (L_e):**	3.048
Available Drawdown (m):	3.71	**Head at Time = 0 (m) (H_o):**	3.01
Borehole Radius (m) (R_b):	0.0508	**Monitoring Well Radius (m) (R_c):**	0.026
Solution Method:	Hvorslev (1951)	**Recovery (%):**	100%
Early K (m/s)	NA	**Early To (s):**	NA
Mid K (m/s)	1.4E-08	**Mid To (s):**	32000
Late K (m/s)	NA	**Late To (s):**	NA

APPENDIX D

Groundwater Quality Certificate of Analysis

FINAL REPORT

CA14802-JUN21 R1

5552

Prepared for

Toronto Inspection Ltd.

FINAL REPORT

First Page

CLIENT DETAILS

Client	Toronto Inspection Ltd.
Address	110 Konrad Crescent, Unit 16 Markham, ON L3R 9X2. Canada
Contact	Simran Panesar
Telephone	416-996-3214
Facsimile	905 940 8192
Email	lab@torontoinspection.com;simran@torontoinspection.com
Project	5552
Order Number	
Samples	Ground Water (1)

LABORATORY DETAILS

Project Specialist	Brad Moore Hon. B.Sc
Laboratory	SGS Canada Inc.
Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-652-2143
Facsimile	705-652-6365
Email	brad.moore@sgs.com
SGS Reference	CA14802-JUN21
Received	06/07/2021
Approved	06/15/2021
Report Number	CA14802-JUN21 R1
Date Reported	06/15/2021

COMMENTS

RL - SGS Reporting Limit
Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present:Yes
Custody Seal Present:Yes

Chain of Custody Number:022205

SIGNATORIES

Brad Moore Hon. B.Sc

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Client: Toronto Inspection Ltd.
Project: 5552
Project Manager: Simran Panesar
Samplers: Peining Guan

PACKAGE: **SANSEW - General Chemistry**
(WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 4 ↑
Total Suspended Solids	mg/L	2	350	15	13
Total Kjeldahl Nitrogen	as N mg/L	0.5	100	1	< 0.5

PACKAGE: **SANSEW - Metals and Inorganics**
(WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics					
Fluoride	mg/L	0.06	10		0.17
Cyanide (total)	mg/L	0.01	2	0.02	< 0.01
Sulphate	mg/L	2	1500		3500
Aluminum (total)	mg/L	0.001	50		0.271
Antimony (total)	mg/L	0.0009	5		< 0.0009
Arsenic (total)	mg/L	0.0002	1	0.02	0.0010
Cadmium (total)	mg/L	0.000003	0.7	0.008	0.000025
Chromium (total)	mg/L	0.00008	5	0.08	0.00087
Copper (total)	mg/L	0.0002	3	0.05	0.0027
Cobalt (total)	mg/L	0.000004	5		0.00732

Client: Toronto Inspection Ltd.
Project: 5552
Project Manager: Simran Panesar
Samplers: Peining Guan

PACKAGE: **SANSEW - Metals and Inorganics**
(WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Metals and Inorganics (continued)

Parameter	Units	RL	L1	L2	Result
Lead (total)	mg/L	0.00009	3	0.12	0.00042
Manganese (total)	mg/L	0.00001	5	0.05	0.429
Molybdenum (total)	mg/L	0.00004	5		0.00190
Nickel (total)	mg/L	0.0001	3	0.08	0.0187
Phosphorus (total)	mg/L	0.003	10	0.4	0.017
Selenium (total)	mg/L	0.00004	1	0.02	0.00134
Silver (total)	mg/L	0.00005	5	0.12	< 0.00005
Tin (total)	mg/L	0.00006	5		0.00238
Titanium (total)	mg/L	0.00005	5		0.00998
Zinc (total)	mg/L	0.002	3	0.04	0.063

Client: Toronto Inspection Ltd.
Project: 5552
Project Manager: Simran Panesar
Samplers: Peining Guan

PACKAGE: **SANSEW - Microbiology** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
Microbiology					
E. Coli	cfu/100mL	-		200	0

PACKAGE: **SANSEW - Nonylphenol and Ethoxylates** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
Nonylphenol and Ethoxylates					
Nonylphenol	mg/L	0.001	0.02		< 0.001
Nonylphenol Ethoxylates	mg/L	0.01	0.2		< 0.01
Nonylphenol diethoxylate	mg/L	0.01			< 0.01
Nonylphenol monoethoxylate	mg/L	0.01			< 0.01

PACKAGE: **SANSEW - Oil and Grease** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
Oil and Grease					
Oil & Grease (total)	mg/L	2			< 2
Oil & Grease (animal/vegetable)	mg/L	4	150		< 4
Oil & Grease (mineral/synthetic)	mg/L	4	15		< 4

Client: Toronto Inspection Ltd.
Project: 5552
Project Manager: Simran Panesar
Samplers: Peining Guan

PACKAGE: **SANSEW - Other (ORP)** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
pH	No unit	0.05	10	9	7.27
Mercury (total)	mg/L	0.00001	0.01	0.0004	< 0.00001

PACKAGE: **SANSEW - PCBs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001	0.001	0.0004	< 0.0001

PACKAGE: **SANSEW - Phenols** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
Phenols					
4AAP-Phenolics	mg/L	0.002	1	0.008	< 0.002

PACKAGE: **SANSEW - SVOCs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result

Client: Toronto Inspection Ltd.
Project: 5552
Project Manager: Simran Panesar
Samplers: Peining Guan

PACKAGE: **SANSEW - SVOCs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
SVOCs					
di-n-Butyl Phthalate	mg/L	0.002	0.08	0.015	< 0.002
Bis(2-ethylhexyl)phthalate	mg/L	0.002	0.012	0.0088	< 0.002

PACKAGE: **SANSEW - VOCs** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010
L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

Parameter	Units	RL	L1	L2	Result
VOCs					
Chloroform	mg/L	0.0005	0.04	0.002	< 0.0005
1,2-Dichlorobenzene	mg/L	0.0005	0.05	0.0056	< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08	0.0068	< 0.0005
cis-1,2-Dichloroethene	mg/L	0.0005	4	0.0056	< 0.0005
trans-1,3-Dichloropropene	mg/L	0.0005	0.14	0.0056	< 0.0005
Methylene Chloride	mg/L	0.0005	2	0.0052	< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	1.4	0.017	< 0.0005
Methyl ethyl ketone	mg/L	0.02	8		< 0.02
Styrene	mg/L	0.0005	0.2		< 0.0005
Tetrachloroethylene (perchloroethylene)	mg/L	0.0005	1	0.0044	< 0.0005
Trichloroethylene	mg/L	0.0005	0.4	0.008	< 0.0005

Client: Toronto Inspection Ltd.
Project: 5552
Project Manager: Simran Panesar
Samplers: Peining Guan

PACKAGE: **SANSEW - VOCs - BTEX** (WATER)

L1 = SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010

L2 = SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010

Sample Number	8
Sample Name	21BH-7 (MW)
Sample Matrix	Ground Water
Sample Date	07/06/2021

VOCs - BTEX

Parameter	Units	RL	L1	L2	Result
Benzene	mg/L	0.0005	0.01	0.002	< 0.0005
Ethylbenzene	mg/L	0.0005	0.16	0.002	< 0.0005
Toluene	mg/L	0.0005	0.27	0.002	< 0.0005
Xylene (total)	mg/L	0.0005	1.4	0.0044	< 0.0005
m-p-xylene	mg/L	0.0005			< 0.0005
o-xylene	mg/L	0.0005			< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	SANSEW / WATER / - - Peel Table 1 - Sanitary Sewer Discharge - BL_53_2010 L1	SANSEW / WATER / - - Peel Table 2 - Storm Sewer Discharge - BL_53_2010 L2
21BH-7 (MW)					
Manganese	SM 3030/EPA 200.8	mg/L	0.429		0.05
Zinc	SM 3030/EPA 200.8	mg/L	0.063		0.04
Sulphate	US EPA 375.4	mg/L	3500	1500	

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 375.4 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO5041-JUN21	mg/L	2	<2	0	20	108	80	120	100	75	125

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-[ENVIEWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0015-JUN21	mg/L	2	< 2	26	30	89	70	130	71	70	130

Cyanide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0096-JUN21	mg/L	0.01	<0.01	ND	10	92	90	110	77	75	125

QC SUMMARY

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-[ENV]EWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0177-JUN21	mg/L	0.06	<0.06	3	10	98	90	110	98	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B I Internal ref.: ME-CA-[ENV]SPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0010-JUN21	mg/L	0.00001	< 0.00001	ND	20	109	80	120	NV	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0059-JUN21	mg/L	0.00005	<0.00005	ND	20	104	90	110	110	70	130
Aluminum (total)	EMS0059-JUN21	mg/L	0.001	<0.001	1	20	95	90	110	96	70	130
Arsenic (total)	EMS0059-JUN21	mg/L	0.0002	<0.0002	7	20	101	90	110	110	70	130
Cadmium (total)	EMS0059-JUN21	mg/L	0.000003	<0.000003	5	20	102	90	110	112	70	130
Cobalt (total)	EMS0059-JUN21	mg/L	0.000004	<0.000004	2	20	102	90	110	118	70	130
Chromium (total)	EMS0059-JUN21	mg/L	0.00008	<0.00008	5	20	100	90	110	103	70	130
Copper (total)	EMS0059-JUN21	mg/L	0.0002	<0.0002	1	20	99	90	110	106	70	130
Manganese (total)	EMS0059-JUN21	mg/L	0.00001	<0.00001	1	20	100	90	110	96	70	130
Molybdenum (total)	EMS0059-JUN21	mg/L	0.00004	<0.00004	3	20	104	90	110	106	70	130
Nickel (total)	EMS0059-JUN21	mg/L	0.0001	<0.0001	5	20	101	90	110	107	70	130
Lead (total)	EMS0059-JUN21	mg/L	0.00009	<0.00001	1	20	107	90	110	123	70	130
Phosphorus (total)	EMS0059-JUN21	mg/L	0.003	<0.003	6	20	104	90	110	NV	70	130
Antimony (total)	EMS0059-JUN21	mg/L	0.0009	<0.0009	9	20	96	90	110	115	70	130
Selenium (total)	EMS0059-JUN21	mg/L	0.00004	<0.00004	11	20	102	90	110	122	70	130
Tin (total)	EMS0059-JUN21	mg/L	0.00006	<0.00006	ND	20	101	90	110	NV	70	130
Titanium (total)	EMS0059-JUN21	mg/L	0.00005	<0.00005	11	20	106	90	110	NV	70	130
Zinc (total)	EMS0059-JUN21	mg/L	0.002	<0.002	8	20	98	90	110	102	70	130

QC SUMMARY

Microbiology

Method: SM 9222D | Internal ref.: ME-CA-IENVIMIC-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
E. Coli	BAC9140-JUN21	cfu/100mL	-	ACCEPTED	ACCEPTED							

Nonylphenol and Ethoxylates

Method: ASTM D7065-06 | Internal ref.: ME-CA-IENVIGC-LAK-AN-015

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Nonylphenol diethoxylate	GCM0149-JUN21	mg/L	0.01	<0.01			93	55	120			
Nonylphenol Ethoxylates	GCM0149-JUN21	mg/L	0.01	< 0.01								
Nonylphenol monoethoxylate	GCM0149-JUN21	mg/L	0.01	<0.01			92	55	120			
Nonylphenol	GCM0149-JUN21	mg/L	0.001	<0.001			94	55	120			

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (total)	GCM0136-JUN21	mg/L	2	<2	NSS	20	100	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-[ENV]GC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (animal/vegetable)	GCM0136-JUN21	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0136-JUN21	mg/L	4	< 4	NSS	20	NA	70	130			

pH

Method: SM 4500 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0161-JUN21	No unit	0.05	NA	0		100			NA		

QC SUMMARY

Phenols by SFA

Method: SM 5530B-D | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0089-JUN21	mg/L	0.002	<0.002	2	10	106	80	120	112	75	125

Polychlorinated Biphenyls

Method: MOE E3400/EPA 8082A | Internal ref.: ME-CA-[ENV]GC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0138-JUN21	mg/L	0.0001	<0.0001	NSS	30	99	60	140	NSS	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Bis(2-ethylhexyl)phthalate	GCM0231-JUN21	mg/L	0.002	< 0.002	NSS	30	110	50	140	NSS	50	140
di-n-Butyl Phthalate	GCM0231-JUN21	mg/L	0.002	< 0.002	NSS	30	114	50	140	NSS	50	140

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0201-JUN21	mg/L	2	< 2	5	10	100	90	110	NA		

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0135-JUN21	as N mg/L	0.5	<0.5	6	10	97	90	110	101	75	125

QC SUMMARY

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-[ENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,2,2-Tetrachloroethane	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	99	50	140
1,2-Dichlorobenzene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	97	60	130	102	50	140
1,4-Dichlorobenzene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	101	50	140
Benzene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	100	50	140
Chloroform	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	99	50	140
cis-1,2-Dichloroethene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	97	60	130	99	50	140
Ethylbenzene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	101	50	140
m-p-xylene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	102	50	140
Methyl ethyl ketone	GCM0161-JUN21	mg/L	0.02	<0.02	ND	30	90	50	140	94	50	140
Methylene Chloride	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	99	50	140
o-xylene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	97	60	130	103	50	140
Styrene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	102	50	140
Tetrachloroethylene (perchloroethylene)	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	95	60	130	101	50	140
Toluene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	96	60	130	101	50	140
trans-1,3-Dichloropropene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	98	60	130	99	50	140
Trichloroethylene	GCM0161-JUN21	mg/L	0.0005	<0.0005	ND	30	95	60	130	100	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

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

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.
RL Reporting Limit.
↑ Reporting limit raised.
↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated. This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

-- End of Analytical Report --

SGS

Request for Laboratory Services and CHAIN OF CUSTODY

No: 022205

Page 1 of 1

Environment, Health & Safety - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

Laboratory Information Section - Lab use only

Received By: R Lawson
Received Date: 06/07/21 (mm/dd/yy)
Received Time: 15:40 (hr : min)
Received By (signature):
Custody Seal Present: Yes ☐ No ☐
Custody Seal Intact: Yes ☐ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: ICE.
Temperature Upon Receipt (°C) 9.9.9
LAB LIMS #: CA14802-Jun21

REPORT INFORMATION	INVOICE INFORMATION
Company: TL	☐ (same as Report Information)
Contact: Simran	Company:
Address: Unit 16, 115 Konrad Crescent, Markham	Contact: Shannon
Phone: 905-940-8809	Address:
Fax:	Phone:
Email: lab@tlconstruction.com	Email: shannon@tlconstruction.com

Quotation #: P.O. #:
Project #: 5552 Site Location/ID:

TURNAROUND TIME (TAT) REQUIRED

☑ Regular TAT (5-7days)

TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH TAT (Additional Charges May Apply): ☐1 Day ☐2 Days ☐3 Days ☐4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date:

*NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19

☐ Table 1 ☐ Res/Park Soil Texture:
☐ Table 2 ☐ Ind/Com ☐ Coarse
☐ Table 3 ☐ Agri/Other ☐ Medium/Fine
☐ Table ____

Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☐ ODWS Not Reportable *See note

Sewer By-Law:
☑ Sanitary
☑ Storm
Municipality: Peel

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	M & I: Field Filtered (Y/N)	M & I: Metals & Inorganics (incl CrVI, CN,Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na-water)	M & I: Full Metals Suite ICP metals plus B(HWS-soil only) Hg, CrVI	M & I: ICP Metals only Sb,As,Ba,Be,B,Cd,Cr,Co,Cu,Pb,Mo,Ni,	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs ☐ Total ☐ Aroclor	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other: Appendix 2: 406/19 Leachate Screening Levels Table 4	Other: Sewer Use: Specify pkg: Sewer Pollut	Other: Water Characterization Pkg General ☐ Extended ☐	TCLP: Specify TCLP tests ☐M&I ☐VOC ☐PCB ☐B(a)P ☐ABN ☐Ignit.	COMMENTS:
1	21BH-7 (GW)	06/07/21	10:45	17	GW	N																
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Observations/Comments/Special Instructions

Sampled By (NAME): Reipino Gnam	Signature:	Date: 06/07/21 (mm/dd/yy)	Pink Copy - Client
Relinquished by (NAME): Reipino Gnam	Signature:	Date: 06/07/21 (mm/dd/yy)	Yellow & White Copy - SGS

APPENDIX E

Water Well Records

Water Well Records

June 30, 2021

1:48:57 AM

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
BRAMPTON CITY (CHING	17 599947 4848423 W	2019-07 7230						7345102 (C45658) A271681 P	
BRAMPTON CITY (CHING 06 016	17 599820 4849188 W	2008-03 3349	6.25	FR 0089	25/66/5/3:0	OT		7102705 (Z69807) A054388	BLCK LOAM LOOS 0002 GREY SAND GRVL CLAY 0055 GREY SHLE 0089
BRAMPTON CITY (CHING HS E 06	17 599144 4848473 W	7314						7354443 (C38625) A139397 P	
BRAMPTON CITY (CHING HS E 06 016	17 599786 4849208 W	1949-07 4620	6 6			NU		4901533 ()	LOAM CLAY 0001 CLAY 0011 HPAN CLAY GRVL 0018 SHLE 0019
BRAMPTON CITY (CHING HS E 06 016	17 598924 4848376 W	1964-10 1325	30	FR 0051	21/25/20/1:0	DO		4901535 ()	LOAM 0003 BRWN CLAY 0021 HPAN 0036 BLUE CLAY SILT 0051
BRAMPTON CITY (CHING HS E 06 016	17 599322 4849731 W	1965-09 1307	30	FR 0054	30//0/:	DO		4901536 ()	BRWN LOAM CLAY 0012 GREY CLAY 0049 GREY SHLE 0054
BRAMPTON CITY (CHING HS E 06 017	17 599465 4848773 W	1974-12 3903	5	UK 0042	18/60/2/3:0	DO		4904554 ()	BRWN CLAY SOFT 0012 BLUE CLAY SOFT 0039 UNKN 0065
BRAMPTON CITY (CHING HS E 06 017	17 599511 4849036 W	1956-05 1612	4	SA 0080	23//1/0:30	DO		4901537 ()	LOAM 0002 BLUE CLAY 0060 MSND 0078 GRVL 0082
BRAMPTON CITY (CHING HS E 06 017	17 599501 4849041 W	1958-06 1307	36	FR 0038	20//2/:	DO		4901538 ()	BRWN LOAM CLAY 0012 GREY CLAY 0036 GRVL 0038
BRAMPTON CITY (CHING HS E 06 017	17 599154 4848448 W	1965-09 1325	30	FR 0046	39/54/2/0:30	ST DO		4901540 ()	LOAM MSND 0002 BRWN CLAY MSND 0009 BLUE CLAY 0027 BLUE CLAY MSND 0046 BLUE MSND 0056
BRAMPTON CITY (CHING HS E 06 017	17 599653 4849123 W	1974-02 3413	30 18	FR 0050	42/45/5/2:0	DO		4904363 ()	PRDG 0045 SHLE 0060
BRAMPTON CITY (CHING HS E 06 017	17 599640 4849223 W	1972-04 1307	30	FR 0042	25/43/0/1:0	DO		4903827 ()	BRWN OBDN 0012 GREY CLAY 0042 GREY CSND 0045 GREY SHLE 0053
BRAMPTON CITY (CHING HS E 06 017	17 599665 4849243 W	1968-06 3512	7	FR 0080	45///:	NU		4903116 () A	LOAM 0001 YLLW CLAY 0012 BLUE CLAY 0071 BLUE SHLE 0100
BRAMPTON CITY (CHING HS E 06 017	17 599907 4849069 W	1965-05 2514	6 6	SA 0049	28/56/2/2:0	ST DO		4901539 ()	LOAM 0002 BRWN CLAY 0012 BLUE CLAY BLDR 0046 BLUE SHLE 0057
BRAMPTON CITY (TORON	17 599914 4849558 W	2015-11 7230						7259795 (C32326) A199757 P	
BRAMPTON CITY (TORON	17 599860 4849463 W	2019-08 7644	2.38		///:	MT	0010 10	7344630 (Z320043) A272085	BRWN SILT CLAY SLTY 0020

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
BRAMPTON CITY (TORON	17 599850 4849394 W	2019-08 7644	2.38		///:	MT	0010 10	7344631 (Z320045) A272086	BRWN SILT CLAY SLTY 0020
BRAMPTON CITY (TORON CON 07 017	17 599847 4849395 W	2011-09 4011			6///:	OT		7168990 (Z134773) A	
BRAMPTON CITY (TORON CON 07 017	17 599847 4849395 W	2011-09 4011	4.71		21///:	OT		7168989 (Z134774) A	
BRAMPTON CITY (TORON CON 07 018	17 599851 4849388 W	1989-09 4919	30 30	UK 0050	40/58/10/1:0	DO		4907194 (62509)	BRWN LOAM HARD 0001 BRWN CLAY HARD 0020 GREY CLAY HARD 0050 GREY SAND LOOS 0060
CALEDON TOWN (ALBION	17 599521 4849992 W	2014-09 7241	2			MT	0014 10	7230867 (Z195893) A168796	BRWN CLAY 0014 GREY CLAY 0024
CALEDON TOWN (ALBION	17 599811 4849431 W	2019-08 7644	2.38		///:	MT	0010 10	7344632 (Z320044) A275910	BRWN SILT CLAY SLTY 0020
CALEDON TOWN (ALBION	17 599914 4849697 W	2019-11 7324						7352603 (C46895) A241043 P	
CALEDON TOWN (ALBION	17 599147 4850255 W	2013-05 6490						7231824 (C08464) P	
CALEDON TOWN (ALBION	17 599596 4849702 W	2011-09 7215	2			TH	0020 10	7170025 (Z133751) A117890	BRWN FILL 0001 BRWN CLAY 0011 GREY CLAY 0020
CALEDON TOWN (ALBION	17 599548 4850005 W	2014-09 7241	2			MT	0015 10	7230866 (Z195894) A168797	BRWN CLAY 0015 GREY CLAY 0025
CALEDON TOWN (ALBION	17 599057 4850449 W	2012-05 6946						7188749 (C18346) A112926 P	
CALEDON TOWN (ALBION	17 599301 4850003 W	2014-09 7241	2			MT	0015 10	7230865 (Z195892) A170590	BRWN CLAY 0015 GREY CLAY 0025
CALEDON TOWN (ALBION CON 01 001	17 599802 4849594 W	2015-05 7147	19.6	FR 0005				7242250 (Z203294) A	
CALEDON TOWN (ALBION CON 01 001	17 599915 4849623 W	1969-03 1307	30	FR 0041	30///:	DO		4903239 ()	BRWN LOAM 0006 GREY CLAY STNS 0040 GREY SHLE 0041
CALEDON TOWN (ALBION CON 01 001	17 599565 4849623 W	1972-11 1307	30	FR 0052	18/50/2/1:0	DO		4903999 ()	BRWN OBDN 0010 GREY CLAY 0051 GRVL 0052
CALEDON TOWN (ALBION CON 01 001	17 599823 4849596 W	2015-05 7147	19.6	FR 0005				7242460 (Z203309) A	

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
CALEDON TOWN (ALBION CON 01 001	17 599798 4849529 W	2015-05 7147	5.90	FR 0007				7242236 (Z203303) A	
CALEDON TOWN (ALBION CON 01 001	17 599808 4849561 W	2015-05 7147	47.2					7242459 (Z203308) A	
CALEDON TOWN (ALBION CON 01 002	17 599049 4850234 W	2013-06 1663	30	UT		NU		7205662 (Z170216) A	BRWN FILL 0004 GREY 0030
CALEDON TOWN (ALBION CON 01 002	17 598965 4850173 W	1970-10 1307	30	FR 0035	10/33/2/1:0	DO		4903516 ()	BRWN LOAM 0012 GREY CLAY 0034 MSND 0035
CALEDON TOWN (ALBION CON 01 003	17 598807 4850410 W	1962-08 1307	30	FR 0037	16//1/:	DO		4900005 ()	BRWN LOAM 0012 GREY CLAY STNS 0030 GREY SHLE 0037
CALEDON TOWN (CALEDO	17 599684 4849401 W	2007-02 6607	2.00				0005 15	7042519 (Z64639) A053601	BLCK FILL 0002 BRWN CLAY SILT 0010 GREY CLAY 0020
CALEDON TOWN (CHINGU	17 599292 4849522 W	2016-06 7190	6 1.5	UT 0017		MO	0015 10	7269470 (Z238608) A156764	GREY GRVL LOOS 0001 BRWN CLAY SILT DNSE 0015 GREY CLAY SILT DNSE 0025
CALEDON TOWN (CHINGU 06 018	17 599690 4849430 W	2008-04 6607	0.30	FR 0028				7109629 (Z60579) A	
CALEDON TOWN (CHINGU HS E 05 018	17 598545 4848512 W	1983-09 3662				NU		4906134 ()	BLCK LOAM 0001 BRWN CLAY 0017 BLUE CLAY STNS HARD 0025 GREY SAND GRVL 0026 BLUE CLAY STNS HARD 0046
CALEDON TOWN (CHINGU HS E 05 020	17 597797 4849333 W	1983-10 3349	6 6	FR 0049	2/46/7/1:0	DO		4906194 ()	BLCK LOAM 0001 GREY CLAY 0035 BLUE SHLE 0080
CALEDON TOWN (CHINGU HS E 05 020	17 597615 4849473 W	1976-11 1307	30	FR 0038	15/36/4/1:0	DO		4905023 ()	BRWN LOAM 0010 GREY CLAY 0036 CSND WBRG 0038
CALEDON TOWN (CHINGU HS E 06 018	17 599561 4850123 W	1975-01 1307	30	FR 0050	30/48/2/1:0	DO		4904610 ()	BRWN LOAM 0012 GREY CLAY 0048 GRVL 0050
CALEDON TOWN (CHINGU HS E 06 018	17 599507 4849413 W	1975-07 1307	30	FR 0060	30/57/2/1:0	DO		4904710 ()	BRWN LOAM 0011 GREY CLAY 0058 GRVL 0060
CALEDON TOWN (CHINGU HS E 06 018	17 598849 4850234 W	1992-03 4919	30 30	UK 0020 UK 0040	20/40/10/1:0	DO		4907705 (110913)	BRWN LOAM HARD 0001 BRWN CLAY HARD 0020 GREY CLAY SAND LYRD 0060
CALEDON TOWN (CHINGU HS E 06 018	17 599669 4849455 W	2004-09 6607	1.97	0016		NU	0002 18	4909576 (Z19514) A015808	GREY SILT CLAY 0015 GREY CLAY SILT 0020
CALEDON TOWN (CHINGU HS E 06 018	17 599619 4849541 W	1990-02 4919	30 30	UK 0040 UK 0058	40/58/10/1:0	DO		4907348 (62600)	BRWN LOAM HARD 0001 BRWN CLAY HARD 0020 GREY CLAY SAND GRVL 0060
CALEDON TOWN (CHINGU HS E 06 019	17 598410 4848873 W	1971-09 1307	30	FR 0033	15/31/4/1:0	DO		4903693 ()	BRWN LOAM 0010 GREY CLAY 0033

TOWNSHIP CON LOT	UTM	DATE CNTR	CASING DIA	WATER	PUMP TEST	WELL USE	SCREEN	WELL	FORMATION
CALEDON TOWN (CHINGUHS E 06 019	17 598065 4849173 W	1979-09 3132	6	FR 0039	11/37/2/1:30	NU		4905631 () A	BRWN CLAY SOFT 0015 BLUE CLAY STNS SOFT 0040 BLUE BLDR HARD 0049 BLUE SHLE SOFT 0088 BLUE SHLE HARD 0120 BLUE SHLE CLAY HARD 0129 BLUE SHLE HARD 0240
CALEDON TOWN (CHINGUHS E 06 019	17 598865 4850223 W	1980-05 4919	30 30	UK 0055	20/55//0:30	DO		4905745 ()	BRWN LOAM HARD 0001 BRWN CLAY HARD 0020 GREY CLAY HARD 0055 GREY SAND LOOS 0058
CALEDON TOWN (CHINGUHS E 06 020	17 598506 4850328 W	1967-08 3514	7 7	FR 0065	30/70/2/2:0	DO		4901543 ()	BRWN CLAY 0018 GREY CLAY GRVL 0052 BLUE SHLE 0070
CALEDON TOWN (CHINGUHS E 06 020	17 597965 4849323 W	1980-09 2224	30	FR 0026	6/20/6/0:30	DO		4905701 ()	GREY SAND 0015 GREY CLAY STNS 0025 GREY SAND GRVL 0027

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

PUMP TEST: Static Water Level in Feet / Water Level After Pumping in Feet / Pump Test Rate in GPM / Pump Test Duration in Hour : Minutes
WELL USE: See Table 3 for Meaning of Code
SCREEN: Screen Depth and Length in feet
WELL: WEL (AUDIT #) Well Tag . A: Abandonment; P: Partial Data Entry Only
FORMATION: See Table 1 and 2 for Meaning of Code

1. Core Material and Descriptive terms

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

2. Core Color

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

3. Well Use

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

4. Water Detail

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