



Terraprobe

*Consulting Geotechnical & Environmental Engineering
Construction Materials Inspection & Testing*

**HYDROGEOLOGICAL ASSESSMENT
PROPOSED INDUSTRIAL DEVELOPMENT
571 WELHAM ROAD, BARRIE, ONTARIO**

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EXECUTIVE SUMMARY

Terraprobe Inc. (Terraprobe) was retained by Environmental 360 Solutions Ltd. to conduct a hydrogeological assessment in support of the proposed development for the Site located to the northeast corner of the intersection of Welham Road and Maple Drive E in Barrie, Ontario. It is proposed to further develop the Site with a new slab-on-grade one-story structure south of the existing building. The proposed structure on story building will have footprint approximately 4,904 sq.m. The purpose of this report is to assess local and regional hydrogeological conditions and the potential impacts of the proposed development on the ground water system. In summary results of the hydrogeological investigation indicate following:

- i. A total of fifteen (15) boreholes were drilled to depths varying from 2.0 m to 13.7 m below existing grades. Monitoring wells were installed in eight (8) selected boreholes for groundwater monitoring and to confirm the ground water quality. The fill was underlain by native soil deposit extending to the full depth of investigation in all boreholes. The native soils deposit in generally consisted of cohesionless sands and silts
- ii. The principal drainage feature adjacent to the Site is tributary of Lovers Creek. Based on the topography, the Site provides significant surface runoff to the adjacent tributary. There is a possibility of base flow contribution to the tributary due to the presence of moderate to high permeability soils at the Site.
- iii. Six (6) month groundwater monitoring was conducted on the Site from April 2020 to September 2020. Based on the available water level recordings it is noted that ground water level varies from $268.2 \pm \text{masl}$ to $262.5 \pm \text{masl}$ (5.7 mbgs to 10.4 mbgs) indicating the inferred ground water flow direction as southeast towards Lovers Creek tributary.
- iv. The hydraulic conductivity of the native cohesionless sand and silts deposits ranges from order of 10^{-5} to 10^{-7} m/s. The moderate to high permeability of the subsurface soils at the Site indicates possible contribution to the infiltration, recharge and the base flow. The recharge rate for this type of soil is estimated as greater than 250 mm/year
- v. The results of the groundwater quality analysis at the Site do not indicate any exceedance as per the Provincial Water Quality Objectives Standards (PWQO). The background ground water quality exceeds the Ontario Drinking Water Quality Standards for hardness, temperature, total dissolved solids, turbidity and dissolved sodium. However, the proposed development will not be contributing any contaminants that may affect the background groundwater quality in the area.
- vi. The Site is not located in Well Head Protection Area (WHPA, WHPA - Q1, WHPA - Q12) to protect water quality and quantity at municipal water supplies.
- vii. The Site is partially located in the Highly Vulnerable Aquifer (HVA). There are no significant contaminating activities associated with the proposed development, therefore the Highly Vulnerable Aquifer (HVA) is not considered to be at risk.



- viii. The Site is located within Intake Protection Zone 3 (IPZ-3) with the score of 5.6, for water supplies that draw water from Lake Simcoe. The proposed land development is not considered as a land use of concern in Intake Protection Zone 3 and do not pose any risk to water supplies.
- ix. The water balance calculations show that development has potential to reduce the natural infiltration by 3,047 m³/a, and to increase the runoff by 8,072 m³/a. If roof top runoff water is re-infiltrated through storm water management features, a total of 4,746 m³/a of water could be available for infiltration under post-development conditions (assuming 90% available of the runoff captured). Approximately 64% of the effective roof runoff captured will be required to compensate the post-development infiltration deficit. This indicates that, with proper storm water management and mitigation measures, the overall infiltration rates at the property can be maintained.
- x. The Site is located partially within a Significant Ground Water Recharge Area (SGRA). Mitigation measures such as conventional low impact development (LID) storm water management measures should be applied to maintain and enhance natural infiltration. Final design of the LID measures should be reviewed in conjunction with the storm water management plan for the Site.
- xi. The development of the Site will result in an overall reduction of ground water recharge and a significant increase in surface water runoff unless appropriate mitigation measures are provided at the design stage. The following mitigation measures can be implemented for the Site:
- The entire run-off from the roof of the proposed development may be directed to a bio-infiltration trench to promote infiltration through slow discharge to the Lovers creek tributary.
 - Appropriate storm water control measures would be required to prevent erosion due to increased run off, for slow and delayed release to promote infiltration and prevent flooding. The implementation of these measures at the Site will assist in maintaining the shallow ground water recharge and replicate the existing surface drainage to tributary of Lovers Creek.

TABLE OF CONTENTS

SECTION	PAGE (S)
1.0 INTRODUCTION.....	1
1.1 PROJECT DESCRIPTION:	1
1.2 SCOPE OF WORK	1
2.0 APPLICABLE REGULATIONS AND AGENCIES	2
2.1 LAKE SIMCOE REGION CONSERVATION AUTHORITY	2
2.2 LAKE SIMCOE SOURCE PROTECTION PLAN UNDER CWA	3
2.3 ASSOCIATED POLICY AREAS	3
2.4 CITY OF BARRIE OFFICIAL PLANS	4
2.5 HYDROGEOLOGICAL ASSESSMENT SUBMISSION GUIDELINES	4
3.0 REGIONAL AND LOCAL SITE SETTING	5
3.1 REGIONAL PHYSIOGRAPHY AND GEOLOGY	5
3.2 REGIONAL HYDROGEOLOGY	5
3.3 TOPOGRAPHY AND DRAINAGE.....	6
3.4 WATERSHED SETTING.....	6
3.5 LOCAL SURFACE WATER AND NATURAL HERITAGE FEATURES.....	7
3.6 ACTIVE PERMIT TO TAKE WATER RECORDS REVIEW	7
3.7 GROUND WATER RESOURCES.....	7
3.8 RESULTS OF DOOR TO DOOR SURVEY	8
3.9 PROPERTY INSPECTION TO ASSESS HYDROGEOLOGIC FEATURES.....	9
4.0 RESULTS OF SUBSURFACE INVESTIGATIONS.....	10
4.1 METHODOLOGY:	10
4.2 LOCAL SOIL STRATIGRAPHY	10
4.3 MONITORING WELL INSTALLATION	11
4.4 GROUND WATER MONITORING	12
4.5 ESTIMATION OF HYDRAULIC CONDUCTIVITY	13
4.5.1 Grain Size Distribution Analysis	13
4.5.1.1 Hydraulic Conductivity Estimation based on Grain Size Analysis:	13
4.5.2 In-Situ Hydraulic Conductivity Testing	14
4.5.2.1 Hydraulic Conductivity Estimation based on In-situ Testing.....	15
4.5.2.2 Hydraulic Conductivity Estimation from Literature:.....	15
4.6 GROUND WATER QUALITY ASSESSMENT.....	15



5.0	IMPACT ASSESSMENT	17
5.1	GROUND WATER BASEFLOW	17
5.2	WATER BALANCE FOR INFILTRATION IMPACT	17
5.2.1	Water Balance Methodology.....	17
5.2.2	Water Balance Analysis:	18
5.3	SURFACE WATER IMPACT	20
5.4	GROUND WATER QUALITY IMPACT	20
6.0	MITIGATING MEASURES TO MAINTAIN HYDROGEOLOGIC FUNCTIONS	21
6.1.1	Maintenance of Ground Water Infiltration	21
6.1.2	Maintenance of Ground Water Transmission Pathways.....	21
7.0	CONCLUSIONS AND RECOMMENDATIONS.....	23
8.0	CLOSURE	25

FIGURES:

Figure 1 – Site Location Plan

Figure 2 – Borehole, Monitoring Well and Cross Section Location Plan

Figure 3a –Cross Section A-A`

Figure 3b –Cross Section B-B`

Figure 4 – MECP Water Well Record Map

Figure 5 – Ground Water flow Contours

APPENDICES:

Appendix A Regulatory and Hydrogeological Mapping

Appendix B MECP Well Records

Appendix C Borehole Logs

Appendix D Grain Size Analysis

Appendix E Aquifer Response Tests

Appendix F Laboratory Certificates of Analysis

Appendix G Water Balance

Appendix H Proposed Conceptual Development Plan

Appendix I Six Month Groundwater Monitoring

1.0 INTRODUCTION

1.1 Project Description:

Terraprobe Inc. (Terraprobe) was retained by Environmental 360 Solutions Ltd. to conduct a hydrogeological assessment in support of the proposed development for the site located to the northeast corner of the intersection of Welham Road and Maple Drive E in Barrie, Ontario (Site or Property). The Property has a municipal address of 571 Welham Road, Barrie, Ontario. The Property location is shown in Figure 1

The Property is approximately rectangular in shape and covers an area of approximately 3.28 ha (8.10 acres). The Property currently consists of parcel of land that is occupied by a single storey industrial building of brick construction, with associated asphalt surfaced parking areas. The south and east portion of the Property is covered with soil, grass, and trees.

It is proposed to further develop the Site with a new slab-on-grade one-story structure south of the existing building. The proposed building will have footprint of approximately 4,904 sq.m (52,787 sq.f) which includes a detached truck unloading area and office space. Refer to proposed development plans provided in **Appendix H**

The purpose of this report is to assess local and regional hydrogeological conditions and the potential impacts of the proposed development on the ground water system.

1.2 Scope of Work

The scope of work for the hydrogeological investigation consisted of the following:

- **Background Information Review:** A review of available geologic and hydrogeological information for the Site and surrounding areas was conducted. This provided background information to allow for characterization of regional hydrogeological conditions. The information reviewed included topographic mapping, geologic mapping, and Ministry of the Environment, Conservation and Parks (MECP) water well records.
- **Borehole Drilling:** Prior to the commencement of drilling, the locations of underground utilities; including telephone, natural gas and electrical lines were marked out by local locating companies and individual borehole locations were cleared by private utility locating service providers. A total of fifteen (15) exploratory boreholes were advanced across the Site to depths of about 2.0 m to 13.7 m below grade.
- **Well Installation:** To measure the ground water level and investigate the quality of ground water, eight (8) boreholes were instrumented with a monitoring well. The monitoring well consisted of a 50 mm diameter PVC screen with a length of PVC riser pipe, 10-ft slotted screen and finished at the surface with protective flush mount casings. Upon installation, an elevation survey of the monitoring wells, relative to a local datum, was completed so that relative ground water flow direction can be assessed. The information obtained from the boreholes was used for the hydrogeological assessment.

- *In-Situ Hydraulic Conductivity Tests:* In-situ hydraulic conductivity tests (rising head tests) were conducted in only one (1) monitoring well as all other monitoring wells were reported “dry” during hydrogeological testing event.
- *Private Well Survey:* Due to the current COVID-19 work restrictions that have been imposed by the provincial government, and to ensure health and safety, the private well survey has been put on hold.
- *Six-month Groundwater Monitoring Program:* In order to capture the seasonal groundwater fluctuations, a six (6) month groundwater monitoring program was conducted on the Site from April 2020 to September 2020 to observe groundwater levels at an hourly interval with data loggers
- *Hydrogeological Assessment Report:* Following completion of the above-noted study, a detailed engineering report was prepared regarding the Site hydrogeology. The report provides the following information:
 - Presentation of all the factual information gathered during the study including the background information and results of site subsurface investigation.
 - Provision of a conceptual site model for local and regional hydrogeologic conditions. The conceptual site model will be used as a basis to assess impacts to local surface and ground water features.
 - Calculations of water balance for existing (pre-development) conditions.
 - Calculation of water balance for post-development conditions, along with recommendations for appropriate LID measures to maintain ground water infiltration rates.
 - Assessment of the requirements for ground water monitoring in order to confirm long-term impacts.

2.0 APPLICABLE REGULATIONS AND AGENCIES

A review of current regulatory requirements associated with water supply and hydrogeology in connection with the proposed development was conducted as indicated below:

2.1 Lake Simcoe Region Conservation Authority

As per the Lake Simcoe Region Conservation Authority (LSRCA) website accessed on May 28, 2020, it is indicated that eastern and southern portions of the Property are partially regulated by LSRCA. Based to LSRCA Sub watershed mapping, the Property is located within the Lovers Creek Sub-watershed of the Lake Simcoe Watershed (Refer to **Appendix A** for associated mapping).

The Barrie Creeks, Lovers Creek and Hewitt’s Creek Sub-watershed Plan (2012) is developed under the direction of Lake Simcoe Protection Plan (LSPP) to mitigate the impacts of land use changes in the watershed and prevent future impacts. The plan provides recommendations for sustainable development including stormwater management, protection of the integrity of both hydrological and hydrogeological

functions, improvement of water quality, conservation of wetlands and wood lands, maintenance or enhancement of fish habitat, and land use planning, etc.

2.2 Lake Simcoe Source Protection Plan under CWA

The MECP mandates the protection of existing and future sources of drinking water under the Clean Water Act, 2006 (CWA). Initiatives under the CWA include the delineation of Wellhead Protection Areas (WHPAs), Significant Ground Water Recharge Areas (SGRAs) and Highly Vulnerable Aquifers (HVAs) as well as the assessment of drinking water quality and quantity threats within Source Protection Regions. Source Protection Plans are developed under the CWA and include the restriction and prohibition of certain types of activities and land uses within WHPAs. This plan dictates that any site within the Lake Simcoe Watershed of South Georgian Bay (SGBLS) region can be rated in terms of score indicating vulnerability to drinking water quality and quantity threats.

The Source Protection Plan (Approved: January 2015, amended: September 2019) under the Clean Water Act (2006) was developed for the South Georgian Bay Lake Simcoe region. Under the Clean Water Act, the objectives of a source protection plan are:

1. to protect existing and future drinking water sources in the source protection region
2. to ensure that, for every area identified in the assessment reports as an area where an activity is or would be a significant drinking water threat
 - i. the activity never becomes a significant drinking water threat; or
 - ii. if the activity is occurring when the source protection plan takes effect, the activity ceases to be a significant drinking water threat.

2.3 Associated Policy Areas

A review of the “The Barrie Creeks, Lovers Creek and Hewitt’s Creek Sub-watershed Plan” (2012) was reviewed, and the Oak Ridges Moraine Ground Water Program (ORMGP) and County of Simcoe Interactive mapping tool accessed on May 28, 2020. The information obtained indicates that the subject property is located partially within a Significant Ground Water Recharge Area (SGRA). The SGRAs are regional areas that receive more than average estimated recharge for a watershed area. The SGRAs within the Lake Simcoe watershed represents areas where the recharge is 15 % greater than the average recharge of 164 mm/yr. The Site is located within an area designated as having a recharge rate range of greater than 250mm/ year as indicated in mapping from “The Barrie Creeks, Lovers Creek and Hewitt’s Creek Sub-watershed Plan” (2012). The Site is located partially within a Significant Ground Water Recharge Area (SGRA) hence additional measures will be required to maintain proper infiltration at the Site.

The Site is also partially located in the Highly Vulnerable Aquifer (HVA). HVAs are those areas where an aquifer may be more prone to contamination. These areas have been identified where there is little or no protection from an overlying aquitard (a protective layer of low permeability materials).

The Site is not located in Well Head Protection Area (WHPA). Based on the assessment of water quantity threats, the Site is not located in the Wellhead Protection Areas (WHPA - Q1, WHPA - Q12) and Intake Protection Zone Q.

Additionally, the Site is located within Intake Protection Zone 3 with the vulnerability score of 5.6. The associated vulnerability score is low and indicates the activities on the Site would have a low likelihood of affecting water quality in a surface water intake of Lake Simcoe. The proposed land development is not considered as a land use of concern in Intake Protection Zone 3.

Refer to **Appendix A** for associated mapping details.

2.4 City of Barrie Official Plans

As a part of Hydrogeological Study, Terraprobe reviewed the Official Plans related to the Property. The City of Barrie Official Plans were reviewed for the current study with the results summarized as below:

- Schedule A (Land Use) - A review of the map, dated January 2018, indicates that the Site is located within the areas designated as General Industrial with some portion within Environmental Protection Area (EP Zone).
- Schedule B (Planning Areas) - A review of the map, dated January 2018, indicates that the Site is located within the areas designated as Industrial.
- Schedule C (Special Policy Areas) - A review of the map, dated January 2018, indicates that the Site is located within the areas designated as Urban Growth Centre.
- Schedule F (Conservation Authority Regulation Limits) - A review of the map, dated January 2018, indicates that the Site is located within the areas designated as Lake Simcoe Regional Conservation Authority with some portions designated as Lake Simcoe Region Conservation Authority Regulation Limits as discussed earlier.
- Schedule G (Drinking Water System Vulnerable Areas) - A review of the map, dated January 2018, indicates that the Site is not located within designated Well Head Protection Areas (WHPAs).
- Schedule H (Natural Heritage Resources) - A review of the map, dated January 2018, indicates that the Site is located within the areas designated as Level 1 Natural Heritage Resources.
- Schedule J (Lake Simcoe Watershed) - A review of the map, dated January 2018, indicates that the Site is located within the boundary designated as Lake Simcoe Watershed.

2.5 Hydrogeological Assessment Submission Guidelines

The Conservation Authority Guidelines for Development Applications (June 2013) was reviewed on May 27, 2020 before the preparation of the hydrogeological report for 571 Welham Road, Barrie, Ontario. The guidance document is referred in Barrie Hydrogeological Study Terms of References (January 2019). The

main purpose of this guidance document is to provide information and guidance material related to hydrogeological assessments and to standardize the hydrogeological study requirements.

Table 1: Hydrogeological Assessment Checklist to support Development Application has been completed and attached with the report for the reference

3.0 REGIONAL AND LOCAL SITE SETTING

3.1 Regional Physiography and Geology

Based on published geological information for the area, the Site is located within the physiographic region known as the Peterborough Drumlin Field. The drumlins are composed of sand, gravel and boulder till and are separated by low -lying wetland areas composed of the fine-grained soils. (Chapman and Putnam 1984). Based on the Ontario Geological Survey (OGS) mapping, the surficial geology at the Site consist of

- Coarse-textured glaciolacustrine deposits - Sand, gravel, minor silt and clay (9b)
- Ice contact stratified deposits - Sand and gravel, minor silt, clay and till (6)
- Till - stone poor, sandy silt to silty sand textured on Paleozoic terrain (5b)

Based on the Ontario Geological Survey (OGS) mapping, the bedrock consists of Lindsay Formation consisting of limestone, dolostone, shale, arkose, and sandstone (54a). Based on the Oak Ridges Moraine Ground Water Program (ORMGP) geological cross section, the depth to bedrock is approximately 167.5 m below the existing grade (Elev. 110 ± masl).

3.2 Regional Hydrogeology

Barrie Creeks, Lovers Creek and Hewitt's Creek Sub-watershed Plan (2012) was reviewed and Oak Ridges Moraine Groundwater Program (ORMGP) produced cross sectional geological mapping of the Site to aid the characterization of the general stratigraphy of the Site and surrounding area. Considering the regional cross section, it is understood the overburden units prevalent in this area are as follows, with the youngest unit at the top:

Halton Till (Upper Till): The Halton Till is mainly comprises of sandy silt to clayey silt till interbedded with silt, clay, and a number of discontinuous sand and gravel lenses. Based on cross-sectional geology, the Halton Till or equivalent is present beneath the Site, with an approximate thickness of up to 3.12 m (E. 274.96 - 271.81 ± masl). The Halton Till have low permeabilities.

Oak Ridges Moraine: The Oak Ridges Moraine Aquifer Complex (ORAC) is a regionally significant aquifer in southern Ontario. A majority of the aquifer's recharge occurs at the crest of the moraine north of the Site. It is primarily composed of interbedded fine sand and silt deposits with localized coarse sand and gravel deposits. Approximate thickness of the ORAC could extend up to 3.92 m (El. 271.81 - 267.87 masl). The ORAC is generally comprised of soils with medium to high permeabilities.

Newmarket Till: The Newmarket Till is a regionally extensive till formation that acts as an aquitard separating the Oak Ridges Aquifer Complex (ORAC) from the underlying Thorncliffe Formation and generally has low permeability. Based on the ORMGP cross-section, Newmarket Till is mapped beneath the ORAC. The average thickness of the Newmarket Till is approximately 67.04 m beneath the Site (El. m (El. 267.87 - 200.82 ± masl))

Thorncliffe Formation: The Thorncliffe Formation consists of glaciofluvial and glaciolacustrine sand and silt deposited approximately 30,000 to 50,000 years ago. The Thorncliffe Formation shows a considerable variation in grain size and thickness, both locally and regionally. It acts as a regional aquifer. It generally comprises of sands and silts with a high permeability.

Sunnybrook Drift: The Sunnybrook Drift consists of silt to silty clay materials deposited 45,000 years ago and acts as a regional aquitard. The thickness of the Sunnybrook Drift is generally less than 10 m to 20 m. The Sunnybrook Drift comprises of silt and clays with low permeabilities.

Scarborough Formation: It is the third regional aquifer in the area underlying the Sunnybrook Drift. It comprises of sands, silt and clays with varying permeabilities. Based on the ORMGP cross-section; the surface of the Scarborough Formation has an approximate thickness of 47 m beneath the Site.

3.3 Topography and Drainage

Based on the topographic map of the Site provided by the Joseph N Campitelli Architect Inc., the approximate elevation of the Property varies from 274 ± masl to 262.5 ± masl slopes to the south towards tributary of Lovers Creek. The nearest water body is a tributary of Lovers Creek which is located adjacent of the Property to the south which flows towards east and eventually drains into Lovers Creek. The Lovers Creek is located approximately 800 m southeast of the Property. The ground water and surface water in the general area are expected to flow to the southeast towards Lovers Creek. Based on ORMGP mapping, the regional ground water flow is expected to be southeast towards Lake Simcoe. The ground water and the surface water drainage at the Site are directed to the tributary of Lovers Creek towards south/southeast following local topography.

3.4 Watershed Setting

Based to LSRCA Sub watershed mapping, the Property is located within the Lovers Creek Sub-watershed of the Lake Simcoe Watershed. All of the lands within the Lake Simcoe watershed ultimately drain into Lake Simcoe, via one of the tributary rivers. The Barrie Creeks, Lovers Creek, and Hewitt's Creek sub watersheds are three of the 18 sub watersheds that make up the Lake Simcoe watershed. To the east of Barrie Creeks is the Lovers Creek sub watershed, with just over half of its land mass in the Town of Innisfil and the rest in the City of Barrie. Unlike the Barrie Creeks sub watershed, Lovers has only one main tributary that has a total combined length of 93.1 km (includes all branches) or about 2% of the total combined watercourse length of the entire Lake Simcoe watershed. With headwaters located in the southern part of the sub watershed (south of Innisfil Beach Road), it flows in a northerly direction until draining into Lake Simcoe. The land uses are relatively evenly split between agriculture, natural heritage, and urban and built up areas (Barrie Creeks, Lovers Creek and Hewitt's Creek Sub-watershed Plan -2012)

3.5 Local Surface Water and Natural Heritage Features

Mapping from the Ontario Ministry of Natural Resources and Forestry (MNR) was reviewed to determine if water bodies were present on the Property and within the Study Area. The Ontario Ministry of Natural Resources National Heritage Information Centre database for listings of Areas of Natural or Scientific Interest (ANSIs) was reviewed. A tributary of Lovers Creek is located adjacent of the Property to the south. The Lovers Creek is located approximately 800 m southeast of the Property.

Record review indicates that there are no records for Areas of Natural or Scientific Interest (ANSIs) within or in close proximity to the Site. However, the MNR mapping tool and County of Simcoe mapping indicates presence of Provincially Significant Wetland (PSW) i.e. portion of Lovers Creek Swamp (IN4) located approximately 160 m southeast of the Property. Most of the wetland areas outlined are regulated by LSRCA.

3.6 Active Permit to Take Water Records Review

MECP website was reviewed for any active PTTW application records within a 1.0 km radius of the Site on May 29, 2020. Record review indicates there are two (2) records for active PTTW within the study area and include the following:

Active Permit to Take Water Records

Permit Number	Permit Holder	Purpose	Source Type	Maximum Litres per Day	Distance to Site
5014-85KHKK	Cedar Links Golf Centre Inc.	Water Supply	Surface and Groundwater	54,740	0.68
5014-85KHKK	Cedar Links Golf Centre Inc.	Golf Course Irrigation (Commercial)	Surface and Groundwater	218,208	0.82

3.7 Ground Water Resources

MECP Water Well Records (WWRs) were reviewed on May 29, 2020 for the registered wells located at the Site and within 500 m radius of the Site boundaries (study area). Information contained in these records provides data for determining the nature and use of local ground water resources. Total of 26 well records were found out of which six (6) wells were reported as abandoned. MECP well record data is presented in **Appendix B**. The findings are summarized as below:

Summary of MECP Well Records (within 500 m radius)

Total Number of Wells	26
Wells completed in Overburden	22 (84.6%)
Bedrock	0 (0 %)
Unknown	4(15.4 %)



Total Number of Wells	26
Well Type	
Drilled Well (Rotary, Boring, Cable Tool, Direct Push)	22 (84.6%)
Unknown	4 (15.4%)
Depth Ranges	
Less than 15 m	14 (53.8 %)
15 m - 30 m	4 (15.4 %)
Greater than 30 m	2 (7.7 %)
Unknown or no well	6 (23.1 %)
Water Use	
Test Holes + Monitoring/Observation	12 (46.2 %)
Test Hole	2 (7.7 %)
Test Hole/Observation + Municipal	1 (3.8 %)
Water Supply	5 (19.2 %)
Abandoned - Other	6 (23.1 %)

The above summary indicates the most of the wells are used as test holes/observation and all are completed in the overburden ranging in depth from 4.57 mbgs to 105.16 mbgs. The record indicated five (5) active water supply wells are located within 500 m radius of the Property ranging in depth from 14.02 mbgs to 51.81 mbgs completed in the overburden and use for domestic and irrigation purpose. Barrie Creeks, Lovers Creek and Hewitt's Creek Sub-watershed Plan (2012) indicates the regionally aquifer system contains four major sand and gravel aquifer units (from shallowest to deepest: A1, A2, A3 and A4). The depths of the wells indicate the majority water supply wells are completed in shallow A2 aquifer system as the A2 aquifer found in the elevation range of approximately 175 - 230 masl. The above summary shows record of one (1) test hole/observation well - municipal water use, with the depth of 90.8 mbgs (154 masl), however, this well is located at distance of 700 m north from the center of the Property. This indicates the municipal well is completed in deep A3 aquifer system as A3 is the main municipal production aquifer in the area.

The proposed development will likely be serviced with municipal water. There is no record of any well completed in the bedrock. Based on the Oak Ridges Moraine Ground Water Program (ORMGP) geological cross section, the depth to bedrock is approximately 167.5 m below the existing grade. It is unlikely that impacts from the proposed development will affect the water resources within the vicinity of the Site.

3.8 Results of Door to Door Survey

Due to the current COVID-19 work restrictions that have been imposed by the provincial government, and to ensure health and safety, the private well survey has been put on hold. The rationale for placing the private well survey on hold is as follows: In order to conduct the private well survey within 500 m of the

proposed development, it is required by Terraprobe field staff on the day of the private well survey to visit all the properties within a 500 m radius of the subject Site.

3.9 Property Inspection to Assess Hydrogeologic Features

The Site was assessed for the presence of features which are significant from a hydrogeologic viewpoint to understand the hydrogeologic dynamics of the subject area. In particular, the property was inspected to assess the following:

- Areas of visible ground water discharge, springs or seepage at the property or in the vicinity of the on-property water courses.
- Areas of potential enhanced ground water recharge such as closed drainage features or depressions or large flat areas which may allow for significant ground water infiltration.
- Inspection of swales and drainage courses for evidence of ground water seepage or springs.
- Evidence of phreatophytic vegetation, which may indicate seasonally high ground water levels and/or ground water discharge and seepage.

The property approximate elevation of the Property varies from $274 \pm$ masl to $262.5 \pm$ masl slopes to the south towards tributary of Lovers Creek which flows towards east and eventually drains into Lovers Creek. Currently, ground water and the surface water drainage at the Site is directed to the tributary of Lovers Creek towards south/southeast following local topography.

The principal drainage feature adjacent to the Site is tributary of Lovers Creek. Based on the topography, the Site provides significant surface runoff to the adjacent tributary. There is a possibility of base flow contribution to the tributary due to the presence of moderate to high permeability soils at the Site. The MNRF mapping tool and County of Simcoe mapping indicates presence of provincially significant wetland (PSW) i.e. portion of Lovers Creek Swamp (IN4) located approximately 160 m southeast of the Property. Most of the wetland areas outlined are regulated by LSRCA. The PSW provides significant ecological functions and hydrological function and fed by the groundwater discharge.

4.0 RESULTS OF SUBSURFACE INVESTIGATIONS

4.1 Methodology:

A subsurface investigation was conducted at the Property by Terraprobe during Feb 24, 2020 to March 3, 2020. The subsurface investigation was conducted in conjunction with geotechnical and environmental investigation. The findings of the Geotechnical Investigation and the Phase Two Environmental Site Assessment are provided under a separate cover. A total of fifteen (15) boreholes (BH1 - BH15) were drilled to depths varying from 2.0 m to 13.7 m below existing grades. Monitoring wells were installed in eight (8) selected boreholes (BH2, BH3, BH4, BH6, BH7, BH13, BH14, and BH15) for ground water monitoring and to confirm the ground water quality. The borehole and monitoring well locations are presented on Figure 2.

Borehole drilling and monitoring well construction were completed by a licensed water well contractor, Walker Drilling Ltd., under the full-time supervision of a field technician from Terraprobe. The boreholes were drilled using continuous flight, solid and hollow stem augers using 2-inch split spoon sampler. The soil samples were observed and recorded by a member of our field technician, who logged the borings and examined the samples as they were obtained. All samples obtained during the investigation were sealed into plastic jars, and transported to our geotechnical testing laboratory for detailed inspection and testing. Detailed descriptions of the encountered subsoil and groundwater conditions are presented on the borehole and monitoring well logs, on the enclosed **Appendix C**, inclusive. The geotechnical laboratory testing consisted of grain size distribution (Sieve and Hydrometer) on six (6) selected soil samples (five samples from native and one from fill) from three (3) borehole locations. The results of the Sieve and Hydrometer analysis are provided in **Appendix D**.

4.2 Local Soil Stratigraphy

For detailed soil stratigraphy, refer to findings of Geotechnical Investigation Report under separate cover “*Geotechnical Investigation Proposed Industrial Development 571 Welham Road, Barrie, Ontario*, File No. 1-19-0792-01, Dated: May 29, 2020”.

In summary, all the boreholes with exception of BH2 encountered a topsoil and surficial materials at the ground surface that was underlain by a layer of earth fill materials in all boreholes, with exception of BH2, BH3 and BH6. The fill was underlain by native soil deposit extending to the full depth of investigation in all boreholes, with exception of BH10 and BH11 which were terminated in the fill material. The native soils deposit in generally consisted of cohesionless sands and silts.

Top Soil and Surficial Materials: All the boreholes with exception of BH2 encountered a topsoil and surficial materials at the ground surface. The topsoil thickness ranges from about 50 mm (BH5 and BH8) to 180 mm (BH 6). Asphaltic concrete of about 75 mm and 100 mm was encountered at the ground in BH3 and BH10 respectively, whereas asphaltic concrete of about 150 mm and 75 mm underlain by aggregate of about 150 mm and 40 mm was encountered in BH14 and BH15 respectively.

Earth Fill: Below the top soil or surficial materials (aggregates), all boreholes were underlain by a layer of earth fill materials with exception of BH2, BH3 and BH6. The earth fill extends to the depths of about 0.8 m (BH4 - BH9, BH12 and BH14) to 3.0 m (BH13) below existing grade. The earth fill material composed of sand to silty sand, trace to some gravel, and clayey silty sand, silt with trace gravel and organics.

Native Soil: The fill was underlain by native soil deposit extending to the full depth of investigation in all boreholes, with exception of BH10 and BH11 which were terminated in the fill material. The cohesionless undisturbed native soil deposit varies in depth ranging from about 0.1 m (BH3) to 13.7 m (BH6) below existing grade. The deposit generally consisted of cohesionless sands and silts with trace gravel and clay.

The Property stratigraphy, including soil materials, composition and texture are presented in detail on the borehole logs in **Appendix C**. The stratigraphic units that were encountered at the Site are summarized below and shown in hydrogeological cross sections presented in Figure 3a and 3b

Summary of Sub surface Soil Stratigraphy

Stratum/Formation	Aquifer/Aquitard	Depth Range (mbgs)	Elevation Range (masl)	Thickness Range (m)
Earth Fill	Aquifer	0.1 to 3.0	273.6 - 269.9	0.5 to 2.9
Cohesionless Native Sands and Silts	Aquifer	0.1 to 13.7	273.0 - 260.7	0.6 to 13.6

4.3 Monitoring Well Installation

Monitoring wells were installed in eight (8) selected boreholes (BH2, BH3, BH4, BH6, BH7, BH13, BH14, and BH15) for ground water monitoring and to confirm the ground water quality. The monitoring wells were constructed using 50-mm diameter PVC riser pipes and screens, which were installed in each of the selected geotechnical boreholes in accordance with Ontario Regulation (O. Reg.) 903. Filter sand was placed around the well screen to approximately 0.6 m above the top of the screen. The wells were then backfilled with bentonite to approximately 0.3 m below ground surface. As per Ontario Regulation 903 the monitoring wells were tagged with cluster water well record. All of the monitoring wells were finished with protective casings. The monitoring wells installation details are summarized in Table below:

Monitoring Well Installation

Well ID	Well Diameter (mm)	Ground Surface (masl)	Top of Screen		Bottom of Screen		Screened Geological Units/Description
			Depth (m)	Elev. (masl)	Depth (m)	Elev. (masl)	
BH 2	50	273	3.1	270.0	6.1	266.9	Sand, trace to some Silt
BH 3	50	273.1	6.1	267.0	9.1	264.0	Sand and Silt to Silt and Sand, trace gravel and clay



BH 4	50	273	3.1	270.0	6.1	266.9	Sand some silt, trace gravel and clay
BH 6	50	273.3	10.7	262.6	13.7	259.6	Sand, trace to some Silt
BH 7	50	273.4	7.6	265.8	10.7	262.7	Sand and Silt to Silty Sand, trace gravel and clay
BH 13	50	272.9	7.0	265.9	10.7	262.2	Sandy Silt to Silt and Sand, trace clay and gravel
BH 14	50	273.9	3.1	270.9	6.1	267.8	Sand, trace to some Silt, trace gravel
BH 15	50	273.2	4.6	268.6	7.6	265.6	Sand and Silt to Silty Sand, trace gravel and clay

*Note: mbgs: meters below ground surface; masl: meters above mean sea level
Ground surface elevations were referenced to a geodetic benchmark*

Additional details of the monitoring well installation is presented on the enclosed borehole logs in **Appendix C**.

4.4 Ground Water Monitoring

All eight (8) installed monitoring wells were utilized to measure and monitor ground water levels. As a part of the geotechnical investigation water levels were measured upon completion of borehole drilling / monitoring well installation. Stabilized ground water level measurements in the monitoring wells were recorded manually on seven (7) monitoring events from March, 2020 to September 2020. Summary of the manual ground water level observations are provided in the **Appendix I**.

In order to capture the seasonal groundwater fluctuations, a six (6) month groundwater monitoring program was conducted on the Site from April 2020 to September 2020. As part of groundwater monitoring program, data loggers were installed in monitoring wells BH2, BH3, BH4, BH6, BH7 and BH13. The data loggers were programmed to record groundwater levels at 1 hour recording interval. Barologger was also programmed at 1-hour interval and installed in BH13 for barometric compensation. The groundwater level observation is analyzed and presented as hydrographs representing the groundwater fluctuation. Please refer to the **Appendix I** for further details.

The results indicate, during the first two monitoring events all the wells were reported as “dry” except monitoring well BH6 which indicated a water level at an approximate elevation of $263.7 \pm \text{masl}$ comparable to the elevation of tributary of Lovers Creek located to south of the Property. Based on the most recent water level observation conducted on September 24, 2020, all the wells were reported as “dry” except monitoring well BH6, BH7 and BH13. Based on the available water level recordings it is noted that ground water level varies from $268.2 \pm \text{masl}$ to $262.5 \pm \text{masl}$ (5.7 mbgs to 10.4 mbgs) indicating the inferred ground water flow direction as southeast towards Lovers Creek tributary. The ground water contour plan is shown in Figure 5.

Based on ORMGP mapping, the regional ground water flow is expected to be southeast towards Lake Simcoe with an approximate elevation of $266 \pm \text{masl}$ to $261 \pm \text{masl}$. Refer to **Appendix A** for associated mapping. Additional details of the monitoring well installation is presented on the enclosed borehole logs in **Appendix C**.



4.5 Estimation of Hydraulic Conductivity

4.5.1 Grain Size Distribution Analysis

The geotechnical laboratory testing consisted of grain size distribution (Sieve and Hydrometer) on six (6) selected soil samples (five samples from native and one from fill) from three (3) borehole locations. The results of the Sieve and Hydrometer analysis are provided in **Appendix D** and summarized below:

Grain Size Distribution Analysis Results

Borehole No. Sample No.	Sampling Depth/Elevation (mbgs/masl)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Soil Type	Description (MIT System)
BH4 SS2	1.1 / 271.9	8	76	12	4	Native	SAND, some silt, trace clay and gravel
BH6 SS3	1.8 / 271.5	7	66	18	9	Native	SAND, some silt, trace clay and gravel
BH6 SS10	10.9 / 262.4	0	87	11	2	Native	SAND, some silt, trace clay
BH13 SS3	1.8 / 271.1	4	54	21	21	Fill	CLAYEY SILTY SAND, trace gravel
BH13 SS5	3.3 / 269.6	3	87	7	3	Native	SAND, trace silt, clay and gravel
BH13 SS6	4.8 / 268.1	4	70	18	8	Native	SAND, some silt, trace clay and gravel

Grain size results indicated the samples composition was in percentage of Sand varying from 54 - 87 % with some silt (7 - 21 %), trace clay (2 - 21 %) and trace gravel (3 - 8 %). The percentage fines vary from 12 - 29.2 % for samples composed of Sand and Silts. The amount of fines within a deposit impacts the ability of the aquifer to transmit the water thus affecting overall hydraulic conductivity.

4.5.1.1 Hydraulic Conductivity Estimation based on Grain Size Analysis:

The Allen Hazen equation estimation method was also used to estimate the hydraulic conductivity (K) for saturated subsoils at selected depths beneath the water table below the subject site. The Hazen Equation method was adopted to estimate the hydraulic conductivity (K) for different soil layers which may contain groundwater during the seasonal high-water table (spring) period, or if they are not encountered within the screen intervals. The Allen Hazen Equation method relies on the interrelationship between hydraulic conductivity and effective grain size, d_{10} , in the soil media. This empirical relation predicts a power-law relation with K, as follow:

$$K = Cd_{10}^2$$

where;

- d_{10} : Value of the soil grain size gradation curve as determined by sieve analysis, whereby 10% by weight of the soil particles are finer and 90% by weight of the soil particles are coarser.
- C: Coefficient; it is equal to 1 when K in cm/sec and d_{10} is in mm



K: Estimated hydraulic conductivity in cm/s

The Allen Hazen Equation estimation provides an indication of the groundwater yield capacity for saturated soil strata at the depths where soils samples were selected for grain size analysis. The grain size distribution graphs prepared for the geotechnical investigation were used to estimate the hydraulic conductivity. The details are presented in **Appendix D**. The results of the Hazen equation are summarized below:

Hydraulic Estimation based on Grain Size Analysis

Borehole No. Sample No	Sampling Depth mbgs/masl	D ₁₀ Grain Size (mm)	Soil Description	Estimated Hydraulic Conductivity (m/s)
BH4 SS2	1.1 / 271.9	3.45×10^{-2}	SAND, some silt, trace clay and gravel	1.19×10^{-5}
BH6 SS3	1.8 / 271.5	2.83×10^{-3}	SAND, some silt, trace clay and gravel	8.01×10^{-8}
BH6 SS10	10.9 / 262.4	5.17×10^{-2}	SAND, some silt, trace clay	2.67×10^{-5}
BH13 SS3	1.8 / 271.1	1.30×10^{-5}	CLAYEY SILTY SAND, trace gravel	1.70×10^{-12}
BH13 SS5	3.3 / 269.6	6.15×10^{-2}	SAND, Trace silt, clay and gravel	3.78×10^{-5}
BH13 SS6	4.8 / 268.1	4.23×10^{-3}	SAND, some silt, trace clay and gravel	1.79×10^{-7}

Note: mbgs: meters below ground surface; masl: meters above mean sea level

Based on the Allen Hazen estimation method, the hydraulic conductivity of the native cohesionless sand and silts deposits ranges from order of 10^{-5} to 10^{-7} m/s, whereas the hydraulic conductivity of clayey silty sand deposit encountered in BH13 SS3 as fill material is estimated as order of 10^{-12} m/s.

4.5.2 In-Situ Hydraulic Conductivity Testing

The hydraulic conductivity was also determined based on single well response tests (SWRTs), as per the hydrogeological investigation completed on April 28, 2020. As indicated above in Section 4.4, during the monitoring event all the wells were reported as “dry” except monitoring well BH6 which indicated a water level at an approximate elevation of $263.7 \pm$ masl. The monitoring well 6 was developed in advance of the testing date. Well development involves the purging and removal of ground water from the monitoring well to remove remnants of clay, silt and other debris introduced into the monitoring well during construction, and to induce the flow of formation ground water through the well screens, thereby improving the transmissivity of the subsoil strata formation at the well screen depths.

The most recent water level observation conducted on May 28, 2020 recorded ground water levels except monitoring wells BH2, BH4 and BH15 which were reported as “dry”. The height of ground water column recorded on May 28, 2020 in the monitoring wells BH3, BH7, BH13 and BH14 is not sufficient to carry out the rising head testing on these monitoring wells. Hence, the hydraulic conductivity is estimated from the Grain Size Analysis and single well response testing results from the monitoring well BH6. It is noted that there is a requirement for long-term monitoring ground water levels to assess seasonal

variations for the period of six (6) months. Upon completion of the on-going long-term monitoring an addendum report will be issued incorporating the hydrographs representing the seasonal ground water fluctuations at the Site and also the results of single well response testing on the remaining wells, if required.

4.5.2.1 Hydraulic Conductivity Estimation based on In-situ Testing

The test involved the rapid removal of water which displaces a known volume of water from a single well and then monitoring the water level in the well until the well has recovered. The static water level was measured prior to the test. The Solinst Datalogger was programmed to record the water levels at one (1) second of the interval throughout the test. The data from the tests was analyzed using the Bouwer and Rice method (1976) included in the Aquifer Test V.7 software package. The results of the analysis are presented in **Appendix E** in form of semi-log plots for drawdown versus time

Hydraulic Conductivity Estimation based on In-situ Testing

Monitoring Well	Well Screen Elevation (masl)	Screened Geological Unit Description	Hydraulic Conductivity (m/s)
BH 6	262.6 - 259.6	Sand, trace to some Silt	1.43×10^{-5}

Based on the single well response estimation, the hydraulic conductivity of the native cohesionless sand and silts deposit is estimated as order of 10^{-5} m/s. The field results indicated a fast recharge of MW6 during the single well response test as indicated by the estimated hydraulic conductivity. Also, the estimated conductivity is comparable to hydraulic conductivity estimated from the grain size distribution analysis for BH6 SS10 (El: 262.4 masl) i.e. 2.67×10^{-5} m/s.

4.5.2.2 Hydraulic Conductivity Estimation from Literature:

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

- Earth Fill (Silty Sand) : 10^{-3} m/s to 10^{-7} m/s
- Native (Sands and Silts): 10^{-2} m/s to 10^{-9} m/s

Based on the analyses, the hydraulic conductivity calculated from the rising head test and grain size analyses are relatively consistent with the published values associated with the geological material tested.

4.6 Ground Water Quality Assessment

One (1) unfiltered sample of ground water was collected by Terraprobe from monitoring well BH6 on April 29, 2020 and analysed for the Provincial Water Quality Objectives Standards (PWQO) and Ontario Drinking Water Quality Standards. The Metals and Mercury (Hg) bottles were filtered in the lab before the analyses. The monitoring well BH6 was developed and purged prior to sample collection. Upon sampling, all of the bottles were placed in ice and packed in a cooler for shipment to the analytical laboratory. Sample analysis was performed by AGAT Laboratories., a laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). No exceedances were reported in the



analysis as per Provincial Water Quality Objectives Standards (PWQO).

The background ground water quality exceeds the Ontario Drinking Water Quality Standards for hardness, temperature, total dissolved solids, turbidity and dissolved sodium. However, the proposed development will not be contributing any contaminants that may affect the background ground water quality in the area. The certificates of the analysis are provided in **Appendix F**.

The site is partially located in the Highly Vulnerable Aquifer (HVA). HVAs are those areas where an aquifer may be more prone to contamination. These areas have been identified where there is little or no protection from an overlying aquitard (a protective layer of low permeability materials). The findings of Phase Two Environmental Site Assessment reported in “*Phase Two Environmental Site Assessment, 571 Welham Road, Barrie Ontario*, File No. 1-19-0792-42, Dated: March 13, 2020” indicates that there were no exceedances of the MECP Table 8 RPI/ICC Standards in the soil and ground water on the Property. There are no significant contaminating activities associated with the proposed development, therefore the Highly Vulnerable Aquifer (HVA) is not considered to be at risk.

5.0 IMPACT ASSESSMENT

The proposed development typically results in impacts which includes increase in the run-off and decrease in the infiltration ultimately leading to reduced interflow and baseflow discharge. The impact assessment details that are applicable to the Property are discussed below.

5.1 Ground Water Baseflow

It is required to assess the potential impact of development on ground water contribution to baseflow. The degree to which the shallow ground water flow is altered largely depend on the infiltration potential of the sub surface soils and nature of proposed development. The degree to which streams and wetlands may be affected also depends on the proximity of the proposed development and its hydrogeological connection with the stream or wetland. The principal drainage feature adjacent to the Site is tributary of Lovers Creek. There will be base flow contribution to the tributary of the Lovers Creek due to the presence of moderate to high permeability soils and topographic configuration of the creek. This will be addressed by maintaining the overall ground water recharge across the Site area.

5.2 Water Balance for Infiltration Impact

An evaluation of water balance was completed in order to estimate the potential impacts that may occur due to proposed development in terms of recharge/discharge characteristics. The water balance is the amount of water entering and leaving a control volume during a given time period. The purpose of water balance analysis is to estimate the pre-development and post-development infiltration and run-off. The maintenance of pre-development ‘recharge’ is a general requirement in the Oak Ridges Moraine Conservation Plan, Lake Simcoe Protection Plan and the Provincial Policy Statement that is often captured in municipal Official Plans. The water balance analysis is conducted for the entire site considering it as one catchment and one drainage outlet.

5.2.1 Water Balance Methodology

The surface soils at the Site provide possible ground water recharge into the shallow ground water system. This is a result of the moderate to high permeable sandy soils found across the Site. Based on Site investigations, it is indicated in the earlier sections that the native soil samples range in major percentage of Sand varying from 54 - 87 %. Based on the hydraulic testing at the Site, the hydraulic conductivity of the native cohesionless sand and silts deposit is estimated as order of 10^{-5} m/s.

One of the objectives during development should be to ensure that the overall volume of ground water recharge is maintained or enhanced. A water balance for the Site was prepared to assess the distribution of rainfall, runoff, and infiltration for pre-development and post-development conditions. Based on the Environment Canada Climatic Normals (1981 - 2010) for the Barrie WPCC weather station (Climate ID: 6110557), the average annual precipitation is considered as 933 mm/ yr. for water balance analysis. Based on the “Lake Simcoe Climate Data Reference Document to Support the Completion of Water Balance Assessment Version 1.0 (April 2017)” the actual evapotranspiration is considered as 571 mm/yr for Urban lawns Hydrologic Soil Group B (fine sandy loam).

The volume of surplus water that infiltrates into the soil was determined by applying an infiltration factor to the surplus volume based on topography, soil type and land cover as per Table 2 approach in the *Technical Information Requirements for Land Development Applications (1995)*. Based on Table 2 approach the infiltration factor is estimated as 0.8, considering the topography as flat topography (0.3), soil type as open sandy loam soils (0.4) and cover as cultivated (0.1). Also, Table 3 approach in the *Technical Information Requirements for Land Development Applications (1995)* reported the typical ground water recharge rates for fine to medium sands as 200 - 250 mm/yr. The infiltration factors for the post-development conditions was considered same as the pre-development conditions. Refer to **Appendix G** for details.

Based on above information, a conceptual model of ground water flow and water balance was developed. The Thornthwaite method approach was used to calculate the relative balance between rainfall, evaporation, and evapotranspiration in a shallow soil zone. A water balance was conducted for the post-development conditions for the entire Site, using the proposed land use statistics information and property development plan. The development plans are provided in **Appendix H**. The post-development water balance accounts for hard-surfaced areas created by building and pavements. The post-development conditions will result in a surplus of water available from run-off. The surplus of water available from roof runoff can be used for infiltration into the shallow ground water system.

The following assumptions were applied for the pre and post development water balance:

- No infiltration will occur beneath the hard surface areas including asphalt/concrete surfaced parking areas and walkways or driveways.
- It is assumed that there will be 10% of evaporation in hard-surface areas/impervious surface and remaining will contribute to run-off.
- Run-off from parking areas will be directed towards storm sewers, and is not included in the infiltration calculations.
- Infiltration rates in open areas of the property (landscaped areas) will occur at rates similar to those for pre- development conditions.
- There will be no infiltration beneath hard-surface areas including, building, pavements, and walkways.

5.2.2 Water Balance Analysis:

Based on the proposed site plan (*Drawing No. A.100, Dated: 2020-11-23*) provided by the Joseph N Campitelli Architect Inc, the Site currently consists of parcel of land that is occupied by a single storey industrial building with the footprint of approximately 1,376 sq.m (0.14 ha), with associated asphalt surfaced parking areas. The south and east portion of the Property consist of landscape areas. The south/southeast portion of the property with a total area of 8,228 sq.m (0.82 ha) is considered as Environmental Protection (EP) zone and regulated by LSRCA. For the water balance, the total area is considered as 24,508 sq.m (2.45 ha) excluding the EP zone as it will not be developed and remain as regulated area by LSRCA. Refer to **Appendix H** for pre and post development site statistics details.

Based on the Climate data, annual precipitation of 933 mm/annum is considered and an actual evapotranspiration of 571 mm/annum. There is a water surplus of 362 mm/annum occurring at the Site

that can either infiltrate into the subsurface or go as a run off. The rate of infiltration was based on topography, soil type and land cover as per as per Table 2 approach in the *Technical Information Requirements for Land Development Applications (1995)*.

The water balance for pre-development conditions for the entire Site is summarized in the Table below:

Summary of Site Statistics (Pre-development)

Land Use	Area (ha)	Area (m ²)
Building Footprint/Envelope	0.14	1,376
Hardscape/Impervious	0.70	7,043
Softscape/Pervious	1.61	16,089
Total	2.45	24,508

Pre- Development Water Balance (Entire Site)

	Area (m ²)	Precipitation (m ³)	Evapotranspiration (m ³)	Evaporation (m ³)	Infiltration (m ³)	Run-Off (m ³)
Proposed Development	24,508	22,866	9,187	785	4,659	8,234

Development of an area affects the natural water balance of the Site. The most significant difference is the addition of impervious surfaces as type of surface cover. Impervious surfaces prevent the infiltration of water into the soils. Net effect of the construction of impervious surfaces is that most of precipitation that falls onto the impervious surfaces becomes surplus water and direct runoff. The natural permeability of the ground surface changes by reducing the current undeveloped land/ open space and vegetation at the Site and replacing part of these areas with less permeable/ impervious surfaces such as building roofs, roads, and driveways. The development will result in an increased volume of runoff and reduction in infiltration. Pre-development conditions results in approximately 4,659 m³ of water available for infiltration to the ground water system as mentioned in the above table.

Based on the post-development plan, a summary of proposed land use is provided in the table below:

Summary of Site Statistics (Post-development)

Land Use	Area (ha)	Area (m ²)
Building Footprint/Envelope	0.63	6,280
Hardscape/Impervious	1.27	12,659
Softscape/Pervious	0.56	5,569
Total	2.45	24,508

The water balance calculations for the post-development case are provided as **Appendix G**. The results of the analysis are summarized in the Table below:

Post- Development Water Balance (Entire Site)

	Area (m ²)	Precipitation (m ³)	Evapotranspiration (m ³)	Evaporation (m ³)	Infiltration (m ³)	Run-Off (m ³)
Proposed Development	24,508	22,866	3,180	1,767	1,613	16,306

In the post-development, the water balance calculations show that development has potential to reduce the natural infiltration by 3,047 m³/a, and to increase the runoff by 8,072 m³/a. If roof top runoff water is re-infiltrated through storm water management features, a total of 4,746 m³/a of water could be available for infiltration under post-development conditions (assuming 90% available of the run-off captured). The volume of roof run-off available is compared to the difference in infiltration between pre-development and post-development, as noted in the Table below:

Roof runoff Infiltration Deficit and Volume of Available Roof Run-off (Entire Site)

	Potential Post-Development Infiltration Deficit (m ³)	Volume of Roof Run-off Available (m ³)
Proposed Development Property	3,047	4,746

As noted, the volume of roof runoff exceeds the infiltration deficit. Approximately 64% of the effective roof runoff captured will be required to compensate the post-development infiltration deficit. This indicates that, with proper storm water management and mitigation measures, the overall infiltration rates at the property can be maintained. The Site is located partially within a Significant Ground Water Recharge Area (SGRA). Mitigation measures such as conventional low impact development (LID) storm water management measures should be applied to maintain and enhance natural infiltration.

5.3 Surface Water Impact

The MNRF mapping tool and County of Simcoe mapping indicates presence of provincially significant wetland (PSW) i.e. portion of Lovers Creek Swamp (IN4) located approximately 160 m southeast of the Property. Most of the wetland areas outlined are regulated by LSRCA. The PSW provides significant ecological functions and hydrological function and fed by the ground water discharge. (LSRCA 2012). Under proposed development, the quality of water directed to pervious areas for infiltration is not expected to contain any contaminant of concerns. The run off from the Site will not be significantly affected by the proposed development resulting in maintenance of functions of wetland that are supported by ground water discharge or surface runoff.

5.4 Ground Water Quality Impact

The impact of the proposed development on ground water quality was assessed as part of hydrogeological assessment. The results of the ground water quality analysis at the Site do not indicate any exceedance as per the Provincial Water Quality Objectives Standards (PWQO). The background ground water quality exceeds the Ontario Drinking Water Quality Standards for hardness, temperature, total dissolved solids,

turbidity and dissolved sodium. However, the proposed development will not be contributing any contaminants that may affect the background ground water quality in the area.

The Site is partially located in the Highly Vulnerable Aquifer (HVA). Phase Two Environmental Assessment conducted by Terraprobe reported no significant contaminating activities associated with the proposed development, therefore the Highly Vulnerable Aquifer (HVA) is not considered to be at risk. Best management practices for the use of salt for winter driveways maintenance should be adopted that will reduce the potential to affect underlying ground water resources. The Site is not located in Well Head Protection (WHPA, WHPA - Q1, WHPA - Q12) to protect water quality and quantity at municipal water supplies. It was assessed there are no potential water quality threats to ground water flow system as well as to any sensitive ground water dependent features such as wetlands and water courses.

6.0 MITIGATING MEASURES TO MAINTAIN HYDROGEOLOGIC FUNCTIONS

6.1.1 Maintenance of Ground Water Infiltration

The existing ground water recharge rates at the Site are approximated as greater than 250 mm/annum. These recharge rates are based on the property specific conditions. This recharge occurs in a broad diffuse manner over the entire Site. Mitigation measures are available to maintain recharge rates, base flow and surface flow to creek following development.

Appropriate low-impact development techniques (LID) which can be applied include:

- Maintenance of the volume and nature of surface drainage to the tributary of Lovers Creek.
- Maintenance of overall ground water recharge across the Site area.

In order to maintain ground water recharge for the Site, the following mitigation measures are provided:

- The entire run-off from the roof of the proposed development will be directed to a bio-infiltration trench to promote infiltration through slow discharge to the Lovers creek tributary. The results of the water balance indicate that approximately 64% of the roof runoff from the building must be re-directed towards the enhanced infiltration feature in order to match the pre-development infiltration rates.
- Appropriate storm water control measures would be required to prevent erosion due to increased run off, for slow and delayed release to promote infiltration and prevent flooding. The implementation of these measures at the Site will assist in maintaining the shallow ground water recharge and replicate the existing surface drainage to tributary of Lovers Creek.

6.1.2 Maintenance of Ground Water Transmission Pathways

The Site predominantly consisted of native sandy soils, which are of moderate to high permeabilities. The overall continuity of the ground water flow at the Site should be maintained, where practical. No significant excavation activities will be involved in the proposed development as the building will be supported on slab on grade. The associated activities will not interrupt the ground water flow system at

the Site. Hence there is no requirement for maintain ground water transmission pathways as result of proposed development. However, in general the continuity of any sand or more permeable zones should be maintained by backfilling with the native sandy (or more permeable) material as it is excavated, if required. However, it was assessed there are no potential water quality threats to ground water flow system as well as to any sensitive ground water dependent features such as wetlands and water courses.



7.0 CONCLUSIONS AND RECOMMENDATIONS

Terraprobe Inc. (Terraprobe) was retained by Environmental 360 Solutions Ltd. to conduct a hydrogeological assessment in support of the proposed development for the Site located to the northeast corner of the intersection of Welham Road and Maple Drive E in Barrie, Ontario with a municipal address of 571 Welham Road, Barrie, Ontario. In summary results of the hydrogeological investigation indicate following:

- i. The Site is located within the physiographic region known as the Peterborough Drumlin Field. The surficial geology at the Site consists of coarse textured glaciolacustrine deposits and bedrock consists of Lindsay Formation found at depth of approximately 168 m below the existing grade.
- ii. The nearest water body is a tributary of Lovers Creek which is located adjacent of the Property to the south-southwest which flows towards east and eventually drains into Lovers Creek. The Lovers Creek is located approximately 800 m southeast of the Property. The ground water and surface water are expected to flow to the southeast towards Lovers Creek.
- iii. The principal drainage feature adjacent to the Site is tributary of Lovers Creek. Based on the topography, the Site provides significant surface runoff to the adjacent tributary. There is a possibility of base flow contribution to the tributary due to the presence of moderate to high permeability soils at the Site.
- iv. The MNRF mapping tool and County of Simcoe mapping indicates presence of provincially significant wetland (PSW) i.e. portion of Lovers Creek Swamp (IN4) located approximately 160 m southeast of the Property. Most of the wetland areas outlined are regulated by LSRCA. Considering the nature of the proposed development it will not pose any significant threat to wetlands or water courses.
- v. MECP Water Well Records (WWRs) review indicates the most of the wells are used as test holes/observation and all are completed in the overburden. Five (5) active water supply wells are located within 500 m radius of the Property completed in the overburden and use for domestic and irrigation purposes. The proposed development will likely be serviced with municipal water. There is no record of any well completed in the bedrock. It is unlikely that impacts from the proposed development will affect the water resources within the vicinity of the Site
- vi. A total of fifteen (15) boreholes were drilled to depths varying from 2.0 m to 13.7 m below existing grades. Monitoring wells were installed in eight (8) selected boreholes (BH2, BH3, BH4, BH6, BH7, BH13, BH14, and BH15) for ground water monitoring and to confirm the ground water quality. All the boreholes with exception of BH2 encountered a topsoil and surficial materials at the ground surface that was underlain by a layer of earth fill materials in all boreholes, with exception of BH2, BH3 and BH6. The fill was underlain by native soil deposit extending to the full depth of investigation in all boreholes, with exception of BH10 and BH11 which were terminated in the fill material. The native soils deposit in generally consisted of cohesionless sands and silts.

- vii. Six (6) month groundwater monitoring was conducted on the Site from April 2020 to September 2020. Based on the available water level recordings it is noted that ground water level varies from $268.2 \pm \text{masl}$ to $262.5 \pm \text{masl}$ (5.7 mbgs to 10.4 mbgs) indicating the inferred ground water flow direction as southeast towards Lovers Creek tributary.
- viii. Based on the in-situ hydraulic testing and grain size distribution, the hydraulic conductivity of the native cohesionless sand and silts deposits ranges from order of 10^{-5} to 10^{-7} m/s. The moderate to high permeability of the subsurface soils at the Site indicates possible contribution to the infiltration, recharge and the base flow. The recharge rate for this type of soil is estimated greater than 250 mm/year.
- ix. The results of the ground water quality analysis at the Site do not indicate any exceedance as per the Provincial Water Quality Objectives Standards (PWQO). The background ground water quality exceeds the Ontario Drinking Water Quality Standards for hardness, temperature, total dissolved solids, turbidity and dissolved sodium. However, the proposed development will not be contributing any contaminants that may affect the background ground water quality in the area.
- x. The Site is not located in Well Head Protection area (WHPA, WHPA - Q1, WHPA - Q12) to protect water quality and quantity at municipal water supplies.
- xi. The Site is partially located in the Highly Vulnerable Aquifer (HVA). There are no significant contaminating activities associated with the proposed development, therefore the Highly Vulnerable Aquifer (HVA) is not considered to be at risk. Best management practices for the use of salt for winter driveways maintenance should be adopted that will reduce the potential to affect underlying ground water resources.
- xii. The Site is located within Intake Protection Zone 3 (IPZ-3) with the score of 5.6, for water supplies that draw water from Lake Simcoe. The proposed land development is not considered as a land use of concern in Intake Protection Zone 3 and do not pose any risk to water supplies.
- xiii. The water balance calculations show that development has potential to reduce the natural infiltration by $3,047 \text{ m}^3/\text{a}$, and to increase the runoff by $8,072 \text{ m}^3/\text{a}$. If roof top runoff water is re-infiltrated through storm water management features, a total of $4,746 \text{ m}^3/\text{a}$ of water could be available for infiltration under post-development conditions (assuming 90% available of the runoff captured). Approximately 64% of the effective roof runoff captured will be required to compensate the post-development infiltration deficit. This indicates that, with proper storm water management and mitigation measures, the overall infiltration rates at the property can be maintained.
- xiv. The Site is located partially within a Significant Ground Water Recharge Area (SGRA). Mitigation measures such as conventional low impact development (LID) storm water management measures should be applied to maintain and enhance natural infiltration. Final

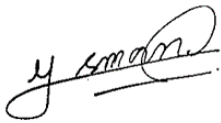
design of the LID measures should be reviewed in conjunction with the storm water management plan for the Site.

- xv. The development of the Site will result in an overall reduction of ground water recharge and a significant increase in surface water runoff unless appropriate mitigation measures are provided at the design stage. The following mitigation measures can be implemented for the Site:
- The entire run-off from the roof of the proposed development may be directed to a bio-infiltration trench to promote infiltration through slow discharge to the Lovers creek tributary.
 - Appropriate storm water control measures would be required to prevent erosion due to increased run off, for slow and delayed release to promote infiltration and prevent flooding. The implementation of these measures at the Site will assist in maintaining the shallow ground water recharge and replicate the existing surface drainage to tributary of Lovers Creek.

8.0 CLOSURE

We trust that the above-noted information is suitable for your review. If you have any questions regarding this information, please do not hesitate to contact the undersigned.

Yours truly,
Terraprobe Inc.



Usman Arshad, M.Eng., EIT
Project Manager



Muhammad I. Shahid, P.Geo., QP_{ESA}
Senior Project Manager



REFERENCES

1. Chapman, L.J. and D.F. Putnam, 1984. The Physiography of Southern Ontario. Ontario.
2. Conservation Authority Guidelines for Hydrogeological Assessments for Development Applications. June 2013
3. City of Barrie Official Plan Schedules, April, 2010
4. Freeze, A. and Cherry, J., 1979. Groundwater, Prentice-Hall Inc., New Jersey.
5. Geological Survey. Ontario Geological Survey (OGS), 2003. Surficial Geology of Southern Ontario.
6. Geological Survey. Ontario Geological Survey (OGS), 2007. Bedrock Geology of Ontario.
7. Hydrogeological Study Terms of References City of Barrie, January 2019
8. Interactive Map-County of Simcoe (GIS) - Simcoe County Maps
9. Ministry of Natural Recourses and Forestry, 2019. Natural Heritage Interactive Map.
10. LSRCA (2012). Barrie Creeks, Lovers Creek, and Hewitt's Creek Subwatershed Plan, Lake Simcoe Conservation Authority. 2012
11. LSRCA (2017). Lake Simcoe Climate Data, Lovers Creek Subwatershed, Lake Simcoe Conservation Authority. 2017
12. LSRCA (2015). South Georgian Bay Lake Simcoe Source Protection Plan, Lake Simcoe Conservation Authority. 2015
13. MOEE (1995) Hydrogeological Technical Information Requirements for Land Development Applications, Ministry of Environment and Energy
14. Oak Ridges Moraine Groundwater Program (ORMGP) mapping
15. Terraprobe Inc, "Geotechnical Investigation Proposed Industrial Development 571 Welham Road, Barrie, Ontario, File No. 1-19-0792-01, Dated: May 29, 2020".
16. Terraprobe Inc, "Phase Two Environmental Site Assessment, 571 Welham Road, Barrie Ontario, File No. 1-19-0792-42, Dated: March 13,2020"



LIMITATIONS OF LIABILITY

This report was prepared at the request of, and for the exclusive use of Environmental 360 Solutions Ltd. and its affiliates (“the Intended User”) is intended to provide an assessment of the hydrogeological conditions of the Property located at 571 Welham Road, Barrie, Ontario (the Site). No one other than the Intended User has the right to use and rely on the work without first obtaining the written authorization of Terraprobe Inc. and Environmental 360 Solutions Ltd.

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The assessment should not be considered a comprehensive audit that eliminates all risks of encountering hydrogeological problems. The information presented in this report is based on information collected during the completion of the hydrogeological study by Terraprobe Inc. It was based on the conditions on the Site at the time of the hydrogeological study by a review of historical information and field investigation to assess the hydrogeological conditions of the Site, as reported herein.

There is no warranty expressed or implied by this report regarding the hydrogeological conditions for the Site. Professional judgement was exercised in gathering and analyzing information collected by reviewing previous reports, data provided by government and are open to public and field work investigation. The conclusions presented are the product of professional care and competence, and cannot be construed as an absolute guarantee.

In the event that during future work new information regarding the hydrogeological conditions of the Site is encountered, or in the event that the outstanding responses from the regulatory agencies indicate outstanding issues on file with respect to the Site, Terraprobe Inc. should be notified in order that we may re-evaluate the findings of this assessment and provide amendments, as required.

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Table 1: Hydrogeological Assessment Check List intended to Support Development Applications

Groundwater Assessment	Master Environmental Servicing Plan or Equivalent	Environmental Assessment (EA)	Site Plan Commercial, Institutional, or Industrial	Subdivision or Condominium Development		Single lot Residential	Dewatering
				Municipal Servicing	Private Servicing		
1. EXISTING CONDITIONS:							
Introduction and background	☐	☐	☒	☐	☐	☐	☐
Site location and description	☐	☐	☒	☐	☐	☐	☐
Description of: • Topography & Drainage • Physiography • Geology & Soils	☐	☐	☒	☐	☐	☐	☐
Test pits/Boreholes	☐	☐	☒	☐	☐	GNR	☐
Monitoring Wells	☐	☐	☒	☐	☐	GNR	☐
Private Well Survey	☐	☐	☐	☐	☐	GNR	☐
Hydrostratigraphy/Hydrogeology: • Aquifer properties • Groundwater Levels • Groundwater flow direction	☐	☐	☒	☐	☐	☐	☐
Description of surface water features and functions	☐	☐	☒	☐	☐	☐	☐
Water Taking Permit details	GNR	GNR	GNR ☒	GNR	GNR	GNR	☐
Water Quality	☐	☐	☒	☐	☐	GNR	☐
D-5-5 (Water Supply)	GNR	GNR	GNR	GNR	☐	GNR	GNR

Groundwater Assessment	Master Environmental Servicing Plan or Equivalent	Environmental Assessment (EA)	Site Plan Commercial, Institutional, or Industrial	Subdivision or Condominium Development		Single lot Residential	Dewatering
				Municipal Servicing	Private Servicing		
2. IMPACT ASSESSMENT:							
Groundwater Levels	☐	☐	☒	☐	☐	GNR	☐
Pumping Tests*	☐	☐	GNR	GNR	☐	GNR	☐
Groundwater Discharge (Baseflow)	☐	☐	☒	☐	☐	GNR	☐
Water Balance	☐	☐	☒	☐	☐	GNR	GNR
Groundwater Quality	☐	☐	☒	☐	☐	GNR	☐
D-5-4 (Onsite Sewage Systems)	GNR	GNR	GNR	GNR	☐	GNR	GNR
3. MITIGATION MEASURES:							
Maintenance of Infiltration/Recharge	☐	☐	☒	☐	☐	GNR	GNR
Maintenance Groundwater Quality	☐	☐	☒	☐	☐	GNR	☐
Monitoring Program	☐	☐	☒	☐	☐	GNR	☐
Contingency Plans**	GNR	GNR	GNR	☐	☐	GNR	☐

NOTES: This table outlines the type of planning application and associated requirements most commonly required by Conservation Authorities in the review of Hydrogeological Assessments. This table is not a complete list of all types of applications dealt with by each Conservation Authority nor is the checklist appropriate for every development situation. Individual Conservation Authorities should be consulted with for specific requirements.

☐ - Recommended

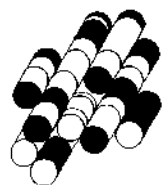
GNR – Generally Not Required

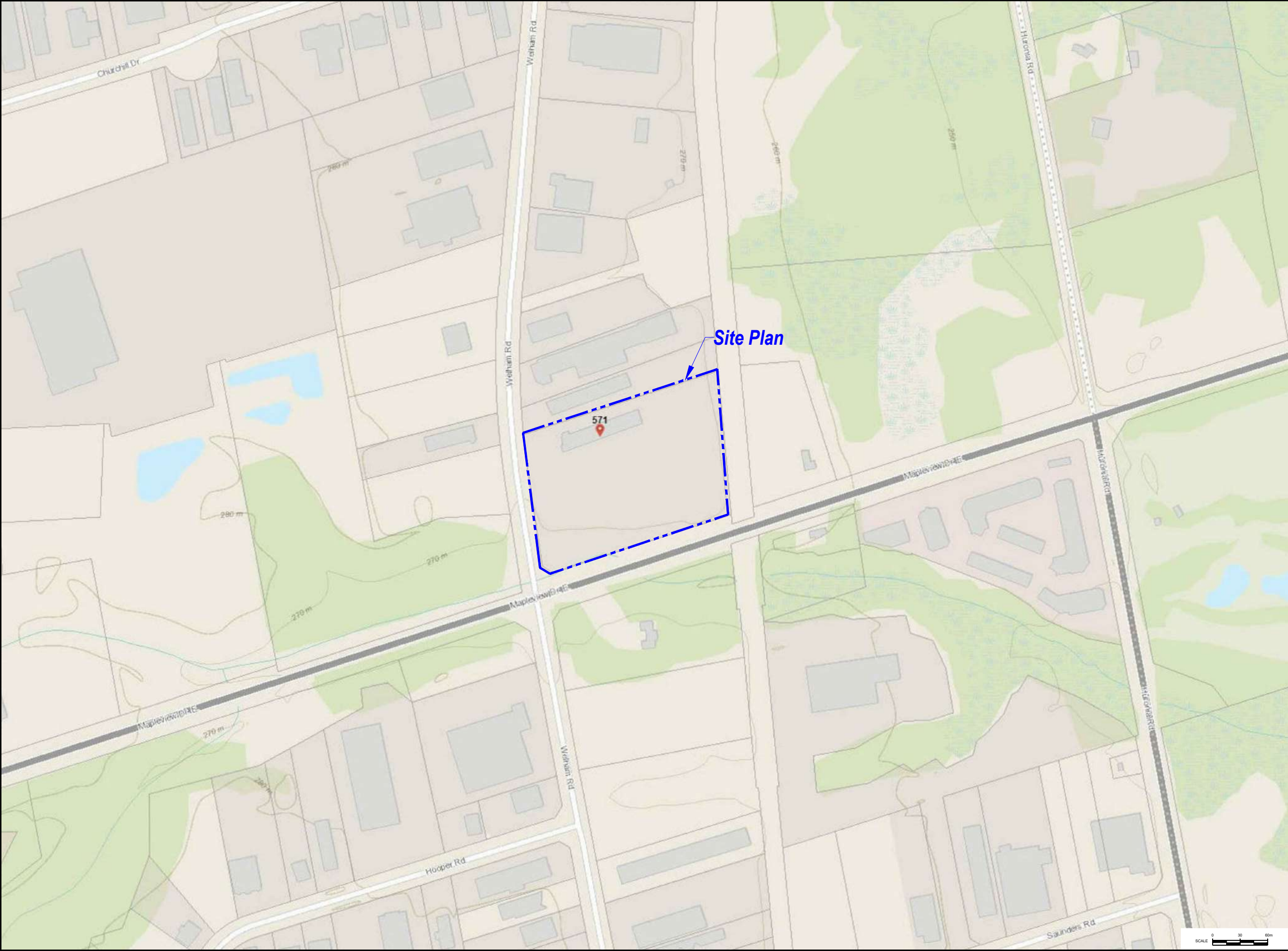
* Where development is municipally serviced, these tests will be necessary on a case by case basis (sensitive aquifer/ aquatic considerations).

**May be scoped, Contingency Plans will not be needed in most cases.

FIGURES

TERRAPROBE INC.







Terraprobe Inc.
Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650



Reference:
County of Simcoe
Interactive Maps

Notes:

Legend:

--- Site Location

Project Title:
Hydrogeological Assessment

Site Location:
571 Welham Road,
Barrie, Ontario

Figure Title:
SITE LOCATION PLAN

Designed By:
NM

Drawn By:
AA

Reviewed By:
MS

Date:
June 2020

File No.:
1-19-0792-46

Scale:
As Shown

Figure No.:
1



Reference:
JOSEPH N CAMPITELLI
Architect Inc.
10 Bur Oak Ave, Markham ON

Notes:

Legend:

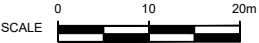
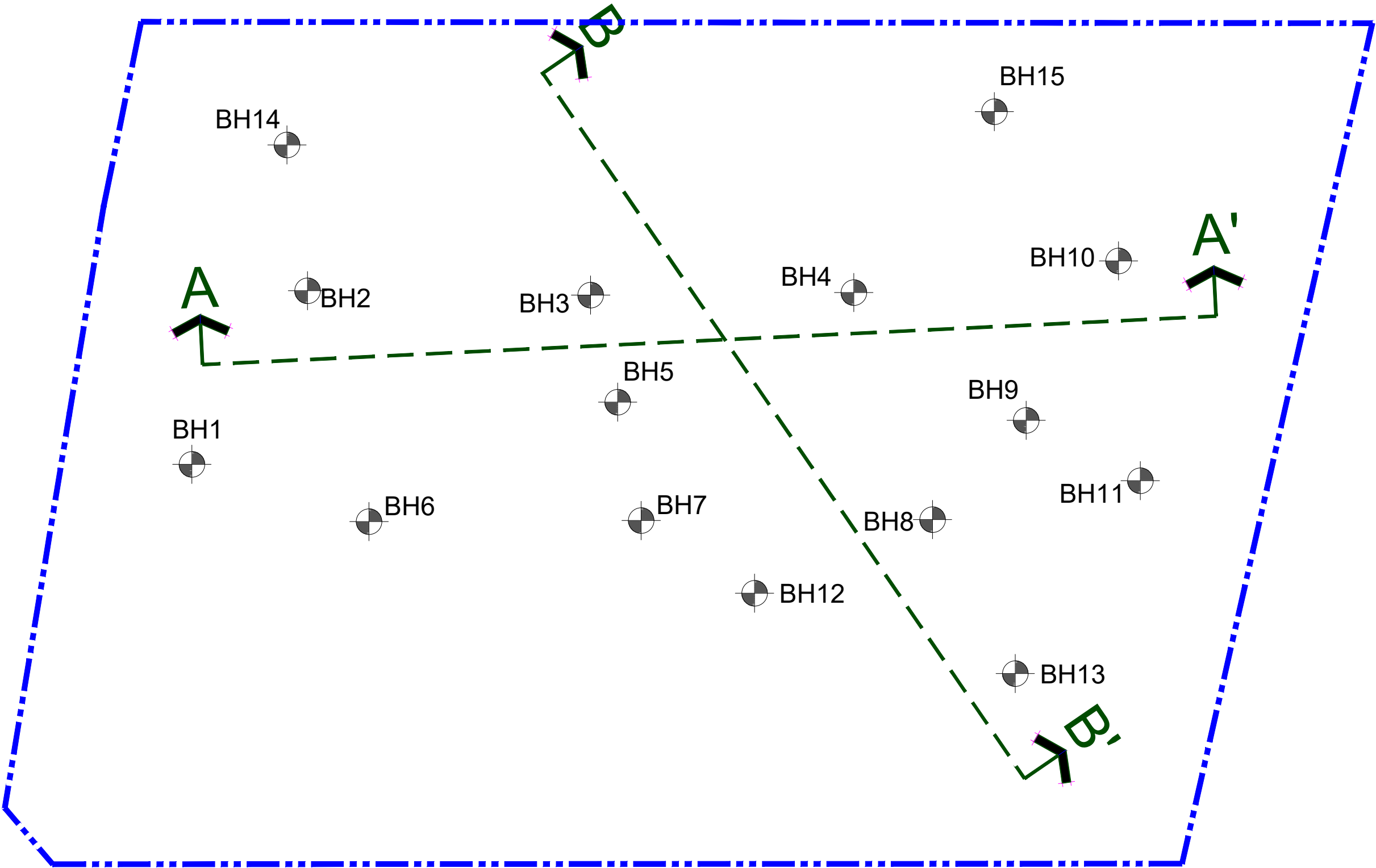
-  Site Location
-  Borehole/Monitoring Well Locations
Terraprobe 2020
-  Cross Section Location

Project Title:
Phase Two Environmental Site Assessment

Site Location:
571 Welham Road,
Barrie, Ontario

Figure Title:
BOREHOLE/MONITORING WELL AND
CROSS SECTION LOCATION PLAN

Designed By: NM	File No.: 1-19-0792-46
Drawn By: SSK	
Reviewed By: MS	Scale: As Shown
Date: June 2020	Figure No.: 2



Reference:

Notes:

Legend:



Topsoil



Fill



Sand



Monitoring Well Screen



Approximate Elevation of Ground Water Table (masl), May. 28, 2020

Project Title:

Phase Two Environmental Site Assessment

Site Location:

571 Welham Road,
Barrie, Ontario

Figure Title:

CROSS SECTION A-A'

Designed By:

NM

File No.:

1-19-0792-46

Drawn By:

SSK

Scale:

As Shown

Reviewed By:

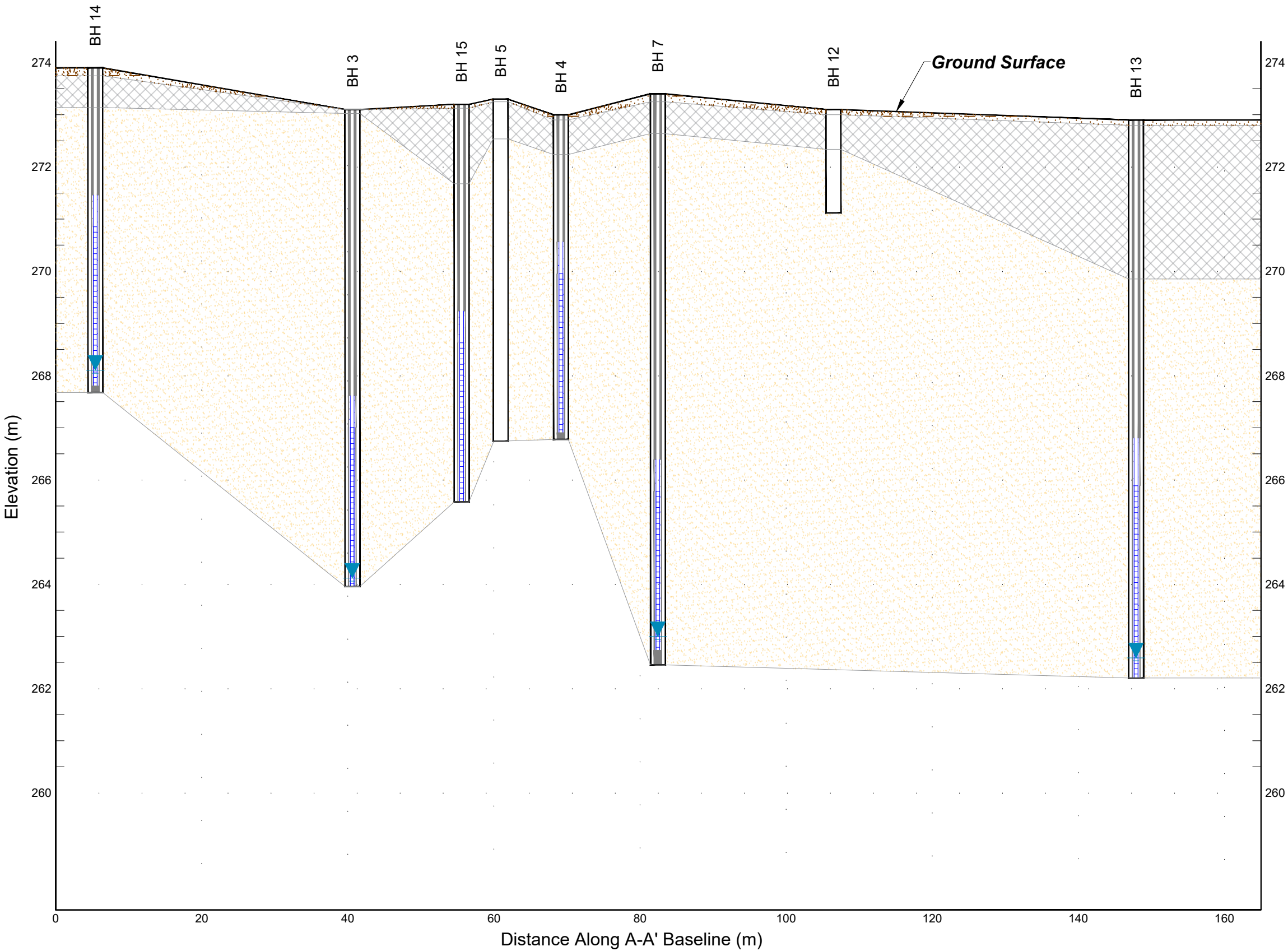
MS

Date:

June 2020

Figure No.:

3A



Reference:

Notes:

Legend:

- Topsoil
- Fill
- Sand
- Monitoring Well Screen
- Approximate Elevation of Ground Water Table (masl), May. 28, 2020

Project Title:

Phase Two Environmental Site Assessment

Site Location:

571 Welham Road,
Barrie, Ontario

Figure Title:

CROSS SECTION B-B'

Designed By:

NM

File No.:

1-19-0792-46

Drawn By:

SSK

Scale:

As Shown

Reviewed By:

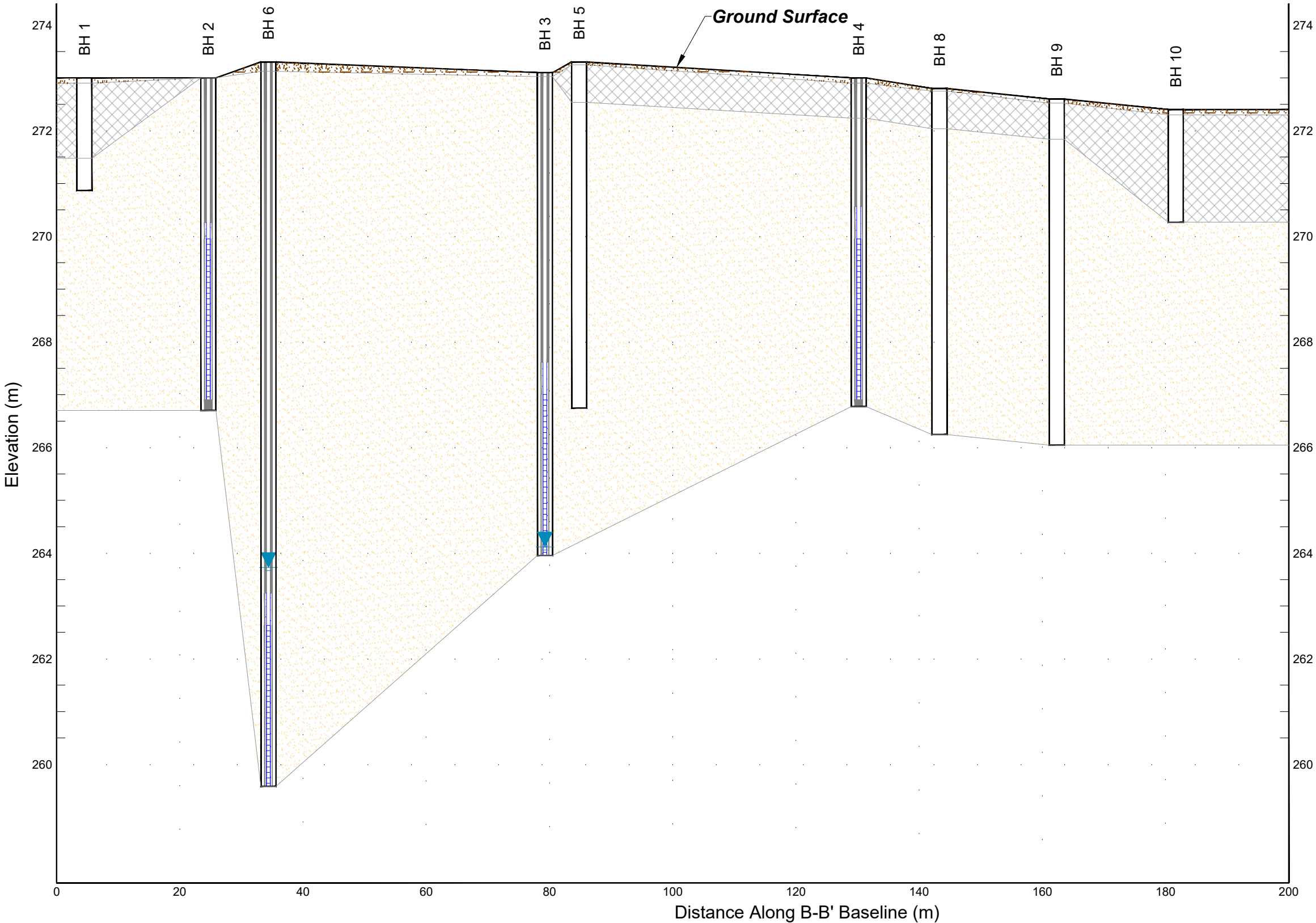
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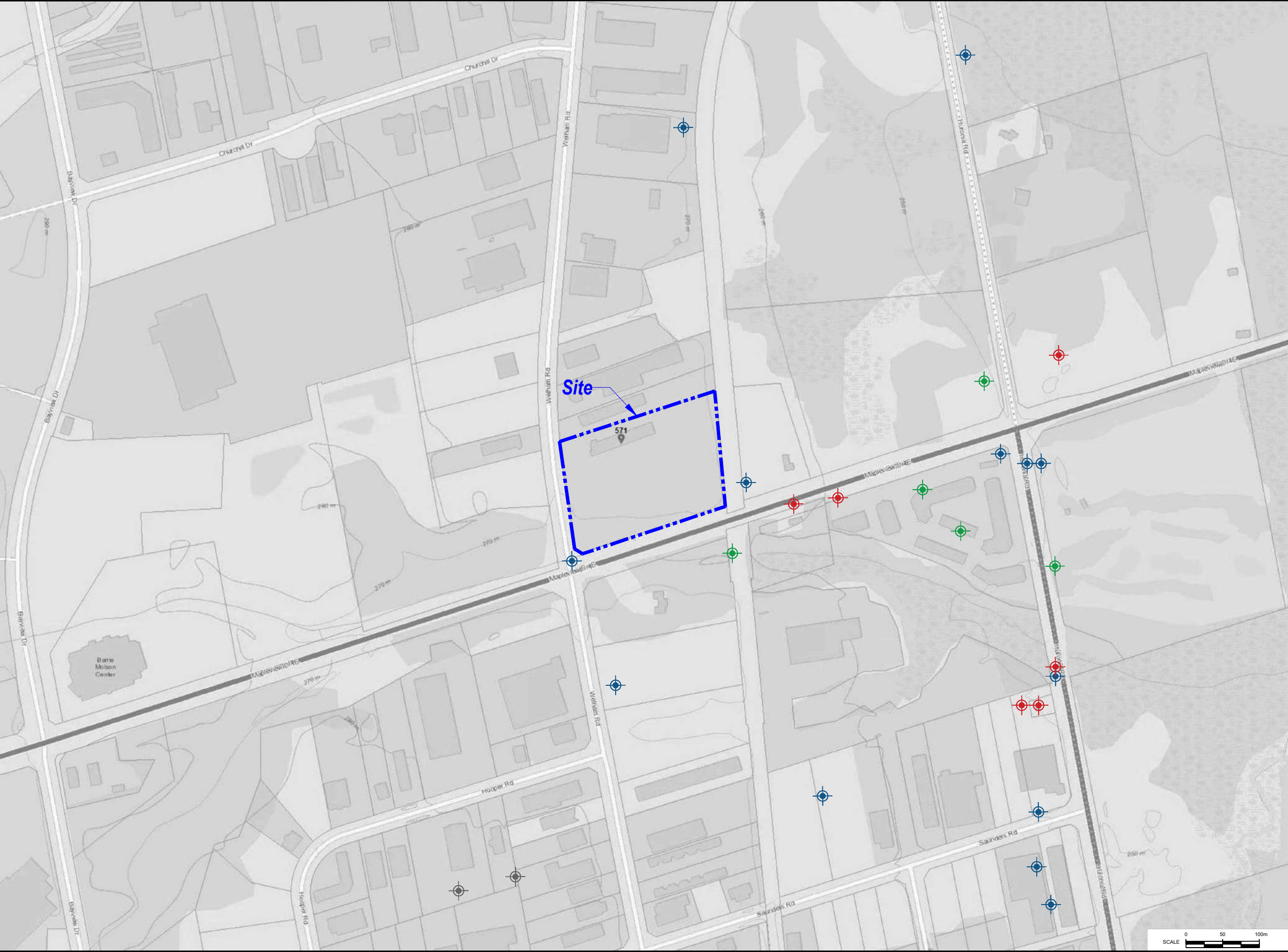
Date:

June 2020

Figure No.:

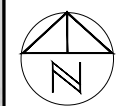
3B







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Consulting Geotechnical & Environmental Engineering
Construction Materials, Inspection & Testing
11 Indell Lane - Brampton Ontario L6T 3Y3 (905) 796-2650



Reference:
County of Simcoe
Interactive Maps

Notes:

Legend:

- Phase Two Property Boundary
- MECP Wells (Test Hole)
- MECP Wells (Observation Wells/ Test Hole)
- MECP Wells (Abandoned Wells)
- MECP Wells (Water Supply Wells)

Project Title:
Phase Two Environmental Site Assessment

Site Location:
571 Welham Road,
Barrie, Ontario

Figure Title:
MECP WELLS LOCATION PLAN

Designed By: NM	File No.: 1-19-0792-46
Drawn By: SSK	Scale: As Shown
Reviewed By: MS	Figure No.: 4
Date: June 2020	

SCALE

0

50

100m



Reference:
JOSEPH N CAMPITELLI
Architect Inc.
10 Bur Oak Ave, Markham ON

Notes:

Legend:

- 263.0

264.00

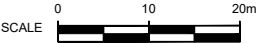
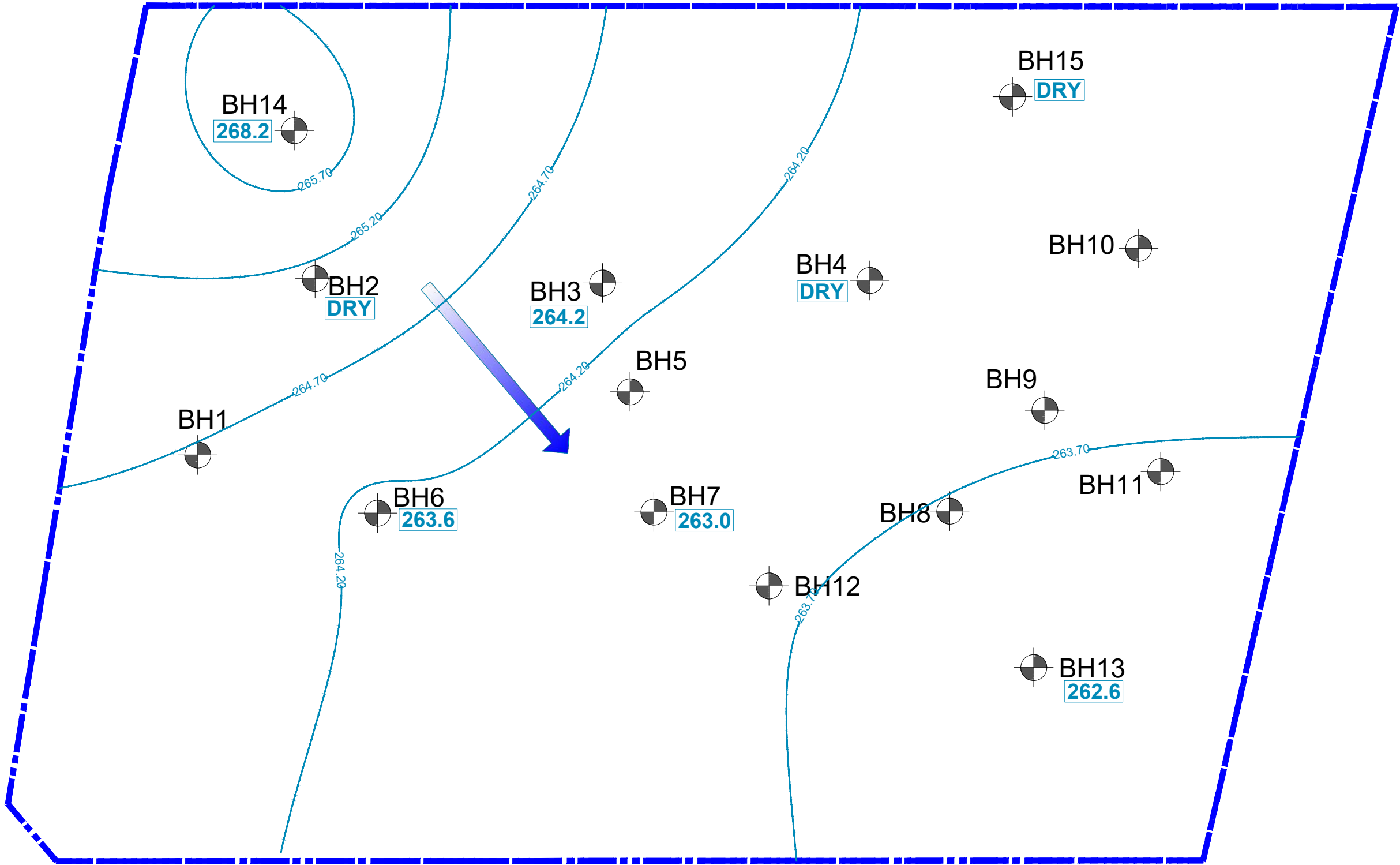
Site Location
Borehole/Monitoring Well Locations
Terraprobe 2020
Approximate Ground Water Elevations;
May 28, 2020
Approximate Ground Water Contours
Approximate Ground Water Flow Direction

Project Title:
Phase Two Environmental Site Assessment

Site Location:
571 Welham Road,
Barrie, Ontario

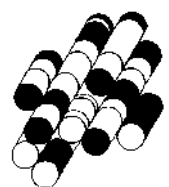
Figure Title:
GROUNDWATER CONTOUR PLAN

Designed By: NM	File No.: 1-19-0792-46
Drawn By: SSK	Scale: As Shown
Reviewed By: MS	Figure No.: 5
Date: June 2020	



APPENDIX A

TERRAPROBE INC.



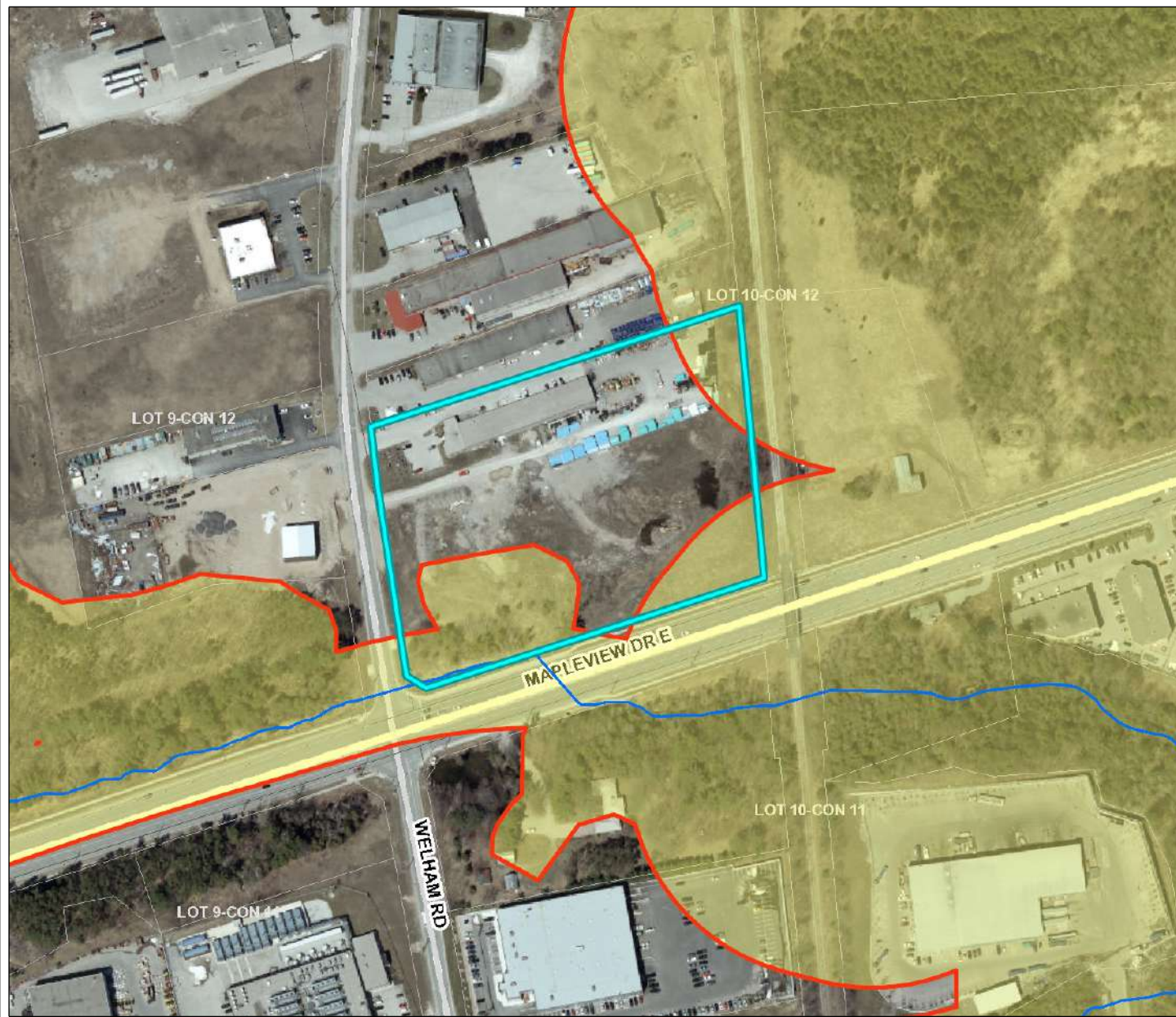


Lake Simcoe Region
conservation authority

LSRCA Regulated Areas 571 Welham Road, Barrie, Ontario

Features

- Regulation Map Index
- LSRCA Watershed Boundary
- Watercourse
- Regulated Area Boundary
- Regulated Area
- Address Labels
- Road Labels
- Assessment Parcel
- Lot and Concession
- Roads
 - Hwy 400 Series
 - Highway, Arterials
 - Local Road
- Railway



Printed On:
5/28/2020

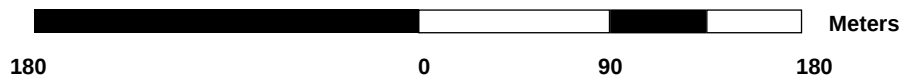


WGS_1984_Web_Mercator_
Auxiliary_Sphere

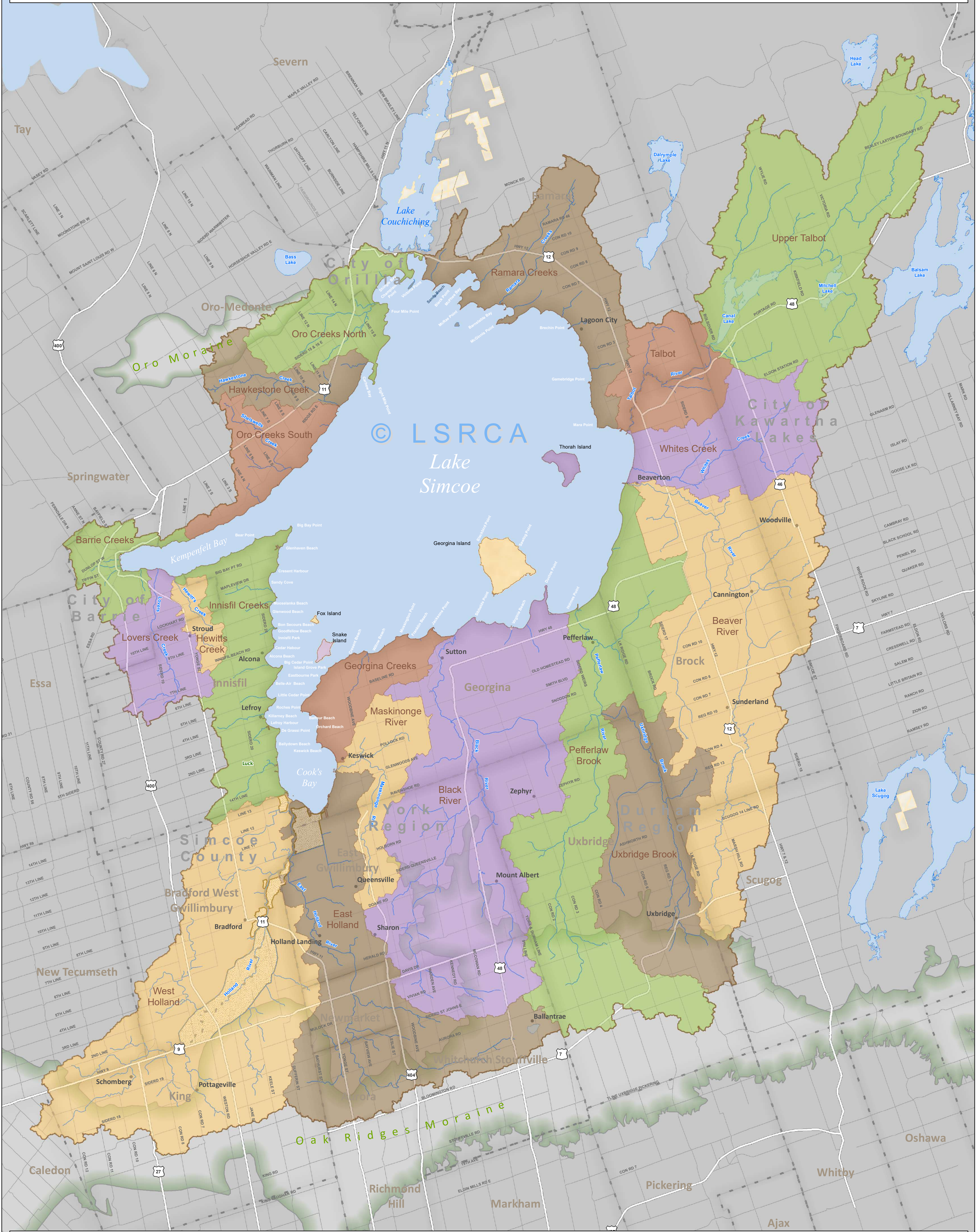
Mapped By: Terraprobe

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Scale 1: 3,539



Lake Simcoe Watershed



Legend

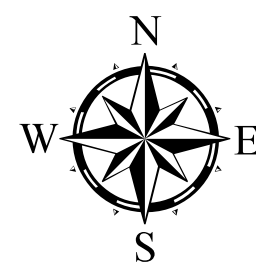
- Settlement
- Road
- Major Highway
- Watercourse
- Lower Tier Municipality
- Lake Simcoe Watershed
- Moraine
- Waterbody
- Holand Marsh
- First Nations



Lake Simcoe Region
conservation authority

0 2.5 5 10 15 20 Kilometres

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Location of the Barrie Creeks, Lovers Creek and Hewitt's Creek subwatershed

Figure 1-1

Legend

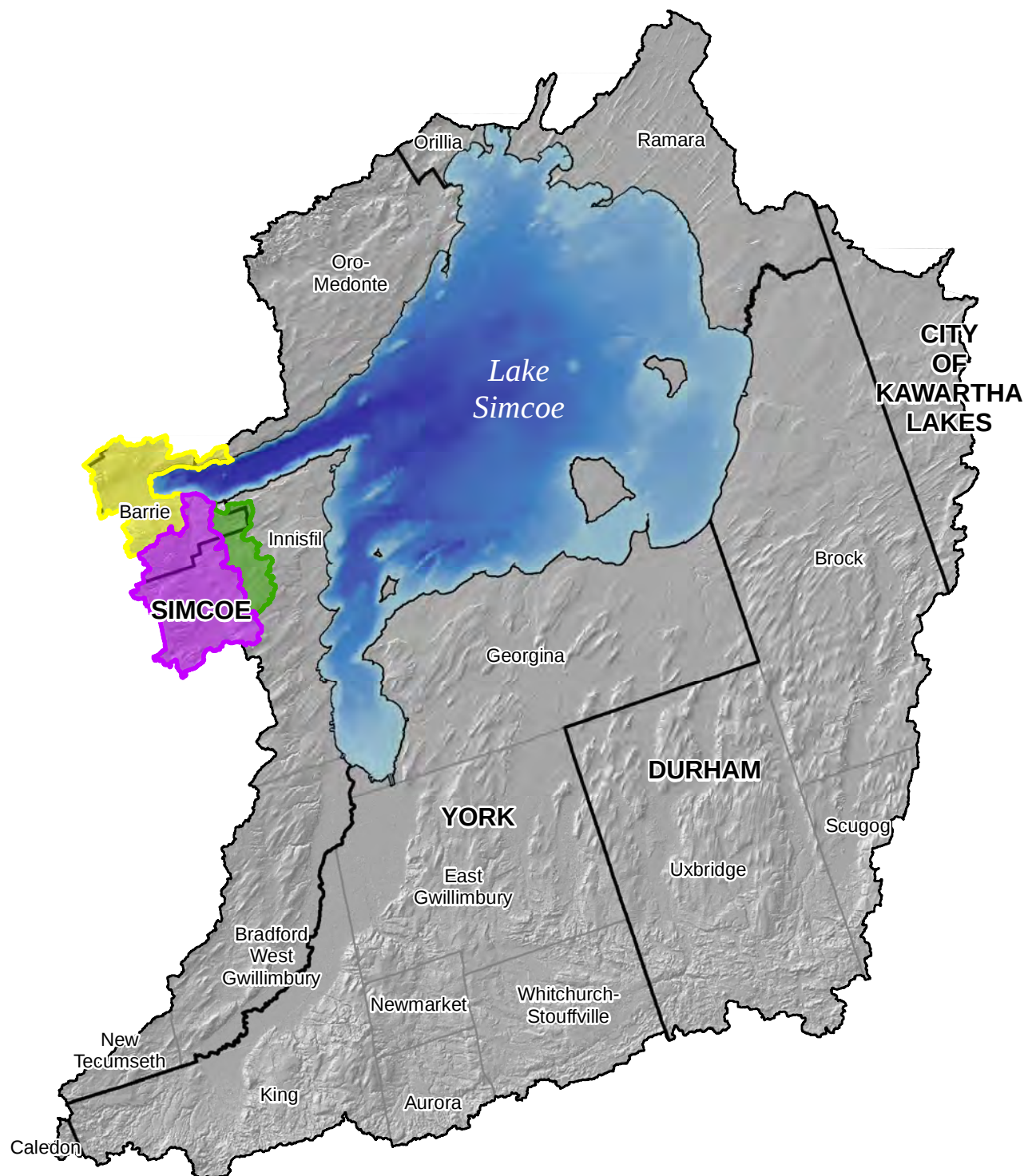
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-  Barrie Creeks Subwatershed
-  Hewitts Creek Subwatershed
-  Lovers Creek Subwatershed
-  Lower Tier Boundary
-  Upper Tier Boundary

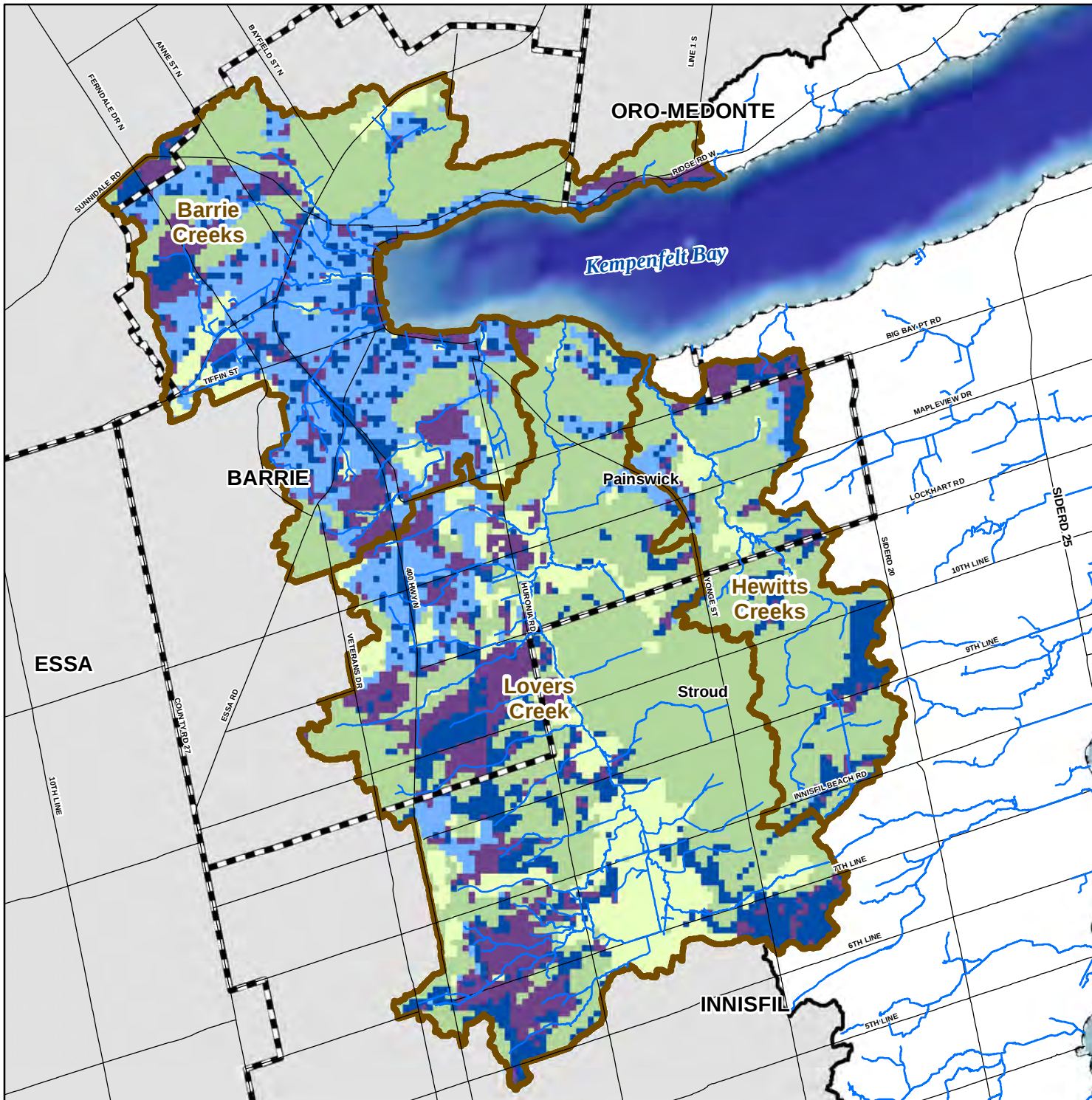


0 1 2 4 6 8 10
Kilometres



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Simulated average annual groundwater recharge (mm/yr) in the Barrie Creeks, Lovers Creek and Hewitt's Creek subwatersheds

Figure 4-12

Legend

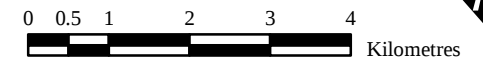
- Road
- ▬ Municipal Boundary
- ~ Watercourse
- Subwatershed

Recharge (mm/yr)

- 1 - 30
- 30 - 125
- 125 - 250
- 250 - 350
- 350 - 675



Lake Simcoe Region
conservation authority



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Significant Groundwater Recharge Areas in the Barrie Creeks, Lovers Creek and Hewitt's Creek subwatersheds

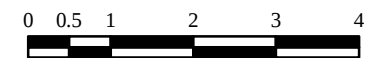
Figure 4-13

Legend

- Road
- Municipal Boundary
- ~ Watercourse
- Subwatershed
- Significant Groundwater Recharge Areas



Lake Simcoe Region
conservation authority



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Bedrock geology in the Barrie Creeks, Lovers Creek and Hewitt's Creek subwatersheds

Figure 2-16

Legend

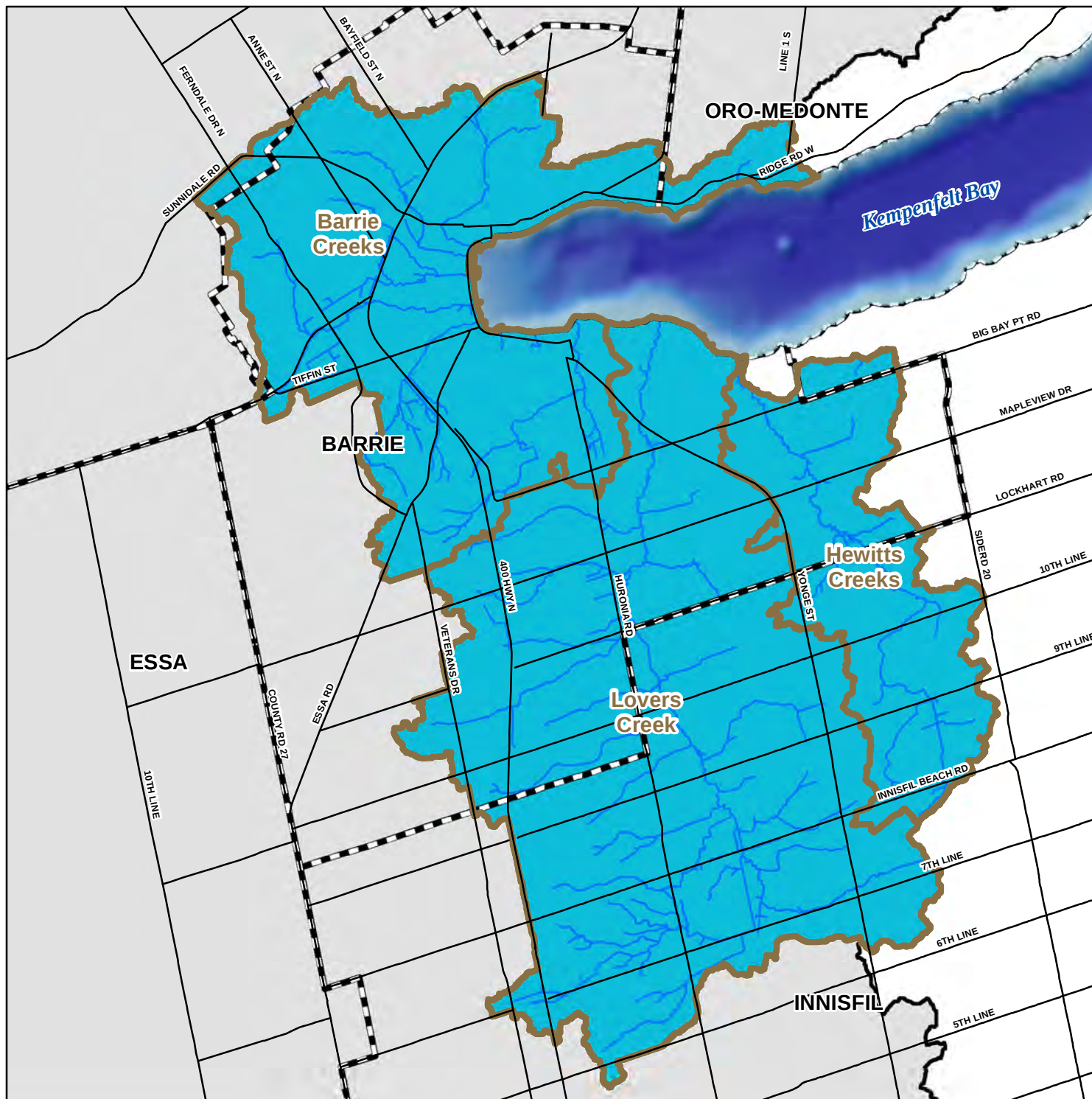
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- ▬ Municipal Boundary
- ~ Watercourse
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Simcoe Group;
Shadow Lake Fm.

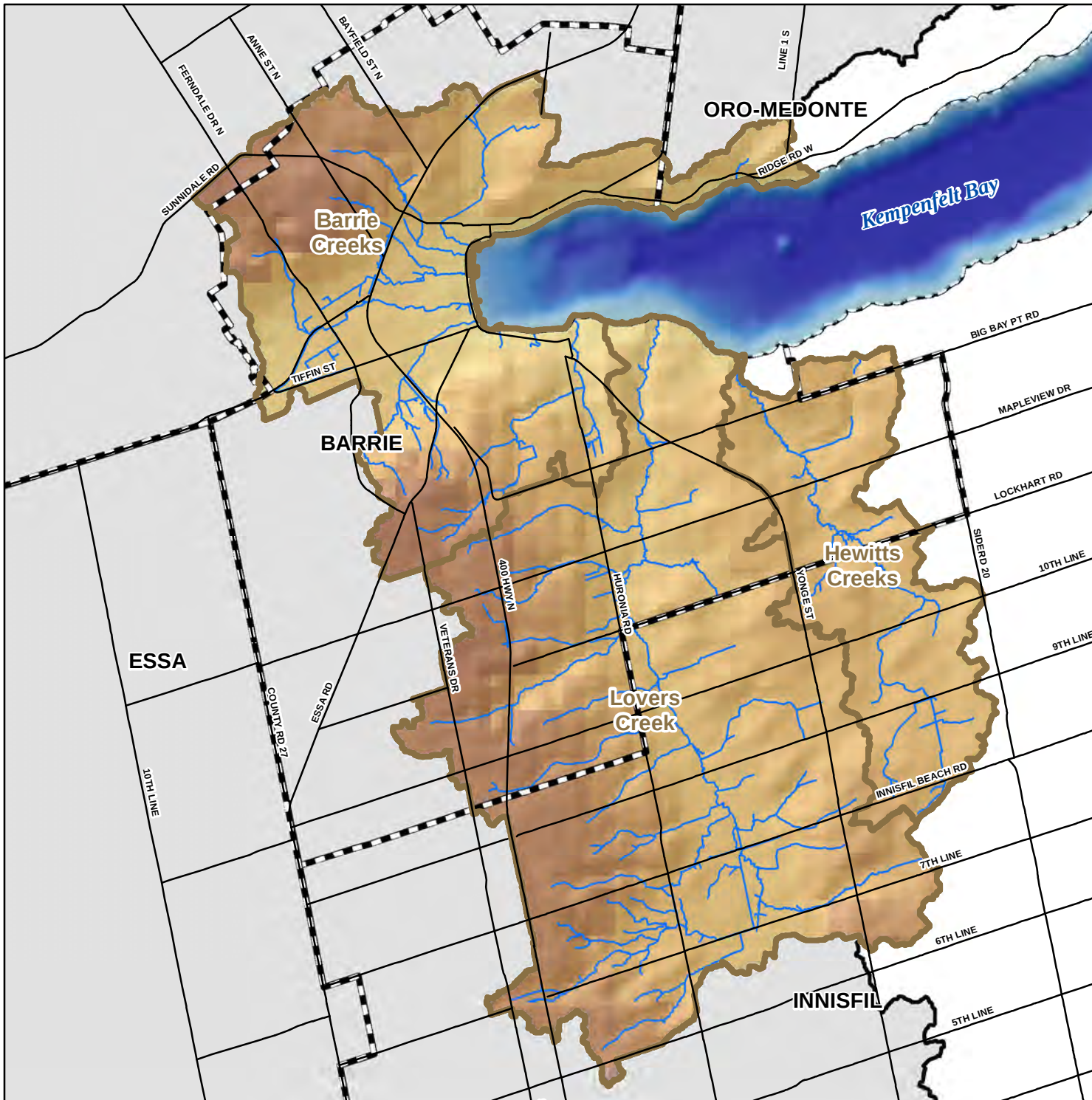


Lake Simcoe Region
conservation authority



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Overburden thickness in the Barrie Creeks, Lovers Creek and Hewitt's Creek subwatersheds

Figure 2-19

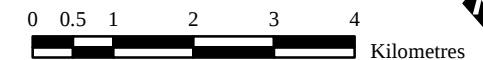
Legend

- Road
- - - Municipal Boundary
- ~ Watercourse

Overburden Thickness (m)			
	115		170
	120		175
50	125		180
60	130		185
70	135		190
80	140		195
85	145		200
90	150		210
95	155		220
100	160		230
105	165		240
110			



Lake Simcoe Region
conservation authority

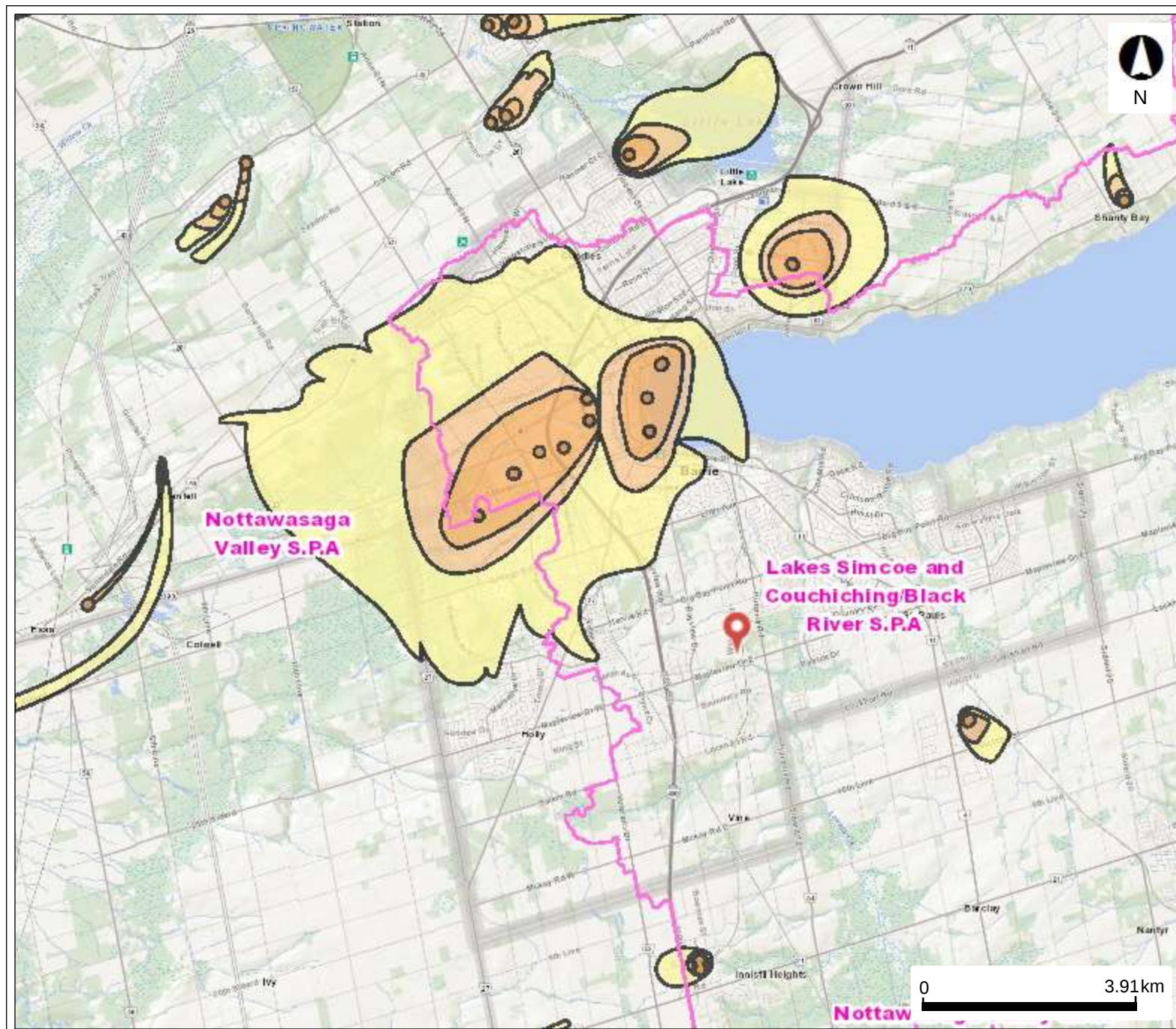


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LSRCA GIS Services DRAFT created July 2010.

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Well Head Protection Area (WHPA) Mapping (571 Welham Road, Barrie, ON)

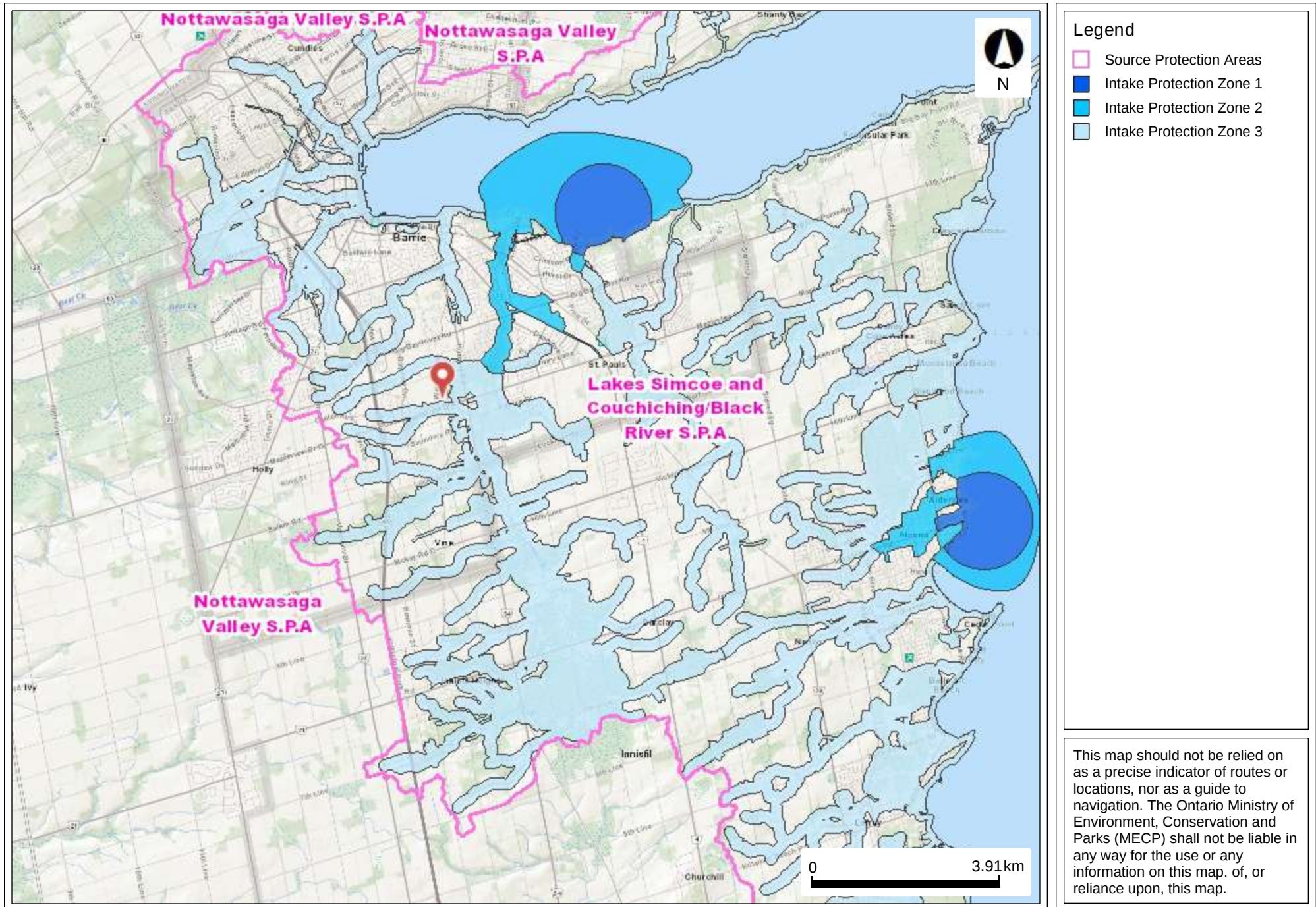


Legend

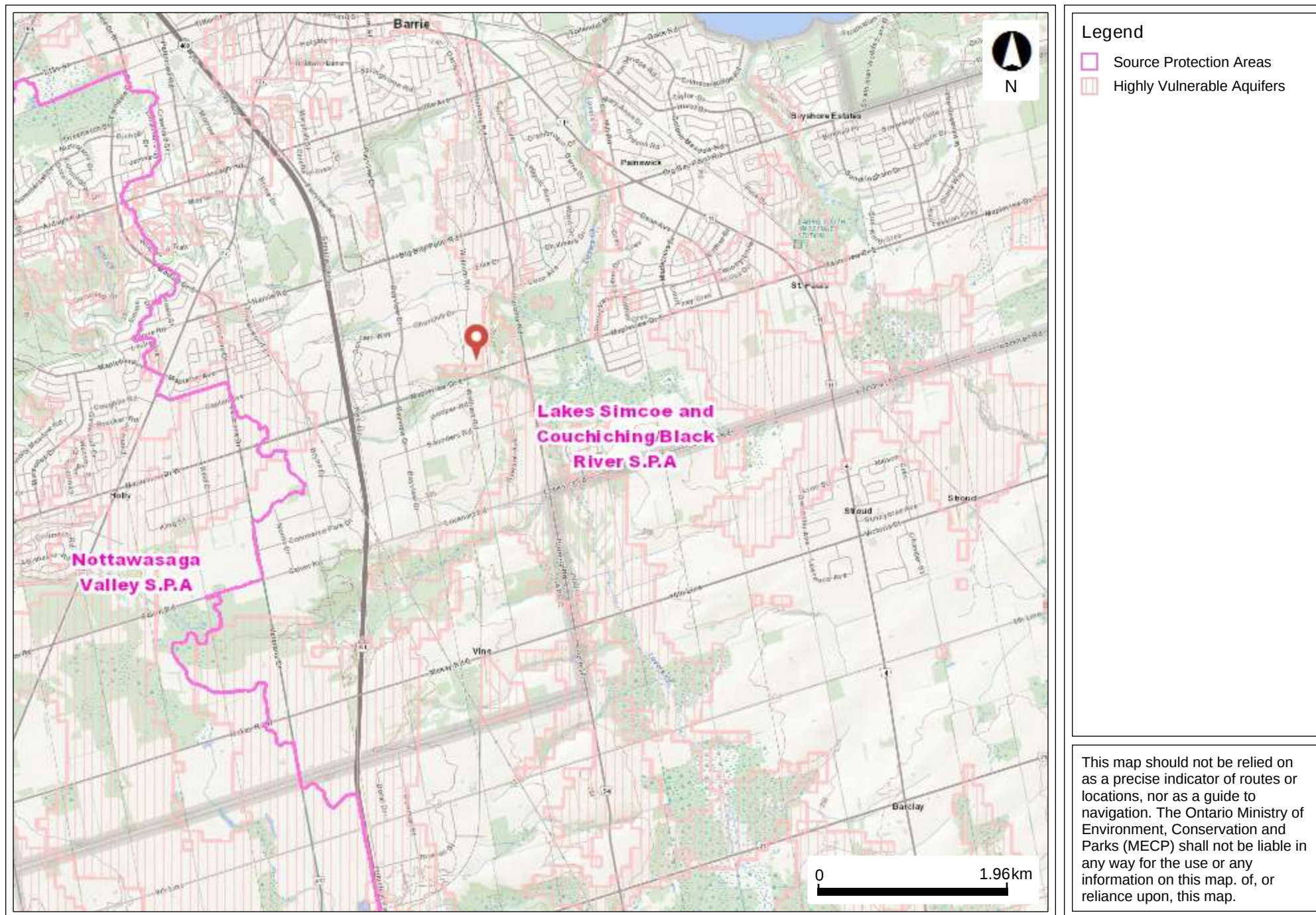
- Source Protection Areas
- Wellhead Protection Area
- A
- B
- C
- C1
- D
- F

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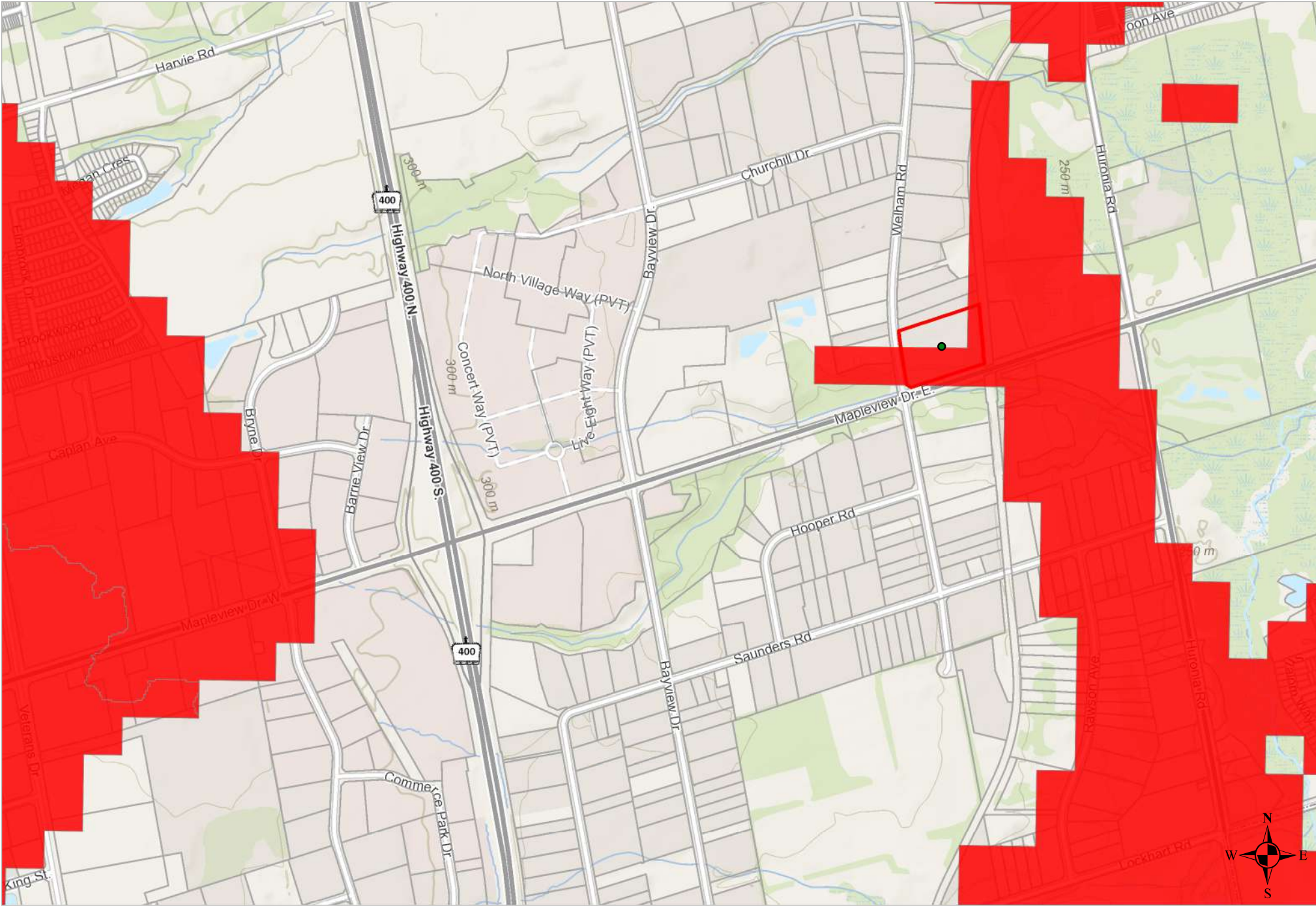
Intake Protection Zone Mapping (571 Welham Road, Barrie, ON)



High Vulnerable Aquifer (HVA) Mapping (571 Welham Road, Barrie, ON)



HVA Mapping - 571 Welham Road, Barrie, ON



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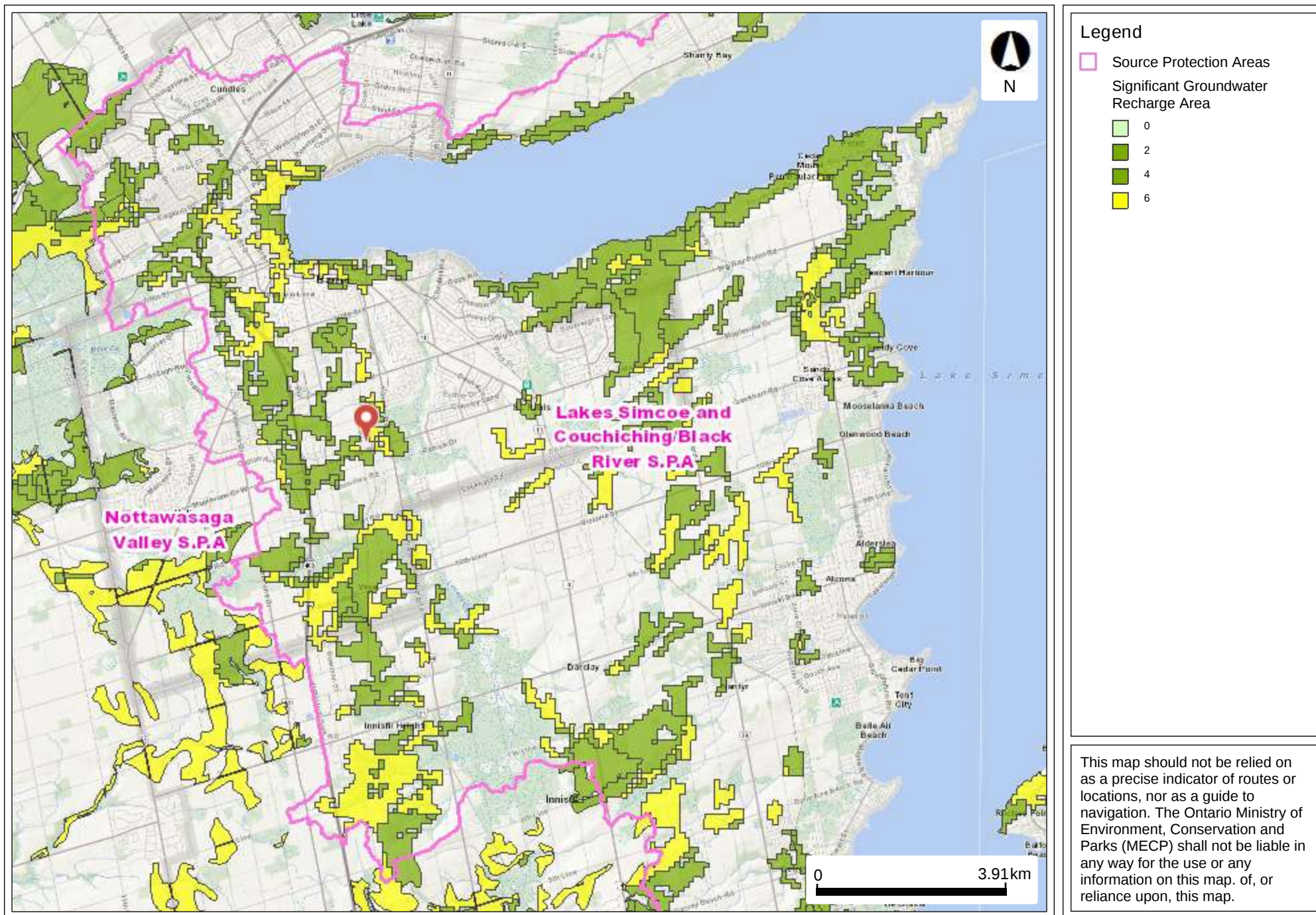
0 0.4 0.8 1.6 km

1:18,056

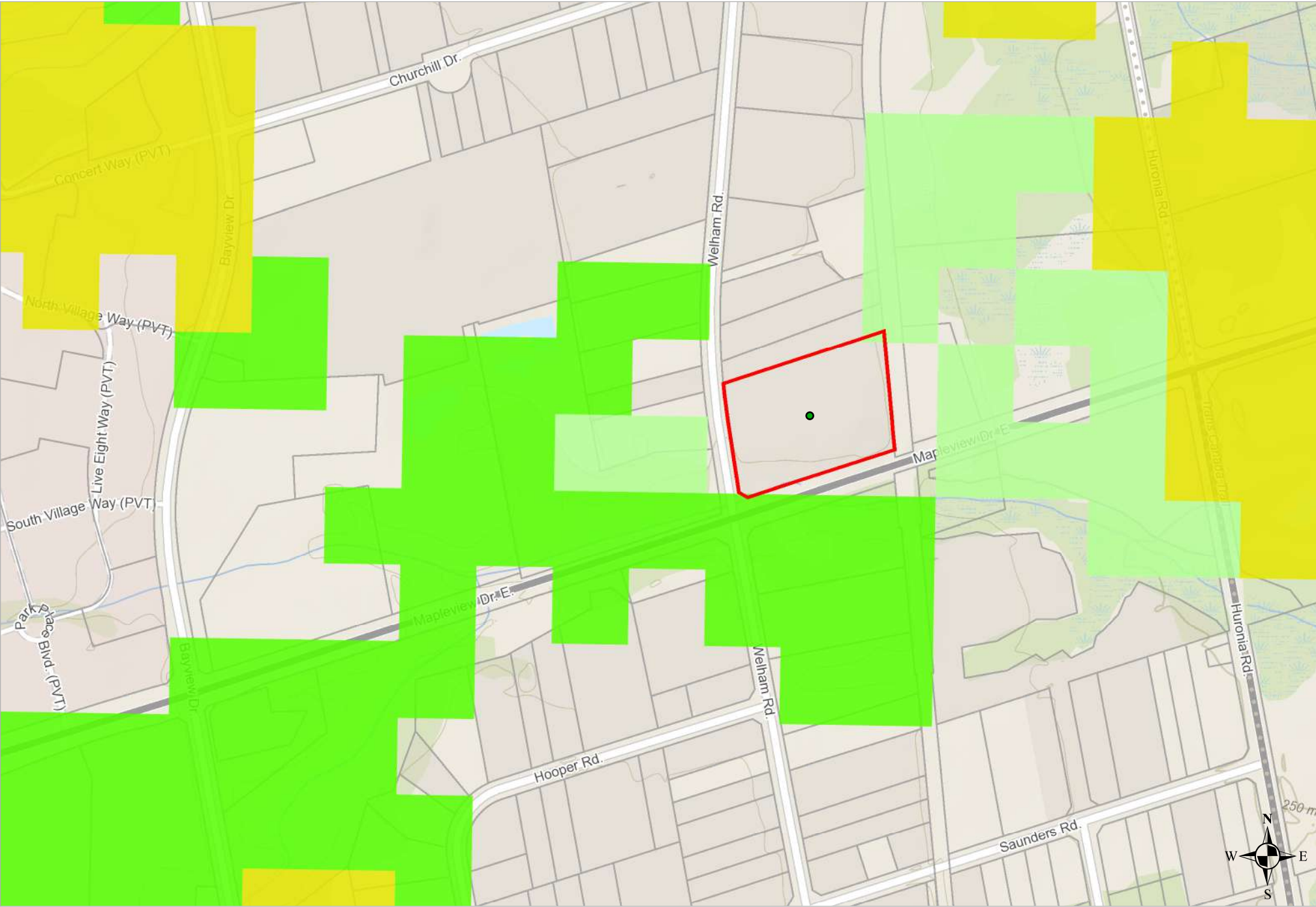


June 3, 2020

Significant Groundwater Recharge Area (SGRA) Mapping (571 Welham Road, Barrie, ON)



SGRA Mapping - 571 Welham Road, Barrie, ON



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0 0.2 0.4 0.8 km

1:9,028



June 3, 2020

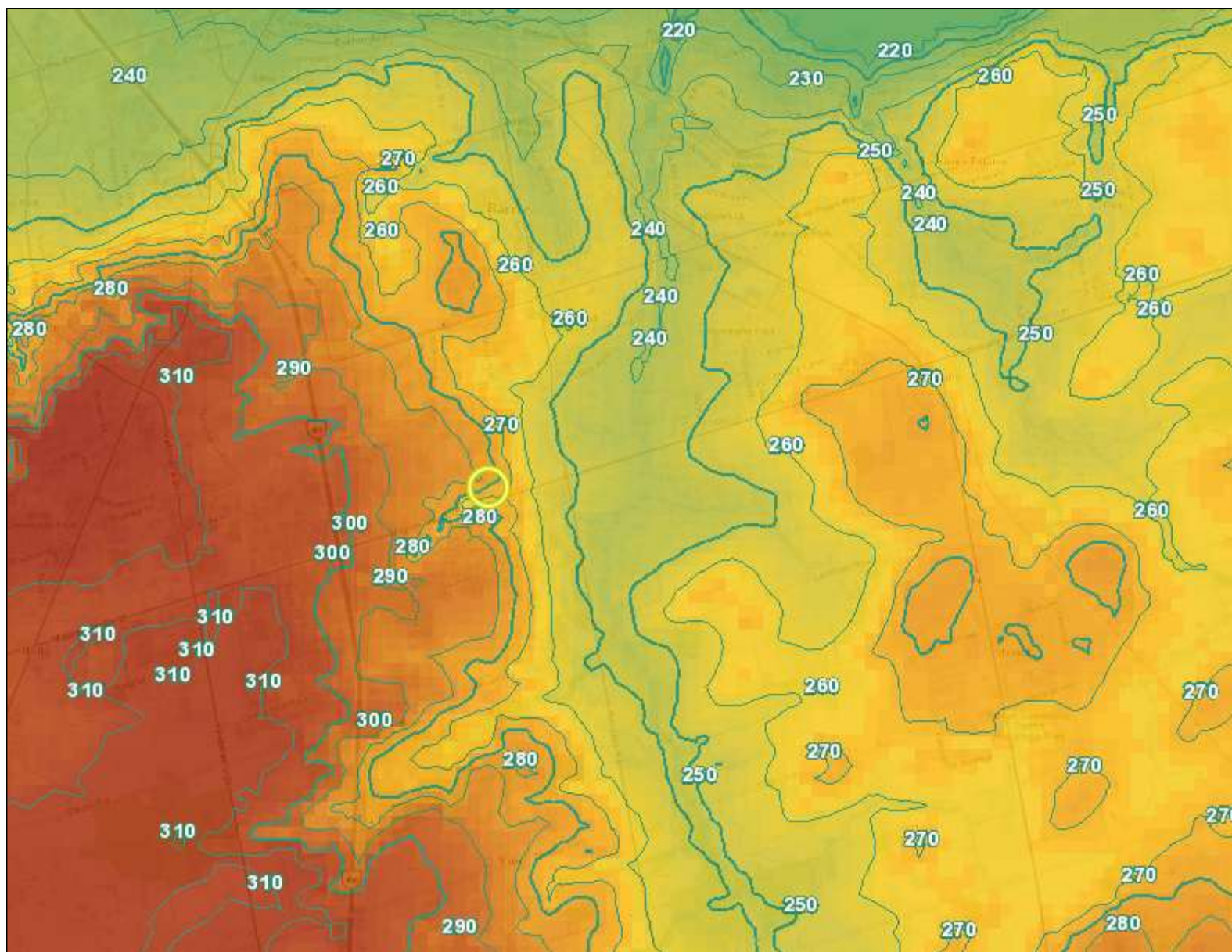
Digital Elevation Model DEM (571 Welham Road, Barrie)

Legend

DEM 100m (ORMGP)

High : 561.608

Low : 0



York Region

3.3 0 1.64 3.3 Metres

1: 64,746



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SOURCE: ORMGP2020; MNRE020;

PROJECTION: WGS_1984_Web_Mercator_Auxiliary Sphero

DATE PRINTED: May 28, 2020

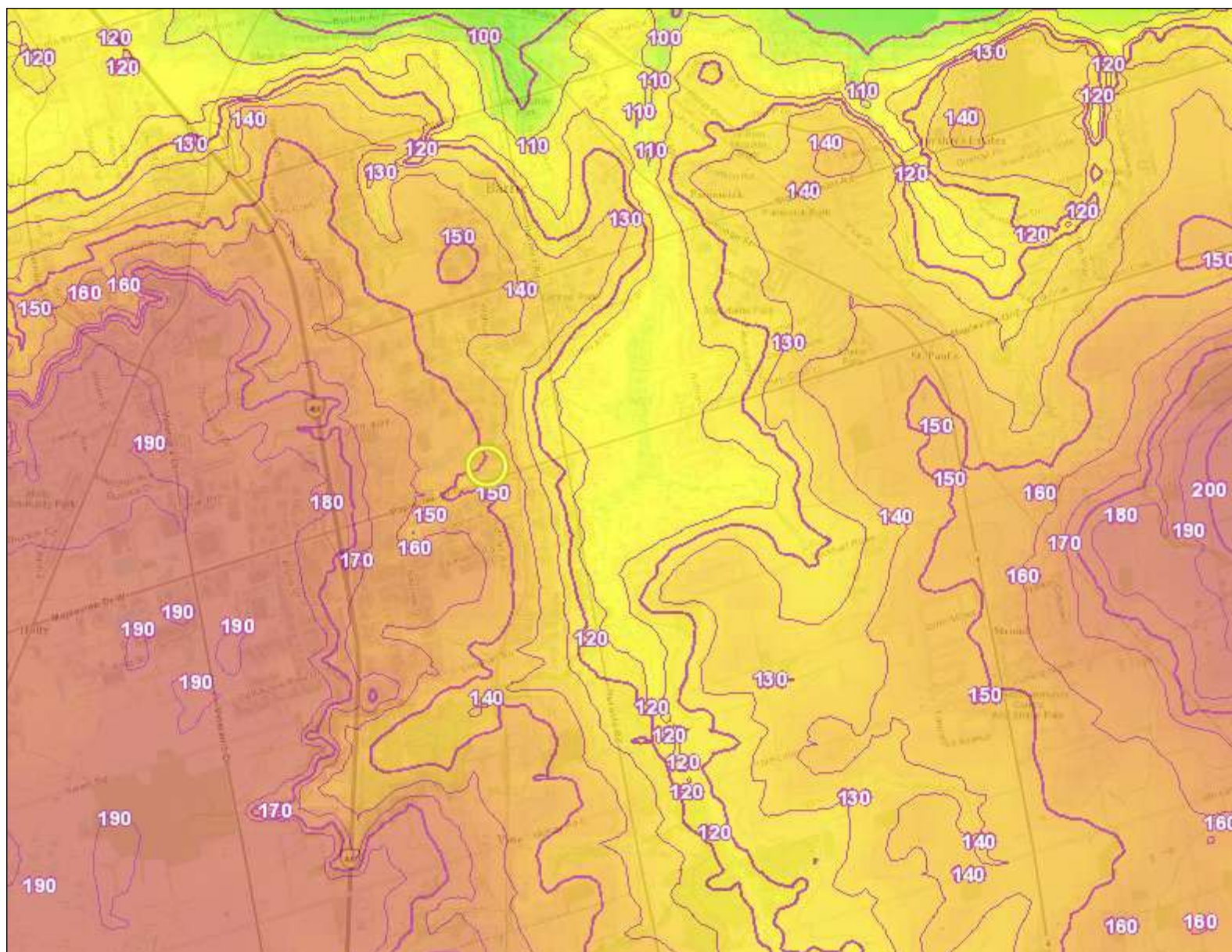
Overburden Thickness (571 Welham Road, Barrie, ON)

Legend

Overburden Thickness (ORMGP)

High : 315.809

Low : 0



3.3 0 1.64 3.3 Metres

1: 64,746



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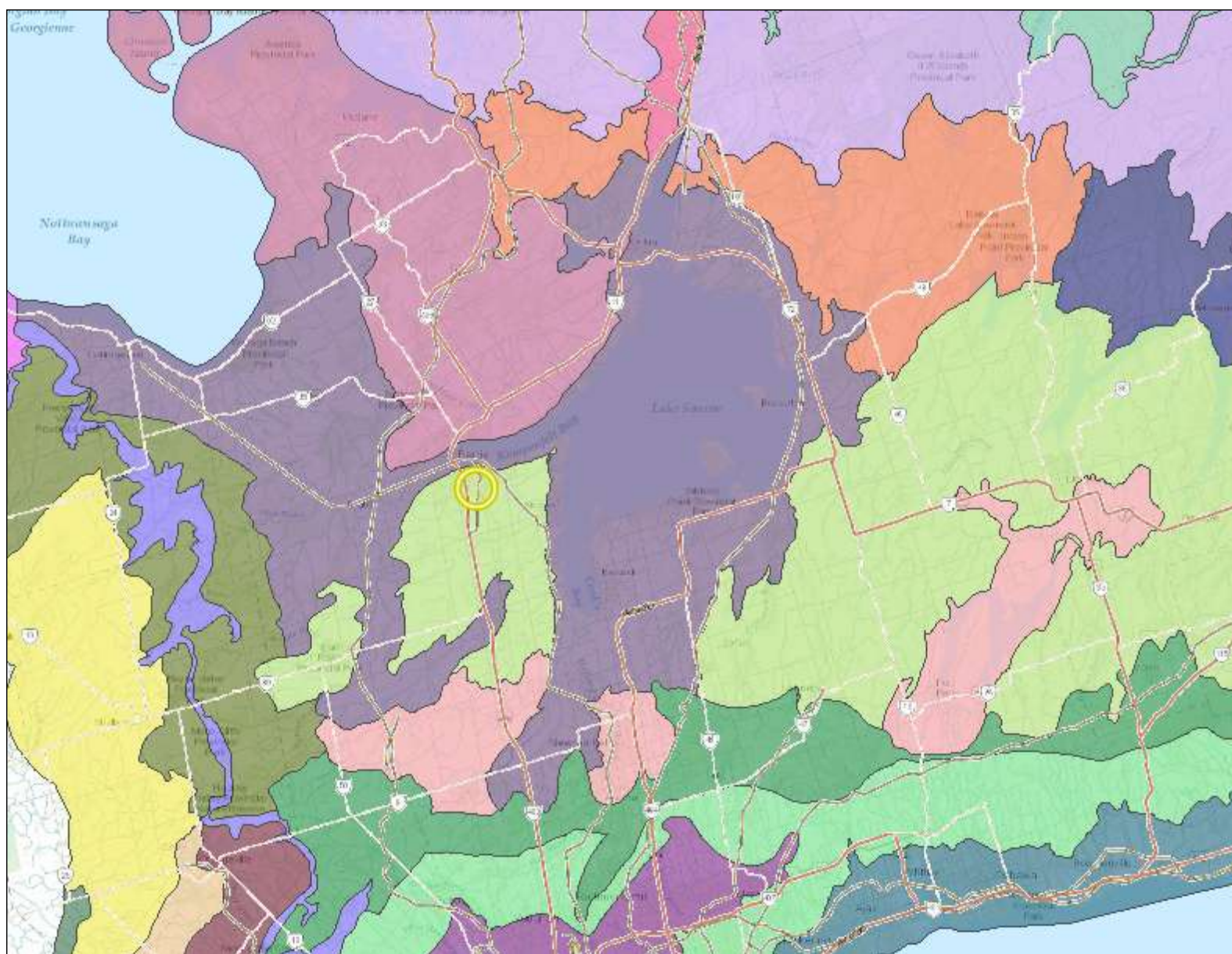
SOURCE: ORMGP2020; MNR020;

PROJECTION: WGS_1984_Web_Mercator_Auxiliary Sphero

DATE PRINTED: May 28, 2020

Physiographic Regions (OGS)

- Algonquin Highlands
- Beaver Valley
- Carden Plain
- Dummer Moraines
- Dundalk Till Plain
- Flamborough Plain
- Georgian Bay Fringe
- Guelph Drumlin Field
- Hillsburgh Sandhills
- Horseshoe Moraines
- Iroquois Plain
- Napanee Plain
- Niagara Escarpment
- Number 11 Strip
- Oak Ridges Moraine
- Peel Plain
- Peterborough Drumlin Field
- Prince Edward Peninsula
- Schomberg Clay Plains
- Simcoe Lowlands
- Simcoe Uplands
- South Slope
- Stratford Till Plain



52.6	0	26.31	52.6 Metres
------	---	-------	-------------

1: 1,035,938



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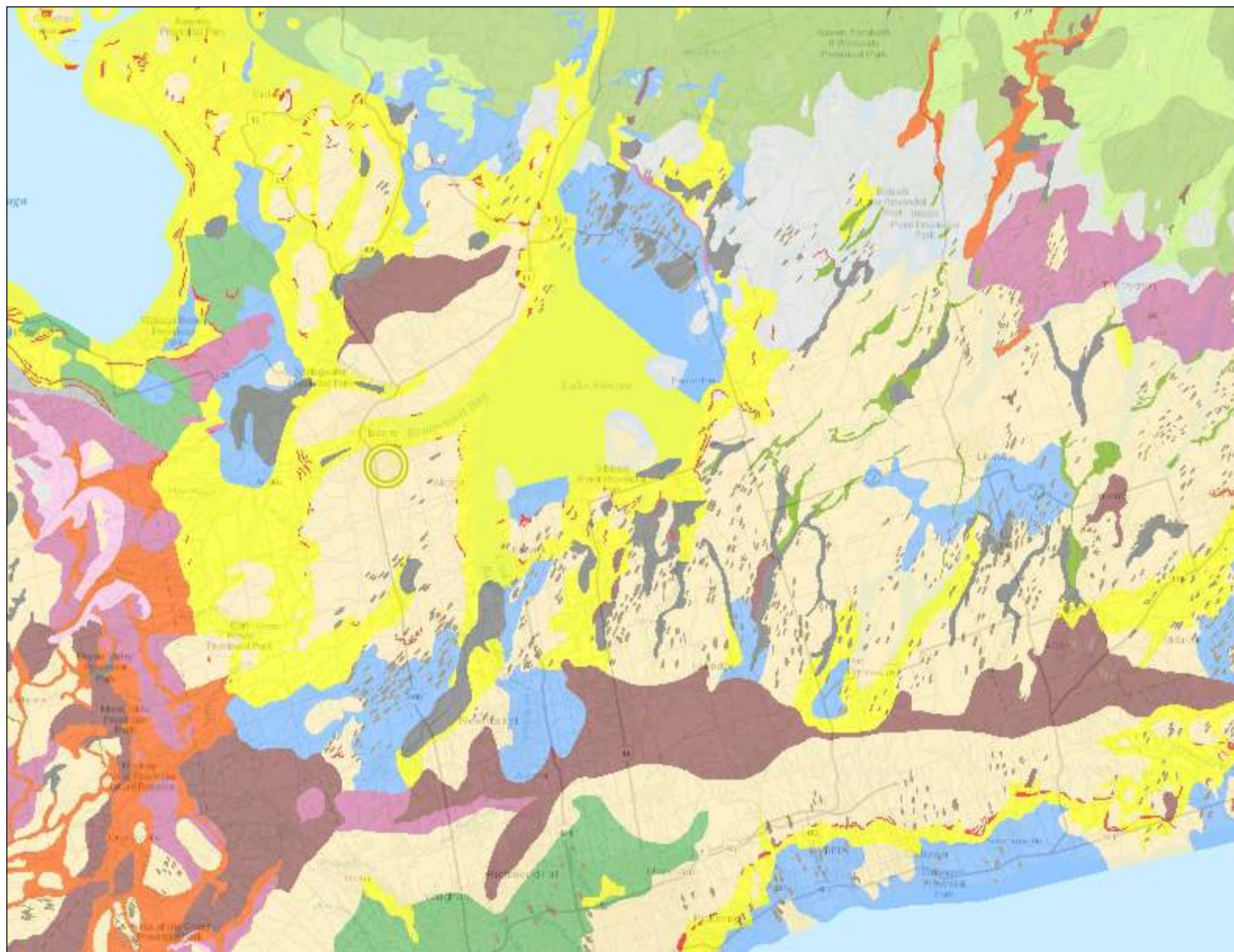
SOURCE: ORMGP2020; MNR020;
PROJECTION: WGS_1984_Web_Mercator_Au
xiliav Sphere
DATE PRINTED: May 28, 2020

Physiographic Regions OGS (571 Welham Road, Barrie)

Legend

Physiography (OGS)

- Bare Rock Ridges And Shallow Till
- Beaches
- Bevelled Till Plains
- Clay Plains
- Drumlins
- Escarments
- Eskers
- Kame Moraines
- Limestone Plains
- Peat And Muck
- Sand Plains
- Shale Plains
- Shallow Till And Rock Ridges
- Spillways
- Till Moraines
- Till Plains (Drumlinized)
- Till Plains (Undrumlinized)



52.6 0 26.31 52.6 Metres

1: 1,035,938

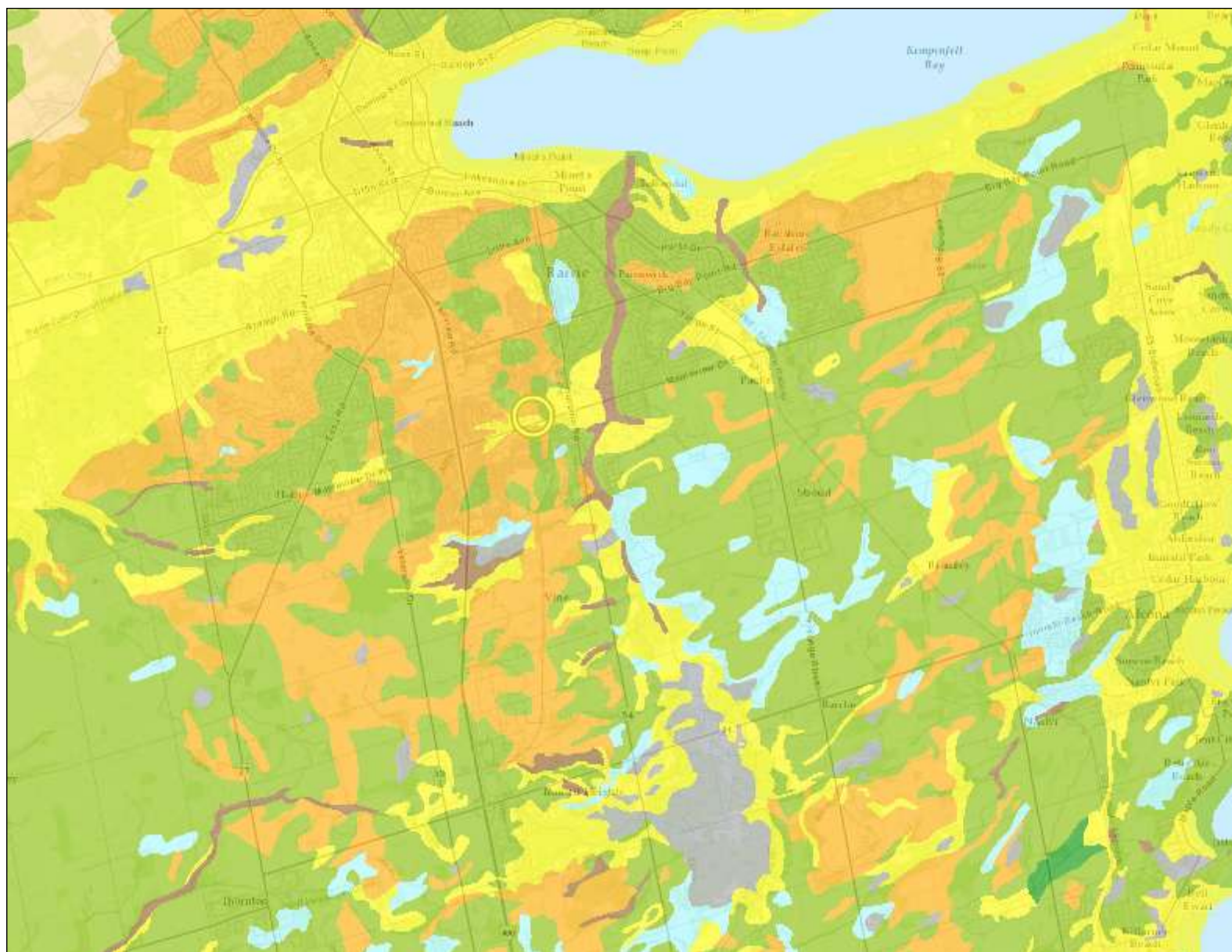


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xiliary Sphere
DATE PRINTED: May 28, 2020

Surficial Geology (571 Welham Road, Barrie, ON)



Legend

Surficial Geology OGS MNDM

- 1: Precambrian bedrock
- 2: Precambrian bedrock-drift complex
- 2a: Mainly till veneer
- 2b: Mainly stratified veneer
- 3: Paleozoic bedrock
- 4: Paleozoic bedrock-drift complex
- 4a: Mainly till veneer
- 4b: Mainly stratified veneer
- 5a: Shield-derived silty to sandy till
- 5b: Stone-poor, carbonate-derived silty
- 5c: Stony, carbonate-derived silty to sa
- 5d: Glaciolacustrine-derived silty to cla
- 5e: Undifferentiated older till and stratif
- 6: Ice-contact stratified deposits
- 6a: In moraines, kames, eskers and cr
- 6b: In subaquatic fans
- 7: Glaciofluvial deposits
- 7a: Sandy deposits
- 7b: Gravelly deposits
- 8: Fine-textured glaciolacustrine depos
- 8a: Massive-well laminated
- 8b: Interbedded flow till, rainout deposi and clay
- 9: Coarse-textured glaciolacustrine dep
- 9a: Deltaic deposits
- 9b: Littoral-foreshore deposits
- 9c: Foreshore-basinal deposits
- 10: Fine-textured glaciomarine deposit:
- 10a: Massive-well laminated
- 10b: Interbedded flow till, rainout depos: and clay
- 11: Coarse-textured glaciomarine depx
- 11a: Deltaic deposits
- 11b: Littoral-foreshore deposits
- 11c: Foreshore-basinal deposits
- 12: Older alluvial deposits
- 13: Fine-textured lacustrine deposits
- 14: Coarse-textured lacustrine deposit
- 14a: Deltaic deposits
- 14b: Littoral-foreshore deposits
- 14c: Foreshore-basinal deposits
- 15: Fine-textured marine deposits
- 16: Coarse-textured marine deposits
- 16a: Deltaic deposits
- 16b: Littoral-foreshore deposits



6.6 0 3.29 6.6 Metres

1: 129,492



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DATE PRINTED: May 28, 2020

Bedrock Geology (571 Welham Road, Barrie, ON)

Legend

- AddressPoints_Peel
Bedrock Geology (OGS)
- 33: Port Lambton Group
 - 32: Kettle Point
 - 31: Hamilton Group
 - 30: Marcellus
 - 29: Dundee
 - 28: Lucas
 - 27: Amherstburg
 - 26: Onondaga
 - 25: Bois Blanc
 - 24: Oriskany
 - 23: Bass Islands
 - 22: Bertie
 - 21: Salina
 - 20: Guelph
 - 19: Amabel
 - 18: Lockport
 - 17: Clinton-Catacart Group
 - 16: Queenston
 - 15: Carlsbad
 - 14: Georgian Bay
 - 13: Billings
 - 12: Blue Mountain
 - 11: Lindsay
 - 10: Verulam
 - 9: Bobcaygeon
 - 8: Gull River
 - 7: Shadow Lake
 - 6: Rockcliffe
 - 5: Oxford
 - 4: March
 - 3: Nepean
 - 2: Covey Hill
 - 1: Precambrian



52.6 0 26.31 52.6 Metres

1: 1,035,938



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PROJECTION: WGS_1984_Web_Mercator_Au
xiliary Sphere
DATE PRINTED: May 28, 2020

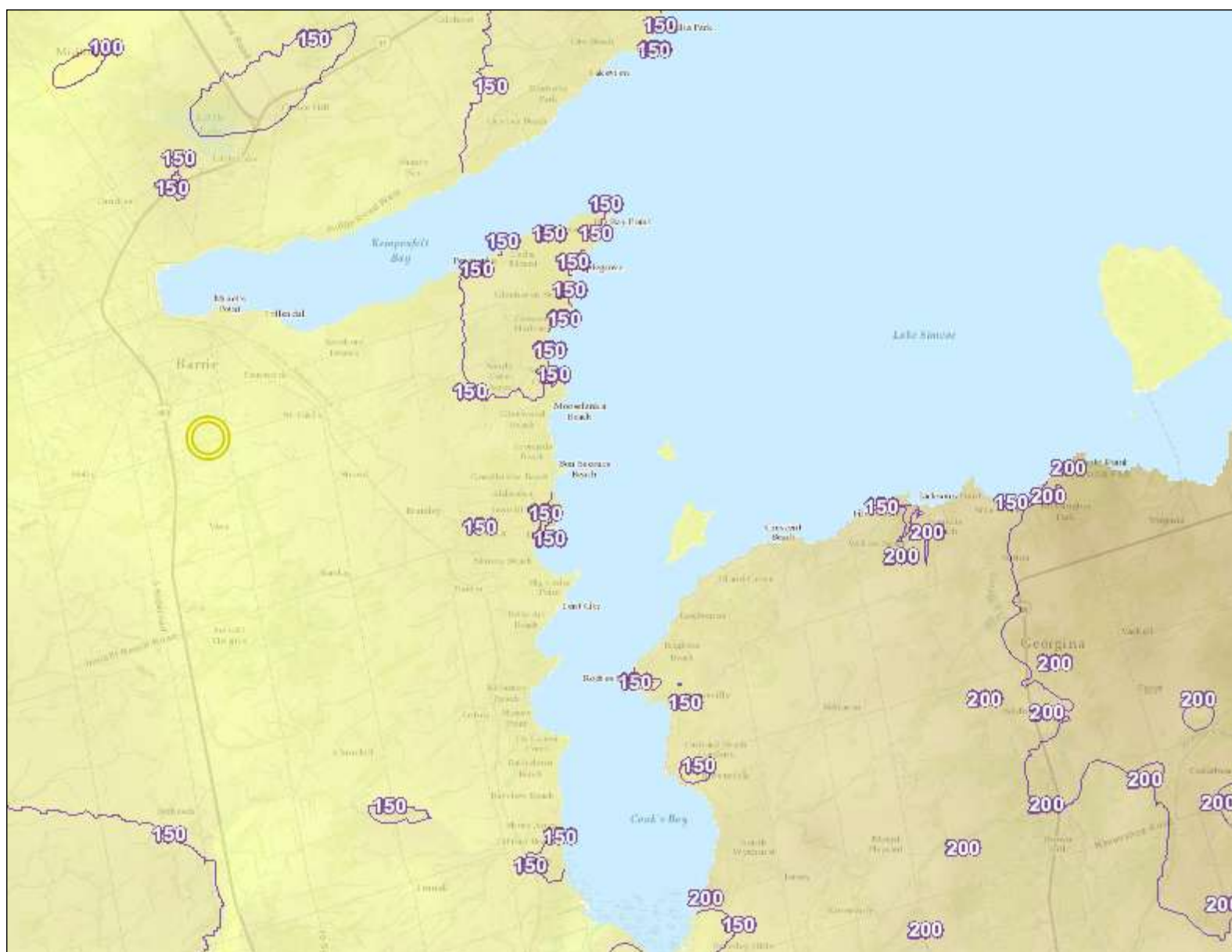
Top of Bedrock (571 Welham Road, Barrie)

Legend

Top of Bedrock

High : 524.259

Low : -93.9649



York Region

13.2 0 6.58 13.2 Metres

1: 258,984



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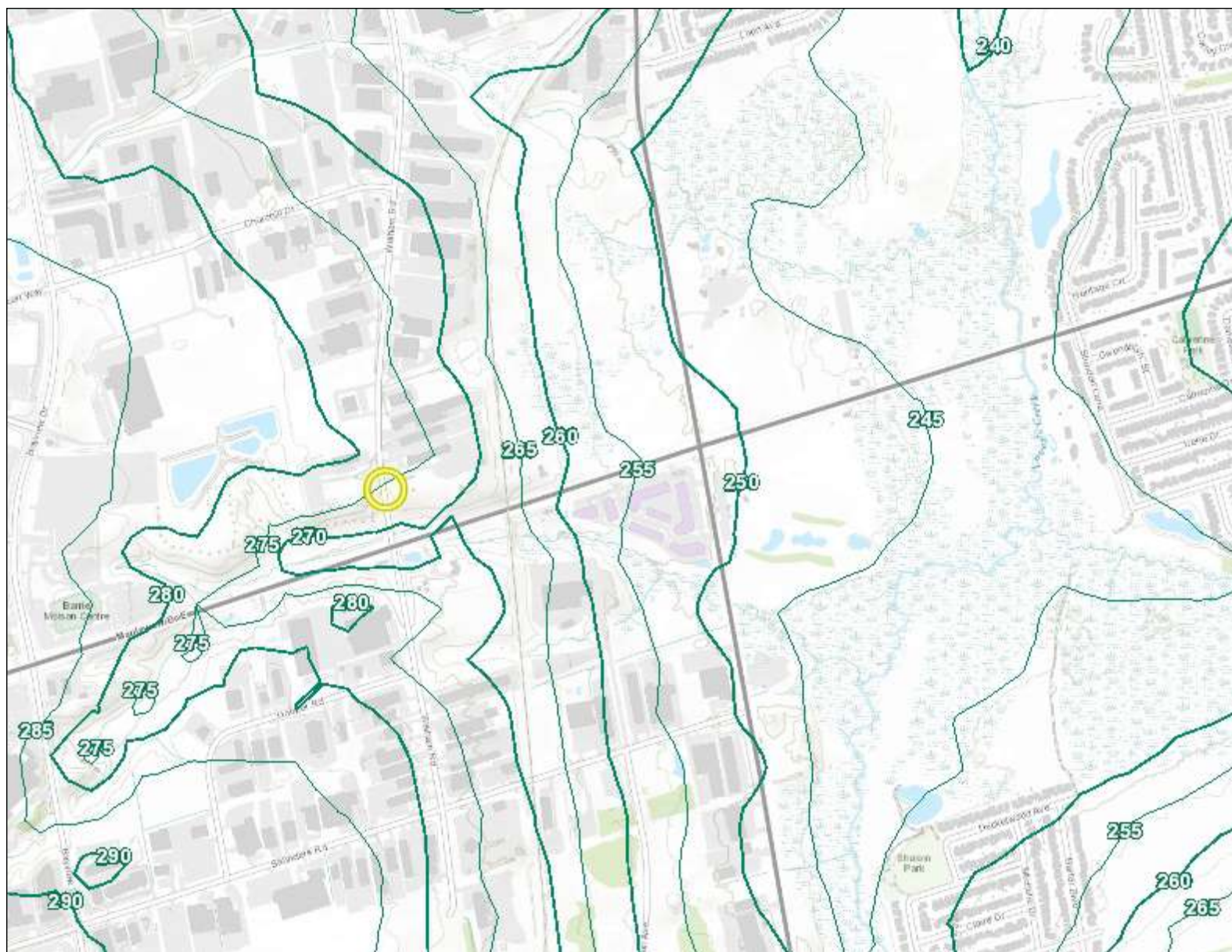
SOURCE: ORMGP2020; MNR020;

PROJECTION: WGS_1984_Web_Mercator_Auxiliary Sphero

DATE PRINTED: May 28, 2020

Ground Surface Elevations (571 Welham Road, Barrie)

Legend



0.8 0 0.41 0.8 Metres

1: 16,187



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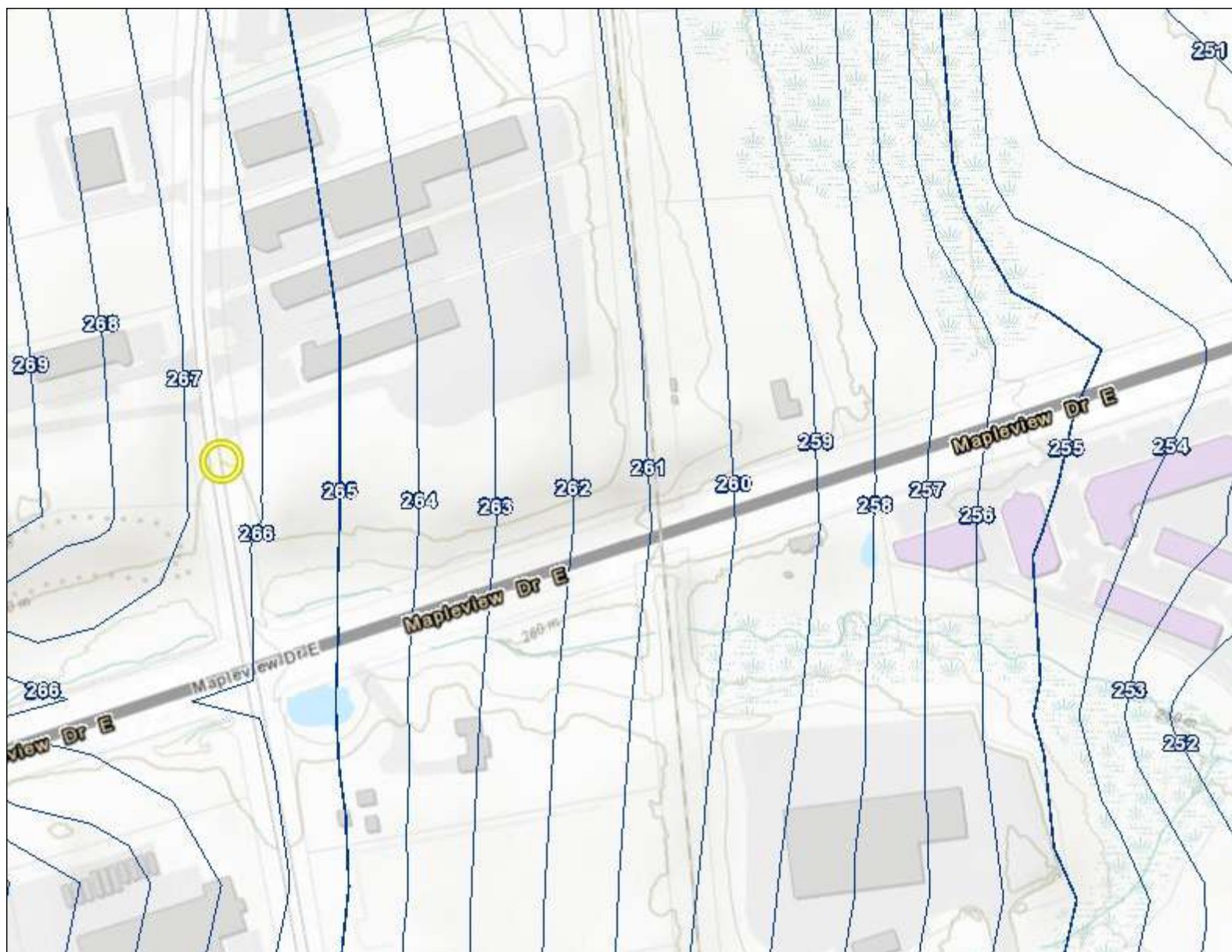


SOURCE: ORMGP2020; MNRE020;
PROJECTION: WGS_1984_Web_Mercator_Au
xiliarv Sohere
DATE PRINTED: May 28, 2020

Groundwater Flow Pattern (571 Welham Road, Barrie, ON)

Legend

Water Bodies



0.2 0 0.11 0.2 Metres

1: 4,514



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DATE PRINTED: June 2, 2020



Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion
- Wetland**
 - Provincially Significant Wetland Evaluated
 - Non - Provincially Significant Wetland Evaluated
 - Unevaluated Wetland
- Area of Natural Heritage & Scientific Interest (ANSI)**
 - Provincially Significant Life Science ANSI
 - Provincially Significant Earth Science ANSI
- Greenbelt Plan**
 - Boundary
 - River Valley Connections
- Land Use Designations**
 - Protected Countryside
 - Towns and Villages
 - Hamlets
 - Urban River Valley
 - Specialty Crop Area
- Niagara Escarpment Plan (NEP)**
 - Boundary
 - Parks and Open Space System
- Land Use Designations**
 - Escarpment Natural Area
 - Escarpment Protection Area
 - Escarpment Rural Area
 - Mineral Resource Extraction Area
 - Escarpment Recreation Area
 - Urban Area
 - Minor Urban Centre
- Oak Ridges Moraine Conservation Plan (ORM)**
 - Boundary
- Land Use Designations**
 - Natural Core Area
 - Natural Linkage Area
 - Countryside Area
 - Rural Settlement
 - Palgrave Estates Residential Community
 - Settlement Area

0.3 0 0.16 0.3 Kilometers



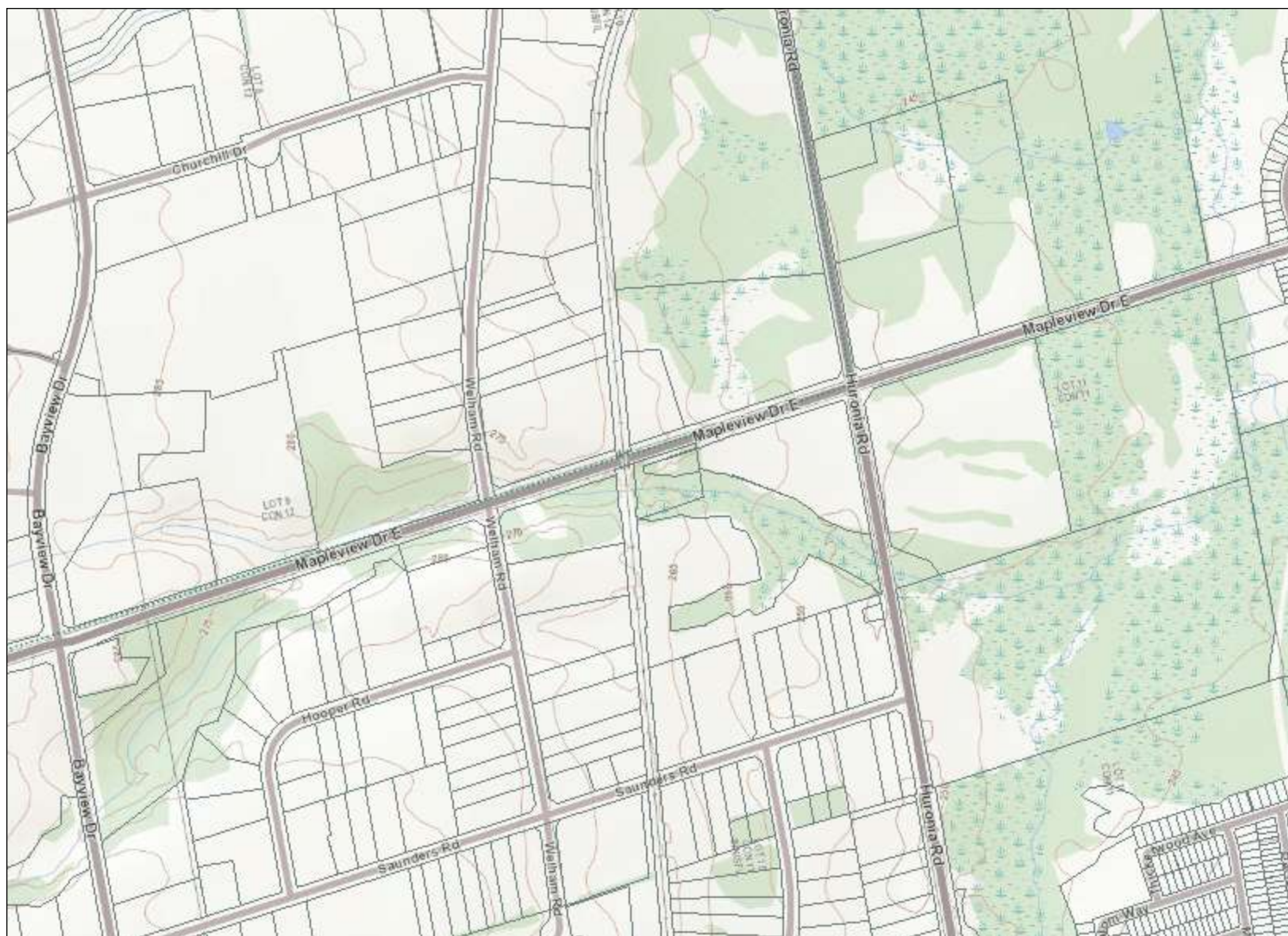
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Legend

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

0 0.5 km

Projection: Web Mercator



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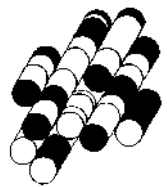
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APPENDIX B

TERRAPROBE INC.



WELL ID	BOREHOLE ID	EASTING	NORTHING	ELEV (masl)	FINAL STATUS	SECONDARY PURPOSE	DATE OF COMPLETION	WATER LEVEL UPON COMPLETION (m)	BOREHOLE DEPTH (m)	SCREEN TOP (m)	SCREEN BOTTOM (m)	DRILLING METHOD	SCREENED UNIT
7291358	1006679300	605893	4909922	285.046	Test Hole	Test Hole	2017-06-23	-	12.19	9.15	12.20	Direct Push	OVERBURDEN
7291359	1006679303	605966	4909940	283.453	Test Hole	Test Hole	2017-06-23	-	11.58	8.54	11.59	Direct Push	OVERBURDEN
7105796	1001603935	606035	4910369	264.977	Observation Wells	Monitoring	2008-04-04	-	9.10	7.60	9.10	Boring	OVERBURDEN
7261608	1005933413	606099	4910206	274.497	Monitoring and Test Hole	Monitoring	2016-02-23	-	6.10	3.05	6.10	Rotary (Convent.)	OVERBURDEN
7181772	1003828878	606177	4910961	266.991	Test Hole	Monitoring and Test Hole	2012-05-08	-	7.62	4.50	7.60	Direct Push	OVERBURDEN
5701395	10379288	606251.4	4910385	263.001	Water Supply	Domestic	1966-05-28	15.86	17.68	16.80	17.70	Cable Tool	OVERBURDEN
7172332	1003612933	606270	4910480	267.318	Test Hole	Monitoring	2010-06-21	-	12.19	9.14	12.19	Auger	OVERBURDEN
7174080	1003626956	606335	4910454	262.480	Abandoned	-	2011-11-22	-	-	-	-	-	-
7243476	1005439183	606382	4910061	263.511	Monitoring and Test Hole	Monitoring	-	-	9.60	6.10	7.60	Boring	OVERBURDEN
5739457	11329021	606396	4910464	258.644	Abandoned	-	2004-10-23	-	-	-	-	-	-
5713836	10391572	606514.4	4910473	255.290	Water Supply	Domestic	1976-10-13	20.74	21.64	20.74	21.64	Cable Tool	OVERBURDEN
5711986	10389776	606564.4	4910423	253.352	Water Supply	Domestic	1974-11-08	12.19	14.02	12.81	13.73	Cable Tool	OVERBURDEN
5711981	10389771	606564.4	4911073	248.572	Test Hole/Observation Well	Municipal	1974-07-30	90.8	105.16	93.03	94.55	Rotary (Convent.)	OVERBURDEN
5705610	10383492	606594.4	4910623	251.901	Water Supply	Domestic	1968-03-05	13.1	14.02	13.70	14.02	Cable Tool	OVERBURDEN
7222736	1004899475	606618	4910525	252.150	Monitoring and Test Hole	Monitoring and Test Hole	2014-05-22	-	4.57	1.53	3.05	Direct Push	OVERBURDEN
7250548	1005761022	606654	4910511	251.960	Observation Wells	Monitoring	2015-10-02	-	15.25	12.20	15.25	Boring	OVERBURDEN
7288657	1006568572	606654	4910511	251.955	Test Hole	Monitoring	2017-05-18	-	15.25	12.20	15.25	Boring	OVERBURDEN
7144552	1002978255	606664	4910184	250.372	Abandoned	-	2010-03-25	-	-	-	-	-	-
7144551	1002978253	606665	4910183	250.348	Abandoned	-	2010-03-19	-	-	-	-	-	-
7225645	1005080456	606679	4909964	251.824	Observation Wells	Monitoring	2014-03-21	-	6.10	3.05	6.10	Boring	OVERBURDEN
7225644	1005080453	606680	4910039	250.857	Observation Wells	Monitoring	2014-03-21	-	4.58	1.53	4.58	Boring	OVERBURDEN
7225643	1005080392	606696	4909912	252.364	Observation Wells	Monitoring	2014-03-21	-	4.575	1.525	4.575	Boring	OVERBURDEN
7148487	1003174304	606696	4910375	250.355	Water Supply	Irrigation - Golf Course	2010-05-17	51.81	51.81	42.67	51.8	Rotary (Convent.)	OVERBURDEN
7250547	1005761019	606700	4910227	250.012	Observation Wells	Monitoring	2015-10-02	-	13.73	3.04/10.67	9.14/13.73	Boring	OVERBURDEN
7288656	1006568569	606700	4910227	250.011	Abandoned-Other	Monitoring	2017-05-18	-	-	-	-	-	-
5730744	10408300	606695.3	4910663	248.966949	Abandoned	-	1994-05-13	-	-	-	-	-	-

14 JP
UTM 3 27 Z 60 6 23 7 E
5 R 49 10 16 2 N



WATER RESOURCES
DIVISION
JUL 57 1966 No 1395

B

The Ontario Water Resources Commission Act

Elev. 5 R 0 8 8 0

WATER WELL RECORD

Basin 22 County or District SIMCOE Township, Village, Town or City INNISFILL
Con. 11 Lot PT. N 10 Date completed 28 MAY 1966 (day month year)
Owner [Redacted] Address Box 229 CAMBORDON ONT

Casing and Screen Record

Inside diameter of casing 5"
Total length of casing 55 FT
Type of screen JOHNSON S.S. SLOT 14
Length of screen 3 FT
Depth to top of screen 55 FT
Diameter of finished hole 5"

Pumping Test

Static level FLOW
Test-pumping rate 2 1/2 G.P.M.
Pumping level 45 FT
Duration of test pumping 1 HR.
Water clear or cloudy at end of test CLEAR
Recommended pumping rate 2 G.P.M.
with pump setting of 52 feet below ground surface

Well Log

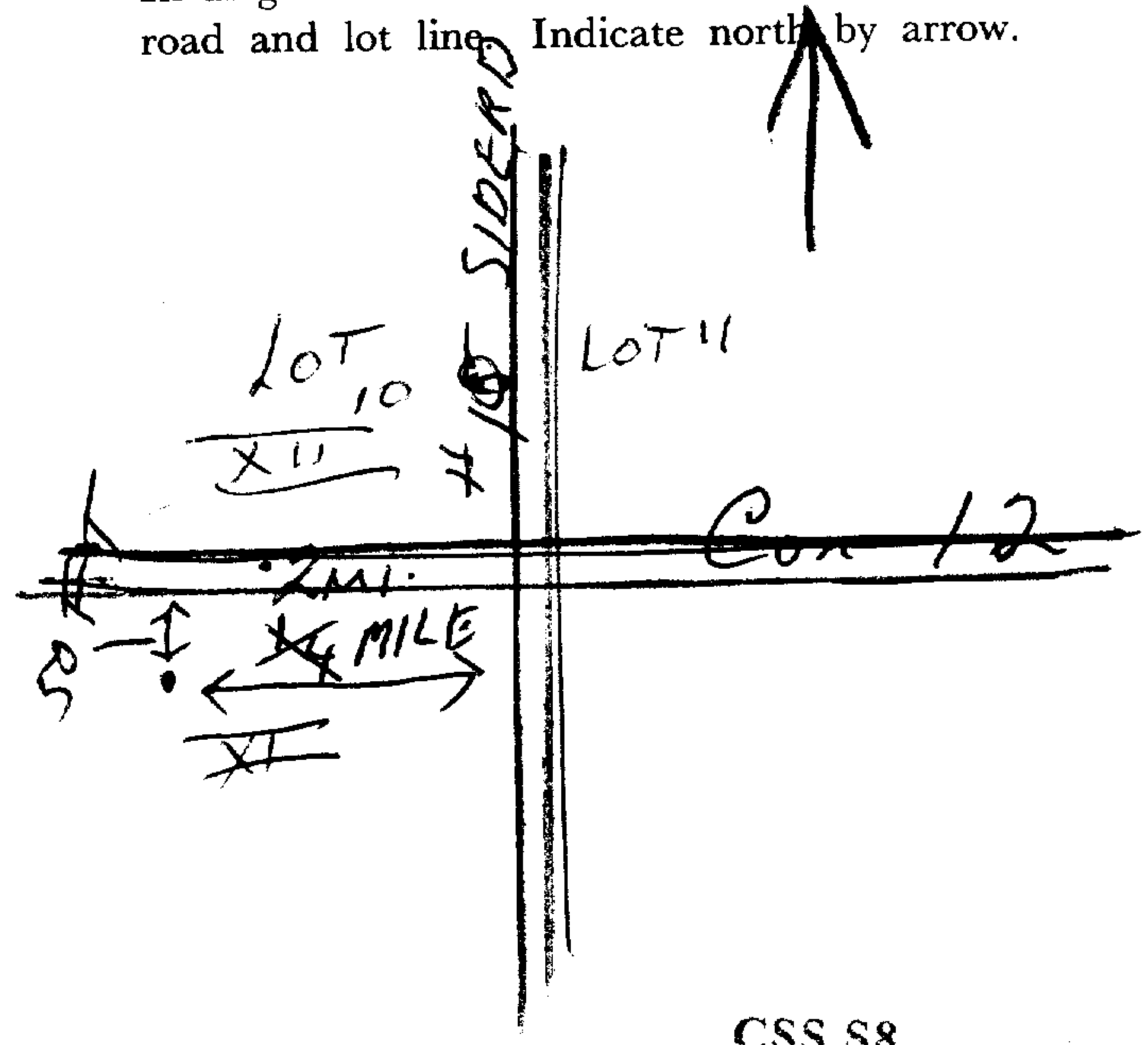
Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
TOPSOIL	0	1		
YELLOW SAND	1	3		
LITE GREY SAND GRAVEL STONES	3	52		
FINE GREY SAND	52	55	52	FRESH
" " " AND GRAVEL	55	58	52-58	

For what purpose(s) is the water to be used? HOUSE
Is well on upland, in valley, or on hillside? HILLSIDE
Drilling or Boring Firm KNELSEN WATER WELLS
RR # 1
Address BARRIE ONT
Licence Number 2033
Name of Driller or Borer ANDREAS KNELSEN
Address SAME
Date May 29 1966
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



JTM

1172 606580

CODED



5705610

4R 49104001

Con XII

Lot 11

lev.

518 0825

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District SIMCOE Township, Village, Town or City INNISFILL
Con. 287 Lot 11 Date completed 5 MAR 1968
Owner [REDACTED] Address RR #2 STROUD ONT

Casing and Screen Record

Inside diameter of casing 5"
Total length of casing 46 FT
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 5"

Pumping Test

Static level GROUND LEVEL
Test-pumping rate 5 G.P.M.
Pumping level 20 FT
Duration of test pumping 2 HRS
Water clear or cloudy at end of test CLEAR
Recommended pumping rate 5 G.P.M.
with pump setting of 25 feet below ground surface

Well Log

Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
<u>TOP SOIL</u>	<u>0</u>	<u>1</u>		
<u>SAND</u>	<u>1</u>	<u>10</u>		
<u>GREY CLAY</u>	<u>10</u>	<u>43</u>		
<u>SAND GRAVEL</u>	<u>43</u>	<u>46</u>	<u>43-46</u>	<u>FRESH</u>
				<u>UNTESTED</u>

For what purpose(s) is the water to be used? HOUSE

Is well on upland, in valley, or on hillside? VALLEY

Drilling or Boring Firm HNELSEN WATER WELLS
R.R. #1

Address BARRIE ONT
728 8218

Licence Number 2986

Name of Driller or Borer ANDREAS HNELSEN

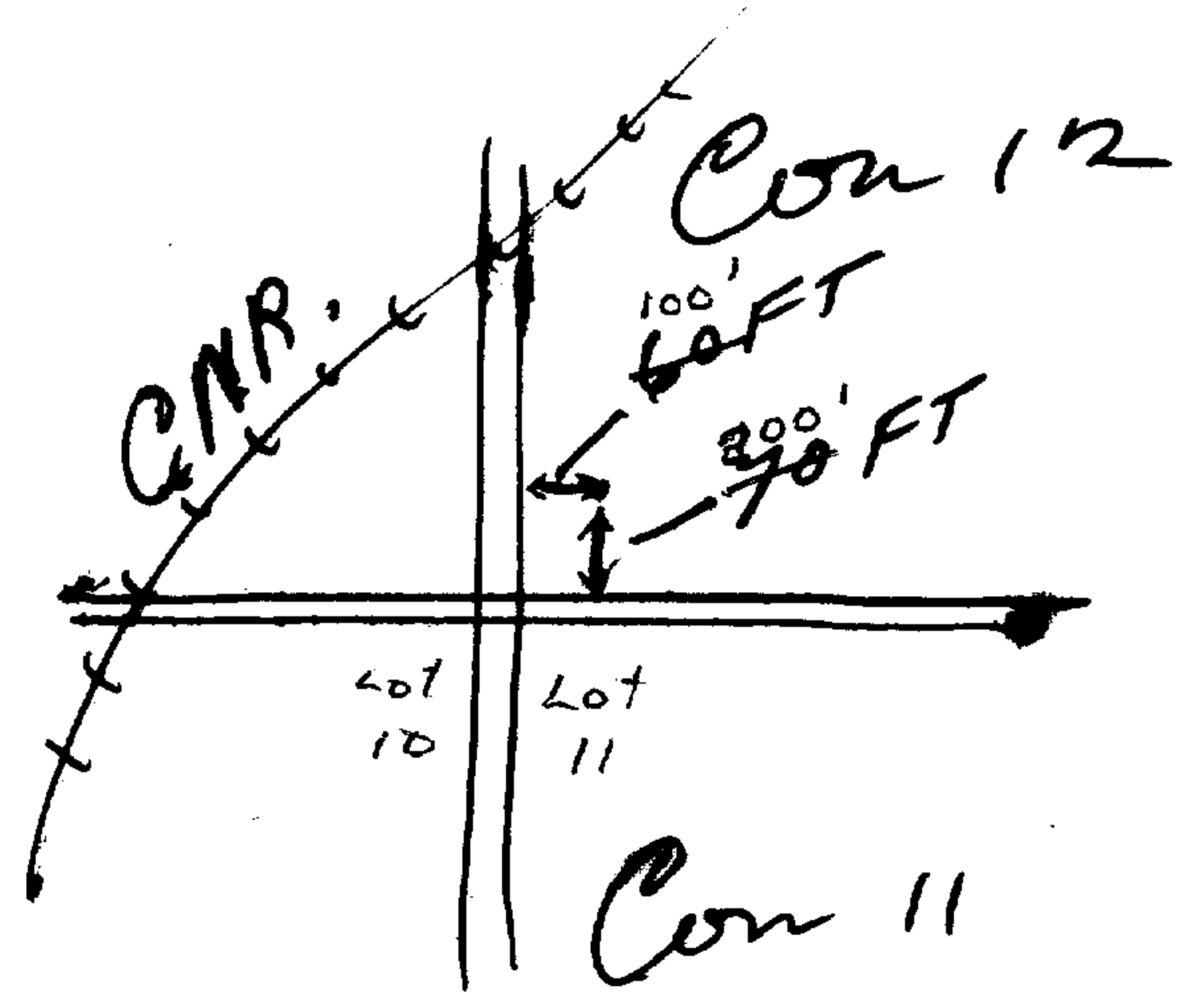
Address same

Date MAR 6 1968

[Signature]
(Signature of Licensed Drilling or Boring Contractor)

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.





Ontario

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

3105E

5711981

MUNICIP. 57005

CON. CAN

12

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT Simcoe	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Innisfil	CON., BLOCK, TRACT, SURVEY, ETC. XII	DATE COMPLETED DAY 30 MO. 07 YR. 74
ADDRESS [REDACTED]		DATE COMPLETED DAY 30 MO. 07 YR. 74	
ZONE 17	EASTING 606530	NORTHING 4910850	RC. 5
ELEVATION 0820	RC. 22	BASIN CODE 22	II III IV

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	clay w/ sand	sand & gravel layers		0	94
	sand		cemented	94	131
	clay & silt			131	298
	sand		medium fine	298	310
	clay w/ sand	layers		310	326
	sand			326	329
	clay			329	331
	sand			331	332
	clay			332	345
		T D 310			

31	0094	052811	0131	2860	0298	0506	0319	0908	0326	052874	0329	28	1
32	0331	05	0332	28	0345	0566							

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☒ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
15-18	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
20-23	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
25-28	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	
30-33	1 ☐ FRESH 3 ☐ SULPHUR
2 ☐ SALTY 4 ☐ MINERAL	

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11	1 ☒ STEEL 12		FROM TO
01"	2 ☐ GALVANIZED		0 0310
	3 ☐ CONCRETE		
	4 ☐ OPEN HOLE		
17-18	1 ☐ STEEL 19		20-23
	2 ☐ GALVANIZED		
	3 ☐ CONCRETE		
	4 ☐ OPEN HOLE		
24-25	1 ☐ STEEL 26		27-30
	2 ☐ GALVANIZED		
	3 ☐ CONCRETE		
	4 ☐ OPEN HOLE		

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE
FROM TO	(CEMENT GROUT, LEAD PACKER, ETC.)
10-13 14-17	drill cuttings
18-21 22-25	
26-29 30-33 80	

71 PUMPING TEST

PUMPING TEST METHOD 1 ☐ PUMP 2 ☐ BAUER	PUMPING RATE guage hole	DEPTH OF PUMPING 20
STATIC LEVEL 008	WATER LEVEL END OF PUMPING 031	WATER LEVELS DURING
70.71 FEET	1.75 FEET	15 MINUTES 28-28 30 MINUTES 29-31 45 MINUTES 32-34 60 MINUTES 35-37
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
		1 ☐ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE

LOCATION OF WELL 0610

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

10 side rd
30' →
LOT #10
LOT #11
LOT #12
LOT #13
LOT #14
LOT #15
LOT #16
LOT #17
LOT #18
LOT #19
LOT #20
LOT #21
LOT #22
LOT #23
LOT #24
LOT #25
LOT #26
LOT #27
LOT #28
LOT #29
LOT #30
LOT #31
LOT #32
LOT #33
LOT #34
LOT #35
LOT #36
LOT #37
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LOT #42
LOT #43
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LOT #45
LOT #46
LOT #47
LOT #48
LOT #49
LOT #50
LOT #51
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LOT #62
LOT #63
LOT #64
LOT #65
LOT #66
LOT #67
LOT #68
LOT #69
LOT #70
LOT #71
LOT #72
LOT #73
LOT #74
LOT #75
LOT #76
LOT #77
LOT #78
LOT #79
LOT #80

FINAL STATUS OF WELL 3

1 ☐ WATER SUPPLY	5 ☐ ABANDONED, INSUFFICIENT SUPPLY
2 ☒ OBSERVATION WELL	6 ☐ ABANDONED, POOR QUALITY
3 ☐ TEST HOLE	7 ☐ UNFINISHED
4 ☐ RECHARGE WELL	

WATER USE 06

1 ☐ DOMESTIC	5 ☐ COMMERCIAL
2 ☐ STOCK	6 ☒ MUNICIPAL
3 ☐ IRRIGATION	7 ☐ PUBLIC SUPPLY
4 ☐ INDUSTRIAL	8 ☐ COOLING OR AIR CONDITIONING
☐ OTHER	9 ☐ NOT USED

METHOD OF DRILLING 2

1 ☐ CABLE TOOL	6 ☐ BORING
2 ☒ ROTARY (CONVENTIONAL)	7 ☐ DIAMOND
3 ☐ ROTARY (REVERSE)	8 ☐ JETTING
4 ☐ ROTARY (AIR)	9 ☐ DRIVING
5 ☐ AIR PERCUSSION	

CONTRACTOR

NAME OF WELL CONTRACTOR Snider Drilling,	LICENCE NUMBER 4816
ADDRESS CRAIGHURST, Ont.	
NAME OF DRILLER OR BORER David Burton.	LICENCE NUMBER
SIGNATURE OF CONTRACTOR Ralph Snider.	SUBMISSION DATE DAY 20 MO. 03 YR. 75

OFFICE USE ONLY

DATA SOURCE 1	CONTRACTOR 4816	DATE RECEIVED 200375
DATE OF INSPECTION May 14/76	INSPECTOR J. B.	
REMARKS TEST WELL #1-74		
	CSS.S8	WI

Instructions for Completing Form

- For use in the Province of Ontario only.** This document is a permanent legal document. Please retain for future reference.
• All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
• Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
• **All metre measurements shall be reported to 1/10th of a metre.**
• Please print clearly in blue or black ink only.

[illegible]

Address of Well Location (County/District/Municipality)		Township		Lot	Section
SINCOE		BARRIE		D/L 10	11
RR#/Street Number/Name		City/Town/Village		Site/Compartment/Block/Tract etc.	
215 MADRIVEN DR.		BARRIE			
GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model
	83	17	606396	4919464	
Mode of Operation:				☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify _____	

		63		11/11/2023			
Log of Overburden and Bedrock Materials (see instructions)							

[illegible]

Hole Diameter			Construction Record				Test of Well Yield					
Depth From	Metres To	Diameter Centimetres	Inside diam	Material	Wall thickness centimetres	Depth From	Metres To	Pumping test method	Draw Down		Recovery	
									Time min	Water Level Metres	Time min	Water Level Metres
								Pump intake set at - (metres)	Static Level			
								Pumping rate - (litres/min)	1		1	
								Duration of pumping ____ hrs + ____ min	2		2	
								Final water level end of pumping ____ metres	3		3	
								Recommended pump type.	4		4	
								☐ Shallow ☐ Deep				
								Recommended pump depth. ____ metres	5		5	
								Recommended pump rate. (litres/min)	10		10	
								If flowing give rate - (litres/min)	15		15	
									20		20	
									25		25	
								If pumping discontinued, give reason.	30		30	
									40		40	
									50		50	
									60		60	

Depth set at		Metres	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
From	To			
55	49	3/8 STONE		
49	10	7 BAGS HOLE PLUG 3/8		
10	0	CLAY		

Method of Construction			
☐ Cable Tool	☐ Rotary (air)	☐ Diamond	☐ Digging
☐ Rotary (conventional)	☐ Air percussion	☐ Jetting	☐ Other
☐ Rotary (reverse)	☐ Boring	☐ Driving	

		Water Use	
☐ Domestic	☐ Industrial	☐ Public Supply	☐ Other
☐ Stock	☐ Commercial	☐ Not used	
☐ Irrigation	☐ Municipal	☐ Cooling & air conditioning	

Final Status of Well			
☐ Water Supply	☐ Recharge well	☐ Unfinished	☐ Abandoned, (Other) _____
☐ Observation well	☐ Abandoned, insufficient supply	☐ Dewatering	
☐ Test Hole	☐ Abandoned, poor quality	☐ Replacement well	

Well Contractor/Technician Information			
Name of Well Contractor	Well Contractor's Licence No.		
LONIE STARR WELL DRILLING LTD		3413	
Business Address (street name, number, city etc.)			
P.O. Box 280 MERRIDEN ONT K0L 1W0			
Name of Well Technician (last name, first name)	Well Technician's Licence No.		
JAMES MOORE	T-401		
Signature of Technician/Contractor		Date Submitted	
x Jim Moore		2004 10 28	

Location of Well			
In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.			
Audit No. Z 19188	Date Well Completed YYYY 2004 MM 10 DD 23		
Was the well owner's information package delivered? Yes ☒ No ☐	Date Delivered YYYY 2004 MM 10 DD 23		

Ministry Use Only				
Data Source			Contractor	
			3413	
Date Received	YYYY	MM	DD	Date of Inspection
JAN	1	1	2005	YYYY MM DD
Remarks			Well Record Number	

Well Owner's Information

First Name	Last Name	E-mail Address	☐ Well Constructed by Well Owner
CORPORATION OF THE CITY OF BARRIE			
Mailing Address (Street Number/Name, RR)	Municipality	Province	Postal Code Telephone No. (inc. area code)
70 COLLIER ST.	BARRIE	ONT.	416 415 7052 264 2412

Part A Construction and/or Major Alteration of a Well

Address of Well Location (Street Number/Name, RR)		Township	Lot	Concession
MAPLEVIEW / WELHAM				
County/District/Municipality		City/Town/Village	Province	Postal Code
SIMCOE		BARRIE	Ontario	
UTM Coordinates	Zone	Easting	Northing	GPS Unit Make Model
NAD 83	17	60603549	110369	GARMIN etrex
Mode of Operation:		☒ Undifferentiated ☐ Averaged		
☐ Differentiated, specify				

Overburden and Bedrock Materials (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From To
BROWN	TOPSOIL			0 0.1
BROWN	FILL	SAND		0.1 0.7
BROWN	SAND	GRAVEL	DENSE	0.7 9.1

Annular Space/Abandonment Sealing Record			
Depth Set at (Metres) From To	Type of Sealant Used (Material and Type)	Volume Placed (Cubic Metres)	
0 1.2	3/8" HOLE PLUG	2 BAGS	
6.7 7.3	3/8" HOLE PLUG	1 BAG	

Method of Construction		Water Use		
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☒ Monitoring
☐ Rotary (Air)	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion	☒ Boring	☐ Industrial		
☐ Other, specify		☐ Other, specify		
Status of Well				
☐ Water Supply	☐ Dewatering Well	☒ Observation and/or Monitoring Hole		
☐ Replacement Well	☐ Abandoned, Insufficient Supply	☐ Alteration (Construction)		
☐ Test Hole	☐ Abandoned, Poor Water Quality	☐ Other, specify		
☐ Recharge Well	☐ Abandoned, other, specify			

Location of Well

Please provide a map below showing:

- all property boundaries, and measurements sufficient to locate the well in relation to fixed points,
- an arrow indicating the North direction
- detailed drawings can be provided as attachments no larger than legal size (8.5" by 14")
- vidigital pictures of inside of well can also be provided

Date Well Completed (yyyy/mm/dd)	Was the well owner's information package delivered? ☐ Yes ☒ No	Date the Well Record and Package Delivered to Well Owner (yyyy/mm/dd)
2008/04/04		

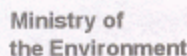
Well Contractor and Well Technician Information			
Business Name of Well Contractor		Well Contractor's Licence No.	
WALKER DRILLING LTD.		712011	
Business Address (Street No./Name, number, RR)		Municipality	
5409 25TH SIDE ROAD R.R.#1		ESSA	
Province	Postal Code	Business E-mail Address	
ONT.	L4M1T0	dave@walkerdrilling.com	
Bus. Telephone No. (inc. area code)		Name of Well Technician (Last Name, First Name)	
7654243423		WALKER, DAVE	
Well Technician's Licence No.		Signature of Technician	
2842		D. R. Walker	
		Date Submitted (yyyy/mm/dd)	
		2008/04/09	

Results of Well Yield Testing			
Check box if after test of well yield, water was:	Draw Down		Recovery
	Time (Min)	Water Level (Metres)	Time (Min) Water Level (Metres)
☐ Clear and sand free	Static Level		Static Level
☐ Cannot develop to sand-free state	1		1
If pumping discontinued, give reason:	2		2
Pumping test method	3		3
Pump intake set at (Metres)	4		4
Pumping rate (Litres/min)	5		5
Duration of pumping	10		10
hrs + min	15		15
Final water level end of pumping (Metres)	20		20
Recommended pump type	25		25
☐ Shallow ☐ Deep	30		30
Recommended pump depth	40		40
Metres	50		50
Recommended pump rate (Litres/min)	60		60
If flowing give rate (Litres/min)			

Water Details	
Water found at Depth	Kind of Water
Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
Water found at Depth	Kind of Water
Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
Water found at Depth	Kind of Water
Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals

Casing Used	Screen Used	Casing and Well Details
☐ Galvanized	☐ Galvanized	Diameter of the Hole (Centimetres)
☐ Steel	☐ Steel	200
☐ Fibreglass	☐ Fibreglass	Depth of the Hole (Metres)
☒ Plastic	☒ Plastic	9.1
☐ Concrete	☐ Concrete	Wall Thickness (Metres)
		SCH. 40
No Casing and Screen Used		Inside Diameter of the Casing (Metres)
☐ Open Hole		50 mm
Disinfected? ☐ Yes ☐ No		Depth of the Casing (Metres)
		7.6

Ministry Use Only	
Audit No.	Well Contractor No.
z 77870	
Date Received (yyyy/mm/dd)	Date of Inspection (yyyy/mm/dd)
MAY 30 2008	
Remarks	



Well Tag No. (Place Sticker and/or Print Below)

Well Record

Regulation 903 Ontario Water Resources Act

Page / of /

Measurements recorded in: ☒ Metric ☐ Imperial

Well Owner's Information

First Name	Last Name <u>Organization</u>	E-mail Address		☐ Well Constructed by Well Owner
	CITY OF BARRIE	cityinfo@barrie.ca		
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
70 COLLIER ST., Box 400	BARRIE	ON	L4M 4T5	705 724 0111

Well Location

Address of Well Location (Street Number/Name) HURONIA RD			Township INNISFIL		Lot 10	Concession 11
County/District/Municipality SIMCOE			City/Town/Village BARRIE			Province Ontario
UTM Coordinates			Municipal Plan and Sublot Number			Postal Code
Zone	Easting	Northing				Other
NAD 8 3	1 7 6 0 6 6 6 5	4 9 1 0 1 8 3				

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
	DECOMMISSION TW 4/98				
	Audit #173480				
		150mm ϕ	CEMENT GROUT	31.7	ϕ
		50mm ϕ	CEMENT GROUT	92.7	1.0m
		32mm ϕ	CEMENT GROUT	92.7	1.0m
		NOTE: 200mm id 150mm SURFACE CASING REMAINS DUE TO ABOVE GROUND HEAD CONDITIONS.			

Annular Space			
Depth Set at (m/ft)		Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To		

Method of Construction		Well Use		
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☐ Monitoring
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, specify _____		☐ Other, specify _____		

Construction Record - Casing				Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply
			From	To	

Construction Record - Screen				
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To

☐ Insufficient Supply
☐ Abandoned, Poor Water Quality
☒ Abandoned, other, specify
NOT REQUIRED
☐ Other, specify

Water Details		Hole Diameter		
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	Depth (m/ft) From	To	Diameter (cm/in)
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____			
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____			

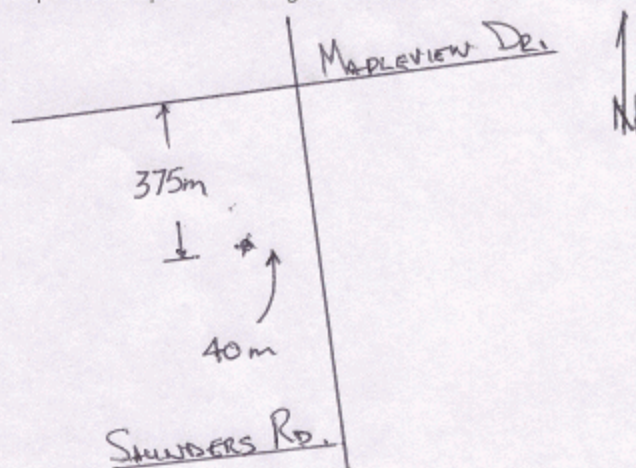
Well Contractor and Well Technician Information				
Business Name of Well Contractor			Well Contractor's Licence No.	
INTERNATIONAL WATER SUPPLY LTD			2 8 0 1	
Business Address (Street Number/Name)			Municipality	
342 BAYVIEW DRIVE			BARRIE	
Province	Postal Code	Business E-mail Address		
ON	L4N4Y8	IWS@IWS.CA		
Bus. Telephone No. (inc. area code)		Name of Well Technician (Last Name, First Name)		
705-733-0111		MARSHALL, PETER		
Well Technician's Licence No.	Signature of Technician and/or Contractor		Date Submitted	
0364	Terry Brown		20100504	

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, <i>specify</i> _____	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
	4		4	
Duration of pumping _____ hrs + _____ min	5		5	
Final water level end of pumping (m/ft)	10		10	
If flowing give rate (l/min / GPM)	15		15	
	20		20	
Recommended pump depth (m/ft)	25		25	
Recommended pump rate (l/min / GPM)	30		30	
	40		40	
Well production (l/min / GPM)	50		50	
Disinfected? ☐ Yes ☐ No	60		60	

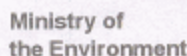
Map of Well Location TW 4/98

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
	Y Y Y Y M M D D	
☐ Yes ☐ No	Date Work Completed	Audit No. z112390 MAY 12 2010 Received
	20100369	



Well Tag No. (Place Sticker and/or Print Below)

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page 1 of 1

Well Owner's Information

First Name	Last Name / <u>Organization</u>	E-mail Address			☐ Well Constructed by Well Owner
	CITY OF BARRIE	cityinfo@barrie.ca			
Mailing Address (Street Number/Name)		Municipality	Province	Postal Code	Telephone No. (inc. area code)
70 COLLIER ST. BOX 400		BARRIE	ON	L4M 4T5	705 726 4242

Well Location

Address of Well Location (Street Number/Name)				Township		Lot	Concession	
Huron Rd				LNNISFL		10	11	
County/District/Municipality				City/Town/Village			Province	Postal Code
SIMCOE				BARRIE			Ontario	
UTM Coordinates		Zone	Easting	Northing	Municipal Plan and Sublot Number			Other
NAD 83		17	606666	4910184				

Overburden and Bedrock Materials Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
			DECOMMISSION TW 3/98 AUDIT# 173478		
		50mm ϕ	BENTONITE PELLETS	15.2	10.4m
			CEMENT GROUT	10.4	ϕ .5m
			BENTONITE CHIPS	0.5	ϕ
			50mm CASING EXCAVATED AND CUT OFF ~ 1m BGL DUE TO ABOVE GROUND HEAD		

Annular Space		Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
Depth Set at (m/ft) From	To		

Method of Construction		Well Use		
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☐ Monitoring
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, <i>specify</i> _____		☐ Other, <i>specify</i> _____		

Construction Record - Casing					Status of Well
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		
			From	To	
					☐ Water Supply
					☐ Replacement Well
					☐ Test Hole
					☐ Recharge Well
					☐ Dewatering Well
					☐ Observation and/or Monitoring Hole
					☐ Alteration (Construction)
					☐ Abandoned, Inactive, or Sealed

Construction Record - Screen				
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To

☐ Insufficient Supply
☐ Abandoned, Poor Water Quality
☒ Abandoned, other, specify
NOT REQUIRED
☐ Other, specify

Water Details		Hole Diameter	
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	Depth (m/ft) From	Diameter (cm/in) To
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____		
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____		

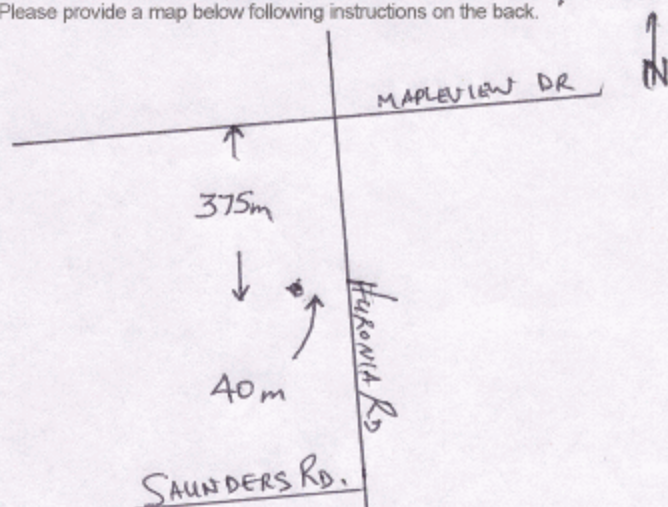
Well Contractor and Well Technician Information			
Business Name of Well Contractor		Well Contractor's Licence No.	
INTERNATIONAL WATER SUPPLY LTD		2801	
Business Address (Street Number/Name)		Municipality	
342 BAYVIEW DRIVE		BARRIE	
Province	Postal Code	Business E-mail Address	
ON	L4N4Y8	IWS@IWS.CO	
Bus. Telephone No. (inc. area code)		Name of Well Technician (Last Name, First Name)	
7057330111		MARCHILDON, PETER	
Well Technician's Licence No.	Signature of Technician and/or Contractor		Date Submitted
0364	Tanner Brown		20100504

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, <i>specify</i> _____	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
	4		4	
Duration of pumping ____ hrs + ____ min	5		5	
Final water level end of pumping (m/ft)	10		10	
If flowing give rate (l/min / GPM)	15		15	
	20		20	
Recommended pump depth (m/ft)	25		25	
	30		30	
Recommended pump rate (l/min / GPM)	40		40	
	50		50	
Well production (l/min / GPM)	60		60	
Disinfected? ☐ Yes ☐ No				

Map of Well Location TW 3/98

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
	Y Y Y Y M M D D	
☐ Yes	Date Work Completed	MAY 12 2010 Received
☐ No	20100325	

Measurements recorded in: ☐ Metric ☒ Imperial

Page of

Well Owner's Information

First Name CEDAR	Last Name / Organization LINKS GOLF CENTRE	E-mail Address	☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code
		Telephone No. (inc. area code)	

Well Location

Address of Well Location (Street Number/Name)	Township INNISFIL	Lot 11	Concession 11
County/District/Municipality SIMCOE	City/Town/Village	Province Ontario	Postal Code
UTM Coordinates NAD 83 0601669104910375	Municipal Plan and Sublot Number	Other	

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)
BLACK	TOPSOIL	—	SOFT	0 1
BROWN	SAND	SILT	LOOSE	1 13
GREY	CLAY	STONES	HARD	13 35
BROWN	SAND	CLAY STONES	DIRTY	35 89
GREY	CLAY	—	DENSE	89 95
BROWN	SAND	SILT	DIRTY	95 104
GREY	CLAY	—	DENSE	104 138
BROWN/GREY	SAND	—	LOOSE	138 170

Annular Space			Results of Well Yield Testing			
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)	After test of well yield, water was: ☐ Clear and sand free ☒ Other, specify DIRTY			
0 20	HOLEPLUG BENSEAL	4	If pumping discontinued, give reason:			
			Pump intake set at (m/ft) 125 FT			
			Pumping rate (l/min / GPM) 22 GPM			
			Duration of pumping 1 hrs + 30 min			
			Final water level end of pumping (m/ft) 51 FT			
			If flowing give rate (l/min / GPM)			
			Recommended pump depth (m/ft) 125 FT			
			Recommended pump rate (l/min / GPM) 100 GPM			
			Well production (l/min / GPM) 150-200			
			Disinfected? ☒ Yes ☐ No			

Method of Construction		Well Use	
☐ Cable Tool ☒ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Other, specify	☐ Diamond ☐ Jetting ☐ Driving ☐ Digging	☐ Public ☐ Domestic ☐ Livestock ☒ Irrigation ☐ Industrial ☒ Other, specify GOLF COURSE	☐ Commercial ☐ Municipal ☐ Test Hole ☐ Cooling & Air Conditioning ☐ Not used ☐ Dewatering ☐ Monitoring

Construction Record - Casing				Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)	☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify	
10 1/4	STEEL	188	+3 136		
5 1/2	STEEL	188	126 150		

Construction Record - Screen			
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)
5 1/2	STAINLESS	16	150 170

Water Details		Hole Diameter	
Water found at Depth	Kind of Water: ☒ Fresh ☐ Untested	Depth (m/ft)	Diameter (cm/in)
170 (m/ft)	☐ Gas ☐ Other, specify	From To	
Water found at Depth	Kind of Water: ☐ Fresh ☐ Untested	0 20	10 IN
(m/ft)	☐ Gas ☐ Other, specify	20 136	8 3/4
Water found at Depth	Kind of Water: ☐ Fresh ☐ Untested	136 170	6 1/8
(m/ft)	☐ Gas ☐ Other, specify		

Well Contractor and Well Technician Information			
Business Name of Well Contractor R&B WELL DRILLING LTD		Well Contractor's Licence No. 4645	
Business Address (Street Number/Name) 569 SIDEROAD 10, BEETON, NEW TEUMESETH		Municipality	
Province ONT	Postal Code L0G 1A0	Business E-mail Address	
Telephone No. (inc. area code) 705 729 2950		Name of Well Technician (Last Name, First Name) KOWALSKI, ROBERT	
Well Technician's Licence No. (Signature of Technician and/or Contractor) 2425		Date Submitted 20100521	

Map of Well Location			
Please provide a map below following instructions on the back.			

Ministry Use Only	
Audit No. 2105515	Received JUL 19 2010
Well owner's information package delivered ☒ Yes ☐ No	Date Package Delivered 20100521 Date Work Completed 20100517
Comments:	

Master Well Owner's and Land Owner's Information

First Name CITY OF BARRIE	Last Name (/s/ AZIMUTH ENVIRONMENTAL CONSULTING INC.)	E-mail Address
Mailing Address (Street Number/Name, RR) 70 COLLIER STREET, Box 400	Municipality BARRIE	Province ONTARIO
Postal Code L4M 4T5	Telephone No. (inc. area code)	

Location and Construction of the Master Well in the Cluster

Address of Well Location (Street Number/Name, RR) MAPLEVIEW DRIVE EAST	Township	Lot	Concession
County/District/Municipality	City/Town/Village BARRIE	Province Ontario	Postal Code

UTM Coordinates NAD 83 Zone 17 Easting 606270 Northing 4910480	GPS Unit Make	Model	Mode of Operation: ☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify
---	---------------	-------	---

Overburden and Bedrock Materials (see instructions on the back of this form) FT.

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From To
Black	TOPSOIL			0' 1'
Brown	SAND	BOULDERS		1' 10'
Grey	SAND	SILT		10' 22'
Grey	SANDY SILT		WET	22' 40'

Hole Details

Depth (Metres) From To	Diameter (Centimetres)
0' 40' 8"	

Water Use

☐ Public	☐ Industrial	☐ Not used	☐ Other, specify
☐ Domestic	☐ Commercial	☐ Dewatering	
☐ Livestock	☐ Municipal	☒ Monitoring	
☐ Irrigation	☒ Test Hole	☐ Cooling & Air Conditioning	

Method of Construction

☐ Cable Tool	☐ Air Percussion	☐ Digging
☐ Rotary (Conventional)	☐ Diamond	☐ Boring
☐ Rotary (Reverse)	☐ Jetting	☐ Other, specify
☐ Rotary (Air)	☐ Driving	AUGER

Status of Well

☒ Test Hole	☐ Abandoned, Insufficient Supply
☐ Replacement Well	☐ Abandoned, Poor Water Quality
☐ Dewatering Well	☐ Other, specify
☐ Alteration (Construction)	☐ Abandoned, other, specify

No Casing and Screen Used	Static Water Level Test
Open Hole ☐ Yes ☒ No	Metres

Screen

☐ Galvanized	☐ Steel	☐ Fibreglass	☐ Concrete	☒ Plastic
Outside Diameter (Centimetres) 2.5"	Slot No. 0.010			

Construction Details

Inside Diameter (Centimetres)	Material (steel, plastic, fibreglass, concrete, galvanized)	Wall Thickness	Depth (Metres) From To
2"	PLASTIC RISER	sch 40	0' 30'
2"	PLASTIC SCREEN	sch 40	30' 40'

Annular Space/Abandonment Sealing Record

Depth Set at (Metres) From To	Type of Sealant Used (Material and Type)	Volume Used (Cubic Metres)
0' 28'	BENTONITE HOLEPLUG	
28' 40'	SILICA SAND	

Water Details

Water found at Depth Metres ☐ Gas ☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals	Kind of Water
Water found at Depth Metres ☐ Gas ☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals	Kind of Water
Water found at Depth Metres ☐ Gas ☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals	Kind of Water

Disinfected ☐ Yes ☒ No If no, provide reason: **TEST HOLE** Date Master Well Completed (yyyy/mm/dd) **2010/06/21**

Cluster Information (Please also fill out the additional Cluster Well Information for Well Construction for each parcel of land and cluster.)

Total Wells in Cluster 2	Please indicate Number of Cluster Well Information Log Sheets Submitted 1
Total Wells on this Property	

Location of Well Cluster

Detailed Map must be provided as an attachment no larger than legal size (8.5" x 14"). Sketches are not allowed.

☒ Check box to confirm detailed map is provided as per Section 11.1 (3)

Consent to release additional information concerning the cluster to the Director upon request

Signature of Technician/Contractor **[Signature]** Date (yyyy/mm/dd) **2010/06/21**

Master Well Owner's/Land Owner's consent to use Cluster Form

Signature **AS PER AZIMUTH ENVIRONMENTAL** Date (yyyy/mm/dd) **2010/06/21**

Ministry Use Only

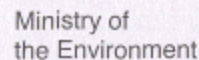
Audit No. **M 07927** Well Contractor No.

Date Received (yyyy/mm/dd) **NOV 25 2011** Date of Inspection (yyyy/mm/dd)

Remarks

Well Contractor and Well Technician Information

Business Name of Well Contractor LANTECH DRILLING SERVICES INC.	Well Contractor's Licence No. 6809
Business Address (Street No./Name, number, RR) 3661 MOUNT ALBERT ROAD	Municipality SHARON
Province ONTARIO	Postal Code L0G 1V0
Business E-mail Address	
Bus. Telephone No. (inc. area code) 905 478 2243	Name of Well Technician (Last Name, First Name) JAMES WRIGHT
Well Technician's Licence No. 1466	Signature of Technician [Signature] Date Submitted (yyyy/mm/dd) 2010/07/15



Well Tag No. for Master Well (Print Well Tag No.)

A095457

Cluster Well Information for Cluster Well Construction

Regulation 903 Ontario Water Resources Act

Page 2 of 2

Property Owner's Information

First Name CITY OF BARRIE	Last Name (40421 with ENVIRONMENTAL CONSULTING INC.)	Mailing Address (Street No./Name, RR) 70 COLLIER ST, Box 400	Municipality BARRIE
Province ONTARIO	Postal Code L4M 4T5	E-mail Address	Telephone No. (Inc. area code)

Cluster Well Information

Address of Well Location (Street Number/Name, RR) MAPLEVIEW DRIVE EAST			Lot	Concession	Township	County/District/Municipality	
City/Town/Village BARRIE	Province Ontario	Postal Code		GPS Unit Make	Model	Unit Mode of Operation	☐ Undifferentiated ☐ Averaged ☐ Differentiated, specify:

Consent

Property Owner's Consent to use cluster form

Signature <i>ds pen</i>	Date (yyyy/mm/dd)
<i>Azimuth environmental</i>	<i>2010/06/21</i>

Consent to release additional information to the Director upon request

Signature of Technician/Contractor	Date (yyyy/mm/dd)
	2010/06/21

[illegible]

Well Contractor and Well Technician Information

Business Name of Well Contractor LANTCH DRILLING SERVICES INC.		Business Address (Street Number/Name, RR) 3661 MOUNT ALBERT ROAD		Municipality SHARON	Province ONTARIO
Postal Code L0G1V0	Business Telephone No. (inc. area code) 9054782243	Well Contractor's Licence No. 6809	Business E-mail Address		
Name of Well Technician (First Name, Last Name) JAMES WAIGHT		Well Technician's Licence No. 1466	Date Submitted (yyyy/mm/dd) 2016/07/15	Signature of Technician 	

Date 1st Well in Cluster Constructed (yyyy/mm/dd) 2010/06/21	Date Last Well in Cluster Constructed (yyyy/mm/dd) 2010/06/21
--	---

Ministry Use Only

Date Received (yyyy/mm/dd) NOV 25 2011	Date Inspected (yyyy/mm/dd)
Audit No. c 14193	Remarks more



1007927
C14193

NOV 25 2011



Well Tag No. (Place Sticker and/or Print Below)

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☒ Metric ☐ Imperial

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address		☐ Well Constructed by Well Owner
	CITY OF BARRIE	cityinfo@barrie.ca		
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
70 COLLIER ST.	BARRIE	ON	L4M 4T5	705 726 4242

Well Location

Address of Well Location (Street Number/Name) 207 MAPLEVIEW DR E.			Township INNISFIL			Lot 10		Concession 11			
County/District/Municipality SIMCOE			City/Town/Village BARRIE				Province Ontario		Postal Code 		
UTM Coordinates		Zone	Easting		Northing		Municipal Plan and Sublot Number			Other	
NAD 83		18	606335491		0454						

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
	DECOMMISSION 57-11986?				
			BENTONITE CHIPS	12.5	6.1
			CEMENT GROUT	6.1	3.0
			BENTONITE CHIPS	3.0	2.0
			NATIVE MATERIAL	2.0	0

Annular Space			
Depth Set at (m/ft)		Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To		

Method of Construction		Well Use		
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☐ Monitoring
☐ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, <i>specify</i> _____		☐ Other, <i>specify</i> _____		

Construction Record - Casing					Status of Well
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned,
			From	To	

Construction Record - Screen				
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To

☐ Abandoned, Poor Water Quality
☒ Abandoned, other, *specify* _____
☐ Other, *specify* _____

Water Details		Hole Diameter	
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	Depth (m/ft) From	Diameter (cm/in) To
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____		
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____		

Well Contractor and Well Technician Information

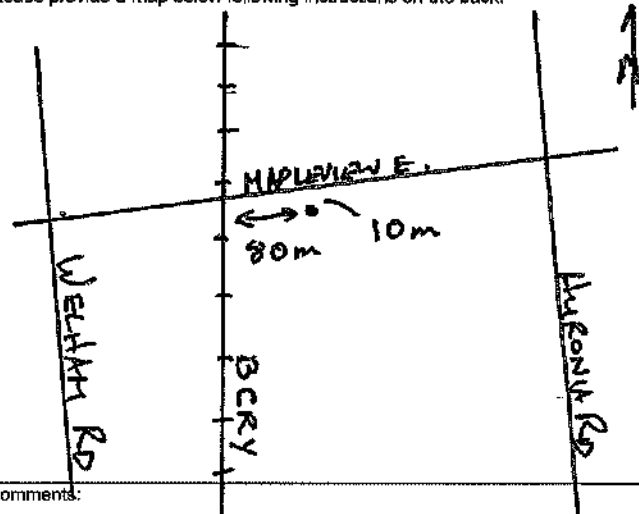
Business Name of Well Contractor INTERNATIONAL WATER SUPPLY		Well Contractor's Licence No. 2801
Business Address (Street Number/Name) 342 BAYVIEW DRIVE		Municipality BARRIE
Province BARRIE	Postal Code L4N4Y1K	Business E-mail Address lws@lws.ca
Bus. Telephone No. (inc. area code) 7057330111	Name of Well Technician (Last Name, First Name) AUGUSTINE, DALE	
Well Technician's Licence No. 31627	Signature of Technician and/or Contractor TN Brown	Date Submitted 2011/12/19

Results of Well Yield Testing

After test of well yield, water was:		Draw Down		Recovery	
☐ Clear and sand free ☐ Other, <i>specify</i> _____		Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level			
		1		1	
Pump intake set at (m/ft)		2		2	
		3		3	
Pumping rate (l/min / GPM)		4		4	
		5		5	
Duration of pumping _____ hrs + _____ min		10		10	
Final water level end of pumping (m/ft)		15		15	
If flowing give rate (l/min / GPM)		20		20	
		25		25	
Recommended pump depth (m/ft)		30		30	
		40		40	
Recommended pump rate (l/min / GPM)		50		50	
		60		60	
Well production (l/min / GPM)					
Disinfected?					
☐ Yes ☐ No					

Map of Well Location

Please provide a map below following instructions on the back.



Comments

Well owner's information package delivered ☐ Yes ☐ No	Date Package Delivered Y Y Y Y M M D D _____	Ministry Use Only Audit No. z115283 Received DEC 29 2011
	Date Work Completed 2 9 1 1 / 1 0 / 2 2	



Ministry of
the Environment

Well Tag No. (Place Sticker and/or Print Below)

Tag#: A125735

A125735

S-12514

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Weldco - Benkes Mfg		
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code
12155-154 Street	Edmonton	AB	T5V1J3

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
515 Wellham Rd			
County/District/Municipality	City/Town/Village	Province	Postal Code
	Barrie	Ontario	
UTM Coordinates	Zone	Easting	Northings
NAD 83	17	760617	74910961
Municipal Plan and Sublot Number			Other WKQ-004936
			A 0 - A 02

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)
				From To
Grey	gravel	sand	Loose	0' 2'
light grey	sand	silt	Loose	2' 10'
light brown	sand	silt	soft	10' 14'
light grey	sand	silt	Dense	14' 25'

Annular Space		
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m ³ /ft ³)
0' 1'	concrete	
1' 14'	Penseal	
14' 25'	Sand	

Method of Construction	Well Use
☐ Cable Tool	☐ Public
☐ Rotary (Conventional)	☐ Commercial
☐ Rotary (Reverse)	☐ Domestic
☐ Boring	☐ Livestock
☐ Air percussion	☐ Irrigation
☒ Other, specify Direct Push	☐ Industrial
	☐ Other, specify

Construction Record - Casing			Status of Well	
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)	
			From To	
1.25"	PVC	0.25	0' 15'	☐ Water Supply
				☐ Replacement Well
				☒ Test Hole
				☐ Recharge Well
				☐ Dewatering Well
				☒ Observation and/or Monitoring Hole
				☐ Alteration (Construction)
				☐ Abandoned, Insufficient Supply
				☐ Abandoned, Poor Water Quality
				☐ Abandoned, other, specify
				☐ Other, specify

Construction Record - Screen		
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.
1.5"	PVC	10

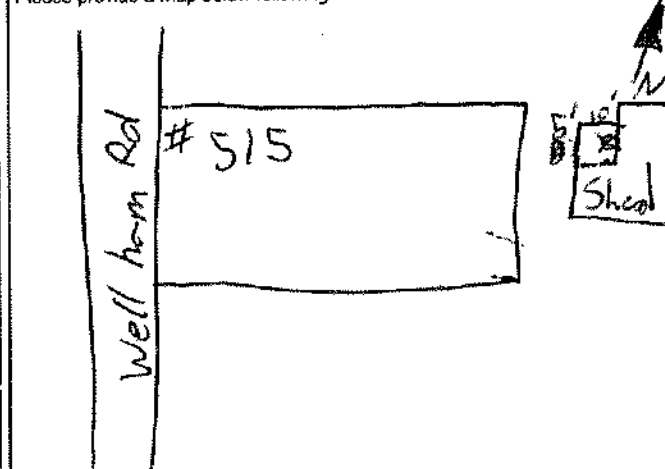
Water Details		Hole Diameter	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested	Depth (m/ft)	Diameter (cm/in)
	☐ Gas ☐ Other, specify	From To	
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested	0' 25'	2.25"
	☐ Gas ☐ Other, specify		
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested		
	☐ Gas ☐ Other, specify		

Business Name of Well Contractor		Well Contractor's Licence No.
Strata Soil Sampling Inc.		7241
Business Address (Street Number/Name)		Municipality
147-2 West Beaver Creek Road		Richmond Hill
Province	Postal Code	Business E-mail Address
Ontario	L4B 1G6	wrecords@stratasoil.com
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	
905-764-9304	Muir, Mike	
Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3448	[Signature]	20120518

Results of Well Yield Testing				
After test of well yield, water was: ☐ Clear and sand free ☐ Other, <i>specify</i> _____	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
	4		4	
Duration of pumping _____ hrs + _____ min	5		5	
Final water level end of pumping (m/ft)	10		10	
If flowing give rate (l/min / GPM)	15		15	
	20		20	
Recommended pump depth (m/ft)	25		25	
Recommended pump rate (l/min / GPM)	30		30	
	40		40	
Well production (l/min / GPM)	50		50	
	60		60	
Disinfected? ☐ Yes ☐ No				

Map of Well Location

Please provide a map below following instructions on the back.



Comments: General contractor: Pinchin Environmental	
Well owner's information package delivered	Date Package Delivered
☐ Yes ☒ No	20120508
Date Work Completed	20120508
Ministry Use Only	
Audit No.	2135039
Received	MAY 30 2012



Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. (Place Sticker and/or Print Below)

A151306

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Address of Well Location (Street Number/Name) 353 Sawnder Road				Township		Lot		Concession				
County/District/Municipality				City/Town/Village Barrie				Province Ontario		Postal Code 		
UTM Coordinates		Zone	Easting	Northing	Municipal Plan and Sublot Number				Other			
NAD		8	3	176066934909912								

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)[illegible]

Annular Space			
Depth Set at (m/ft)		Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To		
0	1'	Flusmant Casing & concrete	
1'	4'	3/8 Bentonite	50 lbs
4'	15	Well Sand	100 lbs

Method of Construction		Well Use		
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☒ Monitoring
☒ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, <i>specify</i> _____		☐ Other, <i>specify</i> _____		

Construction Record - Casing					Status of Well
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		
			From	To	
2"	PVC	3/16	0	5'	☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply

Construction Record - Screen				
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To
2 3/8	PVC	10	5'	15'

insufficient supply

☐ Abandoned, Poor Water Quality

☐ Abandoned, other, specify

☐ Other, specify

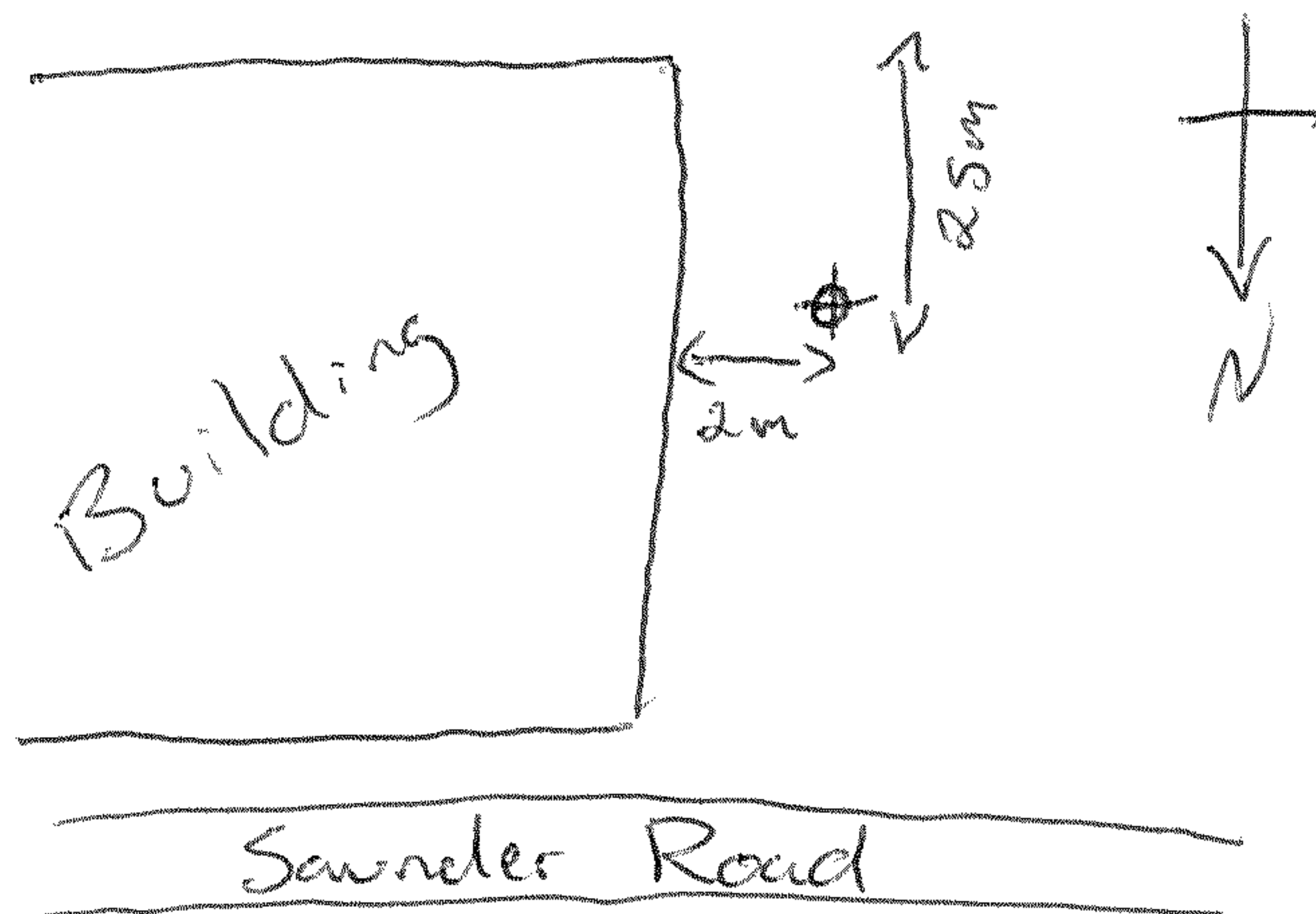
Water Details		Hole Diameter		
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	Depth (m/ft) From	To	Diameter (cm/in)
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	0	15'	4.5"
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____			

Well Contractor and Well Technician Information									
Business Name of Well Contractor					Well Contractor's Licence No.				
Pontil Drilling					7 3 8 3				
Business Address (Street Number/Name)					Municipality				
11 Water Street					Mt. Albert				
Province		Postal Code		Business E-mail Address					
ON		L0G1M0		info@pontildrilling.com					
Bus. Telephone No. (inc. area code)				Name of Well Technician (Last Name, First Name)					
289 3381 8388				Mike Hepburn					
Well Technician's Licence No.				Signature of Technician and/or Contractor				Date Submitted	
3 7 6 2				Mike Hepburn				2014/03/22	

Results of Well Yield Testing				
After test of well yield, water was: ☐ Clear and sand free ☐ Other, <i>specify</i> _____	Draw Down		Recovery	
	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
	4		4	
Duration of pumping _____ hrs + _____ min	5		5	
Final water level end of pumping (m/ft)	10		10	
If flowing give rate (l/min / GPM)	15		15	
	20		20	
Recommended pump depth (m/ft)	25		25	
	30		30	
Recommended pump rate (l/min / GPM)	40		40	
	50		50	
Well production (l/min / GPM)	60		60	
Disinfected?				
☐ Yes ☐ No				

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered	Date Package Delivered	Ministry Use Only Audit No. Z185283 AUG 14 2014 Received
	Date Work Completed	

Measurements recorded in: ☐ Metric ☒ Imperial

A151308

Address of Well Location (Street Number/Name) 353 Saunders Road				Township		Lot		Concession	
County/District/Municipality				City/Town/Village Barrie				Province Ontario	
UTM Coordinates		Zone	Easting	Northing		Municipal Plan and Sublot Number			
NAD 83		17	606680	4910039					
						Other			

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

[illegible]

Annular Space			
Depth Set at (m/ft)		Type of Sealant Used	Volume Placed
From	To	(Material and Type)	(m³/ft³)
0	1'	Flushmount Casing w/ cements	
1'	4'	3/8 Bentonite	50 lbs
4'	15'	Well Sand	100 lbs

Method of Construction		Well Use		
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☒ Monitoring
☒ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, <i>specify</i> _____		☐ Other, <i>specify</i> _____		

Construction Record - Casing					Status of Well
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		
			From	To	
2"	PVC	3/16	0	5'	☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, <i>specify</i> _____ ☐ Other, <i>specify</i> _____
Construction Record - Screen					
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)		
			From	To	
2 3/8	PVC	10	5'	15'	

Water Details		Hole Diameter		
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	Depth (m/ft) From	To	Diameter (cm/in)
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	0	15'	4.5"
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____			

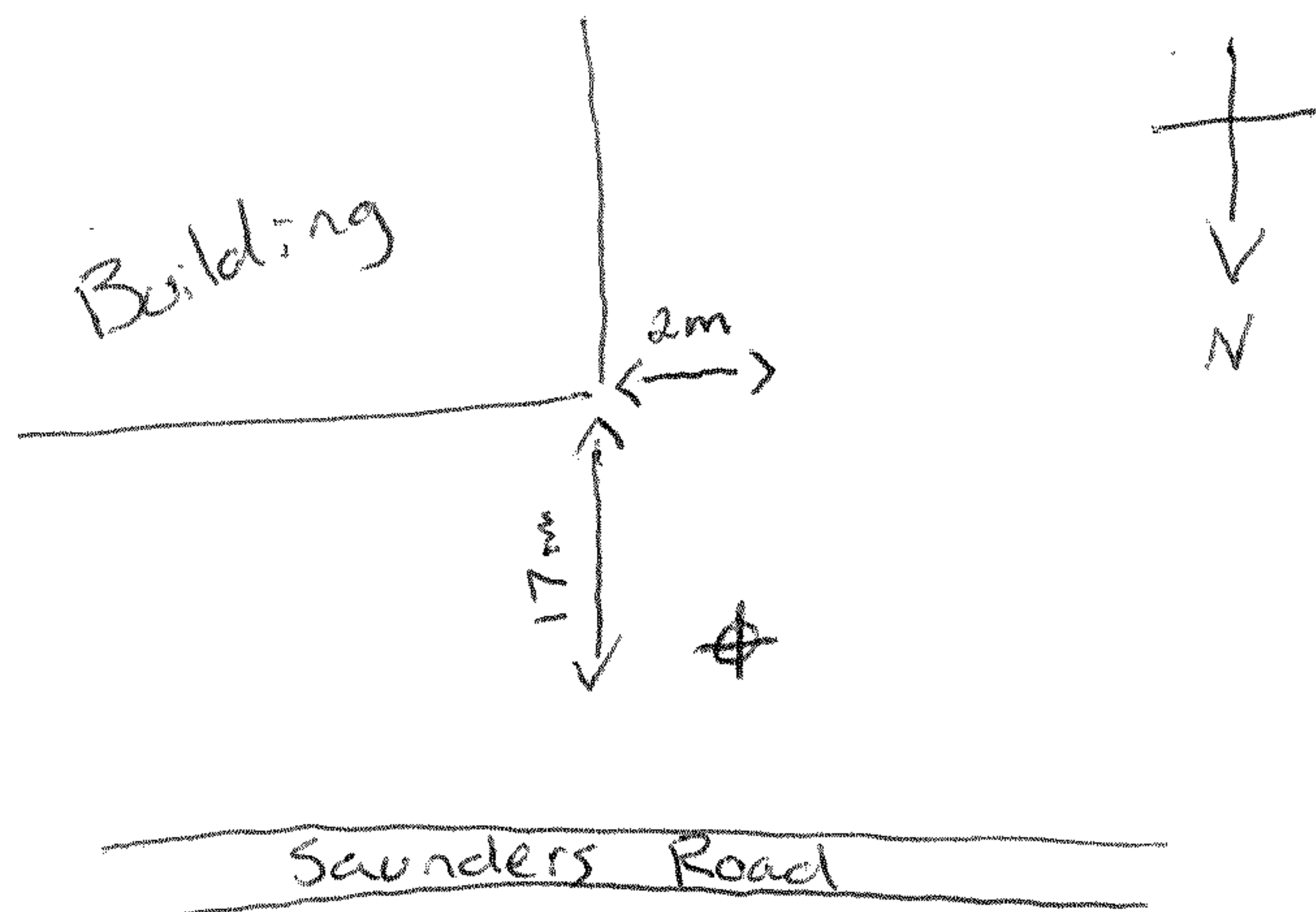
Well Contractor and Well Technician Information									
Business Name of Well Contractor						Well Contractor's Licence No.			
Pontil Drilling						7 3 8 3			
Business Address (Street Number/Name)						Municipality			
11 Water Street						Mt. Albert			
Province		Postal Code		Business E-mail Address					
ON		L0G1M0		info@pontildrilling.com					
Bus.Telephone No. (inc. area code)				Name of Well Technician (Last Name, First Name)					
2893381838				Mike Hepburn					
Well Technician's Licence No.		Signature of Technician and/or Contractor				Date Submitted			
3 7 6 2		[Signature]				20140322			

Results of Well Yield Testing

After test of well yield, water was:		Draw Down		Recovery	
☐ Clear and sand free ☐ Other, <i>specify</i> _____		Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level			
		1		1	
Pump intake set at (m/ft)		2		2	
Pumping rate (l/min / GPM)		3		3	
Duration of pumping _____ hrs + _____ min		4		4	
Final water level end of pumping (m/ft)		5		5	
If flowing give rate (l/min / GPM)		10		10	
Recommended pump depth (m/ft)		15		15	
		20		20	
Recommended pump rate (l/min / GPM)		25		25	
Well production (l/min / GPM)		30		30	
		40		40	
Disinfected?		50		50	
☐ Yes ☐ No		60		60	

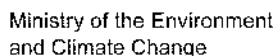
Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well owner's information package delivered	Date Package Delivered	Ministry Use Only Audit No. Z185289 AUG 14 2014 Received _____
	☐ Yes ☒ No	



Tag#: A150902

AI50702

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Measurements recorded in: ☐ Metric ☐ Imperial

Well Owner's Information

First Name City of Barrie	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner		
Mailing Address (Street Number/Name) 70 Collier St	Municipality Simcoe	Province Ont	Postal Code L4M4T5	Telephone No. (inc. area code)	7057264242

Well Location

Address of Well Location (Street Number/Name) 44 Huronia rd				Township Barrie		Lot		Concession	
County/District/Municipality Simcoe				City/Town/Village Barrie		Province Ontario		Postal Code 	
UTM Coordinates NAD 83		Zone 18	Easting 760670	Northing 04910227		Municipal Plan and Sublot Number		Other	

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
Brown	Sand		Packed	0	5'
Grey	Till		hard	5'	15'
Grey	Silt	Sand	wet	15'	45'

Annular Space				Results of Well Yield Testing				
Depth Set at (m/ft)		Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)	After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify _____ If pumping discontinued, give reason: Pump intake set at (m/ft)	Draw Down		Recovery	
From	To				Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
0	34'	Bentonite			Static Level			
34'	45'	Sand			1		1	
0	9	Bentonite			2		2	
9'	20	Sand			3		3	

Method of Construction		Well Use		
☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☒ Monitoring
☒ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, <i>specify</i> _____		☐ Other, <i>specify</i> _____		

Construction Record - Casing					Status of Well
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply
			From	To	
2"	Plastic	Sch 40	0	35'	
2"	Plastic	Sch 40	0	10'	

Construction Record - Screen					☐ Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)		
			From	To	
2"	Plastic	10	35'	45'	
2"	Plastic	10	10'	20	

Water Details		Hole Diameter		
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	Depth (m/ft) From	To	Diameter (cm/in)
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	0	45'	8 1/4"
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	0	20'	8 1/4"

Well Contractor and Well Technician Information			
Business Name of Well Contractor		Well Contractor's Licence No.	
Walker Drilling Ltd		7 2 0 1	
Business Address (Street Number/Name)		Municipality	
8866 CR 56 RR #1 Utopia		Simcoe	
Province	Postal Code	Business E-mail Address	
ont	L0M1T0	info@walkerdrilling.com	
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)		
7054243423	Moser David		
Well Technician's Licence No.	Signature of Technician and/or Contractor		Date Submitted
3 5 4 8			2015/001

Results of Well Yield Testing

After test of well yield, water was:		Draw Down		Recovery	
☐ Clear and sand free ☐ Other, <i>specify</i> _____		Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:		Static Level			
		1		1	
Pump intake set at (m/ft)		2		2	
Pumping rate (l/min / GPM)		3		3	
		4		4	
Duration of pumping _____ hrs + _____ min		5		5	
Final water level end of pumping (m/ft)		10		10	
If flowing give rate (l/min / GPM)		15		15	
		20		20	
Recommended pump depth (m/ft)		25		25	
Recommended pump rate (l/min / GPM)		30		30	
Well production (l/min / GPM)		40		40	
		50		50	
Disinfected?		60		60	
☐ Yes ☐ No					

Map of Well Location

Please provide a map below following instructions on the back.

mapleview dr h

14

Comments:

Well owner's information package delivered	Date Package Delivered	Ministry Use Only Audit No. Z 214649 OCT 16 2015 (Required)
	Date Work Completed	

Measurements recorded in: ☐ Metric ☒ Imperial

Well Owner's Information

First Name City of Barrie	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Mailing Address (Street Number/Name) 70 Collier St	Municipality	Province Ont	Postal Code L4M4T5
Telephone No. (inc. area code) 705 726 4242			

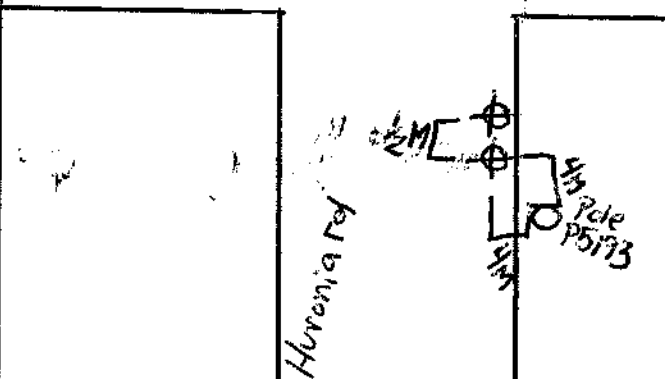
Well Location

Address of Well Location (Street Number/Name) Huron road / Mapleview dr E	Township Barrie	Lot	Concession
County/District/Municipality Simcoe	City/Town/Village Barrie	Province Ontario	Postal Code
UTM Coordinates NAD 83 176066544910511	Zone Easting Northing	Municipal Plan and Sublot Number	Other

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)
From	To			
Brown	Sand	Silt	loose	0 10'
Grey	Silt	Clay	wet	10' 40'
Grey	Clay	Gravel	tight	40' 50'

Annular Space				Results of Well Yield Testing					
Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)	After test of well yield, water was:	Draw Down		Recovery			
From	To		☐ Clear and sand free ☐ Other, specify	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)		
0 39'	Bentonite		If pumping discontinued, give reason:	Static Level					
39' 50'	Sand			1		1			
0 9'	Bentonite			Pump intake set at (m/ft)	2		2		
9' 20'	Sand			Pumping rate (l/min / GPM)	3		3		
Method of Construction			Well Use			Duration of pumping			
☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☒ Boring ☐ Air percussion ☐ Other, specify			☐ Diamond ☐ Jetting ☐ Driving ☐ Digging			☐ Public ☐ Commercial ☐ Not used ☐ Domestic ☐ Municipal ☐ Dewatering ☒ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, specify		hrs + min Final water level end of pumping (m/ft)	
Construction Record - Casing				Status of Well					
Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)	☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☒ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify					
From	To								
2"	Plastic	Sch 40	0 40'	Recommended pump depth (m/ft)					
2"	Plastic	Sch 40	0 10'	Recommended pump rate (l/min / GPM)					
				Well production (l/min / GPM)					
				Disinfected? ☐ Yes ☐ No					

Construction Record - Screen				Map of Well Location			
Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	Please provide a map below following instructions on the back.			
From	To						
2 1/4"	Plastic	10	40' 50'				
2 1/4"	Plastic	10	10' 20'				

Water Details				Hole Diameter			
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested	Depth (m/ft)	Diameter (cm/in)				
	☐ Gas ☐ Other, specify	From	To				
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested	0 50'	8 1/4"				
	☐ Gas ☐ Other, specify	0 20'	8 1/4"				
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested						
	☐ Gas ☐ Other, specify						

Measurements recorded in: ☐ Metric ☒ Imperial

4150902

Page 1 of 1

Well Owner's Information

First Name <i>City of Barrie</i>	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner	
Mailing Address (Street Number/Name) <i>70 Collier St</i>	Municipality <i>Simcoe</i>	Province <i>Ont</i>	Postal Code <i>L4M4T5</i>	Telephone No. (inc. area code) <i>705 726 9242</i>

Well Location

Address of Well Location (Street Number/Name) 644 Huronia rd				Township Simcoe		Lot		Concession	
County/District/Municipality Simcoe				City/Town/Village Barrick		Province Ontario		Postal Code 	
UTM Coordinates NAD 83		Zone 17	Eastings 60670049	Northing 10227		Municipal Plan and Sublot Number		Other	

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

[illegible]

Annular Space

Depth Set at (m/ft)		Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To		
⑩	45'	Bentonite	
①	20'	Bentonite	

Method of Construction

☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☒ Monitoring
☒ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, specify _____		☐ Other, specify _____		

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		Status or Use
			From	To	
2"	Plastic	Sch 40			☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned,
2"	Plastic	Sch 40			

Construction Record - Screen

Outside Diameter (mm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (mm/in)		☐ Abandoned, Poor Water Quality ☒ Abandoned, other, specify <u>Test Complete</u> ☐ Other, specify
			From	To	
2 1/4"	Plastic				
2 1/4"	Plastic				

Water Details

Water found at Depth _____ Kind of Water: ☐ Fresh ☐ Untested
(m/ft) ☐ Gas ☐ Other, specify _____

Water found at Depth _____ Kind of Water: ☐ Fresh ☐ Untested
(m/ft) ☐ Gas ☐ Other, specify _____

Water found at Depth _____ Kind of Water: ☐ Fresh ☐ Untested
(m/ft) ☐ Gas ☐ Other, specify _____

Well Contractor and Well Technician Information

Business Name of Well Contractor Walker drilling Ltd		Well Contractor's Licence No. 7201	
Business Address (Street Number/Name) 8866 CR56 Rte 1 Utqia		Municipality Simcoe	
Province Ont	Postal Code L0M1T0	Business E-mail Address info@walkerdrilling.com	
Bus. Telephone No. (inc. area code) 7054243423		Name of Well Technician (Last Name, First Name) Moser David	
Well Technician's Licence No. 3548	Signature of Technician and/or Contractor 		Date Submitted 2017 05 18

Results of Well Yield Testing

After test of well yield, water was:	Draw Down		Recovery	
☐ Clear and sand free	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
☐ Other, <i>specify</i>	Static Level			
If pumping discontinued, give reason:	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
Duration of pumping _____ hrs + _____ min	4		4	
Final water level end of pumping (m/ft)	5		5	
If flowing give rate (l/min / GPM)	10		10	
Recommended pump depth (m/ft)	15		15	
	20		20	
	25		25	
Recommended pump rate (l/min / GPM)	30		30	
Well production (l/min / GPM)	40		40	
Disinfected?	50		50	
☐ Yes ☐ No	60		60	

Map of Well Location

Please provide a map below following instructions on the back.

A hand-drawn map of a property. The map shows a rectangular area with dimensions 4M (width) and 15M (depth). A smaller rectangular area is attached to the right side of the main rectangle, with a width of 1.5M. A north arrow points upwards and is labeled 'N'. The text 'Mapleview dr E' is written at the top. The text 'Huron St' is written vertically on the right side. A line points from the text 'Pole P5199' to a small circle on the left side of the map.

Well owner's information package delivered

Date Package Delivered

Y	Y	Y	Y	6	M	D	D
---	---	---	---	---	---	---	---

Date Work Completed:

20170518

11/10/2014

Audit No. 2234192

JUN 21 2017

Realized

Measurements recorded in: ☐ Metric ☒ Imperial

450900

Well Owner's Information

First Name City of Brossie	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner	
Mailing Address (Street Number/Name) 70 Collier St	Municipality	Province ont	Postal Code L4M4T5	Telephone No. (inc. area code) 705 726 4242

Well Location

Address of Well Location (Street Number/Name) <i>Huron rd / Mapleview dr E</i>				Township <i>Barrie (Simcoe)</i>		Lot		Concession	
County/District/Municipality <i>Simcoe</i>				City/Town/Village <i>Barrie</i>		Province Ontario		Postal Code 	
UTM Coordinates NAD 8 3		Zone <i>17</i>		Easting <i>606654</i>		Northing <i>4910511</i>		Municipal Plan and Sublot Number	
						Other			

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

[illegible]

Annular Space

Depth Set at (m/ft)		Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To		
0	50'	Bentonite	
0	20'	Bentonite	

Method of Construction

☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☒ Monitoring
☒ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, specify _____		☐ Other, specify _____		

WEL 150

☐ Cable Tool	☐ Diamond	☐ Public	☐ Commercial	☐ Not used
☐ Rotary (Conventional)	☐ Jetting	☐ Domestic	☐ Municipal	☐ Dewatering
☐ Rotary (Reverse)	☐ Driving	☐ Livestock	☐ Test Hole	☒ Monitoring
☒ Boring	☐ Digging	☐ Irrigation	☐ Cooling & Air Conditioning	
☐ Air percussion		☐ Industrial		
☐ Other, specify _____		☐ Other, specify _____		

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		
			From	To	
2"	Plastic	Sch 40			☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned,
2"	Plastic	Sch 40			

Status of Wall

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		
			From	To	
2"	Plastic	Sch 40			☐ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned,
2"	Plastic	Sch 40			

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)		☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify _____ ☐ Other, specify _____
			From	To	
2 1/4"	Plastic				
2 1/4"	Plastic				

Water Details

Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____

Hole Diameter

Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	Depth (m/ft) From	To	Diameter (cm/in)
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	0	50'	8 1/4"
Water found at Depth (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested ☐ Other, specify _____	0	20'	8 1/4"

Well Contractor and Well Technician Information

Business Name of Well Contractor Walker Drilling Ltd		Well Contractor's Licence No. 7201	
Business Address (Street Number/Name) 8866 CR 56 RR#1 Utopia		Municipality	
Province Ont	Postal Code L0M1T0	Business E-mail Address info@walkerdrilling.com	
Bus. Telephone No. (inc. area code) 705 474 5473		Name of Well Technician (Last Name, First Name) Moser David	

Results of Well Yield Testing

After test of well yield, water was:	Draw Down		Recovery	
☐ Clear and sand free	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
☐ Other, specify _____	Static Level			
If pumping discontinued, give reason:	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
Duration of pumping	4		4	
_____ hrs + _____ min	5		5	
Final water level end of pumping (m/ft)	10		10	
If flowing give rate (l/min / GPM)	15		15	
Recommended pump depth (m/ft)	20		20	
	25		25	
Recommended pump rate	30		30	
(l/min / GPM)	40		40	
Well production (l/min / GPM)	50		50	
Disinfected?	60		60	
☐ Yes ☐ No				

Map of Well Location

Please provide a map below following instructions on the back.

Hand-drawn circuit diagram of a 1N4001 diode bridge rectifier. The circuit consists of four diodes connected in a bridge configuration. The AC input is connected to the two opposite corners of the bridge. The DC output is taken from the other two opposite corners. The output is connected to a 4M resistor and a 1N4001 diode in series. The diode is labeled 'Pole P5193'.

Comments:

Well owner's information package delivered

☐ Yes

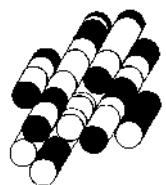
☐ No

Date Package Delivered											
Y	Y	Y	Y	M	M						
Date Work Completed											
7	0	1	3	0	6						

Ministry Use Only	
Audit No.	2234190
JUN 21 2017	

APPENDIX C

TERRAPROBE INC.



Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : CM
Date started : March 3, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 1 of 1	Location : Barrie, Ontario	Checked by : MMT

Position : E: 606050, N: 4910474 (UTM 17T)	Elevation Datum : Geodetic
Rig type : Track-mounted	Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)					Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Undrained Shear Strength (kPa)					Plastic Limit	Natural Water Content	Liquid Limit			
0	273.0	GROUND SURFACE																
		100mm TOPSOIL																
		FILL, sand, trace to some silt, trace gravel, trace organics, compact, brown / dark brown, moist		1	AS													
1				2	SS	13												
	271.5																	
	1.5	SAND, trace to some silt, compact, brown, moist		3	SS	17												
2	270.9																	
	2.1																	

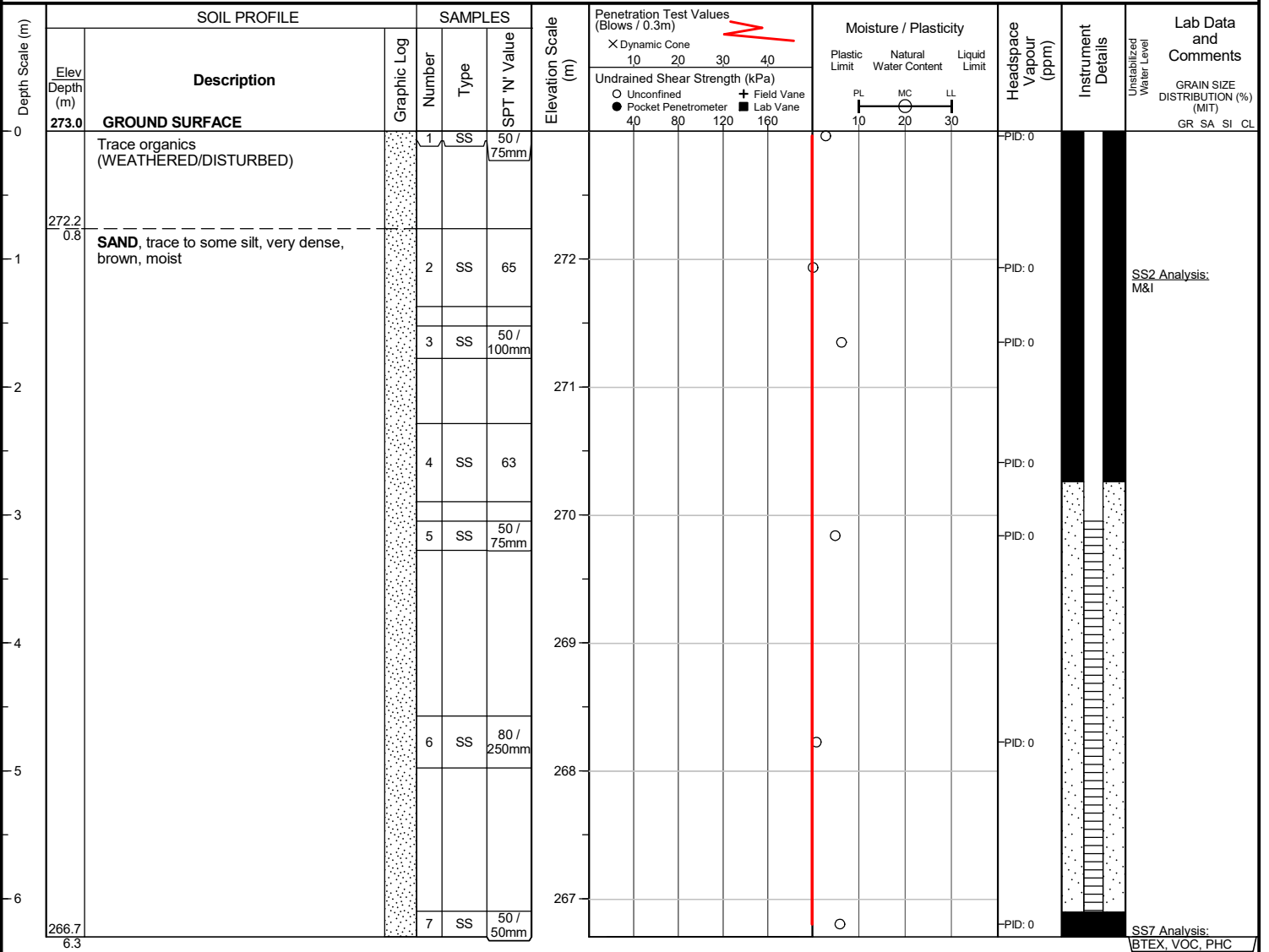
END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : CM
Date started : March 3, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 1 of 1	Location : Barrie, Ontario	Checked by : MMT

Position : E: 606063, N: 4910504 (UTM 17T)	Elevation Datum : Geodetic
Rig type : Track-mounted	Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.
50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Mar 10, 2020	dry	n/a
Apr 28, 2020	dry	n/a
May 28, 2020	dry	n/a

SS2 Analysis: M&I
SS7 Analysis: BTEX, VOC, PHC

Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : BO
Date started : February 24, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 1 of 1	Location : Barrie, Ontario	Checked by : MMT

Position : E: 606112, N: 4910523 (UTM 17T)			Elevation Datum : Geodetic		
Rig type : Track-mounted			Drilling Method : Solid stem augers		

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments	
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		10	20	30	40	Plastic Limit				Natural Water Content
0	273.1	GROUND SURFACE						Penetration Test Values (Blows / 0.3m) × Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160		Moisture / Plasticity PL MC LL 10 20 30						
		75mm AGGREGATE		1	AS		273									
		SAND AND SILT to SILT AND SAND, trace clay, trace gravel, dense to very dense, brown, moist														
			2	SS	57			272								
			3	SS	57											
			4	SS	35											
			5	SS	34											
				6	SS	32										

Project No. : 1-19-0792-01

Client : Environmental 360 Solutions Ltd

Originated by : CM

Date started : March 3, 2020

Project : 571 Welham Road

Compiled by : AS

Sheet No. : 1 of 1

Location : Barrie, Ontario

Checked by : MMT

Position : E: 606160, N: 4910530 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Undrained Shear Strength (kPa)				Plastic Limit	Natural Water Content	Liquid Limit			
0	273.0	GROUND SURFACE															
		100mm TOPSOIL		1	SS	56											
		FILL , gravel and sand, some silt, trace organics, compact, brown / dark brown, moist															
-1	272.2			2	SS	63	272										
	0.8	SAND , some silt to silty, trace gravel, trace clay, very dense, brown, moist															
-2				3	SS	75	271										
				4	SS	64											
-3				5	SS	70											
-4				6	SS	50 / 75mm	269										
-5				7	SS	50 / 125mm	268										
-6	266.8						267										
	6.2																

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

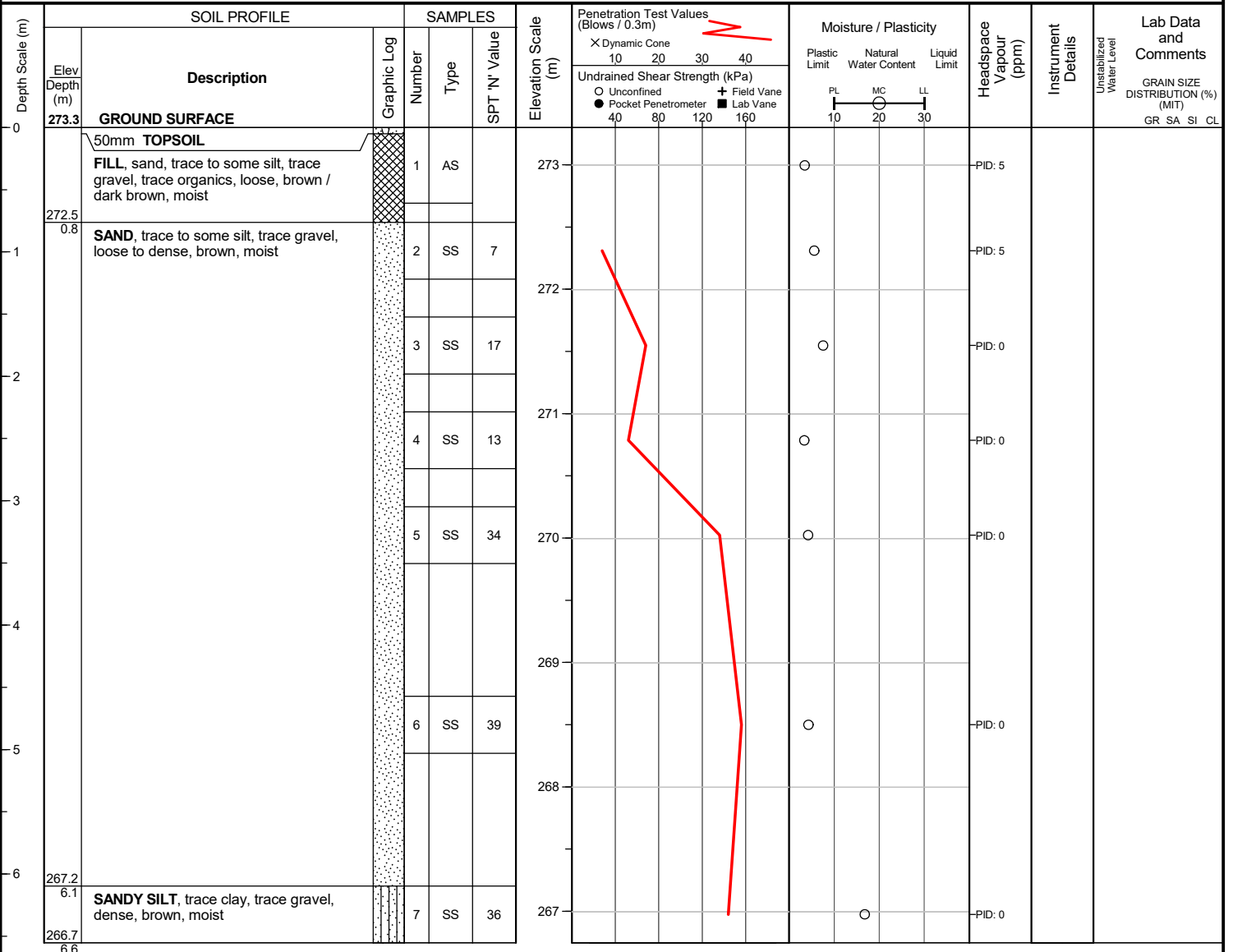
50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Mar 10, 2020	dry	n/a
Apr 28, 2020	dry	n/a
May 28, 2020	dry	n/a

Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : BO
Date started : February 24, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 1 of 1	Location : Barrie, Ontario	Checked by : MMT

Position : E: 606125, N: 4910506 (UTM 17T)	Elevation Datum : Geodetic
Rig type : Track-mounted	Drilling Method : Hollow stem augers



END OF BOREHOLE

Water level and cave could not measured due to hollow stem auger.



Project No. : 1-19-0792-01

Client : Environmental 360 Solutions Ltd

Originated by : BO

Date started : February 26, 2020

Project : 571 Welham Road

Compiled by : AS

Sheet No. : 1 of 2

Location : Barrie, Ontario

Checked by : MMT

Position : E: 606088, N: 4910475 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	273.3	GROUND SURFACE													
0.2	273.1	180mm TOPSOIL		1	AS		273						PID: 5		
		Trace organics (WEATHERED/DISTURBED)													
1	272.5	SAND AND SILT to SILT AND SAND, trace clay, trace gravel, dense to dense, brown, moist		2	SS	63	272						PID: 5		
	0.8														
				3	SS	47	271						PID: 0		7 66 18 9
				4	SS	50 / 150mm	270						PID: 0		
				5	SS	50 / 150mm	269						PID: 0		
				6	SS	50 / 125mm	268						PID: 0		auger refusal moved 1m east and continued drilling on Feb 27, 2020.
				7	SS	61 / 225mm	267						PID: 0		SS7 Analysis: pH
				8	SS	57 / 100mm	266						PID: 0		
	265.7	SAND, trace to some silt, very dense, brown, damp					265								
	7.6						264								
		...wet below		9	SS	66 / 125mm									
10															

(continued next page)

Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : BO
Date started : February 26, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 2 of 2	Location : Barrie, Ontario	Checked by : MMT

Position : E: 606088, N: 4910475 (UTM 17T)			Elevation Datum : Geodetic		
Rig type : Track-mounted			Drilling Method : Hollow stem augers		

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)	Moisture / Plasticity	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments	
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value							
		(continued)						Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL 10 20 30				
11	260.7	SAND, trace to some silt, very dense, brown, damp (continued)		10	SS	67	263						0 87 11 2
12	262								262				
13	260.7	Augered to about 13.7m below grade to install monitoring well		11	SS	31	261						SS10 Analysis: BTEX, VOC, PHC
	12.6								260				
	259.6												

END OF BOREHOLE

Water level and cave could not measured due to hollow stem auger.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Mar 10, 2020	9.6	263.7
Apr 28, 2020	9.6	263.7
May 28, 2020	9.7	263.6



Project No. : 1-19-0792-01

Client : Environmental 360 Solutions Ltd

Originated by : CM

Date started : March 3, 2020

Project : 571 Welham Road

Compiled by : AS

Sheet No. : 1 of 2

Location : Barrie, Ontario

Checked by : MMT

Position : E: 606136, N: 4910490 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	273.4	GROUND SURFACE													
0.2	273.2	150mm TOPSOIL		1	SS	61	273						PID: 0		
		FILL , silty sand, some gravel, trace organics, compact, brown / dark brown, moist													
1	272.6	SAND AND SILT to SILTY SAND , trace clay, trace gravel, compact to very dense, brown, moist		2	SS	27	272						PID: 0		
2				3	SS	54	271						PID: 0		
3				4	SS	42	270						PID: 0		
4				5	SS	98	269						PID: 0		
5				6	SS	50 / 50mm	268						PID: 0		
6															
7				7	SS	61	267						PID: 0		
8				8	SS	50 / 100mm	266						PID: 0		
9		...wet below		9	SS	50 / 50mm	265						PID: 0		
10							264								

(continued next page)

Project No. : 1-19-0792-01 Client : Environmental 360 Solutions Ltd Originated by : CM
 Date started : March 3, 2020 Project : 571 Welham Road Compiled by : AS
 Sheet No. : 2 of 2 Location : Barrie, Ontario Checked by : MMT

Position : E: 606136, N: 4910490 (UTM 17T)			Elevation Datum : Geodetic		
Rig type : Track-mounted			Drilling Method : Solid stem augers		

Depth Scale (m)	SOIL PROFILE		SAMPLES		Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)	Moisture / Plasticity	Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number						
		(continued)								
		SAND AND SILT to SILTY SAND , trace clay, trace gravel, compact to very dense, brown, moist (continued)								
262.5				10	SS	50 / 125mm				
11	10.9									

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Mar 10, 2020	dry	n/a
Apr 28, 2020	dry	n/a
May 28, 2020	10.4	263.0

Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : BO
Date started : February 29, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 1 of 1	Location : Barrie, Ontario	Checked by : MMT

Position : E: 606184, N: 4910499 (UTM 17T)	Elevation Datum : Geodetic
Rig type : Track-mounted	Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			Graphic Log	SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	SPT 'N' Value		X Dynamic Cone		Plastic Limit		Natural Water Content	Liquid Limit						
					10	20					30	40				
	272.8	GROUND SURFACE														
		50mm TOPSOIL														
		FILL, silty sand, some gravel, trace organics, compact, brown / dark brown, moist		1	SS	24								PID: 5		
	272.0															
	0.8	SAND AND SILT to SILTY SAND, trace clay, trace gravel, compact to very dense, brown, moist		2	SS	28								PID: 5		
				3	SS	25								PID: 0		
				4	SS	38								PID: 0		
				5	SS	51								PID: 0		
				6	SS	52								PID: 0		
				7	SS	36								PID: 0		
	266.2															
	6.6															

END OF BOREHOLE

Water level and cave could not measured due to hollow stem auger.

Project No. : 1-19-0792-01 Client : Environmental 360 Solutions Ltd Originated by : BO
 Date started : February 25, 2020 Project : 571 Welham Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Barrie, Ontario Checked by : MMT

Position : E: 606193, N: 4910527 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	272.6	GROUND SURFACE													
		75mm TOPSOIL		1	SS	35							PID: 5		
	271.8	FILL , sand, trace to some silt, trace gravel, trace organics, stone pieces inclusion, compact, brown / dark brown, moist													
-1	0.8	SAND AND SILT to SILTY SAND , trace clay, trace gravel, compact to dense, brown, moist		2	SS	12							PID: 5		
				3	SS	22							PID: 0		
-2				4	SS	29							PID: 5		
-3				5	SS	26							PID: 0		
-4															
-5				6	SS	32							PID: 0		
-6															
	266.0			7	SS	30							PID: 0		
	6.6														

END OF BOREHOLE
 Water level and cave could not measured due to hollow stem auger.

Project No. : 1-19-0792-01

Client : Environmental 360 Solutions Ltd

Originated by : BO

Date started : February 24, 2020

Project : 571 Welham Road

Compiled by : AS

Sheet No. : 1 of 1

Location : Barrie, Ontario

Checked by : MMT

Position : E: 606201, N: 4910558 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Undrained Shear Strength (kPa)				Plastic Limit	Natural Water Content	Liquid Limit			
0	272.4	GROUND SURFACE						10	20	30	40						
		100mm AGGREGATE		1	AS		272									PID: 0	
		FILL , silty sand, some gravel, trace organics, compact, brown / dark brown, moist															
		...topsoil inclusions		2	SS	12										PID: 5	
-1																	
	270.9						271										
	1.5	FILL , sand, trace to some silt, trace gravel, trace organics, compact, brown / dark brown, moist		3	SS	24										PID: 5	
-2	270.3																
	2.1																

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : BO
Date started : February 24, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 1 of 1	Location : Barrie, Ontario	Checked by : MMT

Position : E: 606216, N: 4910520 (UTM 17T)	Elevation Datum : Geodetic
Rig type : Track-mounted	Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone		Plastic Limit	Natural Water Content	Liquid Limit			
								10	20						
								Undrained Shear Strength (kPa)							
								○ Unconfined ● Pocket Penetrometer 40 80 120 160	+ Field Vane ■ Lab Vane 40 80 120 160	PL MC LL 10 20 30					
0	272.5	GROUND SURFACE													
		100mm TOPSOIL		1	AS										
		FILL, silty sand, some gravel, trace organics, compact, brown / dark brown, moist		2	SS	23									
		...wood pieces inclusion		3	SS	15									
270.5	270.5														
2.0															

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Project No. : 1-19-0792-01 Client : Environmental 360 Solutions Ltd Originated by : BO
 Date started : February 25, 2020 Project : 571 Welham Road Compiled by : AS
 Sheet No. : 1 of 1 Location : Barrie, Ontario Checked by : MMT

Position : E: 606159, N: 4910483 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Solid stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	273.1	GROUND SURFACE					273								
		100mm TOPSOIL		1	AS								PID: 5		
	272.3	FILL , silty sand, some gravel, trace organics, compact, dark brown, moist													
-1	0.8	SANDY SILT to SILT AND SAND , trace clay, trace gravel, compact to dense, brown, moist		2	SS	24	272						PID: 0		
				3	SS	44							PID: 0		
	271.1														
	2.0														

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.



Project No. : 1-19-0792-01

Client : Environmental 360 Solutions Ltd

Originated by : BO

Date started : February 25, 2020

Project : 571 Welham Road

Compiled by : AS

Sheet No. : 1 of 2

Location : Barrie, Ontario

Checked by : MMT

Position : E: 606203, N: 4910484 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
0	272.9	GROUND SURFACE													
		100mm TOPSOIL		1	AS								PID: 5		
		FILL , silty sand, some gravel, trace organics, compact, brown / dark brown, moist													
-1				2	SS	38	272						PID: 5		
	271.4														
	1.5	FILL , clayey silty sand, trace gravel, trace organics, compact, dark brown, moist		3	SS	13	271						PID: 5		4 54 21 21
-2		...at 2.3 m, cobble / stone pieces inclusion		4	SS	50 / 125mm							PID: 5		
-3	269.9						270						PID: 0		3 87 7 3
	3.0	SAND , trace to some silt, compact to very dense, brown, moist		5	SS	23									
-4							269								
-5				6	SS	80	268						PID: 0		4 70 18 8
-6	266.8						267								
	6.1	SANDY SILT to SILT AND SAND , trace clay, trace gravel, very dense, brown, moist		7	SS	50 / 150mm							PID: 0		
	266.5														
	6.4	Augered to about 10.7m below grade to install monitoring well on Feb 26, 2020.													
-7							266								
-8							265								
-9							264								
-10							263								

(continued next page)

Project No. : 1-19-0792-01 Client : Environmental 360 Solutions Ltd Originated by : BO
 Date started : February 25, 2020 Project : 571 Welham Road Compiled by : AS
 Sheet No. : 2 of 2 Location : Barrie, Ontario Checked by : MMT

Position : E: 606203, N: 4910484 (UTM 17T) Elevation Datum : Geodetic
 Rig type : Track-mounted Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)	Moisture / Plasticity			Headspace Vapour (ppm)	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value			Plastic Limit	Natural Water Content	Liquid Limit			
		(continued)						X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160						
	262.2 10.7	Augered to about 10.7m below grade to install monitoring well on Feb 26, 2020. (continued)												

END OF BOREHOLE

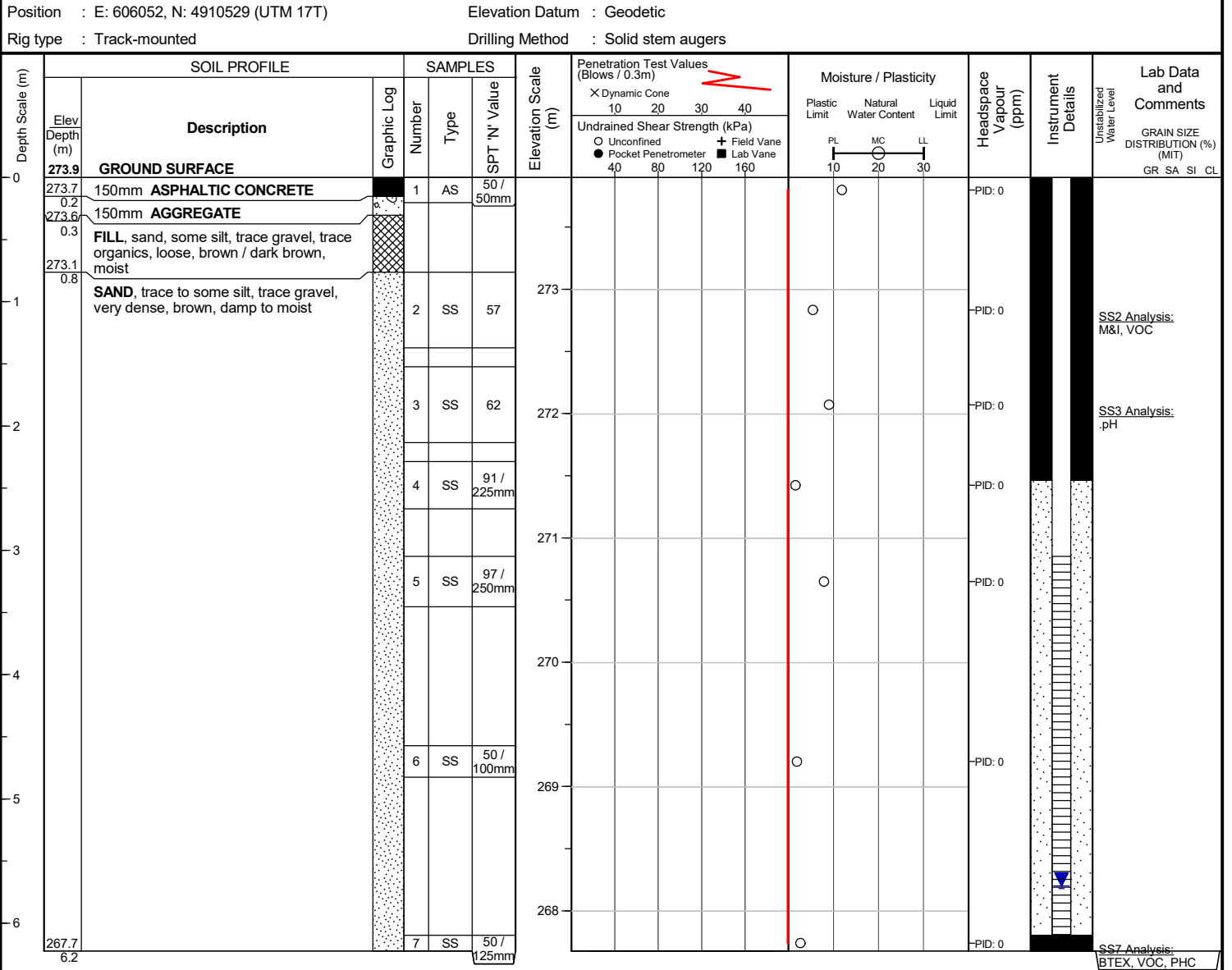
Water level and cave could not measured due to hollow stem auger.

50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Mar 10, 2020	dry	n/a
Apr 28, 2020	dry	n/a
May 28, 2020	10.3	262.6

Project No. : 1-19-0792-01	Client : Environmental 360 Solutions Ltd	Originated by : CM
Date started : March 3, 2020	Project : 571 Welham Road	Compiled by : AS
Sheet No. : 1 of 1	Location : Barrie, Ontario	Checked by : MMT



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.
50 mm dia. monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Mar 10, 2020	dry	n/a
Apr 28, 2020	dry	n/a
May 28, 2020	5.7	268.2

SS7 Analysis:
BTEX, VOC, PHC

Project No. : 1-19-0792-01

Client : Environmental 360 Solutions Ltd

Originated by : BO

Date started : February 24, 2020

Project : 571 Welham Road

Compiled by : AS

Sheet No. : 1 of 1

Location : Barrie, Ontario

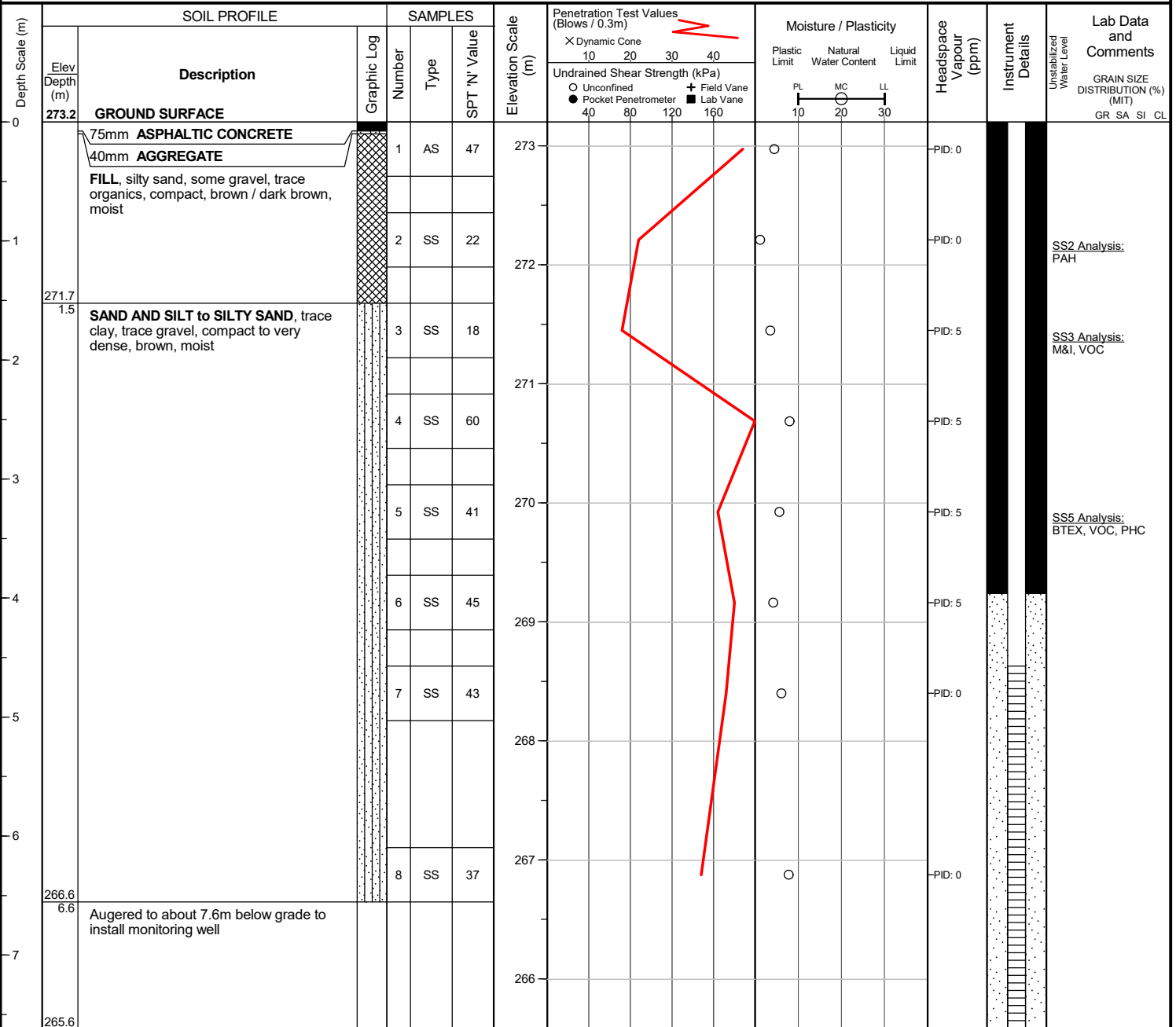
Checked by : MMT

Position : E: 606168, N: 4910578 (UTM 17T)

Elevation Datum : Geodetic

Rig type : Track-mounted

Drilling Method : Hollow stem augers



END OF BOREHOLE

Water level and cave could not measured due to hollow stem auger.

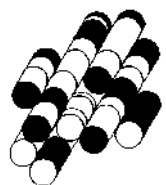
50 mm dia. monitoring well installed.

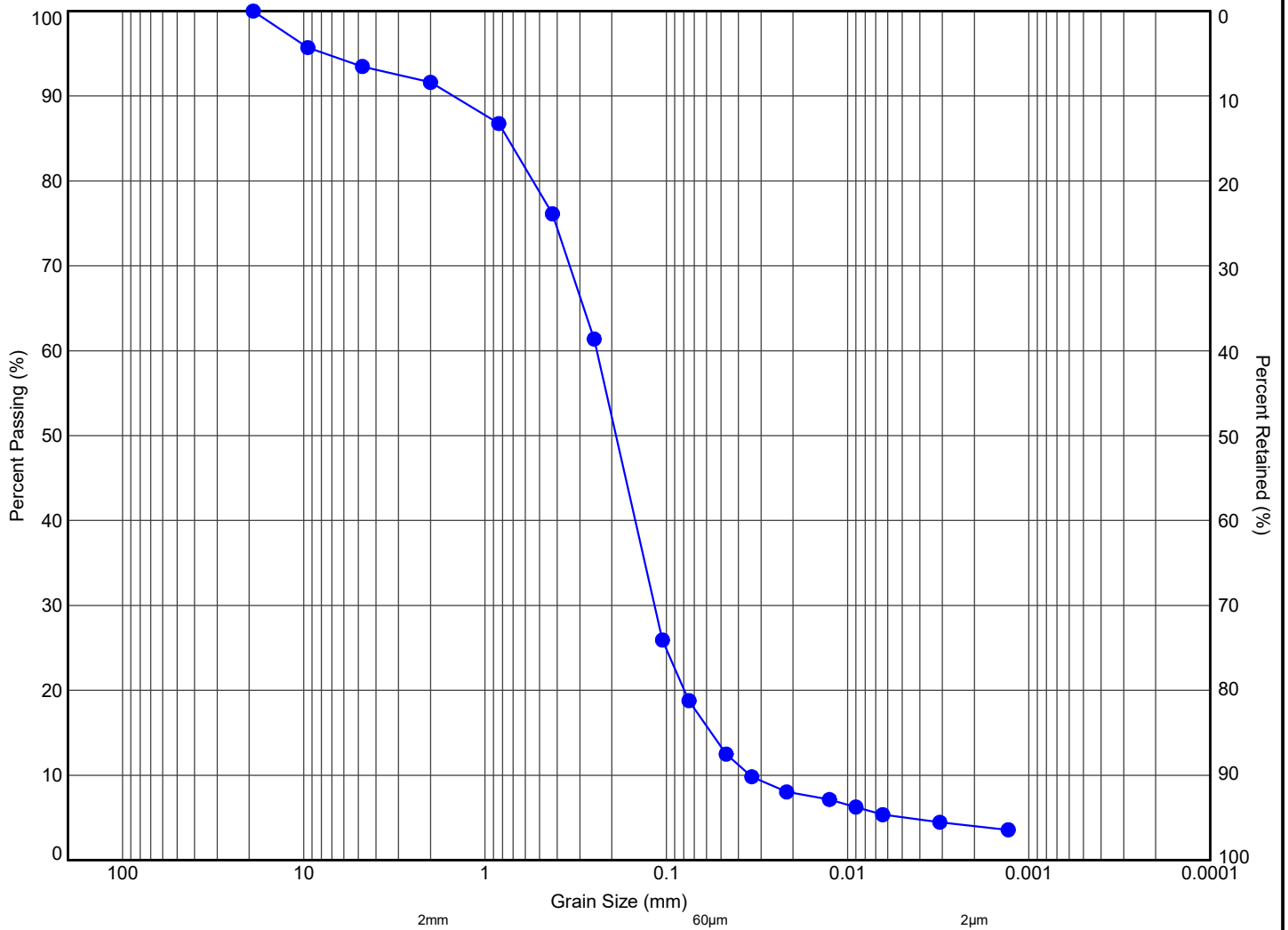
WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Mar 10, 2020	dry	n/a
Apr 28, 2020	dry	n/a
May 28, 2020	dry	n/a

APPENDIX D

TERRAPROBE INC.





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

MIT SYSTEM									
Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)	
● 4	SS2	1.1	271.9	8	76	12	4		



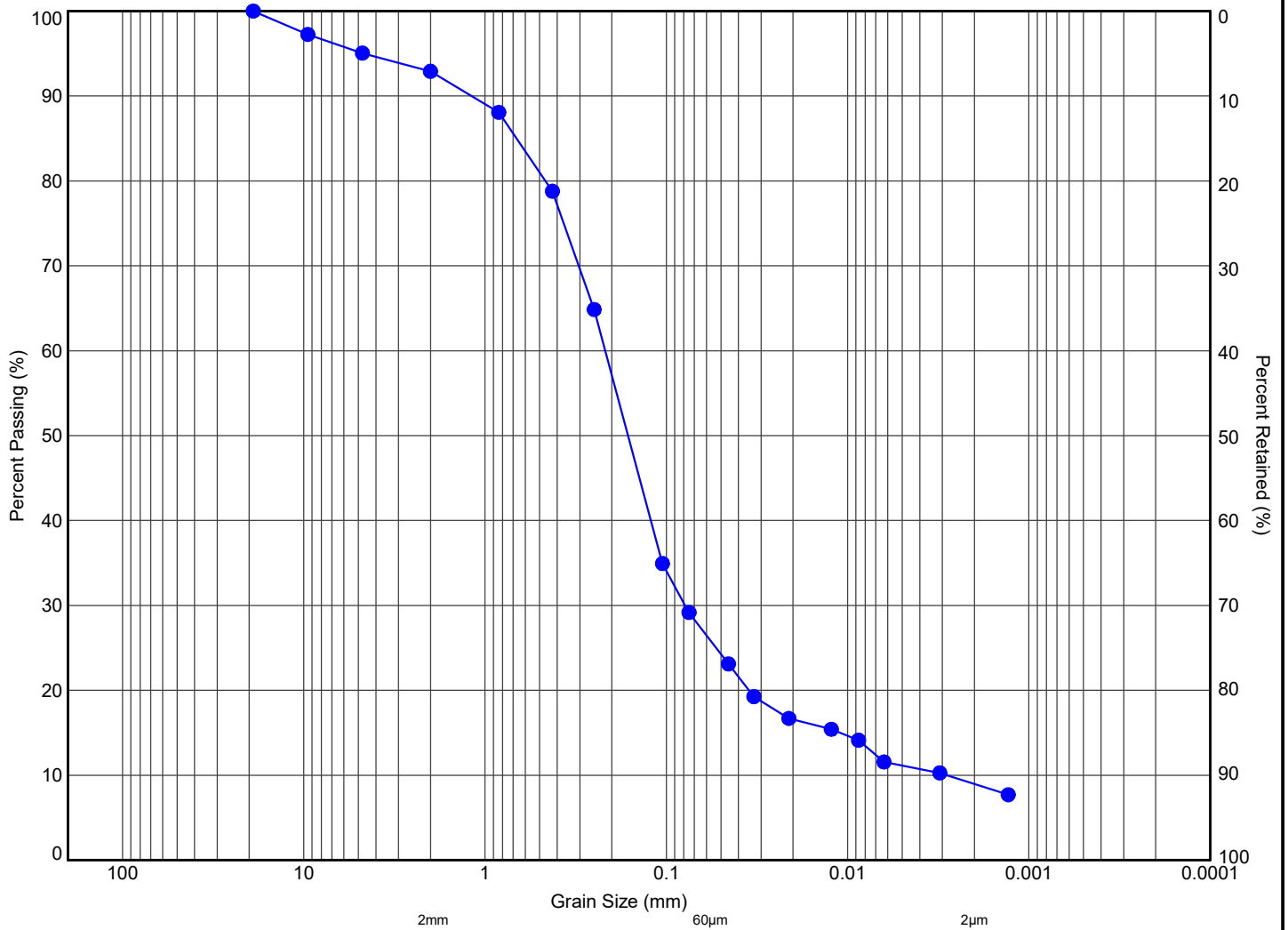
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

**GRAIN SIZE DISTRIBUTION
SAND, SOME SILT, TRACE GRAVEL, TRACE CLAY**

File No.:

1-19-0792-01



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

MIT SYSTEM

Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)
● 6	SS3	1.8	271.5	7	66	18	9	



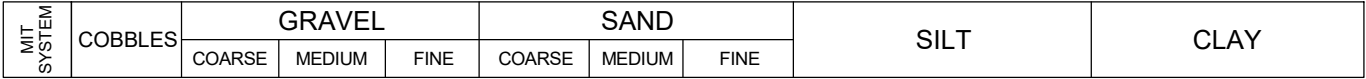
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

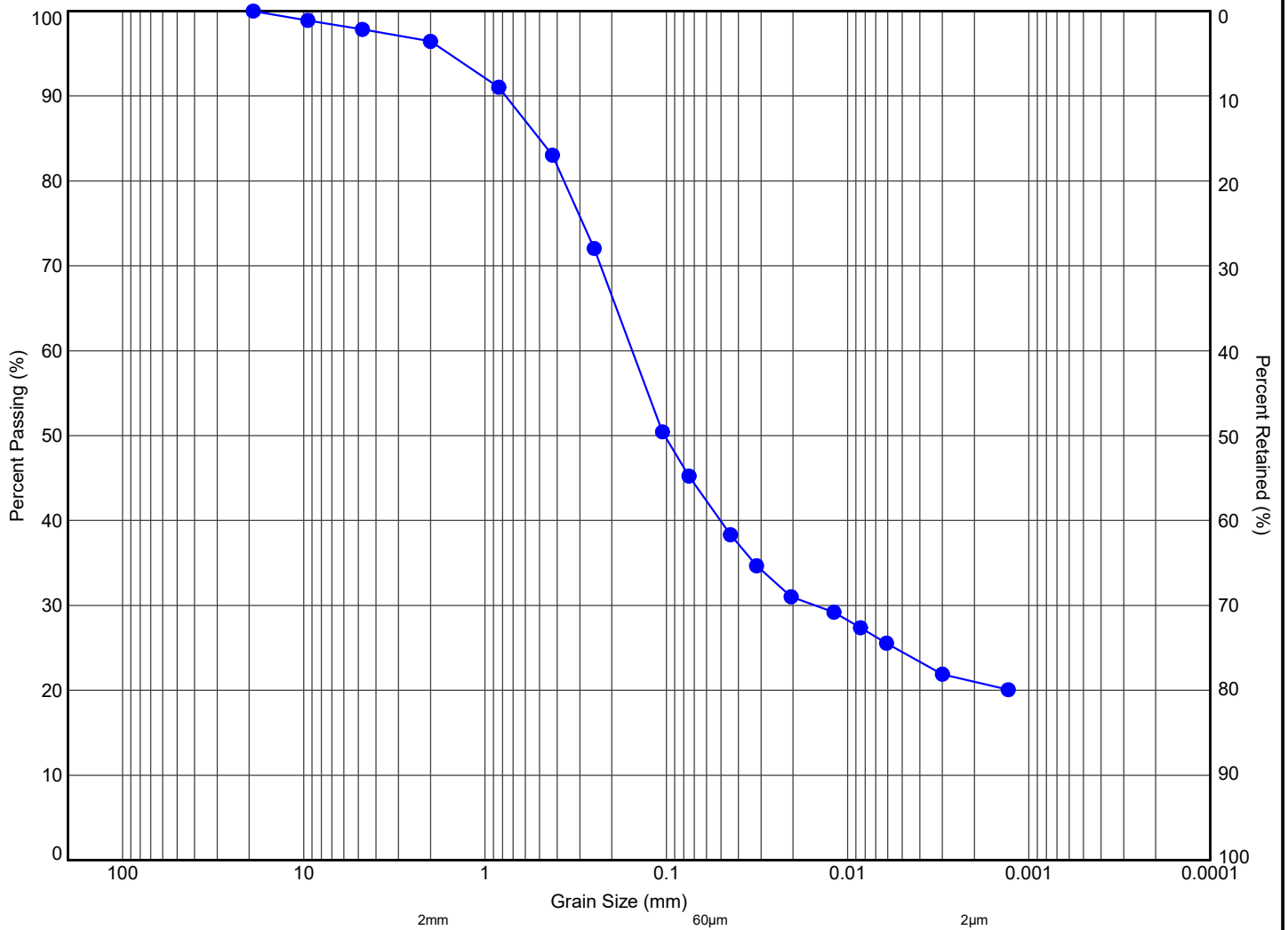
**GRAIN SIZE DISTRIBUTION
SAND, SOME SILT, TRACE CLAY, TRACE GRAVEL**

File No.:

1-19-0792-01



 Terraprobe 11 Indell Lane, Brampton Ontario L6T 3Y3 (905) 796-2650	Title: GRAIN SIZE DISTRIBUTION SAND, SOME SILT, TRACE CLAY
	File No.: 1-19-0792-01



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

MIT SYSTEM

Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)
● 13	SS3	1.8	271.1	4	54	21	21	



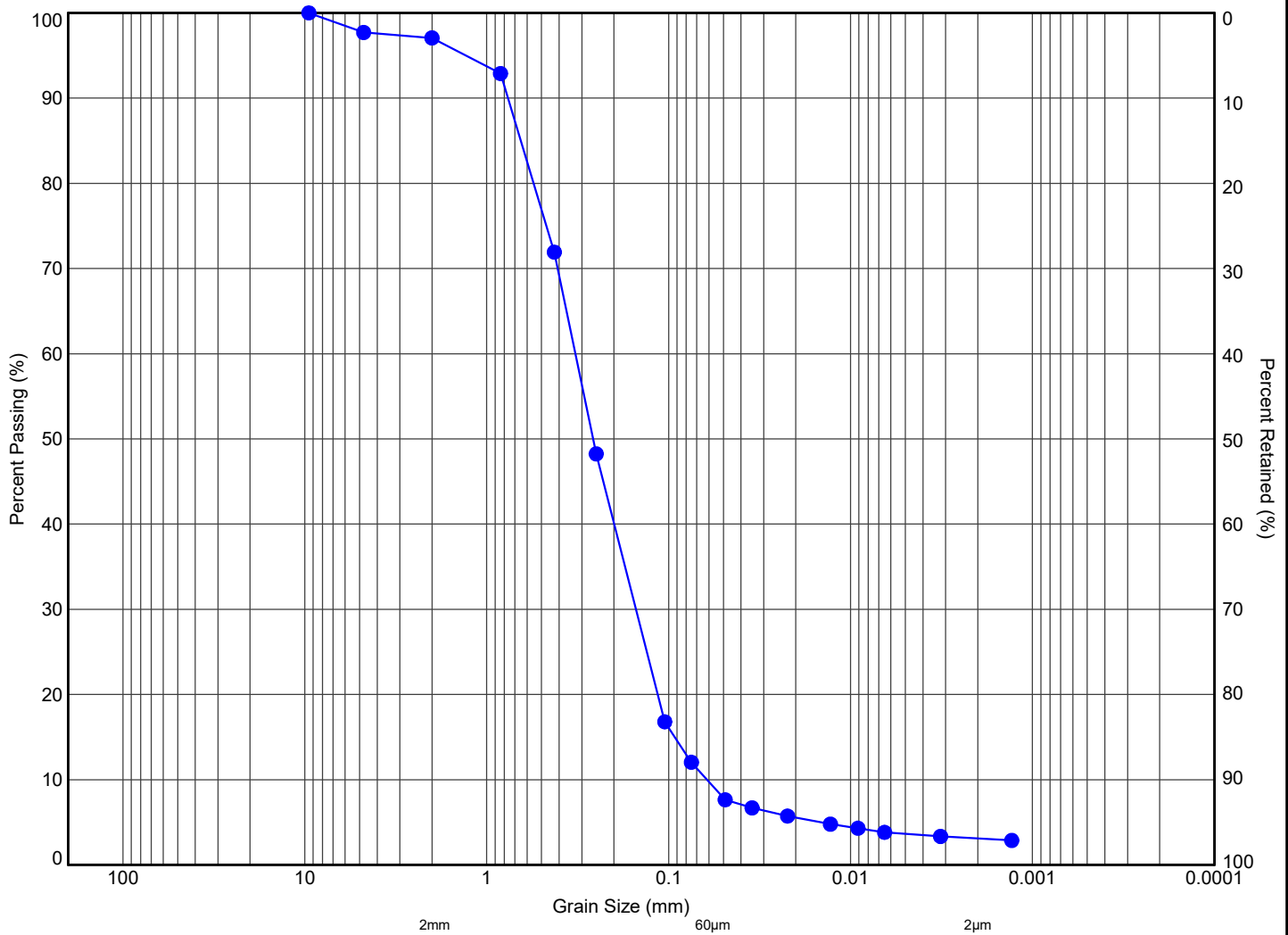
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

**GRAIN SIZE DISTRIBUTION
CLAYEY SILTY SAND, TRACE GRAVEL**

File No.:

1-19-0792-01



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

MIT SYSTEM									
Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)	
● 13	SS5	3.3	269.6	3	87	7	3		



Terraprobe

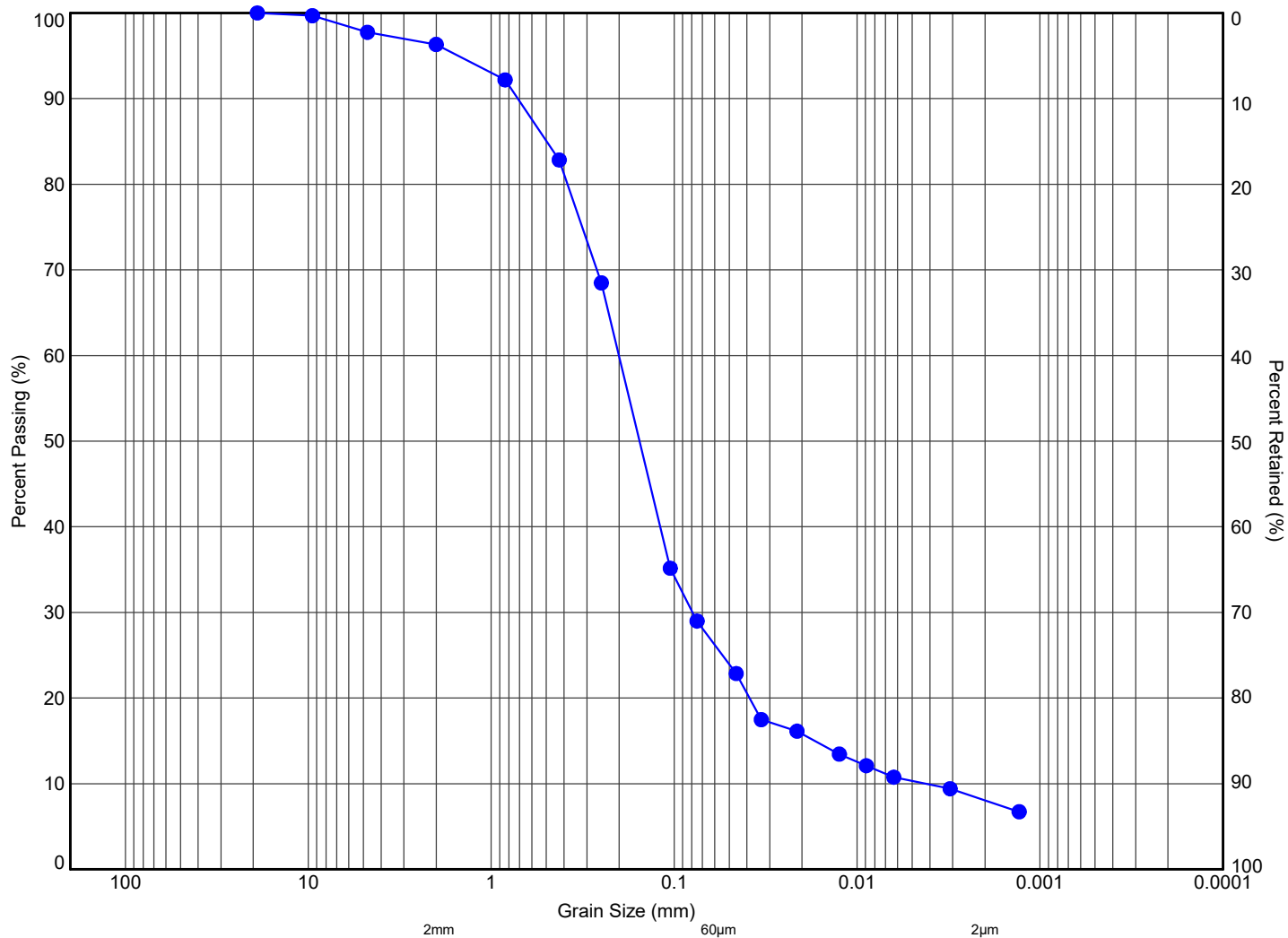
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

**GRAIN SIZE DISTRIBUTION
SAND, TRACE SILT, TRACE CLAY, TRACE GRAVEL**

File No.:

1-19-0792-01



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

MIT SYSTEM									
Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)	
13	SS6	4.8	268.1	4	70	18	8		



11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

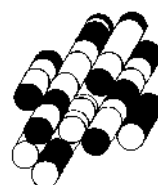
**GRAIN SIZE DISTRIBUTION
SAND, SOME SILT, TRACE CLAY, TRACE GRAVEL**

File No.:

1-19-0792-01

APPENDIX E

TERRAPROBE INC.





Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

Slug Test Analysis Report

Page 1 of 2

Project: 571 Welham Road

Number: 1-19-0792-46

Client:

Location: Barrie

Slug Test: MW6

Test Well: MW6

Test Conducted by: AK

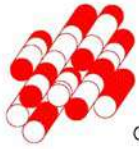
Test Date: 4/28/2020

Water level at t=0 [m]: 12.93

Static Water Level [m]: 13.10

Water level change at t=0 [m]: -0.17

	Time [s]	Water Level [m]	WL Change [m]
1	1	12.993	-0.107
2	2	12.996	-0.104
3	3	13.002	-0.098
4	4	13.005	-0.095
5	5	13.008	-0.092
6	6	13.011	-0.089
7	7	13.011	-0.089
8	8	13.017	-0.083
9	9	13.017	-0.083
10	10	13.02	-0.08
11	11	13.023	-0.077
12	12	13.026	-0.074
13	13	13.026	-0.074
14	14	13.029	-0.071
15	15	13.032	-0.068
16	16	13.032	-0.068
17	17	13.035	-0.065
18	18	13.038	-0.062
19	19	13.038	-0.062
20	20	13.041	-0.059
21	21	13.041	-0.059
22	22	13.044	-0.056
23	23	13.044	-0.056
24	24	13.044	-0.056
25	25	13.047	-0.053
26	26	13.047	-0.053
27	27	13.05	-0.05
28	28	13.05	-0.05
29	29	13.05	-0.05
30	30	13.053	-0.047
31	31	13.053	-0.047
32	32	13.053	-0.047
33	33	13.056	-0.044
34	34	13.053	-0.047
35	35	13.053	-0.047
36	36	13.053	-0.047
37	37	13.053	-0.047
38	38	13.05	-0.05
39	39	13.041	-0.059
40	40	13.035	-0.065
41	41	13.029	-0.071
42	42	13.026	-0.074
43	43	13.02	-0.08
44	44	13.017	-0.083
45	45	13.014	-0.086
46	46	13.011	-0.089
47	47	13.008	-0.092
48	48	13.005	-0.095



Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

Slug Test - Water Level Data

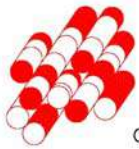
Page 2 of 2

Project: 571 Welham Road

Number: 1-19-0792-46

Client:

	Time [s]	Water Level [m]	WL Change [m]
49	49	13.002	-0.098
50	50	13.002	-0.098



Terraprobe

Consulting Geotechnical & Environmental Engineering
Construction Materials Engineering, Inspection & Testing

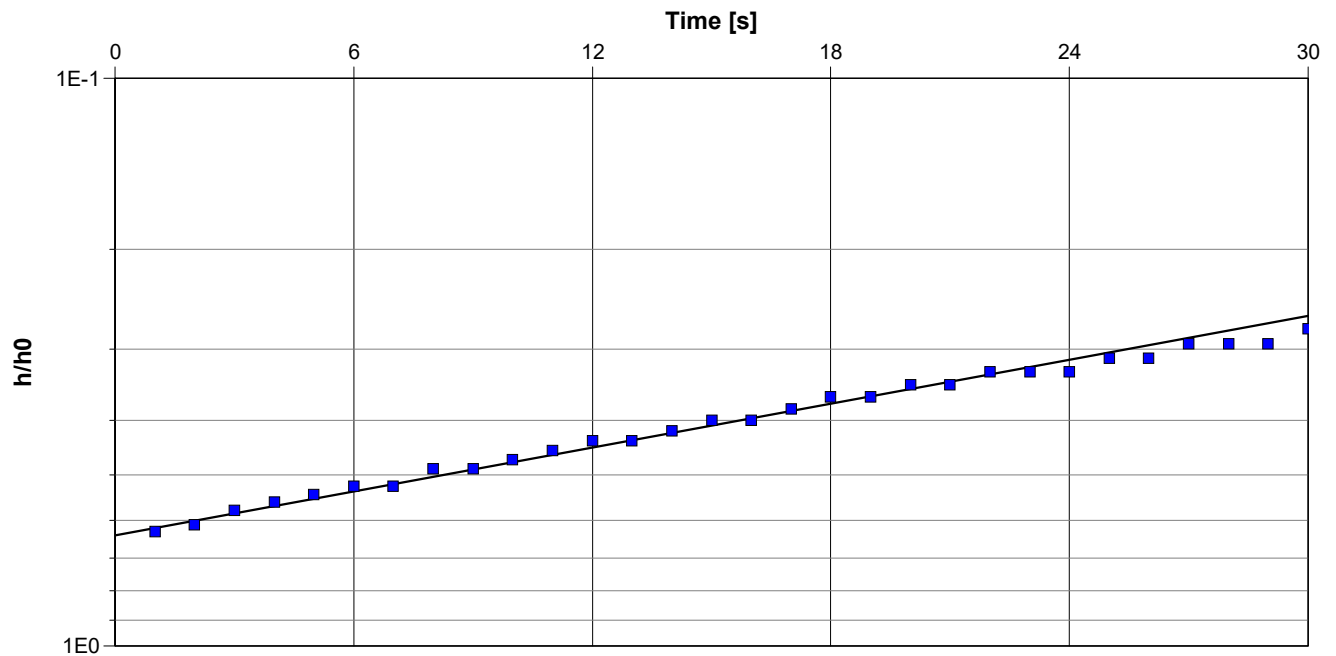
Slug Test Analysis Report

Project: 571 Welham Road

Number: 1-19-0792-46

Client:

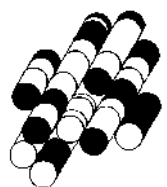
Location: Barrie	Slug Test: MW6	Test Well: MW6
Test Conducted by: AK		Test Date: 4/28/2020
Analysis Performed by: TS	MW6 RHT	Analysis Date: 5/4/2020
Aquifer Thickness: 13.71 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW6	1.43×10^{-5}	

APPENDIX F

TERRAPROBE INC.



CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Muhammad Shahid

PROJECT: 1-19-0792-46

AGAT WORK ORDER: 20T596512

MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

WATER ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

DATE REPORTED: Jun 05, 2020

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

Total Coliforms & E. Coli (Using MI Agar)

DATE RECEIVED: 2020-04-29

DATE REPORTED: 2020-06-05

		SAMPLE DESCRIPTION:		MW6
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2020-04-28
Parameter	Unit	G / S	RDL	1098255
Escherichia coli	CFU/100mL	0	1	ND
Total Coliforms	CFU/100mL	0	1	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

1098255 ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2020-04-29

DATE REPORTED: 2020-06-05

SAMPLE DESCRIPTION: MW6					
SAMPLE TYPE: Water					
DATE SAMPLED: 2020-04-28					
Parameter	Unit	G / S: A	G / S: B	RDL	1098255
Electrical Conductivity	µS/cm			2	1460
pH	pH Units		6.5-8.5	NA	8.02
Saturation pH (Calculated)					7.19
Langelier Index (Calculated)					0.828
Hardness (as CaCO ₃) (Calculated)	mg/L		80-100	0.5	151
Total Dissolved Solids	mg/L		500	20	770[>B]
Alkalinity (as CaCO ₃)	mg/L		30-500	5	331
Bicarbonate (as CaCO ₃)	mg/L			5	331
Carbonate (as CaCO ₃)	mg/L			5	<5
Hydroxide (as CaCO ₃)	mg/L			5	<5
Fluoride	mg/L	1.5		0.05	<0.05[<A]
Chloride	mg/L		250	0.50	233[<B]
Nitrate as N	mg/L	10.0		0.25	1.64[<A]
Nitrite as N	mg/L	1.0		0.25	<0.25[<A]
Bromide	mg/L			0.25	<0.25
Sulphate	mg/L		500	0.50	22.9[<B]
Ortho Phosphate as P	mg/L			0.50	<0.50
Reactive Silica	mg/L			0.05	7.82
Ammonia as N	mg/L			0.02	<0.02
Ammonia-Un-ionized (Calculated)	mg/L			0.000002	<0.000002
Total Phosphorus	mg/L			0.02	0.14
Total Organic Carbon	mg/L			0.5	6.0
Colour	TCU		5	5	<5[<B]
Turbidity	NTU		5	0.5	357[>B]
Dissolved Calcium	mg/L			0.25	53.9
Dissolved Magnesium	mg/L			0.25	3.93
Dissolved Potassium	mg/L			0.25	1.36
Dissolved Sodium	mg/L	20		0.25	193[>A]
Dissolved Aluminum	mg/L			0.004	0.020
Dissolved Antimony	mg/L	0.006		0.001	<0.001[<A]

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2020-04-29

DATE REPORTED: 2020-06-05

SAMPLE DESCRIPTION: MW6					
SAMPLE TYPE: Water					
DATE SAMPLED: 2020-04-28					
Parameter	Unit	G / S: A	G / S: B	RDL	1098255
Dissolved Arsenic	mg/L	0.01		0.003	<0.003[<A]
Dissolved Barium	mg/L	1.0		0.002	0.041[<A]
Dissolved Beryllium	mg/L			0.0005	<0.0005
Dissolved Boron	mg/L	5.0		0.010	<0.010[<A]
Dissolved Cadmium	mg/L	0.005		0.0001	<0.0001[<A]
Dissolved Chromium	mg/L	0.05		0.003	<0.003[<A]
Dissolved Cobalt	mg/L			0.0005	<0.0005
Dissolved Copper	mg/L			0.001	0.002
Dissolved Iron	mg/L			0.010	<0.010
Dissolved Lead	mg/L	0.010		0.001	<0.001[<A]
Dissolved Manganese	mg/L			0.002	0.002
Dissolved Mercury	mg/L	0.001		0.0001	<0.0001[<A]
Dissolved Molybdenum	mg/L			0.002	<0.002
Dissolved Nickel	mg/L			0.003	<0.003
Dissolved Selenium	mg/L	0.05		0.004	0.006[<A]
Dissolved Silver	mg/L			0.0001	<0.0001
Dissolved Strontium	mg/L			0.005	0.149
Dissolved Thallium	mg/L			0.0003	<0.0003
Dissolved Tin	mg/L			0.002	<0.002
Dissolved Titanium	mg/L			0.002	<0.002
Dissolved Tungsten	mg/L			0.010	<0.010
Dissolved Uranium	mg/L	0.02		0.002	<0.002[<A]
Dissolved Vanadium	mg/L			0.002	<0.002
Dissolved Zinc	mg/L			0.005	<0.005
Dissolved Zirconium	mg/L			0.004	<0.004

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248, B Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards - Aesthetic Objectives and Operational Guidelines
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

1098255 Un-ionized Ammonia and/or Ammonium detection limit is a calculated RDL.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Guideline Violation

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Muhammad Shahid

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
1098255	MW6	ON 169/03 AO&OG	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Hardness (as CaCO ₃) (Calculated)	mg/L	80-100	151
1098255	MW6	ON 169/03 AO&OG	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Temperature	Deg C	15	24.0
1098255	MW6	ON 169/03 AO&OG	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Total Dissolved Solids	mg/L	500	770
1098255	MW6	ON 169/03 AO&OG	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Turbidity	NTU	5	357
1098255	MW6	ON 169/03 MAC/IMAC	Water Quality Assessment - Dissolved Metals - PWQO (mg/L)	Dissolved Sodium	mg/L	20	193

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

Microbiology Analysis

RPT Date: Jun 05, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper

Total Coliforms & E. Coli (Using MI Agar)

Escherichia coli 1098718 ND ND NA < 1

Total Coliforms 1098718 24 22 8.7% < 1

Comments: ND - Not Detected, NA - % RPD Not Applicable

Certified By:

AGAT QUALITY ASSURANCE REPORT (V1)

Page 6 of 12

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.

Results relate only to the items tested. Results apply to samples as received.

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

Water Analysis															
RPT Date: Jun 05, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

Electrical Conductivity	1098220		635	637	0.3%	< 2	109%	80%	120%						
pH	1098220		7.90	7.77	1.7%	NA	102%	90%	110%						
Total Dissolved Solids	1091908		498	498	0.0%	< 20	100%	80%	120%						
Alkalinity (as CaCO ₃)	1098220		108	106	1.9%	< 5	94%	80%	120%						
Bicarbonate (as CaCO ₃)	1098220		108	106	1.9%	< 5									
Carbonate (as CaCO ₃)	1098220		<5	<5	NA	< 5									
Hydroxide (as CaCO ₃)	1098220		<5	<5	NA	< 5									
Fluoride	1097224		<0.05	<0.05	NA	< 0.05	107%	90%	110%	103%	90%	110%	105%	85%	115%
Chloride	1097224		1.54	1.54	0.0%	< 0.10	91%	70%	130%	101%	80%	120%	102%	70%	130%
Nitrate as N	1097224		1.88	1.87	0.5%	< 0.05	92%	70%	130%	102%	80%	120%	105%	70%	130%
Nitrite as N	1097224		<0.25	<0.25	NA	< 0.05	103%	70%	130%	105%	80%	120%	105%	70%	130%
Bromide	1097224		<0.25	<0.25	NA	< 0.05	100%	90%	110%	98%	90%	110%	100%	85%	115%
Sulphate	1097224		5.45	5.44	0.2%	< 0.10	96%	70%	130%	103%	80%	120%	105%	70%	130%
Ortho Phosphate as P	1097224		<0.50	<0.50	NA	< 0.10	104%	70%	130%	107%	80%	120%	111%	70%	130%
Reactive Silica	1098255	1098255	7.82	7.82	0.0%	< 0.05	107%	90%	110%	106%	90%	110%	96%	80%	120%
Ammonia as N	1098255	1098255	<0.02	<0.02	NA	< 0.02	101%	70%	130%	100%	80%	120%	85%	70%	130%
Total Phosphorus	1098332		0.08	0.08	NA	< 0.02	96%	70%	130%	96%	80%	120%	109%	70%	130%
Total Organic Carbon	1098255	1098255	6.0	6.4	6.5%	< 0.5	96%	90%	110%	103%	90%	110%	93%	80%	120%
Colour	1100321		18	17	NA	< 5	102%	90%	110%						
Turbidity	1098255	1098255	357	356	0.3%	< 0.5	101%	80%	120%						
Dissolved Calcium	1090825		57.6	60.4	4.7%	< 0.05	90%	70%	130%	100%	80%	120%	98%	70%	130%
Dissolved Magnesium	1090825		12.8	13.4	4.6%	< 0.05	94%	70%	130%	104%	80%	120%	102%	70%	130%
Dissolved Potassium	1090825		9.29	9.59	3.2%	< 0.05	94%	70%	130%	102%	80%	120%	101%	70%	130%
Dissolved Sodium	1090825		2.01	2.09	3.9%	< 0.05	94%	70%	130%	102%	80%	120%	101%	70%	130%
Dissolved Aluminum	1098663		0.103	0.117	12.7%	< 0.004	106%	70%	130%	105%	80%	120%	102%	70%	130%
Dissolved Antimony	1098663		<0.005	<0.005	NA	< 0.001	102%	70%	130%	98%	80%	120%	98%	70%	130%
Dissolved Arsenic	1098663		<0.015	<0.015	NA	< 0.003	103%	70%	130%	98%	80%	120%	99%	70%	130%
Dissolved Barium	1098663		0.014	0.012	15.4%	< 0.002	99%	70%	130%	100%	80%	120%	97%	70%	130%
Dissolved Beryllium	1098663		<0.0025	<0.0025	NA	< 0.0005	102%	70%	130%	96%	80%	120%	99%	70%	130%
Dissolved Boron	1098663		<0.050	<0.050	NA	< 0.010	101%	70%	130%	100%	80%	120%	103%	70%	130%
Dissolved Cadmium	1098663		<0.0005	<0.0005	NA	< 0.0001	100%	70%	130%	100%	80%	120%	113%	70%	130%
Dissolved Chromium	1098663		<0.015	<0.015	NA	< 0.003	100%	70%	130%	100%	80%	120%	102%	70%	130%
Dissolved Cobalt	1098663		<0.0025	<0.0025	NA	< 0.0005	105%	70%	130%	99%	80%	120%	104%	70%	130%
Dissolved Copper	1098663		<0.005	<0.005	NA	< 0.001	97%	70%	130%	99%	80%	120%	99%	70%	130%
Dissolved Iron	1098663		0.011	<0.010	NA	< 0.010	104%	70%	130%	93%	80%	120%	109%	70%	130%
Dissolved Lead	1098663		<0.005	<0.005	NA	< 0.001	98%	70%	130%	97%	80%	120%	94%	70%	130%
Dissolved Manganese	1098663		<0.010	<0.010	NA	< 0.002	103%	70%	130%	99%	80%	120%	104%	70%	130%
Dissolved Mercury	1098055		<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	98%	80%	120%	94%	70%	130%
Dissolved Molybdenum	1098663		<0.010	<0.010	NA	< 0.002	101%	70%	130%	99%	80%	120%	100%	70%	130%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

Water Analysis (Continued)

RPT Date: Jun 05, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Dissolved Nickel	1098663		<0.015	<0.015	NA	< 0.003	105%	70%	130%	99%	80%	120%	101%	70%	130%
Dissolved Selenium	1098663		<0.020	<0.020	NA	< 0.004	102%	70%	130%	98%	80%	120%	100%	70%	130%
Dissolved Silver	1098663		<0.0005	<0.0005	NA	< 0.0001	104%	70%	130%	113%	80%	120%	109%	70%	130%
Dissolved Strontium	1098663		0.081	0.077	5.1%	< 0.005	104%	70%	130%	103%	80%	120%	103%	70%	130%
Dissolved Thallium	1098663		<0.0015	<0.0015	NA	< 0.0003	102%	70%	130%	103%	80%	120%	102%	70%	130%
Dissolved Tin	1098663		<0.010	<0.010	NA	< 0.002	99%	70%	130%	100%	80%	120%	99%	70%	130%
Dissolved Titanium	1098663		<0.010	<0.010	NA	< 0.002	101%	70%	130%	98%	80%	120%	107%	70%	130%
Dissolved Tungsten	1098663		<0.050	<0.050	NA	< 0.010	99%	70%	130%	100%	80%	120%	101%	70%	130%
Dissolved Uranium	1098663		<0.010	<0.010	NA	< 0.002	106%	70%	130%	100%	80%	120%	100%	70%	130%
Dissolved Vanadium	1098663		<0.010	<0.010	NA	< 0.002	98%	70%	130%	94%	80%	120%	102%	70%	130%
Dissolved Zinc	1098663		<0.025	<0.025	NA	< 0.005	102%	70%	130%	101%	80%	120%	102%	70%	130%
Dissolved Zirconium	1098663		<0.020	<0.020	NA	< 0.004	95%	70%	130%	94%	80%	120%	94%	70%	130%

Comments: NA signifies Not Applicable.

If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Alkalinity (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6070	QuickChem 10-114-27-1-A & SM 4500 Si-F	LACHAT FIA
Ammonia as N	INOR-93-6059	modified from SM 4500-NH ₃ H	LACHAT FIA
Ammonia-Un-ionized (Calculated)		MOE REFERENCE, PWQOs Tab 2	CALCULATION
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Dissolved Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Aluminum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Antimony	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Arsenic	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Barium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Beryllium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cadmium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Chromium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cobalt	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Copper	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Dissolved Iron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Lead	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Manganese	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Dissolved Molybdenum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Nickel	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Selenium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Silver	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Strontium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Thallium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tin	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Titanium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tungsten	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Uranium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Vanadium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zinc	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zirconium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Muhammad Shahid

PROJECT: 1-19-0792-46

AGAT WORK ORDER: 20T596512

MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

WATER ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

DATE REPORTED: May 06, 2020

PAGES (INCLUDING COVER): 11

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
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- The test results reported herewith relate only to the samples as received by the laboratory.
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- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

Total Coliforms & E. Coli (Using MI Agar)

DATE RECEIVED: 2020-04-29

DATE REPORTED: 2020-05-06

		SAMPLE DESCRIPTION:		MW6
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2020-04-28
Parameter	Unit	G / S	RDL	1098255
Escherichia coli	CFU/100mL		1	ND
Total Coliforms	CFU/100mL		1	ND

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1098255 ND - Not Detected.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

5835 COOPERS AVENUE
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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2020-04-29

DATE REPORTED: 2020-05-06

		SAMPLE DESCRIPTION:		MW6
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2020-04-28
Parameter	Unit	G / S	RDL	1098255
Electrical Conductivity	µS/cm		2	1460
pH	pH Units	6.5-8.5	NA	8.02
Saturation pH (Calculated)				7.19
Langelier Index (Calculated)				0.828
Hardness (as CaCO ₃) (Calculated)	mg/L		0.5	151
Total Dissolved Solids	mg/L		20	770
Alkalinity (as CaCO ₃)	mg/L		5	331
Bicarbonate (as CaCO ₃)	mg/L		5	331
Carbonate (as CaCO ₃)	mg/L		5	<5
Hydroxide (as CaCO ₃)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.50	233
Nitrate as N	mg/L		0.25	1.64
Nitrite as N	mg/L		0.25	<0.25
Bromide	mg/L		0.25	<0.25
Sulphate	mg/L		0.50	22.9
Ortho Phosphate as P	mg/L		0.50	<0.50
Reactive Silica	mg/L		0.05	7.82
Ammonia as N	mg/L		0.02	<0.02
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.000002	<0.000002
Total Phosphorus	mg/L	*	0.02	0.14
Total Organic Carbon	mg/L		0.5	6.0
Colour	TCU		5	<5
Turbidity	NTU		0.5	357
Dissolved Calcium	mg/L		0.25	53.9
Dissolved Magnesium	mg/L		0.25	3.93
Dissolved Potassium	mg/L		0.25	1.36
Dissolved Sodium	mg/L		0.25	193
Dissolved Aluminum	mg/L	0.075	0.004	0.020
Dissolved Antimony	mg/L	0.020	0.001	<0.001

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

5835 COOPERS AVENUE
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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

DATE RECEIVED: 2020-04-29

DATE REPORTED: 2020-05-06

		SAMPLE DESCRIPTION:		MW6
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2020-04-28
Parameter	Unit	G / S	RDL	1098255
Dissolved Arsenic	mg/L	0.1	0.003	<0.003
Dissolved Barium	mg/L		0.002	0.041
Dissolved Beryllium	mg/L	*	0.0005	<0.0005
Dissolved Boron	mg/L	0.2	0.010	<0.010
Dissolved Cadmium	mg/L	0.0002	0.0001	<0.0001
Dissolved Chromium	mg/L		0.003	<0.003
Dissolved Cobalt	mg/L	0.0009	0.0005	<0.0005
Dissolved Copper	mg/L	0.005	0.001	0.002
Dissolved Iron	mg/L	0.3	0.010	<0.010
Dissolved Lead	mg/L	*	0.001	<0.001
Dissolved Manganese	mg/L		0.002	0.002
Dissolved Mercury	mg/L	0.0002	0.0001	<0.0001
Dissolved Molybdenum	mg/L	0.040	0.002	<0.002
Dissolved Nickel	mg/L	0.025	0.003	<0.003
Dissolved Selenium	mg/L	0.1	0.004	0.006
Dissolved Silver	mg/L	0.0001	0.0001	<0.0001
Dissolved Strontium	mg/L		0.005	0.149
Dissolved Thallium	mg/L	0.0003	0.0003	<0.0003
Dissolved Tin	mg/L		0.002	<0.002
Dissolved Titanium	mg/L		0.002	<0.002
Dissolved Tungsten	mg/L	0.030	0.010	<0.010
Dissolved Uranium	mg/L	0.005	0.002	<0.002
Dissolved Vanadium	mg/L	0.006	0.002	<0.002
Dissolved Zinc	mg/L	0.030	0.005	<0.005
Dissolved Zirconium	mg/L	0.004	0.004	<0.004

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

1098255 Un-ionized Ammonia and/or Ammonium detection limit is a calculated RDL.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

Microbiology Analysis

RPT Date: May 06, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper

Total Coliforms & E. Coli (Using MI Agar)

Escherichia coli 1098718 ND ND NA < 1

Total Coliforms 1098718 24 22 8.7% < 1

Comments: ND - Not Detected, NA - % RPD Not Applicable

Certified By:

AGAT QUALITY ASSURANCE REPORT (V1)

Page 5 of 11

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.

Results relate only to the items tested. Results apply to samples as received.

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

Water Analysis															
RPT Date: May 06, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Water Quality Assessment - Dissolved Metals - PWQO (mg/L)

Electrical Conductivity	1098220		635	637	0.3%	< 2	109%	80%	120%						
pH	1098220		7.90	7.77	1.7%	NA	102%	90%	110%						
Total Dissolved Solids	1091908		498	498	0.0%	< 20	100%	80%	120%						
Alkalinity (as CaCO3)	1098220		108	106	1.9%	< 5	94%	80%	120%						
Bicarbonate (as CaCO3)	1098220		108	106	1.9%	< 5									
Carbonate (as CaCO3)	1098220		<5	<5	NA	< 5									
Hydroxide (as CaCO3)	1098220		<5	<5	NA	< 5									
Fluoride	1097224		<0.05	<0.05	NA	< 0.05	107%	90%	110%	103%	90%	110%	105%	85%	115%
Chloride	1097224		1.54	1.54	0.0%	< 0.10	91%	70%	130%	101%	80%	120%	102%	70%	130%
Nitrate as N	1097224		1.88	1.87	0.5%	< 0.05	92%	70%	130%	102%	80%	120%	105%	70%	130%
Nitrite as N	1097224		<0.25	<0.25	NA	< 0.05	103%	70%	130%	105%	80%	120%	105%	70%	130%
Bromide	1097224		<0.25	<0.25	NA	< 0.05	100%	90%	110%	98%	90%	110%	100%	85%	115%
Sulphate	1097224		5.45	5.44	0.2%	< 0.10	96%	70%	130%	103%	80%	120%	105%	70%	130%
Ortho Phosphate as P	1097224		<0.50	<0.50	NA	< 0.10	104%	70%	130%	107%	80%	120%	111%	70%	130%
Reactive Silica	1098255	1098255	7.82	7.82	0.0%	< 0.05	107%	90%	110%	106%	90%	110%	96%	80%	120%
Ammonia as N	1098255	1098255	<0.02	<0.02	NA	< 0.02	101%	70%	130%	100%	80%	120%	85%	70%	130%
Total Phosphorus	1098332		0.08	0.08	NA	< 0.02	96%	70%	130%	96%	80%	120%	109%	70%	130%
Total Organic Carbon	1098255	1098255	6.0	6.4	6.5%	< 0.5	96%	90%	110%	103%	90%	110%	93%	80%	120%
Colour	1100321		18	17	NA	< 5	102%	90%	110%						
Turbidity	1098255	1098255	357	356	0.3%	< 0.5	101%	80%	120%						
Dissolved Calcium	1090825		57.6	60.4	4.7%	< 0.05	90%	70%	130%	100%	80%	120%	98%	70%	130%
Dissolved Magnesium	1090825		12.8	13.4	4.6%	< 0.05	94%	70%	130%	104%	80%	120%	102%	70%	130%
Dissolved Potassium	1090825		9.29	9.59	3.2%	< 0.05	94%	70%	130%	102%	80%	120%	101%	70%	130%
Dissolved Sodium	1090825		2.01	2.09	3.9%	< 0.05	94%	70%	130%	102%	80%	120%	101%	70%	130%
Dissolved Aluminum	1098663		0.103	0.117	12.7%	< 0.004	106%	70%	130%	105%	80%	120%	102%	70%	130%
Dissolved Antimony	1098663		<0.005	<0.005	NA	< 0.001	102%	70%	130%	98%	80%	120%	98%	70%	130%
Dissolved Arsenic	1098663		<0.015	<0.015	NA	< 0.003	103%	70%	130%	98%	80%	120%	99%	70%	130%
Dissolved Barium	1098663		0.014	0.012	15.4%	< 0.002	99%	70%	130%	100%	80%	120%	97%	70%	130%
Dissolved Beryllium	1098663		<0.0025	<0.0025	NA	< 0.0005	102%	70%	130%	96%	80%	120%	99%	70%	130%
Dissolved Boron	1098663		<0.050	<0.050	NA	< 0.010	101%	70%	130%	100%	80%	120%	103%	70%	130%
Dissolved Cadmium	1098663		<0.0005	<0.0005	NA	< 0.0001	100%	70%	130%	100%	80%	120%	113%	70%	130%
Dissolved Chromium	1098663		<0.015	<0.015	NA	< 0.003	100%	70%	130%	100%	80%	120%	102%	70%	130%
Dissolved Cobalt	1098663		<0.0025	<0.0025	NA	< 0.0005	105%	70%	130%	99%	80%	120%	104%	70%	130%
Dissolved Copper	1098663		<0.005	<0.005	NA	< 0.001	97%	70%	130%	99%	80%	120%	99%	70%	130%
Dissolved Iron	1098663		0.011	<0.010	NA	< 0.010	104%	70%	130%	93%	80%	120%	109%	70%	130%
Dissolved Lead	1098663		<0.005	<0.005	NA	< 0.001	98%	70%	130%	97%	80%	120%	94%	70%	130%
Dissolved Manganese	1098663		<0.010	<0.010	NA	< 0.002	103%	70%	130%	99%	80%	120%	104%	70%	130%
Dissolved Mercury	1098055		<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	98%	80%	120%	94%	70%	130%
Dissolved Molybdenum	1098663		<0.010	<0.010	NA	< 0.002	101%	70%	130%	99%	80%	120%	100%	70%	130%



CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

Water Analysis (Continued)															
RPT Date: May 06, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Dissolved Nickel	1098663		<0.015	<0.015	NA	< 0.003	105%	70%	130%	99%	80%	120%	101%	70%	130%
Dissolved Selenium	1098663		<0.020	<0.020	NA	< 0.004	102%	70%	130%	98%	80%	120%	100%	70%	130%
Dissolved Silver	1098663		<0.0005	<0.0005	NA	< 0.0001	104%	70%	130%	113%	80%	120%	109%	70%	130%
Dissolved Strontium	1098663		0.081	0.077	5.1%	< 0.005	104%	70%	130%	103%	80%	120%	103%	70%	130%
Dissolved Thallium	1098663		<0.0015	<0.0015	NA	< 0.0003	102%	70%	130%	103%	80%	120%	102%	70%	130%
Dissolved Tin	1098663		<0.010	<0.010	NA	< 0.002	99%	70%	130%	100%	80%	120%	99%	70%	130%
Dissolved Titanium	1098663		<0.010	<0.010	NA	< 0.002	101%	70%	130%	98%	80%	120%	107%	70%	130%
Dissolved Tungsten	1098663		<0.050	<0.050	NA	< 0.010	99%	70%	130%	100%	80%	120%	101%	70%	130%
Dissolved Uranium	1098663		<0.010	<0.010	NA	< 0.002	106%	70%	130%	100%	80%	120%	100%	70%	130%
Dissolved Vanadium	1098663		<0.010	<0.010	NA	< 0.002	98%	70%	130%	94%	80%	120%	102%	70%	130%
Dissolved Zinc	1098663		<0.025	<0.025	NA	< 0.005	102%	70%	130%	101%	80%	120%	102%	70%	130%
Dissolved Zirconium	1098663		<0.020	<0.020	NA	< 0.004	95%	70%	130%	94%	80%	120%	94%	70%	130%

Comments: NA signifies Not Applicable.

If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 20T596512

PROJECT: 1-19-0792-46

ATTENTION TO: Muhammad Shahid

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

Method Summary

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

ATTENTION TO: Muhammad Shahid

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO ₃) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684, ON MOECC E3139, SM 2540C, D	BALANCE
Alkalinity (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Bicarbonate (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Carbonate (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Hydroxide (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Reactive Silica	INOR-93-6070	QuickChem 10-114-27-1-A & SM 4500 Si-F	LACHAT FIA
Ammonia as N	INOR-93-6059	modified from SM 4500-NH ₃ H	LACHAT FIA
Ammonia-Un-ionized (Calculated)		MOE REFERENCE, PWQOs Tab 2	CALCULATION
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 B	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	modified from SM 2130 B	NEPHELOMETER
Dissolved Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Dissolved Aluminum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Antimony	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Arsenic	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Barium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Beryllium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cadmium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Chromium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cobalt	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Copper	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

PROJECT: 1-19-0792-46

SAMPLING SITE:

AGAT WORK ORDER: 20T596512

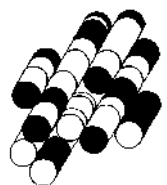
ATTENTION TO: Muhammad Shahid

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Dissolved Iron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Lead	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Manganese	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Dissolved Molybdenum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Nickel	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Selenium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Silver	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Strontium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Thallium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tin	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Titanium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Tungsten	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Uranium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Vanadium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zinc	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zirconium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS

APPENDIX G

TERRAPROBE INC.



1. Climate Information

Precipitation ¹	933 mm/a	0.93 m/a
Evapotranspiration ²	571 mm/a	0.57 m/a
Water Surplus	362 mm/a	0.36 m/a

2. Infiltration Rates**Table 2 Approach - Infiltration Factors³ (Pre and Post Development)**

Topography: Flat Land	0.3 (Considering slope of the area excluding EP zone)
Soil: Open Sandy Loan	0.4
Cover: Cultivated	0.1
Infiltration Factor:	0.8
Infiltration	289.6 mm/a 0.2896 m/a
Run-off	72 mm/a 0.0724 m/a

3. Property Statistics⁴**Pre- Development Site Coverage**

Building Area/Coverage	1,376 m ²	0.14 ha
Hardscape/Impervious	7,043 m ²	0.70 ha
Softscape/Landscape	16,089 m ²	1.61 ha
TOTAL	24,508 m²	2.45 ha

Post-Development Coverage

Building Area/Coverage	6,280 m ²	0.63 ha
Hardscape/Impervious	12,659 m ²	1.27 ha
Softscape/Landscape	5,569 m ²	0.56 ha
TOTAL:	24,508 m²	2.45 ha

Notes:

Water Balance Analysis Method: Thornthwaite and Matther approach

¹ Environment Canada (Climate ID: 6110557)

² Lake Simcoe Climate Data Reference Document (April 2017)

³ MOEE Technical Information Requirements for Land Development Applications (1995)

⁴ Proposed site plan (Drawing No. A.100, Dated: 2020-11-23), Joseph N Campitelli Architect Inc

APPENDIX G - Water Balance - 571 Welham Road, Barrie, Ontario

File No. 1-19-0792-46

4. Annual Water Balance (Pre Development)

Land Use	Area (m ²)	Precipitation (m ³)	Evapotranspiration (m ³)	Evaporation (m ³)	Infiltration (m ³)	Run-Off (m ³)
Building Area/Coverage	1,376	1,284	nil	128	nil	1,155
Hardscape/Impervious	7,043	6,571	nil	657	nil	5,914
Softscape/Landscape	16,089	15,011	9,187	nil	4,659	1,165
TOTAL	24,508	22,866	9,187	785	4,659	8,234

6. Annual Water Balance (Post Development)

Land Use	Area (m ²)	Precipitation (m ³)	Evapotranspiration (m ³)	Evaporation (m ³)	Infiltration (m ³)	Run-Off (m ³)
Building Area/Coverage	6,280	5,859	nil	586	nil	5,273
Hardscape/Impervious	12,659	11,811	nil	1,181	nil	10,630
Softscape/Landscape	5,569	5,196	3,180	nil	1,613	403
TOTAL	24,508	22,866	3,180	1,767	1,613	16,306

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

	Precipitation (m ³)	Evapotranspiration (m ³)	Evaporation (m ³)	Infiltration (m ³)	Run-Off (m ³)
Pre-Development	22,866	9,187	785	4,659	8,234
Post-Development	22,866	3,180	1,767	1,613	16,306

8. Requirement for Infiltration Maintenance from roof run-off

Volume of roof run-off captured (90%) (roof run-off available in post development)

4,746 m³

Volume of roof run-off required to match pre-development infiltration rates (Infiltration deficit in post development)

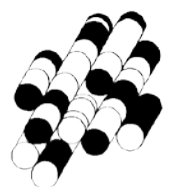
3,047 m³

Percentage of roof run-off required to match pre-development infiltration

64% m³

APPENDIX H

TERRAPROBE INC.





INDUSTRIAL DEVELOPMENT PROPOSED CRUMB MANUFACTURING FACILITY

571 WELHAM RD. BARRIE, ON
PROJECT NO: 270.19

- DRAWING LIST:
- A.000 COVER PAGE
 - A.100 PROPOSED SITE PLAN
 - A.301 PROPOSED GROUND FLOOR
& MEZZANINE PLAN
 - A.302 PROPOSED ROOF PLAN
 - A.401 PROPOSED ELEVATIONS
 - A.501 PROPOSED SECTIONS
PROP. GARBAGE ENCLOSURE
- RE-ISSUED FOR SPA APPLICATION - NOVEMBER 20, 2020

INDUSTRIAL DEVELOPMENT
PROPOSED
CRUMB MANUFACTURING FACILITY

571 WELHAM RD.
BARRIE, ON



CONSULTANTS

ARCHITECT

JOSEPH N CAMPITELLI
ARCHITECT INC.

10 Bur Oak Avenue, Unit 3, Markham, ON L6C 0A2
Tel: 905-887-8907 Fax: 905-887-9400
e-mail: info@jnc-architect.com

LEGAL

This drawing, as an instrument of service, is provided by, and is the property of, Joseph N. Campitelli, Architect Inc. (the "Architect"). The contractor must verify and accept responsibility for all dimensions and conditions on site and must notify the Architect, of any variations from the supplied information. The Architect is not responsible for the accuracy of survey, structural, mechanical, electrical, engineering information, etc., which is shown on this drawing. Refer to the appropriate engineering drawings before proceeding with the work. Construction must conform to all applicable codes and requirements of the authorities having jurisdiction. Unless otherwise noted, no investigation has been undertaken or reported on by the Architect, in regard to the environmental condition of the site to which this drawing refers. This drawing is not to be used for construction purposes until counterigned by the Architect.

This drawing is not to be scaled. All architectural symbols indicated on this drawing are graphic representations only.

COUNTERSIGNED
Joseph N. Campitelli, Architect
B.Arch., O.A.A., M.R.A.I.C.

DATE

F

7

L

J

DWG ISSUES

1. FEB.11.2020	DS ISSUED FOR COORDINATION	RD
2. MAY.15.2020	DS RE-ISSUED FOR COORDINATION	RD
3. MAY.22.2020	ISSUED FOR STABLE SLOPE REVIEW	RD
4. MAY.26.2020	ISSUED FOR COORDINATION	RD
5. JUN.01.2020	ISSUED FOR COORDINATION	RD
6. JUL.07.2020	ISSUED FOR SPA APPLICATION	RD
7. NOV.23.2020	REVISED FOR SPA APPLICATION	RD

DESCRIPTION

PRE-CON FILE NO: D28-043-2019
SPA FILE NO: D11-017-2020

LEGAL

INFO

PROJECT ARCHITECT
J. CAMPITELLI
ASSISTANT DESIGNER

DRAWN BY
RD

CHECKED BY
J.C.

COVER PAGE

DWG TITLE

SCALE	DWG NUMBER	PROJECT NO.
N.T.S.	NOV.23.2020	270.19 D

SHEET NO

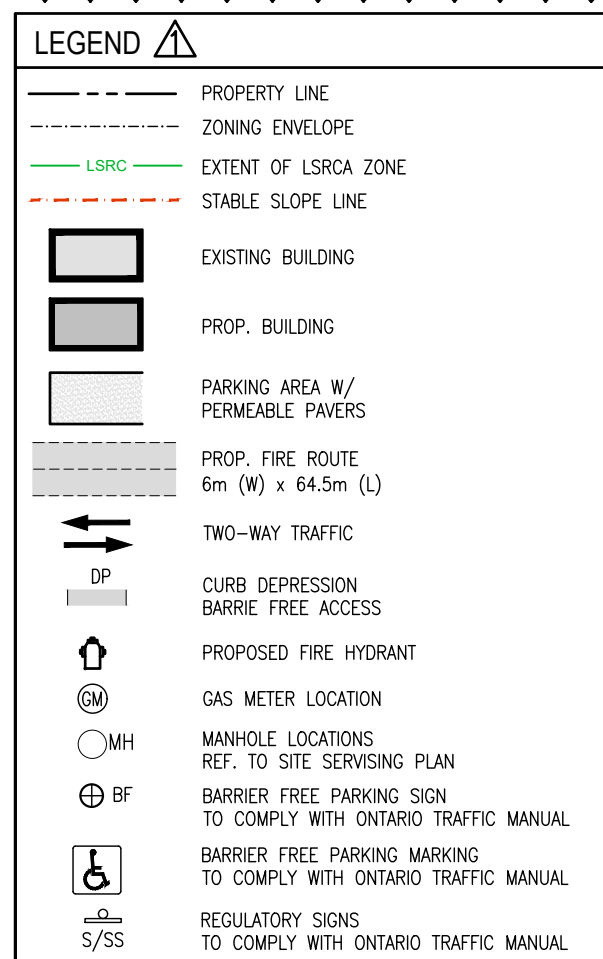
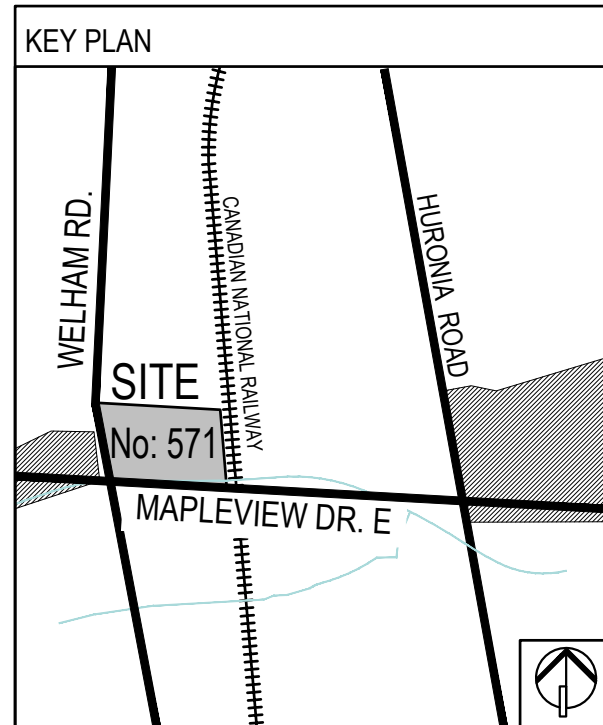
A.000

SURVEY INFORMATION		
INFORMATION FOR THIS SITE PLAN WAS TAKEN FROM THE FOLLOWING SURVEY: PART OF LOTS 9 AND 10, CONCESSION 12, TOWNSHIP OF INNISVILLE CITY OF BARRIE, COUNTY OF SIMCOE		
DATED: OCT. 02, 2020		
RUDY MAC SURVEYING LTD. ONTARIO LAND SURVEYORS 89 BIG BAY POINT ROAD, BARRIE, ONTARIO L4N 8M5 (705) 722-3845		
SPECIFIED CONTROL POINTS (SCP): UTM ZONE 17, NAD 83 (ORIGINAL). COORDINATES TO URBAN ACCURACY PER SEC. 14 (2) OF OREG. 216/10		
POINT ID	NORTHING	EASTING
SCP 03120040012	4909810.870	605984.432
SCP 00119713848	4911611.018	606450.422
ORP A	4910395.23	606053.35
ORP B	4910458.49	606245.33
COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THE PLAN.		

DEVELOPMENT STATISTICS		
	PRE-CONSTRUCTION SITE	POST-CONSTRUCTION SITE
BUILDING AREA/COVERAGE	1,376sm	6,280sm
IMPERVIOUS AREA	7,043sm	12,659sm
LANDSCAPE AREA	16,089sm	5,569sm
SITE AREA TOTAL: G1 ZONE 24,508sm	24,508sm	24,508sm

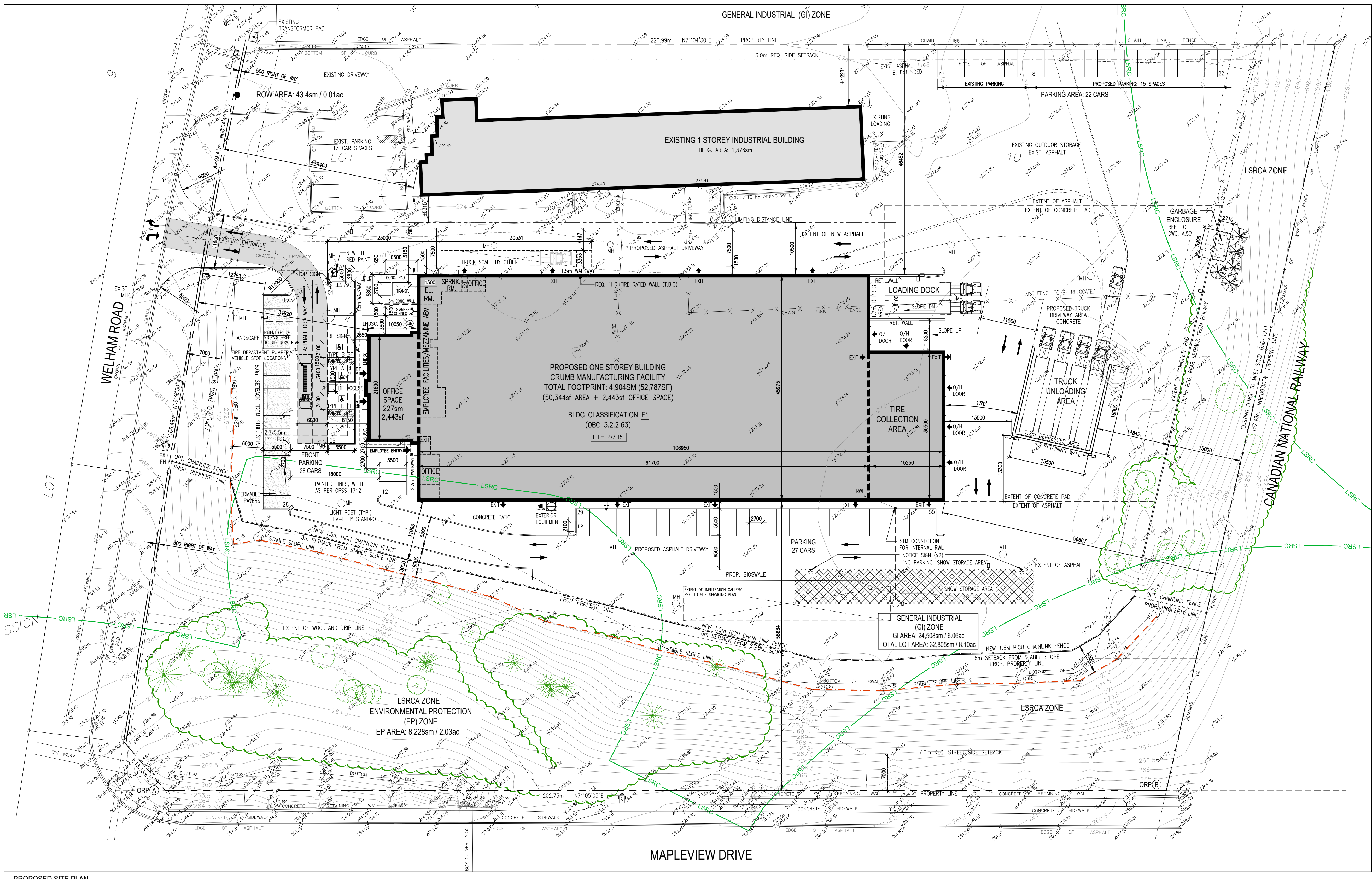
PROPOSED BUILDING STATISTICS / OBC		
• BLDG. CLASSIFICATION: OBC 3.2.2.6.3: GROUP F, DIVISION 1, ONE STOREY		
• ACCESSORY CLASSIFICATION - OCCUPANCY D (OFFICES)		
• NONCOMBUSTIBLE CONSTRUCTION		
• SPRINKLERED BUILDING		

ZONING STANDARDS MATRIX							
	ZONING BY-LAY 2009-141	EXISTING	PROPOSED		ZONING BY-LAY 2009-141	EXISTING	PROPOSED
1. ZONING	GENERAL INDUSTRIAL (G) w/ PORTION ENVIRONMENTAL PROTECTION (EP)	EXISTING INDUSTRIAL BUILDING	PROPOSED CRUMB MANUFACTURING FACILITY - GI ZONE	7. GFA	N/A	BLDG. GFA - 1,376sm (14,811sf)	PROP. MANUFAC. FACILITY - 4,904sm (52,787sf) PROP. STORAGE MEZZANINE - 165sm (1,776sf)
2. SITE AREA	MIN. 700sm	32,805sm /8.10ac	24,508sm /6.06ac (REF. TO DRAFT REF. PLAN BY RUDY MAK, FILE # 14107)				TOTAL GFA - 5,069sm (54,563sf)
3. LOT FRONTAGE	MIN. 30m	155.91m	85.5m				EXCLUSIONS: (MEZZ. STORAGE, UTILITY ROOMS)- 225sm (2,422sf)
4. SETBACKS	NORTH (INTERIOR SIDE YARD)- 3.0m SOUTH (EXTERIOR SIDE YARD)- 10.0m WEST (FRONT YARD)- 7.0m EAST (REAR YARD)- 15.0m	NORTH SIDE YARD- ±12.23m WEST (FRONT YARD)- ±39.46m	NORTH (INTERIOR SIDE YARD)- 46.48m SOUTH (INTERIOR SIDE YARD)- 11.99m WEST (FRONT YARD)- 34.92m EAST (REAR YARD)- 56.66m	8. PARKING	EXIST. INDUSTRIAL BUILDING: 1 SPACE / 70sm PARKING REQUIRED: 19.6 SPACES BF PARKING - 1 SPACE (INC.)	EXISTING PARKING: 20 SPACES BF PARKING - 1 SPACE (EXIST.)	EXIST. PARKING: 20 SPACES
5. COVERAGE	MAX. 60%	EXIST. BLDG. AREA -1,376sm (14,811sf)	25.6% (6,280sm) - COVERAGE EXIST. BUILDING - 1,376sm (14,811sf) PROP. MANUFAC. FACILITY - 4,904sm (52,787sf) TOTAL COVERED AREA - 6,280sm (67,598sf)		PROPOSED BUILDING: MANUFACTURING FACILITY 1 SPACE / 70sm PARKING REQUIRED - 69 SPACE (4,844sm / 70sm = 69) BF PARKING - 3 SPACES (INCL.)		PARKING PROVIDED: 70 SPACES TOTAL SITE PARKING PROVIDED: 90 SPACES BF PARKING: EXISTING: 1 SPACE (INCL.) PROPOSED: 3 SPACES (INCL.)
6. BUILDING HEIGHT	NO LIMIT	EXIST. 1 STOREY BLDG. BLDG. HEIGHT: ±5.2m	PROPOSED 1 STOREY BLDG. BLDG. HEIGHT: 9.1m	9. LOADING	B/W 3,000sm-7,499sm OF GFA; REQ. 2 LOADING SPACES		PROVIDED - 6 SPACES



- ### TRANSPORTATION NOTES
1. TRAFFIC SIGNS TO CONFORM TO THE ONTARIO TRAFFIC MANUAL (OTM).
 2. ALL BARRIER FREE PARKING STALLS SHALL BE SIGNED IN ACCORDANCE WITH ONTARIO TRAFFIC MANUAL BOOK 5 - REGULATORY SIGNS.
 3. ALL BARRIER FREE PARKING STALLS SYMBOLS SHALL BE MARKED IN ACCORDANCE WITH ONTARIO TRAFFIC MANUAL BOOK 11 - PAVEMENT, HAZARD AND DELINEATION MARKINGS.
 4. PAVEMENT MARKINGS FOR PARKING STALLS SHALL BE PAINTED WHITE AND CONFORM TO OPSS 1712.

- ### GENERAL NOTES
1. ALL DRAWING DOCUMENTS LISTED IN THIS SET ARE FOR INFORMATION PURPOSES ONLY.
 2. ALL SITE BOUNDARY AND PERIMETER INFORMATION INDICATED IN THIS SITE PLAN WAS TAKEN FROM SURVEY DRAWING AS NOTED.
 3. EXISTING BUILDING INFORMATION USED IN THIS DOCUMENTATION WAS TAKEN FROM ARCHITECT. DRAWINGS, PREPARED BY: VAN S. MALCOLM ARCHITECT, DATED MARCH 1989.
 4. THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION. ALL AREAS AND DIMENSIONS TO BE SITE VERIFIED PRIOR TO ANY WORK.



INDUSTRIAL DEVELOPMENT
PROPOSED
CRUMB MANUFACTURING FACILITY

571 WELHAM RD.
BARRIE, ON

E360s ENVIRONMENTAL & DESIGN SOLUTIONS
Sustainable Environmental Management

CLIENT

CONSULTANTS

ARCHITECT

JOSEPH N. CAMPITELLI
ARCHITECT INC.

10 Bur Oak Avenue, Unit 3, Markham, ON L3R 0A2
Tel: 905-887-8800 Fax: 905-887-9400
e-mail: info@jncampitelli.com

LEGAL

DWG ISSUES

INFO

DWG TITLE

SHEET NO

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COUNTERSIGNED
Joseph N. Campitelli, Architect
B.Arch., O.A.A., M.A.I.C.

DATE

1. FEB. 11, 2020 DS ISSUED FOR COORDINATION RD
2. MAY 15, 2020 DS RE-ISSUED FOR COORDINATION RD
3. MAY 22, 2020 ISSUED FOR STABLE SLOPE REVIEW RD
4. MAY 26, 2020 ISSUED FOR COORDINATION RD
5. JUN. 01, 2020 ISSUED FOR COORDINATION RD
6. JUL. 07, 2020 ISSUED FOR SPA APPLICATION RD
7. NOV. 23, 2020 REVISED FOR SPA APPLICATION RD

PRE-CON FILE NO: D28-043-2019
SPA FILE NO: D11-017-2020

PROJECT ARCHITECT
J. CAMPITELLI
ASSISTANT DESIGNER
RD
CREATED BY
J.C.

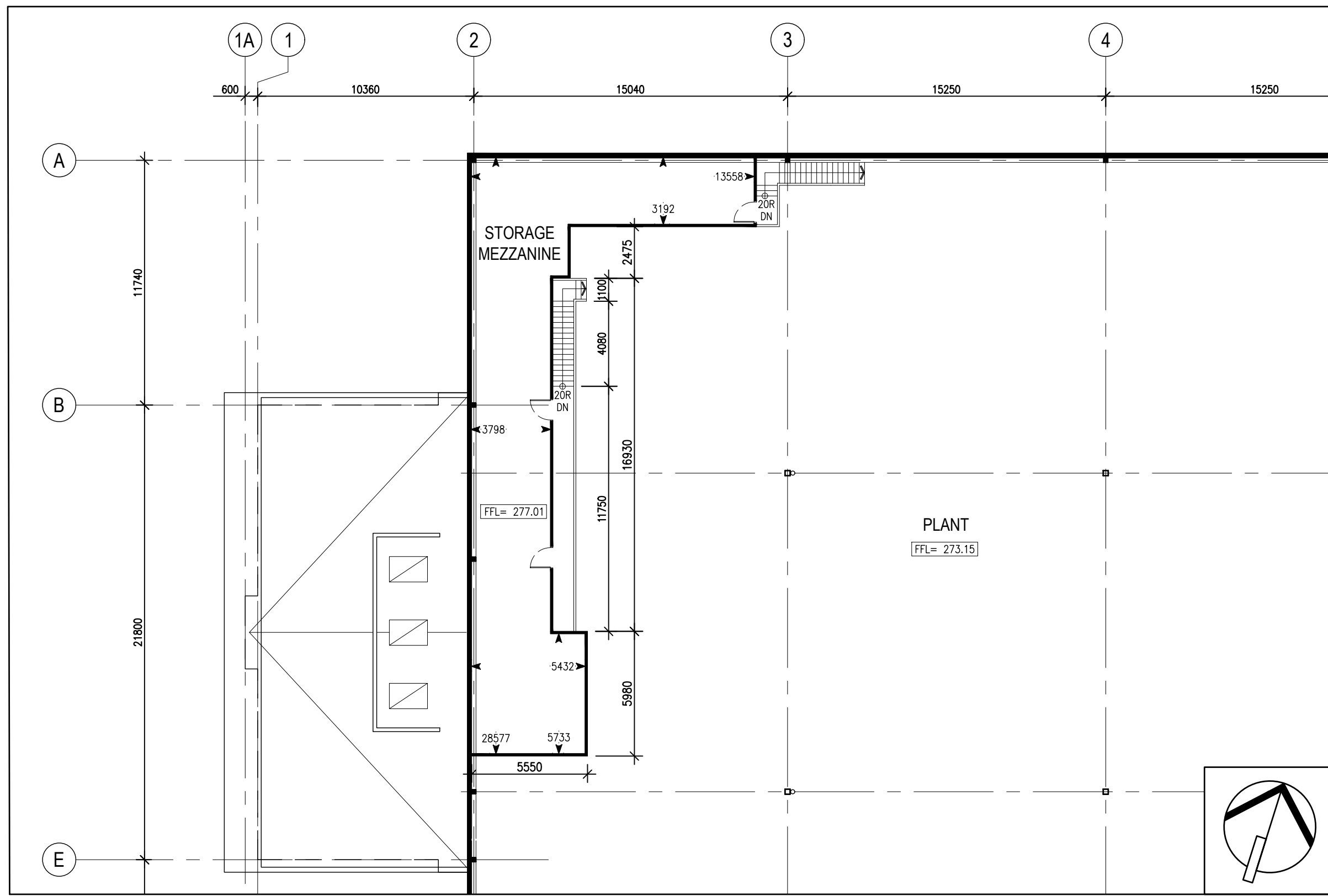
PROPOSED SITE PLAN

SCALE
1:400

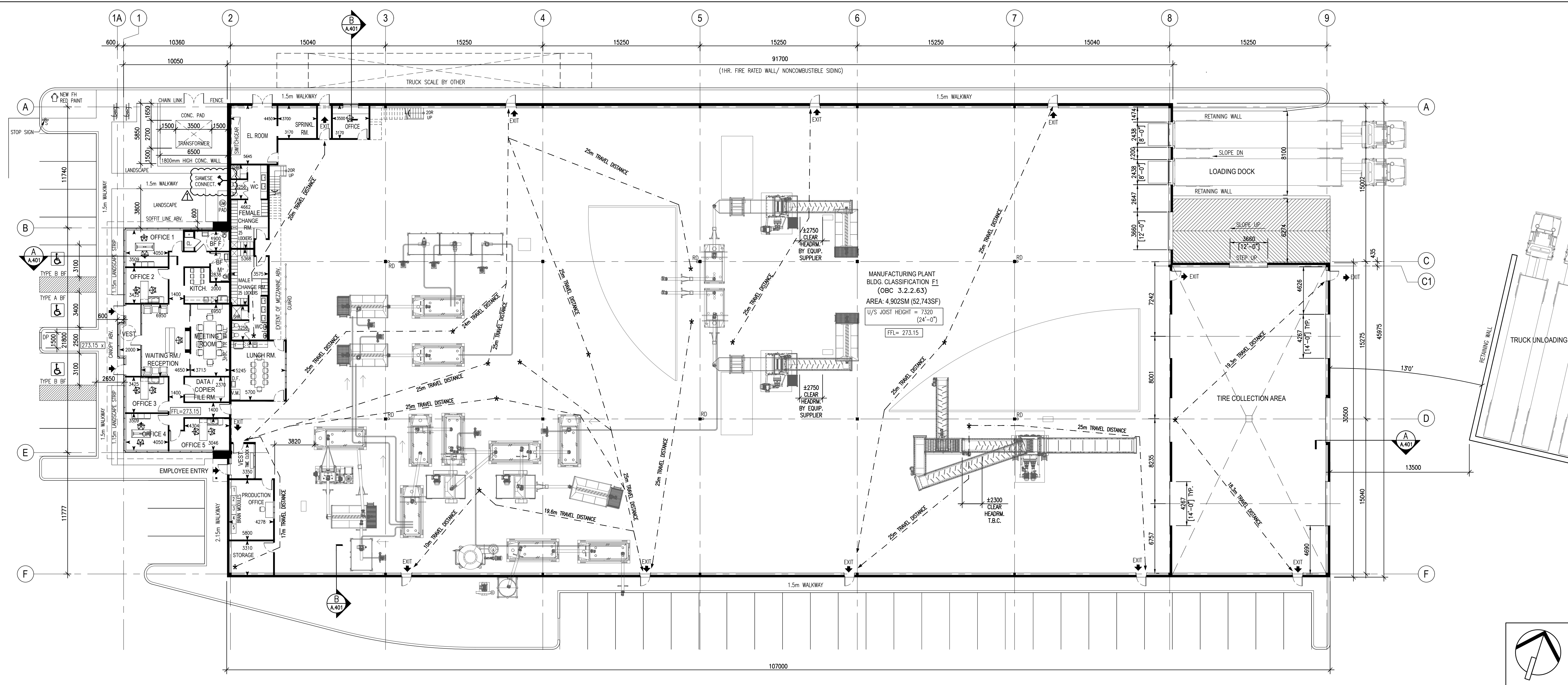
DWG PRINTED
NOV. 23, 2020

PROJECT NO
270.18 D

A.100



PROPOSED MEZZANINE PLAN



PROPOSED FLOOR PLAN

Firm Name: Joseph N. Campitelli Architect Certificate of Practice Number: 5859 Firm Certificate of Practice Number: 4067		The architect noted above has exercised responsible control with respect to design activities. The architect's seal number is the architect's BCDN.	
Item		OBC Reference	
1 Project Description: Proposed Rubber Processing Plant		References are to Division B unless noted (A) for Division A or (C) for Division C.	
2 Major Occupancy(s) Group F Division 1		3.1.2.1 (1)	
3 Building Area(m ²) Existing New 4,904 m ² Total 4,904 m ²		3.1.2.1 (A)	
4 Gross Area Existing New 4,904 m ² Total 4,904 m ²		3.1.2.1 (A)	
5 Number of Storeys Above Grade Below Grade		3.2.2.1 (A) & 3.2.1.1	
6 Number of Storeys / Fire Fighter Access		3.2.2.1 (A) & 3.2.5	
7 Building Classification Section 3.2.2.1 - Group F1		3.2.2.20 - B3	
8 Sprinkler System Proposed		3.2.2.20 - B3	
9 Standpipe required		3.2.2.20 - B3	
10 Fire Alarm required		3.2.2.20 - B3	
11 Water Service / Supply is Adequate		3.2.2.7	
12 High Building		3.2.6	
13 Construction Restrictions		3.2.2.20 - B3	
14 Mezzanine(s) Area m ²		3.2.1.1 (3)(4)	
15 Occupant Load Based on		3.1.17	
16 Barrier-free Design		3.8	
17 Hazardous Substances		3.3.1.2 & 3.3.1.19	
18 Required		3.2.2.20 - B3 & 3.2.1.4	
19 Spatial Separation - Construction of Exterior Walls		3.2.3	
20 Plumbing Fixtures Requirements		3.2.1.1 (3)(4)	
Male / Female Count @		Occupant Load	
Basement		Occupancy	
1st Floor		Occupancy	
2nd Floor		Occupancy	
2nd Floor (Adjust as Required for Additional Floors or Occupancies)		Occupancy	

INDUSTRIAL DEVELOPMENT
PROPOSED
CRUMB MANUFACTURING FACILITY

571 WELHAM RD.
BARRIE, ON

ENVIRONMENTAL 360 SOLUTIONS
Sustained Environmental Management

JOSEPH N. CAMPITELLI
ARCHITECT INC.

10 Bar Oak Avenue, Unit 3, Markham, ON L6C 0A2
Tel: 905-887-8900 Fax: 905-569-9400
e-mail: info@jnc-architect.com

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This drawing is not to be scaled. All architectural symbols indicated on this drawing are graphic representations only.

COUNTERSIGNED
Joseph N. Campitelli, Architect
B.Arch., O.A.A., M.R.A.I.C.

DATE

ONTARIO ASSOCIATION
OF
ARCHITECTS
JOSEPH N. CAMPITELLI
LICENCE
5859

1. FEB.11.2020	ISSUED FOR COORDINATION	RD
2. MAY.15.2020	ISSUED FOR COORDINATION	RD
3. MAY.22.2020	ISSUED FOR STABLE SLOPE REVIEW	RD
4. MAY.26.2020	ISSUED FOR COORDINATION	RD
5. JUN.01.2020	ISSUED FOR COORDINATION	RD
6. JUL.07.2020	ISSUED FOR SPA APPLICATION	RD
7. NOV.23.2020	REVISED FOR SPA APPLICATION	RD

PRE-CON FILE NO: D28-043-2019
SPA FILE NO: D11-017-2020

PROJECT ARCHITECT
J. CAMPITELLI
ASSISTANT DESIGNER

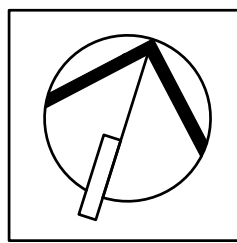
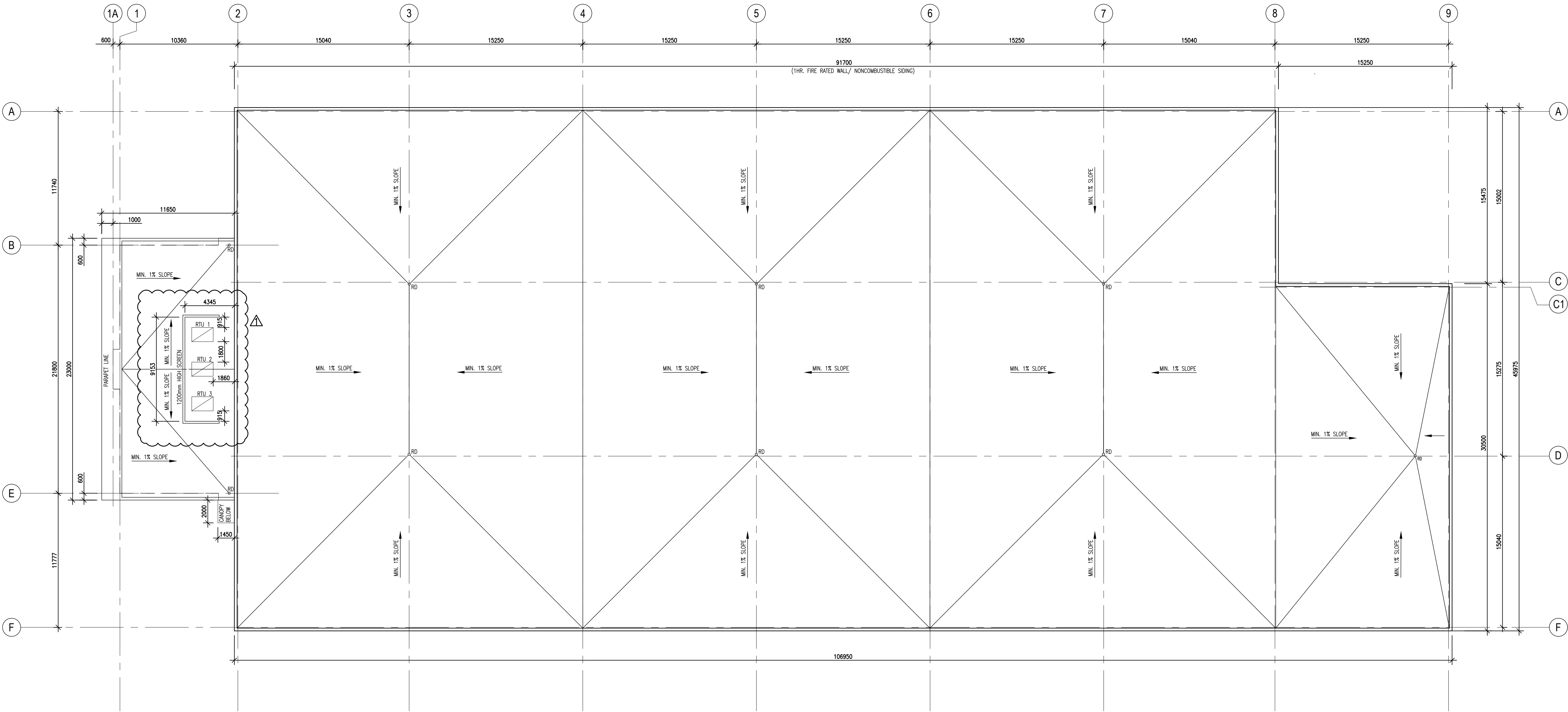
DRAWN BY
RD
CHECKED BY
J.C.

PROPOSED GROUND FLOOR
& MEZZANINE PLAN

SCALE
1:200

DATE
NOV.23.2020

PROJECT NO.
270.19.D



PROJECT

INDUSTRIAL DEVELOPMENT
PROPOSED
CRUMB MANUFACTURING FACILITY

CLIENT

 ENVIRONMENTAL 360 SOLUTIONS
Trusted Environmental Management

CONSULTANTS

ARCHITECT

JOSEPH N CAMPITELLI
ARCHITECT INC.

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ONTARIO ASSOCIATION
OF
ARCHITECTS
JOSEPH N. CAMPITELLI
LICENCE
5869

DWG ISSUES

1. FEB.11.2020	DS ISSUED FOR COORDINATION	RD
2. MAY.15.2020	DS RE-ISSUED FOR COORDINATION	RD
3. MAY.22.2020	ISSUED FOR STABLE SLOPE REVIEW	RD
4. MAY.26.2020	ISSUED FOR COORDINATION	RD
5. JUN.01.2020	ISSUED FOR COORDINATION	RD
6. JUL.07.2020	ISSUED FOR SPA APPLICATION	RD
7. NOV.23.2020	REVISED FOR SPA APPLICATION	RD

DESCRIPTION

PRE-CON FILE NO: D28-043-2019
SPA FILE NO: D11-017-2020

LEGAL

INFO

PROJECT ARCHITECT
J. CAMPITELLI
ASSISTANT DESIGNER

DRAWN BY
RD

CHECKED BY
J.C.

DWG TITLE

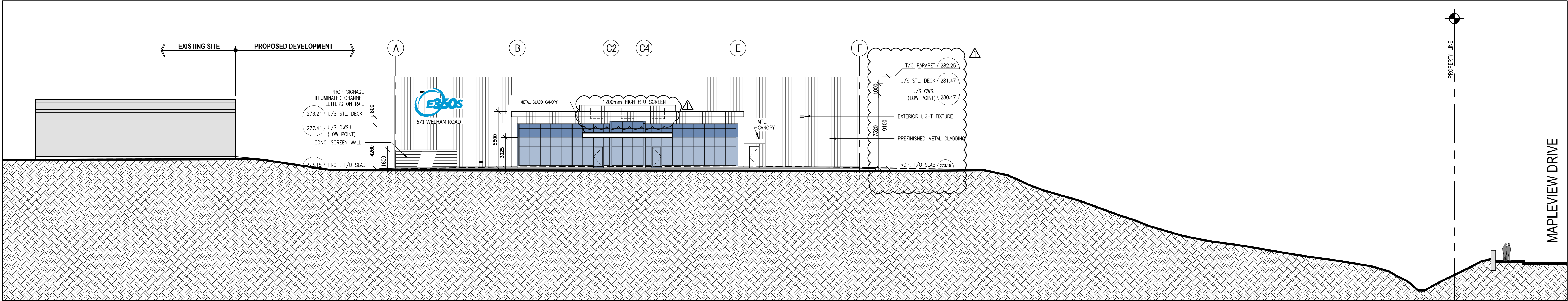
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SCALE

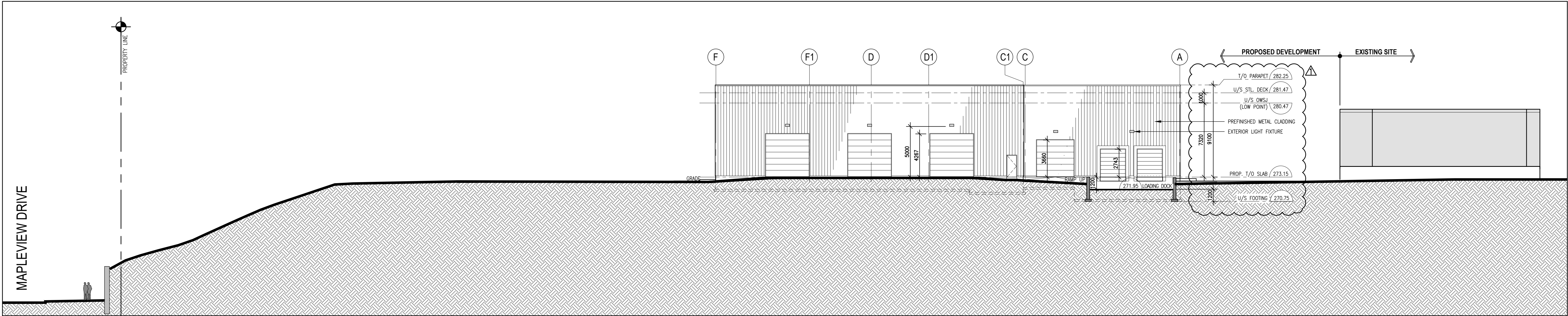
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SHEET NO

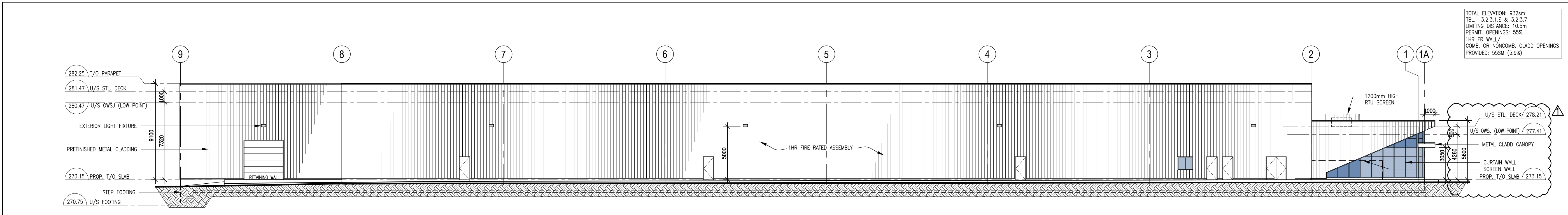
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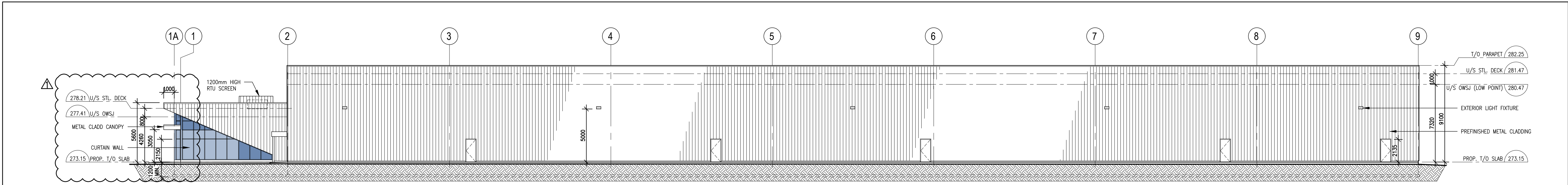
PROPOSED WEST (FRONT) ELEVATION



PROPOSED EAST (REAR) ELEVATION



PROPOSED NORTH ELEVATION



PROPOSED SOUTH ELEVATION

INDUSTRIAL DEVELOPMENT
PROPOSED
CRUMB MANUFACTURING FACILITY

571 WELHAM RD.
BARRIE, ON

E360S ENVIRONMENTAL SAS SOLUTIONS
Sustained Environmental Management

CONSULTANTS

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B. ARCH., O.A.A., M.R.A.I.C.

DATE
ONTOARIO ASSOCIATION
OF
ARCHITECTS
JOSEPH N. CAMPITELLI
LICENCE
5859

DWG ISSUES
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2. MAY.15.2020 DS RE-ISSUED FOR COORDINATION RD
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4. MAY.26.2020 ISSUED FOR COORDINATION RD
5. JUN.01.2020 ISSUED FOR COORDINATION RD
6. JUL.07.2020 ISSUED FOR SPA APPLICATION RD
7. NOV.23.2020 REVISED FOR SPA APPLICATION RD

DESCRIPTION
PRE-CON FILE NO: D28-043-2019
SPA FILE NO: D11-017-2020

LEGAL

INFO
PROJECT ARCHITECT
J. CAMPITELLI
ASSISTANT DESIGNER

DRAWN BY
RD
CHECKED BY
J.C.

DWG TITLE
PROPOSED ELEVATIONS

DWG NO
SCALE
1:200
DATE PREPARED
NOV 23 2020
PROJECT NO
270.19 D

A.401



1. FEB.11.2020	DS ISSUED FOR COORDINATION	RD
2. MAY.15.2020	DS RE-ISSUED FOR COORDINATION	RD
3. MAY.22.2020	ISSUED FOR STABLE REVIEW	RD
4. MAY.26.2020	ISSUED FOR COORDINATION	RD
5. JUN.01.2020	ISSUED FOR COORDINATION	RD
6. JUL.07.2020	ISSUED FOR SPA APPLICATION	RD
7. NOV.23.2020	REVISED FOR SPA APPLICATION	RD

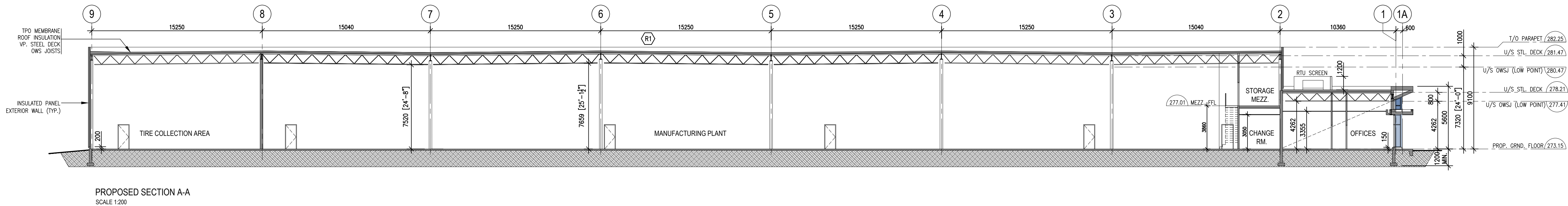
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SPA FILE NO: D11-017-2020

PROJECT ARCHITECT
J. CAMPITELLI
ASSISTANT DESIGNER

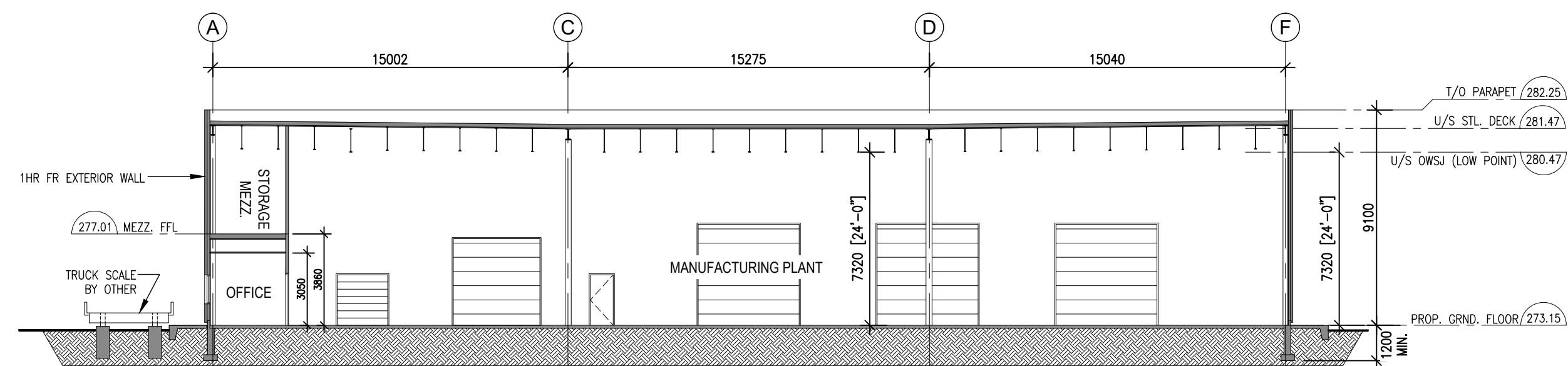
DRAWN BY
RD
CHECKED BY
J.C.

PROPOSED SECTIONS
PROP. GARBAGE ENCLOSURE

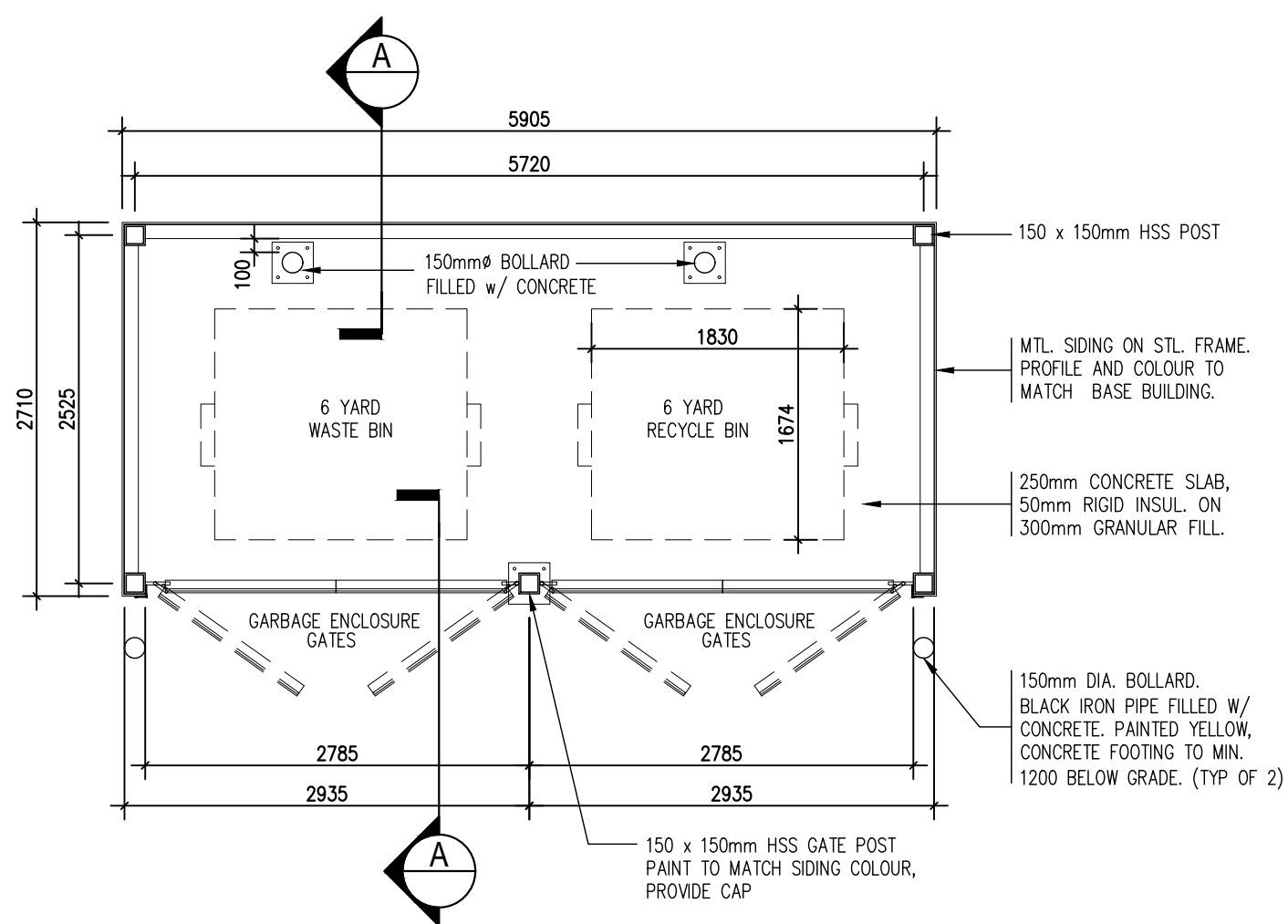
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AS NOTED	NOV.23.2020	270.19.D



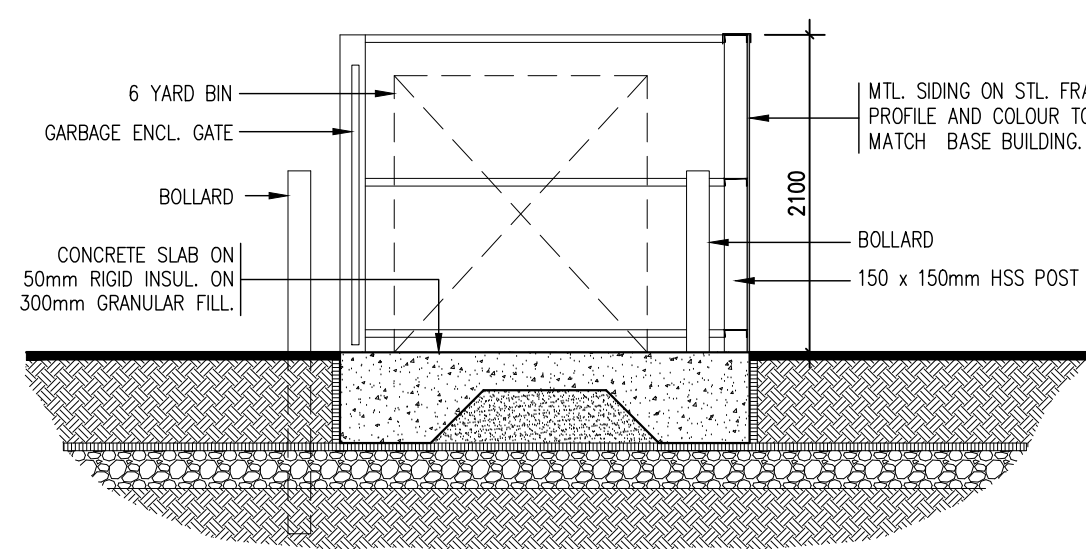
PROPOSED SECTION A-A
SCALE 1:200



PROPOSED SECTION B-B
SCALE 1:200

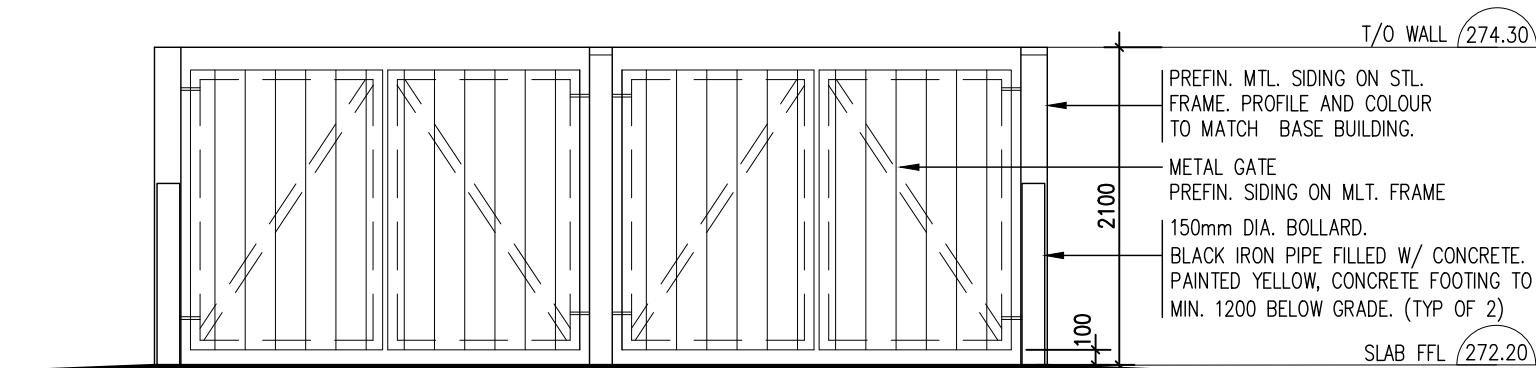


PROPOSED PLAN

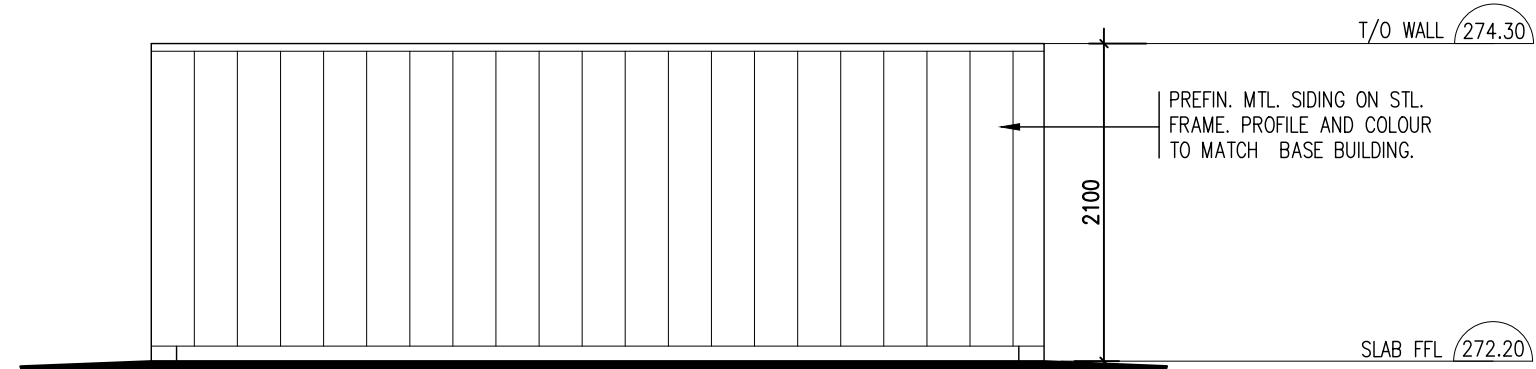


SECTION A-A

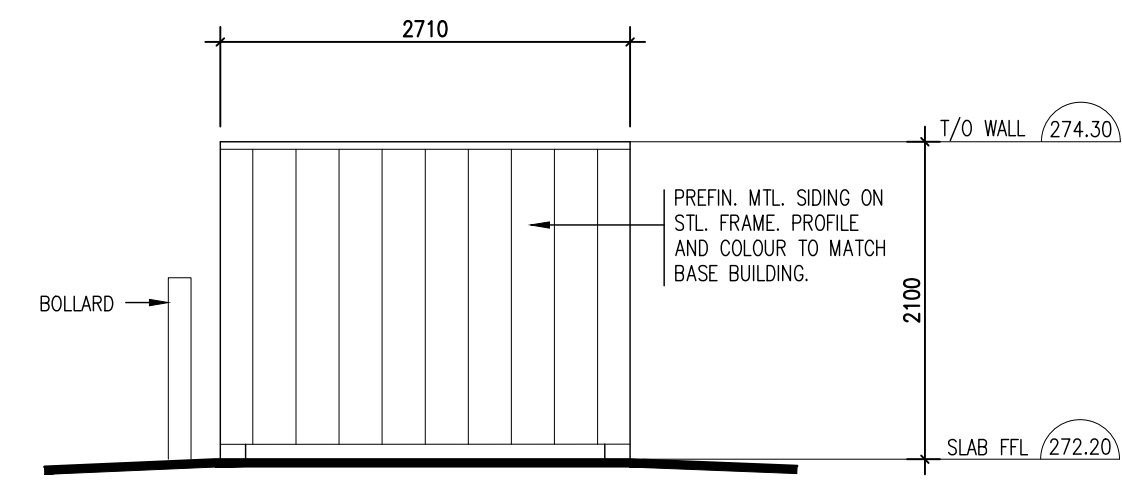
PROPOSED GARBAGE ENCLOSURE
SCALE 1:50



WEST ELEVATION



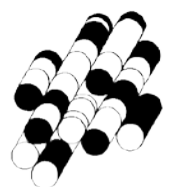
EAST ELEVATION



SOUTH ELEVATION
NORTH ELEVATION (SIMILAR)

APPENDIX I

TERRAPROBE INC.



File No. 1-19-0792-46
571 Welham Road, Barrie, ON

Monitoring Well	Drilling Date	Data logger Installation date	Ground Surface Elevation (masl)	Well depth (m)	Stickup (m)	Six Month Groundwater Monitoring													
						10-Mar-20		28-Apr-20		28-May-20		26-Jun-20		23-Jul-20		31-Aug-20		24-Sep-20	
						Depth of Ground Water (mbgs)	Ground Water Elevation (masl)	Depth of Ground Water (mbgs)	Ground Water Elevation (masl)	Depth of Ground Water (mbgs)	Ground Water Elevation (masl)	Depth of Ground Water (mbgs)	Ground Water Elevation (masl)	Depth of Ground Water (mbgs)	Ground Water Elevation (masl)	Depth of Ground Water (mbgs)	Ground Water Elevation (masl)	Depth of Ground Water (mbgs)	Ground Water Elevation (masl)
MW 2	03-Mar-20	28-Apr-20	273	6.1	1.1	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW 3	24-Feb-20	28-Apr-20	273.1	9.1	1.1	DRY	DRY	DRY	DRY	8.9	264.2	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW 4	03-Mar-20	28-Apr-20	273	6.1	0.9	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW 6	26-Feb-20	28-Apr-20	273.3	13.7	1.0	9.6	263.7	9.6	263.7	9.7	263.6	9.7	263.6	9.8	263.5	9.7	263.6	9.7	263.6
MW 7	03-Mar-20	28-Apr-20	273.4	10.7	1.0	DRY	DRY	DRY	DRY	10.4	263.0	10.5	262.9	10.5	262.9	10.4	263.0	10.4	263.0
MW 13	25-Feb-20	28-Apr-20	272.9	10.7	0.9	DRY	DRY	DRY	DRY	10.3	262.6	10.4	262.5	10.4	262.6	10.4	262.5	10.4	262.5
MW 14	03-Mar-20	-	273.9	6.1	-	DRY	DRY	DRY	DRY	5.7	268.2	5.7	268.2	DRY	DRY	DRY	DRY	DRY	DRY
MW 15	24-Feb-20	-	273.2	7.6	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

NOTES: masl: meters above sea level, mbgs: meters below ground surface
Barlogger installed in MW 13

Monthly Monitoring (April 2020 - September 2020)
571 Welham Road, Barrie, Ontario

