

Appendix A

20 SR SPS Future Flow Technical Memorandum



Innisfil Heights
Schedule 'B' Municipal
Class Environmental Assessment
20th Sideroad Sewage Pumping Station

Technical Memorandum
Future Flows

February 2026



Innisfil Heights Municipal Class Environmental Assessment

Technical Memorandum Future Flows

Project No. 121031

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1. Introduction

This Technical Memorandum has been prepared in support of the Innisfil Heights Schedule B Municipal Class Environmental Assessment (Class EA). The 2018 Master Servicing Plan (MSP) identified short- and long-term strategies for water and wastewater servicing to accommodate the population and employment growth outlined in the Innisfil Official Plan (2018). The MSP recommended construction of new sewage pumping stations (SPS) to service the Innisfil Heights economic district.

This Technical memorandum pertains to the proposed new 20th Sideroad Sewage Pumping Station (20SR SPS), to be located on 20th Sideroad in the Town of Innisfil. The station will receive wastewater flows from the Innisfil Heights economic areas, including flows from IH SPS 6 (which conveys flows from IH SPS 1, IH SPS 2, IH SPS 3, IH SPS 4, and IH SPS 5) and the Stroud SPS, as well as from the Innisfil Town Campus and the Royal Victoria Health Centre (RVH) Innisfil Campus, and will convey these flows to the Lakeshore Wastewater Treatment Plant.

2. Objectives

The objectives of this Technical Memorandum are as follows:

- Review historical documentation,
- Project future wastewater flows from servicing area to 20 SR SPS and to the proposed trunk sewer on Innisfil Beach Road and 20th Sideroad.

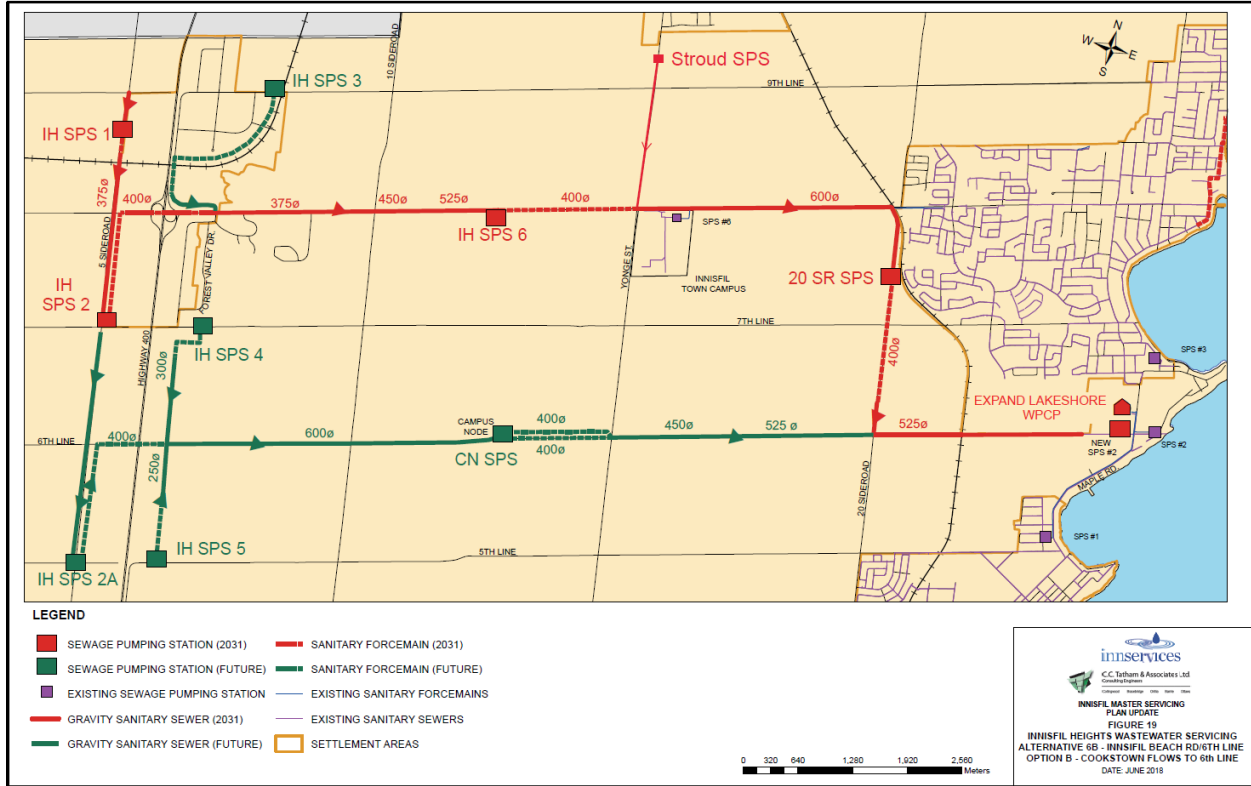
3. Historical Documents Overview

3.1. Innisfil Master Servicing Plan Update in 2018 & 2023

As part of the 2018 MSP (completed by C.C. Tatham & Associates Ltd.), various alternatives were examined in order to provide servicing for the first phase of the Innisfil Heights economic district expansion, an area designated as a Strategic Settlement Employment Area. In order to promote, facilitate and maximize the planned expansion of this area, the MSP identified that a municipal sanitary sewage collection system is required. The MSP identified “Alternative 6, Option B” as the preferred option. Alternative 6 establishes a sanitary collection system connected to the Lakeshore wastewater system via Innisfil Beach Road and 20th Sideroad for the first phase of development up to year 2031. Several sewage pumping stations were identified along the sewer route including the new 20 SR SPS.

This EA was initiated in 2021. In 2023, the updated MSP was commenced, and Ainley incorporated the revised servicing areas into this EA. The design criteria originally adopted from the 2018 MSP were updated through consultation with the 2023 MSP team.

Figure 1 below shows the sanitary collection system recommended in the 2018 MSP to meet future servicing needs, which served as the trigger for this EA. The servicing schematic was updated in the 2023 MSP and is shown in Figure 2 in Section 4.2.



*Map from 2018 Innisfil Master Servicing Plan Upgrade

Figure 1 – 2018 Innisfil Heights MSP: Alternative 6B

4. Wastewater Flow Design Basis

4.1. Design Assumptions

Table 1 outlines the design criteria used to estimate the average daily flow from new residential, commercial, and industrial development, as well as inflow and infiltration from development in the Town of Innisfil. The design criteria are based on the 2018 MSP, with the commercial and industrial criteria updated through consultation with the 2023 Master Servicing Plan team.

Table 1 – Design Criteria

Description	Rate
Population Density	2.52 persons per unit
Residential Average Flow (Incl. Average I&I)	325 L/c/d
Residential Peak Domestic Flow	275 L/c/d
Residential Peak Flow (Incl. Peak I&I)	400 L/c/d
Commercial and Industrial Flow (Incl. Average I&I)	10 m ³ /ha/d
Peak Commercial and Industrial Flow (Incl. Peak I&I)	20 m ³ /ha/d

4.2. Build-out of Proposed Servicing Area

The build-out of the servicing area for 20 SR SPS is defined as the complete development of the proposed lands to address the short- and long-term needs of the Innisfil Heights economic district and Town Campus. 20 SR SPS will collect wastewater flows from following sources:

- Innisfil Town Campus (Town Campus Development SPS);
- RVH Innisfil Campus (RVH SPS);
- IH SPS 6 (with flows from IH SPS 1, IH SPS 2, IH SPS 3, IH SPS 4 and IH SPS 5);
- Stroud SPS, and;
- 1460 7th Line property land (when the servicing boundary has been expanded).

It should be noted that IH SPS 3, IH SPS 4 and IH SPS 5 are proposed stations that may be constructed in the future but are outside the scope of this EA.

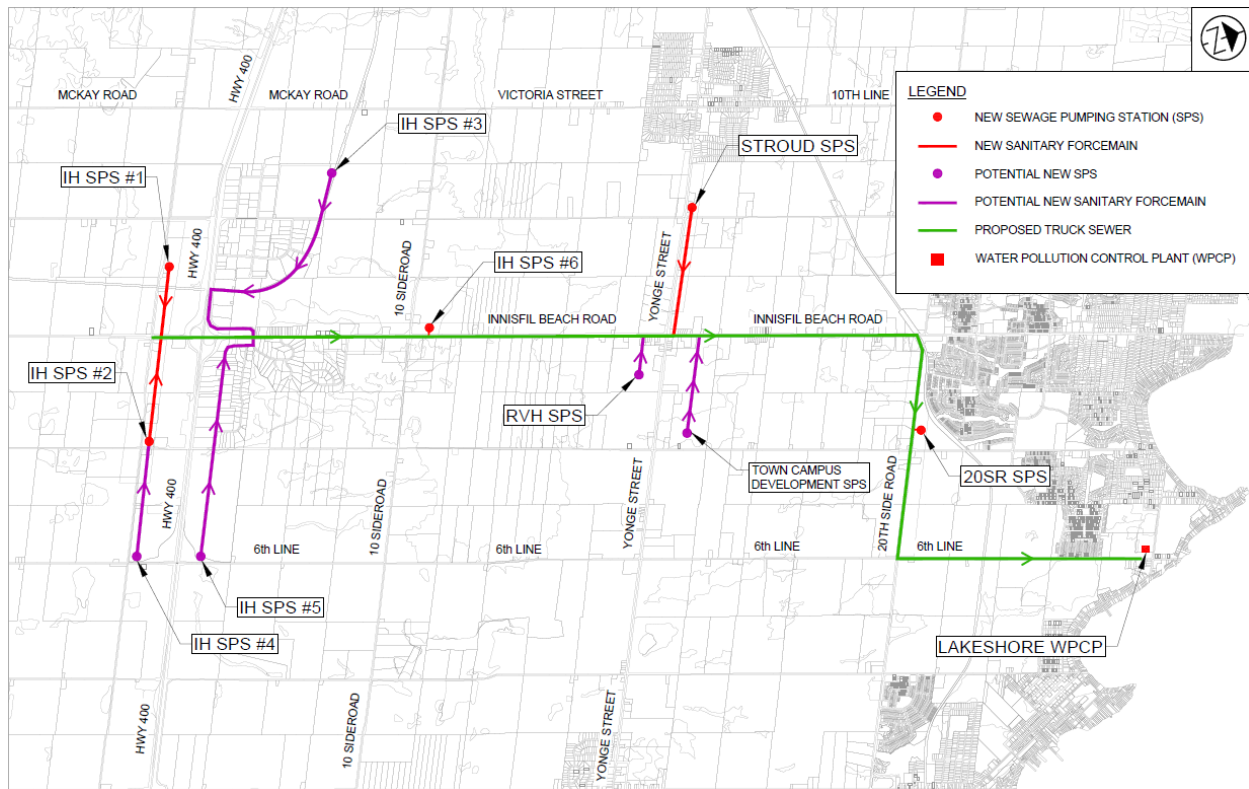


Figure 2 – Planned Development Areas Connected to 20 SR SPS

The proposed construction location of 20 SR SPS is at 1460 7th Line.

Flow contributions from future residential areas are calculated based on the design criteria provided in Table 1 above. The growth areas considered within the analysis are listed in Table 2 and are reflected in Figure 2.

Residential ADF estimates are calculated on the following basis:

$$ADF = Residence * Residential Average Flow Criteria$$

Residential PWWF estimates are calculated on the following basis:

$$PWWF = Residence * Residential Peak Domestic Flow * Peaking Factor + Residence * Residential Peak Flow Criteria$$

Table 2 – Wastewater Flows from Proposed Servicing Area

Identification	Designation	Area (Ha)	ADF Estimate (L/s)	Peak Wet Weather Flow Estimate (L/s)
Town Campus ¹	-	-	5.8	11.6
RVH Innisfil Campus ¹	-	-	27.6	55.1
IH SPS 6	-	-	41.4	84.0
Stroud SPS	-	-	22.0	64.1
Future Flow from the Property Land ²	Residential	-	12.5	25.0
Total	-	-	109.3	239.9
¹ Flow from Town of Innisfil 2023 Master Servicing Plan				
² Estimated flow provided by the property owner.				

20 SR SPS will service an estimated future residential flow and receive flows from Innisfil Town Campus, the RVH Innisfil Campus, IH SPS 6 (with flows from IH SPS 1, IH SPS 2, IH SPS 3, IH SPS 4 and IH SPS 5), and Stroud SPS.

According to the design criteria outlined in Table 1, 20 SR SPS is expected to handle a total ADF of 109.3 L/s and a total PWWF of 239.9 L/s.

It is important to note that PWWF is typically 3.5 to 4.5 times the ADF. Based on the Town's design criteria for commercial and industrial lands, the PWWF is 2 times ADF.

5. Summary

- 20 SR SPS receives wastewater flows from the Innisfil Heights economic district, the Town Campus, and Stroud SPS through a proposed trunk along Innisfil Beach Road and 20th Sideroad.
- The ADF contributes to 20 SR SPS is 109.3 L/s and the PWWF is 239.9 L/s.

Appendix B

Geotechnical and Hydrogeological Background Conditions Report



December 16, 2021

Ainley & Associates Limited

550 Welham Road

Barrie, Ontario

L4N 8Z7

Attn: Wendy Smeh, C.E.T., PMP

**RE: Geotechnical & Hydrogeological Background Conditions Report
20th Sideroad Sewage Pumping Station
20th Sideroad between Innisfil Beach Road and 6th Line
Project No. 2103505**

GEI Consultants (GEI) was retained by Ainley & Associates Limited (Ainley) to complete geotechnical and hydrogeological reports discussing the background site conditions for five (5) potential Sewage Pumping Stations (SPS) in Innisfil, Ontario. The work is being completed as part of a Municipal Class Environmental Assessment and preliminary design for the Sewage Pumping Stations being carried out by Ainley. Each SPS study area covers a large footprint and the exact SPS locations have not been selected at this time. An overall site plan showing each study area is included in Enclosure 1.

The background reports by GEI review publicly available sources of subsurface information, surficial geology and bedrock mapping, and local experience about nearby soil and groundwater conditions to discuss geotechnical and hydrogeological engineering constraints for each SPS study area. These background reports will help the design team select the best location for the SPS structure within each area. Once the locations are selected, GEI will advance one (1) borehole with a monitoring well installation in each proposed SPS location and provide preliminary geotechnical and hydrogeological design reports.

The current report contains the results of the background review and provides engineering discussion for 20th Sideroad SPS, located along 20th Sideroad generally between Innisfil Beach Road and 50 metres north of 6th Line. The total length of the 20th Sideroad SPS study area is approximately 2.6 km and extends about 200 to 300 metres east and west of 20th Sideroad. A site plan showing the 20th Sideroad SPS study area is in Enclosure 1. The background reports for the other SPS study areas are included under separate covers.

1. BACKGROUND REVIEW

The 20th Sideroad SPS study area is located along Innisfil Beach Road generally between Innisfil Beach Road and 50 metres north of 6th Line. A site plan showing the 20th Sideroad SPS study area is in Enclosure 1.

Existing subsurface investigations, geotechnical reports, or hydrogeological reports were not provided for the study area. An overview of the subsurface conditions expected to be encountered on site were established using a variety of publicly available information and are summarized below.

1.1. Physiology and Geology Mapping

Surficial geology mapping from the Ontario Geological Survey (OGS) was reviewed and is provided in Enclosure 2. The mapping indicates that the area approximately north of 7th Line is underlain by a combination of sandy silt to silty sand-textured glacial till, glaciolacustrine deposits of clays and silts, glaciolacustrine sand deposits, or alluvial deposits of sand, gravel, silt and clay. South of 7th Line is underlain mostly by sandy silt to silty sand-textured glacial till, with some zones of alluvial deposits of sand, gravel, silt and clay or glaciolacustrine deposits of clays and silts.

The study area is within the physiographic region known as the Peterborough Drumlin Field (Chapman and Putnam, 1984) which is dominated by drumlinized till plains.

At depth, the study area is underlain by bedrock of the Lindsay Formation (Simcoe Group), which consists primarily of limestone. Drift thickness mapping from the Ontario Division of Mines (1974) indicates bedrock is approximately 90 to 100 metres below grade in the study area.

Geotechnical boreholes available on a database from the Ministry of Energy, Northern Development and Mines (MENDM) were reviewed. However, no boreholes were found within or around the study area.

1.2. MECP Water Well Records and PTTW Mapping

Ministry of Environment, Conservation and Parks (MECP) water well records were reviewed for the site and surrounding area. Numerous well records were found in the area, but 23 representative well records were selected and are included in Enclosure 3 with their locations also shown in Enclosure 3. Six (6) wells were completed prior to 1970s, four (4) completed during the 1970s, five (5) during the 1980s, three (3) in the 1990s, four (4) in the 2000s, and one (1) in 2017. Most of the wells were installed for domestic water supply. The stratigraphic descriptions within the MECP well records are typically inaccurate due to the methodology in which they are determined (observations of cuttings and no consistency between descriptions of soil between different drillers). Though this is the case, an overall sense of the stratigraphy can still be determined.

The well records at the southern end of the study area typically encountered “clay” with boulders (likely glacial till deposits) at grade, often underlain by sand or silt deposits. The well records in the middle of the study area typically encountered thicker clay deposits (likely glacial till deposits) with intermittent zones of sands and gravels. The well records in the northern end of the study area and encountered sands, gravels, and clays at grade. Unstabilized water levels were noted to be about 2.5 metres below grade or deeper on the well records. Approximately half of the domestic drinking water wells were screened about 9 to 10 metres below grade, and the remaining wells were screened in deeper aquifers about 18 metres below grade or deeper.

The online MECP Permit to Take Water (PTTW) database shows there are no active PTTWs within the study area. The nearest permits are at Big Cedar Golf & Country Club and Innisfil Beach Park (about 3 km east of the study area), and consist of the following:

- One (1) PTTWs – Golf course irrigation. Surface water taking rates of 545,520 L/day.
- One (1) PTTWs – Municipal water supply. Permits allow up to about 45 million L/day of surface water taking for the Town of Innisfil water supply.
- It is assumed both locations take water from Lake Simcoe.

1.3. Simcoe County Mapping

Online mapping from Simcoe County was reviewed for the study area and selected maps are provided in Enclosure 4.

There are two streams that flow from west to east through the middle of the study area. The streams are depressed relative to the surrounding grades. A small unevaluated wetland area is visible on the plan in Enclosure 4 near the intersection of 7th Line and 20th Sideroad. It is expected that the swamp areas will contain organic deposits at grade, and the groundwater table is likely near surface or at / above grade in these areas.

Simcoe mapping provides 2 metre contour intervals. The northern extent of the study area is near Elev. 268 metres and slopes down to the south to Elev. 254 to 252 metres near the two streams in the middle section of the site. The southern extent of the study area is near Elev. 268 metres and similarly slopes down to the north. The streams flow from west to east through the middle section of the study area before crossing under 20th Sideroad and eventually outletting into Lake Simcoe.

The northern part of the study area is located within a Significant Groundwater Recharge Area. The nearest Wellhead Protection Areas are about 3.0 km northwest and 3.3 km southwest of the study area and are associated with the Municipal Water supply for the Town of Innisfil municipal drinking water wells. A Highly Vulnerable Aquifer underlies approximately half of the study area (mostly in the southern half).

A railway generally runs parallel to 20th Sideroad from Innisfil Beach Road to approximately 900 metres south of Innisfil Beach Road, before veering eastward.

1.4. MTO Boreholes

The Ontario Ministry of Transportation (MTO) Foundation Library online database was searched for any MTO geotechnical reports and boreholes near the study area. The nearest geotechnical report was completed in the 1968 for MTO work near the Railway Overpass at Sixth Line Road, about 0.6 km east of the study area. Selected boreholes from the investigation are provided in Enclosure 5.

The four MTO boreholes were advanced to a maximum depth of 8.1 metres below grade and generally encountered very dense and moist sandy silt glacial till through the full borehole depth. Groundwater was measured about 3 to 5 metres below grade.

2. GEOTECHNICAL AND HYDROGEOLOGICAL CONSIDERATIONS

Preliminary design drawings or other information for the SPS structures are not available. It is expected that the SPS structure will consist of a wet well extending approximately 9 to 10 metres below grade, a small on-grade structure or pump house, and various pipes and manholes.

The following considerations and recommendations are derived from the surficial geology mapping, MTO boreholes, and MECP well records:

- Glacial Till Deposits:
 - Based on the subsurface conditions encountered near the study area, it is expected that the glacial till deposits will be cohesionless, compact to very dense, and competent / favourable for the support of buildings, structures, construction and drilling equipment, and for support of shoring wall tie-backs or anchors.
 - Glacial till deposits are typically well graded and laboratory testing the from the nearby MTO boreholes in Enclosure 5 shows this. The glacial till is expected to be less permeable than the sand deposits, which can significantly reduce water taking rates and potential complications during construction dewatering.
 - The lower permeability will reduce the dewatering radius of influence which reduces the potential impacts to nearby surface water features, drinking water wells, or settlement of nearby land.
 - An excavation made fully within glacial till has a reduced potential to require a PTTW from the MECP (i.e. less than 400,000 L/day of pumping).
 - Cobbles and boulders may be embedded within the deposits. This has a potential to interfere with caisson drill rigs (e.g. for shoring wall installation) or during excavations and would need to be addressed in construction contracts.
 - There is a reduced potential for temporary cased holes or drilling mud to install caisson piles for shoring walls or for augered holes for tie-backs.
 - Glacial till is considered the most favourable soil type for the SPS construction.
- If deposits of glaciolacustrine clay are encountered, the considerations will be similar to the glacial till.

- Cohesionless Sand Deposits (Alluvial or Glaciolacustrine):
 - It is expected that the sand deposits encountered on site, either from grade or below the glacial till deposits, will be competent for the support of buildings, structures, construction access and drilling equipment, and for support of shoring wall tie-backs or anchors.
 - The major consideration for the sand deposits is groundwater control and constructability. Depending on the grain size distribution and percentage of fines, higher groundwater flow rates are expected for excavations made into the sands.
 - Higher flow rates may require a more robust dewatering system and increases the potential for a PTTW from the MECP. The dewatering radius of influence will also be higher in the sands which has an increased potential to impact nearby surface water features, drinking water wells, or settlement of nearby land.
 - There is an increased potential for temporary cased holes or drilling mud to install caisson piles for shoring walls or for augered holes for tie-backs.
 - There may be cobble or gravel zones within the sands that can increase the difficulty of excavation or caisson installation for shoring walls.

Based on this preliminary review, approximately the southern 900 metres of the 20th Sideroad SPS study area (starting from 250 metres south of 7th Line) is considered the best location from geotechnical and hydrogeological engineering perspectives, as summarized below:

- There appears to be the highest probability for deeper glacial till deposits in this area based on the geology mapping and MECP well records. Sand deposits may still be encountered underlying / interbedded within the glacial till.
- The grades are closer to Elev. 268 metres, or about 15 metres higher than the grades along the streams through the middle of the site. The groundwater table may be deeper where grades are higher than the nearby streams.
- There are fewer nearby drinking water wells, surface water features, houses or other structures that could be impacted by dewatering activities.
- With the vacant surrounding lands, open cut excavations may be feasible instead of shoring which could potentially reduce design and construction costs.
- The higher elevation may also help the civil engineer design or optimize the pumping system due to potential energy.

Based on this preliminary review, the middle of the study area (generally 250 metres north or south from the intersection of 20th Sideroad and 7th Line) is considered the second-best location from geotechnical and hydrogeological engineering perspectives, as summarized below:

- This area of the site has an elevation of 252 to 254 metres and appears to have a higher probability for deeper glacial till deposits. However, the close proximity to a significant groundwater recharge area and a highly vulnerable aquifer may require additional measures to be in place to reduce the risk of contamination.

- There is a wide variety of surficial geology being recorded in the area which could mean variable soil conditions at depth.
- There are nearby dwellings and a higher concentration of domestic drinking water wells screened around 9 to 10 metres below grade. Potentially more stringent dewatering and excavation support systems may be required.

Based on this preliminary review, the northern section of the study is considered the least preferred location from geotechnical and hydrogeological perspectives. There appears to be the highest potential for wet sands to exist at grade, the surrounding area is more densely developed and the railway runs along the eastern side of 20th Sideroad (more stringent dewatering and shoring considerations likely required to prevent excessive settlements).

3. CONCLUSION

We trust this information is sufficient for your present purposes. Should you have any questions concerning the above, or can be of any further assistance, please do not hesitate to contact the undersigned.

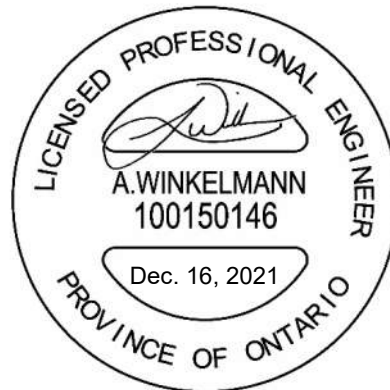
Yours truly,
GEI Consultants

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Geotechnical and Earth Sciences Manager

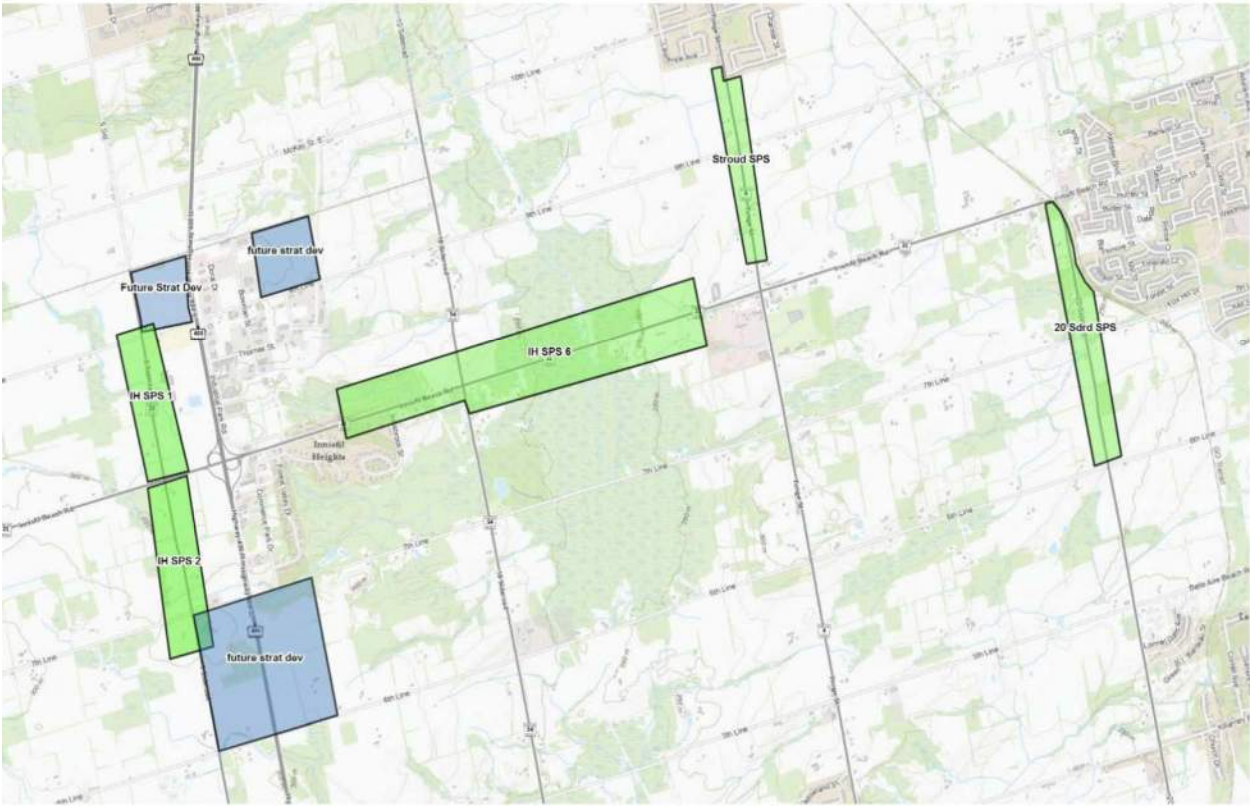
Enclosures (5)

Study Area Locations
Surficial Geology Mapping
MECP Well Record Locations and Well Records
Simcoe County Maps
MTO Boreholes and Borehole Location Plans

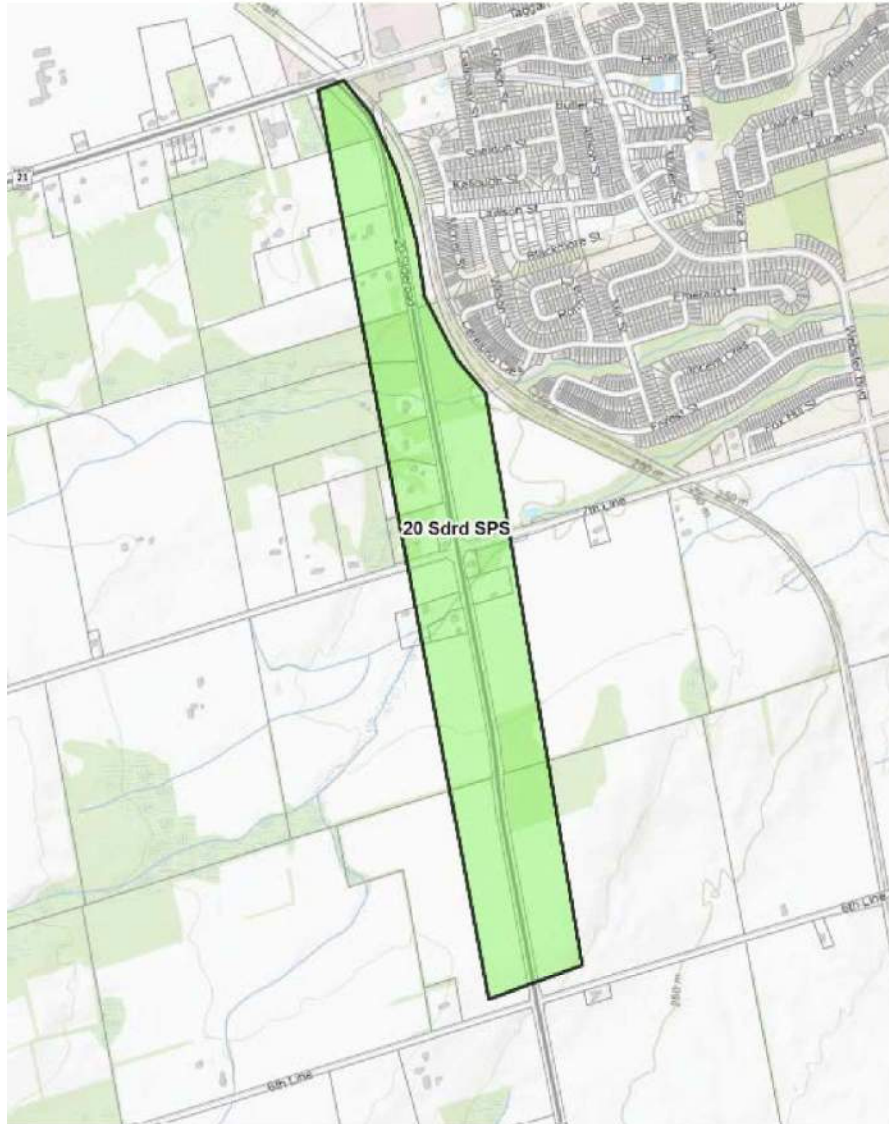
ENCLOSURE 1

Study Area Maps

OVERALL PLAN

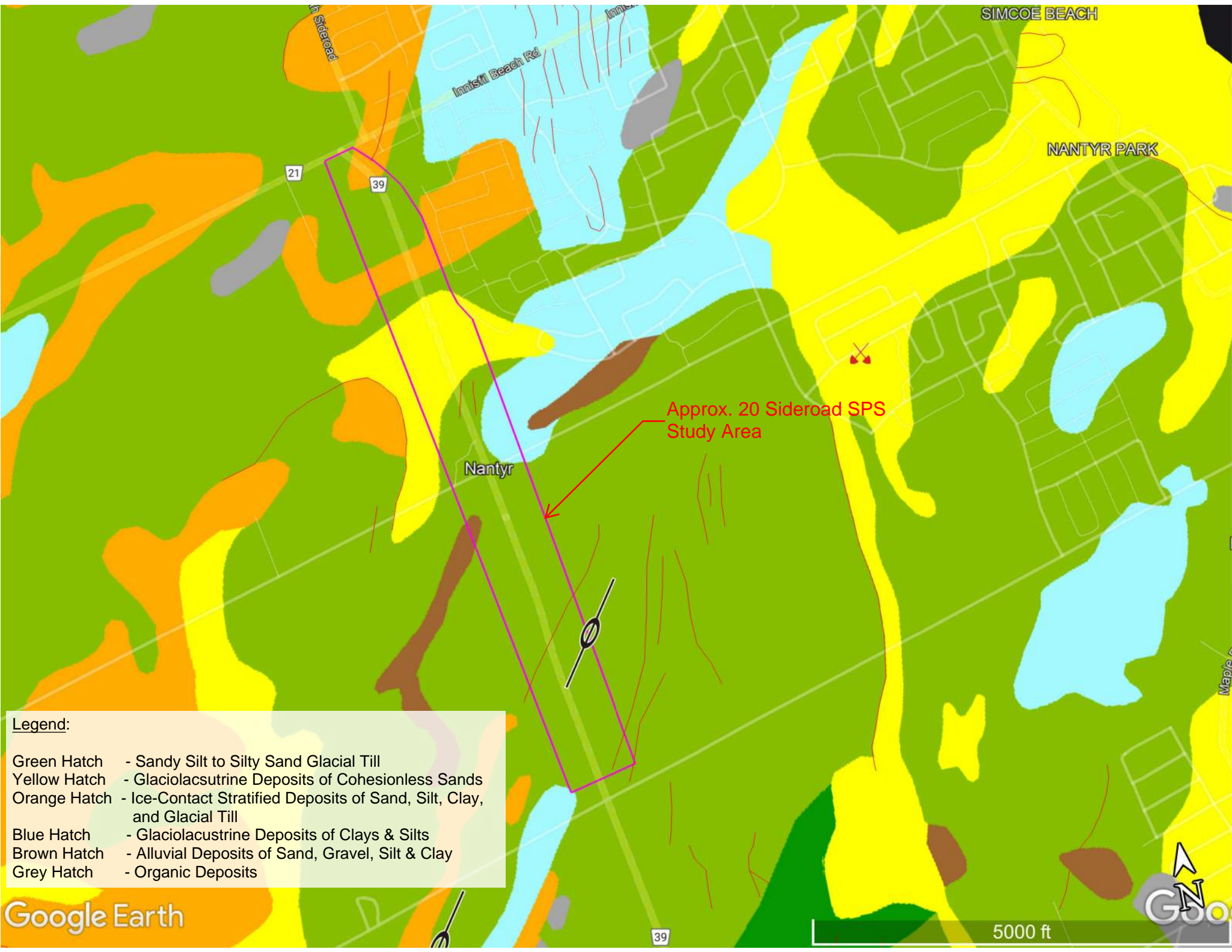


20th Sideroad SPS



ENCLOSURE 2

Surficial Geology Mapping



Legend:

- Green Hatch - Sandy Silt to Silty Sand Glacial Till
- Yellow Hatch - Glaciolacustrine Deposits of Cohesionless Sands
- Orange Hatch - Ice-Contact Stratified Deposits of Sand, Silt, Clay, and Glacial Till
- Blue Hatch - Glaciolacustrine Deposits of Clays & Silts
- Brown Hatch - Alluvial Deposits of Sand, Gravel, Silt & Clay
- Grey Hatch - Organic Deposits



ENCLOSURE 3

MECP Well Record Locations and Well Records

ALCONA

Innistrill Beach Rd

Approx. 20th Sideroad SPS Study Area

20th Sideroad

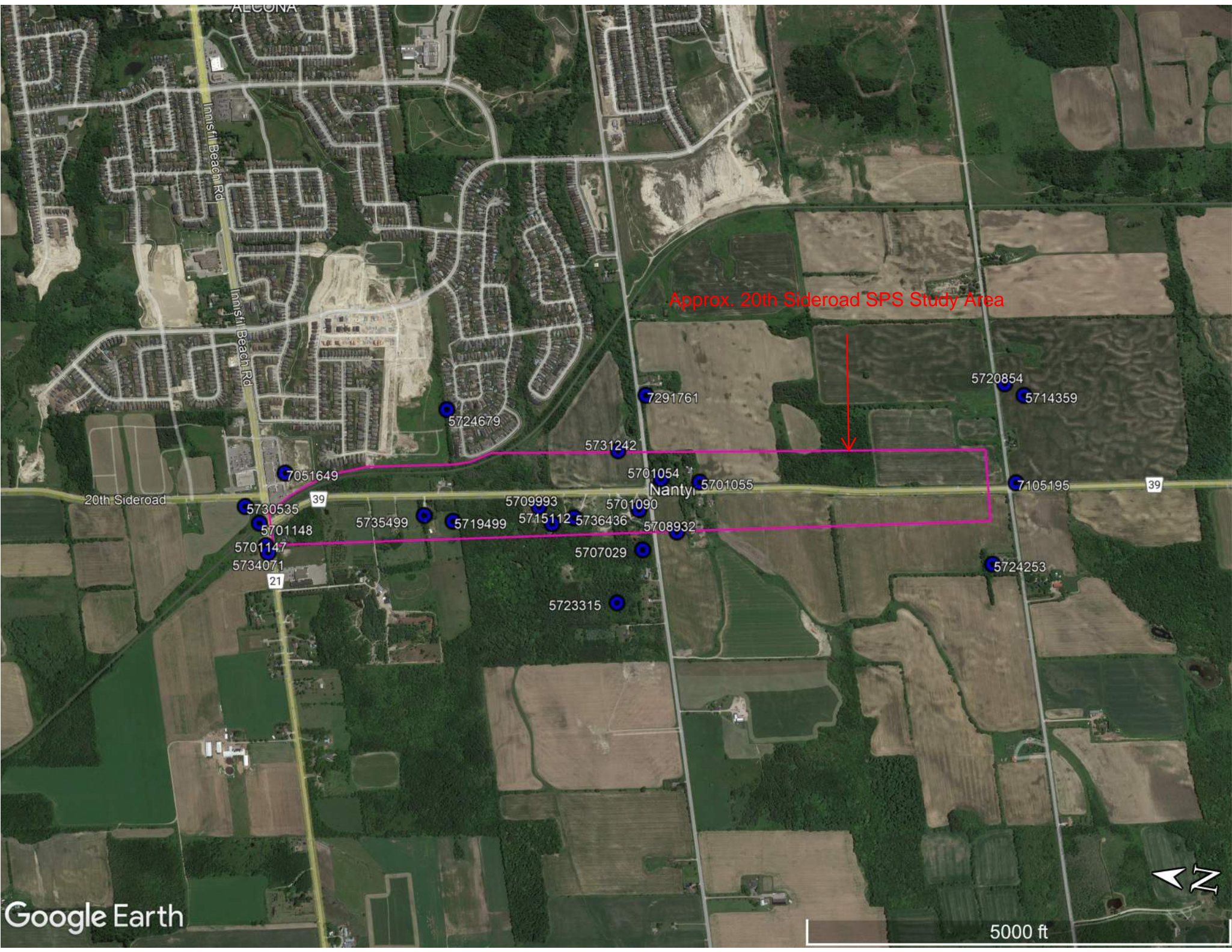
39

39

21

Google Earth

5000 ft



5724679

7291761

5720854

5714359

5731242

7051649

5701054

5701055

7105195

Nanty

20th Sideroad

5730535

5701148

5701147

5734071

5735499

5719499

5709993

5715112

5736436

5707029

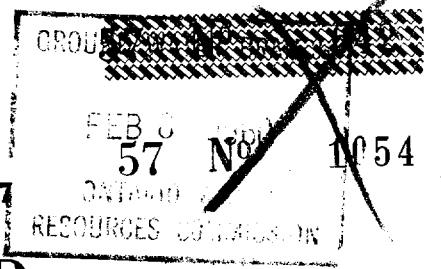
5701090

5708932

5723315

5724253

UTM 17 2 6 13 8 3 8 E
 S R 49 0 5 4 9 5 N
 Elev. S R 10 8 2 5
 Basin 22



The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

County or District Simcoe Township, Village, Town or City Innisfil
 Con. VI Lot North 1/2 of 21 Date completed 18 Dec. 1959
 (day month year)
 Owner Innisfil School Board Area Address Ed. Sturgeon Sec. Tres. Churchill
 (print in block letters) Ont.

Casing and Screen Record

Pumping Test

Inside diameter of casing 30"
 Total length of casing 24 ft.
 Type of screen.....
 Length of screen.....
 Depth to top of screen.....
 Diameter of finished hole 30

Static level 6
 Test-pumping rate 20 G.P.H. G.P.M.
 Pumping level.....
 Duration of test pumping.....
 Water clear or cloudy at end of test Clear
 Recommended pumping rate..... G.P.M.
 with pumping level of.....

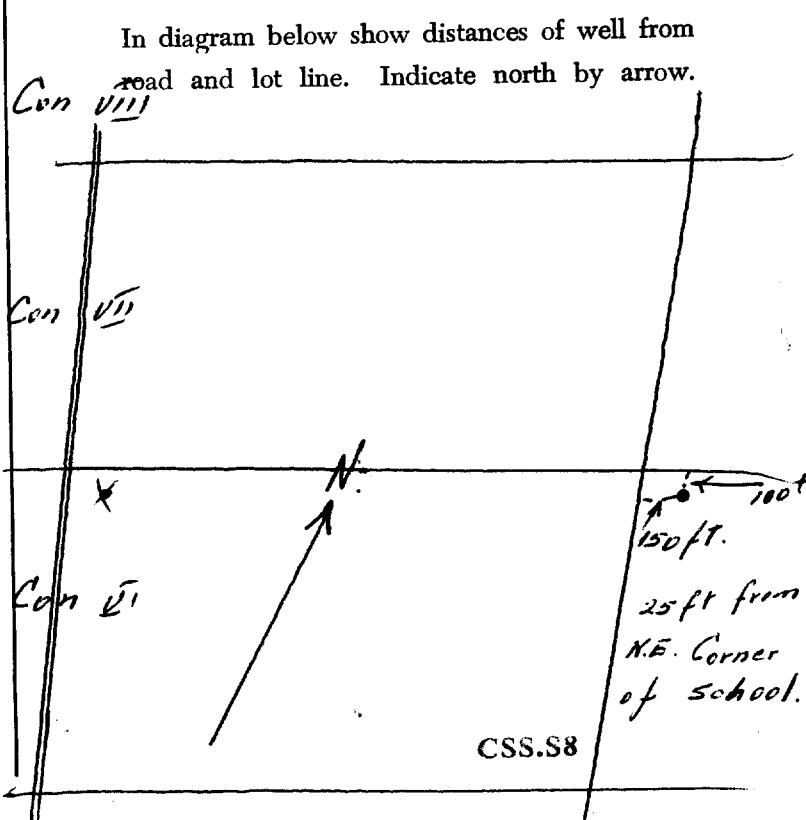
Well Log

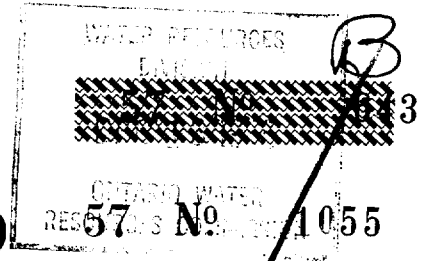
Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
<u>Brown Clay</u>	<u>0</u>	<u>2</u>	<u>6</u>	<u>0</u>	<u>Fresh</u>
<u>Brown Sand</u>	<u>2</u>	<u>12 ft.</u>			
<u>Sandy Blue Clay + Boulders</u>	<u>12</u>	<u>24</u>			

For what purpose(s) is the water to be used?
School
 Is well on upland, in valley, or on hillside?
upland
 Drilling Firm Babuik Well Boring
 Address 126 Laurel Ave.
Islington, Ont.
 Licence Number 137
 Name of Driller Mike S. Babuik
 Address Same as Above
 Date Jan 20/60
M. S. Babuik
 (Signature of Licensed Drilling Contractor)

Location of Well





UTM 177 Z 16138 U 55 E
5 R 4905357 N
 Elev. 5 R 0827

The Ontario Water Resources Commission Act

WATER WELL RECORD

Basin W County or District Simcoe Township, Village, Town or City Innisfil
 Con. 6 Lot 21 Date completed 5 Oct. 1965
 (day month year)
 Address R.R. 1 LEFROY

Casing and Screen Record

Inside diameter of casing 6 1/2"
 Total length of casing 144 ft.
 Type of screen
 Length of screen
 Depth to top of screen
 Diameter of finished hole 6 1/2"

Pumping Test

Static level 68 ft.
 Test-pumping rate 10 G.P.M.
 Pumping level 85
 Duration of test pumping 1 1/2 hr.
 Water clear or cloudy at end of test clear
 Recommended pumping rate 6 G.P.M.
 with pump setting of 80 feet below ground surface

Well Log

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>sandy brown clay, boulders</u>	<u>1</u>	<u>14</u>		
<u>blue clay, boulders</u>	<u>14</u>	<u>35</u>		
<u>sand</u>	<u>35</u>	<u>57</u>		
<u>sand, gravel, silt, boulders</u>	<u>57</u>	<u>110</u>		
<u>clay</u>	<u>110</u>	<u>118</u>		
<u>gravel & sand, silt</u>	<u>118</u>	<u>143</u>		
<u>course sand</u>	<u>143</u>	<u>144</u>		
<u>fine gravel</u>	<u>144</u>		<u>144</u>	<u>fresh</u>

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

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

Drilling or Boring Firm H. HAMMERS

Well Driller Henry Hammars

Address RR# 3 Barrie, Ont.

Licence Number 1662

Name of Driller or Borer A. HAMMERS

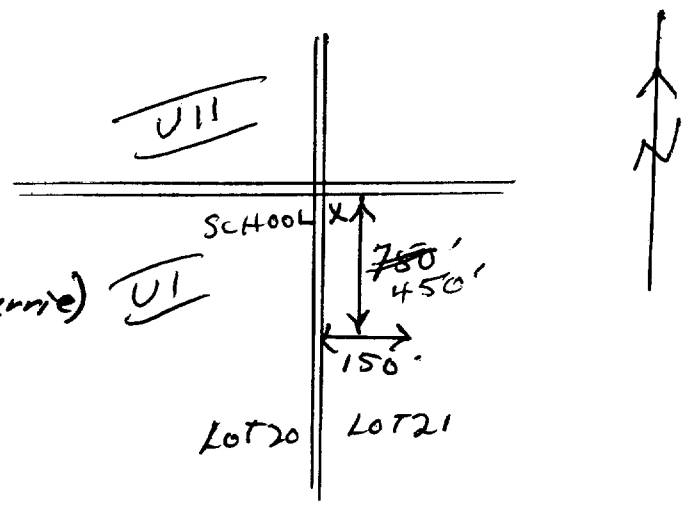
Address 201 Harvie Rd. E. Holly (RR# 5 Barrie)

Date Oct 6 1965

Henry Hammars
 (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.



63
DTM 17 Z 6 1 3 7 1 4 E



57 No. 1080
1090

5 R 49 0 4 5 5 3 N

The Ontario Water Resources Commission Act

Elev. 5 R 0 8 3 5

WATER WELL RECORD

Basin 22 Seneca
County or District

Township, Village, Town or City

Con. 7 - 20 side R Lot 20

Date completed 12 Sept. 1967
(day month year)

Address RR 2 Stroud

Casing and Screen Record

Inside diameter of casing 30
Total length of casing 15
Type of screen tiled
Length of screen
Depth to top of screen
Diameter of finished hole 30

Pumping Test

Static level 12 4'
Test-pumping rate 2 G.P.M.
Pumping level
Duration of test pumping
Water clear or cloudy at end of test clear
Recommended pumping rate 2 G.P.M.
with pump setting of 13 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)
Sand	0	2		
Gravel	2	15	10	Fresh

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

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

Drilling or Boring Firm Rath Well Digging

Address RR# 5 Burrie

Licence Number 116

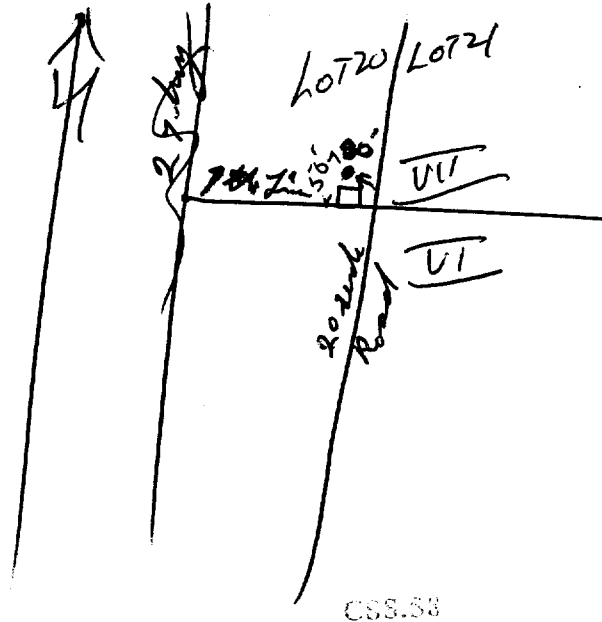
Name of Driller or Borer B. Rath

Address Same

Date
B. Rath.
(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.





GROUND WATER BRANCH
 57 No. 1147
 NOV 4 1963
 ONTARIO WATER RESOURCES COMMISSION

UTM 17 613304 E

S R 140 068.31 N
 con. 1111

Elev. S R 10880
 Lot 20

Basin 22 SIMCOE
 County or District

Con. 8 Lot 20

The Ontario Water Resources Commission Act

WATER WELL RECORD

Township, Village, Town or City INNISFILL TWP.

Date completed 30 SEPT 1963
 (day month year)

Address STROUD

Casing and Screen Record

Inside diameter of casing 30"
 Total length of casing 18 FT
 Type of screen
 Length of screen
 Depth to top of screen
 Diameter of finished hole 30

Pumping Test

Static level 6
 Test-pumping rate 4 G.P.M.
 Pumping level
 Duration of test pumping
 Water clear or cloudy at end of test CLEAR
 Recommended pumping rate 3 G.P.M.
 with pump setting of 17 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)
BROWN CLAY	0	8	9	FRESH
COURSE SAND	8	18		

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

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

Drilling or Boring Firm

ONTARIO WELL DIGGING COMPANY

Address R.R. # NEWMARKET, ONT.

Licence Number 727

Name of Driller or Borer C. MOORE

Address

Date

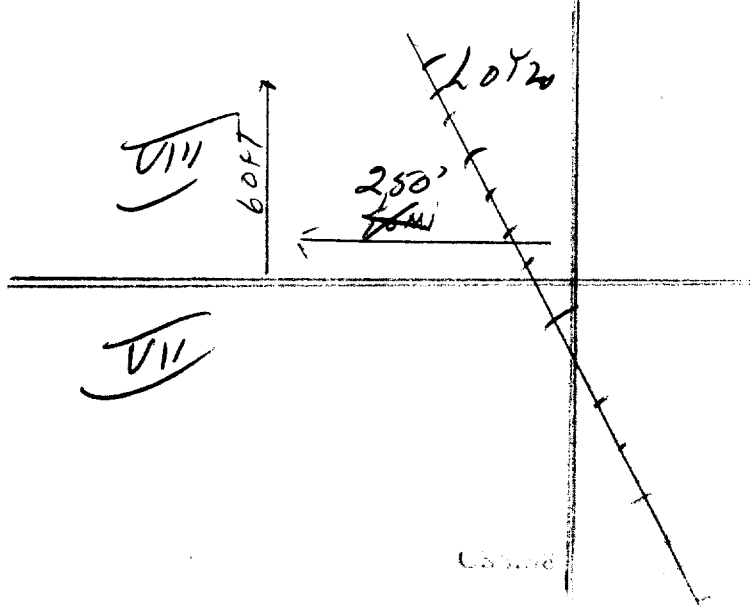
C. Moore
 (Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

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





WATER RESOURCES DIVISION

57 No. 1148
A.P.R. 1966

ONTARIO WATER RESOURCES COMMISSION

UTM 61134114
245 R 90618817 N

Elev. 5 R 0870

WATER WELL RECORD

Basin 22 County or District York Simcoe
Con. 8 Lot 20

Township, Village, Town or City INNISFAL TWP.

Date completed 15 (day) SEPT (month) 1965 (year)

Address STROUD ONT.

Casing and Screen Record

Inside diameter of casing 30"
Total length of casing 25 FT
Type of screen
Length of screen
Depth to top of screen
Diameter of finished hole 30"

Pumping Test

Static level 6
Test-pumping rate 4 G.P.M.
Pumping level
Duration of test pumping
Water clear or cloudy at end of test CLEAR
Recommended pumping rate 4 G.P.M.
with pump setting of 23 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>BROWN CLAY</u>	<u>0</u>	<u>11</u>	<u>11</u>	<u>FRESH</u>
<u>COURSE GRAVEL</u>	<u>10</u>	<u>15</u>		
<u>BLUE CLAY</u>	<u>15</u>	<u>25</u>		

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

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

Drilling or Boring Firm

ONTARIO WELL DIGGING COMPANY

Address R.R. # NEWMARKET, ONT.
Licence Number 1236

Name of Driller or Borer

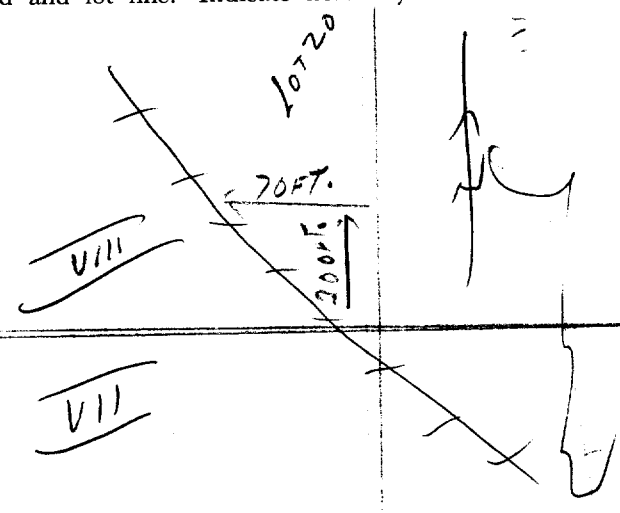
Address

Date

J. Moore
(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.





The Ontario Water Resources Commission Act WATER WELL RECORD

310/5'E

Water management in Ontario 1. PRINT ONLY IN SPACES PROVIDED

2. CHECK CORRECT BOX WHERE APPLICABLE

11

5708932

57005

CON. 06

COUNTY OR DISTRICT: SIMCOE
 TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: INNISFIL
 CON., BLOCK, TRACT, SURVEY, ETC.: N/2 020
 DATE COMPLETED: 08 06 72
 OWNER: [REDACTED] LEMOY ONT
 RE. ELEVATION RC. BASIN CODE: 105400 14 10870 15 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	Topsoil			0	2
"	Gravel	stones		2	19
"	Clay	Gravel		19	26
Grey	"			26	45
"	"	Sand, Small stones		45	98
"	Sand	Clay		98	128
"	Clay	Gravel	Hard	128	139
"	Gravel	Sand	wet	139	

31 000202 00196112 00262811 0045205 00982052812 0128228211
 32 013920511 00000000 00000000 00000000 00000000 00000000 00000000 00000000

41 WATER RECORD

WATER FOUND AT FEET	KIND OF WATER			
10-13	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
15-18	2 <input checked="" type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		
20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
25-28	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11	1 <input checked="" type="checkbox"/> STEEL		0	139
17-18	2 <input type="checkbox"/> GALVANIZED	188		0139
24-25	3 <input type="checkbox"/> CONCRETE			
	4 <input type="checkbox"/> OPEN HOLE			

SCREEN

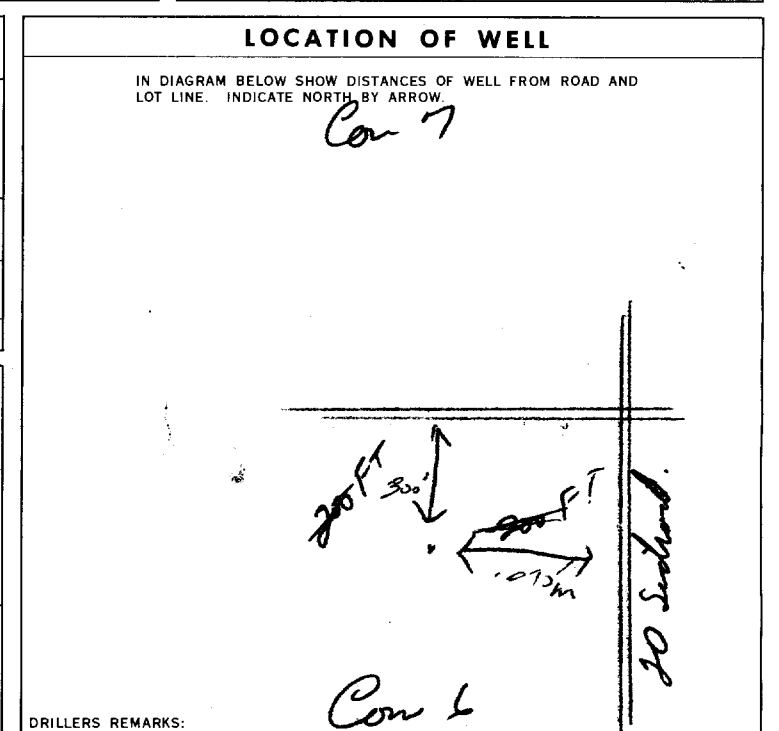
SIZE(S) OF OPENING (SLOT NO.)	DIAMETER	LENGTH
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN

61 PLUGGING & SEALING RECORD

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

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER
 PUMPING RATE: 0008 GPM
 DURATION OF PUMPING: 02 HOURS 30 MINS.
 WATER LEVELS DURING PUMPING:
 15 MINUTES: 075 FEET
 30 MINUTES: 080 FEET
 45 MINUTES: 080 FEET
 60 MINUTES: 080 FEET
 RECOMMENDED PUMP TYPE: SHALLOW DEEP
 RECOMMENDED PUMP SETTING: 100 FEET
 RECOMMENDED PUMPING RATE: 0008 GPM
 SPECIFIC CAPACITY: 0.016 GPM./FT.



FINAL STATUS OF WELL

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

WATER USE

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

METHOD OF DRILLING

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

CONTRACTOR

NAME OF WELL CONTRACTOR: KNELSEN WATER WELLS
 LICENCE NUMBER: 3203
 ADDRESS: RR#1 BARRIE ONT
 NAME OF DRILLER OR BORER: GORD IYENT
 LICENCE NUMBER: _____
 SIGNATURE OF CONTRACTOR: [Signature]
 SUBMISSION DATE: 5 MO. 7 YR. 72

OFFICE USE ONLY

DATA SOURCE: 1
 CONTRACTOR: 3203
 DATE RECEIVED: 030872
 DATE OF INSPECTION: _____
 INSPECTOR: _____
 REMARKS: _____
 P/M
 WI



WATER WELL RECORD

310/5E

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

11

5714359

MUNICIP

57005

CON.

CON

05

COUNTY OR DISTRICT Simcoe	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Innisfil	CON. BLOCK, TRACT, SURVEY, ETC. 5	LOT 021
DATE COMPLETED Hatherley Rd Toronto 10			DATE COMPLETED DAY 18 MO. 12 YR. 76
REG. NO. 04259	RC. DIVISION 5	RC. BASIN CODE 0825	RC. CODE 5

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	Topsoil			0	1
yellow	clay			1	7
Brown	clay	gravel, small stones		7	14
Grey	"			14	92
	Sand	gravel	wet.	92	95
	"	" clay		95	-

31 0001 02 0007 505 0014 605 11/12 0092 2205 0095 281191 0095 281105

41 WATER RECORD

WATER FOUND FEET	KIND OF WATER			
0-13	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
13-15	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		
15-18	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
18-20	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		
20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
23-25	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		
25-28	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
28-30	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR		
33-40	2 <input type="checkbox"/> SALTY	4 <input type="checkbox"/> MINERAL		

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11	STEEL			13-16
11-12	1 <input checked="" type="checkbox"/> GALVANIZED	188	0	92
12-13	2 <input type="checkbox"/> CONCRETE			0092
13-16	4 <input type="checkbox"/> OPEN HOLE			
17-18	1 <input type="checkbox"/> STEEL			20-23
18-19	2 <input type="checkbox"/> GALVANIZED			
19-20	3 <input type="checkbox"/> CONCRETE			
20-23	4 <input type="checkbox"/> OPEN HOLE			
24-25	1 <input type="checkbox"/> STEEL			27-30
25-26	2 <input type="checkbox"/> GALVANIZED			
26-27	3 <input type="checkbox"/> CONCRETE			
27-30	4 <input type="checkbox"/> OPEN HOLE			

SCREEN

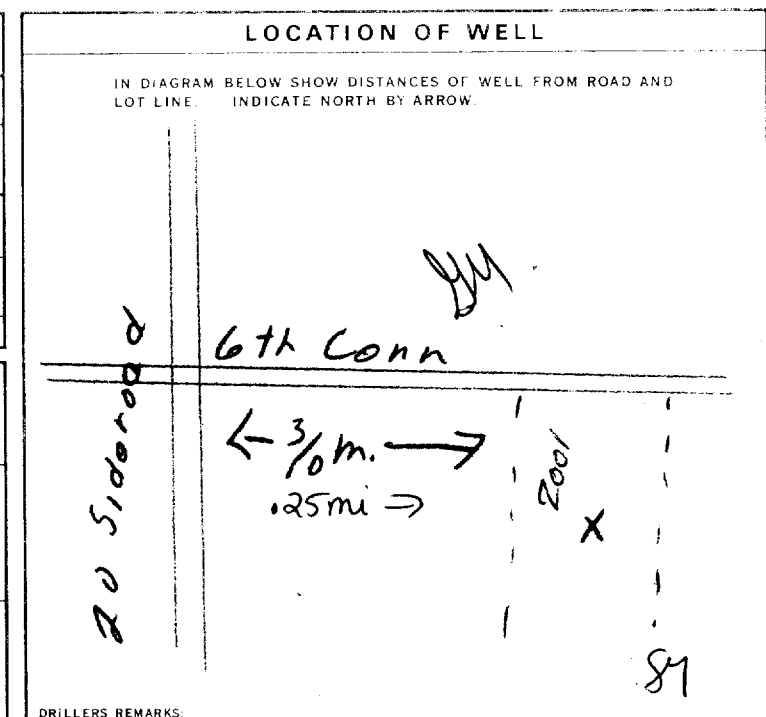
SIZE (S) OF OPENING (SLOT NO.) 012	DIAMETER 05000	LENGTH 03
MATERIAL AND TYPE Johnson SS 0092		DEPTH TO TOP OF SCREEN 2

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
10	
10-13	H. Packer
18-21	
22-25	
26-29	
30-33	
40	

71 PUMPING TEST METHOD

1 <input type="checkbox"/> PUMP	2 <input checked="" type="checkbox"/> TAILER	PUMPING RATE 0002	DURATION OF PUMPING GPM 04 HOURS 30 MINS
STATIC LEVEL 065	WATER LEVEL END OF PUMPING 080	WATER LEVELS DURING	
15-21	22-24	15 MINUTES 080	30 MINUTES 080
25-28	29-31	45 MINUTES 080	60 MINUTES 080
32-34	35-37	WATER AT END OF TEST	
38-41	42	1 <input checked="" type="checkbox"/> CLEAR	2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE <input checked="" type="checkbox"/> SHALLOW <input type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 090	RECOMMENDED PUMPING RATE 0002	



FINAL STATUS OF WELL

1 <input checked="" type="checkbox"/> WATER SUPPLY	5 <input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY
2 <input type="checkbox"/> OBSERVATION WELL	6 <input type="checkbox"/> ABANDONED, POOR QUALITY
3 <input type="checkbox"/> TEST HOLE	7 <input type="checkbox"/> UNFINISHED
4 <input type="checkbox"/> RECHARGE WELL	

WATER USE

1 <input checked="" type="checkbox"/> DOMESTIC	5 <input type="checkbox"/> COMMERCIAL
2 <input type="checkbox"/> STOCK	6 <input type="checkbox"/> MUNICIPAL
3 <input type="checkbox"/> IRRIGATION	7 <input type="checkbox"/> PUBLIC SUPPLY
4 <input type="checkbox"/> INDUSTRIAL	8 <input type="checkbox"/> COOLING OR AIR CONDITIONING
9 <input type="checkbox"/> OTHER	9 <input type="checkbox"/> NOT USED

METHOD OF DRILLING

1 <input checked="" type="checkbox"/> CABLE TOOL	6 <input type="checkbox"/> BORING
2 <input type="checkbox"/> ROTARY (CONVENTIONAL)	7 <input type="checkbox"/> DIAMOND
3 <input type="checkbox"/> ROTARY (REVERSE)	8 <input type="checkbox"/> JETTING
4 <input type="checkbox"/> ROTARY (AIR)	9 <input type="checkbox"/> DRIVING
5 <input type="checkbox"/> AIR PERCUSSION	

CONTRACTOR

NAME OF WELL CONTRACTOR Kent Well Drilling	LICENCE NUMBER 3135
ADDRESS RR # 1 Barrie Ont	
NAME OF DRILLER OR BORER Gord Kent	LICENCE NUMBER 3135
SIGNATURE OF CONTRACTOR <i>Gord Kent</i>	SUBMISSION DATE DAY _____ MO. _____ YR. _____

OFFICE USE ONLY

DATA SOURCE 1	CONTRACTOR 3135	DATE RECEIVED 220777
DATE OF INSPECTION	INSPECTOR <i>[Signature]</i>	
REMARKS:		
	CSS.S8	WI



Ontario

WATER WELL RECORD

31015E

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

11

5715112

MUNICIP. 57005

CON. CON

07

COUNTY OR DISTRICT SIMCOE	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE INNISFIL	CON., BLOCK, TRACT, SURVEY, ETC. CON 7	LOP 020
DATE COMPLETED DAY 20 MO 09 YR 77			
ELEVATION 05850		NO. OF FEET 5	BASIN CODE 23

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BLACK		TOPSOIL		0	2
BROWN	SAND	CLAY		2	18
GREY	CLAY			18	63
"	CLAY	SILT	LAYERS	63	152
"	"			152	289
"	"	GRAVEL		289	291
"	GRAVEL		PACKED	291	318
"	"			318	321
"	"	CLAY	PACKED	321	—

31	0002802	001862805	0063205	01522050674	0289205	029120511	1
32	0318211179	0321211	03212051179				

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
15-18	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
10-11	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	188	0 0320
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		20-23
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE		27-30

SCREEN

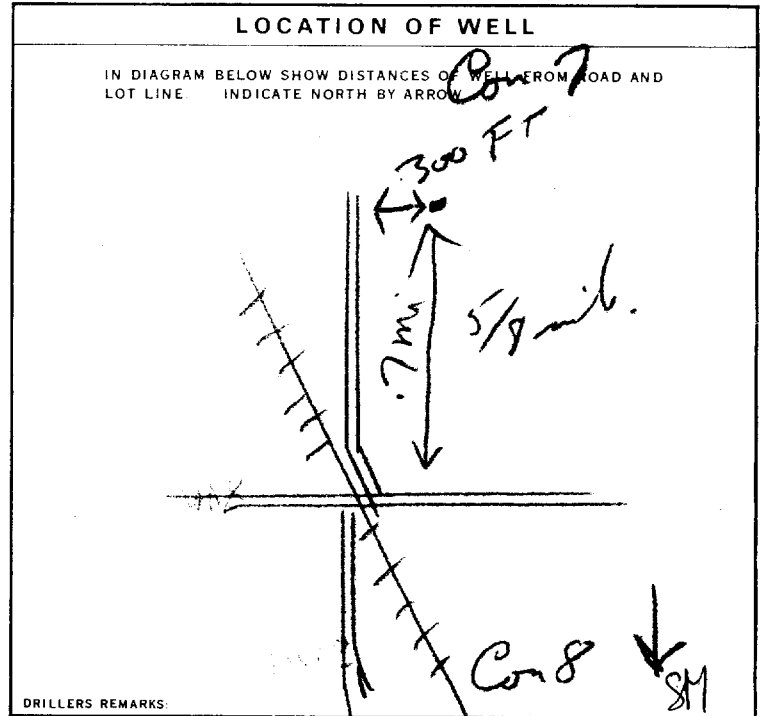
SIZE (S) OF OPENING (SLOT NO.)	31-33	DIAMETER	34-38	LENGTH	39-40
		INCHES		FEET	
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN		41-44	80	
	FEET				

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17
18-21	SEAL SUPPLIED
26-29	30-33 80

71 PUMPING TEST

PUMPING TEST METHOD 1 <input type="checkbox"/> PUMP 2 <input checked="" type="checkbox"/> TRILER	PUMPING RATE 0005 GPM	DURATION OF PUMPING 05 HOURS 00 MINS
STATIC LEVEL 075 FEET	WATER LEVEL END OF PUMPING 153 FEET	WATER LEVELS DURING PUMPING 15 MINUTES: 141 FEET 30 MINUTES: 149 FEET 45 MINUTES: 153 FEET 60 MINUTES: 153 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
RECOMMENDED PUMP TYPE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING 200 FEET	RECOMMENDED PUMPING RATE 0005 GPM



FINAL STATUS OF WELL

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

WATER USE

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

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: **KVENSEN WATER WELLS** LICENCE NUMBER: **3203**
 ADDRESS: **RR-1 BARRIE**
 NAME OF DRILLER OR BORER: **DAVIDE KVENSEN** LICENCE NUMBER: **3213**
 SIGNATURE OF CONTRACTOR: *[Signature]* SUBMISSION DATE: DAY **22** MO **9** YR **77**

OFFICE USE ONLY

DATA SOURCE: **1** CONTRACTOR: **3203** DATE RECEIVED: **900578**
 DATE OF INSPECTION: **July 5 78** INSPECTOR: *[Signature]*
 REMARKS: **P**
WI

WATER WELL RECORD

31015

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

11

5719499

MUNICIPALITY 57005

CON

North Valley

COUNTY OR DISTRICT: Simcoe TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Innisfil CON. BLOCK, TRACT, SURVEY, ETC: 7 VII LOT: 020
 OWNER (SURNAME FIRST): [REDACTED] ADDRESS: RR 2 Stroud DATE COMPLETED: DAY 10 MO 12 YR 84

ZONE: U 17 EASTING: 1613550 NORTHING: 4906200 5 ELEVATION: 0850 5 BASIN CODE: 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	top soil			0	2
	Sand			2	12
	Brown clay			12	39

FEB 13 1987

31 0002 02 0012 28 0039 605

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER			
0-25'	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERAL	14
15-18	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERAL	19
20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERAL	24
25-28	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERAL	29
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERAL	34

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
30"	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input checked="" type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	2 1/2	0	20
30"	1 <input type="checkbox"/> STEEL 2 <input checked="" type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	16 gauge	20	39

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	
cement sealed	41-44	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	18-17
18-21	22-25
26-28	30-33

10 ton Granular A

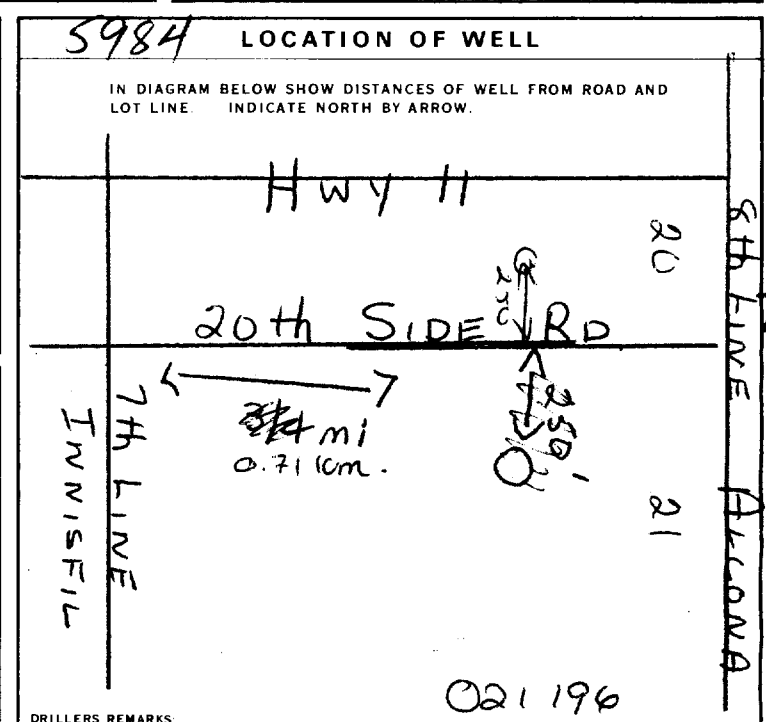
71 PUMPING TEST METHOD

1 PUMP 2 BAILER

PUMPING RATE: 0003 GPM DURATION OF PUMPING: 04 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING			
010	034	15 MINUTES: 034	30 MINUTES: 034	45 MINUTES: 034	60 MINUTES: 034

RECOMMENDED PUMP TYPE: SHALLOW DEEP



FINAL STATUS OF WELL: 1 WATER SUPPLY

WATER USE: 01 DOMESTIC

METHOD OF DRILLING: 6 CABLE TOOL, BORING

CONTRACTOR: LONE STAR WELL DIGGING, SITE 11, R.R. 6, BARRIE, ONTARIO

CONTRACTOR LICENCE NUMBER: 3413

DRILLER OR BORER: P. Moore, LICENCE NUMBER: 3742

SUBMISSION DATE: DAY 10 MO 12 YR 84

OFFICE USE ONLY

DATA SOURCE: 1 CONTRACTOR: 3413 DATE RECEIVED: 18 12 84

REMARKS: located only 11/85 PK

CSS.ES

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11

5720854

MUNICIP. _____ CON. _____

COUNTY OR DISTRICT: SIMCOE TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: FENNISFIL CON. BLOCK, TRACT, SURVEY ETC: CONC. 5 LOT: 22
DATE COMPLETED: 48-53 DAY: 14 MO: 8 YR: 85
PR# 1, LEFROY, LOL 1100

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	CLAY	BOULDERS		0	18
BLUE	CLAY	GRAVEL, SAND		18	45
BLUE	CLAY			45	86
BLUE	CLAY	CEMENTED SAND & GRAVEL		86	108
	MEDIUM & COARSE SAND			108	111

31 _____ 32 _____

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
108	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL
	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE	.188	0	108
	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			
	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.): #18 SLOT
DIAMETER: 6 INCHES
LENGTH: 3 FEET
MATERIAL AND TYPE: STAINLESS STEEL
DEPTH TO TOP OF SCREEN: 41-44 FEET

61 PLUGGING & SEALING RECORD

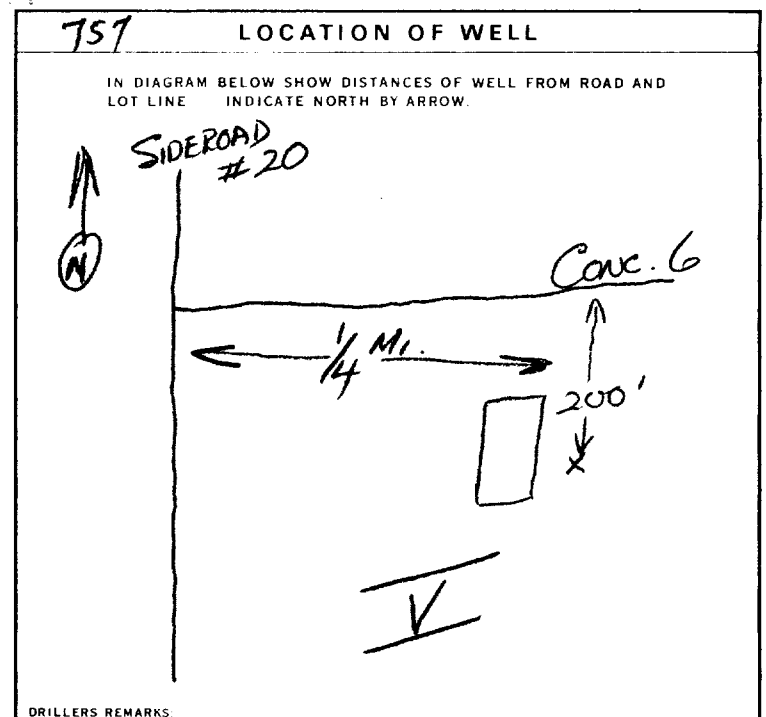
DEPTH SET AT - FEET	MATERIAL AND TYPE	(CEMENT GROUT LEAD PACKER, ETC.)
FROM	TO	
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER
PUMPING RATE: 10 GPM
DURATION OF PUMPING: 3 HOURS
PUMPING TEST: 1 PUMPING 2 RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING			
19-21	22-24	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
65 FEET	80 FEET	72 FEET	77 FEET	79 FEET	80 FEET

RECOMMENDED PUMP TYPE: SHALLOW DEEP
RECOMMENDED PUMP SETTING: 95 FEET
RECOMMENDED PUMPING RATE: 10 GPM



FINAL STATUS OF WELL

1 WATER SUPPLY 5 ABANDONED, INSUFFICIENT SUPPLY
2 OBSERVATION WELL 8 ABANDONED POOR QUALITY
3 TEST HOLE 7 UNFINISHED
4 RECHARGE WELL

WATER USE

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

METHOD OF DRILLING

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: SCOTT WELL DRILLING LICENCE NUMBER: 4778
ADDRESS: BOX 497, NOBLETON
NAME OF DRILLER OR BORER: IAN HURST LICENCE NUMBER: _____
SIGNATURE OF CONTRACTOR: _____ SUBMISSION DATE: _____

OFFICE USE ONLY

DATA SOURCE: _____ CONTRACTOR: _____ DATE RECEIVED: 080886
DATE OF INSPECTION: _____ INSPECTOR: _____
REMARKS: _____
CSS.ES

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5723315

MUNICIPALITY: _____ CON. _____

COUNTY OR DISTRICT: CLARE TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: INSFIL CON. BLOCK, TRACT, SURVEY ETC: 7 LOT: 20

DATE COMPLETED: DAY 2 MO MAY YR 88

RC _____ ELEVATION _____ RC _____ BASIN CODE _____

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
Brown	TOP SOIL		HARD	0	1'
Brown	CLAY		"	1'	20'
GREY	CLAY		"	20'	28'

31 _____ 32 _____

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERALS 5 <input type="checkbox"/> TESTED 6 <input type="checkbox"/> GAS
15-18	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERALS 5 <input type="checkbox"/> TESTED 6 <input type="checkbox"/> GAS
20-23	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERALS 5 <input type="checkbox"/> TESTED 6 <input type="checkbox"/> GAS
25-28	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERALS 5 <input type="checkbox"/> TESTED 6 <input type="checkbox"/> GAS
30-33	1 <input type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERALS 5 <input type="checkbox"/> TESTED 6 <input type="checkbox"/> GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
10-11	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	16	0	28
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC			20-23
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC			27-30

SCREEN

SIZE (S) OF OPENING (SLOT NO.): _____ DIAMETER: _____ LENGTH: _____

MATERIAL AND TYPE: _____ DEPTH TO TOP OF SCREEN: _____

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17
16-21	22-25
28-29	30-33

71 PUMPING TEST

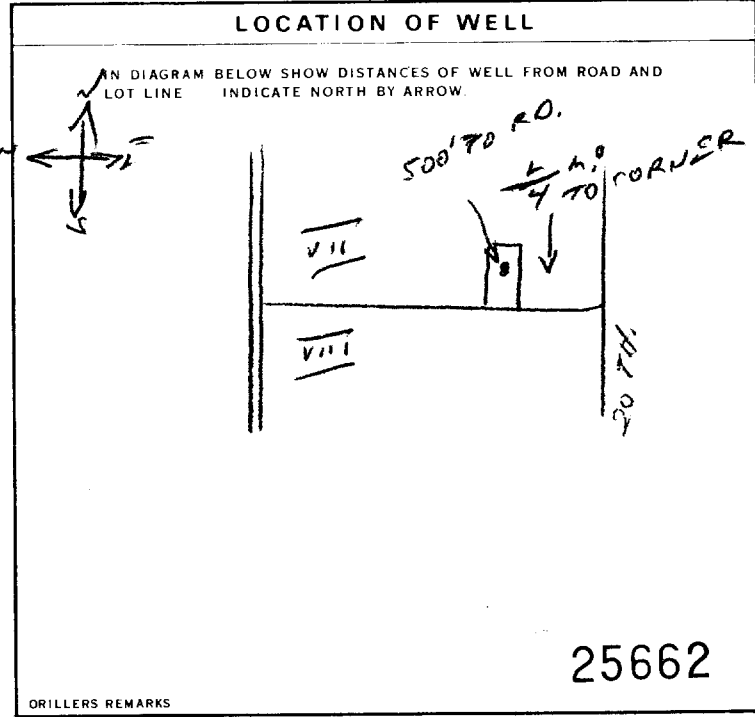
PUMPING TEST METHOD: 1 PUMP 2 BAILER

PUMPING RATE: _____ GPM DURATION OF PUMPING: _____ HOURS _____ MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING			
8 FEET	26 FEET	15 MINUTES: 25 FEET	30 MINUTES: 24 FEET	45 MINUTES: 23 FEET	60 MINUTES: 22 FEET

IF FLOWING, GIVE RATE: _____ GPM PUMP INTAKE SET AT: _____ FEET WATER AT END OF TEST: _____ FEET

RECOMMENDED PUMP TYPE: SHALLOW DEEP RECOMMENDED PUMP SETTING: 26 FEET RECOMMENDED PUMPING RATE: 2 GPM



FINAL STATUS OF WELL

1 WATER SUPPLY 5 ABANDONED, INSUFFICIENT SUPPLY
2 OBSERVATION WELL 6 ABANDONED, POOR QUALITY
3 TEST HOLE 7 UNFINISHED
4 RECHARGE WELL 9 DEWATERING

WATER USE

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 CONSTRUCTION

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

CONTRACTOR

NAME OF WELL CONTRACTOR: L. B. Webb WELL CONTRACTOR'S LICENCE NUMBER: _____

ADDRESS: Albion

NAME OF WELL TECHNICIAN: Ken WELL TECHNICIAN'S LICENCE NUMBER: _____

SIGNATURE OF TECHNICIAN/CONTRACTOR: _____ SUBMISSION DATE: _____

OFFICE USE ONLY

DATA SOURCE: _____ CONTRACTOR: 4919 DATE RECEIVED: JUN 13 1988

DATE OF INSPECTION: _____ INSPECTOR: _____

REMARKS: _____

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5724253

MUNICIP 57.005

CON. 10 14 15 22 23 24

COUNTY OR DISTRICT: SIMCOE TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: INWISFIL CON. BLOCK, TRACT, SURVEY, ETC: 6 LOT: 5-20
BOURNVILLE DRIVE DATE COMPLETED: DAY 7 MO 11 YR 88
SCARBOROUGH ELEVATION: 1100 RC: 1111 BASIN CODE: 1111

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	SANDY	CLAY		0	12
BLUE	SILT		STONE	12	30
		STONE IN BOTTOM			
		7 1/2 FT OF WATER OVERNIGHT			

31 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER					
8-30	1 <input checked="" type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	6 <input type="checkbox"/> GAS	2 <input type="checkbox"/> SALTY	
15-19	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	6 <input type="checkbox"/> GAS	2 <input type="checkbox"/> SALTY	
20-23	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	6 <input type="checkbox"/> GAS	2 <input type="checkbox"/> SALTY	
25-28	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	6 <input type="checkbox"/> GAS	2 <input type="checkbox"/> SALTY	
30-33	1 <input type="checkbox"/> FRESH	3 <input type="checkbox"/> SULPHUR	4 <input type="checkbox"/> MINERALS	6 <input type="checkbox"/> GAS	2 <input type="checkbox"/> SALTY	

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
36	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	3	0	30
17-18	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC			20-23
24-25	1 <input type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC			27-30

SCREEN

SIZE (S) OF OPENING (SLOT NO)	DIAMETER INCHES	LENGTH FEET

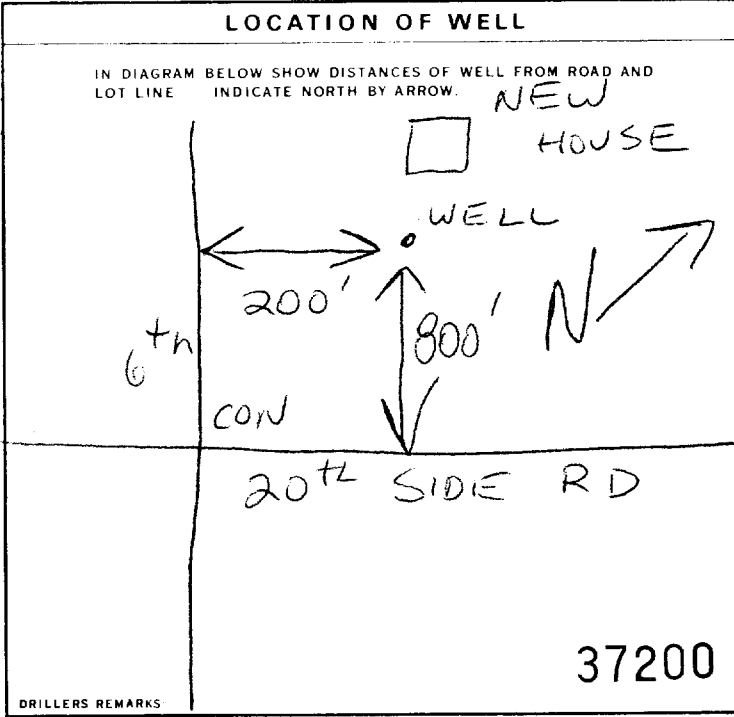
MATERIAL AND TYPE: GRAVEL DEPTH TO TOP OF SCREEN: 61-64 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC)
10-13	14-17
19-21	22-25
26-28	30-33

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE GPM	DURATION OF PUMPING HOURS
1 <input type="checkbox"/> PUMP 2 <input type="checkbox"/> BAILER		15-18 HOURS 17-18 MINS
STATIC LEVEL: 8 FEET	WATER LEVEL END OF PUMPING: 22-24 FEET	WATER LEVELS DURING PUMPING:
		15 MINUTES: 29-29 FEET 30 MINUTES: 26-31 FEET 45 MINUTES: 32-36 FEET 60 MINUTES: 35-37 FEET
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT: 28 FEET	WATER AT END OF TEST: 1 <input type="checkbox"/> CLEAR 2 <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE: <input checked="" type="checkbox"/> SHALLOW <input type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING: 28 FEET	RECOMMENDED PUMPING RATE: 1 1/2 GPM



FINAL STATUS OF WELL

1 <input checked="" type="checkbox"/> WATER SUPPLY	8 <input type="checkbox"/> ABANDONED, INSUFFICIENT SUPPLY
2 <input type="checkbox"/> OBSERVATION WELL	9 <input type="checkbox"/> ABANDONED, POOR QUALITY
3 <input type="checkbox"/> TEST HOLE	7 <input type="checkbox"/> UNFINISHED
4 <input type="checkbox"/> RECHARGE WELL	9 <input type="checkbox"/> DEWATERING

WATER USE

1 <input checked="" type="checkbox"/> DOMESTIC	5 <input type="checkbox"/> COMMERCIAL
2 <input type="checkbox"/> STOCK	6 <input type="checkbox"/> MUNICIPAL
3 <input type="checkbox"/> IRRIGATION	7 <input type="checkbox"/> PUBLIC SUPPLY
4 <input type="checkbox"/> INDUSTRIAL	8 <input type="checkbox"/> COOLING OR AIR CONDITIONING
5 <input type="checkbox"/> OTHER	9 <input type="checkbox"/> NOT USED

METHOD OF CONSTRUCTION

1 <input type="checkbox"/> CABLE TOOL	6 <input checked="" type="checkbox"/> BORING
2 <input type="checkbox"/> ROTARY (CONVENTIONAL)	7 <input type="checkbox"/> DIAMOND
3 <input type="checkbox"/> ROTARY (REVERSE)	8 <input type="checkbox"/> JETTING
4 <input type="checkbox"/> ROTARY (AIR)	9 <input type="checkbox"/> DRIVING
5 <input type="checkbox"/> AIR PERCUSSION	10 <input type="checkbox"/> DIGGING <input type="checkbox"/> OTHER

CONTRACTOR JOHNSON & BAETZ
ADDRESS: RR# 1 MT. PLEASANT
NAME OF WELL TECHNICIAN: JOHN PAUL BROOKS
SIGNATURE OF TECHNICIAN/CONTRACTOR: [Signature]

WELL CONTRACTOR'S LICENCE NUMBER 3030
WELL TECHNICIAN'S LICENCE NUMBER 85-242

SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

DATA SOURCE: 3030 CONTRACTOR: 3030 DATE RECEIVED: DEC 01 1988
DATE OF INSPECTION: _____ INSPECTOR: _____
REMARKS: _____

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5724679

MUNICIPALITY 57005

CON. 107

COUNTY OR DISTRICT: [REDACTED] TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: TAINISFIL CON. BLOCK TRACT. SURVEY ETC: 7 LOT: 21
DATE COMPLETED: DAY 01 MO 03 YR 89
RC: 30 ELEVATION: 31 BASIN CODE: 11

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
BROWN	CLAY	SAND		0	10
GREY	CLAY		SOFT	10	33
GREY	CLAY		HARD	33	52
GREY	SAND		FINE W/B	52	67

31 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
52-67	1 <input checked="" type="checkbox"/> FRESH 3 <input type="checkbox"/> SULPHUR 2 <input type="checkbox"/> SALTY 4 <input type="checkbox"/> MINERALS 6 <input type="checkbox"/> GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET
5	1 <input checked="" type="checkbox"/> STEEL 2 <input type="checkbox"/> GALVANIZED 3 <input type="checkbox"/> CONCRETE 4 <input type="checkbox"/> OPEN HOLE 5 <input type="checkbox"/> PLASTIC	.158	+2 61

SCREEN

SIZE(S) OF OPENING (SLOT NO.): 4 DIAMETER: 5 INCHES LENGTH: 4 FEET
MATERIAL AND TYPE: JOHNSON DEPTH TO TOP OF SCREEN: 61 FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
59 61	K-PACKER & LEAD PIPE
4 10	Benseal

71 PUMPING TEST

PUMPING TEST METHOD: 1 PUMP 2 BAILER PUMPING RATE: 8 GPM DURATION OF PUMPING: 1 HOURS 17-18 MIN

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING			
7 FEET	50 FEET	15 MINUTES: 7 FEET	30 MINUTES: 7 FEET	45 MINUTES: 7 FEET	60 MINUTES: 7 FEET

RECOMMENDED PUMP TYPE: SHALLOW DEEP RECOMMENDED PUMP SETTING: 50 FEET RECOMMENDED PUMPING RATE: 8 GPM

LOCATION OF WELL

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

8 ft high road
0 ft to DR.
38155

FINAL STATUS OF WELL

1 WATER SUPPLY 6 ABANDONED, INSUFFICIENT SUPPLY
2 OBSERVATION WELL 7 ABANDONED POOR QUALITY
3 TEST NOLE 8 UNFINISHED
4 RECHARGE WELL 9 DEWATERING

WATER USE

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 CONSTRUCTION

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

CONTRACTOR

NAME OF WELL CONTRACTOR: MARCHION DRILLING WELL CONTRACTOR'S LICENCE NUMBER: 3660
ADDRESS: RR #1 SHANTY BAY ONT
NAME OF WELL TECHNICIAN: NORMAN JACQUES WELL TECHNICIAN'S LICENCE NUMBER: 70171
SIGNATURE OF TECHNICIAN/CONTRACTOR: [Signature] SUBMISSION DATE: DAY 8 MO 3 YR 89

OFFICE USE ONLY

DATA SOURCE: 3660 CONTRACTOR: 3660 DATE RECEIVED: MAR 14 1989
DATE OF INSPECTION: INSPECTOR:
REMARKS:



5730535

MUNICIP 57005

CON. CON

08

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County or District, Township, Borough, City, Town, Village, Con. Block, Tract, Survey Etc, Lot, Date Completed, Day, Month, Year

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

Table with columns: GENERAL COLOUR, MOST COMMON MATERIAL, OTHER MATERIALS, GENERAL DESCRIPTION, DEPTH - FEET (FROM, TO). Includes handwritten entries: BROWN TOP SOIL, BROWN CLAY, GREY CLAY, SAND LAYERS, HARD, PRACTED.

Scale bars for 31 and 32

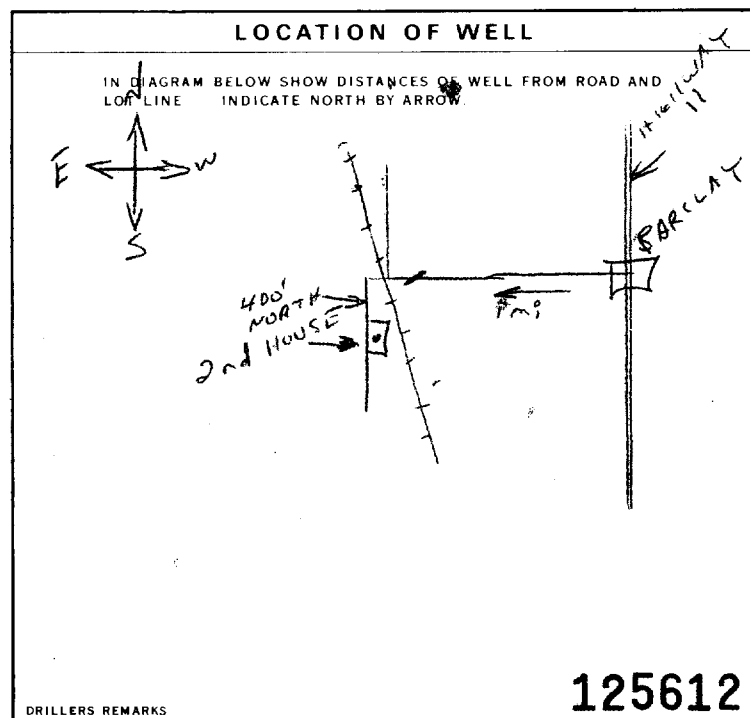
41 WATER RECORD: WATER FOUND AT FEET, KIND OF WATER (FRESH, SALTY, SULPHUR, MINERALS, GAS)

51 CASING & OPEN HOLE RECORD: INSIDE DIAM INCHES, MATERIAL, WALL THICKNESS INCHES, DEPTH - FEET

SCREEN: SIZE(S) OF OPENING, SLOT NO 1, DIAMETER, LENGTH, MATERIAL AND TYPE, DEPTH TO TOP OF SCREEN

61 PLUGGING & SEALING RECORD: DEPTH SET AT - FEET, MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST: PUMPING TEST METHOD, PUMPING RATE, DURATION OF PUMPING, WATER LEVELS DURING, PUMP INTAKE SET AT, WATER AT END OF TEST, RECOMMENDED PUMP TYPE, RECOMMENDED PUMP SETTING, RECOMMENDED PUMPING RATE



FINAL STATUS OF WELL, WATER USE, METHOD OF CONSTRUCTION

CONTRACTOR: NAME OF WELL CONTRACTOR, WELL CONTRACTOR'S LICENCE NUMBER, ADDRESS, NAME OF WELL TECHNICIAN, WELL TECHNICIAN'S LICENCE NUMBER, SIGNATURE OF TECHNICIAN/CONTRACTOR, SUBMISSION DATE

OFFICE USE ONLY: DATA SOURCE, CONTRACTOR, DATE RECEIVED, DATE OF INSPECTION, INSPECTOR, REMARKS

125612

CSS.ES

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11 5731242 57005 CON 107

COUNTY OR DISTRICT: [redacted] TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: *Mississauga* CON. BLOCK, TRACT, SURVEY ETC: *VII* LOT 25-27: *21*
DATE COMPLETED: DAY *3* MO *10* YR *94*

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
<i>dark</i>	<i>top soil</i>			<i>0</i>	<i>1</i>
<i>brown</i>	<i>clay</i>	<i>sand</i>		<i>1</i>	<i>16</i>
<i>grey</i>	<i>clay</i>			<i>16</i>	<i>27</i>
<i>"</i>	<i>sand</i>	<i>silt, clay</i>		<i>27</i>	<i>64</i>
<i>"</i>	<i>sand</i>	<i>silt</i>		<i>64</i>	<i>86</i>
<i>"</i>	<i>clay</i>			<i>86</i>	<i>104</i>
<i>grey</i>	<i>sand</i>		<i>fine, cemented</i>	<i>104</i>	<i>116</i>

31 32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
<i>104 to 116</i>	<input checked="" type="checkbox"/> FRESH <input type="checkbox"/> SALTY <input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS
	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY <input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS
	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY <input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS
	<input type="checkbox"/> FRESH <input type="checkbox"/> SALTY <input type="checkbox"/> SULPHUR <input type="checkbox"/> MINERALS <input type="checkbox"/> GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
<i>6 3/4</i>	<input checked="" type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC	<i>.188</i>	<i>+1</i>	<i>108</i>
	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC			
	<input type="checkbox"/> STEEL <input type="checkbox"/> GALVANIZED <input type="checkbox"/> CONCRETE <input type="checkbox"/> OPEN HOLE <input type="checkbox"/> PLASTIC			

SCREEN

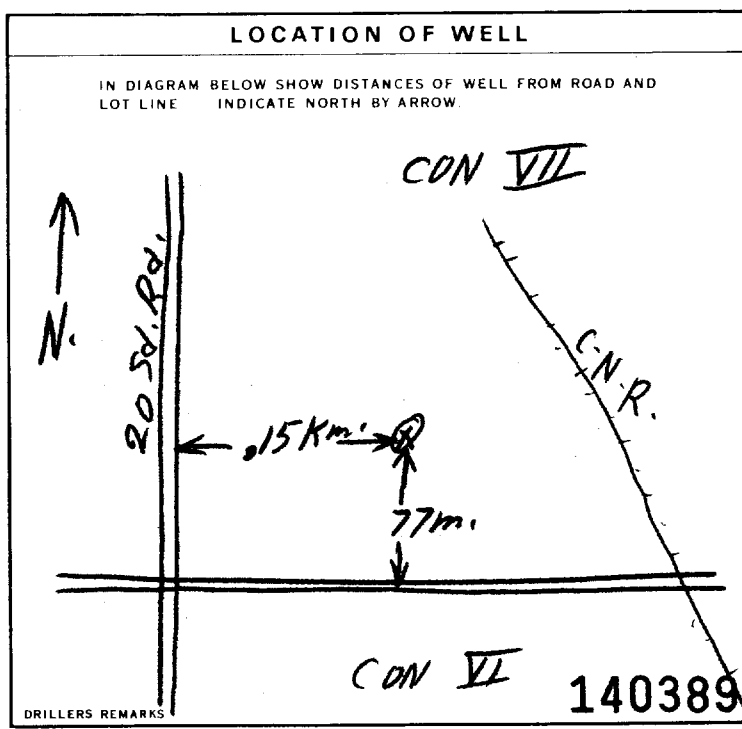
SIZE(S) OF OPENING (SLOT NO): <i>6</i>	DIAMETER: <i>6</i> INCHES	LENGTH: <i>7</i> FEET
MATERIAL AND TYPE: <i>stainless steel</i>	DEPTH TO TOP OF SCREEN: <i>108</i> FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET		MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
FROM	TO	
<i>0</i>	<i>7</i>	<i>clay</i>
<i>7</i>	<i>10</i>	<i>Whelping</i>

71 PUMPING TEST

PUMPING TEST METHOD: <input type="checkbox"/> PUMP <input checked="" type="checkbox"/> BAILER	PUMPING RATE: <i>10</i> GPM	DURATION OF PUMPING: <i>1</i> HOURS <i>30</i> MINS.
STATIC LEVEL: <i>31</i> FEET	WATER LEVEL END OF PUMPING: <i>106</i> FEET	WATER LEVELS DURING:
		15 MINUTES: <i>106</i> FEET
		30 MINUTES: <i>106</i> FEET
		45 MINUTES: <i>106</i> FEET
		60 MINUTES: <i>106</i> FEET
IF FLOWING, GIVE RATE:	PUMP INTAKE SET AT: <i>70</i> FEET	WATER AT END OF TEST: <i>1</i> CLEAR <input type="checkbox"/> CLOUDY
RECOMMENDED PUMP TYPE: <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> DEEP	RECOMMENDED PUMP SETTING: <i>70</i> FEET	RECOMMENDED PUMPING RATE: <i>5</i> GPM



FINAL STATUS OF WELL

WATER SUPPLY OBSERVATION WELL TEST HOLE RECHARGE WELL ABANDONED, INSUFFICIENT SUPPLY ABANDONED, POOR QUALITY UNFINISHED DEWATERING

WATER USE

DOMESTIC STOCK IRRIGATION INDUSTRIAL OTHER COMMERCIAL MUNICIPAL PUBLIC SUPPLY COOLING OR AIR CONDITIONING NOT USED

METHOD OF CONSTRUCTION

CABLE TOOL ROTARY (CONVENTIONAL) ROTARY (REVERSE) ROTARY (AIR) AIR PERCUSSION BORING DIAMOND JETTING DRIVING OIGGING OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: *A. Hammers Well Drilling Inc.* WELL CONTRACTOR'S LICENCE NUMBER: *2513*
ADDRESS: *737 Esna Rd, Barrie*
NAME OF WELL TECHNICIAN: *A. Hammers* WELL TECHNICIAN'S LICENCE NUMBER: *70229*
SIGNATURE OF TECHNICIAN/CONTRACTOR: *A. Hammers* SUBMISSION DATE: DAY *30* MO *11* YR *94*

OFFICE USE ONLY

DATA SOURCE: *2513* CONTRACTOR: *2513* DATE RECEIVED: *DEC 05 1994*
DATE OF INSPECTION: _____ INSPECTOR: _____
REMARKS: _____

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11

5734071

Municipality 57005 Con. CON 08
10 14 15 22 23 24

County or District: SIMCOE
Township/Borough/City/Town/Village: INDISSIELE
Con block tract survey, etc.: 8 Lot: 20
Address: [REDACTED]
Date completed: 29 1 99
day month year

21
2
10 12 17 18 24 25 26 30 31 47

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)					
General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
gray	clay sand			0	90
gray	clay			90	130
gray	sand clay			130	160
gray	silt	clay		160	170
gray	silt	sand & gravel		170	190
gray	clay			190	225

31
32

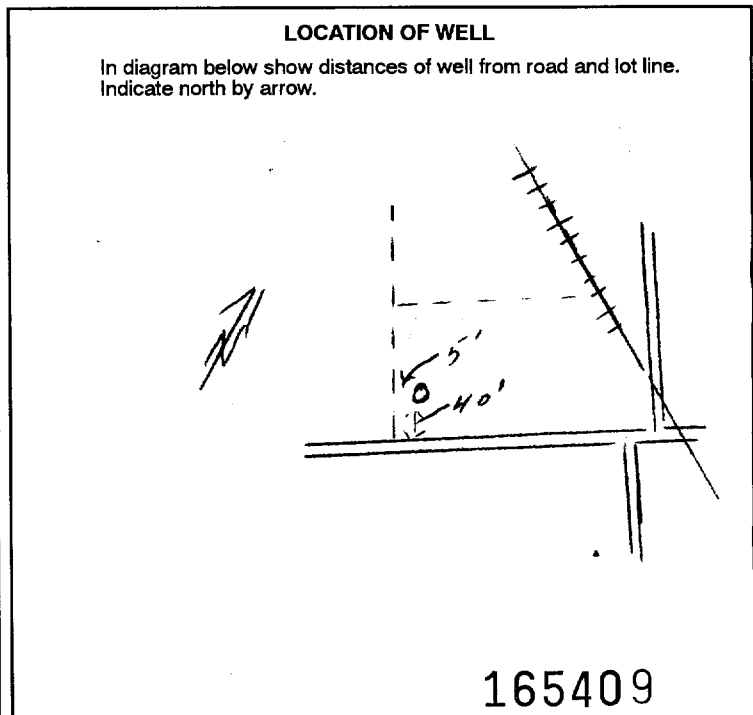
41 WATER RECORD			
Water found at - feet	Kind of water		
10-13	<input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	14
15-18	<input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	19
20-23	<input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	24
25-28	<input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	29
32-35	<input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Salty	<input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals <input type="checkbox"/> Gas	34

51 CASING & OPEN HOLE RECORD				
Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
10-11	<input checked="" type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic		1'8"	203
17-18	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic			20-23
24-25	<input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> Concrete <input type="checkbox"/> Open hole <input type="checkbox"/> Plastic			27-30

SCREEN	Sizes of opening (Slot No.)	Diameter	Length
		inches	feet
	Nil		
			Depth at top of screen
			feet

61 PLUGGING & SEALING RECORD		
<input type="checkbox"/> Annular space <input type="checkbox"/> Abandonment		
Depth set at - feet		Material and type (Cement grout, bentonite, etc.)
From	To	
8	17	Ben Seal
18-21	22-25	
26-29	30-33	

71 PUMPING TEST	Pumping test method		Pumping rate	Duration of pumping		
	<input type="checkbox"/> Pump	<input type="checkbox"/> Bailer	GPM	Hours	Mins	
	Static level	Water level end of pumping	Water levels during			
	19-21	22-24	15 minutes	30 minutes	45 minutes	60 minutes
	feet	feet	feet	feet	feet	feet
		If flowing give rate	Pump intake set at	Water at end of test		
		GPM	feet	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy		
		Recommended pump type	Recommended pump setting	Recommended pump rate		
		<input type="checkbox"/> Shallow <input type="checkbox"/> Deep	feet	GPM		



FINAL STATUS OF WELL			
<input type="checkbox"/> Water supply	<input checked="" type="checkbox"/> Abandoned, insufficient supply	<input checked="" type="checkbox"/> Unfinished	
<input type="checkbox"/> Observation well	<input type="checkbox"/> Abandoned, poor quality	<input type="checkbox"/> Replacement well	
<input checked="" type="checkbox"/> Test hole	<input checked="" type="checkbox"/> Abandoned (Other) - over stopped		
<input type="checkbox"/> Recharge well	<input type="checkbox"/> Dewatering		

WATER USE		
<input type="checkbox"/> Domestic	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not used
<input type="checkbox"/> Stock	<input type="checkbox"/> Municipal	<input type="checkbox"/> Other
<input type="checkbox"/> Irrigation	<input type="checkbox"/> Public supply	
<input type="checkbox"/> Industrial	<input type="checkbox"/> Cooling & air conditioning	

METHOD OF CONSTRUCTION		
<input checked="" type="checkbox"/> Cable tool	<input type="checkbox"/> Air percussion	<input type="checkbox"/> Driving
<input type="checkbox"/> Rotary (conventional)	<input type="checkbox"/> Boring	<input type="checkbox"/> Digging
<input type="checkbox"/> Rotary (reverse)	<input type="checkbox"/> Diamond	<input type="checkbox"/> Other
<input type="checkbox"/> Rotary (air)	<input type="checkbox"/> Jetting	

Name of Well Contractor: Marchildon Drilling	Well Contractor's Licence No.: 3660
Address: 111 Stantyr Bay 102-220	
Name of Well Technician: Peter Marchildon	Well Technician's Licence No.: 703 64
Signature of Technician/Contractor: Peter Marchildon	Submission date: day 16 mo 2 yr 99

MINISTRY USE ONLY	Data source	Contractor	Date received
		3660	APR 27 1999
	Date of inspection	Inspector	
Remarks			

CSS.ES9

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11

5735499

Municipality: 57005 Con: CON 07

County or District: Simcoe Township/Borough/City/Town/Village: Innisfil
Address: 1962 20th Side Road
Date completed: 18 day 07 month 2000 year
Con block tract survey, etc.: 7 Lot: 20
Stroud on Col 2nd

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
Brown	clay	Sand	Topsoil	0	2
"	clay	Sand + Gravel	Sandy Gravelly Clay	2	35
Grey	"	Sand	Finer Sandy Clay	35	120
"	"	Gravel + Sand	Sandy Gravelly clay	120	437
"	Limestone			437	480

31
32

41 WATER RECORD

Water found at - feet	Kind of water
480	1 <input type="checkbox"/> Fresh 2 <input type="checkbox"/> Salty 3 <input checked="" type="checkbox"/> Sulphur 4 <input type="checkbox"/> Minerals 5 <input type="checkbox"/> Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6 7/8	Steel	.188	2	437

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

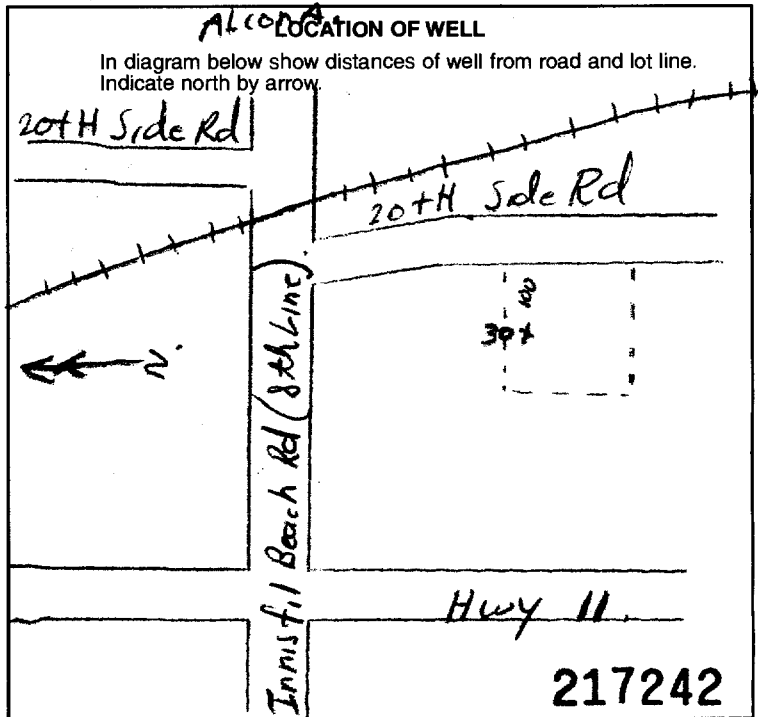
61 PLUGGING & SEALING RECORD

Depth set at - feet		Material and type (Cement grout, bentonite, etc.)
From	To	
10	20	Benseal

71 PUMPING TEST

Pumping test method	Pumping rate	Duration of pumping
1 <input type="checkbox"/> Pump 2 <input checked="" type="checkbox"/> Bailor	1 GPM	4 Hours 0 Mins

Static level	Water level end of pumping	Water levels during
128 feet	475 feet	15 min: 462 feet, 30 min: 448 feet, 45 min: 430 feet, 60 min: 415 feet



FINAL STATUS OF WELL

1 Water supply 2 Observation well 3 Test hole 4 Recharge well

WATER USE

1 Domestic 2 Stock 3 Irrigation 4 Industrial

METHOD OF CONSTRUCTION

1 Cable tool 2 Rotary (conventional) 3 Rotary (reverse) 4 Rotary (air)

Name of Well Contractor: Mike Hammers Well Drill LTD
Well Contractor's Licence No.: 2514
Address: 544 St Vincent St N, Bonnie Ont L4M 4L5
Name of Well Technician: Mike Hammers
Well Technician's Licence No.: T-0527
Signature of Technician/Contractor: [Signature]
Submission date: day mo yr

MINISTRY USE ONLY

Data source: 2514 Contractor: 2514 Date received: SEP 20 2000
Date of inspection: Inspector:
Remarks: CSS.ES0

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11

5736436

Municipality
57005

Con. CON 07

County or District: Simcoe Township/Borough/City/Town/Village: Innisfil Con block tract survey, etc.: VII Lot: 20
Address: 1836, 20 SR, Innisfil Date completed: 19 day 10 month 01 year

General colour	Most common material	Other materials	General description	Depth - feet	
				From	To
dark	top soil			0	1
brown	clay	sand		1	3
grey	clay			3	49
grey	silt	gravel, sand sloppy		49	57
"	clay	traces very fine sand		57	92
"	clay			92	112
grey	sand	traces clay sloppy		112	116

31 _____ 32 _____

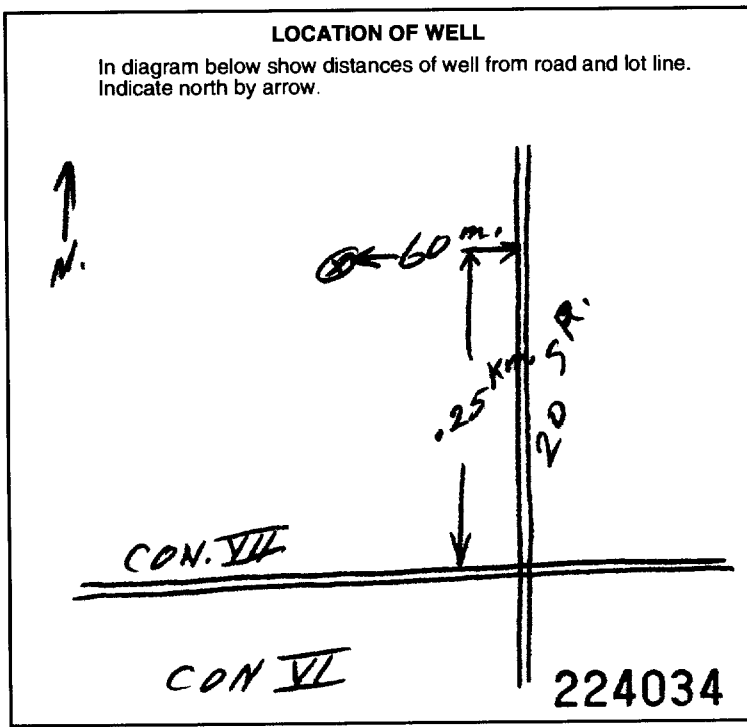
41 WATER RECORD	
Water found at - feet	Kind of water
112-116	1 <input checked="" type="checkbox"/> Fresh 3 <input type="checkbox"/> Sulphur 14 <input type="checkbox"/> Minerals 6 <input type="checkbox"/> Gas
15-18	1 <input type="checkbox"/> Fresh 3 <input type="checkbox"/> Sulphur 19 <input type="checkbox"/> Minerals 4 <input type="checkbox"/> Gas 6 <input type="checkbox"/> Gas
20-23	1 <input type="checkbox"/> Fresh 3 <input type="checkbox"/> Sulphur 24 <input type="checkbox"/> Minerals 4 <input type="checkbox"/> Gas 6 <input type="checkbox"/> Gas
25-28	1 <input type="checkbox"/> Fresh 3 <input type="checkbox"/> Sulphur 29 <input type="checkbox"/> Minerals 4 <input type="checkbox"/> Gas 6 <input type="checkbox"/> Gas
30-33	1 <input type="checkbox"/> Fresh 3 <input type="checkbox"/> Sulphur 34 <input type="checkbox"/> Minerals 4 <input type="checkbox"/> Gas 6 <input type="checkbox"/> Gas

51 CASING & OPEN HOLE RECORD				
Inside diam inches	Material	Wall thickness inches	Depth - feet	
			From	To
6 1/4	1 <input checked="" type="checkbox"/> Steel 12 <input type="checkbox"/> Galvanized 2 <input type="checkbox"/> Concrete 3 <input type="checkbox"/> Open hole 4 <input type="checkbox"/> Plastic 5	.188	+1 1/2	112
17-18	1 <input type="checkbox"/> Steel 19 <input type="checkbox"/> Galvanized 2 <input type="checkbox"/> Concrete 3 <input type="checkbox"/> Open hole 4 <input type="checkbox"/> Plastic 5			20-23
24-25	1 <input type="checkbox"/> Steel 26 <input type="checkbox"/> Galvanized 2 <input type="checkbox"/> Concrete 3 <input type="checkbox"/> Open hole 4 <input type="checkbox"/> Plastic 5			27-30

61 SCREEN	Sizes of opening (Slot No.)	Diameter	Length
	14	6 inches	4 feet
	Material end type: <u>stainless steel</u>		Depth at top of screen: <u>112</u> feet

61 PLUGGING & SEALING RECORD	
<input checked="" type="checkbox"/> Annular space <input type="checkbox"/> Abandonment	
Depth set et - feet	Material end type (Cement grout, bentonite, etc.)
From To	
0 7	clay, sand
7 10	gravelly
26-29 30-33 80	

71 PUMPING TEST	
Pumping test method: 1 <input type="checkbox"/> Pump 2 <input checked="" type="checkbox"/> Bailer	Pumping rate: <u>20</u> GPM
Duration of pumping: <u>1</u> Hours <u>0</u> Mins	
Static level: <u>30</u> feet	Water level end of pumping: <u>80</u> feet
Water levels during: 15 minutes: <u>33</u> feet, 30 minutes: <u>31</u> feet, 45 minutes: <u>30 1/2</u> feet, 60 minutes: <u>30</u> feet	
If flowing give rate: _____ GPM	Pump intake set at: _____ feet
Recommended pump type: <input type="checkbox"/> Shallow <input checked="" type="checkbox"/> Deep	Recommended pump setting: <u>55</u> feet
	Water at end of test: <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Cloudy
	Recommended pump rate: <u>10</u> GPM



54 FINAL STATUS OF WELL

1 Water supply 5 Abandoned, insufficient supply 9 Unfinished
 2 Observation well 6 Abandoned, poor quality 10 Replacement well
 3 Test hole 7 Abandoned (Other)
 4 Recharge well 8 Dewatering

55-56 WATER USE

1 Domestic 5 Commercial 9 Not use
 2 Stock 6 Municipal 10 Other
 3 Irrigation 7 Public supply
 4 Industrial 8 Cooling & air conditioning

57 METHOD OF CONSTRUCTION

1 Cable tool 5 Air percussion 9 Driving
 2 Rotary (conventional) 6 Boring 10 Digging
 3 Rotary (reverse) 7 Diamond 11 Other
 4 Rotary (eir) 8 Jetting

Name of Well Contractor: A. Hammers Well Drilling Inc. 2513 Well Contractor's Licence No.: _____
 Address: 737 Esna Rd, Barrie, Ont.
 Name of Well Technician: A. Hammers Well Technician's Licence No.: T-0229
 Signature of Technician/Contractor: A. Hammers Submission date: 31 day 10 mo 01 yr

MINISTRY USE ONLY

Data source: 2513 Contractor: _____ Date received: NOV 06 2001
 Date of inspection: _____ Inspector: _____
 Remarks: _____

Address of Well Location (Street Number/Name, RR) 1475 INNISFIL BEACH ROAD Township Lot 21 Concession 7
County/District/Municipality SIMCOE City/Town/Village INNISFIL Province Ontario Postal Code
UTM Coordinates Zone Easting Northing GPS Unit Make Model Mode of Operation: Undifferentiated Averaged

Overburden and Bedrock Materials (see instructions on the back of this form) Table with columns: General Colour, Most Common Material, Other Materials, General Description, Depth (Metres) From, To. Includes entries for TOPSOIL, SANDY SILT, SAND, GRAVEL, WET.

Annular Space/Abandonment Sealing Record Table with columns: Depth Set at (Metres) From, To, Type of Sealant Used (Material and Type), Volume Placed (Cubic Metres). Includes entries for BENTONITE HOLEPLUG and SILICA SAND.

Method of Construction and Water Use sections. Includes checkboxes for Cable Tool, Rotary, Air percussion, etc., and Public, Commercial, Domestic, etc. Also includes Status of Well section.

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") - digital pictures of inside of well can also be provided

SEE ATTACHED

Results of Well Yield Testing Table. Includes checkboxes for Clear and sand free, Cannot develop to sand-free state, etc. Also includes Draw Down and Recovery columns with Time (Min) and Water Level (Metres).

Water Details Table. Includes columns for Water found at Depth (Metres), Kind of Water (Fresh, Salty, Sulphur, Minerals), Gas, etc.

Casing Used, Screen Used, and Casing and Well Details sections. Includes checkboxes for Galvanized, Steel, Fibreglass, Plastic, Concrete, etc. Also includes Diameter of the Hole (Centimetres) and Depth of the Hole (Metres) FEET.

Date Well Completed (yyyy/mm/dd) 2007/09/20 Was the well owner's information package delivered? Yes No Date the Well Record and Package Delivered to Well Owner (yyyy/mm/dd)

Well Contractor and Well Technician Information. Business Name of Well Contractor LANTECH DRILLING SERVICES INC. Well Contractor's Licence No. 6 8 0 9 Business Address (Street No./Name, number, RR) 3661 MT. ALBERT ROAD SHARON Municipality 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) TODD PASCO Well Technician's Licence No. 2 2 5 2 Signature of Technician Date Submitted (yyyy/mm/dd) 2007/10/09

No Casing and Screen Used. Open Hole Disinfected? Yes No Depth of the Casing (Metres) FEET 20

Ministry Use Only. Audit No. 263429 Well Contractor No. Date Received (yyyy/mm/dd) NOV 05 2007 Date of Inspection (yyyy/mm/dd) Remarks



NOV 05 2007
C-6809
Z 63429

Address of Well Location (Street Number/Name, RR) 510 ROAD 20 AND 6th LINE		Township	Lot	Concession
County/District/Municipality		City/Town/Village LEFROY	Province Ontario	Postal Code
UTM Coordinates NAD 83	Zone Easting 17614077	Northing 4909456	GPS Unit Make	Model
Mode of Operation:		<input type="checkbox"/> Undifferentiated <input type="checkbox"/> Averaged <input type="checkbox"/> Differentiated, specify _____		

Overburden and Bedrock Materials (see instructions on the back of this form)				FEET	
General Colour	Most Common Material	Other Materials	General Description	Depth From (Metres)	To (Metres)
BROWN	SILT TU		HARD	0	10'
GREY	CLAY			10'	15'
BROWN	SAND			15'	20'

FEET Annular Space/Abandonment Sealing Record		
Depth Set at (Metres)	Type of Sealant Used (Material and Type)	Volume Placed (Cubic Metres)
0 to 13'	BENTONITE HOLEPLUG	
13' to 20'	SILICA SAND	

<input type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary (Conventional) <input type="checkbox"/> Rotary (Reverse) <input type="checkbox"/> Rotary (Air) <input type="checkbox"/> Air percussion <input type="checkbox"/> Other, specify _____	<input type="checkbox"/> Diamond <input type="checkbox"/> Jetting <input type="checkbox"/> Driving <input type="checkbox"/> Digging <input checked="" type="checkbox"/> Boring <input type="checkbox"/> Other, specify _____	<input type="checkbox"/> Public <input type="checkbox"/> Domestic <input type="checkbox"/> Livestock <input type="checkbox"/> Irrigation <input type="checkbox"/> Industrial <input type="checkbox"/> Other, specify _____	<input type="checkbox"/> Commercial <input type="checkbox"/> Municipal <input type="checkbox"/> Test Hole <input checked="" type="checkbox"/> Cooling & Air Conditioning <input type="checkbox"/> Not used <input type="checkbox"/> Dewatering <input checked="" type="checkbox"/> Monitoring
---	---	---	---

<input type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well	<input type="checkbox"/> Dewatering Well <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify _____	<input checked="" type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> 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

SEE ATTACHED

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)
<input type="checkbox"/> Clear and sand free <input type="checkbox"/> Cannot develop to sand-free state	Static Level		Static Level	
If pumping discontinued, give reason:	1		1	
Pumping test method	2		2	
Pump intake set at (Metres)	3		3	
Pumping rate (Litres/min)	4		4	
Duration of pumping hrs + min	5		5	
Final water level end of pumping (Metres)	10		10	
Recommended pump type <input type="checkbox"/> Shallow <input type="checkbox"/> Deep	15		15	
Recommended pump depth Metres	20		20	
Recommended pump rate (Litres/min)	25		25	
If flowing give rate (Litres/min)	30		30	
	40		40	
	50		50	
	60		60	

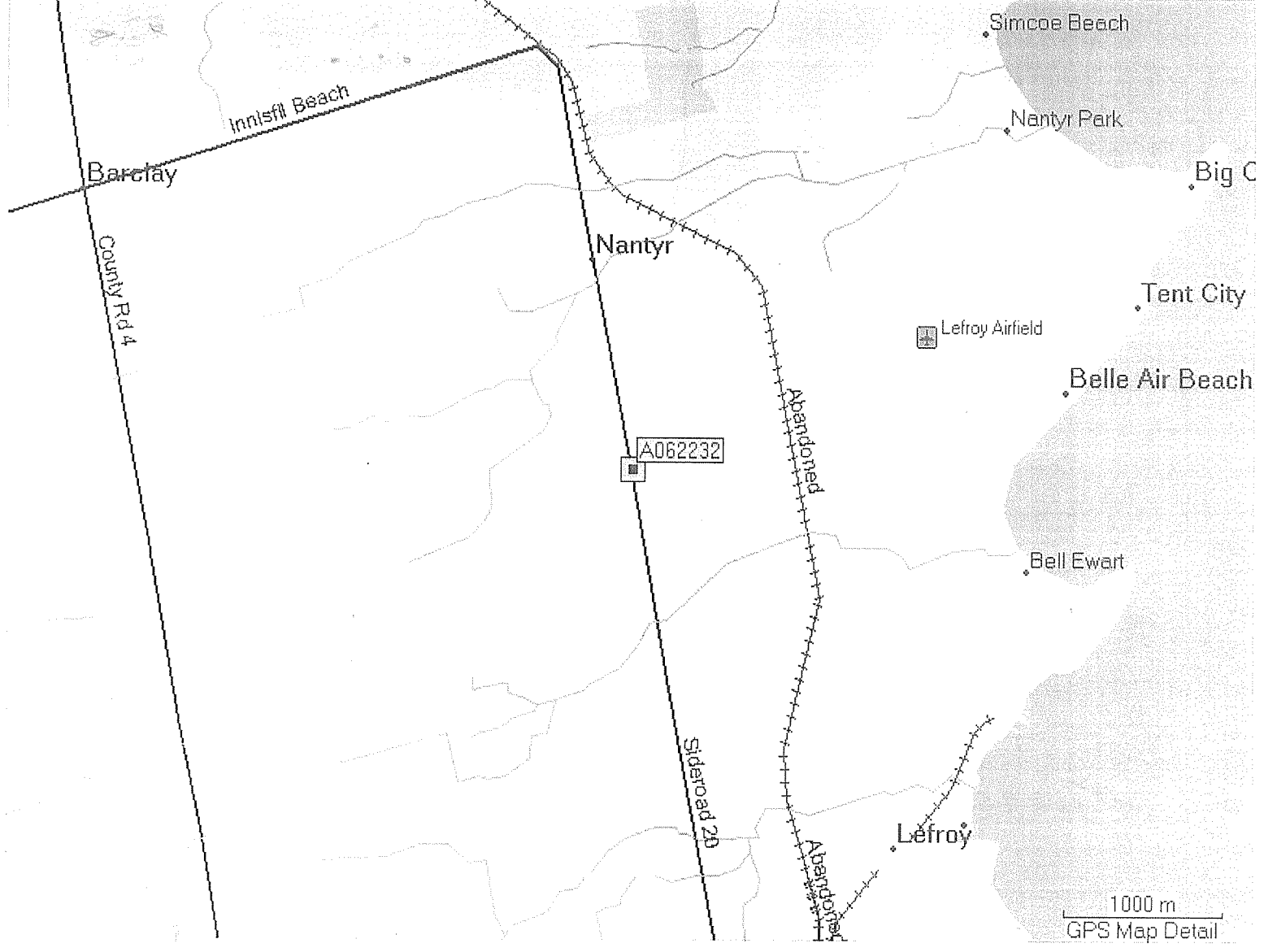
Water Details	
Water found at Depth _____ Metres	Kind of Water <input type="checkbox"/> Gas <input checked="" type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals
Water found at Depth _____ Metres	Kind of Water <input type="checkbox"/> Gas <input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals
Water found at Depth _____ Metres	Kind of Water <input type="checkbox"/> Gas <input type="checkbox"/> Fresh <input type="checkbox"/> Salty <input type="checkbox"/> Sulphur <input type="checkbox"/> Minerals

<input type="checkbox"/> Galvanized <input type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input checked="" type="checkbox"/> Plastic <input type="checkbox"/> Concrete	<input type="checkbox"/> Galvanized <input type="checkbox"/> Steel <input type="checkbox"/> Fibreglass <input checked="" type="checkbox"/> Plastic <input type="checkbox"/> Concrete	Casing and Well Details Diameter of the Hole (Centimetres) 89 Depth of the Hole (Metres) FEET 20' Wall Thickness (Metres) SEE 40 Inside Diameter of the Casing (Metres) 2" Depth of the Casing (Metres) FEET 15'
No Casing and Screen Used <input type="checkbox"/> Open Hole		
Disinfected? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Date Well Completed (yyyy/mm/dd) 2007/11/15	Was the well owner's information package delivered? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Date the Well Record and Package Delivered to Well Owner (yyyy/mm/dd)
---	--	---

Well Contractor and Well Technician Information	
Business Name of Well Contractor LANTECH DRILLING SERVICES INC.	Well Contractor's Licence No. 6 8 0 9
Business Address (Street No./Name, number, RR) 3661 MT. ALBERT ROAD	Municipality SHARON
Province ONTARIO	Postal Code L0G1V0
Bus. Telephone No. (inc. area code) 9054782243	Name of Well Technician (Last Name, First Name) TODD PASCAL
Well Technician's Licence No. 2 2 5 2	Signature of Technician <i>[Signature]</i>
	Date Submitted (yyyy/mm/dd) 2008/01/04

Ministry Use Only	
Audit No. Z 76247	Well Contractor No.
Date Received (yyyy/mm/dd) FEB 19 2008	Date of Inspection (yyyy/mm/dd)
Remarks	



FEB 19 2008

Z 76247

C. 6809



z 76247
FEB 19 2008

Well ID

Well ID Number: 7291761
Well Audit Number: Z265891
Well Tag Number: A226060

This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	20TH SIDE ROAD & 7TH LINE
Township	INNISFIL TOWNSHIP
Lot	021
Concession	CON 06
County/District/Municipality	SIMCOE
City/Town/Village	Innisfil
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 17 Easting: 614141.00 Northing: 4905824.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
BRWN	GRVL	SAND		0 ft	4 ft
BRWN	FILL			4 ft	10 ft
GREY	SILT	BLDR		10 ft	20 ft
GREY	SAND	SILT	WBRG	20 ft	25 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant (Material and Type)	Used Placed	Volume
18 ft	0 ft	BENTONITE		

Method of Construction & Well Use

Method of Construction Well Use

Auger

Monitoring

Status of Well

Observation Wells

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
2 inch	PLASTIC	0 ft	20 ft

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To
2 inch	PLASTIC	20 ft	25 ft

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 7360

Results of Well Yield Testing

After test of well yield, water was
If pumping discontinued, give reason

Pump intake set at
Pumping Rate
Duration of Pumping
Final water level
If flowing give rate
Recommended pump depth
Recommended pump rate
Well Production
Disinfected?

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
45		45	
50		50	
60		60	

Water Details

Water Found at Depth Kind
11 ft Untested

Hole Diameter

Depth **Depth** **Diameter**

From **To**

0 ft 25 ft 6 inch

Audit Number: Z265891

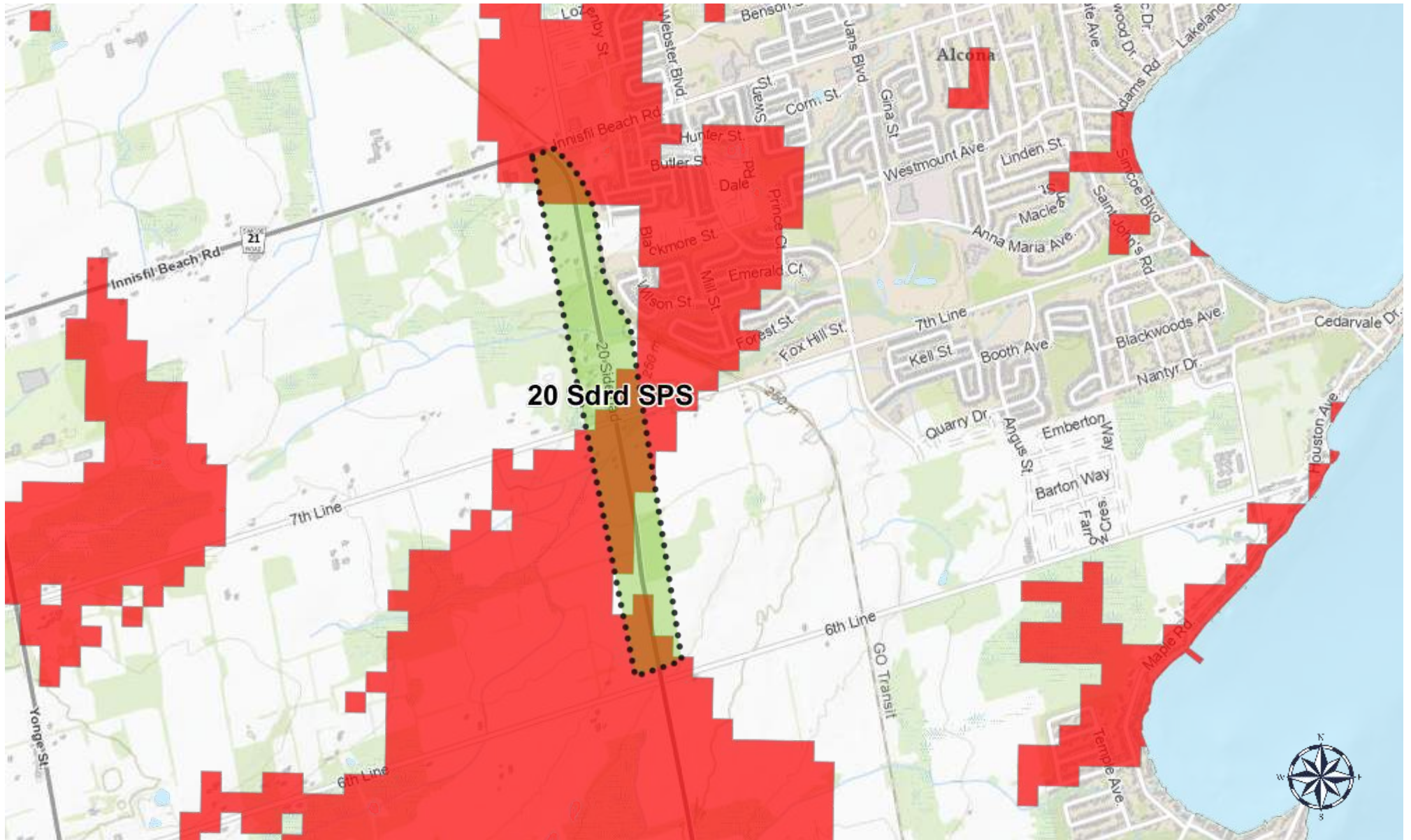
Date Well Completed: July 11, 2017

Date Well Record Received by MOE: August 01, 2017

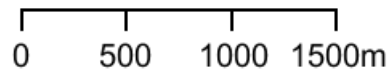
ENCLOSURE 4

Simcoe County Maps

Highly Vulnerable Aquifers Map



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1 : 36,112

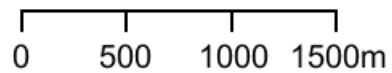


Nov 25, 2021

Significant Groundwater Recharge Areas Map



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1 : 36,112

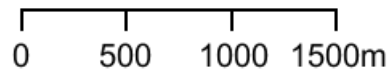


Nov 25, 2021

Wetlands Map



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1 : 36,112



Nov 25, 2021

ENCLOSURE 5

MTO Boreholes

LOG OF BOREHOLE 1

Our Reference No. 9-10-11

Enclosure No. 3

CLIENT: ANLEY & ASSOCIATES LTD.
PROJECT: BRIDGE OVER C.N.R.
LOCATION: TOWNSHIP OF INNISFILL, ONTARIO
DATUM ELEVATION: SPIKE IN TREE 500.93'

DRILLING DATA
Method: DRY BORING
Diameter: 4"
Date: OCT 15, 1968

ELEVATION FT.	DEPTH FT.	SUBSURFACE PROFILE		SAMPLES			PENETRATION RESISTANCE (Blows/Foot)					WATER CONTENT %			REMARKS		
		DESCRIPTION	SYMBOL	GROUND WATER	NUMBER	TYPE	74	75	76	77	78	PLASTIC LIMIT	NATURAL	LIQUID LIMIT			
							UNDRAINED SHEAR STRENGTH (FIELD VANE TEST)					W _p — W — W _L					
							● COMPRESSION TEST					5	10	15	20	25	
510.4	0	GROUND SURFACE															
	0	6" GRAVEL SURFACE															
	5	LOOSE BROWN SANDY SILT FILL topsoil inclusions															
	5			1	SS	4											
	5			2	SS	5											
	5			3	SS	5											
	5			4	SS	5											
500.2	10	VERY DENSE SANDY SILT light brown embedded grits and gravel (glacial till)															
	10			4	SS	26											
	15			5	SS	62											
	15			6	SS	92											
	15			7	SS	100											
	20			8	SS	72											
	25			9	SS	103											
485.2	26.5	END OF BOREHOLE															

LOG OF BOREHOLE 2

Our Reference No. R-10-11

Enclosure No. 4

CLIENT: WYNLEY & ASSOCIATES LTD
PROJECT: BRIDGE OVER C.N.R.
LOCATION: TOWNSHIP OF INNISFIL, ONTARIO
DATUM ELEVATION: SPIKE IN TREE 500.94'

DRILLING DATA
Method: WASHBORING
Diameter: 3"
Date: OCT 17, 1968

SUBSURFACE PROFILE			SAMPLES		PENETRATION RESISTANCE (Blows / Foot)					WATER CONTENT %			REMARKS		
ELEVATION FT.	DEPTH FT.	DESCRIPTION	SYMBOL GROUND WATER	NUMBER	TYPE	Z	20	40	60	80	100	PLASTIC LIMIT		NATURAL	LIQUID LIMIT
							UNDRAINED SHEAR STRENGTH					WATER CONTENT			
498.0	0	GROUND SURFACE													
	5	VERY DENSE SANDY SILT embedded grits and gravel occasional cobbles	WL EL. 484.3 OCT 15, 68	1	SS	69									
	10	light brown grey (glacial till)		2	SS	100/67									
	15			3	SS	100/41									
	20			4	SS	80									
	25			5	SS	63									
	30			6	SS	100/37									
475.5	22.5	END OF BOREHOLE		7	SS	97									

VERTICAL SCALE 1" = 5'

LOG OF BOREHOLE 4

Our Reference No. 8-10-11

Enclosure No. 6

CLIENT: ANLEY & ASSOCIATES LTD
PROJECT: BRIDGE OVER C.N.R.
LOCATION: TOWNSHIP OF INNISFIL, ONTARIO
DATUM ELEVATION: SPIKE IN TREE 500.93'

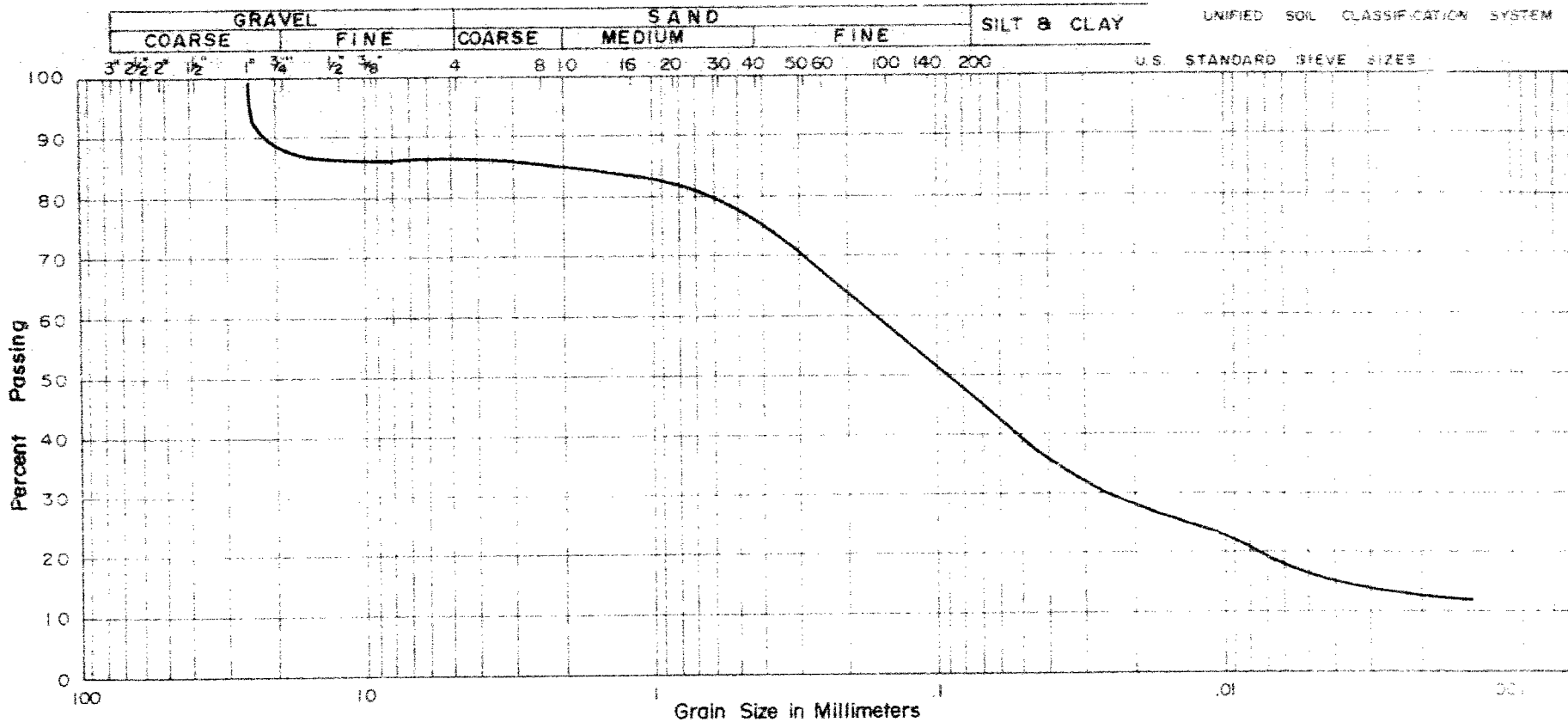
DRILLING DATA
Method: DRY BORING
Diameter: 3"
Date: OCT 15, 1968

SUBSURFACE PROFILE			SAMPLES			PENETRATION RESISTANCE Blows / Foot					WATER CONTENT %			REMARKS		
ELEVATION FT	DEPTH FT	DESCRIPTION	SYMBOL	GROUND WATER	NUMBER	TYPE	N	PENETRATION RESISTANCE					PLASTIC LIMIT W _p		NATURAL W	LIQUID LIMIT W _L
								20	40	60	80	100				
500.6	0	GROUND SURFACE														
		8" TOPSOIL														
		SANDY SILT														
		embedded grit and gravel (glacial till)														
		dense very dense														
		light brown grey														
429.1	21.5	END OF BOREHOLE														

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

DOMINION SOIL INVESTIGATION LIMITED
GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO 8-10-11



PROJECT: BRIDGE OVER C.N.R.
 LOCATION: TWP. OF INNISFILL
 BOREHOLE NO: 1
 SAMPLE NO: 7
 DEPTH: 19'
 ELEVATION:

COEFFICIENT OF UNIFORMITY:
 COEFFICIENT OF CURVATURE:

PLASTIC PROPERTIES

LIQUID LIMIT % =
 PLASTIC LIMIT % =
 PLASTICITY INDEX % =
 MOISTURE CONTENT % =

Classification of Sample and Group Symbol:

SANDY SILT - trace of gravel

Appendix C

Geotechnical Investigation Report for the Proposed 20 SR SPS



Geotechnical Investigation and Report Proposed 20th Sideroad Sewage Pumping Station

1460 7th Line, Town of Innisfil, Ontario

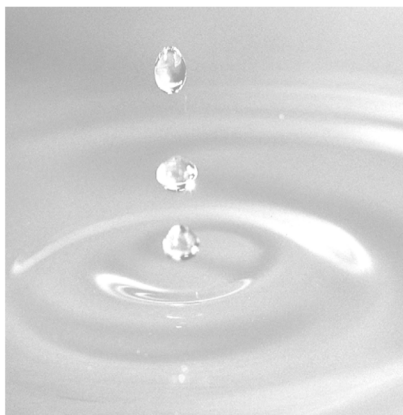
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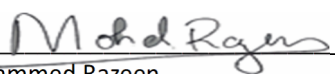
Ainley & Associates Limited
550 Welham Road
Barrie, Ontario
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Submitted by:

GEI Consultants Canada Ltd.
647 Welham Road, Unit 14
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February 4, 2025
Project No. 2403367




Mohammed Razeen

Geotechnical E.I.T



Geoffrey R. White, P.Eng.
Barrie Office Branch Manager and
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Appendices

Appendix A	Borehole Logs
Appendix B	Geotechnical Laboratory Data
Appendix C	Typical Details
Appendix D	Certificates of Chemical Analysis

Certification

PREPARED BY:

GEI Consultants Canada Ltd.



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Geoffrey White, P.Eng.
Barrie Office Branch Manager and
Senior Geotechnical Engineer

Acronyms and Abbreviations

%	Percent (per 100 units)
<	Less than ...
>	Greater than ...
Δ	Change in ...
μm	micrometer
ANSI	Area of Natural and Scientific Interest
APEC	Areas of Potential Environmental Concern
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
BH	Borehole
BH/MW	Borehole / Monitoring Well
cm	centimeters
CVC	Credit Valley Conservation
EASR	Environmental Activity and Sector Registry
EBA	Event Based Area
ERIS	EcoLog Environmental Risk Information Services Ltd.
Elev.	Elevation
ET	Evapotranspiration/Evaporation
FOS	Factor of Safety
FSR	Functional Servicing Report
GEI	GEI Consultants Canada Ltd.
ha	hectares
hr	hours
HVA	Highly Vulnerable Aquifer
I	Infiltration
ICA	Issue Contributing Area
ID	Identification
IPZ	Intake Protection Zone
K	Hydraulic Conductivity
kg	kilogram
km	Kilometres
kPa	Kilopascal
L	Litres
LID	Low Impact Development
m	Metres
m ³	Cubic Meters
MECP	Ministry of Environment, Conservation and Parks
min	minute
mm	Millimetres
MMAH	Ministry of Municipal Affairs and Housing

MW	Monitoring Well
N values	“N” Values
OBC	Ontario Building Code
OHSA	Occupational Health and Safety Act
OPSS	Ontario Provincial Standard Specifications
OPSD	Ontario Provincial Standard Drawing
O.Reg.	Ontario Regulation
OD	Outside Diameter
P	Precipitation
PHC	Petroleum Hydrocarbon
PTTW	Permit to Take Water
PWQO	Provincial Water Quality Objective
PVC	Polyvinyl Chloride
R	Runoff
ROI/ROIs	Radius/Radii of Influence
ROW	Right of Way
s	Seconds
SLS	Serviceability Limit State
S	Storage
SCS	Site Condition Standards
SGRA	Significant Groundwater Recharge Area
SPT	Standard Penetration Test
SPmdd	Standard Proctor maximum dry density
SS	Split Spoon
SWM	Storm Water Management
ULS	Ultimate Limit State
USCS	Unified Soil Classification System
VOC	Volatile Organic Compound
WHPA	Wellhead Protection Area

It is noted that all elevations in this report are metric/geodetic and expressed in m. All measurements are also in metric and expressed in mm, m or km.

1. Introduction

GEI was retained by Ainley & Associates Limited Group, on behalf of The Town of Innisfil, to complete a subsurface investigation and provide a geotechnical report in support of the proposed 20th Sideroad Sewage Pumping Station (SPS), in the Town of Innisfil, Ontario. A site location plan is enclosed as Figure 1.

InnServices is proposing to construct a new SPS. The proposed location is 1460 7th Line in the Town of Innisfil, Ontario. The SPS is to be located along 20th sideroad in the central west portion of the property. The site currently comprises a farm field. The exact location and configuration of the facility has not been established at this time however, it is understood to comprise a dry well, a wet well, an electrical room and an outdoor generator. The wet/dry well may be about 6 to 8 m below existing grade. General evaluation of the site is required to aid with finalization of the design and provide parameters for detail design.

The purpose of the geotechnical investigation was to assess the subsurface soil conditions at the site, and based on this information, provide geotechnical engineering recommendations in support of the proposed SPS. This report summarizes the borehole findings, provides design geotechnical engineering recommendations regarding foundations, lateral earth pressures and installation of servicing pipes. Considerations for constructability such as soil excavation, compaction, on-site backfill suitability and temporary groundwater control are also provided.

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

2. Procedures and Methodology

Prior to the commencement of drilling activities, the borehole locations were staked in the field by GEI. Ground surface elevations of the boreholes and horizontal coordinates (referencing NAD 83 geodetic datum), were surveyed by GEI with a Topcon FC – 5000 GPS Survey unit. Underground utilities including natural gas, electrical, telephone, water, etc., were marked out by public and private utility locating companies, prior to drilling.

The fieldwork for the drilling program was carried out on December 19 and 20, 2024, where Boreholes 1 to 3 were drilled to 12.6 m below existing grade (Elev. 240.5 to 241.3). Borehole logs are provided in Appendix A and the borehole locations are shown on Figure 2.

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

Monitoring wells were installed in all three boreholes by GEI, to facilitate long-term groundwater monitoring, each consisting of 50 mm diameter PVC pipe with a 3.0 m long screen and protective casing. Monitoring well construction is shown on the borehole logs in Appendix A. Boreholes without wells were backfilled in accordance with O.Reg. 903.

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

In GEI's laboratory, the samples were classified as to their visual and textural characteristics. All samples were submitted for moisture content determination, in accordance with ASTM D2216. Six (6) representative samples of the subgrade soils were selected and submitted to our laboratory for grain size analysis. Grain size results are provided in Figures B1 to B4 in Appendix B.

3. Subsurface Conditions

3.1. General Overview

The detailed soil profiles encountered in the boreholes, are indicated in the attached borehole logs in Appendix A. The geotechnical laboratory results are included in Appendix B. The borehole locations are shown on Figure 2.

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

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

3.2. Stratigraphy

3.2.1. Topsoil

A surficial topsoil layer was at the ground surface at each borehole location ranging in thickness from 50 to 305 mm. Topsoil thickness may vary between boreholes and in other areas of the site due to the farming activities at the site.

3.2.2. Fill

A fill layer was encountered beneath the topsoil in all boreholes and was penetrated at 0.8 m to 1.5 m depth (Elev. 252.2 to 253.2). The unit comprise the disturbed soil associated with farming activities. The fill consisted of sandy silt with some clay. Some organics were observed in some samples. The fill was moist with moisture contents ranging from 15 to 28%. The fill had N values of 5 to 11 blows indicating loose to compact conditions.

3.2.3. Clayey Silt

Underneath the fill, the native soil consisted of clayey silt in Boreholes 1 and 2. The clayey silt extended to 7.6 and 9.1 m depth (Elev. 244.6 and 245.5). Two (2) samples of the material were submitted for grain size analysis, and the results are provided in Figure B1 in Appendix B. The soil was moist to wet with depth and had moisture contents of 14 to 28%. N values in the soil were 14 to 44 blows indicating stiff to hard consistency.

3.2.4. Sand and Silt

Underneath the fill in Borehole 3, a sand and silt unit with some clay and trace gravel was encountered to 5.5 m depth (Elev. 248.4). One (1) sample of the material was submitted for grain size analysis, and results are provided in Figure B2 in Appendix B. The soil was moist with moisture contents of 10 to 17%. N values in the soil were 16 to 44 blows indicating typically compact conditions, locally dense at the base of the unit.

3.2.5. Silty Clay / Silt and Clay

Underneath the clayey silt, a silty clay unit was present in Borehole 1, and underlying the sand and silt in Borehole 3, a silt and clay unit was present in Borehole 3. The cohesive units extended to 10.7 and 9.1 m depth (Elev. 242.4 and 244.8), respectively in Boreholes 1 and 3. Trace to some sand was present in the samples. Two (2) samples of the material were submitted for grain size analysis, and the results are provided in Figure B3 in Appendix B. The soil was very moist to wet with moisture contents of 22 to 25%. N values in the soil were 15 to 23 blows indicating very stiff consistency.

3.2.6. Silt

A discontinuous layer of silt was encountered underlying the clayey silt in Borehole 2 and the silt and clay in Borehole 3 and extended to 10.7 m depth (Elev. 243.0 and 243.3), respectively. Some clay and some sand was observed in the samples. One (1) sample of the material was submitted for grain size analysis and the results are provided in Figure B4 in Appendix B. The soil was moist with moisture contents ranging of 14 and 15%. The soil was dense with N values of 33 and 40 blows.

3.2.7. Sand and Gravel/Gravelly Sand

A local sand and gravel/gravelly sand was encountered below the upper soil layers in Boreholes 1 and 2, at the depth of 10.7 m and extended to 12.2 m depth (Elev. 240.9 and 241.5). The soil was grey and wet with moisture contents of 18 and 19%. N values were 45 and 55 blows, indicating dense and very dense conditions.

3.2.8. Sand

A basal sand was revealed in all the boreholes extending to 12.6 m depth of exploration (Elev. 240.5 to 241.3). The soil was wet, and moisture contents were 9 to 16%. N values were 12 to 27 blows, indicating compact conditions.

3.3. Groundwater

Unstabilized groundwater level measurements and cave measurements were taken upon the completion of drilling of each borehole, as shown on the borehole logs in Appendix A. These measurements were taken to provide a rough estimate of the possible excavation and temporary groundwater control constructability considerations that may arise. All boreholes were outfitted with a monitoring well with 50 mm diameter pipe and 3.0 m long screen. Monitoring well configuration and groundwater observations, are noted on the borehole logs in Appendix A and summarized in the table below.

Table 3-1. Groundwater Levels

Borehole	Depth of Cave (m) / Elev. (m)	Unstabilized Groundwater Level Depth (m) / Elev. (m)	Depth (m) / Elev. (m) of Groundwater Table, January 07, 2025
1	9.1 / 244.0	3.7 / 249.4	5.8 / 247.3
2	Open	6.1 / 247.6	6.5 / 247.2
3	Open	9.6 / 244.3	6.4 / 247.5

The stabilized groundwater levels ranged from 5.8 to 6.5 m (Elev. 247.2 to 247.5) on January 07, 2025 and show some slight artesian pressure in the in groundwater in the more pervious sand/gravelly sand/sand and gravel, controlled by the typical overlying cohesive units.

The sand and gravel, gravelly sand and sand are permeable and will allow for the free flow of water. Sand and silt and silt are semi-permeable and allow for some free flow of ground water when wet. The silt and clay, silty clay and clayey silt are not permeable.

Groundwater levels are expected to show seasonal fluctuations and vary in response to prevailing climate conditions.

3.4. Soil Corrosivity and Sulphate Attack on Concrete

The following soil samples were collected from the site and submitted to CALA-accredited Caduceon Laboratories for testing, to determine the potential for soil corrosivity and sulphate attack on concrete:

- BH1 / SS3
- BH2 / SS4

The results of the chemical testing are provided in Appendix D.

The American Water Works Association (AWWA) has developed a scoring system in their C-105 Standard, to determine the potential for soil to corrode cast iron alloys. The scoring system assigns points based on several soil parameters, including resistivity, pH, redox potential, sulfides, and moisture content. A rank of 10 or more indicates a potential for corrosion and suggests that corrosion protection measures should be considered. The results from the testing at this site, is summarized below and the laboratory Certificate of Analysis is included as Appendix D.

Table 3-2. Corrosivity Test Results Parameters

Soil Parameter	AWWA Score	
	BH1 / SS3	BH2 / SS4
Resistivity (ohm·cm)	0	0
pH	0	0
Redox Potential (mV)	0	0
Sulfides (µg/g)	3.5	2

Soil Parameter	AWWA Score	
	BH1 / SS3	BH2 / SS4
Moisture	1	1
TOTAL SCORE	4.5	3.0

Based on the AWWA scoring system, samples scored less than 10 points, which indicates a low potential for the soil corrosivity to affect cast iron alloys and corrosion protection measures, are therefore not recommended for the site.

It should be noted that this ranking system provides a general indication of soil corrosivity potential only. Other external factors may increase corrosivity potential, such as stray electrical currents or the application of de-icing salts in the winter, that can leach into the ground.

The samples were also tested for water-soluble sulphate content and compared to *Table 3: Additional Requirements for Concrete Subjected to Sulphate Attack*, as found in *CSA A23.1 Concrete Materials and Methods of Construction*. Table 3 is used to determine the cementing materials required in concrete based on degree of exposure to sulphate attack. The testing shows the samples have less than 0.1% water-soluble sulphate, and therefore, there will have negligible exposure to sulphate attack, as such no additives are required.

4. Engineering Design Parameters & Analysis

InnServices is proposing to construct a new SPS. The proposed location is 1460 7th Line in the Town of Innisfil, Ontario. The SPS is to be located along 20th sideroad in the central west portion of the property. The site currently comprises a farm field. The exact location and configuration of the facility has not been established at this time however, it is understood to comprise a dry well, a wet well, an electrical room and an outdoor generator. The wet/dry well may be about 6 to 8 m below existing grade. General evaluation of the site is required to aid with finalization of the design and provide parameters for detail design.

The purpose of the geotechnical investigation was to assess the subsurface soil conditions at the site, and based on this information, provide geotechnical engineering recommendations in support of the proposed SPS. This report summarizes the borehole findings, provides design geotechnical engineering recommendations regarding foundations, lateral earth pressures and installation of servicing pipes. Considerations for constructability such as soil excavation, compaction, on-site backfill suitability and temporary groundwater control are also provided.

4.1. Site Grading

Grading plans were not available for review at the time of this report; however, it is speculated that some site grading may be required to accommodate the project. When grading is established, GEI should review the drawings for geotechnical requirements.

The topsoil and fill are unsuitable to support the building footings and floor slabs. In this regard, it is recommended to remove the topsoil and sub-excavate fill (as deep as 1.5 m depth) down to competent native soil. The exposed subgrade surface should be thoroughly compacted, and then engineered fill placement can commence to the desired grade. Footings would be supported by native soil and/or the engineered fill and the floor slabs by the engineered fill.

4.1.1. Engineered Fill

GEI defines “engineered fill” as material that will support foundations, and which is placed and compacted in a specified and controlled manner, under full-time supervision of geotechnical engineering staff.

In any location where engineered fill will be placed to raise grades or replace poor/weak soil, the topsoil, vegetation, organic soil, or existing fill soil, must be fully removed down to native soil. The exposed subgrade soil must be proof-rolled and inspected by the geotechnical engineer, to ensure all unsuitable material (e.g., organics, weak or soft soil, weathered / disturbed soil, deleterious materials and existing fill) is removed from the engineered fill footprint. Any unsuitable areas must be further sub-excavated and replaced with approved material and compacted to targeted 100% Standard Proctor Maximum Dry Density (SPmdd), in building areas and 95% SPmdd in servicing or paved areas.

Once the subgrade is approved, engineered fill can be placed. Engineered fill must be placed under the full-time supervision of a geotechnical engineer, as required in the Ontario Building Code. The engineered fill may consist of excavated on-site inorganic cohesionless soils, provided they have been moisture

conditioned to a moisture content within 2% of optimum moisture content, and do not contain organics, topsoil or deleterious material. It is recommended that imported soil consist of Granular B (OPSS.MUNI 1010) and first be used in building areas, leaving site soil for pavement and landscaped areas. Engineered fill must be placed in loose lifts of 200 mm or less and compacted to 100% SPmdd, in building areas and 95% SPmdd in servicing or paved areas.

If wet subgrade is encountered, the first lift of engineered fill shall consist of 400 mm of Granular B Type II (OPSS.MUNI 1010). This will help to bridge the weaker subgrade and improve the ability to achieve the compaction specifications for subsequent engineered fill lifts.

The engineered fill must extend a minimum of 1 m out from all sides of the foundations and extend at a 1 horizontal to 1 vertical slope (1H:1V) down to the exposed subgrade. A typical detail for engineered fill pad dimensioning, is included in Appendix C.

4.2. Foundation Design

4.2.1. *Shallow Footings*

The topsoil and existing fill are not suitable for the support of buildings or other shallow foundations. The underlying undisturbed native soil encountered in the boreholes below the fill, is considered suitable for the support of new shallow foundations.

Foundations for new buildings or other structures may be constructed, as conventional shallow spread and strip footing foundations, that extend down to bear on the competent undisturbed native soils. Footings founded on the undisturbed very stiff to hard clayey silt or compact sand and silt in the upper 3.0 m of the site, may be designed using a maximum geotechnical reaction at SLS of 150 kPa, for an estimated settlement of 25 mm or less. The maximum factored geotechnical resistance at ULS is 225 kPa. These geotechnical resistances are for a minimum 0.5 m wide footing and are for vertical, concentric loading. Where eccentric or inclined loads are applied, the resistance values used in design must be reduced.

4.2.2. *Wet/Dry Wells*

Currently it is understood that the wet/dry wells will extend about 6.0 to 8.0 m below the existing ground surface. Based on boreholes, the wells will be founded within the bottom of the clayey silt/sand and silt or the upper portion of the silty clay/silt and clay. Proposed well foundations founded on undisturbed native soils at the depths noted above, may be designed using a geotechnical reaction at SLS of 150 to 200 kPa (depending on the location), for an estimated settlement of 25 mm or less. The maximum factored geotechnical resistance at ULS is 225 to 300 kPa. The bearing resistance can be finalized once the location is finalized.

4.2.3. *Foundations on Engineered Fill*

Footings supported on an engineered fill pad placed over the undisturbed very stiff to hard clayey silt or compact sand and silt, may be designed using a geotechnical bearing resistance up to 150 kPa at SLS and 225 kPa at ULS. The engineered fill pad should be constructed in accordance with Section 4.1.1.

It is recommended that nominal reinforcing steel for stiffening of the foundation walls made on engineered fill, be provided to help mitigate minor cracking due to minor differential settlement. The reinforcing steel in the poured concrete foundation walls, may consist of 2-15M bars continuous at the top of the foundation wall, and 2-15M bars continuous at the bottom of the foundation walls. Typically, these bars are placed 100 to 200 mm from the top or bottom of the foundation wall, respectively. The reinforcing steel should extend a minimum of 3 m past any transition zones between engineered fill and native soil. A typical reinforcing steel detail for foundation walls placed on engineered fill, is provided within Appendix C. The recommended nominal reinforcing steel should not be considered a structural design. The need for different or additional reinforcement, should be reviewed by a structural engineer to ensure the original structural design intent of the structure is maintained.

4.2.4. General Considerations

Regardless of loading considerations, the minimum strip footing widths to be used shall be dictated as per the Ontario Building Code. Footings stepped from one level to another must be at a slope not exceeding 7 vertical to 10 horizontal.

Reference is made to Figure 26.27 in CFEM 4th edition, for general underpinning requirements related to footings in close proximity to existing or proposed wet/dry well walls.

Foundations exposed to ambient air temperature throughout the year, must be provided with a minimum of 1.5 m of earth cover for frost protection. Where earth cover is less than 1.5 m, additional equivalent insulation is required. A 25 mm thick polystyrene insulation board is equivalent to 300 mm of soil cover.

Prior to pouring concrete for the footings, the footing subgrade must be cleaned of deleterious materials, softened, disturbed, or caved materials, and any standing water. During the excavation and construction of the footings, GEI should be retained to inspect the founding base, to ensure the subgrade has been properly prepared and that the integrity of the founding soil has been maintained.

Soils tend to weather and deteriorate on exposure to the atmosphere or to surface water, therefore, foundation bases that will remain open and exposed to the atmosphere for an extended period, shall be protected by applying a skim coat of lean concrete immediately after inspection of the founding subgrade is completed. If construction is to proceed in freezing conditions, temporary frost protection for the footing bases and concrete must be provided. Construction traffic should be prohibited from travelling over the exposed subgrade.

4.3. Seismic Site Classification

The 2024 Ontario Building Code came into effect on January 1, 2025, and notable amendments to the 2012 Building Code pertaining to the seismic site classification are listed below:

- As per section 4.1.8.4, Site Properties, OBC 2024, the site designation shall be determined from Table 4.1.8.4.-A using the average shear wave velocity, V_{s30} , calculated from in situ measurements of shear wave velocity.
- Where V_{s30} calculated from in situ measurements is not available, the site designation shall be X_s , where S is the Site Class determined using the energy-corrected average standard penetration

resistance, N_{60} , or the average undrained shear strength, S_u , in accordance with Table 4.1.8.4.-B, N_{60} and S_u being calculated based on rational analysis.

There have been no shear wave velocity measurements carried out at the site and therefore, SPT 'N' values are used to determine the site classification. Table 4.1.8.4.-B Site Classes, S , for Site Designation X_S in OBC 2024 indicates that site class "S" should be determined from the average ground profile characteristics in the top 30 m. The native soils encountered below the site that will support foundations generally consist of compact to very dense / very stiff to hard soil with average SPT "N" Values of more than 15 but less than 50. Based on the known soil conditions, the Site Designation for the Site is " X_D " corresponding to Site Class D as per Table 4.1.8.4.-B. Shear wave velocity measurements can be considered to potentially improve upon the Site Designation if requested.

4.4. Floor Slabs

The engineered fill is suitable to support the floor slab for the building and any other near surface structures. Topsoil, vegetation, organics, soft or weak soil, existing fill and other soil containing organics, excessive moisture, or deleterious materials are not suitable to support floor slabs.

It is necessary that the floor slabs be provided with a capillary moisture barrier and drainage layer. This is made by placing the concrete slab on a minimum 200 mm layer of 19 mm clear stone (OPSS.MUNI 1004), compacted by vibration to a dense state. The upper 50 mm of clear stone can be replaced with 19 mm crusher run limestone for a working surface. The clear stone and subgrade must be separated by a geotextile such as Terrafix 270R (or approved equivalent), to prevent the migration of fines into the clear stone layer, which could result in loss of support for the slab. Alternatively, OPSS Granular A can be utilized, compacted to 100% SPmdd, without the geotextile.

The modulus of subgrade reaction appropriate for design of a thickened slab, on approved native or engineer fill soil is 25 MPa/m.

For the proposed building that will be slab-on-grade with no basement level (wet/dry well discussed below), perimeter and under-slab drainage for the building at the foundation level is not required, provided that the underside of the concrete slab is at least 200 mm above the prevailing grade of the site, and the surrounding surfaces slope away from the building at a gradient of at least 2% to promote surface water run-off and to reduce groundwater infiltration adjacent to foundations. To minimize infiltration of surface water, the upper 150 mm of backfill should comprise relatively impervious/cohesive compacted soil material.

4.5. Lateral Earth Pressures and Hydrostatic Uplift Resistance

The walls of the wet well and the dry well must be designed to resist the unbalanced lateral pressure due to the weight of the retained soil. The effect of hydrostatic pressure must also be included, as it is likely impractical to have a drainage system below the groundwater table. In this regard, the lateral pressure, P , may be computed using the following equation:

$$P = K[\gamma(h - h_i) + \gamma' h_i + q] + \gamma_w h_i$$

where,	P =	the horizontal pressure at depth, h (m)
	K =	the earth pressure coefficient (dimensionless)
	h_i =	depth below groundwater at depth h below ground surface (m)
	h =	depth below surface (m)
	γ =	bulk unit weight of soil = 20 kN/m ³
	γ' =	buoyant unit weight of soil, = $\gamma - \gamma_w$ (kN/m ³)
	γ_w =	unit weight of water, = 9.81 kN/m ³
	q =	surcharge loading (kPa)

In addition, there should be allowance for seismic events and appropriate factors of safety should be used in the design.

The ground water level should be considered at the ground surface for design purposes (Elev 253.5 +/-).

The values for use in the design of the wet/dry well walls, subjected to unbalanced lateral earth pressures at the site are as follows:

Table 4-1. Earth Pressure Values

Soil Type	γ - Bulk Unit Weight (kN/m ³)	ϕ - Friction Angle (degrees)	Earth Pressure Coefficient (dimensionless)		
			K_a - Active	K_o - At-Rest	K_p - Passive
Granular 'B' (OPSS.MUNI 1010)	21.0	32	0.31	0.47	3.25
Very Stiff to Hard Cohesive Soil	19.0	30	0.33	0.50	3.0
Compact to Very Dense Cohesionless Soils	20.0	30	0.33	0.50	3.0
Fill	20.0	28	0.36	0.53	2.77

The calculation of the earth pressure coefficients is based on Rankine theory, which provides a conservative estimate as no friction between the soil and the structure is accounted for. The earth pressure

coefficients provided above, are only applicable for flat ground surfaces beyond the structure and will change for sloping ground surfaces.

The earth pressure coefficients referenced within the above table, are a function of the friction angle of the adjacent soil, and both the degree and direction of movement of the structure subjected to unbalanced lateral earth pressures. For structures that are restrained at the top (such as basement walls), the at-rest earth pressure coefficient will apply. For structures that allow for 0.1 to 1% of movement away from the soil, the full active earth pressure coefficient will apply. For structures that allow for 1 to 10% of movement into the soil, the full passive earth pressure coefficient will apply. The percentage movement is based on the height of the structure.

Other types of structures such as shoring walls with multiple rows of tiebacks and soil nail walls, are subject to different loading conditions and must be analyzed separately.

The wet and dry wells will be installed below the groundwater table and must be designed to withstand uplift pressure due to hydrostatic head at the base of the structure. For design purposes, it is recommended that the groundwater level be assumed at the ground surface (Elev. 253.5 +/-). Resistance to uplift is provided by the weight of the structure, plus the weight of any soil cover over the structure. Additional resistance can be achieved by extending the foundation base and considering the weight of the soil above the extended base. A thickened base/slab would also suffice. Bulk unit weight of soil, γ , is provided above. The unit weight of submerged soil, γ' , is the bulk soil unit weight minus 9.81 kN/m^3 (the unit weight of water).

4.6. Service Installation

4.6.1. Bedding

The type of material and depth of granular bedding below the pipe will, to some extent, depend on the method of construction used by the contractor. Pipe bedding for flexible pipes, should follow the requirements in OPSD 802.010 or applicable municipal standards. Pipe bedding for rigid pipes, should follow the requirements in OPSD 802.030 to 802.032 or applicable municipal standards.

A subgrade consisting of the native soils at the site, will provide adequate support for pipes with the bedding requirements, as laid out in the above referenced OPS drawings. Where disturbance of the trench base has occurred from groundwater seepage, construction traffic, etc., or if in-situ fill is present at the invert level, the material should be sub-excavated and replaced with suitably compacted granular bedding. If weak zones are encountered, additional bedding materials and differing construction practices may be required and should be determined during construction. Any zones of peat or organic soil should be sub-excavated and replaced with approved earth fill or imported granular material., compacted to 95% SPmdd. Details on temporary groundwater control are provided in Section 5.3.

Regardless of whether flexible or rigid pipes are implemented, granular bedding and cover material should consist of a well graded, free draining material, such as Granular "A" (OPSS.MUNI 1010). All granular bedding must be compacted to a minimum of 95% SPmdd.

4.6.2. Backfill

Excavated native cohesionless soils may be re-used as backfill in trenches, provided the soil is moisture conditioned so that the moisture content is within 2% of optimum. Additional soil compaction details are provided in Section 5.4. The backfill should be compacted to a minimum of 95% SPmdd. In confined areas, the layer thickness will have to be reduced to utilize smaller compaction equipment efficiently or by using granular material instead of locally sourced fill. Any backfill that is frozen, contains a high percentage of organic material (topsoil, peat, etc.) or moisture, or has otherwise unsuitable deleterious inclusion should not be used as backfill. The maximum cobble or boulder size should not exceed half of the loose lift thickness (i.e., all particles with a diameter greater than 100 mm should be removed). Where cohesive soils are utilized as backfill, a sheepsfoot compactor will be required. Moisture content conditioning may also be required.

Where trenches are within the traveled portions of a roadway, backfill within the frost penetration depth of 1.2 m should consist of native, non-organic, excavated material consistent with the soils surrounding the trench. If this technique is not undertaken, then frequently problems arise with yearly differential frost heave movements between the trench backfill and the adjacent native soil. This would occur, for example, if imported granular material is used to backfill trenches which is less susceptible to frost effects compared to the native soils on site. Alternatively, if different soil is used as the backfill due to issues with achieving compaction, a frost taper of 10H:1V can be implemented to help mitigate the potential for differential settlement and frost heave.

5. Constructability Considerations

5.1. Excavations

Excavations for the proposed wells, are anticipated to extend as deep as 8 m below existing grade and extend through topsoil, fill, clayey silt, silty clay, sand and silt and silt and clay, and possibly into the underlying sand/sand and gravel/gravelly sand. Harder digging will be experienced in the dense to very dense / hard soil.

Excavations must be carried out in accordance with the Occupational Health and Safety Act, Ontario Regulation 213/91 (as amended), Construction Projects, Part III - Excavations, Section 222 through 242. Where workers must enter a trench or excavation, the soil must be suitably sloped and/or braced in accordance with the OHSA.

These regulations designate four (4) broad classifications of soils, to stipulate appropriate measures for trench safety. If more than one soil type is encountered in a trench, the soil type with the highest number will govern the trench/excavation sidewall geometry. Subject to adequate groundwater control, as required and discussed in the next section, excavation for the proposed building and service trenches shall be carried out with Type 3 Soil geometry, with sidewalls to be constructed no steeper than 1H:1V from the base of the excavation.

Excavation sidewalls will need to be continuously reviewed for evidence of instability and ground water seepage, particularly following periods of heavy rain or thawing. When required, remedial action must be taken to ensure the continued stability of excavation slopes and the safety of the workers.

It is important to note that soils encountered in the construction excavations may vary significantly across the site. Our soil classifications are based solely on the materials encountered in the boreholes advanced on site. The contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions are encountered at the time of construction, we recommend that GEI be contacted immediately to evaluate the conditions encountered.

5.2. Temporary Protection Systems

Considering the depth of excavation and space needed for an open excavation, and for added groundwater control as discussed in the next section, temporary protection systems may be considered to limit the size of the excavation.

The design and construction of the temporary protection systems is the responsibility of the contractor. The lateral pressure distribution acting on the protection/shoring system, is a function of the construction sequence and the relative flexibility of the wall, and these factors should be taken into consideration when designing the shoring system. All protection systems should be designed by a Professional Engineer experienced in such designs, who will determine an appropriate support system.

The soil parameters that may be used for design of temporary protection systems with horizontal ground surface are below.

Table 5-2. Soil Parameters for Temporary Protection Systems

Soil Type	Effective Unit Weight γ' (kN/m ³)	Active Lateral Earth Pressure Coefficient (Ka)	At-rest Lateral Earth Pressure Coefficient (Ko)	Passive Lateral Earth Pressure Coefficient (Kp)
Existing Fill	20	0.36	0.53	2.77
Very Stiff to Hard Clayey Silt or Silty Clay or Silt and Clay	9 (*)	0.33	0.50	3.0
Compact to Dense Sand and Silt	10 (*)	0.33	0.50	3.0

(*) submerged unit weight

The temporary protection systems must be designed to resist any surcharge loads, such as those imposed by the excavator and any construction equipment. The sheet piling would need to be driven to an adequate depth to resist unbalanced lateral loading.

Minimum support system requirements for steeper excavations, are stipulated in Sections 235 through 238 and 241 of the OHSA and include provisions for timbering, shoring and moveable trench boxes. To reduce the potential for instability of the trench excavations, materials excavated from the service trenches and/or other fill materials, or heavy equipment should not be placed near the crest of the trench excavations.

5.3. Temporary Construction Groundwater Control

As noted in the last section, the excavation is anticipated to extend as deep as 8.0 m depth below the existing grade.

The stabilized groundwater levels ranged from 5.8 to 6.5 m (Elev. 247.2 to 247.5) on January 07, 2025. It is noted that the groundwater in the sand/gravelly sand/sand and gravel appears to be under some slight artesian pressure. An excavation that penetrates the upper cohesive layers and extends into the more permeable sand/gravelly sand/sand and gravel layers will encounter more groundwater.

The excavation will extend through the surficial topsoil, fill, clayey silt, silty clay, sand and silt and silt and clay. Conventional sump pumping should suffice to control ground water seepage for excavations to about 5 m depth, (above the groundwater level). However, deeper excavation for the wet/dry wells will extend approximately 0.5 to 2.5 m below the groundwater level. The clayey silt, silty clay and silt and clay will have low seepage volumes. Excavations much deeper into the more permeable materials like wet sand and gravel, gravelly sand and sand (high seepage volumes), groundwater seepage is envisioned to be controlled by sump pumping from multiple pumps or sumps, created with a corrugated steel pipe filled with gravel. Depressurization may be required for excavation into the pervious layers below the cohesive layers.

The exact scenario where certain groundwater control techniques will work, are directly correlated to how coarse/fine the native soils are in an excavation, and both the lateral and vertical extent of the wet

cohesionless deposits. If the groundwater table is not controlled during construction, the base of the excavations will be unstable.

It is recommended to carry out the work during the dry time of the year, when the ground water table is lowest, to mitigate groundwater control measures. Also reducing the size of the excavation that is open at any one time, will aid in reducing groundwater control requirements.

Based on the above, a Permit-to-Take-Water (PTTW) is likely not required; however, registry on the Environmental Activity and Sector Registry (EASR) system may be required for the deep excavation and may be a prudent action to allow for areas of greater groundwater seepage with no work stoppage.

When design details are established, a hydrogeological investigation may be required to determine dewatering rates, and a need for registration on the EASR system or a PTTW.

5.4. Compaction Specifications

SPmdd is the specification to indicate the degree to which soil or aggregate is compacted. To achieve the specified SPmdd as indicated in this report, all soils or aggregates must be placed in lift thicknesses no greater than 200 mm. If this is not the case, only the upper portion of the lift will be adequately compacted, and the lower portion of the lift has a high probability of not meeting compaction specifications. In addition, industry standard equipment used to determine the degree of compaction, consists of nuclear densometers. These devices have an inherent limitation in that they cannot test beyond 300 mm in depth, and so the degree of compaction beyond this depth cannot be quantitatively determined.

Along with lift thickness, ensuring that the soil or aggregate is within 2% of its optimum moisture content ensures that the specified compaction can be reached. If the soil or aggregate is too dry/wet, it is either very difficult or impossible to reach the specified compaction. This is especially true for when higher compaction specifications such as 98% and 100% SPmdd are required.

Moisture can be increased by adding water and mixing the soil prior to re-use, blending the soil with wetter material, or by importing soil to the site that is at optimum and can be readily compacted.

Moisture can be reduced by tilling or spreading out the soil to dry or blending it with drier material. In-situ moisture contents can change based on the season and local groundwater levels, and can also change for stockpiled material due to precipitation. Zones of the fine-grained soil (clayey silt, silty clay and silt and clay) beneath the site, may have zones of higher moisture contents. Reducing moisture in the cohesive soil can be attempted but might not be practical. If moisture is too high, compaction specifications may not be achieved. A sheepfoot compactor is required for cohesive soil.

In addition to the above compaction specifications, in any areas where compacted fill will be placed over the exposed native soil subgrade, any loose, soft, wet, organic or unstable areas should be sub-excavated, and backfilled with clean earth fill or Granular 'B' (OPSS.MUNI 1010) compacted to a minimum of 95% SPmdd. This recommendation applies to site servicing and pavement subgrades. Where structures/buildings require upfilling beneath the structure, the fill should be compacted to 100% SPmdd.

5.5. Quality Verification Services

On-site quality verification services are an integral part of the geotechnical design function, and for foundations, engineered fill and retaining walls, are required under the Ontario Building Code. Quality verification services are used to confirm that construction is being conducted in general conformance with the requirements, as outlined in the drawings, reports and specifications prepared for the proposed development.

GEI can provide all the on-site quality verification services outlined below:

- The subgrade for shallow foundations must be field reviewed by the geotechnical engineer per the OBC;
- Installation of retaining structures over 1.0 m high and related backfilling operations must be field reviewed on a continuous basis by the geotechnical engineer as required in the OBC;
- Part-time monitoring of the subgrade support capabilities, material quality, lift thickness, moisture content, degree of compaction, etc. is recommended for the following areas to ensure the recommendations within this report are followed and they perform adequately in the long-term:
 - Slab-on-grades; and
 - Bedding/backfilling of site servicing.
- Testing of the concrete (compressive strength, slump, air content, etc.) are recommended to ensure that the quality of the materials being brought to site meet the requirements of the project.

5.6. Site Work

The soils found at this site will become weakened when subjected to traffic, particularly when wet. If there is site work conducted during periods of wet weather, then it can be expected that the subgrade will be disturbed, unless an adequate granular working surface is provided to protect the integrity of the subgrade soils from construction traffic. Subgrade preparation works cannot be adequately accomplished during wet weather, and the project must be scheduled accordingly. The disturbance caused by the traffic, can result in the removal of disturbed soil and use of granular fill material for site restoration or underfloor fill, that is not intrinsic to the project requirements.

The most severe loading conditions on the subgrade, may occur during construction. Consequently, special provisions such as end dumping and forward spreading of earth and aggregate fills, restricted construction lanes, and half-loads during paving and other work may be required, especially if construction is conducted during unfavourable weather.

If construction proceeds during freezing weather conditions, adequate temporary frost protection for the founding subgrade and concrete must be provided. The soil at this site is susceptible to frost damage. Consideration must be given to frost effects, such as heave or softening, on exposed soil surfaces in the context of this project development.

6. Limitations and Conclusions

6.1. Limitations

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

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

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

This report was authorized by, and prepared by GEI for, the account of Ainley & Associates Limited. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. GEI accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

6.2. Conclusions

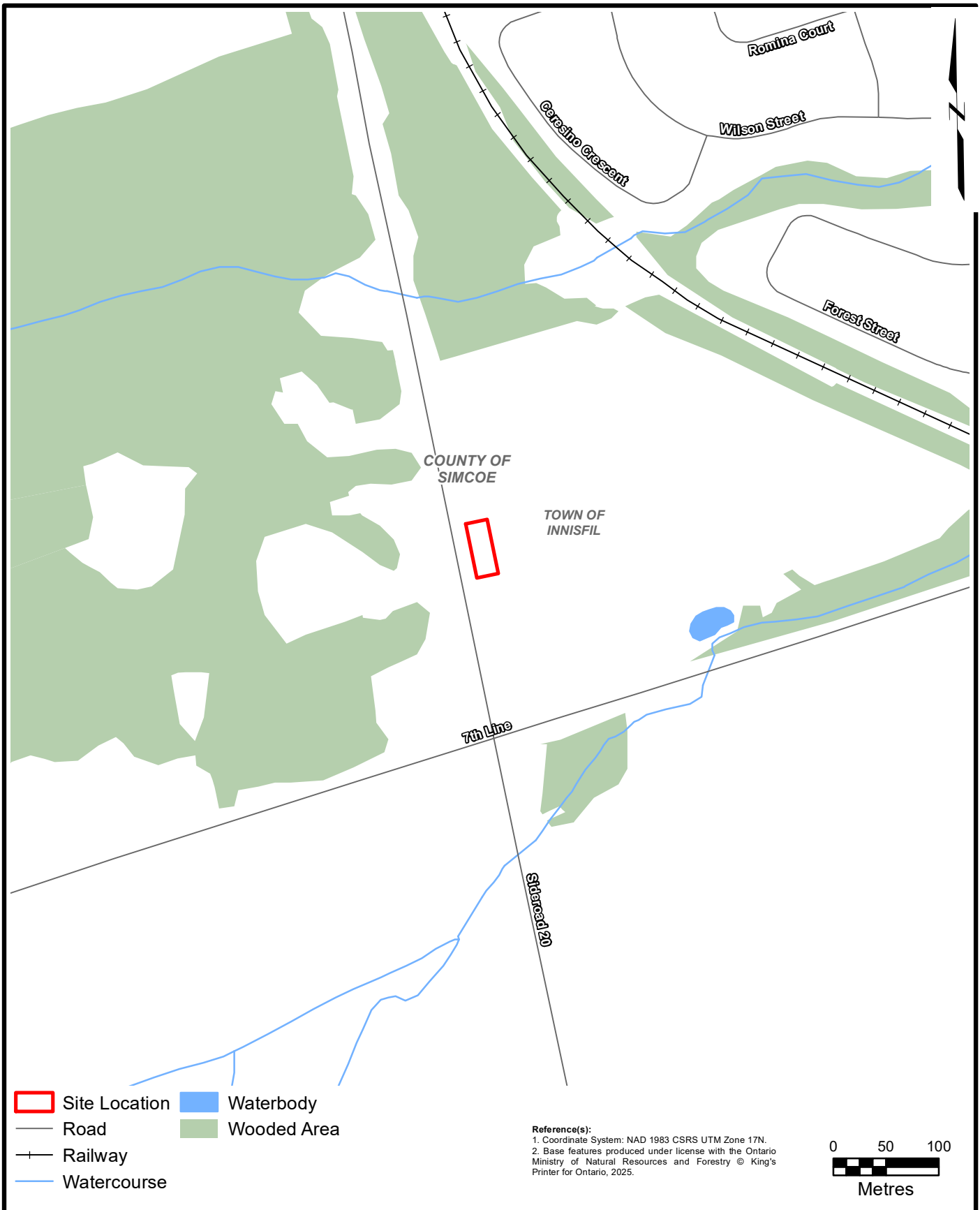
It is recognized that municipal/regional governing bodies, in their capacity as the planning and building authority under Provincial statutes, will make use of and rely upon this report, cognizant of the limitations thereof, both as are expressed and implied.

We trust this report is complete within our terms of reference, and the information presented is sufficient for your present purposes. If you have any questions, or when we may be of further assistance, please do not hesitate to contact our office.

Figures

Site Location Plan

Borehole Location Plan



Geotechnical Investigation
1460 7th Line
Town of Innisfil, Ontario



SITE LOCATION PLAN

Ainley Group

Project 2403367

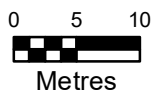
February 2025


Fig. 1



-  Site Location
-  Road
-  Approximate Borehole/Monitoring Well Location

Reference(s):
 1. Coordinate System: NAD 1983 CSRS UTM Zone 17N.
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2025.
 3. Orthoimagery © First Base Solutions, 2025. Imagery taken in 20XX.



<p>Geotechnical Investigation 1460 7th Line Town of Innisfil, Ontario</p>		<p>BOREHOLE LOCATION PLAN (AERIAL)</p>
<p>Ainley Group</p>	<p>Project 2403367</p>	<p>February 2025 Fig. 2</p>

Appendix A Borehole Logs

RECORD OF BOREHOLE No. 01



Project Number: 2403367
 Project Client: Ainley Group
 Project Name: 20th Sideroad Sewage Pumping Station
 Project Location: 1460 7th Line, Innisfil, ON
 Drilling Location: See Borehole Location Plan
 Local Benchmark: _____

Drilling Method: Solid and Hollow Stem Drilling Machine: Rubber Tire
 Logged By: BH Northing: 4905947 Date Started: Dec 19/24
 Reviewed By: MR Easting: 613787 Date Completed: Dec 19/24

LITHOLOGY PROFILE	SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)						
	DESCRIPTION	Sample Type	Sample Number	Recovery (%)			SPT "N" Value	Shear Strength Testing (kPa)	Penetration Testing	Atterberg Limits		Water Content (%)	GR	SA	SI	CL		
0.0 - 0.3	TOPSOIL: 305 mm	SS 1	1	100	5	253.1												
0.3 - 0.8	FILL: Sandy silt, some clay, trace gravel, some organics, loose, brown, moist	SS 2	2	100	15	252.3												
0.8 - 1.0	CLAYEY SILT: Very stiff, grey, moist to wet	SS 3	3	100	23	252.0												
1.0 - 1.2		SS 4	4	100	24	251.8												
1.2 - 1.5		SS 5	5	100	26	251.5												
1.5 - 2.0		SS 6	6	100	19	250.5												
2.0 - 2.5		SS 7	7	100	20	250.0												
2.5 - 7.6	SILTY CLAY: Some sand, very stiff, grey, very moist to wet	SS 8	8	100	16	245.5												
7.6 - 8.5		SS 9	9	100	23	244.4												
8.5 - 10.7	SAND AND GRAVEL: Trace silt, very dense, grey, wet	SS 10	10	50	55	242.4												
10.7 - 12.2	SAND: Trace gravel, trace silt, compact, grey, wet	SS 11	11	100	25	240.9												
12.2 - 12.6	Borehole Terminated at 12.6 m					240.5												

Groundwater depth encountered on completion of drilling: 3.7 m. Cave depth after auger removal: 9.1 m.
 Groundwater depth observed on: Jan 07/25 at depth of: 5.8 m. Groundwater Elevation: 247.3 m

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

Scale: 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. 02



Project Number: 2403367
 Project Client: Ainley Group
 Project Name: 20th Sideroad Sewage Pumping Station
 Project Location: 1460 7th Line, Innisfil, ON
 Drilling Location: See Borehole Location Plan
 Local Benchmark: _____

Drilling Method: Solid and Hollow Stem Drilling Machine: Rubber Tire
 Logged By: BH Northing: 4905927 Date Started: Dec 19/24
 Reviewed By: MR Easting: 613784 Date Completed: Dec 20/24

LITHOLOGY PROFILE	SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)					
	DESCRIPTION	Sample Type	Sample Number	Recovery (%)			SPT "N" Value	Shear Strength Testing (kPa)	Penetration Testing	Atterberg Limits		Water Content (%)	GR	SA	SI	CL	
0.0 - 0.2 TOPSOIL: 255 mm	SS	1	100	10		253.7	○ 10		○ 20								
0.2 - 1.5 FILL: Sandy silt, some clay, some organics, compact, brown, moist	SS	2	100	11		253.5	○ 11		○ 21								
1.5 - 2.5 CLAYEY SILT: Hard, brownish grey to grey, moist	SS	3	100	33		252.2	○ 11		○ 16				0	0	73	27	
	SS	4	100	33		252.0	○ 33		○ 16								
	SS	5	100	44		250.0	○ 33		○ 15								
--- Very stiff to stiff ---	SS	6	100	24		248.0	○ 44		○ 19								
	SS	7	100	14		246.0	○ 24		○ 21								
--- Wet ---	SS	8	100	16		244.6	○ 14		○ 28								
	SS	9	100	40		244.6	○ 16		○ 15				0	10	73	17	
9.1 - 10.7 SILT: Some clay, some sand, dense, grey, moist	SS	10	50	45		243.0	○ 40		○ 19								
10.7 - 12.2 GRAVELLY SAND: Trace silt, dense, grey, wet	SS	11	100	16		241.5	○ 45		○ 16								
12.2 - 12.6 SAND: Trace silt, trace gravel, compact, brown, wet	SS	11	100	16		241.1	○ 16										
Borehole Terminated at 12.6 m																	

Groundwater depth encountered on completion of drilling: 6.1 m. Cave depth after auger removal: Open
 Groundwater depth observed on: Jsn 07/25 at depth of: 6.5 m. Groundwater Elevation: 247.2 m

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

Scale: 1 : 100
 Page: 1 of 1

RECORD OF BOREHOLE No. 03



Project Number: 2403367
 Project Client: Ainley Group
 Project Name: 20th Sideroad Sewage Pumping Station
 Project Location: 1460 7th Line, Innisfil, ON
 Drilling Location: See Borehole Location Plan
 Local Benchmark: _____

Drilling Method: Solid and Hollow Stem Drilling Machine: Rubber Tire
 Logged By: BH Northing: 4905904 Date Started: Dec 19/24
 Reviewed By: MR Easting: 613790 Date Completed: Dec 19/24

LITHOLOGY PROFILE	SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)						
	DESCRIPTION	Sample Type	Sample Number	Recovery (%)			SPT "N" Value	Shear Strength Testing (kPa)	Penetration Testing	Atterberg Limits		Water Content (%)	GR	SA	SI	CL		
0.0 - 0.253.9	TOPSOIL: 50 mm FILL: Sandy silt, some clay, some organics, trace gravel, loose, brown, moist	SS	1	100	7	0	7											
0.253.9 - 0.273.2	SAND AND SILT: Some clay, trace gravel, compact, brown, moist	SS	2	100	16	0.2539	16											
0.273.2 - 0.283.2		SS	3	100	18	0.2732	18											
0.283.2 - 0.293.2		SS	4	100	16	0.2832	16											
0.293.2 - 0.303.2		SS	5	100	22	0.2932	22											
0.303.2 - 0.313.2	--- Dense, grey ---	SS/AS	6	35	44	0.3032	44											
0.313.2 - 0.323.2	SILT AND CLAY: Trace sand, very stiff, grey, very moist	SS	7	100	15	0.3132	15											
0.323.2 - 0.333.2		SS	8	100	15	0.3232	15											
0.333.2 - 0.343.8	SILT: Some sand, some clay, dense, grey, moist	SS	9	100	33	0.3332	33											
0.343.8 - 0.353.3	SAND: Trace to some gravel, trace silt, compact, brown, wet	SS	10	50	27	0.3438	27											
0.353.3 - 0.363.3		SS	11	100	12	0.3533	12											
0.363.3 - 12.6	Borehole Terminated at 12.6 m					12.6												

Groundwater depth encountered on completion of drilling: 9.6 m. Cave depth after auger removal: Open
 Groundwater depth observed on: Jan 07/25 at depth of: 6.4 m. Groundwater Elevation: 247.5 m

GEI CONSULTANTS
 Canada Ltd.
 www.geiconsultants.com

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

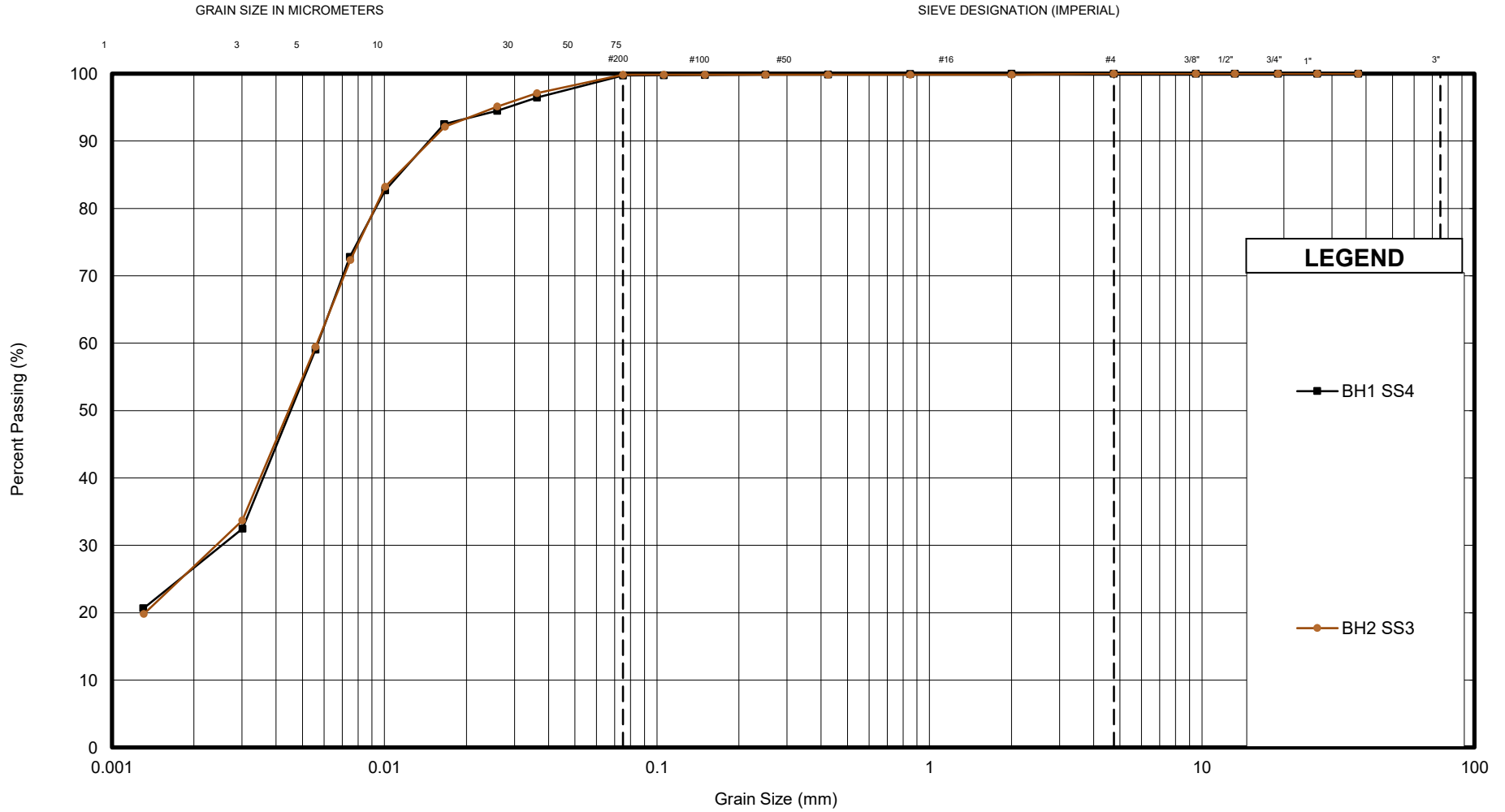
Scale: 1 : 100
 Page: 1 of 1

Geotechnical Investigation and Report
Proposed 20th Sideroad Sewage Pumping Station
1460 7th Line, Town of Innisfil, Ontario
February 4, 2025, Proj. No.: 2403367

Appendix B Geotechnical Laboratory Data

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



Sample	Description	Gr.	Sa.	Si.	Cl.	D ₁₀	D ₃₀	D ₆₀	C _u	C _c
BH1 SS4	CLAYEY SILT	-	-	73	27	-	0.003	0.006	-	-
BH2 SS3	CLAYEY SILT	-	-	73	27	-	0.002	0.006	-	-

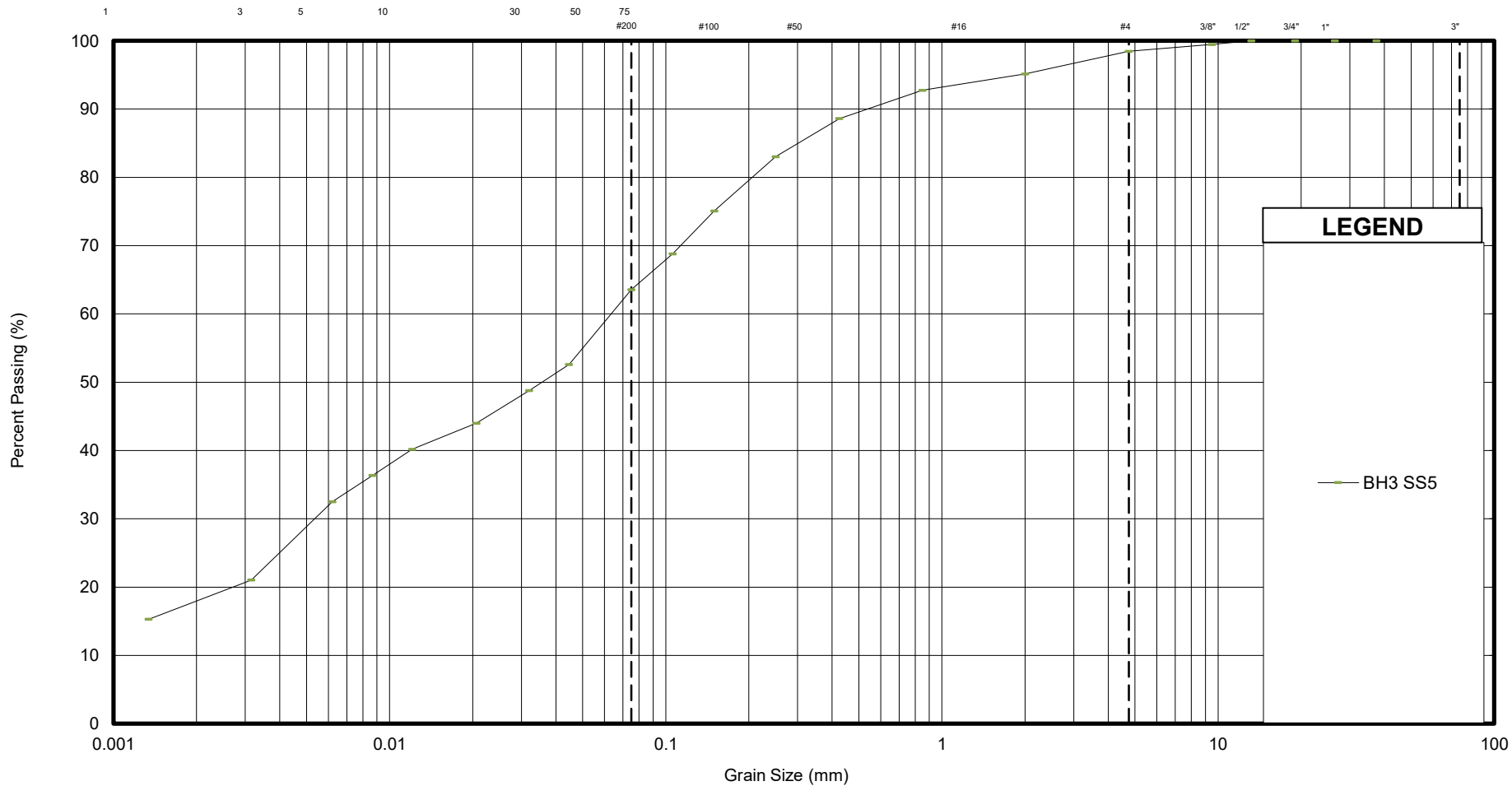
	GRAIN SIZE DISTRIBUTION - 20th Sideroad Sewage Pumping Station	FIGURE No. B1
	CLAYEY SILT	REF. No. 2403367
		DATE February 2025

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse

GRAIN SIZE IN MICROMETERS

SIEVE DESIGNATION (IMPERIAL)



LEGEND

— BH3 SS5

Sample	Description	Gr.	Sa.	Si.	Cl.	D ₁₀	D ₃₀	D ₆₀	C _u	C _c
BH3 SS5	SILT AND SAND, Some Clay, Trace Gravel	2	35	45	18	-	0.005	0.063	-	-

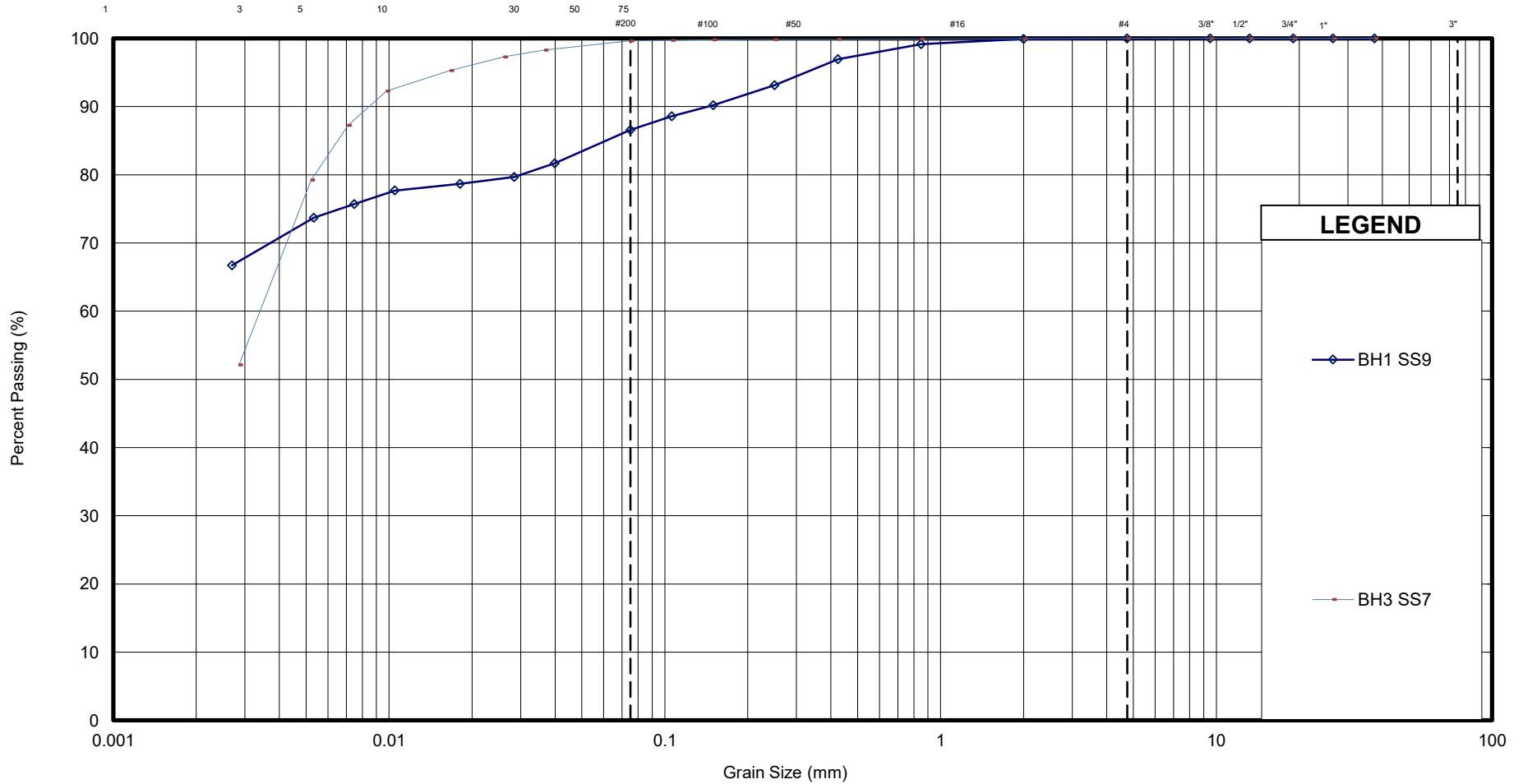
	GRAIN SIZE DISTRIBUTION - 20th Sideroad Sewage Pumping Station	FIGURE No. B2
	SILT AND SAND	REF. No. 2403367
		DATE February 2025

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse

GRAIN SIZE IN MICROMETERS

SIEVE DESIGNATION (IMPERIAL)



Sample	Description	Gr.	Sa.	Si.	Cl.	D ₁₀	D ₃₀	D ₆₀	C _u	C _c
BH1 SS9	SILTY CLAY, Some Sand	-	13	24	63	-	-	0.002	-	-
BH3 SS7	SILT AND CLAY	-	-	55	45	-	-	0.003	-	-

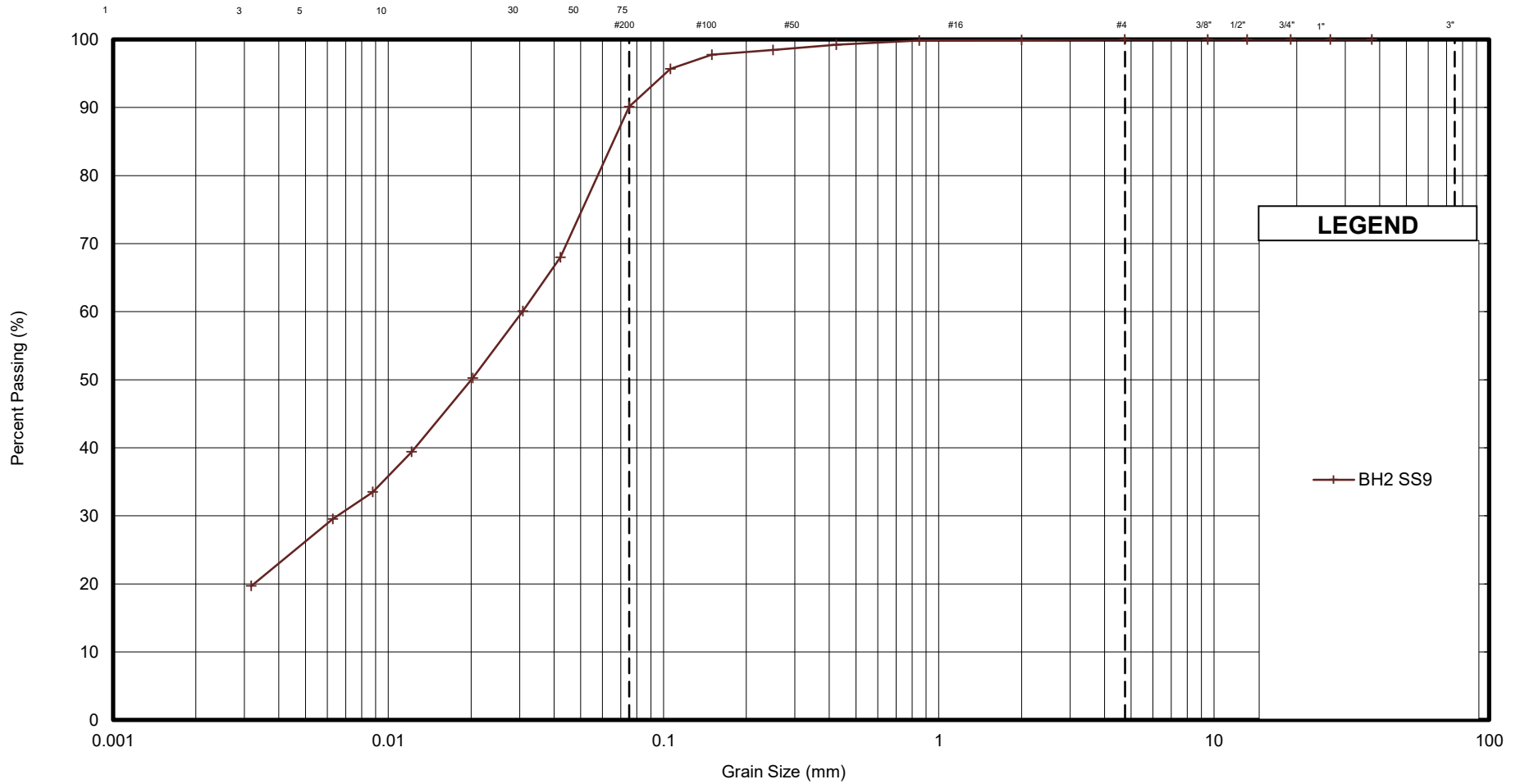
	GRAIN SIZE DISTRIBUTION - 20th Sideroad Sewage Pumping Station	FIGURE No. B3
	SILTY CLAY/SILT AND CLAY	REF. No. 2403367
		DATE February 2025

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse

GRAIN SIZE IN MICROMETERS

SIEVE DESIGNATION (IMPERIAL)



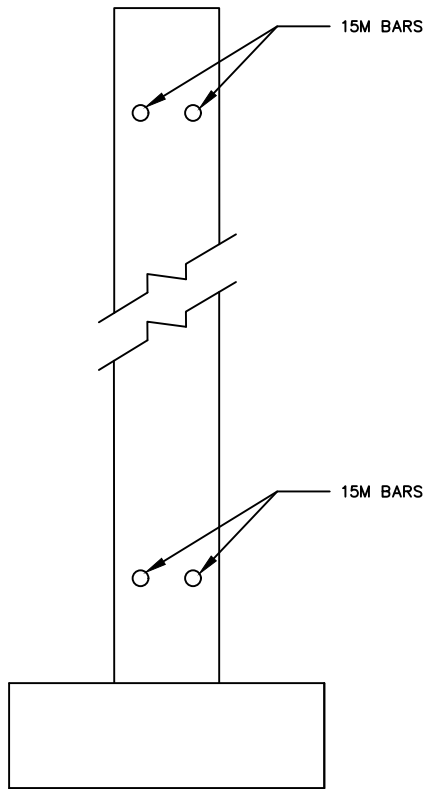
LEGEND

—+— BH2 SS9

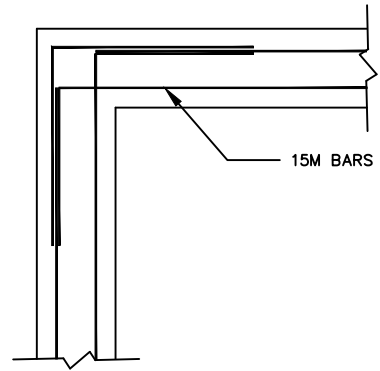
Sample	Description	Gr.	Sa.	Si.	Cl.	D ₁₀	D ₃₀	D ₆₀	C _u	C _c
BH2 SS9	SILT, Some Clay, Some Sand	-	10	73	17	-	0.007	0.031	-	-

	GRAIN SIZE DISTRIBUTION - 20th Sideroad Sewage Pumping Station	FIGURE No. B4
	SILT	REF. No. 2403367
		DATE February 2025

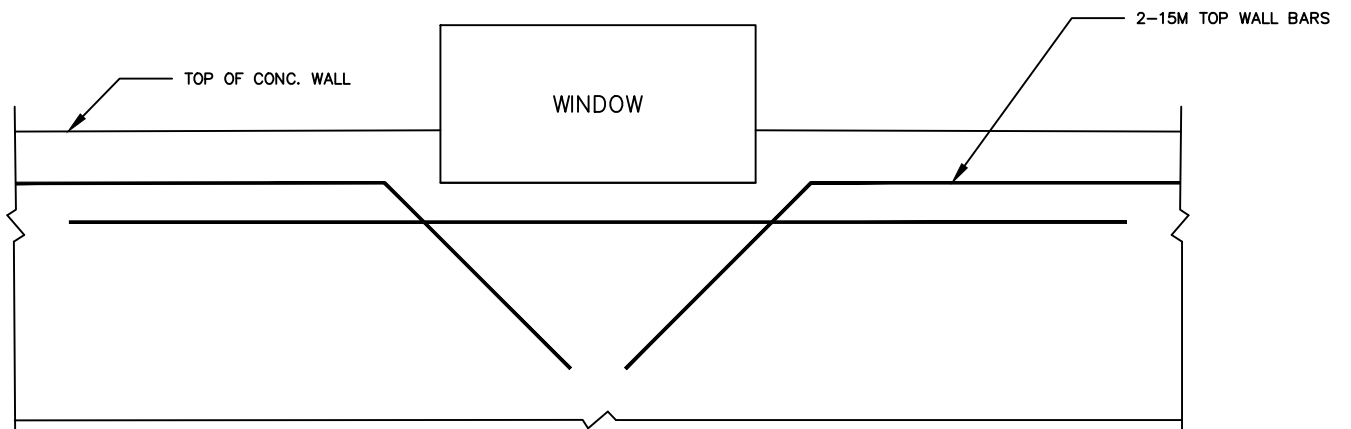
Appendix C Typical Details



TYPICAL REINFORCED WALL



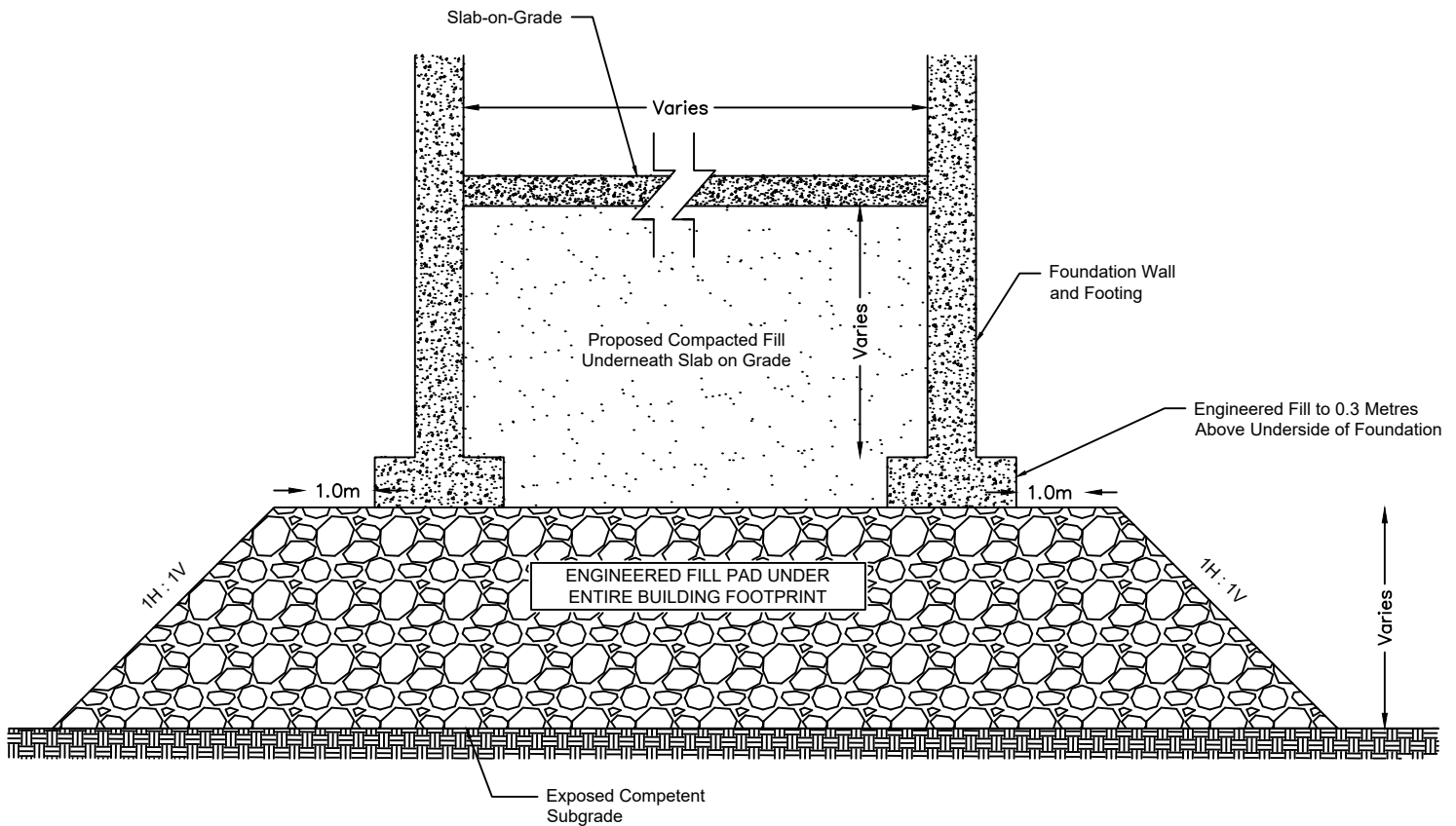
TYPICAL SPLICING AT CORNERS



TYPICAL WINDOW REINFORCING

Notes:

1. Engineered Fill compacted to 98% Standard Proctor Maximum Dry Density (SPMDD) and inspected under the full time supervision of GEI.
2. Engineered fill must be placed in loose lifts of 200 mm or less and then compacted as noted above.
3. Interior non-structural compacted fill compacted to 98% SPMDD with recommended part-time inspection.



Appendix D Certificates of Chemical Analysis

C.O.C.: -

REPORT No: 25-000597 - Rev. 0

Report To:

GEI Consultants
 647 Welham Rd, Unit 14
 Barrie, ON L4N 0B7

CADUCEON Environmental Laboratories

112 Commerce Park Dr Unit L
 Barrie, ON L4N 8W8

Attention: Mohammad Razeen

DATE RECEIVED: 2025-Jan-07
 DATE REPORTED: 2025-Jan-16
 SAMPLE MATRIX: Soil

CUSTOMER PROJECT: 2403367
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Solid)	2	OTTAWA	LMACGREGOR	2025-Jan-10	A-IC-01	SM 4110B
Conductivity Meter (Solid)	2	OTTAWA	PLUSSIER	2025-Jan-09	A-COND-03	MECP E3530
pH Meter (Solid)	2	OTTAWA	PLUSSIER	2025-Jan-09	pH-03	MECP E3530
Redox Potential (Solid)	2	RICHMOND_HILL	JSAINT	2025-Jan-09	In House	SM 2580
Sulphide Solid (Subcontracted)	2	TESTMARK	TSEXSMITH	2025-Jan-09		Subcontracted

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an *

Parameter	Units	R.L.	Client I.D.	
			BH1 SS3	BH2 SS4
			Sample I.D.	Sample I.D.
			25-000597-1	25-000597-2
			Date Collected	Date Collected
			2024-12-19	2024-12-19
			-	-
Conductivity @25°C	mS/cm	0.001	0.147	0.086
Resistivity (calculated)	Ohms*cm	-	6800	11600
pH @25°C	-	-	7.91	8.08
Redox Potential	mV	-	434	357
Chloride	µg/g	5	20	25
Sulphate	µg/g	10	21	17



Michelle Dubien
Data Specialist

Subcontracted Analyses

			Client I.D.	BH1 SS3	BH2 SS4
			Sample I.D.	25-000597-1	25-000597-2
			Date Collected	2024-12-19	2024-12-19
Parameter	Units	R.L.		-	-
Sulphide	µg/g	-		1.5	0.3



Michelle Dubien
Data Specialist

Appendix D

Environmental Constraints Analysis of Natural Heritage Features



Environmental Assessments & Approvals

November 22, 2021

AEC21-242

Ainley Group
280 Pretty River Parkway
Collingwood ON
L9Y 4J5

Re: **Environmental Constraints Analysis of Natural Heritage Features
20th Sideroad Sewage Pumping Station
Town of Innisfil**

Dear Ms. Smeh:

Azimuth Environmental Consulting, Inc. (Azimuth) was retained to provide an Environmental Constraints Analysis (ECA) of the potential natural heritage constraints which would require consideration in the evaluation of potential locations for the 20th Sideroad Sewage Pumping Station (SPS) as part of the Schedule B Municipal Class Environmental Assessment (MCEA). Potential locations for the 20th Sideroad SPS are being explored as part of the MCEA within the identified study area as provided by Ainley Group (Ainley) and depicted in Figures 1-3. Preliminary constraints are presented in this ECA, as they relate to Key Natural Heritage Features (KNHFs), as defined by Provincial Planning Policy. KNHFs may include woodlands, wetlands, valleylands, Significant Wildlife Habitat (SWH), fish habitat, and habitat for Species at Risk (SAR) protected under Ontario's *Endangered Species Act, 2007* (ESA).

The ECA includes a summary of recommendations to be considered for future stages of the project including recommendations for additional environmental field study and evaluation, depending upon the ultimate proposed location for 20th Sideroad SPS.

Information provided herein will ultimately be included in an Environmental Impact Study (EIS) report once design details are known, and all stages of development are understood in order to adequately identify mitigation requirements for natural heritage protection, and permitting requirements from the regulatory agencies.



1.0 STUDY APPROACH

Prior to undertaking field studies, an initial classification of habitats was undertaken using recent air photo imagery for an area encompassing the study area and adjacent lands (*i.e.* lands within approximately 120 metres (m)). A field survey was completed by an Azimuth ecologist on October 1 and November 3, 2021 and environmental features mapping (Figure 2E; attached) illustrates information derived from a combination of desktop mapping resources and field conclusions. The high level field assessment for this ECA was restricted to a ‘windshield’ survey from within the road right-of-way (ROW). Detailed environmental investigations were not undertaken as part of the ECA. Vegetation units were generally classified using Ecological Land Classification for Southern Ontario (ELC) protocols as illustrated in Figure 2E.

2.0 SUMMARY OF NATURAL HERITAGE CONDITIONS

2.1 Vegetation and Vegetation Communities

The study area includes several natural heritage components including woodlands, wetlands and meadows that are intermixed with agricultural, rural residential and commercial lands. A total of thirteen vegetation communities were identified by Azimuth in 2021 (Figure 2E).

Non-provincially significant unevaluated wetland exists within the study area and adjacent lands (Figure 3E).

The ROW was typically composed of open ‘field’ habitat composed of opportunistic herbaceous/grass species.

Riparian vegetation typically exists in proximity to the mapped watercourses within the study area and within the ROW (Figure 2E).

Although not considered a KNHF, many of the rural properties are treed and include hedgerows that border the properties.

There were no Butternut (Threatened) observed during Azimuth’s 2021 field investigations although, we are aware that Butternut have been documented within the southernmost deciduous woodland community (FODM5-2, Figure 2E).

2.2 Wildlife and Wildlife Habitat

The Ministry of Natural Resources and Forestry’s (MNRF) NHIC database identifies records for five Species at Risk: Butternut (Endangered), Blanding’s Turtle (Threatened),



Eastern Meadowlark (Threatened), Snapping Turtle (Special Concern) and a Restricted Species.

2.3 Watercourses and Fish Habitat

The study area includes two, mapped watercourses that convey flow from west to east (Figures 2E and 3E), ultimately converging approximately 1.3 kilometer (km) east of the 20th Sideroad and continuing eastward in the 7th Line roadside ditch before discharging directly to Lake Simcoe in Nantyr Park. Background mapping from the Lake Simcoe Region Conservation Authority's (LSRCA) Innisfil Creeks Subwatershed Plan (2012) identifies both systems as headwater tributaries of Bank's Creek, with historic record of coldwater conditions suitable for coldwater adapted Brook Trout (*Salvelinus fontinalis*) (LSRCA, 2012). The subwatershed report notes that Banks Creek is thought to no longer have its population, however the system is classified as coldwater, and it remains unconfirmed if the population has persisted in some capacity (LSRCA, 2012).

Background mapping from the LSRCA (2012) indicates that portions of Banks Creek are considered Municipal Drains regulated under the *Ontario Drainage Act*. LSRCA identifies the north crossing as 'Drain Class F' (typified by intermittent flow conditions and usually dry in the summer), while the southern crossing is mapped as Drain Class A', owing to the occurrence of fish (and therefore direct fish habitat). The classified drain segments on Banks Creek are shown on Figure 3E. Although LSRCA identifies the occurrence of drains, both the Town of Innisfil Municipal Drain Map (Town of Innisfil, 2016) and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) 'AgMaps' do not. Both have limits identified as 'constructed drains' that generally align with the watercourses, with the northern drain identified as the 'Hislop Drain', and the southern Drain the 'Johah Drain' (OMAFRA, 2020). Since both appear to be constructed features (expecting below ground), and not in reference to the creeks themselves, they were not included in the environmental mapping on Figure 3E. Further, the AgMaps do not highlight either as being classified by Fisheries and Oceans Canada (DFO) in accordance with the DFO Drain Classification System (2017). Given that the Town of Innisfil Drain mapping, and OMAFRA AgMaps with DFO reference, supercede the LSRCA mapping, both watercourses are not being considered Municipal Drains.

Both watercourses in the study area are regulated by the LSRCA as shown on Figure 3E, and will require site specific *Fisheries Act* review for works that have the potential to impact fish habitat (DFO, 2017).

There are no known aquatic SAR known to occur within the Lovers Creek watershed (LSRCA, 2007; DFO, 2019).



3.0 SUMMARY OF CONSTRAINTS AND OPPORTUNITIES

Azimuth has identified several KNHF within the study area based on a review of site conditions. Preliminary Environmental Constraints mapping for the study area is presented in Figure 3E.

3.1 Wetlands

Wetland habitat has been identified within the study area (Figure 3E).

3.2 Woodlands

Woodland habitat has been identified within the study area (Figure 2E). Several of these woodland area are contiguous with adjacent woodland areas and therefore, may be considered to be significant as per local, regional and provincial planning policies. The woodlands that may be considered significant are highlighted within Figure 3E.

3.3 Watercourses

They study area includes two watercourses that function as fish habitat (Figure 2E).

3.4 Significant Wildlife Habitat

Detailed studies are required to confirm the presence/absence of SWH. Typically, SWH functions are associated with other KNHF such as woodlands and wetlands but would require further assessment to confirm.

3.5 Species at Risk

The following list only considers species that have a moderate or high possibility of occurring within the study area:

- Blanding's Turtle (Threatened);
 - Potential habitat for Blanding's Turtle within wetland habitat;
- Butternut (Endangered);
 - While no Butternut were identified during 2021 field surveys, potential habitat for this species occurs within the forest and treed swamp communities in addition to individual trees on rural properties or within hedgerows;
 - Butternuts are known to occur within the southernmost woodland on the east side of 20th Sideroad (Figure 3E);
- Eastern Meadowlark (Threatened);
 - Potential habitat for Eastern Meadowlark occurs within the agricultural lands of the study area;
- Endangered Bats (Little Brown Myotis, Northern Myotis and Tri-colored Bat);



- Forest and treed swamp (wetland) habitat provides potential habitat for Endangered bat species.

As illustrated on Figure 2E and 3E, the study area contains woodland, wetland and agricultural lands that may provide habitat for SAR, as discussed above.

4.0 CONSIDERATIONS AND RECOMMENDATIONS

4.1 Aquatic Considerations

Both tributaries of Bank's Creek are considered watercourses protected under the Federal *Fisheries Act*. Any proposal to alter site conditions in water or within lands regulated by the LSRCA (Figure 3E) requires site specific fisheries evaluation of project activities to confirm potential impacts, and mitigation requirements prior to development. Mitigation planning should include best management practices for works around waterbodies, and use of DFO's Standards and Interim Codes of Practice where applicable. Land development with potential for impacts to watercourses requires review in accordance with DFO's 'Projects Near Water'. Coldwater fisheries timing restrictions governed by MNRF are expected to apply for all work around watercourses, to protect fish (either in the study area or downstream) during sensitive spawning periods.

4.2 LSRCA Regulated Lands

Portions of the study area is regulated by the LSRCA as per Ontario Regulation 179/06 (Figure 3E), therefore LSRCA consultation is required prior to site alteration in regulated lands.

4.3 Potential Additional Surveys

The need for additional in-season surveys will depend on the proposed location(s) of the 20th Sideroad SPS. The following additional surveys may be recommended:

- Detailed summer vegetation (late June-August) inventories to further characterize the limits and extent of vegetation communities within the footprint of the 20th Sideroad SPS. This survey will include a screening for SAR flora including a comprehensive search for Butternut trees.
- Complete evening amphibian surveys in the spring to confirm the presence/absence of breeding toads/frogs. Typically, three surveys are undertaken;
- Complete breeding bird surveys in June to confirm the presence/absence of diurnal birds. The number of surveys required will depend on the habitat.
- Should construction of the 20th Sideroad SPS be proposed within woodland



- habitat, a general survey screened for presence of “snag” trees with potential to provide refuge and maternity roosting habitat for bat species listed as Endangered under the ESA (Little Brown Myotis, Nothorn Myotis, and Tri-colored Bat) may be required.
- Obtain up-to-date SAR information from Ministry of Environment, Conservation and Parks (MECP) as required and to determine if any additional SAR need to be considered within the assessment and/or if any SAR have been confirmed within the study area.
 - Consult with the Natural Heritage Information Centre to determine the “Restricted Species” that has been documented within the area;
 - Should SAR be confirmed within the footprint of the 20th Sideroad SPS, consult with MECP to determine if additional species specific surveys are recommended relating to potential SAR habitat. If not, confirm mitigation measures that should be implemented to avoid incidental impact to SAR (*i.e.* exclusion fencing, timing restrictions for tree clearing).
 - Should construction of the 20th Sideroad SPS have the potential to impact fish and fish habitat directly or indirectly, complete an aquatic habitat assessment to confirm potential for fish use in the study area, and classify fish habitat as ‘direct’ (fish occur), ‘seasonal direct’ (fish can access the study area seasonally or under elevated water levels), or ‘indirect’ (no fish occur but drainage discharges to fish that occur downstream).

Subsequent to the completion of the recommended studies, detailed mitigation measures would be outlined in an EIS.

5.0 CONCLUSIONS

Based on our initial assessment, several KNHF’s have been identified within the study area including:

- Wetland;
- Significant Woodland;
- Watercourses - fish habitat;
- Potential SAR and/or SAR habitat; and
- Potential SWH.

Based on the identified features and functions, it is recommended that siting of the 20th Sideroad SPS occur outside/away from of the identified KNHF including the wetland, woodland, watercourses and LSRCA regulated lands, to mitigate potential impacts to the identified KNHF’s, fish and aquatic resources and potential SAR habitat in the study




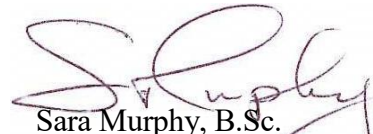
area. Although the FODM5-2 (Figure 2E and 3E) does not meet the size criteria for significance, due to the known presence of Butternut within this woodland, we would recommend that this feature be avoided.

As highlighted in Section 4.3, additional studies will likely be required once the proposed location for the 20th Sideroad SPS is known. The need for specific studies can be recommended once this information is available and should be confirmed in consultation with LSRCA.

Should you have any additional questions or concerns, or wish to discuss further please do not hesitate to contact the undersigned.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.


Lisa Moran, B.Sc.Env.
Terrestrial Ecologist


Sara Murphy, B.Sc.
Senior Aquatic Ecologist/Partner

Attach: Figure 1, Figure 2E, Figure 3E



6.0 REFERENCES

Endangered Species Act, Ontario. (2007). An Act to protect species at risk and to make related changes to other Acts. Bill 184 Chapter 6, Statutes of Ontario 2007.

Fisheries and Oceans Canada. 2017. Guidance for Maintaining and Repairing Municipal Drains in Ontario.

Fisheries and Oceans Canada. 2019. Aquatic Species at Risk Map. <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario. First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Sciences Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Lake Simcoe Region Conservation Authority (LSRCA). 2012. Innisfil Creeks Subwatershed Plan

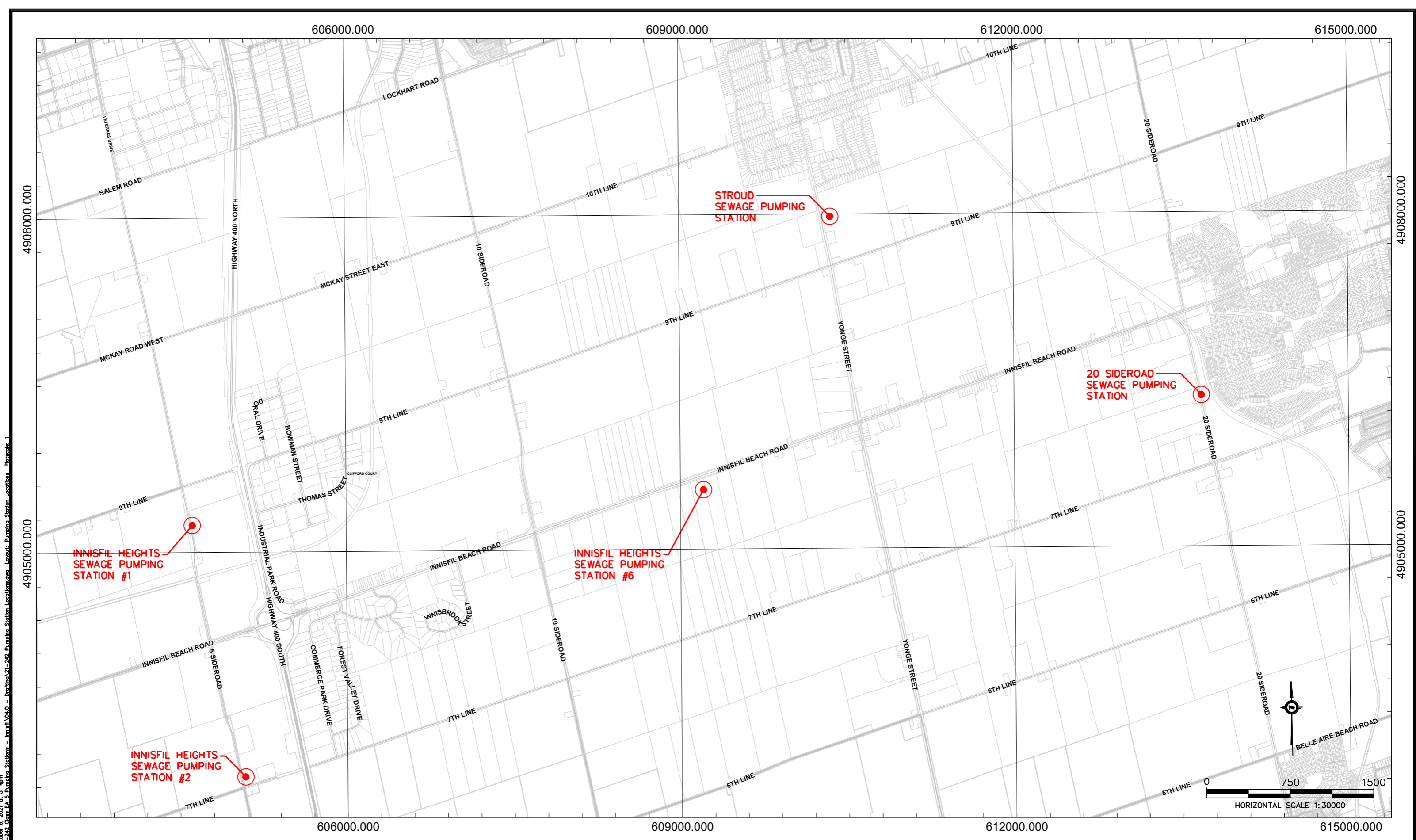
Lake Simcoe Region Conservation Authority (LSRCA). 2021. Online Regulation Mapping. <https://maps.lsrca.on.ca/EH5Viewer/index.html?viewer=LSRCARegulations> Site accessed October 2021.

Ministry of Environment, Conservation and Parks (MECP). 2021. Species at Risk <https://www.ontario.ca/page/species-risk>. Site accessed October 2021.

Ministry of Natural Resources and Forestry (MNR). 2021. Online Make a Map Tool. Website. Available Online: <https://www.ontario.ca/page/make-naturalheritage-area-map> Accessed October 2021

Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). 2017. AgMaps Geographic Information Portal, <https://www.lioapplications.lrc.gov.on.ca/AgMaps/Index.html?viewer=AgMaps.AgMaps&locale=en-CA>

Town of Innisfil. 2016. Municipal Drain Map, <https://innisfil.ca/wp-content/uploads/2020/03/Municipal-Drains-2016-ID-168737-1.pdf>



Picked by: ALU on October 6, 2021 at 5:14pm
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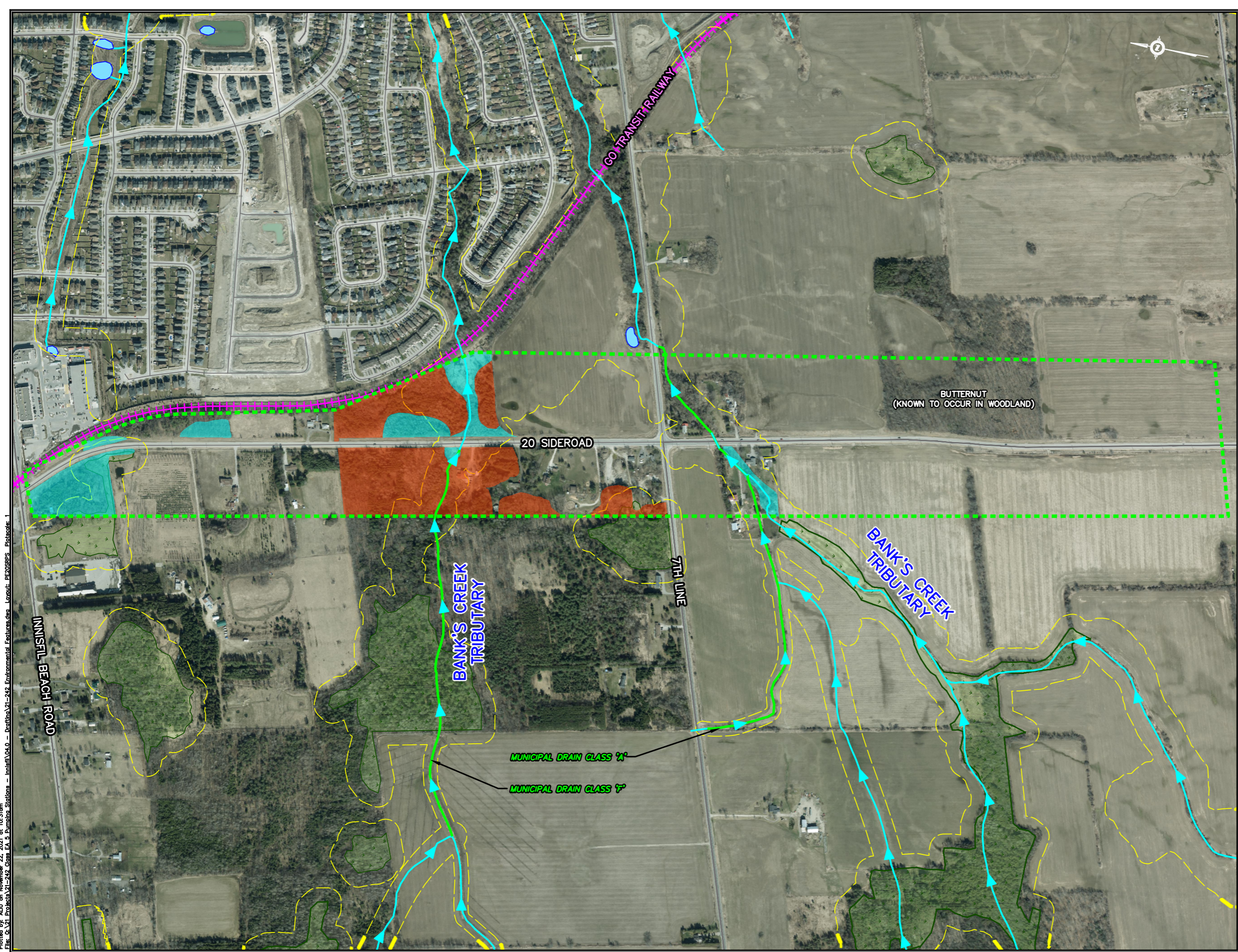


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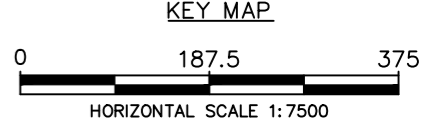
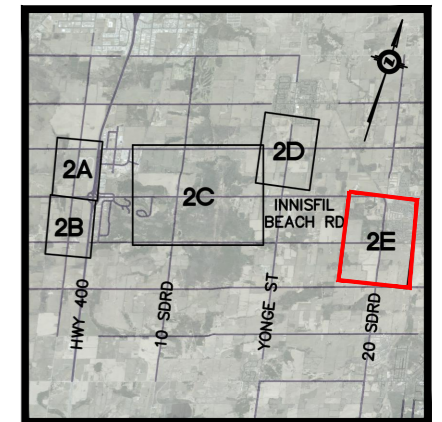
INNSERVICES UTILITIES INC.
 FIVE SEWAGE PUMPING STATIONS
 INNISFIL, ON

PUMPING STATION LOCATIONS

DATE ISSUED:	SEPTEMBER 2021	Figure No.
CREATED BY:	A.L.	1
PROJECT NO.:	21-242	
REFERENCE:	SIMCOE COUNTY	



- LEGEND:**
- - - - - STUDY AREA
 - + + + + + GO TRANSIT RAILWAY
 - ▶—▶—▶ WATERCOURSE (ONTARIO MNRF, 2020)
 - MUNICIPAL DRAIN SEGMENT (LSRCA, 2012)
 - WATERBODY (ONTARIO MNRF, 2020)
 - UNEVALUATED WETLAND (ONTARIO MNRF, 2020)
 - WETLAND
 - - - - - REGULATORY LIMIT (LSRCA, 2021)
 - SIGNIFICANT WOODLAND



**PRELIMINARY ENVIRONMENTAL CONSTRAINTS
20 SIDEROAD PUMPING STATION**

**INNSERVICES UTILITIES INC.
FIVE SEWAGE PUMPING STATIONS**

DATE ISSUED:	NOVEMBER 2021	Figure No.
CREATED BY:	A.L.	3E
PROJECT NO.:	21-242	
REFERENCE:	SIMCOE COUNTY	

Projected by ALU on November 22, 2021 at 10:31am
 File: Q:\21-242-242-04-0 - Innisfil Stations - Innisfil\04.0 - Draft\21-242-Environmental Features.dwg Layout: PE2025RFS_PlotScale_1

Appendix E

Scoped Environmental Impact Study Report



Environmental Approvals

Fisheries & Aquatic Ecology

Terrestrial & Wetland Ecology

Environmental Engineering

Hydrogeology & Contaminant Hydrogeology

Arborist Services

Environmental Site Assessment

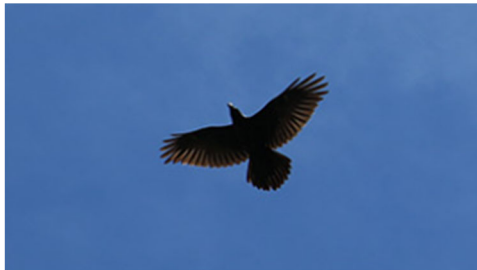
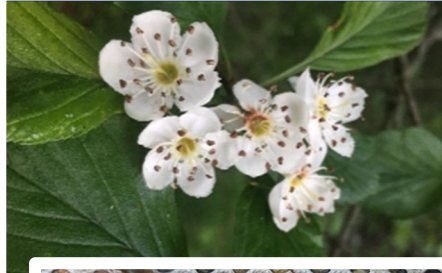
Species at Risk

Project Management

Environmental Impact Assessment

Water and Wastewater Engineering

Environmental Site Inspection / Construction Monitoring



Scoped Environmental Impact Study

1460 7th Line

Town of Innisfil

InnServices Utilities Inc.

Prepared for the Ainley Group

AEC Project No. 21-242 February 2026



Environmental Assessments & Approvals

February 2, 2026

AEC 21-242

Ainley Group
280 Pretty River Parkway
Collingwood ON
L9Y 4J5

Attention: Wendy Smeh, C.E.T., PMP, Project Manager

Re: **Scoped Environmental Impact Study, InnServices Sewage Pumping Station (20th Sideroad), 1460 7th Line, Town of Innisfil**

Dear Wendy Smeh,

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide a Scoped Environmental Impact Study (EIS) for the 20th Sideroad Innisfil Heights Sewage Pumping Station (20th Sideroad SPS) building in the Town of Innisfil. The EIS represents a continuation of study from the Environmental Constraints Analysis (ECA) completed for the Schedule B Municipal Class Environmental Assessment (Class EA) in 2021.

Should you have any questions or require additional information please do not hesitate to contact the undersigned.

Regards,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.


Lisa Moran, B.Sc.Env.
Senior Ecologist



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1.0 INTRODUCTION

Azimuth Environmental Consulting, Inc. (Azimuth) was retained by the Ainley Group to undertake a Scoped Environmental Impact Study (EIS) for the 20th Sideroad Sewage Pumping Stroud (20th Sideroad SPS) located at 1460 7th Line in the Town of Innisfil (the “Town”), County of Simcoe (the “County”). A map illustrating the location of the proposed 20th Sideroad SPS building in its regional context is shown on Figure 1.

As background, InnServices Utilities Inc. (InnServices) completed a Master Servicing Plan (MSP) update in 2018 which identified short and long-term strategies for water and wastewater servicing to accommodate the Town of Innisfil and its anticipated growth. The MSP recommended the construction of four (4) new SPS. Each proposed SPS requires a Schedule B Municipal Class Environmental Assessment (MCEA) prior to construction. InnServices has retained the Ainley Group to complete the Schedule B Class EA. This EIS will form a component of the EA in accordance with the Municipal Class Environmental Assessment Document (2000).

Azimuth completed an Environmental Constraints Analysis (ECA) for a larger study area (in which the 20th Sideroad SPS was being considered) in November 2021 to identify candidate Key Natural Heritage Features (KNHFs) present that should be avoided when considering potential locations for the 20th Sideroad SPS. This EIS represents a continuation of the ECA, to assess the potential impacts associated with 20th Sideroad SPS on KNHFs at its proposed location as presented in Figure 1. The EIS includes a review of background information, in combination with results of a detailed field program completed in 2022 and 2023 to confirm natural heritage features and functions. This EIS also examines potential for Species at Risk (SAR) protected under Ontario’s *Endangered Species Act, 2007 (ESA)*, and potential for negative impacts to natural heritage features with recommendations for avoidance and mitigation where required.

For the purposes of this EIS, the study area comprises the proposed footprint of the 20th Sideroad SPS and adjacent lands (within approximately 120m) as depicted on Figures 1-2. The EIS does not assess any external connections beyond the footprint of the 20th Sideroad SPS. Natural features in the overall planning area beyond the defined study area limits are discussed where applicable throughout the report.



2.0 PLANNING AND POLICY CONTEXT

2.1 County of Simcoe

Section 4.7 of the County of Simcoe's Official Plan (OP) provides direction to lower-tier municipalities with respect to Infrastructure: Sewage and Water.

For those lands within the Lake Simcoe Protection Plan – Watershed Boundary, as shown on Schedule 5.1 Land Use Designations, section 3.13 of this Plan also applies. The study area is within the Lake Simcoe watershed.

Policies related to the Lake Simcoe Protection Plan are discussed in Section 2.3 below.

The County of Simcoe Official Plan identifies the study area as Rural. There are no County Greenlands identified within the study area (Appendix A).

2.2 Town of Innisfil

The footprint of the 20th Sideroad SPS is within an area designated as Rural Area as per Schedule B Land Use. There are no Key Natural Heritage Features & Key Hydrologic Features mapped within the study area (Appendix A).

2.3 Lake Simcoe Protection Plan

The study area is not located within a Settlement Area and is within the Lake Simcoe Watershed. Therefore, applicable provision of the Lake Simcoe Protection Plan (LSPP) are relevant to the proposed works. Relevant Natural Heritage policies of the LSPP are highlighted below, although other policies may be applicable, specific to sewage infrastructure.

Key Natural Heritage Features of the LSPP include wetlands, significant woodlands, significant valleylands and natural areas abutting Lake Simcoe. Key hydrologic features are wetlands, permanent and intermittent streams and lakes other than Lake Simcoe (Section 6.21 and 6.22).

As per Section 6.23-DP, development or site alteration is not permitted within a key natural heritage feature, a key hydrologic feature and within a related vegetation protection zone, except in relation to (g) infrastructure, but only if the need for the project has been demonstrated through an Environmental Assessment or other similar environmental approval and there is no reasonable alternative.



2.4 Lake Simcoe Region Conservation Authority

The study area is located within the jurisdiction of the LSRCA. The study area does not include any lands subject to O. Reg. 41/24 – “Prohibited Activities, Exemptions and Permit” by the LSRCA (Appendix B). Therefore, LSRCA approvals in the form of a permit are not anticipated to be required.

2.5 Endangered Species Act, 2007

Ontario’s *Endangered Species Act, 2007* (ESA) provides regulatory protection to Endangered and Threatened species prohibiting harm and/or killing of individuals and destruction of their habitats.

The various schedules of the ESA included under Ontario Regulation (O. Reg.) 230/08 identify SAR in Ontario. These include species listed as Extirpated, Endangered, Threatened and Special Concern. As noted above, only species listed as Endangered and Threatened receive protection from harm and destruction to habitat on which they depend. Species designated as “Special Concern” may receive protection under the Significant Wildlife Habitat provisions of the PPS.

On June 4, 2025, the province of Ontario adopted *Bill 5, Protect Ontario by Unleashing Our Economy Act, 2025* (“Bill 5”), which received Royal Assent the following day. Upon adoption of Bill 5, several amendments to how protections apply to Threatened and Endangered species came into force, including (but not limited to) a revised definition of “habitat” for flora and fauna, removal of species protections against “harassment”, and enabling the province to add or remove species from the Species at Risk in Ontario List. The revisions to the provincial ESA that came into effect upon adoption of Bill 5 represent interim changes to regulatory protections and other requirements for Species at Risk in Ontario.

It is understood the province currently intends to repeal the ESA in early 2026 and replace with the *Species Conservation Act, 2025* (SCA), in doing so will implement additional amendments to regulatory requirements for Threatened and Endangered species. Of particular relevance to the development approvals process, the SCA will include a Protected Species in Ontario List regulation that will not necessarily include all Threatened and Endangered species in the province. It is also understood that the Protected Species in Ontario List may provide protections to certain species on a regional level, applying to only some portions of the province. Where impacts to Threatened and Endangered species appearing on the Protected Species in Ontario List may occur, the SCA will introduce a “registration first” approach that will set out rules for proponents to follow as a condition of carrying out the impacting activity. It is understood that this system will replace the existing ESA permitting process for the large



majority of species and occurrences, and will be accessible through an online Species Conservation Registry system. It is anticipated that the full details regarding the overhauled regulatory process for Threatened and Endangered species will be available early 2026.

3.0 STUDY APPROACH

3.1 Field Program Summary

Azimuth attended the property in 2022 and 2023 to carry out an assessment of the natural features within the study area. Field surveys were completed by Azimuth ecologists on the following dates:

- October 1 and November 3, 2021 – site characterization for preparation of an Environmental Constraints Analysis (Azimuth, 2021)
- June 20 and 28, 2023 – Completion of dawn breeding bird surveys (Lisa Moran, Azimuth Terrestrial Ecologist)
- July 26, 2022 – Vegetation assessment of the study area (Jordan Wrobel, Azimuth Terrestrial Ecologist)

Prior to undertaking the field study an initial classification of habitats was undertaken using recent air photo imagery for an area encompassing the study area in conjunction with a review of available background mapping.

Vegetation boundaries were checked in the field and delineated as illustrated in Figure 2. Vegetation community types were classified using the Ecological Land Classification for Southern Ontario: First Approximation (ELC; Lee *et al.*, 1998, updated 2008).

A SAR screening was undertaken for the scope of this assignment that compares the habitat requirements of species with potential to occur in the overall planning area with habitat types that occur on the property. The screening was based on air photo interpretation combined with onsite evaluation of habitats within the study area.

3.1.1 Breeding Bird Surveys

Two dawn breeding bird surveys were conducted within the study area on June 20 and 28, 2023 guided by point count methodology presented in Appendix D of the OBBA Guide for Participants (2001). All surveys were conducted no earlier than one half hour before sunrise and were completed prior to 10:00a.m. Surveys were completed under suitable weather conditions (*i.e.* no precipitation and light winds (Beaufort wind scale ≤ 3)), with an observation period of 10 minutes carried out at the point count station shown on Figure 2.



3.2 Background Information

A review of background documents provided information on site characteristics, habitat, wildlife, fisheries, rare species and communities, and general cultural/historic aspects of the study area. This included a review of the following:

- MNR's Natural Heritage Information Center (NHIC; MNR, 2025);
 - Make-A-Map: Natural Heritage Areas application;
- Atlas of the Breeding Birds of Ontario (OBBA; Cadman *et al.*, 2007);
- Ontario Reptile and Amphibian Atlas (2020);
- MECP's Species at Risk Ontario list (2025);
- Atlas of the Mammals of Ontario (Dobbyn, 1994).
- LSRCa regulation limit mapping (2024);
- Aerial photographs available for the study area (Google Earth, VuMap);
- County of Simcoe interactive mapping (2025);
- County of Simcoe Official Plan (2023); and
- Town of Innisfil Official Plan (2018).

4.0 EXISTING CONDITIONS

The study area includes active agricultural lands with opportunistic meadow species associated with the road right-of-way (Figure 1; Photograph 1). A small segment of wetland intersects with the study area (Figure 2). Within the air photos, it is evident that there are topographic lows associated with the agricultural lands. However, these areas appear to be routinely disturbed by agricultural operations as evidenced within June 2022 photos and therefore remain agricultural lands (Photograph 2).



Photograph 1: Location of proposed 20th Sideroad SPS (June 23, 2022)



Photograph 2: Lands extending north of the proposed 20th Sideroad SPS (June 23, 2022)

Rural residential properties reside to the west of 20th sideroad in addition to woodland communities.



4.1 Vegetation and Vegetation Communities

A field survey was undertaken to evaluate vegetation community types including representative plant species compositions on July 26, 2022. The site visit was undertaken by a qualified Terrestrial Ecologist with knowledge of rare, Threatened, and Endangered plant species with potential to occur in the area.

There are elements of occurrence (EO_ID) within the study area for Butternut (Endangered) and Black Ash (Endangered). There are no additional provincially Endangered or Threatened, or provincially rare vegetation species according to the MNR NHIC database. A detailed survey was undertaken to identify Butternut (*Juglans cinerea*) and Black Ash (*Fraxinus nigra*) trees; however, none were observed along the east side of 20th Sideroad in proximity to the 20th Sideroad SPS footprint or within the agricultural lands. Furthermore, no Butternut or Black Ash were observed within the study area.

No plant species considered Endangered or Threatened were identified during the site investigation. Further, no provincially rare species were observed during the field program. None of the vegetation communities or species documented are of federal or provincial conservation concern (MNR, 2025).

Vegetation communities within the study area were determined in accordance with the ELC system and illustrated on Figure 2. Vegetation communities identified within the study area are associated with the adjacent lands only and include only a very small portion of two woodland communities located to the west of 20th sideroad (Figure 2)

The footprint of the proposed 20th Sideroad SPS is within active agricultural lands (*i.e.* row crops). The land that abuts the active agricultural lands, associated with the road right-of-way, is composed of typical 'ditch habitat' with Cattail (*Typha sp.*) a variety of goldenrods (*Solidago sp.*), Wild Carrot (*Daucus carota*), thistles (*Cirsium sp.*) and Garden Bird's foot Trefoil (*Lotus corniculatus*) among others.

4.2 Wildlife and Wildlife Habitat

Direct and indirect observations of wildlife (*i.e.* tracks, scat, fur) were collected as a matter of course during Azimuth's site investigations. White-tailed Deer was observed within the agricultural lands. Apart from the breeding birds, no additional wildlife was observed during Azimuth's field investigations.



4.2.1 Breeding Bird Surveys

A total of twelve (12) bird species were recorded during dawn breeding bird surveys, all of which are typical of open field/agricultural land (Table 1).

4.3 Species at Risk

A screening for SAR occurred within the planning area based on potentially suitable habitat features identified during the site investigation (Table 2). The SAR assessment fully considers SAR with potential to occur within the overall planning area. Based on this assessment in combination with vegetation communities and other environmental features observed during the site investigation, there are no SAR considerations included within this report.

According to the NHIC database, there are restricted species records within the study area. Azimuth reached out to the MNR to confirm the species record. MNR responded to confirm the species (Appendix B). With this information, Azimuth has considered this species and its preferred habitat and can confirm that there is no potentially suitable habitat within the study area.

4.4 Wetlands

There is no wetland within the study area based on background sources (Appendix A and B). A small portion of wetland extends into the northern portion of the study area (Figure 2).

4.5 Woodlands

There is no woodland within the study area based on background sources (Appendix A and B). A small segment of woodland extends into the study area to the west of 20th Sideroad (Figure 2). Since the woodland area within the study area is contiguous with a larger woodland, the woodland within the study area may be considered significant as per local, regional and provincial planning policies.

4.6 Valleylands

There are no valleyland features within the study area according standards presented in the NHRM and LSPP Technical Definition of Significant Valleyland (MNRF, 2015), principally due to the lack of permanent or intermittent watercourses that constitute a defining component of a valleyland feature. No portion of the study area fulfills the well-defined valley morphology and landform prominence required to be considered Candidate Significant Valleyland.



4.7 Candidate Significant Wildlife Habitat

An assessment of the potential for Significant Wildlife Habitat (SWH) within study area was conducted using the criteria outlined within the Significant Wildlife Habitat Technical Guide (OMNR, 2000) and the accompanying the Ecoregion 6E Criteria Schedules (MNRF, 2015). There is no potential SWH within the study area.

4.8 Areas of Natural and Scientific Interest

There are no Areas of Natural and Scientific Interest located within the study area according to municipal or provincial mapping resources (Appendix A and B).

4.9 Watercourses and Fish Habitat

There are no watercourses or fish habitat within the study area (Appendix A and B; Figure 2).

5.0 KEY NATURAL HERITAGE FEATURES SUMMARY

The results of Azimuth's site investigation combined with review of background information indicate the potential for the following candidate KNHFs within the study area:

- Wetland
- Significant Woodland

6.0 PROPOSED WORKS

The build-out of the servicing area for the 20th Sideroad SPS is defined as the complete development of the proposed lands to meet the short- and long-term needs of the Innisfil Heights economic district and Town Campus. The 20th Sideroad SPS is proposed to connect to the future sanitary system within the settlement boundary to service new growth.

The 20th Sideroad SPS is expected to accommodate a total average daily flow of 109.3 L/s and a total peak wet weather flow of 239.9 L/s, which will discharge to the proposed trunk sewer on 20th Sideroad and further discharging into Lakeshore Water Pollution Control Plant.

7.0 IMPACT ASSESSMENT

This impact assessment is prepared with regards to the construction footprint of the proposed 20th Sideroad SPS, as described above and illustrated in Figure 2.



7.1 Wetland

There will be no direct impacts to wetland as a result of the construction of the SPS. The 20th sideroad SPS will be located approximately 90m from the wetlands, therefore there will be no indirect impacts.

7.2 Significant Woodland

There will be no direct impacts to woodland as a result of the construction of the SPS. The woodland within the study area is located on the west side of 20th sideroad and is approximately 90m from the proposed works, therefore indirect impacts are not anticipated.

8.0 MITIGATION

8.1 Species at Risk

Given the dynamic character of the natural environment, there is a constant variation in habitat use. Care will be taken in the interpretation of presence of species of concern including those listed under the ESA (or SCA). This report is intended as a point in time assessment of the potential to impact Species at Risk; not to provide long term “clearance” for Species at Risk. While there is no expectation that the assessment will change significantly, it is the responsibility of the proponent to ensure that they are not in contravention of the ESA (or SCA) at the time that site works are undertaken. A review of the assessment provided in this report by a qualified person should be sufficient to provide appropriate advice at the time of the onset of future site works. It is recommended that once the details of the SCA are known, a review will occur to ensure compliance with the new SCA.

8.2 Migratory Birds

Activities involving the removal of vegetation should be restricted from occurring during the breeding season. Migratory birds, nests, and eggs are protected by the *Migratory Birds Convention Act, 1994* (MBCA) and the *Fish and Wildlife Conservation Act, 1997* (FWCA). Environment Canada outlines dates when activities in any region have potential to impact nests at the Environment Canada Website. In Zones C1 and C2 vegetation clearing should be avoided between **April 1 through August 31** of any given year. If work requires that vegetation clearing is required between these dates screening by an ecologist with knowledge of bird species present in the area could be undertaken to ensure that the vegetation has been confirmed to be free of nests prior to clearing.



9.0 CONCLUSIONS

Based upon our analysis, it is concluded that the environmental conditions are not limiting to the construction of the 20th Sideroad SPS through incorporation of the environmental protection measures described in Section 8 of this report.

At this time, our findings are summarized as follows:

- The proposed infrastructure works are consistent with the applicable natural heritage policies of the *ESA*, County of Simcoe Official Plan, Town of Innisfil Official Plan, and the Lake Simcoe Protection Plan.
- The proposed works are not expected to negatively impact the ecological functions of wetland or Significant Woodland within the study area.
- There is no expectation that there will be any impacts to potential Threatened or Endangered species that may occur within the study area (*i.e.* SAR bats; See Table 2).



10.0 REFERENCES

Azimuth Environmental Consulting Inc. 2021. Environmental Constraints Analysis of Natural Heritage Features 20th Sideroad Sewage Pumping Station

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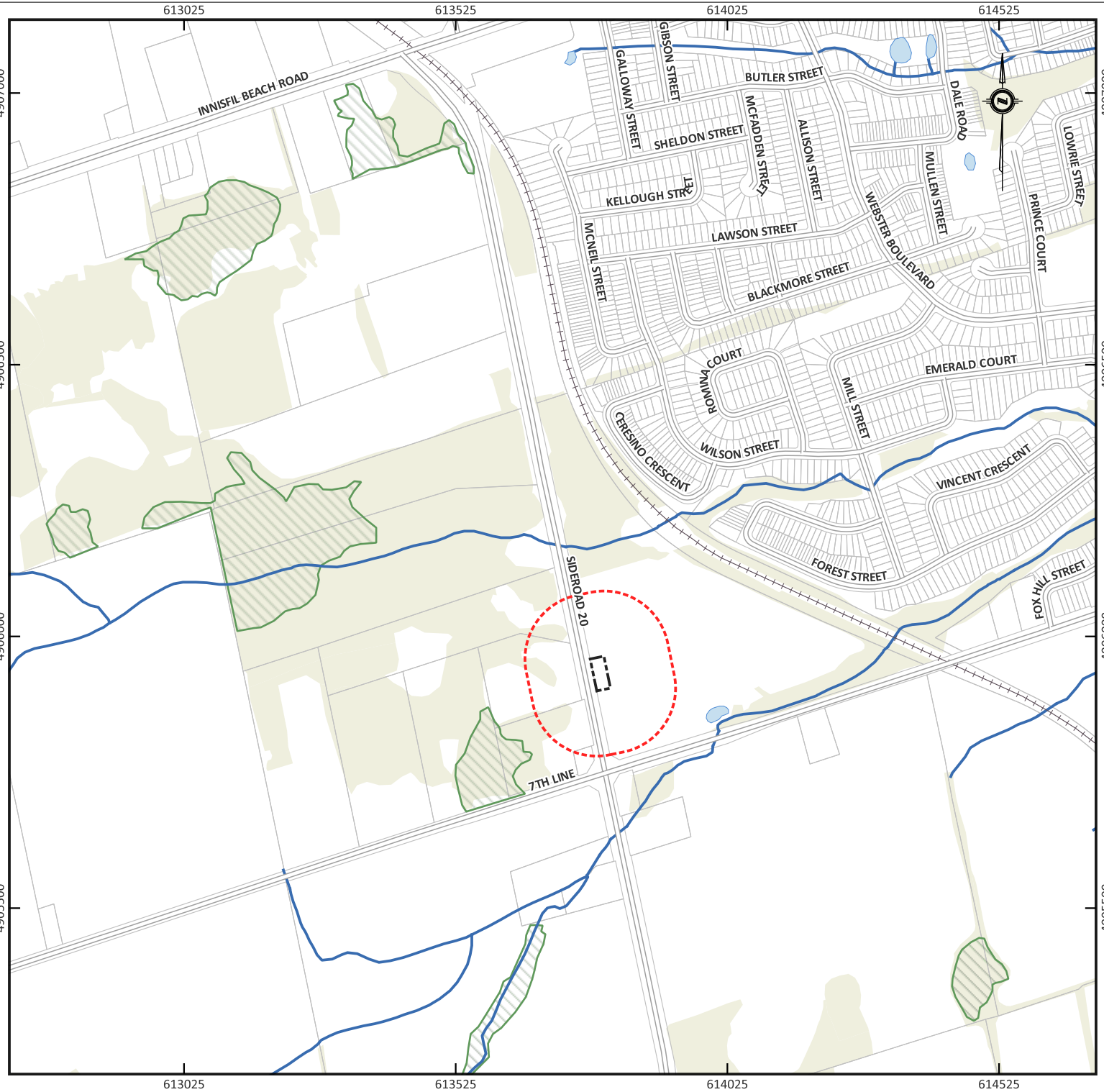
Ministry of Natural Resources and Forestry (MNRF), 2015. Technical Definitions and Criteria for Identifying Key Natural Heritage Features and Key Hydrologic Features for the Lake Simcoe Protection Plan.

Ministry of Natural Resources (MNR). 2025. Natural Heritage Information Centre (NHIC) internet web page. Government of Ontario, Ministry of Natural Resources (<https://www.ontario.ca/page/natural-heritage-information-centre>).

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File: Q:\21 Projects\21-242 Class EA 5 Pumping Stations - Innisfil\04.0 - Drafting\21-242 v2.dwg



LEGEND

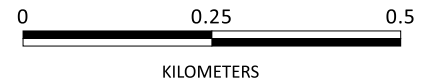
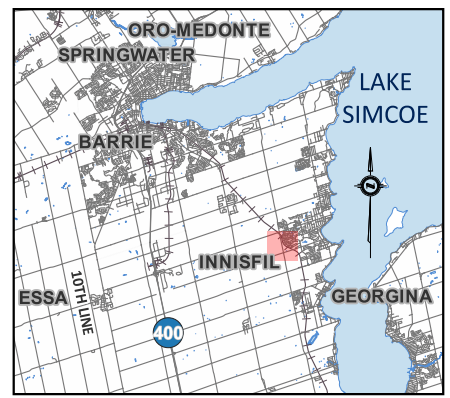
- Approximate Location Inn Services
- Sewage Pumping Station - 20th Sideroad
- 120m Radius Study Area (20th Sideroad SPS)
- Waterbody
- Mapped Watercourse
- Unevaluated Wetland
- Rail
- Wooded Area
- Road

NOTES

1. Watercourse, Waterbody, Wetland, Woodland and ANSI layers are derived from MNRFS GIS data, retrieved December 2022.
2. The metric grid displayed on the map corresponds to NAD83 / UTM zone 17N (EPSG:26917).

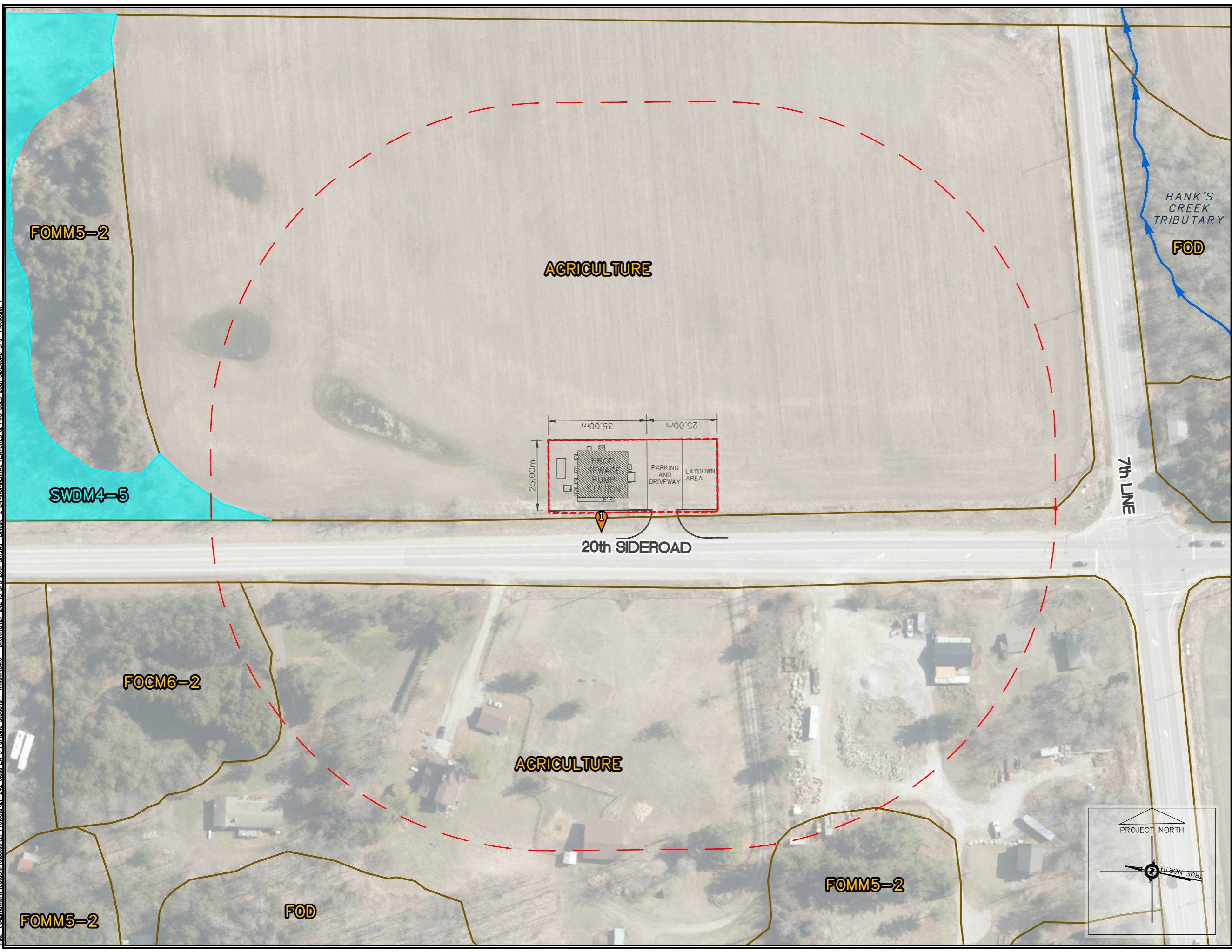
REGIONAL MAP

SCALE 1:50000



SITE LOCATION	
INN SERVICES PUMPING STATION - 20th SIDEROAD INNISFIL, ON	
DATE ISSUED: MAY 2025	Figure No. 1
CREATED BY: A.L.	
PROJECT NO.: 21-242	
BASE MAP: MNRFS	

Projected by: ALU on May 22, 2025 at 4:53pm
 File: \\s:\environmental\21-242\21-242_Geas EA_5_Plumbing_Station - Innisfil\04.0 - Drafting\21-242_US_SPS_20th_SRD.dwg Layout: 2 ENVIRONMENTAL FEATURES & PROPOSED 20th SIDEROAD SPS - PlotScale: 1



LEGEND:

- - - PROPOSED LOCATION OF 20th SIDEROAD SPS
- 120m RADIUS STUDY AREA
- DRAINAGE FEATURE

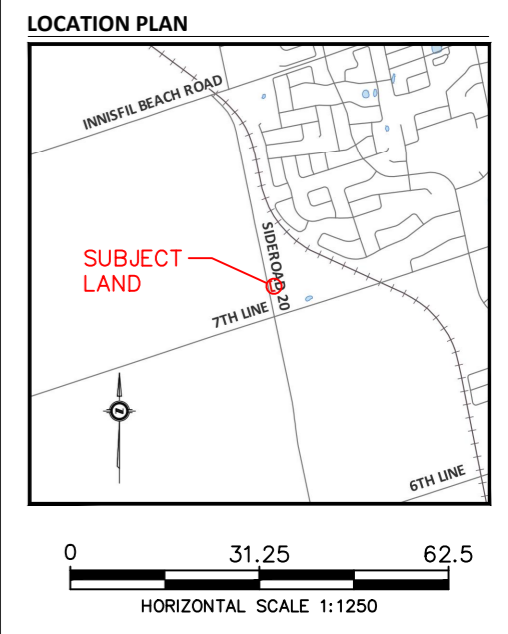
ELC UPLAND COMMUNITIES:

- FOCM6-2 DRY-FRESH WHITE PINE NATURALIZED CONIFEROUS PLANTATION TYPE
- FOD DECIDUOUS FOREST
- FOMM5-2 DRY-FRESH POPLAR MIXED FOREST TYPE

ELC WETLAND COMMUNITIES:

- SWDM4-5 POPLAR MINERAL DECIDUOUS SWAMP TYPE

- 📍 DAWN BREEDING BIRD SURVEY STATION



ENVIRONMENTAL FEATURES & PROPOSED 20th SIDEROAD SPS

**INN SERVICES PUMPING STATION
20th SIDEROAD, INNISFIL, ON**

DATE ISSUED:	MAY 2025	Figure No.
CREATED BY:	A.L.	2
PROJECT NO.:	21-242	
REFERENCE:	SIMCOE COUNTY	



Table 1: Bird List, 20th Sideroad SPS, Town of Innisfil

FAMILY	SCIENTIFIC NAME	COMMON NAME	Location ^{1,2}		Conservation Rankings ³				
			1		GRANK	SRANK	ESA	SARA	TRACK
			Visit 1	Visit 2					
Cardinalidae	<i>Passerina cyanea</i>	Indigo Bunting	S	S	G5	S5B			N
Columbidae	<i>Zenaida macroura</i>	Mourning Dove	H		G5	S5			N
Corvidae	<i>Corvus brachyrhynchos</i>	American Crow	S	S	G5	S5			N
Fringillidae	<i>Spinus tristis</i>	American Goldfinch	FO	FO	G5	S5			N
Icteridae	<i>Agelaius phoeniceus</i>	Red-winged Blackbird		H	G5	S5			N
Icteridae	<i>Quiscalus quiscula</i>	Common Grackle		FO	G5	S5			N
Paridae	<i>Poecile atricapillus</i>	Black-capped Chickadee		S	G5	S5			N
Passerellidae	<i>Melospiza melodia</i>	Song Sparrow	S	S	G5	S5			N
Passerellidae	<i>Passerculus sandwichensis</i>	Savannah Sparrow	S		G5	S5B,S3N			N
Passerellidae	<i>Spizella passerina</i>	Chipping Sparrow	S		G5	S5B,S3N			N
Sturnidae	<i>Sturnus vulgaris</i>	European Starling		H	G5	SNA			N
Turdidae	<i>Turdus migratorius</i>	American Robin	S	S	G5	S5			N

¹ Visit 1: June 20, 2023, Observer: L.Moran, Temperature 14°C, Cloud Cover 5% , Wind: B1, Precipitation: Nil, Search Time 07:23 to 07:33;
 Visit 2: June 28, 2023, Observer: L.Moran, Temperature 14°C, Cloud Cover 100% , Wind: B3, Precipitation: Nil, Search Time 08:44 to 08:54

² Breeding Bird Evidence Codes: X - Species observed, C - Call heard, FO - Flyover (Species presence); H - Species observed in its breeding season in suitable nesting habitat, S - Singing male (Possible Breeding); P - Pair observed , T - Territorial behaviour, A - Agitated behaviour or anxiety calls of adult, V - Visiting a probably nest site, N - Nest building or excavation of nest hole (Probable Breeding); DD - Distraction display or injury feigning, NU - Used Nest or egg shells, FY - Recently fledged young, AE - Adult leaving or entering nest sites, FS - Adult carrying fecal sac, CF - Adult carrying food for young, NE - Nest containing eggs, NY - Nest with young seen or heard (Confirmed Breeding).

³ Conservation Rankings: From Ontario Ministry of Natural Resources, Natural Heritage Information Centre (<https://www.ontario.ca/page/natural-heritage-information-centre>)

Common Name	Species Name	ESA	SARA	Key Habitats Used By Species ¹	Assessment
Bank Swallow	<i>Riparia riparia</i>	THR	THR	Nests in burrows excavated in natural and human-made settings with vertical sand and silt faces. Commonly found in sand or gravel pits, road cuts, lakeshore bluffs, and along riverbanks (COSEWIC, 2013a). ESA Protection: Species and general habitat protection	No potentially suitable habitat for the species within the study area. Not documented during Azimuth's dawn breeding bird surveys.
Barn Swallow	<i>Hirundo rustica</i>	SC	THR	Ledges and walls of man-made structures such as buildings, barns, boathouses, garages, culverts and bridges. (COSEWIC, 2011a). ESA Protection: Species and general habitat protection	Potentially suitable structures are present within the study area (west of 20th sideroad) that could provide suitable nesting habitat for the species. However, no Barn Swallow were observed during Azimuth's dawn breeding bird surveys.
Black Ash	<i>Fraxinus nigra</i>	END	No Status	Facultative wetland tree species frequently found in floodplain forests, swamps, seepage areas, shoreline margins and fens. Occupied sites are generally seasonally-flooded (COSEWIC, 2018a). ESA Protection: Species and general habitat protection	No Black Ash observed during Azimuth's field investigations.
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	END	Blanding's Turtles are a primarily aquatic species that prefer wetland habitats, lakes, ponds, slow-moving streams, etc., however they may utilize upland areas to search for suitable basking and nesting sites. In general, preferred wetland sites are eutrophic and characterized by clear, shallow water, with organic substrates and high density of aquatic vegetation (COSEWIC, 2016a). ESA Protection: Species and general habitat protection	There is no suitable wetland habitat within the study area. No potentially suitable habitat for Blanding's Turtle.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	Nests primarily in forage crops (e.g. hayfields and pastures) dominated by a variety of species such as clover, Timothy, Kentucky Bluegrass, tall grass, and broadleaved plants. abandoned fields dominated by tall grasses. Does not generally occupy fields of row crops or short-grass prairie. Sensitive to habitat size and has lower reproductive success in small habitat fragments (COSEWIC, 2010). ESA Protection: Species and general habitat protection	No potentially suitable habitat within the 20th Sideroad SPS footprint (i.e. row crop). Right of-way meadow habitat is disturbed and too small to provide suitable habitat for the species. No Bobolink were observed during Azimuth's dawn breeding bird surveys.
Butternut	<i>Juglans cinerea</i>	END	END	Commonly found in riparian habitats, but is also found in rich, moist, well-drained loams, and well-drained gravels. Butternut is intolerant of shade (COSEWIC, 2017). ESA Protection: Species and general habitat protection	No Butternut observed during Azimuth's field investigations.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	Nests primarily in chimneys though some populations (i.e. in rural northern areas) may nest in cavity trees (COSEWIC, 2018b). Recent changes in chimney design may be a significant factor in recent declines in numbers (Cadman <i>et al.</i> , 2007). ESA Protection: Species and general habitat protection	No potentially suitable habitat for the species within the study area. It is expected that the chimneys within the study area are capped sufficiently to preclude entry of wildlife. Not documented during Azimuth's dawn breeding bird surveys.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	Open habitats including sand dunes, beaches recently logged/burned over areas, forest clearings, short grass prairies, pastures, open forests, bogs, marshes, lakeshores, gravel roads, mine tailings, quarries, and other open relatively clear areas (COSEWIC, 2018c). ESA Protection: N/A	No potentially suitable habitat for the species within the study area.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	Most common in grassland, pastures, savannahs, as well as anthropogenic grassland habitats, including hayfields, weedy meadows, young orchards, golf courses, restored surface mines, etc. (COSEWIC, 2011). ESA Protection: Species and general habitat protection	No potentially suitable habitat within the 20th Sideroad SPS footprint (i.e. row crop). Right of-way meadow habitat is disturbed and too small to provide suitable habitat for the species. No Eastern Meadowlark were observed during Azimuth's dawn breeding bird surveys.
Eastern Red Bat	<i>Lasiurus borealis</i>	END	Not Listed	Roosting habitat includes deciduous and coniferous forests of any age class. Maternity roost trees tend to be large diameter and tall, reaching or exceeding the height of the surrounding canopy with southern exposure and sheltered from the wind (COSEWIC, 2023). ESA Protection: Species and general habitat protection	Only very limited woodland within the study area to the west of 20th sideroad. Due to the proximity to the proposed works to the woodland habitat, SAR bats will not be considered further within the Impact Assessment. No overwintering habitat is present within the study area.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	Mostly in mature and intermediate-age deciduous and mixed forests having an open understory. It is often associated with forests dominated by Sugar Maple and oak. Usually associated with forest clearings and edges within the vicinity of its nest (COSEWIC, 2012a). ESA Protection: N/A	Woodland located within (west of 20th sideroad) and extending beyond the study area could potentially provide habitat for the species. No Eastern Wood-pewee were documented during Azimuth's dawn breeding bird surveys.
Grasshopper Sparrow <i>pratensis</i> subspecies	<i>Ammodramus savannarum pratensis</i>	SC	SC	Typically breeds in large human-created grasslands (≥5 ha), such as pastures and hayfields, and natural prairies, such as alvars, characterized by well-drained, often poor soil dominated by low, sparse perennial herbaceous vegetation (COSEWIC, 2013b). ESA Protection: N/A	No potentially suitable habitat within the 20th Sideroad SPS footprint (i.e. row crop). Right of-way meadow habitat is disturbed and too small to provide suitable habitat for the species. No Grasshopper Sparrow were observed during Azimuth's dawn breeding bird surveys.
Hoary Bat	<i>Lasiurus cinereus</i>	END	Not Listed	Utilize mostly treed habitats (deciduous and coniferous of any age class) for roosting or foraging. Maternity roost trees tend to be large diameter and tall, reaching or exceeding the height of the surrounding canopy with southern exposure and sheltered from the wind. Hoary Bats typically roost among the foliage of trees and occasionally shrubs and are typically solitary roosters (COSEWIC, 2023). ESA Protection: Species and general habitat protection	Only very limited woodland within the study area to the west of 20th sideroad. Due to the proximity to the proposed works to the woodland habitat, SAR bats will not be considered further within the Impact Assessment. No overwintering habitat is present within the study area.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	Forests and regularly aging human structures as maternity roost sites. Regularly associated with attics of older buildings and barns for summer maternity roost colonies. Overwintering sites are characteristically mines or caves (MNRF, 2014) (COSEWIC, 2013c). ESA Protection: Species and general habitat protection	Only very limited woodland within the study area to the west of 20th sideroad. Structures within the study area were not assessed and could provide suitable roosting habitat for bats. Due to the proximity to the proposed works to the woodland habitat, SAR bats will not be considered further within the Impact Assessment. No overwintering habitat is present within the study area.
Monarch	<i>Danaus plexippus</i>	SC	SC	Breeding habitat is confined to sites where milkweeds, the sole food of caterpillars, grow. Milkweeds grow in a variety of environments, including meadows in farmlands, along roadsides and in ditches, open wetlands, dry sandy areas, short and tall grass prairie, river banks, irrigation ditches, arid valleys, and south-facing hills (COSEWIC, 2016b). ESA Protection: N/A	There was not an abundance of Common Milkweed documented within the roadside vegetation. No Monarch were observed during Azimuth's field investigations.
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	Maternity roost sites are generally located within deciduous and mixed forests and focused in snags including loose bark and cavities of trees. Overwintering sites are characteristically mines or caves (COSEWIC, 2013c). ESA Protection: Species and general habitat protection	Only very limited woodland within the study area to the west of 20th sideroad. Due to the proximity to the proposed works to the woodland habitat, SAR bats will not be considered further within the Impact Assessment. No overwintering habitat is present within the study area.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	END	END	Occurs in open deciduous forests, particularly those dominated by oak and beech, groves of dead trees, floodplain forests, orchards, cemeteries, savannas and savanna-like grasslands. (COSEWIC, 2018d). ESA Protection: Species and general habitat protection.	Only very limited woodland within the study area to the west of 20th sideroad. Species was not documented during Azimuth's dawn breeding bird surveys.

Common Name	Species Name	ESA	SARA	Key Habitats Used By Species ¹	Assessment
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	END	Not Listed	Roosting by Silver-haired Bats occurs under bark and in the cavities of trees, therefore, they rely on large, decaying trees (deciduous and coniferous). Deciduous species (<i>Populus spp.</i>) often have characteristics that make them ideal as roost sites, particularly in older forests. Can utilize old woodpecker cavities. May occasionally roost in buildings, especially during migration (COSEWIC, 2023) ESA Protection: Species and general habitat protection	Only very limited woodland within the study area to the west of 20th sideroad. Due to the proximity to the proposed works to the woodland habitat, SAR bats will not be considered further within the Impact Assessment. No overwintering habitat is present within the study area.
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	Habitat is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Often located in ponds, sloughs, shallow bays or river edges and slow streams, or areas combining several of these wetland habitats (COSEWIC, 2008). ESA Protection: N/A	There is no suitable wetland habitat within the study area. No potentially suitable habitat for Snapping Turtle.
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	Maternity roost sites include forests and modified landscapes (barns or human-made structures). Overwintering sites include mines and caves (COSEWIC, 2013c). ESA Protection: Species and general habitat protection	Only very limited woodland within the study area to the west of 20th sideroad. Due to the proximity to the proposed works to the woodland habitat, SAR bats will not be considered further within the Impact Assessment. No overwintering habitat is present within the study area.
Wood Thrush	<i>Hyllocichla mustelina</i>	SC	THR	Found in moist, deciduous hardwood or mixed stands, often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches (COSEWIC, 2012b). ESA Protection: N/A	Woodland located within (west of 20th sideroad) and extending beyond the study area could potentially provide habitat for the species. No Wood Thrush were documented during Azimuth's dawn breeding bird surveys.

¹ Habitat as outlined within the MNR's Species at Risk in Ontario website files (<https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>), or Species Specific COSEWIC Reports referenced in this document.

Species at Risk in Ontario List
 Best, T., and J. Jennings. 1997. Mammalian Species, *Myotis leibii*. The American Society of Mammalogists. No. 547, pp. 1-6, 5 figs.
 Cadman, M., D. Sutherland, G. Beck, D. Lepage and A. Couturier. 2007. Atlas of the Breeding Birds of Ontario 2001-2005. Bird Studies Canada, Environment
 COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp
 COSEWIC. 2010. COSEWIC assessment and update status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp
 COSEWIC. 2011a. COSEWIC assessment and update status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp
 COSEWIC. 2011. COSEWIC assessment and update status report on the Eastern Meadowlark *Sturnella magna* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp
 COSEWIC. 2012a. COSEWIC assessment and status report on the Eastern Wood-pewee *Contopus virens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp
 COSEWIC. 2012b. COSEWIC assessment and status report on the Wood Thrush *Hyllocichla mustelina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp
 COSEWIC. 2013a. COSEWIC assessment and update status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp
 COSEWIC. 2013b. COSEWIC assessment and status report on the Grasshopper Sparrow pratensis subspecies *Ammodramus savaannarum pratensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 36 pp
 COSEWIC. 2013c. COSEWIC assessment and update status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis* and Tri-colored Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.
 COSEWIC. 2016a. COSEWIC assessment and status report on the Blanding's Turtle *Emydoidea blandingii*, Nova Scotia population and Great Lakes/St. Lawrence population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xix
 COSEWIC. 2016b. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 59 pp
 COSEWIC. 2017. COSEWIC assessment and status report on the Butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 74 pp
 COSEWIC. 2018a. COSEWIC assessment and status report on the Black Ash *Fraxinus nigra* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 95 pp
 COSEWIC. 2018b. COSEWIC assessment and status report on the Chimney Swift *Chaetura pelagica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 49 pp
 COSEWIC. 2018c. COSEWIC assessment and status report on the Common Nighthawk *Chordeiles minor* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 50 pp
 COSEWIC. 2018d. COSEWIC assessment and status report on the Red-headed Woodpecker *Melanerpes erythrocephalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp
 COSEWIC. 2023. COSEWIC assessment and status report on the Hoary Bat (*Lasiurus cinereus*), Eastern Red Bat (*Lasiurus borealis*) and Silver-haired Bat (*Lasionycteris noctivagans*) in Canada. Ottawa. xxi + 100 pp.
 Ministry of the Environment, Conservation and Parks (MECP). 2025. Species at Risk in Ontario (<https://www.ontario.ca/page/species-risk-ontario>)



APPENDICES

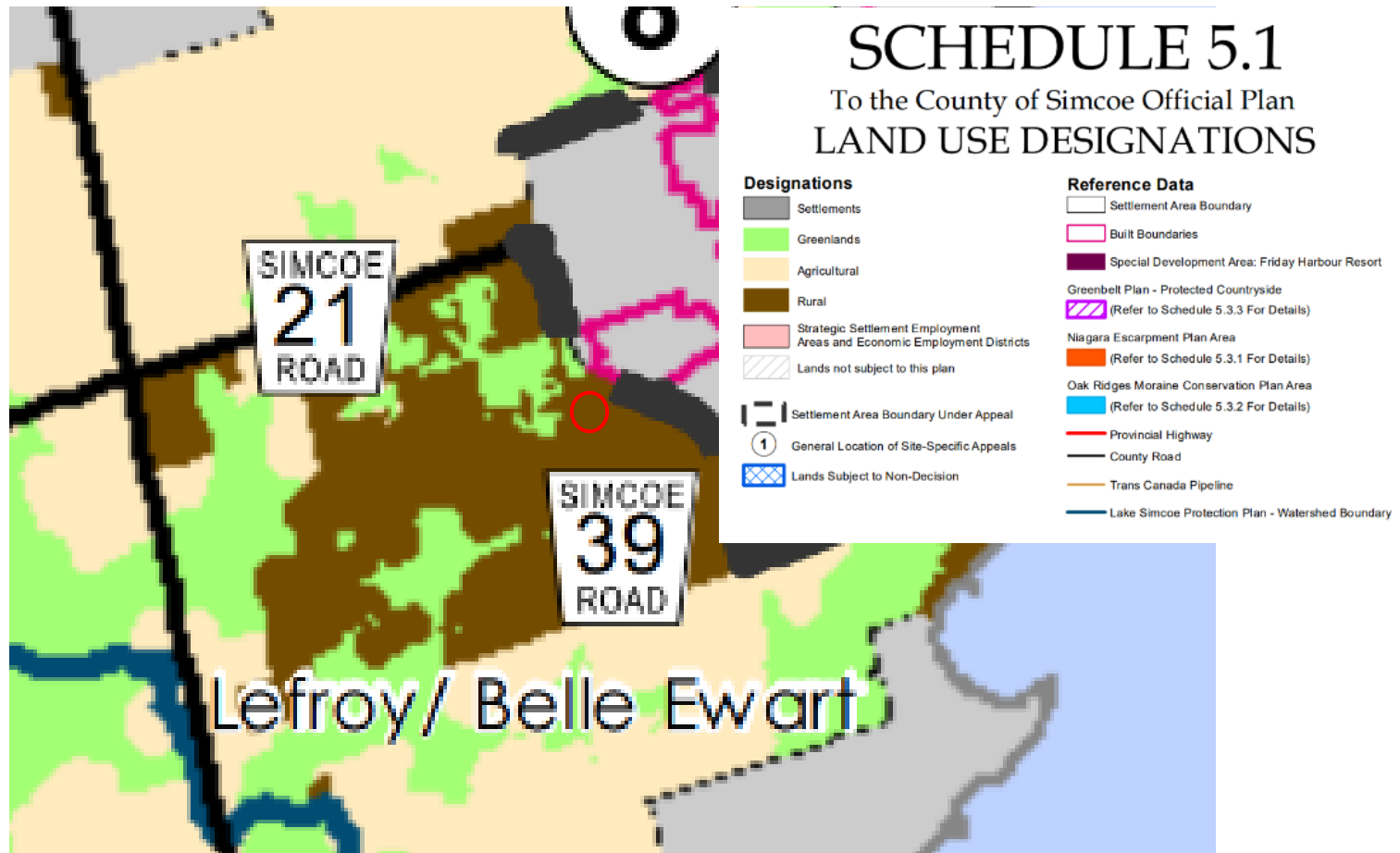
Appendix A: Natural Heritage Policy Information

Appendix B: Background Information

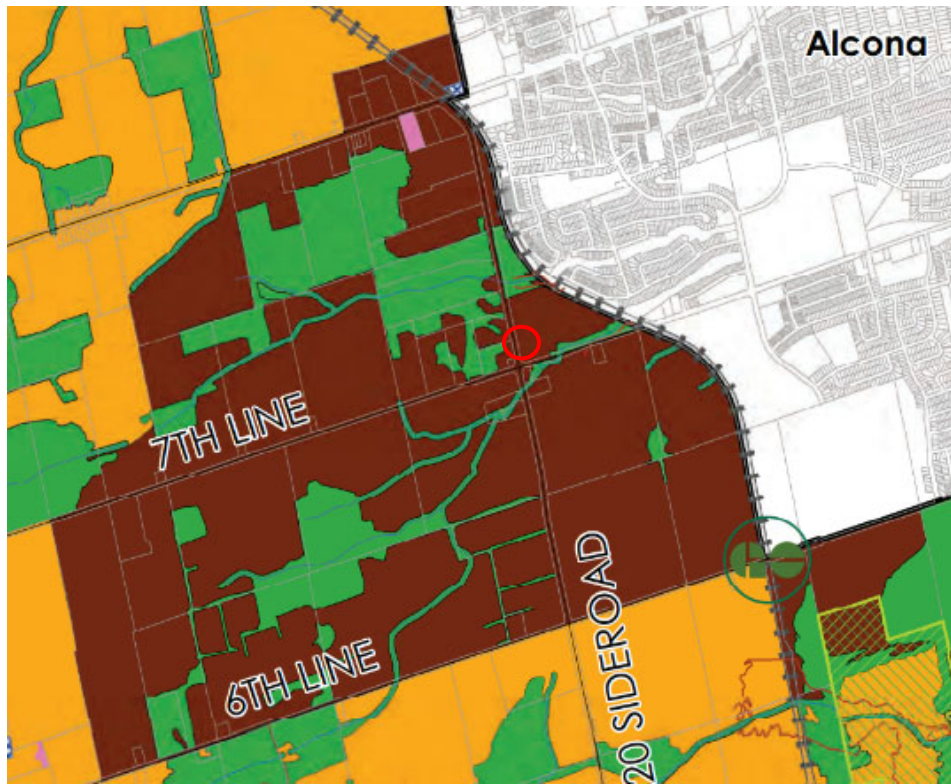


APPENDIX A

Natural Heritage Policy Information



Appendix A: Excerpt from the County of Simcoe Official Plan Schedule 5.1 Land Use Designations, February 2023. (Note: study area contained within red circle drawn on map)



Schedule B: Land Use Innisfil Official Plan

Legend Land Use Designations

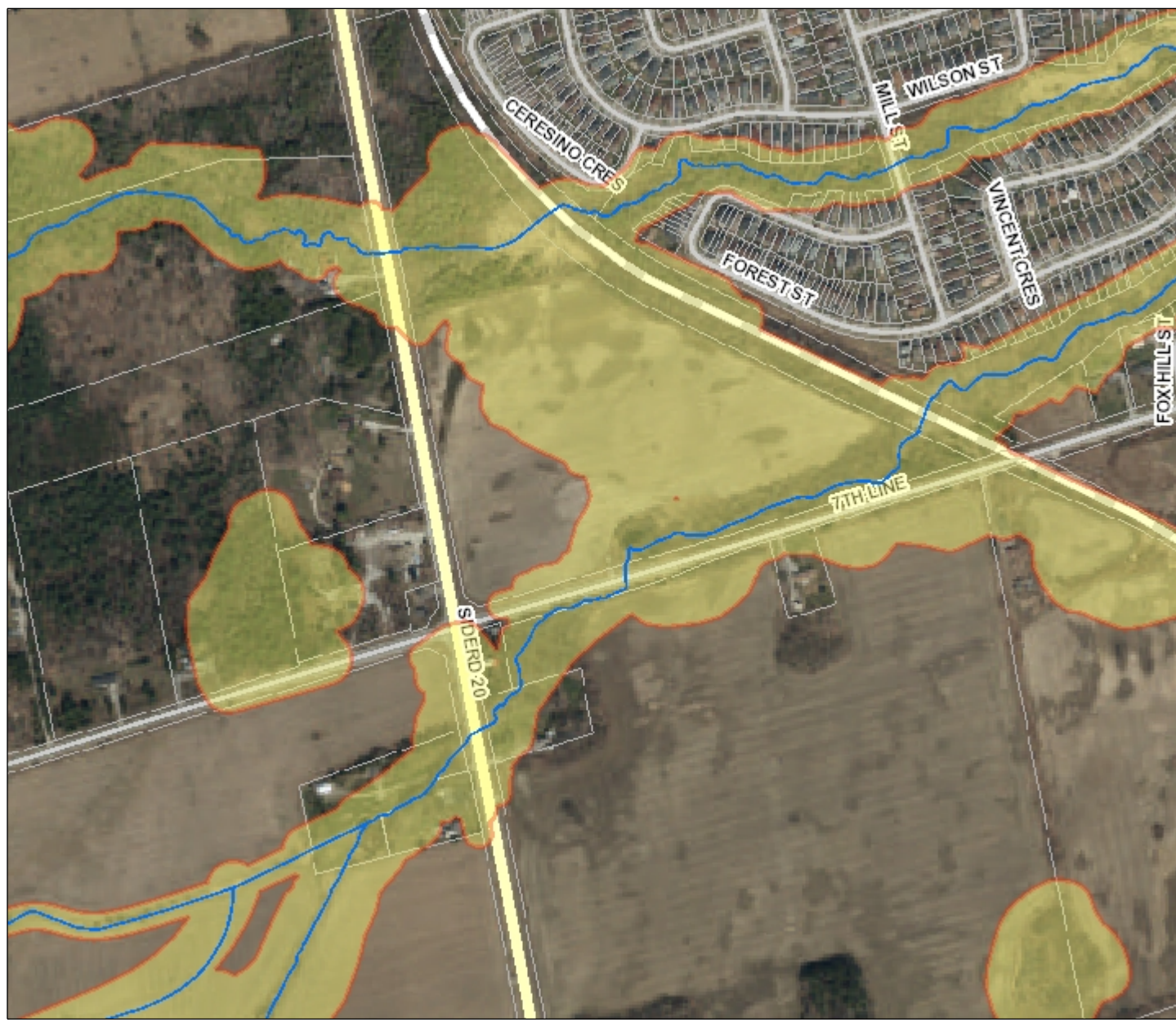
- Lands Remaining Under Appeal PL180900
 - Big Bay Point Resort Secondary Plan Boundary
 - Greenbelt Plan - Natural Heritage System Overlay
 - Waste Disposal Assessment Area
 - Waste Disposal Sites
 - Natural Heritage System
 - Municipal Border
 - Settlement Area (see Schedules B1 to B3, B5 & B7 to B10)
 - GO Station
 - Road
 - Streams
 - Parcel Fabric
 - Railway
 - Hazard Land Area Overlay
 - Lake Bed
- Official Plan Land Use**
- Agricultural Area
 - Community Space
 - Estate Residential Area
 - Extractive Industrial Area
 - Parks and Open Space
 - Resort Recreational
 - Rural Area
 - Rural Commercial
 - Rural Industrial
 - Shoreline Commercial Area
 - Shoreline Residential Area
 - Specialty Crop Area
 - Shoreline Commercial Area
 - Community Space
 - KNHF & KHF
 - Parks and Open Space

Appendix A: Excerpt from the Town of Innisfil Official Plan Schedule B: Land Use (November 2018) (Note: Study area contained within red circle drawn on map)



APPENDIX B

Background Information



Features

- LSRCA Watershed Boundary
- Watercourse
- Regulation Limit
- Address Labels
- Road Labels
- Assessment Parcel
- Roads
 - Hwy 400 Series
 - Highway, Arterials
 - Local Road
- Railway

Printed On:
5/22/2025

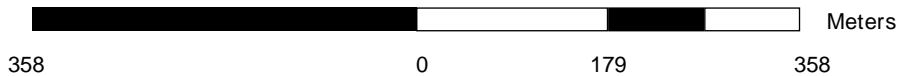


WGS_1984_Web_Mercator_
Auxiliary_Sphere

Mapped By:

This product was produced by the Lake Simcoe Region Conservation Authority and some information depicted on this map may have been compiled from various sources. While every effort has been made to accurately depict the information, data/mapping errors may exist. This map has been produced for illustrative purposes from an interactive web mapping site. LSRCA GIS Services DRAFT printed 2024. © LAKE SIMCOE REGION CONSERVATION AUTHORITY. 2024. All Rights Reserved. The following data sets of Assessment Parcel, Roads, Upper & Lower Tier Municipalities, Wetlands are © Kings Printer for Ontario. Reproduced with Permission, 2024. The Current Regulation Limit and Boundary data sets are derived products from several datasets. Orthophotography 2002, 2005, 2007-2009, 2011-2024, © First Base Solutions, Inc.

Scale 1: 7,041



358

0

179

358

Meters

Lisa Moran

From: NHIC-Requests (MNR) <nhicrequests@ontario.ca>
Sent: May 23, 2025 11:37 AM
To: Lisa Moran
Cc: NHIC-Requests (MNR)
Subject: RE: NHIC - Restricted Species - Town of Innisfil

Hello Lisa,

Thank you for contacting the Ontario Natural Heritage Information Centre.

The name of the restricted species associated with squares 17PK1206, 17PK1205, 17PK1306, 17PK1305, 17PK1304, 17PK1406, 17PK1405, 17PK1404 is [REDACTED] observation from 1970-07-09.

We 'restrict' the names of some species in open data sets, because they are especially sensitive to disturbance or vulnerable to exploitation. It is important that the location information for these species is kept confidential.

Kind regards,
Holly

Holly Caruana

Natural Heritage Information Centre Information Analyst | Science and Research Branch
Ministry of Natural Resources | Ontario Public Service
holly.caruana@ontario.ca



Taking pride in strengthening Ontario, its places and its people

Please note: As part of providing [accessible customer service](#), if you have any accommodation needs, require communication supports, or alternate formats please let me know.

From: Lisa Moran <Lisa@Azimuthenvironmental.Com>
Sent: Thursday, May 22, 2025 2:42 PM
To: NHIC-Requests (MNR) <nhicrequests@ontario.ca>
Subject: NHIC - Restricted Species - Town of Innisfil

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good afternoon,

Azimuth Environmental Consulting, Inc. (Azimuth) has been retained to complete an Environmental Impact Study for the proposed infrastructure (sewage pumping station) along the 20th sideroad (just north of 7th Line). It has come to our attention there are several restricted species records within the area:

- 17PK1206 [OGF ID number for this species is 1018160]
- 17PK1205 [OGF ID number for this species is 1018159]
- 17PK1306[OGF ID number for this species is 1018170]
- 17PK1305[OGF ID number for this species is 1018169]
- 17PK1304[OGF ID number for this species is 1018168]
- 17PK1406[OGF ID number for this species is 1018180]
- 17PK1405[OGF ID number for this species is 1018179]
- 17PK1404[OGF ID number for this species is 1018178]

At this time we are requesting identification and information regarding this restricted species to assist in our project.

Regards,



Lisa Moran, B.Sc.Env.

Terrestrial Ecologist

Azimuth Environmental Consulting, Inc.

642 Welham Road Barrie, ON L4N 9A1

Office: 705-721-8451 x202

Cell: 705-331-1479

www.azimuthenvironmental.com

Providing services in hydrogeology, terrestrial and aquatic ecology, environmental engineering, and arborist assessments



APPENDIX B

Background Information

Appendix F

Stage 1 Archaeological Assessment Report

Stage 1 Archaeological Assessment 20th Sideroad Sewage Pumping Station #3 (Lot 20 and 21, Concession 6, Lot 20 and Lot 21, Concession 7, Former Township of Innisfil, County of Simcoe) Town of Innisfil, Simcoe County

Original Report

Prepared for:

Ainley Group

280 Pretty River Parkway

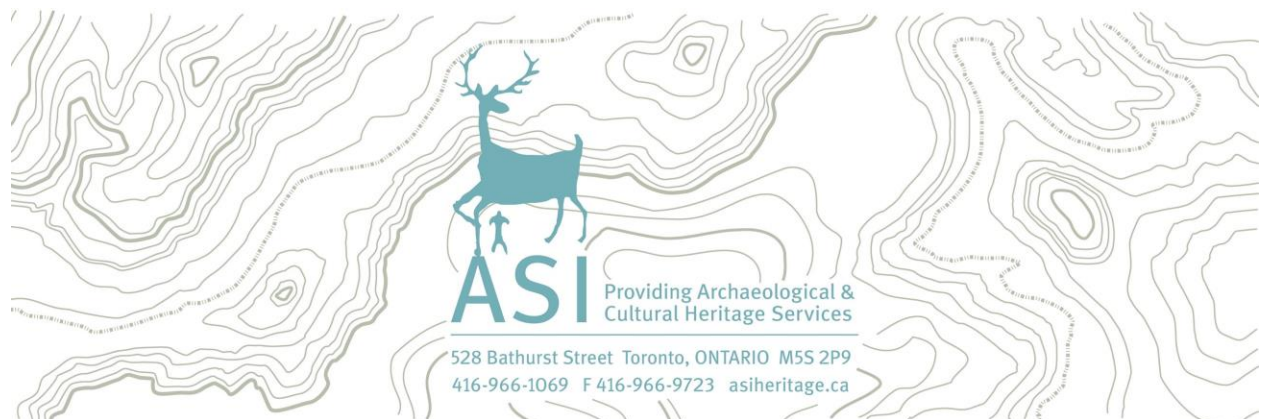
Collingwood, ON L9Y 4J5

Archaeological Licence: P383 (Williams)

PIF P383-0307-2021

Archaeological Services Inc. File: 21EA-087

March 23, 2022



Executive Summary

Archaeological Services Inc. was contracted by Ainley Group, on behalf of the Town of Innisfil, to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of 20th Sideroad Sewage Pumping Station Municipal Class Environmental Assessment project. The Environmental Assessment is part of the Innisfil Master Servicing Plan update which identifies various alternatives to provide servicing to the Innisfil Heights economic district, an area designated as a Strategic Settlement Employment Area. The Master Servicing Plan identified 20th Sideroad as one of the proposed sewage pumping stations identified along this sewer route. The Stage 1 Study Area includes the east and west side of 20th Sideroad between Innisfil Beach Road and 6th Line .

According to the OASD, nine previously registered archaeological sites are located within one kilometre of the Study Area, none of which are located within 50 metres. The property inspection determined that parts of the Study Area exhibit archaeological potential and will require Stage 2 assessment.

In light of these results, the following recommendations are made:

- 1 Parts of the Study Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit/pedestrian survey at five metre intervals, where appropriate. Stage 2 is required prior to any proposed construction activities on these lands;
- 2 The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or being previously assessed. These lands do not require further archaeological assessment; and,
- 3 Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.



Project Personnel

- **Senior Project Manager:** Lisa Merritt, MSc. (P094) Partner, Director, Environmental Assessment Division
- **Project Coordinator:** Katrina Thach, Hon. BA (R1225), Associate Archaeologist, Division Coordinator, Environmental Assessment Division
- **Project Director:** Blake Williams, MLitt (P383), Lead Archaeologist, Project Manager, Environmental Assessment Division
- **Project Manager:** Eliza Brandy, MA (R1109), Associate Archaeologist, Project Manager, Environmental Assessment Division
- **Field Director:** Blake Williams
- **Report Preparation:** Laura Burke, Hons BA (R1113), Associate Archaeologist, Technical Writer and Researcher, Environmental Assessment Division
- **Graphics:** Peter Bikoulis, PhD, Archaeologist, GIS Technician, Operation Division
- **Report Reviewer:** Eliza Brandy, Sarah Jagelewski, Hon. BA (R405), Lead Archaeologist, Manager, Environmental Assessment Division



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1.0 Project Context

Archaeological Services Inc. (ASI) was contracted by Ainley Group, on behalf of the Town of Innisfil, to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of 20th Sideroad Sewage Pumping Station Municipal Class Environmental Assessment project. The Environmental Assessment is part of the Innisfil Master Servicing Plan update which identifies various alternatives to provide servicing to the Innisfil Heights economic district, an area designated as a Strategic Settlement Employment Area. The Master Servicing Plan identified 20th Sideroad as one of the proposed sewage pumping stations identified along this sewer route. The Stage 1 Study Area includes the east and west side of 20th Sideroad between Innisfil Beach Road and 6th Line (Figure 1).

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (Ontario Heritage Act, R.S.O. c. O.18, 1990, as amended in 2019) and the 2011 *Standards and Guidelines for Consultant Archaeologists (S & G)*, administered by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI 2011).

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act, RSO* (Environmental Assessment Act, R.S.O., 1990 as amended 2020) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the Municipal Engineers' Association document *Municipal Class Environmental Assessment* (Municipal Class Environmental Assessment, 2000, as amended 2015).

The *County of Simcoe Archaeological Management Plan* (ASI, 2019) was also consulted.

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment and property inspection was granted by Ainley Group on September 2, 2021.



1.1.1 Treaties and Traditional Territories

The Study Area is within the Nottawasaga Purchase (Treaty 18), a provisional agreement sometimes called the Lake Simcoe-Nottawasaga Treaty, signed on October 17, 1818, by representatives of the Government of Upper Canada and the Anishinaabe (Ministry of Indigenous Affairs, 2020; Williams Treaties First Nations, 2021). Treaty 18 encompassed 1,592,000 acres of land between the District of London in the west, Lake Huron in the north, the west limit of the Penetanguishene Purchase (1815) in the east, and the west shore of Lake Simcoe, Cook's Bay, and the Holland River in the northwest. In exchange for the land, the Crown agreed to pay an annual sum of £1200 in goods at the "Montreal price" (Crown-Indigenous Relations and Northern Affairs, 2016; Ministry of Indigenous Affairs, 2020). The Nottawasaga Purchase territory includes the present-day communities of Wasaga, Bradford, and Collingwood.

1.2 Historical Context

1.2.1 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (B.P.) (Ferris, 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 B.P., the environment had progressively warmed (Edwards & Fritz, 1988) and populations now occupied less extensive territories (Ellis & Deller, 1990).

Between approximately 10,000-5,500 B.P., the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. This period produces the earliest evidence of heavy wood working tools, an indication of greater investment of labour in felling trees for fuel, to build shelter, and watercraft production. These activities suggest prolonged seasonal residency at occupation sites. Polished stone and native copper implements were being produced by approximately 8,000 B.P.; the latter was acquired from the north shore of Lake Superior, evidence of extensive exchange networks throughout the Great Lakes region. The earliest evidence for cemeteries dates to approximately 4,500-3,000 B.P. and is indicative of increased



social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Brown, 1995, p. 13; Ellis et al., 1990, 2009).

Between 3,000-2,500 B.P., populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. The Woodland period begins around 2,500 B.P. and exchange and interaction networks broaden at this time (Spence et al., 1990, pp. 136, 138) and by approximately 2,000 B.P., evidence exists for small community camps, focusing on the seasonal harvesting of resources (Spence et al., 1990, pp. 155, 164). By 1,500 B.P. there is macro botanical evidence for maize in southern Ontario, and it is thought that maize only supplemented people's diet. There is earlier phytolith evidence for maize in central New York State by 2,300 B.P. - it is likely that once similar analyses are conducted on Ontario ceramic vessels of the same period, the same evidence will be found (Birch & Williamson, 2013, pp. 13–15). As is evident in detailed Anishinaabek ethnographies, winter was a period during which some families would depart from the larger group as it was easier to sustain smaller populations (Rogers, 1962). It is generally understood that these populations were Algonquian-speakers during these millennia of settlement and land use.

From the beginning of the Late Woodland period at approximately 1,000 B.P., lifeways became more similar to that described in early historical documents. Between approximately 1000-1300 Common Era (C.E.), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource base was still practised (Williamson, 1990, p. 317). By 1300-1450 C.E., this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al., 1990, p. 343). The sixteenth century saw the coalescence of these small villages into larger communities (Birch et al., 2021). Through this process, the socio-political organization of the First Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed.

By 1600 C.E., the communities within Simcoe County had formed the Confederation of Nations encountered by the first European explorers and



missionaries. In the 1640s, the traditional enmity between the Haudenosaunee and the Huron-Wendat (and their Algonquian allies such as the Nippissing and Odawa) led to the dispersal of the Huron-Wendat. Shortly afterwards, the Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario. By the 1690s however, the Anishinaabeg were the only communities with a permanent presence in southern Ontario. From the beginning of the eighteenth century to the assertion of British sovereignty in 1763, there was no interruption to Anishinaabeg control and use of southern Ontario.

1.2.2 Post-Contact Settlement

Historically, the Study Area is located in the Township of Innisfil, County of Simcoe, in parts of Lot 20 and 21, Concession 6 and 7.

The S & G stipulates that areas of early Euro-Canadian settlement (pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches, and early cemeteries are considered to have archaeological potential. Early historical transportation routes (trails, passes, roads, railways, portage routes), properties listed on a municipal register or designated under the Ontario Heritage Act or a federal, provincial, or municipal historic landmark or site are also considered to have archaeological potential.

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those that are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be located in proximity to water. The development of the network of concession roads and railroads through the course of the nineteenth century frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 metres of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient



access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Indigenous trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

Township of Innisfil

The Township of Innisfil was surveyed in 1820 and the first settlement began that year. The township was named after the poetical name for Ireland, Innisfail, by its early settlers. Growth was slow during the first ten years of the township and the first sawmill was not erected until the 1830s and in 1835 a grist mill was constructed. Early settlement focused around Kempenfeldt Bay, and the southwestern area of the township was not settled until after 1840. By 1843, the first school was constructed and the following year the Innisfil Methodist Congregation built the first church. The first census of the township recorded a population of only 762 inhabitants, by 1850, the township had a population of 1,807.

Following the connection of the Northern Railway in 1853, the township became an important shipping hub for the lumber industry of central Ontario (Mika & Mika, 1981). With the arrival of the railway a number of communities developed and prospered, Allandale, Lefroy, and Craigvale all boasted stations. On the western border of the township, Thorton was a stop for the Hamilton and Northwestern Railway. Early post office communities included Bramley, Cherry Creek, Fennell, Holly, Innisfil, Killyleagh, Beaumont, Painswick, and Stroud. Today, Innisfil attracts large numbers of tourists and cottagers in the summertime who travel from Toronto via Highway 400 and Highway 11, the northern extension of Yonge Street. This extension travels the length of the township and was built in the late seventeenth century by Colonel John Graves Simcoe from York (Toronto) to Lake Simcoe (Mika & Mika, 1981).

Nantyr

The central portion of the Study Area is historically the settlement of Nantyr, a small crossroads settlement at the intersection of 20th Sideroad and 7th Line. Named after an estate in Wales, Nantyr was founded on land owned by William Cross who would eventually become the first reeve of Innisfil. The settlement was



founded when a log school was constructed in 1845, and prior to this, students were taught in Cross's house. The log school was replaced by a stone school in 1875, which stands at the southeast corner of this intersection to this day.

Railways

The GO Transit Barrie Rail Corridor operated by Metrolinx is located adjacent to the north end of the Study Area. The rail corridor follows the track alignment originally completed by the Toronto, Simcoe, and Huron Union Railroad Company. The Toronto, Simcoe, and Huron Union Railroad Company was incorporated in 1844 and in 1850 was renamed the Ontario, Simcoe, and Huron Union Railroad Company. The rail line opened on May 16, 1853, and connected Toronto to Aurora (formerly Machell's Corners) via a 48-kilometre track (Andreae, 1997). The line was expanded with service to Bradford beginning June 13, 1853, and further expanded to Barrie through Innisfil on October 11, 1853 (forming the path for the present Barrie Rail Corridor). The inaugural trip on May 16, 1853 from Toronto to Aurora is commemorated by a plaque at Toronto's Union Station, as it was the first steam locomotive operated in Ontario (Mika & Mika, 1977).

In 1858, the company underwent a third name change becoming the Northern Railway Company of Canada. Subsequently, the Ontario, Simcoe & Huron Railway became known simply as the Northern Railway, until 1888 when the ownership amalgamated with the Grand Trunk Railway Company of Canada, at which point the Northern Railway became part of the Grand Trunk Railway. Rail tracks were quickly laid across Ontario, as well as other parts of the country linking settlements and provinces. The population of Canada doubled between 1851 and 1901 but the miles of rail laid increased exponentially from 159 to 18,294 miles (Andreae, 1997). The Northern Railway was a major draw for businesses in the Counties of York and Simcoe and caused many communities with a station to thrive and those without to dissipate (Town of Newmarket, 2018). In 1923, the Northern Railway was amalgamated with the government-owned Canadian National Railway.

Commuter service began on the line in 1972, operated by Canadian National Railway as part of the Canadian National Newmarket Subdivision. This commuter



service was taken over by GO Transit in 1982. GO Transit continues to operate this commuter service to this day as a division of Metrolinx.

The Barrie Rail Corridor leaves downtown Toronto in a northern direction, passing through Vaughan, King, Aurora, Newmarket, East Gwillimbury, Bradford West Gwillimbury, and ending in Barrie. Originally constructed through rural portions of the historical settlements of Brockton, Maple, King, Aurora, Newmarket, Holland Landing, Bradford (West Gwillimbury), Lefroy, and Allandale adjacent to Lake Simcoe.

1.2.3 Map Review

The 1871 *Map of the County of Simcoe* (Hogg, 1871), the 1881 *Illustrated Historical Atlas of the County of Simcoe* (Belden, 1881) and 1928 and 1986 topographic maps of Barrie (Department of National Defence, 1928) (Department of Energy, Mines and Resources, 1986) were examined to determine the presence of historical features within the Study Area during the nineteenth and twentieth centuries (Figures 2-5).

On the 1871 *Map* a schoolhouse is illustrated on the southeast corner of Lot 20. The Northern Railway travels along part of the northeast side of the Study Area. The Study Area is within a rural context.

Four road allowances are shown within the Study Area on the 1871 *Map*, which align with extant 20th Sideroad, Innisfil Beach Road, 7th Line, and 6th Line in Innisfil (Figure 2).

The 1881 *Atlas* again identifies Chas. Cross as the owner of the middle parcels on the western side of the Study Area (Figure 3). A church is drawn on the map on the southeast corner of Lot 20, Concession 7 and a schoolhouse is shown on the northwest corner of Lot 21 in Concession 6. Two unidentified historic structures are shown on the west side of what is now named 20th Sideroad in Lot 20 Concession 6. T. Hughes is again shown as the owner of the most southwest parcel within the Study Area while Jus. Ralston is the new owner of the most southeastern parcel of Lot 21 in Concession 6.



The 1928 topographic map shows four historic structures in the middle of the Study Area along 20th Sideroad, and 7th line (Figure 4). The 1986 topographic map reveals several more buildings, with many of them, presumably being farmsteads (Figure 5).

1.2.4 Aerial and Orthoimagery Review

Historical aerial imagery from 1954 (Hunting Survey Corporation Limited, 1954) indicates a continued rural agricultural land use within the Study Area (Figure 6). Several farmsteads are visible in the approximate location of the structures illustrated in 1928, with crop fields surrounding. The Study Area continues to display a rural context with agricultural land use. The slight jog in 20th Sideroad visible on the topographic maps located midway between 7th Line and 6th Line are no longer present in the aerial image from 1954.

A review of available Google satellite imagery shows the Study Area has remained relatively unchanged since 2004.

1.3 Archaeological Context

This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Study Area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the MHSTCI through “Ontario’s Past Portal”; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

The Study Area can generally be described as a rural context, with areas of agricultural land use. 20th Sideroad is a north-south running roadway that features one lane of traffic in each direction with gravel shoulders throughout most of the Study Area. Residences in the settlement of Alcona are located to the northeast of the Study Area, however residences within the Study Area are generally sparse and not concentrated in any particular area. The intersection of 20th Sideroad and



7th Line in the central portion of the Study Area is the location of the historical crossroads community of Nantyr (Figure 5), however it only featured a few twentieth-century residences and a former schoolhouse at the time of field review.

The intersection of 6th Line and 20th Sideroad in the southern portion of the Study Area is in a rural agricultural context, with 6th Line carrying one lane of east-west traffic. This roadway features gravel shoulders and shallow ditches. The intersection of 20th Sideroad and Innisfil Beach Road in the northern portion of the Study Area is in a generally suburban context with commercial and retail establishments to the east, residences to the west, and agricultural fields to the north.

1.3.2 Geography

In addition to the known archaeological sites, the state of the natural environment is a helpful indicator of archaeological potential. Accordingly, a description of the physiography and soils are briefly discussed for the Study Area.

The S & G stipulates that primary water sources (lakes, rivers, streams, creeks, etc.), secondary water sources (intermittent streams and creeks, springs, marshes, swamps, etc.), ancient water sources (glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches, etc.), as well as accessible or inaccessible shorelines (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 BP (Karrow & Warner, 1990, p. Figure 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.



Other geographic characteristics that can indicate archaeological potential include elevated topography (eskers, drumlins, large knolls, and plateaux), pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground, distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings. Resource areas, including; food or medicinal plants (migratory routes, spawning areas) are also considered characteristics that indicate archaeological potential (S & G, Section 1.3.1).

The Study Area is situated within the Peterborough Drumlin Field physiographic region of southern Ontario (Chapman & Putnam, 1984). The Peterborough Drumlin Field extends from Simcoe County east to Hastings County and is generally characterized by rolling till plains overlying limestone bedrock and contains over 3,000 drumlins (Chapman & Putnam, 1984). The drumlins are composed of highly calcareous till but there are local differences in composition. The till plains of the regions were formed during the retreat of the Lake Ontario ice lobe of the Laurentide glacier. Till is produced from the advance of continental glacial ice in which soil and rock is carried forward by the ice, mixed and milled, producing a heterogeneous soil (Chapman & Putnam, 1984). The rolling topography of the Study Area is representative of the drumlin and till formations of this physiographic region. The agricultural history of the area can be connected to the till plains formed through glacial movement.

The surficial geology of the Study Area (Figure 7) is largely made up of stone poor, carbonate-derived silty to sandy till. Two small patches of ice contact stratified deposits are located in the northern part of the Study Area. There is one patch of littoral foreshore deposits north of 7th Line. One small patch of massive well laminated is visible in the center of the Study Area as well as in the southwest corner. A very small section of older alluvial deposits has also been identified southwest of 7th Line along the western border of the Study Area.

Soil drainage is illustrated in Figure 8. There are three soil types within the Study Area: Sargent is part of the Brown Forest soil group, it has gravelly sandy loam with good drainage; Bondhead is made up of light grey, calcareous, loam and



sandy loam till and has good drainage; and Smithfield is a calcareous, lacustrine, varved silt loam and clay with imperfect drainage. Bondhead and Smithfield are both part of the Grey-Brown Podzolic soil group.

The Study Area is within the Lake Simcoe Watershed which covers 3400 square kilometres and is situated in the municipal communities of York Region, Durham Region, Simcoe County, Barrie, Orillia, and the Kawartha Lakes. The Study Area is within the Innisfil Creeks subwatershed. The subwatershed is located on the western side of the Lake Simcoe watershed, mostly in the Town of Innisfil, and is 107 square kilometres in size, consisting of the following 17 named creeks which drain from agricultural areas through urban areas and into Lake Simcoe: Banks, Belle Aire, Bon Secours, Carson, Cedar, Gilford, Holland River, Innisfil Creeks (small unnamed tributaries), Leonard's, Mooselanka, Moyer, Sandy Cove, Strathallan, Sylvan, Upper Marsh, White Birch, and Wilson (Lake Simcoe Region Conservation Authority, 2012b). The minor watercourses which pass through the Study Area from this watershed drains into Cook's Bay (Lake Simcoe Region Conservation Authority, 2012a).

1.3.3 Previously Registered Archaeological Sites

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MHSTCI. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 kilometres north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden block *BbGv*.

According to the OASD, nine previously registered archaeological sites are located within one kilometre of the Study Area, none of which are located within 50 metres (Ministry of Heritage, Sport, Tourism and Culture Industries, 2021). A summary of the sites is provided below in Table 1.



Table 1: Registered Sites within One Kilometre of the Study Area

Borden number	Site Name	Temporal/ Cultural Affiliation	Site type	Researcher
BbGv-37	Kloosterman 1	Post-Contact	Homestead	This Land Archaeology Inc. 2009
BbGv-64	7 th Line H1	Post-Contact	Homestead	Archeoworks Inc. 2019
BbGv-49	Jack Site	Post-Contact	Homestead	ASI 2012
BbGv-50	McCullough	Post-Contact	Homestead	ASI 2012
BbGv-50	Ralston 1	Post-Contact	Homestead	ASI 1987
BbGv-50	Ralston 2	Post-Contact	Homestead	ASI 1987
BbGv-2	Kirkpatrick	Unknown	Unknown	Kirkpatrick 1975
BbGv-48	Unnamed	Post-Contact	Homestead	The Archaeologists Inc. 1990
BbGv-47	Unnamed	Post-Contact	Homestead	The Archaeologists Inc. 1989



1.3.4 Previous Archaeological Assessments

According to background research, eight previous reports detail fieldwork within 50 metres of the Study Area:

(ASI, 2011) Stage 1 and 2 AA of Proposed Previn Court Homes Development, Part of Lots 21 and 22, Concession 6, Geo Twp. of Innisfil, Town of Innisfil, County of Simcoe [P049-562-2010, P347-042-2011]

The project area overlaps with the Study Area southeast of the 7th Line and 20th Sideroad intersection in the north half of Lot 21 in Concession 6. The majority of the overlapping project area and Study Area were determined to have archaeological potential. Test pit survey was conducted on two properties. One test pit survey occurred on a property southeast of 7th Line and 20th Sideroad. The other occurred on a property east of 20th Sideroad. Both of these areas were subjected to test pits at five metre intervals. The agricultural fields between these two sections were subjected to pedestrian survey at five metre intervals.

During the course of the Stage 2 field assessment one precontact findspot and four historical archaeological sites, the Jack site (BbGv-49), the McCullough site (BbGv-50), the Ralston 1 site (BbGv-51) and the Ralston 2 site (BbGv-52) were encountered. The precontact findspot does not require further work and is recommended to be free of archaeological concern. The four historical sites were evaluated in a land use history context and it was determined that the McCullough site (BbGv-50) and the Ralston 1 site (AbGv-51) do not possess cultural heritage value as they are secondary deposits related to the late nineteenth or early twentieth century occupation of Lots 21 and 22. However, the Jack (BbGv-49) and Ralston 2 (BbGv-52) sites do possess cultural heritage value as they are primary deposits related to the mid-to-late nineteenth-century occupation of Lots 21 and 22. They should be subject to a comprehensive Stage 3 assessment.

(York North Archaeological Services Inc, 2013) Stage 2 Archaeological Assessment of the Proposed Road Widening of County Road 21 from



County Road 27 to County Road 39, Located in Part of Lots 1 through 20, Concession 7, and Part of Lots 1 Through 20, Concession 8, Township of Innisfil, County of Simcoe, Ontario [P156-109-2010, P156-122-2011].

The Stage 2 survey of County Road 21 (Innisfil Beach Road) was completed ahead of the proposed road widening. The archaeological assessment involved pedestrian survey (at five-metre intervals) and test pit survey (at five-metre intervals) adjacent to the road. No archaeological resources were encountered during the Stage 2 assessment.

(ASI 2016) Stage 1 Archaeological Assessment 6th Line Class Environmental Assessment Part A: 20 Sideroad to St. John’s Road Town of Innisfil, County of Simcoe (Former Township of Innisfil, County of Simcoe), Ontario [P392-0123-2014]

The project area overlaps with the current Study Area on the northeast corner of 6th Line and 20th Sideroad. It was determined that this area has archaeological potential and requires pedestrian survey and test pit survey at five metre intervals.

(ASI 2017a) Stage 1 Archaeological Assessment 6th Line Part B Class Environmental Assessment 20 Sideroad to County Road 27 Town of Innisfil, County of Simcoe (Former Township of Innisfil, County of Simcoe), Ontario [P392-0124-2014]

The project area overlaps with the current Study Area on the northwest corner of 6th Line and 20th Sideroad. It was determined that this area has archaeological potential and requires pedestrian survey at five metre intervals.

(ASI 2017b) Stage 1 Archaeological Assessment Barrie Rail Corridor Expansion Transit Project Assessment Mile 3.00 to Mile 63.00 City of Toronto, Regional Municipality of York, and County of Simcoe (Former Townships of East Gwillimbury, King, Vaughan, Whitchurch and York,



County of York, and Former Townships of Innisfil and West Gwillimbury, County of Simcoe) [P057-0837-2016]

The project area overlaps with the current Study Area on Lot 20 and 21 in Concession 7, south of Innisfil Beach Road. It was determined areas east and west of 20th Sideroad have archaeological potential. Test pit survey is required.

(ASI 2018) Stage 2 Archaeological Assessment, 7th Line Improvements, 20th Sideroad to St. Johns Road, Part of Lots 21-22, Concession 6, Part of Lots 21-25, Concession 7 (Former Township of Innisfil), Town of Innisfil, County of Simcoe, Ontario [P1066-0043-2017].

The project area overlaps with the current Study Area at the 7th Line and 20th Sideroad intersection. The Stage 1 determined that the property on the northwest corner of 7th Line and 20th Sideroad is disturbed and has no archaeological potential. The northeast and southwest properties at this intersection as well as the southeast corner were identified as having archaeological potential and would require Stage 2 survey.

(ASI 2019) Stage 2 Archaeological Assessment, 7th Line Improvements, 20th Sideroad to St. Johns Road, Part of Lots 21-22, Concession 6, Part of Lots 21-25, Concession 7 (Former Township of Innisfil), Town of Innisfil, County of Simcoe, Ontario [P1066-0113-2019].

The project area overlaps with the current Study Area at the 7th Line and 20th Sideroad intersection. Lands determined to exhibit archaeological potential were subject to pedestrian survey at 2.5-metre intervals, test pit survey at five-metre intervals and, at 10-metre judgmental intervals to confirm disturbance. No archaeological resources were encountered during the Stage 2 assessment.

(ASI, 2022) Stage 1 Archaeological Assessment, Metrolinx OnCorr Non-Priority Work Barrie Corridor, Various Lots and Concessions (Former Townships of York, Vaughan, King and Whitchurch, County of



York, Former Townships of West Gwillimbury, East Gwillimbury and Innisfil, County of Simcoe), City of Toronto, City of Vaughan, Town of Richmond Hill, Town of Aurora, Town of Newmarket, Town of East Gwillimbury, Town of Bradford West Gwillimbury, Town of Innisfil, City of Barrie, Ontario [P383-0183-2019]

The project area overlaps with the current Study Area on Lot 21 in Concession 7, south of Innisfil Beach Road. It was determined in the Stage 1 report that areas east of 20th Sideroad within this Study Area have archaeological potential. Test pit survey is required.

2.0 Field Methods

A Stage 1 property inspection must adhere to the S & G, Section 1.2, Standards 1-6, which are discussed below. The entire property and its periphery must be inspected. The inspection may be either systematic or random. Coverage must be sufficient to identify the presence or absence of any features of archaeological potential. The inspection must be conducted when weather conditions permit good visibility of land features. Natural landforms and watercourses are to be confirmed if previously identified. Additional features such as elevated topography, relic water channels, glacial shorelines, well-drained soils within heavy soils and slightly elevated areas within low and wet areas should be identified and documented, if present. Features affecting assessment strategies should be identified and documented such as woodlots, bogs or other permanently wet areas, areas of steeper grade than indicated on topographic mapping, areas of overgrown vegetation, areas of heavy soil, and recent land disturbance such as grading, fill deposits and vegetation clearing. The inspection should also identify and document structures and built features that will affect assessment strategies, such as heritage structures or landscapes, cairns, monuments or plaques, and cemeteries.

The Stage 1 archaeological assessment property inspection was conducted under the field direction of Blake Williams (P383) of ASI, on November 15th, 2021, in order to gain first-hand knowledge of the geography, topography, and current conditions and to evaluate and map archaeological potential of the Study Area. It



was a systematic visual inspection from public right-of-ways only and did not include excavation or collection of archaeological resources. Fieldwork was conducted when weather conditions were deemed clear with good visibility (partly cloudy with seasonal temperatures), per S & G Section 1.2., Standard 2. Field observations are compiled onto the existing conditions of the Study Area in Section 8.0 (Figures 10-11) and associated photographic plates are presented in Section 7.0 (Images 1-10).

3.0 Analysis and Conclusions

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the Study Area. Results of the analysis of the Study Area property inspection and background research are presented in Section 3.1.

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria that are indicative of archaeological potential. The Study Area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites (See Table 1);
- Early historic transportation routes (Innisfil Beach Road, 6th Line, 7th Line, 20th Sideroad);
- Proximity to early settlements (Nantyr); and
- Well-drained soils (Sargent, Bondhead)

According to the S & G, Section 1.4 Standard 1e, no areas within a property containing locations listed or designated by a municipality can be recommended for exemption from further assessment unless the area can be documented as disturbed. The Town of Innisfil Municipal Heritage Register was consulted and two properties within the Study Area are Listed or Designated under the Ontario Heritage Act:

- 1497 7th Line, Innisfil, Known Built Heritage Resource – Listed by Municipality (CR-327.08 Sept. 17/08), Nantyr Schoolhouse, 1875



- 1770 20th Sideroad, Innisfil, Known Known Built Heritage Resource Designated under Part IV of the OHA (By-law 087-11), the Cross House, 1850

The *County of Simcoe Archaeological Management Plan* (ASI, 2019) was also consulted and the entirety of the Study Area is identified as having archaeological potential.

These criteria are indicative of potential for the identification of archaeological resources, depending on soil conditions and the degree to which soils have been subject to deep disturbance.

The property inspection determined that parts of the Study Area exhibit archaeological potential. These areas will require Stage 2 archaeological assessment prior to any construction activities. According to the S & G Section 2.1.1, pedestrian survey is required in actively or recently cultivated fields (Images 9, 10; Figures 10-11: areas highlighted in orange). According to the S & G Section 2.1.2, test pit survey is required on terrain where ploughing is not viable, such as wooded areas, properties where existing landscaping or infrastructure would be damaged, overgrown farmland with heavy brush or rocky pasture, and narrow linear corridors up to 10 metres wide (Images 1-5, 8; Figures 10-11: areas highlighted in green).

Part of the Study Area has been previously assessed and does not require further archaeological assessments (Figure 10-11: areas highlighted in red).

The remainder of the Study Area has been subjected to deep soil disturbance events due to construction of 20th Sideroad and 7th Line, and disturbed laneways and roadbeds. According to the S & G Section 1.3.2 these areas do not retain archaeological potential (Images 1, 3, 6, 7, 8, 9, 10; Figures 10-11: areas highlighted in yellow) and do not require further survey.

3.2 Conclusions

According to the OASD, nine previously registered archaeological sites are located within one kilometre of the Study Area, none of which are located within 50



metres. The property inspection determined that parts of the Study Area exhibit archaeological potential and will require Stage 2 assessment. (Figure 10-11).

4.0 Recommendations

In light of these results, the following recommendations are made:

- 1 Parts of the Study Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit/pedestrian survey at five metre intervals, where appropriate. Stage 2 is required prior to any proposed construction activities on these lands;
- 2 The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or being previously assessed. These lands do not require further archaeological assessment; and,
- 3 Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the Ministry of Heritage, Sport, Tourism and Culture Industries should be immediately notified.

The above recommendations are subject to Ministry approval, and it is an offence to alter any archaeological site without Ministry of Heritage, Sport, Tourism and Culture Industries concurrence. No grading or other activities that may result in the destruction or disturbance of any archaeological sites are permitted until notice of MHSTCI approval has been received.



5.0 Legislation Compliance Advice

ASI advises compliance with the following legislation:

- This report is submitted to the Ministry of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, RSO 2005, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation, and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the Ministry stating that there are no further concerns with regards to alterations to archaeological sites by the proposed development.
- It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the Ontario Heritage Act.
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act.
- The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33, requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the



Registrar of Cemeteries at the Ministry of Consumer Services is also immediately notified.

- Archaeological sites recommended for further archaeological field work or protection remain subject to Section 48(1) of the Ontario Heritage Act and may not be altered, nor may artifacts be removed from them, except by a person holding an archaeological license.



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7.0 Images

7.1 Field Photography



Image 1: Road and ditch are previously disturbed, no potential. Lawn to the west; potential, test pit survey required.



Image 2: Potential, test pit survey required.



Image 3: Road and ditch are previously disturbed, no potential. Lawn to the west; potential, test pit survey required.



Image 4: Areas on lawn have potential, test pit survey required.



Image 5: Lawn and woodlot have potential. Test pit survey required.



Image 6: Disturbed gravel laneway, no potential.



Image 7: Disturbed road right of way, no potential.



Image 8: Disturbed ditch, no potential. Lawn has potential, test pit survey required.



Image 9: Evidence of utilities in foreground; disturbed, no potential. Field in background; archaeological potential. Pedestrian survey required.



Image 10: Disturbed, raised roadbed, no potential.

8.0 Maps



Figure 1: 20th Sideroad Sewage Pumping Station #3 Study Area



Figure 2: The Study Area overlaid on the 1871 Hoggs Map of the County of Simcoe (Base Map: (Hogg, 1871).



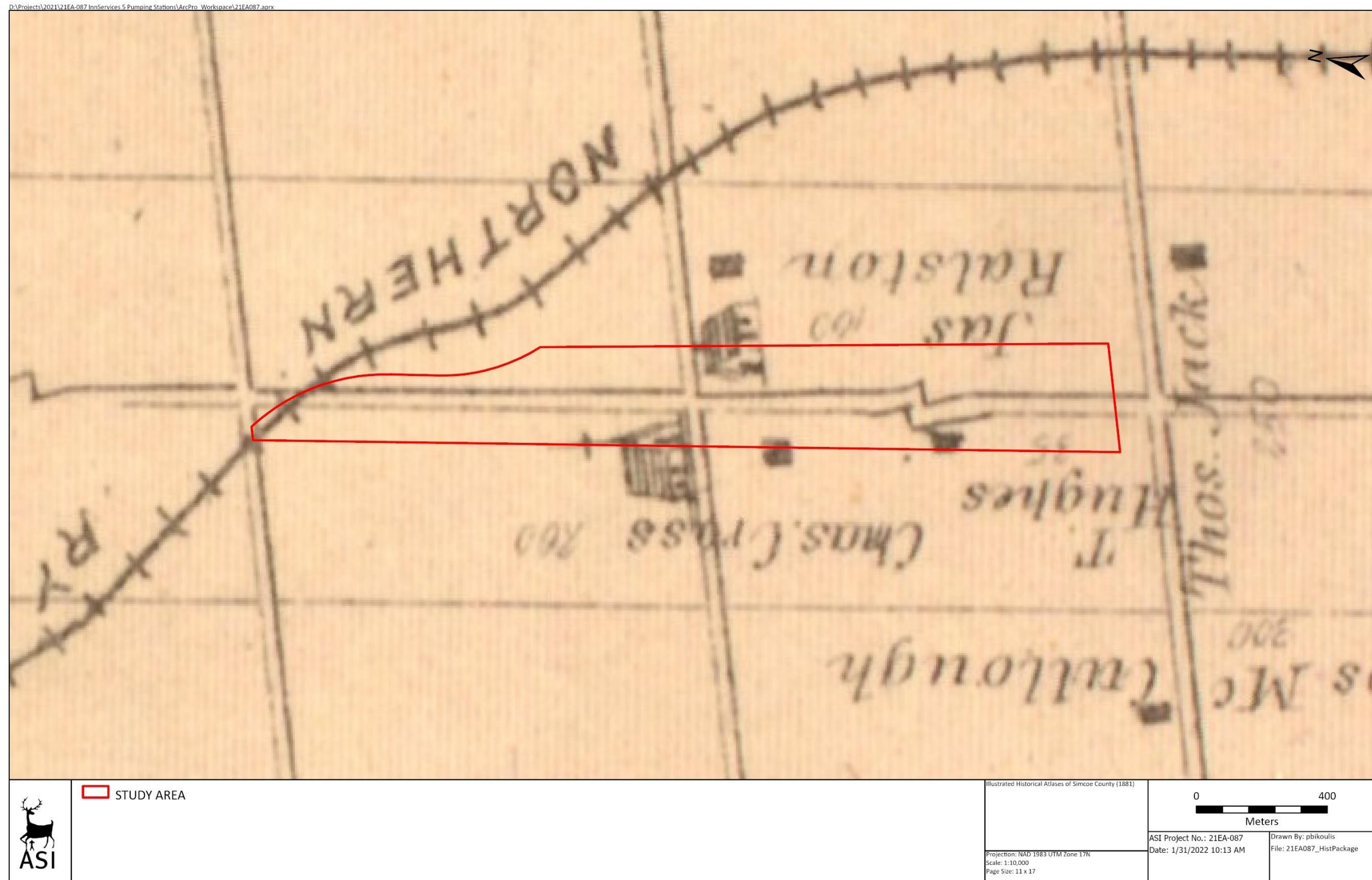


Figure 3: The Study Area overlaid on the 1881 Historical Atlas of the County of Simcoe (Base Map: (Belden, 1881).



Figure 4: The Study Area overlaid on the 1928 topographic map of Barrie (Base Map: (Department of National Defence, 1928)).

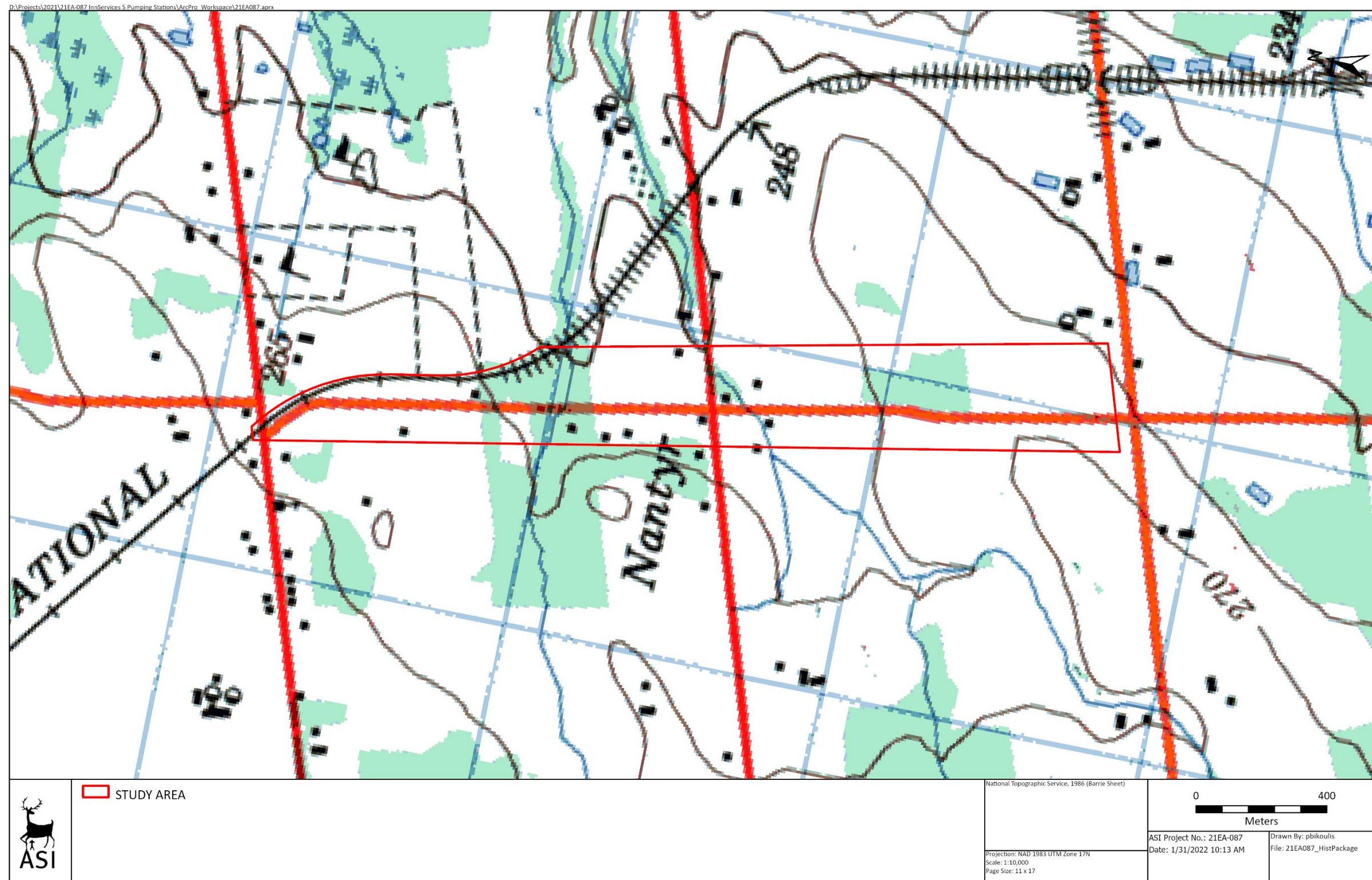


Figure 5: The Study Area overlaid on the 1986 topographic map of Barrie (Base Map: (Department of Energy, Mines and Resources, 1986).





Figure 6: The Study Area overlaid on the 1954 aerial photograph of Innisfil (Base Map: (Hunting Survey Corporation Limited, 1954).



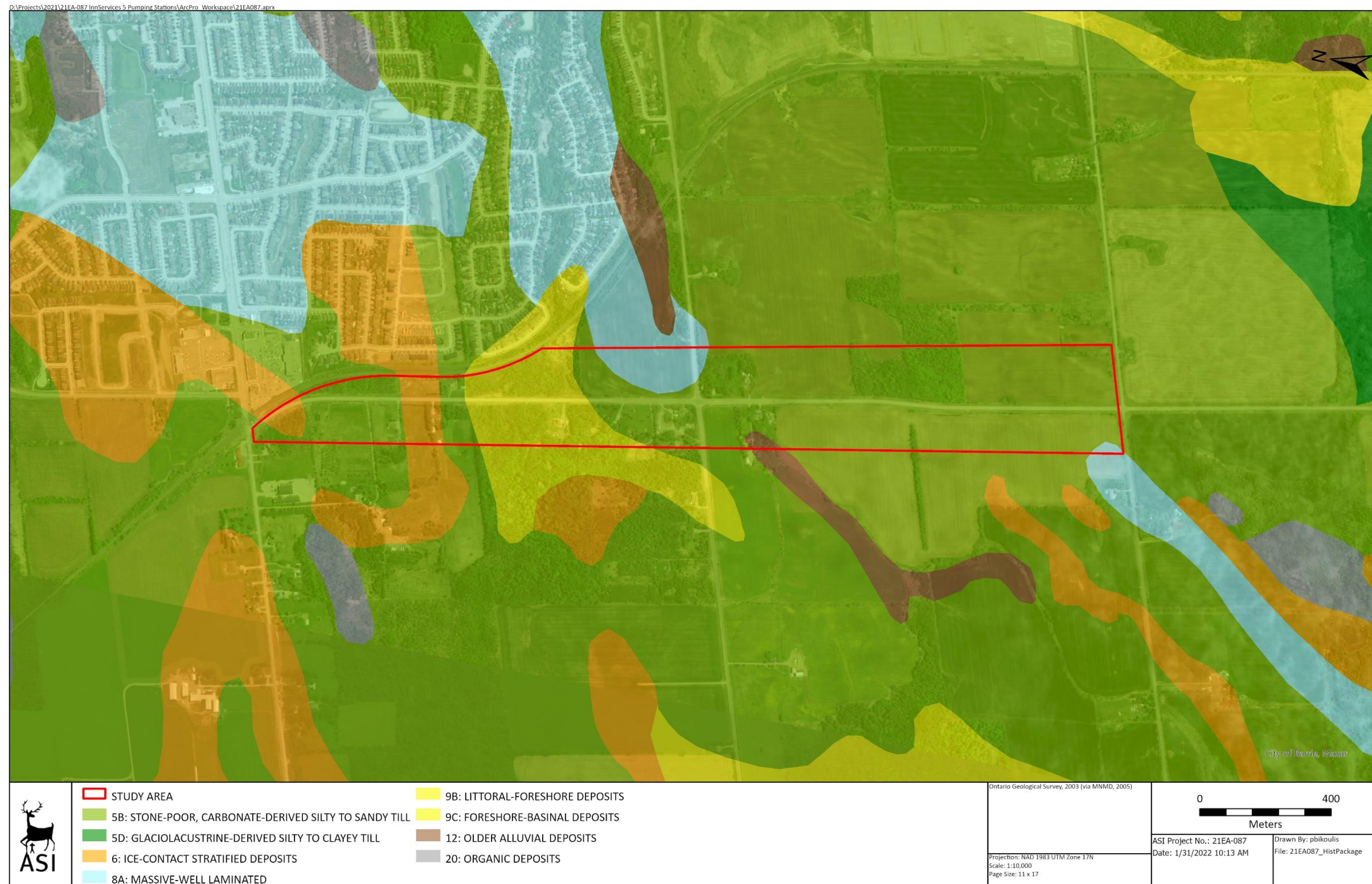


Figure 7: Study Area – Surficial Geology



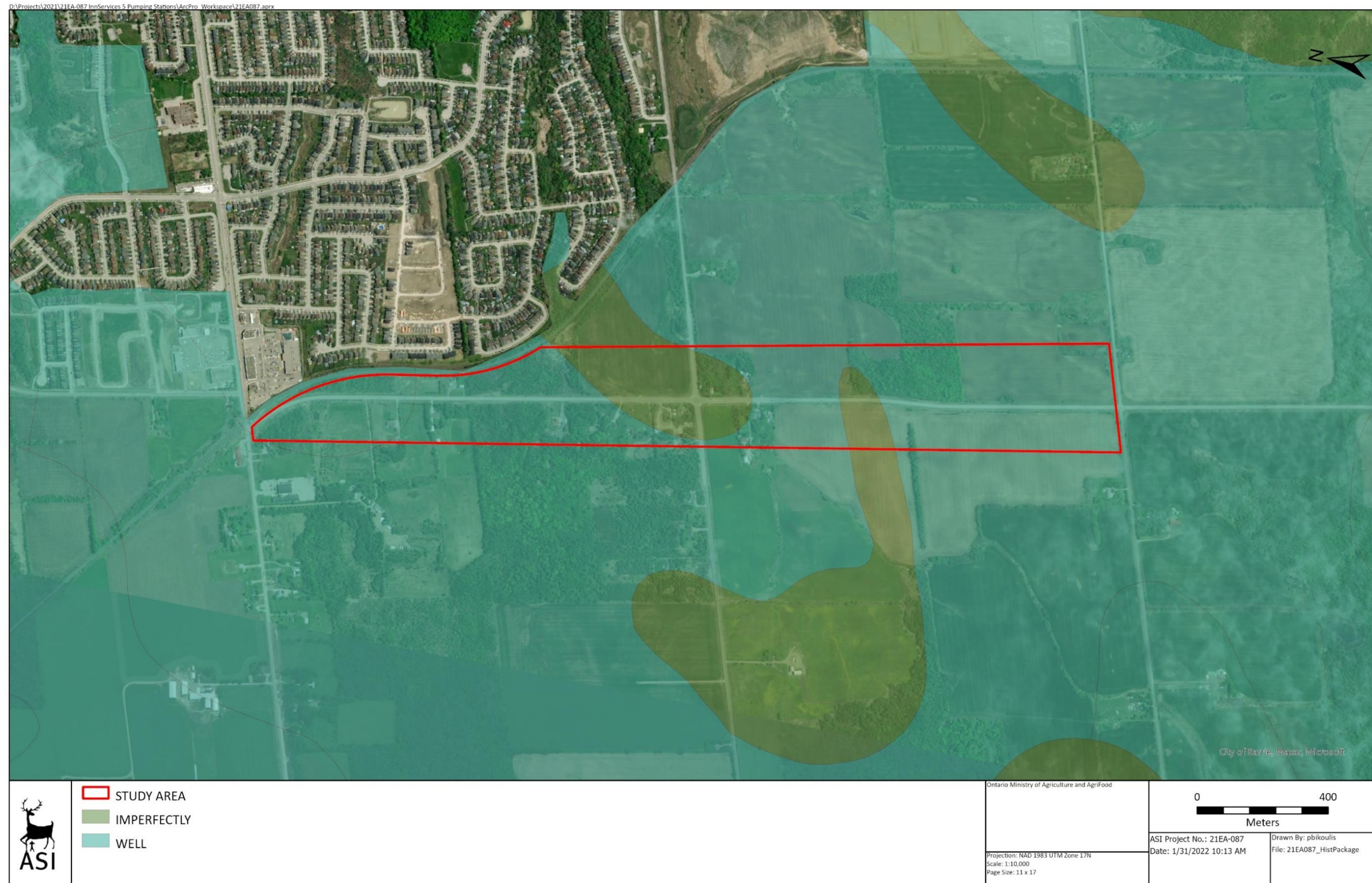


Figure 8: Study Area - Soil Drainage



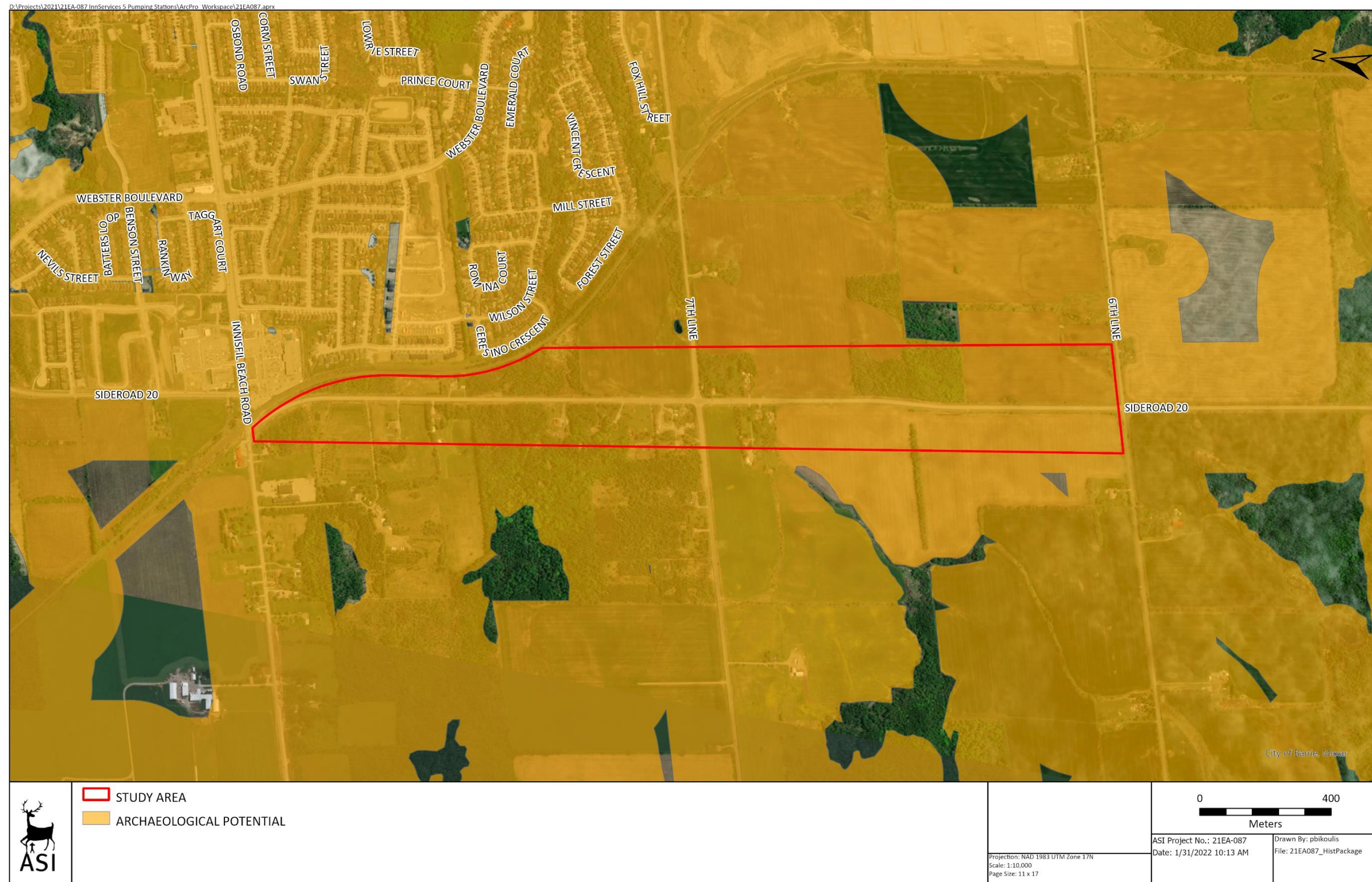


Figure 9: Archaeological Potential Modeling from the County of Simcoe Archaeological Management Plan (ASI, 2019).



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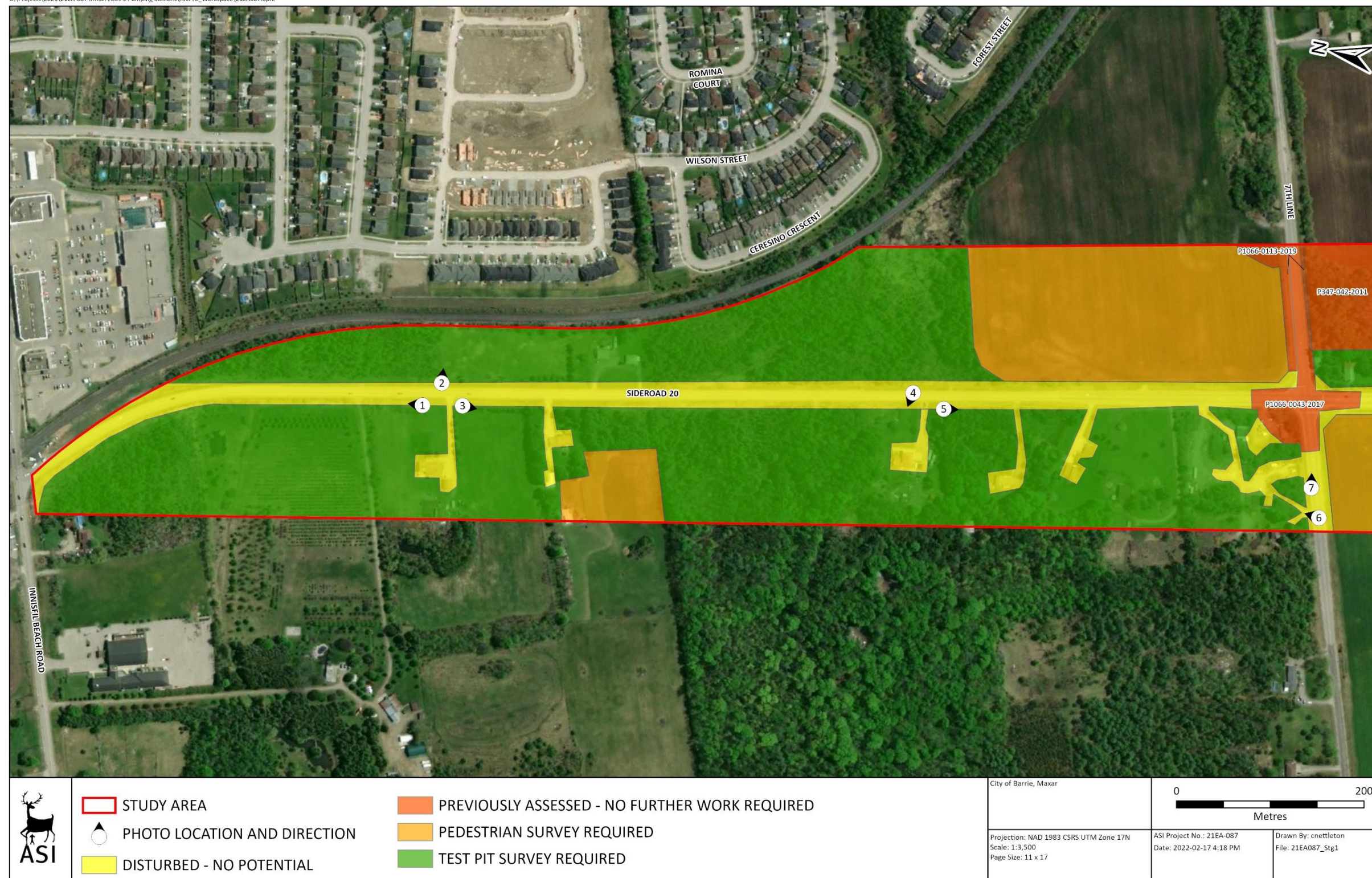


Figure 10: Stage 1 Results for 20th Sideroad Sewage Pumping Station #3 – Sheet 1



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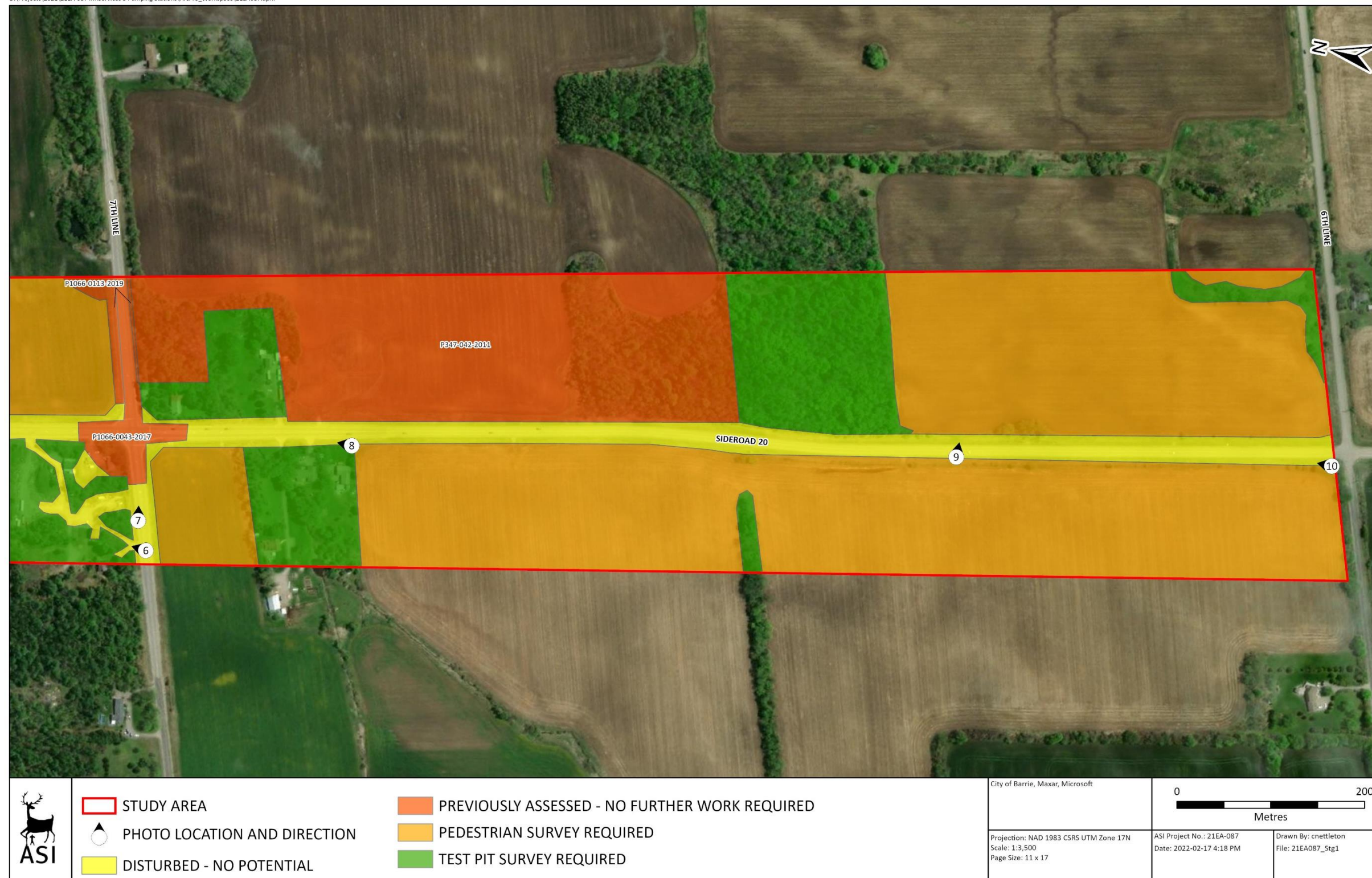


Figure 11: Stage 1 Results for 20th Sideroad Sewage Pumping Station #3 – Sheet 2



Appendix G

Stage 2 Archaeological Assessment Report

Stage 2 Archaeological Assessment 1460 7th Line Sideroad Sewage Pumping Station (Part of Lot 21, Concession 7, Geographical Township of Innisfil, County of Simcoe), Town of Innisfil, County of Simcoe

Original Report

Prepared for:

Ainley Group

280 Pretty River Parkway
Collingwood, Ontario, L9Y 4J5

Archaeological Licence: P383 (Williams)

PIF P383-0502-2025

Archaeological Services Inc. File: 24EA-076

18 December 2025



Executive Summary

Archaeological Services Inc. (ASI) was contracted by Ainley Group, on behalf of the InnServices Utilities Inc., to conduct a Stage 2 Archaeological Assessment of the 20th Sideroad Sewage Pumping Station (SPS). The Project Area, as outlined in the site plan provided to ASI by Ainley Group, consists of an approximately 25 metre by 60 metre area within an open field and driveway east of 20th Sideroad at 1460 7th Line in the Town of Innisfil.

A Stage 1 assessment for the 20th Sideroad SPS project was previously completed by ASI in 2022. The report concluded that the agricultural field retained archaeological potential and must be subject to Stage 2 pedestrian survey at five metre intervals before any development.

The Stage 2 property survey was conducted on September 30, 2025, in accordance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists* by pedestrian and test pit survey.

Approximately 4% of the Project Area (0.01 hectares) was found to have low archaeological potential on account of disturbance. The remaining 96% (0.16 hectares) was subject to pedestrian and test pit survey at one and five metre intervals.

No archaeological resources were encountered during the Stage 2 survey, and no further archaeological assessment is recommended.

No archaeological resources were encountered within the Project Area during the Stage 2 survey, and no further archaeological assessment is recommended.



Project Personnel

- **Principal:** Lisa Merritt, MSc (P094), Principal, Infrastructure
- **Senior Project Manager:** Sarah Jagelewski, BA Hons (R405), Lead Archaeologist, Manager, Infrastructure
- **Division Coordinator:** Katrina Thach, BA Hons (R1225), Associate Archaeologist, Assistant Manager, Infrastructure
- **Project Administrator:** Catherine Kitchen, BA (R1364), Archaeologist, Project Administrator, Infrastructure
- **Project Director (Licencee):** Blake Williams, MLitt (P383), Lead Archaeologist, Project Manager, Infrastructure
- **Project Manager:** Eliza Brandy, MA (R1109), Associate Archaeologist, Project Manager, Infrastructure
- **Field Director:** Jose Gutierrez, MA (R1213), Archaeologist, Field Director, Infrastructure
- **Field Archaeologists:** Abdur Rahman; Evgenii Raspopov
- **Report Preparation:** Laura Burke, BA Hons (R1113), Associate Archaeologist, Technical Writer and Researcher, Infrastructure
- **Graphics:** Andrew Clish, BES (P046), Senior Archaeologist, Senior Field Director, Laboratory and Fieldwork Services, Operations; Jonas Fernandez, MSc (R281), Lead Archaeologist, Manager - Geomatics, Operations; Carolyn Nettleton, BA, Archaeologist, GIS Technician, Operation Division
- **Report Review:** Eliza Brandy; Jessica Lytle, MSc (P1066), Lead Archaeologist, Coordinator, Infrastructure; Sarah Jagelewski



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1.0 Project Context

Archaeological Services Inc. (ASI) was contracted by Ainley Group, on behalf of the InnServices Utilities Inc., to conduct a Stage 2 Archaeological Assessment of the 20th Sideroad Sewage Pumping Station (SPS). The Project Area, as outlined in the site plan provided to ASI by Ainley Group, consists of an approximately 25 metre by 60 metre area within an open field and driveway east of 20th Sideroad at 1460 7th Line in the Town of Innisfil (Figure 1).

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (R.S.O. c. O.18, 1990, as amended in 2025) and the 2011 *Standards and Guidelines for Consultant Archaeologists (S&G)*, currently administered by the Ministry of Citizenship and Multiculturalism (MCM, 2011).

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act* (R.S.O. c. E.18, 1990, as amended in 2025) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the *Municipal Class Environmental Assessment* process (Municipal Engineers Association, 2023).

In addition, this Stage 2 assessment has been commissioned to satisfy the recommendations of the previous Stage 1 assessment (P383-0307-2021) that was undertaken as part of the 20th Sideroad Sewage Pumping Station #3 Municipal Class Environmental Assessment in the Town of Innisfil.

The *County of Simcoe Archaeological Management Plan* (ASI, 2019) was also consulted.

Authorization to access and carry out all activities necessary for the completion of this Stage 2 assessment was granted by Ainley Group on June 25, 2025.



1.1.1 Treaties and Traditional Territories

The Nottawasaga Purchase (Treaty 18), a provisional agreement sometimes called the Lake Simcoe-Nottawasaga Treaty, was signed on October 17, 1818, by representatives of the Government of Upper Canada and the Anishinaabe (Ministry of Indigenous Affairs, 2020). Treaty 18 encompassed 1,592,000 acres of land between the District of London in the west, Lake Huron in the north, the west limit of the Penetanguishene Purchase (1815) in the east, and the west shore of Lake Simcoe, Cook’s Bay, and the Holland River in the northwest. In exchange for the land, the Crown agreed to pay an annual sum of £1200 in goods at the “Montreal price” (Ministry of Indigenous Affairs, 2020). The Nottawasaga Purchase territory includes the present-day communities of Wasaga, Bradford, and Collingwood.

Indigenous Contributions

Oral histories from Indigenous communities are primary sources that can hold important historical information and their inclusion can provide an indigenous perspective to archaeological assessment reports. There are various understandings of the histories and movements of communities based on the study of different oral histories and written records and it is fair to say that there is no universally accepted narrative.

The following history is provided by the Chippewas of Rama First Nation:

“The Chippewas of Rama First Nation are an Anishinaabe (Ojibway) community located at Rama First Nation, ON. Our history began with a great migration from the East Coast of Canada into the Great Lakes region. Throughout a period of several hundred years, our direct ancestors again migrated to the north and eastern shores of Lake Huron and Georgian Bay. Our Elders say that we made room in our territory for our allies, the Huron-Wendat Nation, during their times of war with the Haudenosaunee. Following the dispersal of the Huron-Wendat Nation from the region in the mid-1600s, our stories say that we again migrated to our territories in what today is known as Muskoka and Simcoe County. Several major battles with the Haudenosaunee culminated in peace being agreed between the



Anishinaabe and the Haudenosaunee, after which the Haudenosaunee agreed to leave the region and remain in southern Ontario. Thus, since the early 18th century, much of central Ontario into the lower parts of northern Ontario has been Anishinaabe territory.

The more recent history of Rama First Nation begins with the creation of the “Coldwater Narrows” reserve, one of the first reserves in Canada. The Crown intended to relocate our ancestors to the Coldwater reserve and ultimately assimilate our ancestors into Euro-Canadian culture. Underlying the attempts to assimilate our ancestors were the plans to take possession of our vast hunting and harvesting territories. Feeling the impacts of increasingly widespread settlement, many of our ancestors moved to the Coldwater reserve in the early 1830s. Our ancestors built homes, mills, and farmsteads along the old portage route which ran through the reserve, connecting Lake Simcoe to Georgian Bay (this route is now called “Highway 12”). After a short period of approximately six years, the Crown had a change of plans. Frustrated at our ancestors continued exploiting of hunting territories (spanning roughly from Newmarket to the south, Kawartha Lakes to the east, Meaford to the west, and Lake Nipissing to the north), as well as unsuccessful assimilation attempts, the Crown reneged on the promise of reserve land. Three of our Chiefs, including Chief Yellowhead, went to York under the impression they were signing documents affirming their ownership of land and buildings. The Chiefs were misled, and inadvertently allegedly surrendered the Coldwater reserve back to the Crown.

Our ancestors, then known as the Chippewas of Lakes Simcoe and Huron, were left landless. Earlier treaties, such as Treaty 16 and Treaty 18, had already resulted in nearly 2,000,000 acres being allegedly surrendered to the Crown. The Chippewas made the decision to split into three groups. The first followed Chief Snake to Snake Island and Georgina Island (today known as the Chippewas of Georgina Island). The second group followed Chief Aissance to Beausoleil Island, and later to Christian Island (Beausoleil First Nation). The third group, led by Chief Yellowhead, moved to the Narrows between Lakes Simcoe and Couchiching and eventually, Rama (Chippewas of Rama First Nation).



A series of purchases, using Rama’s own funds, resulted in Yellowhead purchasing approximately 1,600 acres of abandoned farmland in Rama Township. This land makes up the core of the Rama Reserve today, and we have called it home since the early 1840’s. Our ancestors began developing our community, clearing fields for farming and building homes. They continued to hunt and harvest in their traditional territories, especially within the Muskoka region, up until the early 1920’s. In 1923, the Williams Treaties were signed, surrendering 12,000,000 acres of previously unceded land to the Crown. Once again, our ancestors were misled, and they were informed that in surrendering the land, they gave up their right to access their seasonal traditional hunting and harvesting territories.

With accessing territories difficult, our ancestors turned to other ways to survive. Many men guided tourists around their former family hunting territories in Muskoka, showing them places to fish and hunt. Others worked in lumber camps and mills. Our grandmothers made crafts such as porcupine quill baskets and black ash baskets, and sold them to tourists visiting Simcoe and Muskoka. The children were forced into Indian Day School, and some were taken away to Residential Schools. Church on the reserve began to indoctrinate our ancestors. Our community, along with every other First Nation in Canada, entered a dark period of attempted genocide at the hands of Canada and the Crown. Somehow, our ancestors persevered, and they kept our culture, language, and community alive.

Today, our community has grown into a bustling place, and is home to approximately 1,100 people. We are a proud and progressive First Nations community.”

1.2 Historical Context

A comprehensive review of the precontact Indigenous and Euro-Canadian occupations of Simcoe County is presented in the Stage 1 report (ASI, 2022a, pp. 8–14). To summarize, background research indicates that the general vicinity of the Project Area has been attractive to human settlement for thousands of years, primarily by Indigenous people and more recently by Euro-Canadian settlers.



Historically, the Project Area is within part of Lot 21, Concession 7 in the Geographical Township of Innisfil, County of Simcoe, Ontario.

Township of Innisfil

The Township of Innisfil was surveyed in 1820 and the first settlement began that year. The township was named after the poetical name for Ireland, Innisfail, by its early settlers. Growth was slow during the first ten years of the township and the first sawmill was not erected until the 1830s and in 1835 a grist mill was constructed. Early settlement focused around Kempenfeldt Bay and the southwestern area of the township was not settled until after 1840. By 1843, the first school was constructed and the following year the Innisfil Methodist Congregation built the first church. The first census of the township recorded a population of only 762 inhabitants, by 1850, the township had a population of 1,807.

Following the connection of the Northern Railway in 1853, the township became an important shipping hub for the lumber industry of central Ontario (Mika & Mika, 1981). With the arrival of the railway a number of communities developed and prospered, Allandale, Lefroy, and Craigvale all boasted stations. On the western border of the township, Thorton was a stop for the Hamilton and Northwestern Railway. The community of St. Paul's was established at the corner of Penetanguishene Road (Yonge Street) and Mapleview Drive, and was centered around St. Paul's Anglican Church (established 1851) and a schoolhouse as depicted on the 1879 Illustrated Historical Atlas (Belden, 1881). The small community consisted of a cluster of houses, and would have been along the main path of anyone travelling between Toronto and Georgian Bay along Penetanguishene Road. Other early post office communities included Bramley, Cherry Creek, Fennell, Holly, Innisfil, Killyleagh, Beaumont, Painswick, and Stroud. Today, Innisfil attracts large numbers of tourists and cottagers in the summertime who travel from Toronto via Highway 400 and Highway 11, the northern extension of Yonge Street. This extension travels the length of the township and was built in the late eighteenth century by Colonel John Graves Simcoe from York (Toronto) to Lake Simcoe (Mika & Mika, 1981).



1.3 Archaeological Context

This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Project Area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the MCM through *Ontario's Past Portal*; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

The Project Area is located at 1460 7th Line on the east side of 20th Sideroad approximately 145 metres north of 7th Line and the community of Nantyr, Town of Innisfil. The rectangular portion of the Project Area is situated within an active agricultural field. The section of the Project Area running adjacent to 20th Sideroad is within the roadbed and right-of-way, an overgrown ditch and a gravel patch located at the entrance to the field.

The Stage 2 survey for the 20th Sideroad Sewage Pumping Station project was conducted on September 30, 2025, under the field direction of Jose Gutierrez (R1213).

1.3.2 Geography

A comprehensive summary of the geology and physiography of Simcoe County is presented in the Stage 1 report (ASI, 2022a, pp. 15–17). To summarize, the Project Area is situated within the till plains of the Peterborough Drumlin Field physiographic region of southern Ontario (Chapman & Putnam, 1984).

The Peterborough Drumlin Field extends from Simcoe County east to Hastings County and is generally characterized by rolling till plains overlying limestone bedrock. The region is approximately 4,532 square kilometres and contains over 3000 drumlins in addition to many other drumlinoid hills and surface flutings (Chapman & Putnam, 1984). The drumlins are composed of highly calcareous till but there are local differences in composition. The till plains of the regions



were formed during the retreat of the Lake Ontario ice lobe of the Laurentide glacier and they indicate directionality of glacial advance and retreat. Till is produced from the advance of continental glacial ice. Soil and rock is carried forward by the ice, mixed and milled, producing a heterogeneous soil which is characteristic of glaciations (Chapman & Putnam, 1984).

The soil type within the Project Area is Smithfield, a silty clay loam with imperfect drainage (Soil Research Institute, 1959).

The Project Area is within the Lake Simcoe Watershed and has two minor tributaries located within 300 metres. The tributaries drain into Cook's Bay to the east.

The Lake Simcoe Watershed drains an area of approximately 3,400 kilometres squared, from the Oro Moraine in the north to the Oak Ridges Moraine in the south, ultimately draining into Lake Huron to the west (Lake Simcoe Region Conservation Authority, 2012).

1.3.3 Previously Registered Archaeological Sites

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database maintained by the MCM. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 kilometres north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Project Area under review is located in Borden block *BbGv*.

According to the Ontario Archaeological Sites Database, six previously registered archaeological sites are located within one kilometre of the Project Area, none of which are located within 50 metres (MCM, 2025). A summary of the sites is provided below.



Table 1: Registered Sites within One Kilometre of the Project Area

Borden Number	Site Name	Temporal/ Cultural Affiliation	Site Type	Researcher
BbGv-2	Kirkpatrick	Not Listed	Not Listed	Not Listed, 1975
BbGv-49	Jack	Post-Contact	Homestead	ASI, 2010
BbGv-50	McCullough	Post-Contact	Scatter	ASI, 2010
BbGv-51	Ralston 1	Post-Contact	Homestead	ASI, 2010
BbGv-52	Ralston2	Post-Contact	Homestead	ASI, 2010
BbGv-64	7 th Line H1	Post-Contact	Homestead	Archeoworks Inc., 2019

1.3.4 Previous Archaeological Assessments

ASI reviewed previous archaeological assessments that detail fieldwork within 50 metres of the Project Area. Only those specific archaeological assessments of direct relevance to the present undertaking have been included here:

- **Report awaiting MCM review:** *Stage 1 Archaeological Assessment 20th Sideroad Sewage Pumping Station #3 (Lot 20 and 21, Concession 6, Lot 20 and Lot 21, Concession 7, Former Township of Innisfil, County of Simcoe) Town of Innisfil, Simcoe County. P383-0307-2021.*

The assessment associated with the current SPS project concluded that the 20th Sideroad right-of-way was disturbed and that the agricultural field retained archaeological potential. Within the agricultural field pedestrian survey at five metre intervals was recommended before any further work.



2.0 Field Methods

The Stage 2 Project Area is approximately 25 metres by 60 metres in size and covers an area of 0.17 hectares.

The Stage 2 property survey was conducted under the field direction of Jose Gutierrez (R1213), on September 30, 2025, in accordance with the *Ontario Heritage Act* and the S&G, Section 2. During the field assessments, weather and lighting conditions permitted good visibility and were in accordance with the S&G, Section 2.1, Standard 3. During the time of survey, conditions were seasonal with sunny skies and temperatures of 21 degrees Celsius. Photographs of all field conditions were taken (Image 1 to Image 4), and the location and direction of each photograph is mapped in Figure 2.

The Stage 2 Project Area includes 0.15 hectares of actively farmed agricultural lands with clay-loam soils. Prior to the initiation of survey, all agricultural lands within the Project Area were ploughed, disked, and allowed to weather over several rainfalls. The field preparation methods used meet the requirements of S&G Section 2.1.1, Standards 1-5 for pedestrian survey. All standards were met; ploughing was deep enough to provide total topsoil exposure, but not deeper than previous ploughing and weathering was excellent resulting in surface visibility greater than 80 % (Image 4). These lands were then subject to pedestrian survey at five metre intervals following S&G Section 2.1.1, Standards 6-9.

As per Section 2.1 of the S&G, all lands where ploughing was not possible were subject to test pit survey (Image 3). According to Section 2.1.2, Standard 2 of the S&G, any undisturbed areas requiring test pit survey within 300 metres of any feature of archaeological potential must be subject to systematic assessment at five metre intervals. A narrow strip of agricultural field less than 10 metres in width is included within the Project Area. As per S&G Section 2.1.2, Standard 1.f, these un-ploughed lands were subject to test pit survey at five metre intervals.

All test pits were excavated following the S&G Section 2.1.2 Standards 5-9. All test pits were excavated by hand to a minimum of 30 centimetres in diameter, and into the first five centimetres of subsoil where possible. Each test pit was examined for stratigraphy, cultural features, and evidence of fill. Test pit fill was



screened through six-millimetre mesh to facilitate artifact recovery. Afterwards, all test pits were backfilled, and their locations were recorded on field maps. Any factors that precluded the excavation of test pits (e.g., excessive slope, drainage, exposed bedrock, previous disturbance) were noted, and the areas were mapped and photographed.

Fieldwork was conducted using a Samsung Galaxy A7 tablet paired with a sub-metre Trimble Catalyst Global Navigation Satellite System and ESRI Field Maps in conjunction with project mapping provided by the Town of Innisfil to ensure the assessment remained within the Project Area limits.

2.1 Areas of Low Archaeological Potential

Visual assessment determined that a narrow portion of the Project Area did not retain archaeological potential. Approximately four percent of the Project Area (0.01 hectares) had been previously subject to deep and extensive ground disturbance and was not subject to Stage 2 survey, as per S&G Section 2.1, Standard 2.b. The lands documented as being previously disturbed have low archaeological potential and include the roadbed and right-of-way, an overgrown ditch and a gravel patch located at the entrance to the field (Figure 2; Image 1).

2.2 Pedestrian Survey

Approximately 91 percent of the Project Area (0.15 hectares) was subject to pedestrian survey at five metre intervals following S&G Section 2.1.1, Standards 1-9 and Guideline 2 (Figure 2; Image 4**Error! Reference source not found.**).

2.3 Test Pit Survey

Approximately five percent of the Project Area (0.01 hectares) did not contain natural topsoil (A-horizon), and given the size of the area, was subject to test pit survey at five metre intervals to confirm previous disturbance following S&G Section 2.1.8, Standards 1-2. The area subject to test pit survey includes an overgrown area between the right-of-way and the agricultural field. (Figure 2; Image 3).



Disturbed stratigraphy in the Project Area is characterized by 15 centimetres of redeposited dark grey (10YR 4/1) sand topsoil (A-horizon) containing gravel, atop 16 centimetres of light grey (5Y 7/1) sand and a gray (5Y 5/1) sandy clay fill deposit containing large gravel pieces (Image 2).

3.0 Record of Finds

No archaeological resources were encountered during the course of the Stage 2 Archaeological Assessment for the 20th Sideroad SPS Project Area.

3.1 Inventory of Documentary and Material Record

The documentation related to this archaeological assessment will be curated by ASI until such a time that arrangements for their ultimate transfer to His Majesty the King in right of Ontario, or other public institution, can be made to the satisfaction of the project owner(s), the MCM, and any other legitimate interest groups.

Table 2 provides an inventory and location of the documentary and material record for the project in accordance with the S&G, Sections 6.7 and 7.8.2.3.

Table 2: Inventory of Documentary and Material Record

Material	Location	Comments
Digital field notes (1 file) and GNSS generated Esri shapefiles (2 files)	Archaeological Services Inc., 528 Bathurst Street, Toronto, Ontario, M5S 2P9	Stored in ASI project folder 25EA-076; GPS and digital information stored on ASI network servers
Digital field photography (41 files)	Same as above	Files stored on ASI network servers



Material	Location	Comments
Digital research, analysis, and reporting materials (3 files)	Same as above	Files stored on ASI network servers

4.0 Analysis and Conclusions

The Stage 2 property survey was conducted September 30, 2025, in accordance with the *Ontario Heritage Act* and the S&G by test pit and pedestrian survey.

Approximately four percent of the Project Area (0.01 hectares) was found to have low archaeological potential on account of disturbance and did not require Stage 2 survey. The remaining 96 percent (0.16 hectares) was subject to pedestrian and test pit survey at one and five metre intervals.

No archaeological resources were encountered during the Stage 2 survey, and no further archaeological assessment is recommended.

5.0 Recommendations

In light of these results, the following recommendations are made:

1. The 20th Sideroad SPS Project Area does not require further archaeological assessment; and
2. Should the proposed work extend beyond the current Project Area, or should changes to the project design or temporary workspace requirements result in the inclusion of previously un-surveyed lands, these lands should be subject to further archaeological assessment.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that



archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Archaeology Programs Unit of the MCM should be immediately notified.

The above recommendations are subject to Ministry approval, and it is an offence to alter any archaeological site without MCM concurrence. No grading or other activities that may result in the destruction or disturbance of any archaeological sites are permitted until notice of MCM approval has been received.

6.0 Advice on Compliance with Legislation

- This report is submitted to the Minister as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48



- (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.
- The *Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33* requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Public and Business Services Delivery.
 - Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.



7.0 Bibliography and Sources

- Archaeological Services Inc. (2019). *County of Simcoe Archaeological Management Plan*. Report on file with the County of Simcoe.
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- Chapman, L. J., & Putnam, F. (1984). *The Physiography of Southern Ontario* (3rd ed., Vol. 2). Ontario Ministry of Natural Resources.
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Municipal Engineers Association. (2023). *Municipal Class Environmental Assessment*.

Soil Research Institute. (1959). *Soil Map of Simcoe County, Ontario. North Sheet*. [Map]. Research Branch, Canada Department of Agriculture and the Ontario Agricultural College.



8.0 Images



Image 1: Disturbed right-of-way; low archaeological potential



Image 2: Disturbed soil profile



Image 3: Test pit survey at five metre intervals to confirm disturbance



Image 4: Pedestrian survey at five metre intervals

9.0 Maps

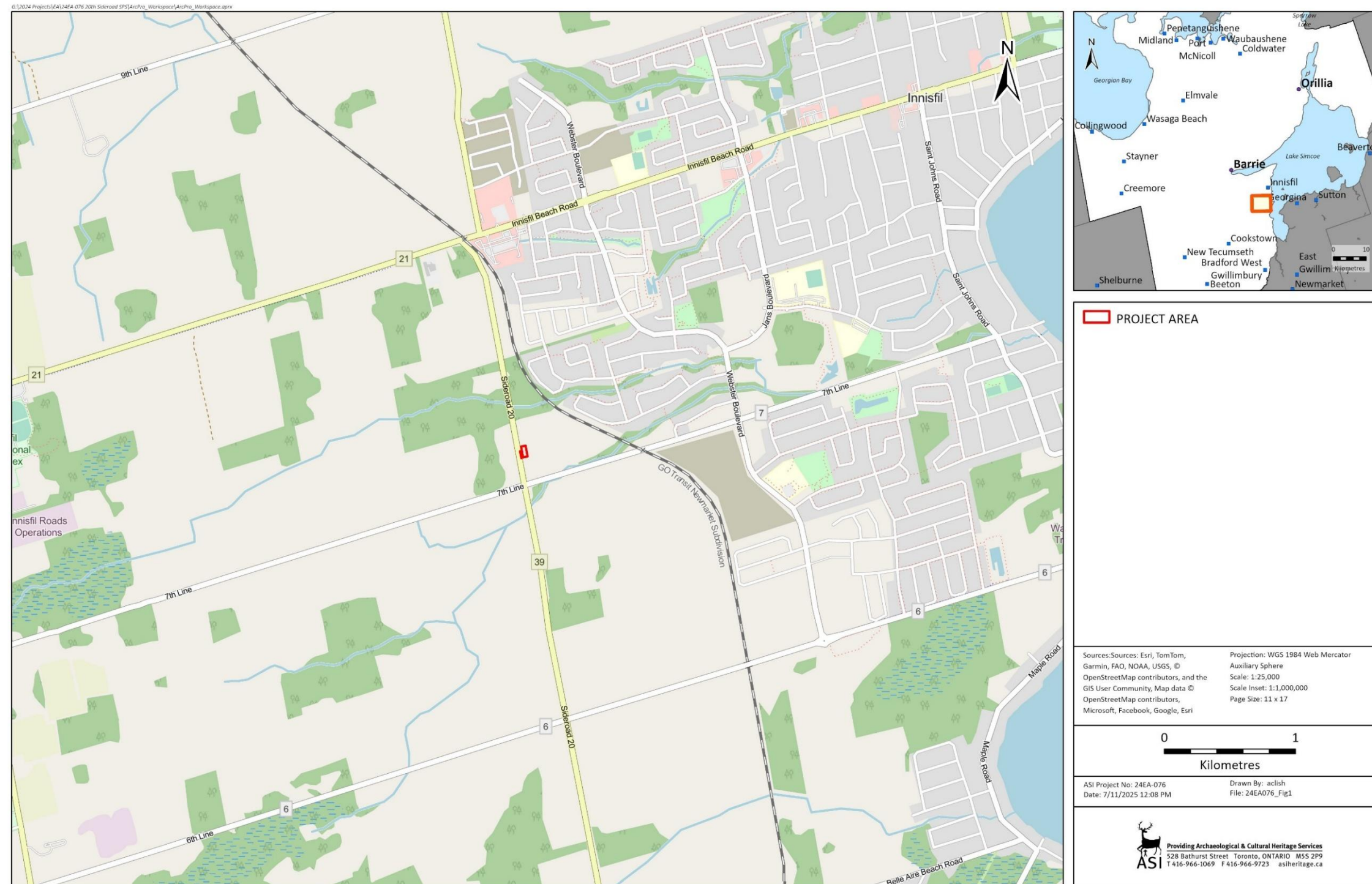


Figure 1: 20th Sideroad Sewage Pumping Station Stage 2 Project Area

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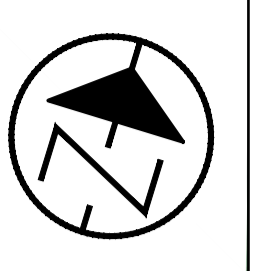


Figure 2: 20th Sideroad Sewage Pumping Station Stage 2 Results



Appendix A: Proposed Site Plan





NOT FOR CONSTRUCTION

NOTES
 1. SITE LAYOUT AND ALL STRUCTURES IDENTIFIED WITHIN THE SSPS PROPERTY BOUNDARY ARE CONCEPTUALLY SHOWN AND SUBJECT TO CHANGE UPON FURTHER DETAILED DESIGN.

CONTRACT DRAWINGS
 Contractor must verify all dimensions and be responsible for same. Any discrepancies must be reported to the Engineer before commencing work. Drawings are not to be scaled. Drawings may not be used for any purpose other than that stipulated in the contract agreement between the owner/client and the Engineer without the express written consent of Ainley & Associates Limited. Use of these drawings by any party for any other purpose is subject to the following caution.
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Not Valid Unless Signed And Dated

PRELIMINARY

SCALE:	H= 1:1000 V= N/A
DESIGN:	
DRAWN:	M.L.
CHECKED:	
DATE:	NOV. 2024

TOWN OF INNISFIL
PROPOSED SEWAGE PUMP STATION
INNISFIL 20SR SEWAGE PUMPING STATION
 LOCATION PLAN



AINLEY FILE:
 121031
 DRAWING No.
 SP2

NO.	REVISIONS	DATE	INITIAL

Plotted by: M. Wong, 11/15/2024, 11:05 AM
 File: \\borealis\projects\2024\2024-2025\2024-2025_SPS_SPS.dwg, Layout: SP2