

6th Line Municipal Class Environmental Assessment

County Road 27 to St John's Road
Town of Innisfil, ON

September 6, 2016

**APPENDIX C:
STAGE 1 ARCHAEOLOGICAL
ASSESSMENT**

**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**

ORIGINAL REPORT

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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

EXECUTIVE SUMMARY

Archaeological Services Inc (ASI) was contracted by HDR Corporation on behalf of the Town of Innisfil to prepare a Stage 1 archaeological assessment report as part of the 6th Line Class Environmental Assessment (Part A) of the 6th Line ROW including parts of St. John's Road and 20 Sideroad in the Town of Innisfil.

The background research indicates that six previously registered archaeological sites are located within one kilometre of the study area. A review of the geography and history of the study area suggested that the study area has potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the condition of soils. Some project lands have been subject to previous archaeological assessment.

The property inspection identified some project lands that possess archaeological potential and will require Stage 2 archaeological assessment. Other lands, primarily within the 6th Line right-of-way as well as adjacent lands are considered to not retain archaeological potential.

In light of these results, ASI makes the following recommendations:

1. The 6th Line Part A study area includes lands which are considered to possess archaeological potential. These lands should be subject to Stage 2 archaeological assessment by a combination of test pit and pedestrian survey, both at five metre intervals, prior to any proposed impacts by the projects;
2. The remainder of the study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance, steeply sloping, or low and wet conditions. These lands do not require further archaeological assessment; and,
3. Should the proposed work extend beyond the current study area, then further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.



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1.0 PROJECT CONTEXT

Archaeological Services Inc. (ASI) was contracted by HDR Corporation (HDR) on behalf of the Town of Innisfil to conduct a Stage 1 archaeological assessment (background research and property inspection) as part of the 6th Line Municipal Class Environmental Assessment (EA) (Part A) of the 6th Line right-of-way (ROW) including parts of St. John's Road and 20 Sideroad in the Town of Innisfil (Figure 1). The Town is proposing to improve 6th Line from a two lane rural road to a four lane urban major collector road.

In the *Standards and Guidelines for Consultant Archaeologists* (S & G), Section 1, the objectives of a Stage 1 archaeological assessment are discussed as follows:

- To provide information about the history, current land conditions, geography, and previous archaeological fieldwork of the study area;
- To evaluate in detail the archaeological potential of the study area that can be used, if necessary, to support recommendations for Stage 2 archaeological assessment for all or parts of the study area; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment, if necessary.

This report describes the Stage 1 archaeological assessment that was conducted for this project and is organized as follows: Section 1.0 summarizes the background study that was conducted to provide the historical and archaeological contexts for the project study area; Section 2.0 addresses the field methods used for the property inspection that was undertaken to document its general environment, current land use history and conditions of the study area; Section 3.0 analyses the characteristics of the project study area and evaluates its archaeological potential; Section 4.0 provides recommendations for the next assessment steps; and the remaining sections contain other report information that is required by the S & G, e.g., advice on compliance with legislation, works cited, mapping and photo-documentation.

1.1 Development Context

All activities carried out during this assessment were completed in accordance with the *Environmental Assessment Act*, the *Ontario Heritage Act* and the S & G. The project is being undertaken under the Municipal Class Environmental Assessment process.

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted to ASI by HDR on November 11, 2014.

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information gathered through the Stage 1 background research. First, a summary is presented of the current understanding of the Aboriginal land use of the study area. This is followed by a review of the historical Euro-Canadian settlement history.



1.2.1 *Aboriginal Land Use and Settlement*

Southern Ontario has been occupied by human populations, since the retreat of the Laurentide glacier, approximately 13,500 before present (BP) (Ferris 2013: 13). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 BP, the environment had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990: 62-63). The study area is situated below an extinct shorecliff which is generally believed to be attributed to either glacial Lake Algonquin or of glacial Lake Ardrea. Both of these lakes are believed to have drained between 10,500-10,000 BP (see Section 1.3.2; Karrow and Warner 1990:17; Kaszycki 1985: 120; Stewart 2013: 25-26).

Between approximately 10,000-5,500 BP, the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines were then submerged. This period produces the earliest evidence of heavy wood working tools and is indicative of greater investment of labour in felling trees for fuel, to build shelter, or to produce tools, and is ultimately indicative of prolonged seasonal residency at sites. By approximately 8,000 BP, evidence exists for polished stone implements and worked native copper. The source for the latter from the north shore of Lake Superior is evidence of extensive exchange networks. Early evidence exists at this time for the creation of communal cemeteries and ceremonial funerary customs. This evidence is significant for the establishment of band territories. These communal places indicate shared meaning across the community and are reflective of a people's cosmology (Brown 1995: 13; Holloway and Hubbard 2001: 74; Parker Pearson 1999: 141). Between approximately 4,500-3,000 BP, there is evidence for construction of fishing weirs. These structures indicate not only the group sharing of resources, but also the organization of communal labour (Ellis *et al.* 1990; Ellis *et al.* 2009).

Settlement and subsistence systems between 3,000 BP and 2,500 BP are not entirely understood. Populations continued a semi-permanent existence and exploited seasonally-available resources. The harvesting of spawning fish continued to be an important part of their subsistence practices. There continues to be evidence for extensive and complex exchange networks (Spence *et al.* 1990:136, 138). By approximately 2,000 BP, evidence exists for macro-band camps, focusing on the seasonal exploitation of resources such as spawning fish and wild rice (Spence *et al.* 1990:155, 164). It is also during this period that maize was first introduced into southern Ontario, though it would have only supplemented people's diet (Birch and Williamson 2013:13-15). Bands likely retreated to interior camps during the winter.

By approximately 1,000 BP until approximately 300 BP, lifeways became more similar to that described in early historical documents. Populations in the study area would have been Iroquoian speaking though full expression of Iroquoian culture is not recognised archaeologically until the fourteenth century. During the Early Iroquoian phase (1000-1300), 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: 317). By the second quarter of the first millennium BP, during the Middle Iroquoian phase (1300-1450), this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd *et al.* 1990: 343). In the Late Iroquoian phase (1450-1649) this process continued with the coalescence of these small villages into larger communities (Birch and Williamson 2013). Through this process, the socio-political organization of the Aboriginal Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed.

The study area is located within the traditional territory of the Huron-Wendat (Heidenreich 1990: Figure 15.1). The Huron-Wendat initially migrated into the Lake Simcoe area around the early sixteenth century



and by the turn of the seventeenth century most of the population of the north shore of Lake Ontario had migrated there forming the Huron-Wendat Confederacy (Birch and Williamson 2013: 40). The Huron were eventually dispersed by the Five Nations Iroquois in 1649 at which point the Seneca mainly took over control of the region (Heidenreich 1990; Ramsden 1990), who used the area primarily as a hinterland for the beaver hunt (Trigger 1978). The region of the study area coincides with one of the described seventeenth century Iroquois beaver hunting grounds in southern Ontario (Lahontan 1703). The geographical accuracy of Lahontan's map may need to be taken with a grain of salt and the "*hunting countries*" may generically refer to the previous territories of the former populations dispersed from southern Ontario by the Five Nations Iroquois.

Beginning in the mid-late seventeenth century, Ojibwa people began to enter southern Ontario and replace the Iroquois as the controlling Aboriginal group. By 1710, Ojibwa groups were well established in southern Ontario (Rogers 1978).

The eighteenth century saw the ethnogenesis in Ontario of the Métis. Métis people are of mixed First Nations and French ancestry, but also mixed Scottish and Irish ancestry as well. The Métis played a significant role in the economy and socio-political history of the Great Lakes during this time. Living in both Euro-Canadian and Aboriginal societies, the Métis acted as agents and subagents in the fur trade but also as surveyors and interpreters. Métis populations were predominantly located north and west of Lake Superior, however Métis populations lived throughout Ontario (Métis Nation of Canada [MNC] n.d.; Stone and Chaput 1978:607,608).

The study area is located within the lands of the Lake Simcoe-Nottawasaga Treaty of 1818 between the Crown and the Chippewa Nation (Aboriginal Affairs and Northern Development Canada [AANDC] 2013)

1.2.2 Historic Euro-Canadian Land Use: Township Survey and Settlement

Historically, the study area is located in part of Lots 20-26, Concessions 5 and 6 in the former Township of Innisfil, County of Simcoe.

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 which 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 Aboriginal 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 for Great Lakes traffic and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Aboriginal trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

Innisfil Township

The Township of Innisfil was surveyed in 1820 and the first settlement began that year. 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 focussed around Kempenfeldt Bay. By 1843, the first school was constructed and the following year the Innisfil Methodist Congregation built the first church. By 1850, the township had a population of 1,807. Following the connection of the Northern Railway, the township became an important shipping hub for the lumber industry of central Ontario (Mika and Mika 1981: 347-349).

1.2.3 Historic Map Review

The 1881 *Simcoe Supplement in Illustrated Atlas of the Dominion of Canada* was reviewed to determine the potential for the presence of historical archaeological remains within the study area during the nineteenth century (Figure 2). It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. Property owners and historical features of interest associated with the study area are detailed in Table 1.

Table 1: Nineteenth-century property owner(s) and historical features(s)
1881 Simcoe Supplement in Illustrated Atlas of the Dominion of Canada

Lot #	Concession #	Property Owner	Historical Feature(s)
20	5	Thos Jack	n/a
21	5	Thos Jack	n/a
22	5	n/a	Northern railway
23	5	n/a	n/a
24	5	n/a	n/a
25	5	n/a	n/a
26	5	n/a	n/a
20	6	T. Hughes	n/a
21	6	Jas Ralston	n/a
22	6	n/a	Northern Railway
23	6	n/a	n/a
24	6	n/a	n/a
25	6	n/a	n/a
26	6	n/a	n/a

The historic maps indicate that 6th Line and 20 Sideroad are both historic transportation routes.



Twentieth century maps indicate that the study area is predominantly rural with interspersed structures (likely houses). The immediate lands of the study area have changed little since the beginning of the twentieth century (Department of National Defence 1928; 1950).

1.2.4 Summary of Historical Context

The background research demonstrates that the study area has been occupied by Aboriginal peoples for thousands of years and is located on the territory of the (ancestral) Huron-Wendat. It was subsequently utilized by the Seneca and Ojibwa peoples for hunting territories, until the early nineteenth century. The background research also acknowledges the presence of the Métis across Ontario, however their presence is often muted in the historical record.

The background research and historic mapping also demonstrates that the study area is located in the Former Township of Innisfil, County of Simcoe. Nineteenth century mapping indicates that the study area includes historical transportation routes.

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 in the study area; the site record forms for registered sites housed at the Ministry of Tourism, Culture and Sport (MTCS); published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

The 6th Line Part A study area is a 3 km long linear corridor aligned with 6th Line from 450 m west of 20 Sideroad to St. John's Road and includes extensions along 6th Line ROW and St. John's Road ROW to Lake Simcoe, extending 25 m north and south of the existing 6th Line ROW property boundary. The project is proposing to widen the current two lane 20 m wide rural road to a four lane 26m wide collector road. The road currently runs through a rural landscape in transition. The western end of the study area is generally agricultural fields with low density housing, however the eastern section is dotted with recent residential subdivision developments, many still under construction. The property inspection was conducted on October 6, 2015.

1.3.2 Geography

In addition to the known archaeological sites and historic features, the state of the natural environment is an important indicator of archaeological potential. Accordingly, a description of the study area geography, physiography and soils is provided below.

The S & G, Section 1.3.1, 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 and Warner 1990: 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.

The S & G, Section 1.3.1, also lists other geographic characteristics that can indicate archaeological potential, including: elevated topography (eskers, drumlins, large knolls, 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. Physical indicators of use may be present, 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.

The 6th Line Part A study area is situated within the Lake Simcoe Lowlands physiographic region of southern Ontario in sand plain and beach with some boulder pavement as well as within the Peterborough Drumlin Field physiographic region of southern Ontario in drumlinized till plain (Chapman and Putnam 1984). The Simcoe Lowlands physiographic region consists of low-lying belts of sand plain, which cover an area of 280,000 ha, bordering Georgian Bay and Lake Simcoe (Chapman and Putnam 1984: 177–182). The area was once inundated by the waters of glacial Lake Algonquin, inland of the present day shorelines. Remnant shoreline features (beaches, shorecliffs, bars etc.) mark the former water level of Lake Algonquin. Topography is generally flat and sub-soils consist of variable sand, gravel, silt and clay deposits as formed on the lake bottom.

Sand plains and beach ridges are glaciolacustrine features and are products of the Late Wisconsinian glacial stage (ca. 25,000-10,000 BP). Sand plains are formed in shallow waters and beach ridges mark the former shorelines (Karrow and Warner 1990: 5). The sand plain upon which the study area is situated likely corresponds to shallow water deposits from Lake Algonquin. Boulder pavement has been caused by wave action during preceding high-water phases (Chapman and Putnam 1984: 76).

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 km² and contains over 3000 drumlins in addition to many other drumlinoid hills and surface flutings (Chapman and Putnam 1984: 169). 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 and Putnam 1984: 10, 16).



Soils within the study area consist of Alliston sandy loam, Guerin loam – stony phase, Muck and Bondhead sandy loam – stony phase (Department of Agriculture 1959). For detailed soil description see Appendix A.

The surficial geology of the study area is mapped on Figure 3. The study area is underlain by deposits of diamicton (poorly sorted sediments typically of glacial origin) and clay and silt (Ontario Geologic Survey [OGS] 2010). Soil drainage information is mapped on Figure 4. The study area includes well-drained and imperfectly drained soils.

The study area is located adjacent to Lake Simcoe. Lake Simcoe was known to the Huron-Wendat as *Ouentironk*, or “beautiful water (Lake Simcoe Region Conservation Authority [LSRCA] 2014). Late seventeenth and early eighteenth century French sources refer to Lake Simcoe as *Lac Toronto*. The etymology of ‘Toronto’ is debated however it is thought to be derived from the Mohawk word *tkaronto* which means “where there are trees standing in the water” and may refer to the fish weir at the Narrows between Lake Simcoe and Lake Couchiching (Natural Resources Canada [NRCAN] 2007). Lake Simcoe was one of the terminals of the Toronto Carry Place route along the Humber River which was a vital route in fur trade (Williamson 2008: 50-52). This passage connected to Lake Ontario at the mouth of the Humber River. Lake Simcoe drains an area of 340,000 ha, subsequently draining into Lake Huron. Lake Simcoe supports a diverse aquatic ecosystem, home to over 50 different species of fish (LSRCA 2014). The study area is located within the Innisfil Creeks subwatershed and contains one of the Innisfil Creeks, small unnamed tributaries. The Innisfil Creeks subwatershed drains an area of 10,700 ha (LSRCA 2012).

1.3.3 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MTCS. 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 km east to west, and approximately 18.5 km 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 blocks *BbGv*.

According to the OASD, six previously registered archaeological sites are located within one kilometre of the study area (MTCS 2014). Details of the previously registered sites are provided in Table 2. The site information for several of the sites is incomplete in the OASD but further information has been requested.

Table 2: Details of previously registered archaeological sites registered within 1 km of the study area

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
BbGv-47	n/a	n/a	n/a	n/a
BbGv-48	n/a	n/a	n/a	n/a
BbGv-49	Jack	Euro-Canadian (mid-late nineteenth century)	Homestead	ASI 2010
BbGv-50	McCullough	Euro-Canadian (mid-late nineteenth century)	Homestead	ASI 2010
BbGv-51	Ralston 1	n/a	n/a	n/a
BbGv-52	Ralston 2	n/a	n/a	n/a

N.B. - Dates based on MTCS 2014



According to the background research, five previous assessments have been conducted within 50 m of the 6th Line Part A study area (ASI 2014a; 2014b; 2015a; 2015b; D.R. Poulton & Associates Inc. [DRPA] 2012). These assessments are reviewed below.

D.R. Poulton & Associates Inc. (2012) conducted a Stage 1 archaeological assessment of the Alcona South Secondary Plan in the Town of Innisfil, Simcoe County under the project direction of Dana R. Poulton (PIF P316-083-2010). The study area is located immediately west of the Innisfil SPS No. 2 study area. The study area was determined to possess archaeological potential and was recommended to be subject to Stage 2 archaeological assessment.

ASI (2014a) conducted a Stage 1 archaeological assessment for the Sanitary Pump Station No. 2 Upgrade Municipal Class EA in part of Lots 25 and 26, Concessions 5 and 6, Former Township of Innisfil, Town of Innisfil, County of Simcoe under the project direction of Paul David Ritchie (PIF P392-0092-2014). The property inspection identified lands within the 6th Line Part A study area as requiring Stage 2 archaeological assessment (Figure 8).

ASI (2014b) conducted a Stage 2 archaeological assessment (property assessment) for the Upgrading of Sanitary Pump Station No. 2 Municipal Class EA in part of Lot 25, Concession 6, former Township of Innisfil, Town of Innisfil, County of Simcoe under the project direction of Lisa Merritt (PIF P094-0189-2014). Part of the 6th Line Part A study area was assessed by test-pit survey at 5 m intervals. No archaeological resources were identified.

ASI (2015a) conducted a Stage 1 archaeological assessment of a proposed draft plan of subdivision in part of Lots 23-34, Concession 5 and part of Lots 22-25, Concession 6, Town of Innisfil, County of Simcoe under the project direction of Robert Pihl (P057-0761-2015). Part of the 6th Line Part A study area was assessed as possessing low and wet and steeply sloping conditions. These lands do not require further archaeological assessment. Other lands were recommended as requiring Stage 2 archaeological assessment.

ASI (2015b) conducted a Stage 2 archaeological assessment of the Proposed Sleeping Lion Sales Centre in part of Lot 24, Concession 6, Geographic Township of Innisfil, now in the Town of Innisfil, County of Simcoe under the project direction of Robert Pihl (P057-0780-2015). Part of the 6th Line Part A study area was assessed by pedestrian survey at five metre intervals under the field direction of Robb Bhardwaj (R449). No archaeological resources were identified.

1.3.4 Summary of Archaeological Context

The background research indicated that the study area is located in proximity to Lake Simcoe and includes well-drained sandy soils. The study area also crosses a beach line of glacial Lake Algonquin. The historic mapping indicates that the study area includes historic transportation routes. These criteria indicate that the study area possesses potential for the recovery of Aboriginal and Euro-Canadian archaeological resources, depending on the degree to which the natural topography and soils in the study area have been disturbed by historic and modern development.



2.0 FIELD METHODS: PROPERTY INSPECTION

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 by Peter Carruthers (P163) of ASI, on October 6, 2015, 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 visual inspection only and did not include excavation or collection of archaeological resources. All requisite S&Gs were met during the course of the property investigation.

Weather conditions for the inspection were overcast with a temperature of approximately 17 C. Previously identified features of archaeological potential were examined; additional features of archaeological potential not visible on mapping were identified and documented as well as any features that will affect assessment strategies. Field observations are compiled onto maps of the study area in Section 7.0 (Figure 5-8), and associated photographic plates are presented in Section 8.0 (Plates 1-10).

3.0 ANALYSIS AND CONCLUSIONS

The historical and archaeological contexts were analyzed to help determine the archaeological potential of the study area. A summary of the archaeological potential of the study area is presented in Section 2.1 of this report.

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria which are indicative of potential for the identification of archaeological resources. The study area meets the following criteria indicative of archaeological potential:

- Previously registered archaeological sites (e.g. BbGv-47)
- Well-drained sandy soil (e.g. Bondhead sandy loam)
- Water source: primary, secondary, or past water source (e.g. Lake Simcoe; Lake Algonquin)
- Early transportation route (e.g. 6th Line)

These criteria characterize the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the degree of disturbance.



3.2 Analysis of Property Inspection Results

The property inspection determined that parts of the 6th Line Part A study area has been previously subject to deep and extensive disturbance, associated with ROW construction and adjacent development (Figures 6-8: areas marked in yellow). These lands do not retain archaeological potential. Other parts of the study area are considered to possess archaeological potential (Figures 6-8: areas marked in green and orange). These lands will require Stage 2 archaeological assessment prior to any proposed impacts by the project.

3.3 Conclusions

The Stage 1 background study determined that six previously registered archaeological sites are located within one kilometre of the 6th Line Part A study area. A review of the geography and history of the study area suggested that the study area has potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the condition of soils within the study area. The Stage 1 property inspection determined that the majority of the study area—primarily the existing 6th Line ROW, has been previously disturbed and therefore does not require further archaeological assessment (Figures 6-8: areas marked in yellow).

Other lands beyond the existing ROW do exhibit archaeological potential. These lands must be subject to Stage 2 archaeological assessment, prior to any proposed impacts by the project (Figures 6-8: areas marked in green and orange). The chosen survey methodology depends on the property characteristics such as the nature and extent of ground cover, the possible depth at which archaeological resources might be located and the degree and characteristics of past disturbances (S & G, Section 2.1). Active or recently cultivated agricultural lands must be subject to pedestrian survey at five metre intervals (S & G, Section 2.1.1, Standards 1-6). Lands where ploughing is not possible or viable due to terrain or where survey corridors are narrow (10 m or less) can be subject to a test-pit survey at five metre intervals. Lands in narrow corridors (10 m or less) where at the time of fieldwork possess surface conditions that permit a pedestrian survey, must be subject to a pedestrian survey at five metre intervals (S & G, Section 2.1.2, Standard 1.f).

Some lands within the study area are subject to outstanding recommendations from previous archaeological assessments (Figures 7 and 8). These lands require further archaeological assessment prior to any proposed disturbances by the project.

4.0 RECOMMENDATIONS

In light of the results of this assessment, ASI makes the following recommendations:

1. The 6th Line A study area includes lands which are considered to possess archaeological potential. These lands should be subject to Stage 2 archaeological assessment by a combination of test pit and pedestrian survey, both at five metre intervals, prior to any proposed impacts by the projects;
2. The remainder of the study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance, steeply sloping, or low and wet conditions. These lands do not require further archaeological assessment; and,



3. Should the proposed work extend beyond the current study area then further Stage 1 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 Tourism, Culture and Sport should be immediately notified.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

ASI advises compliance with the following legislation:

- This report is submitted to the Minister of Tourism, Culture and Sport 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 MTCS, 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 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*; and
- 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.

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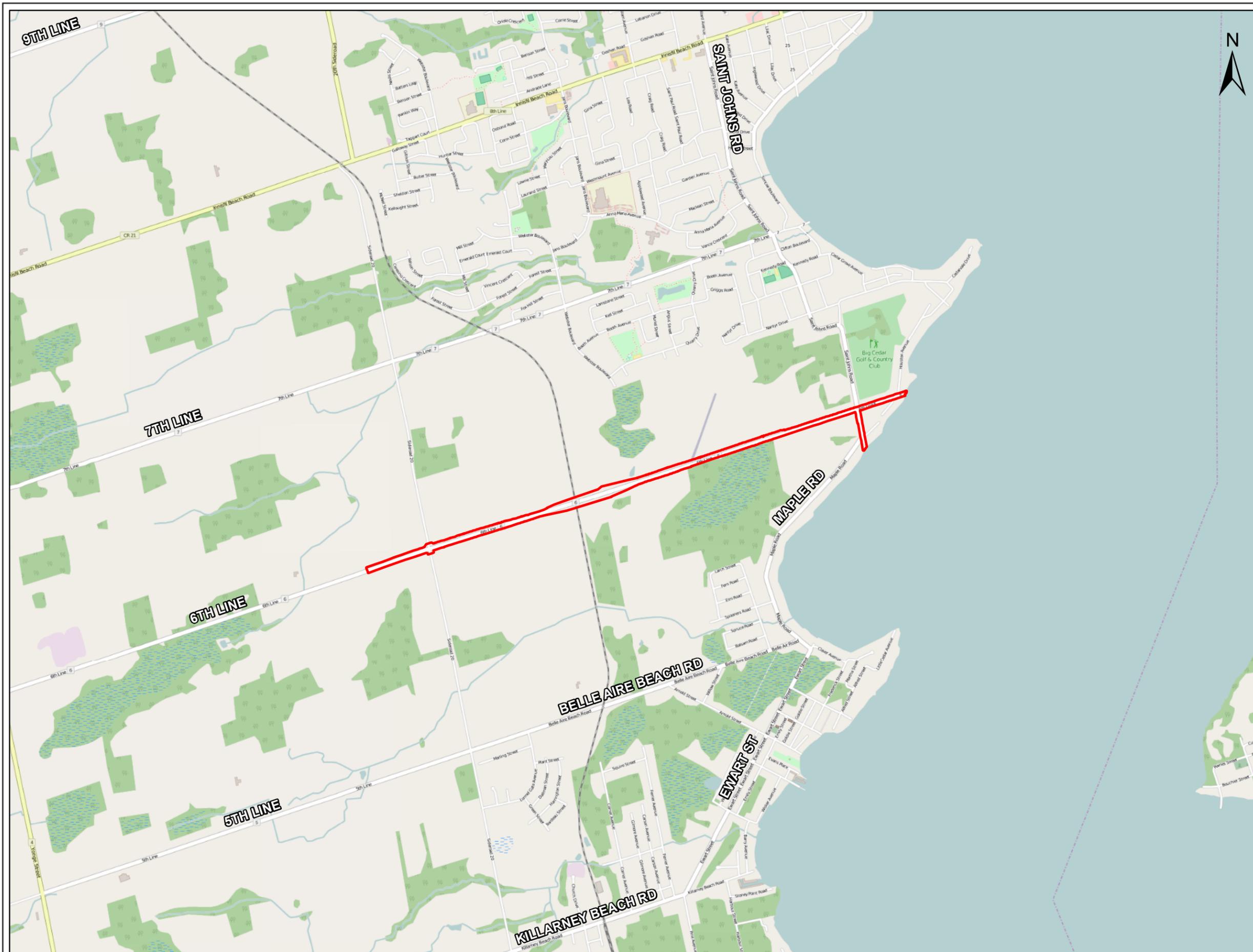


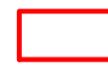
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7.0 MAPS





 Study Area

BASE:
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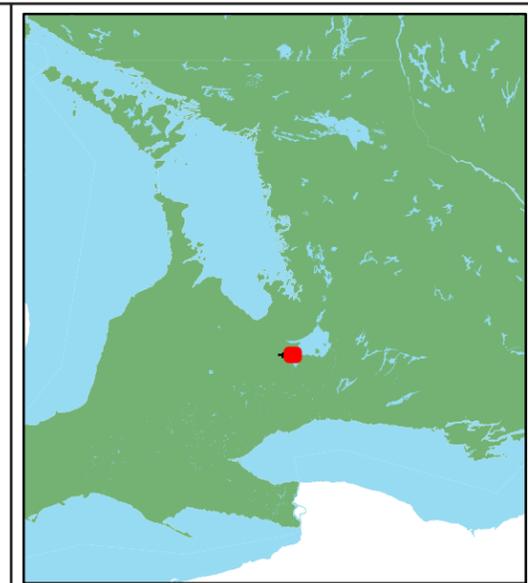
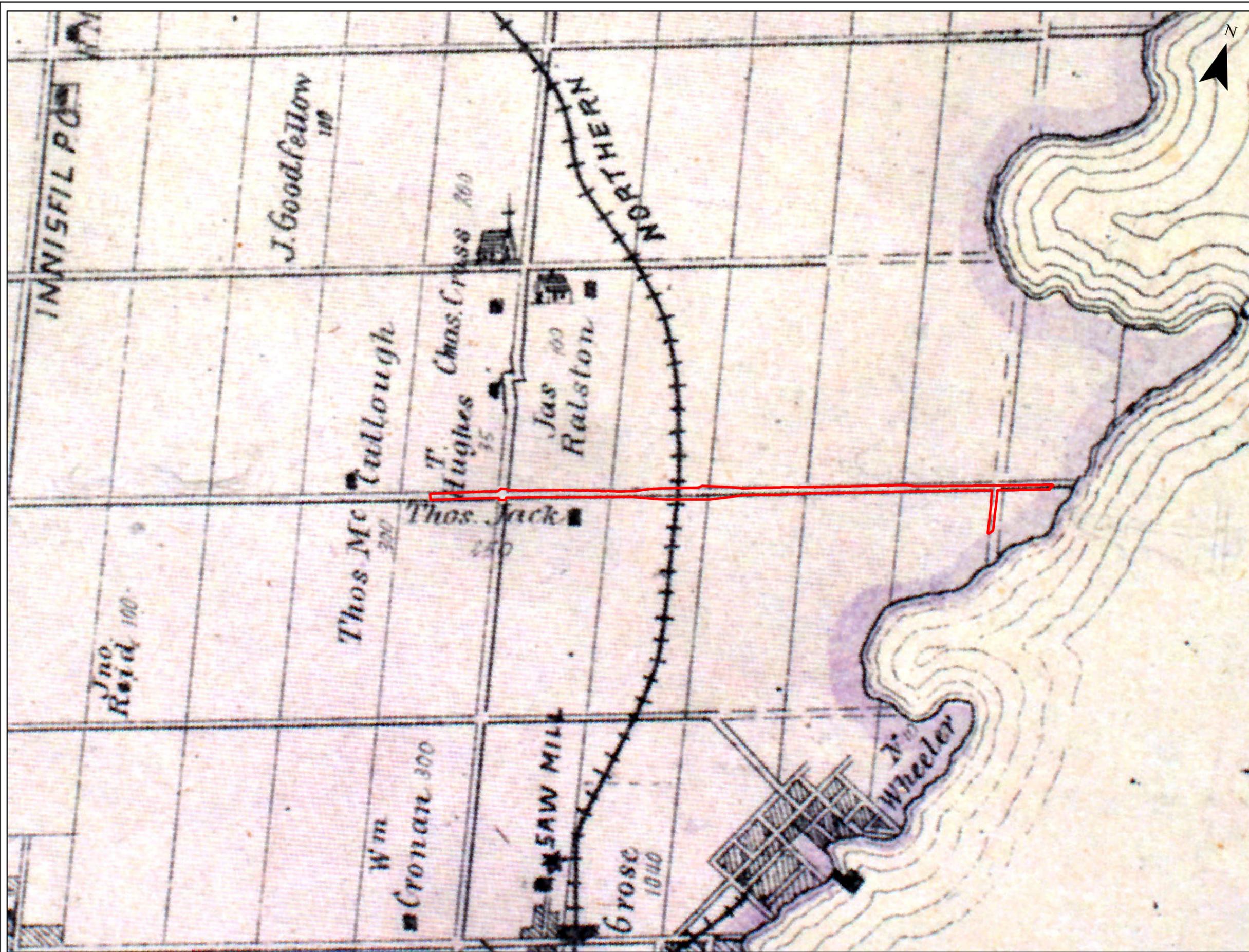


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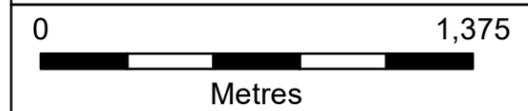


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Figure 1: 6th Line (Part A) Study Area Location



 Study Area



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DATE: November 11, 2014

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Figure 2: 6th Line (Part A) Study Area overlaid on 1881 map of Township of Innisfil

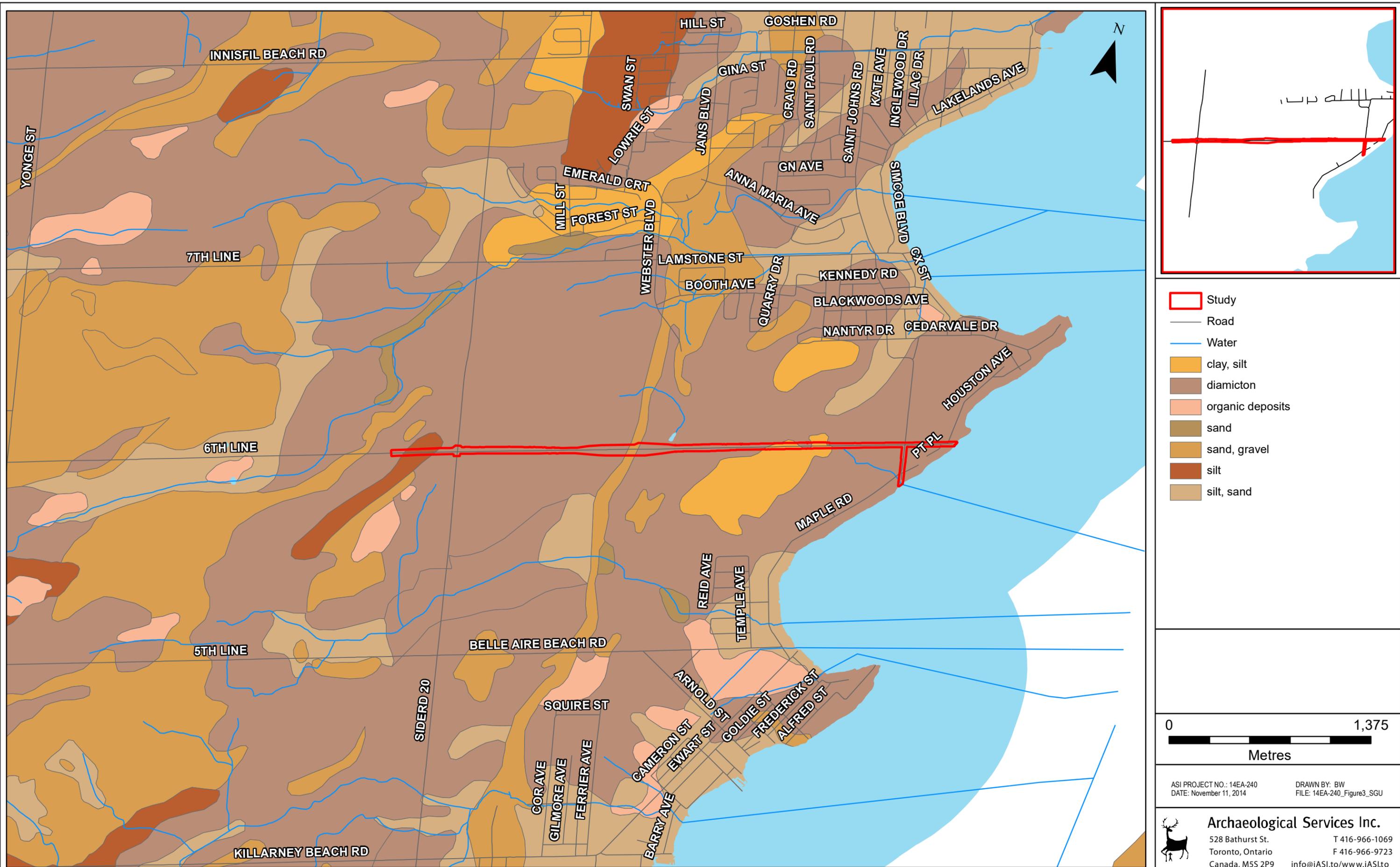


Figure 3: 6th Line (Part A) Study Area Surficial Geology

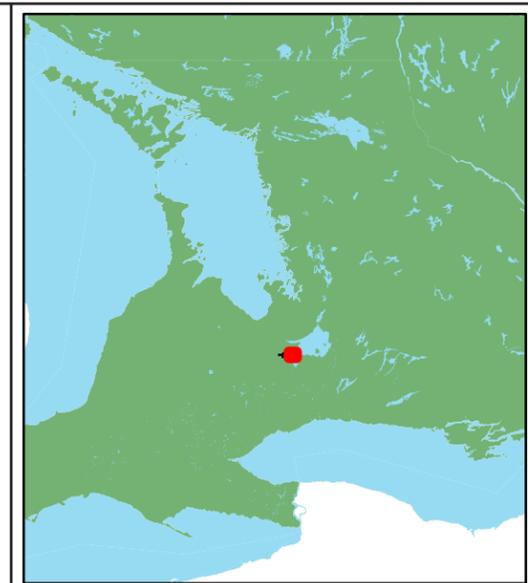
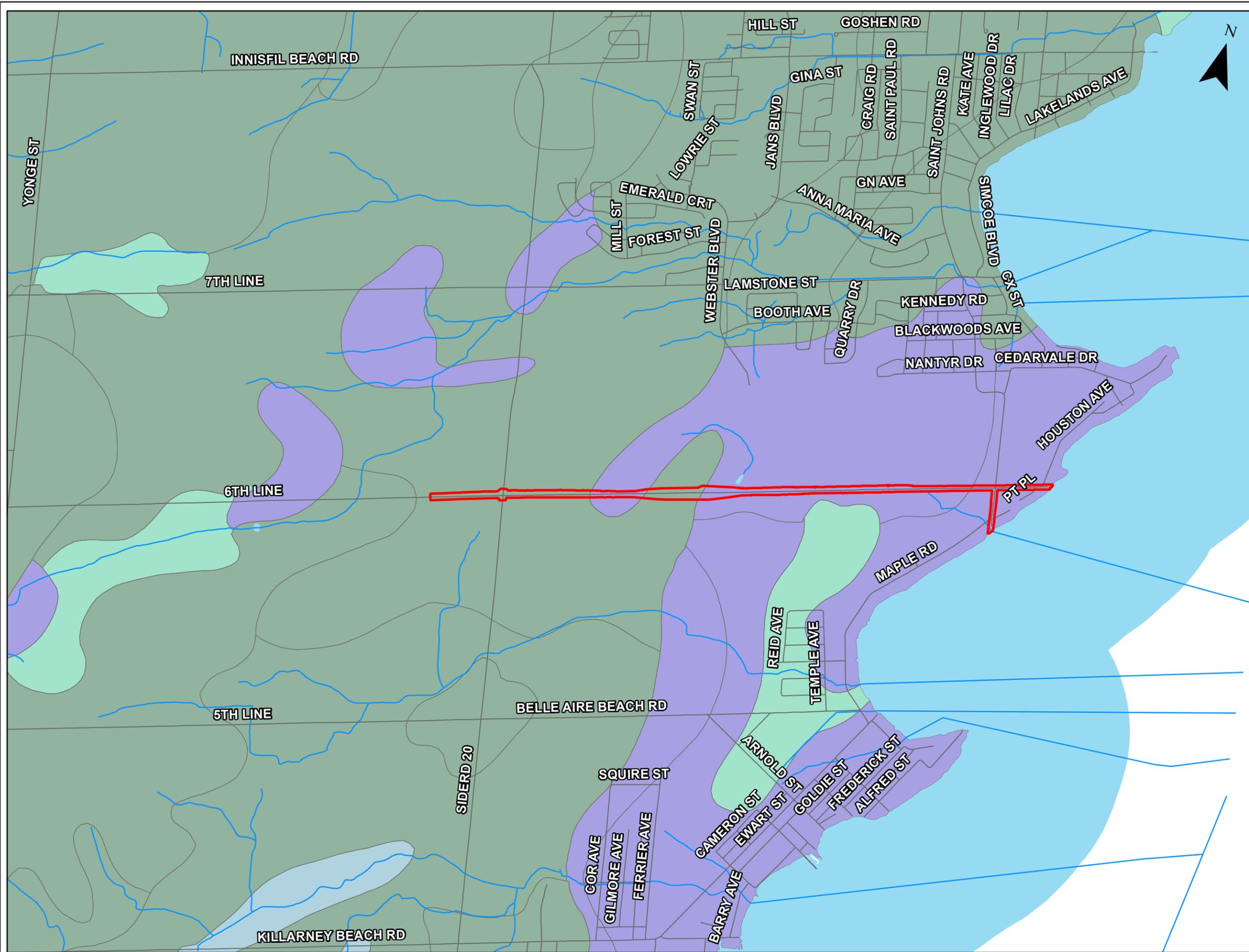
- Study
- Road
- Water
- clay, silt
- diamicton
- organic deposits
- sand
- sand, gravel
- silt
- silt, sand

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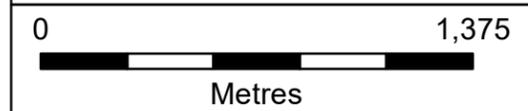
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- Study Area
- Road
- Water
- Imperfectly
- Poorly
- Very Poorly
- Well



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Figure 4: 6th Line (Part A) Study Area Soil Drainage

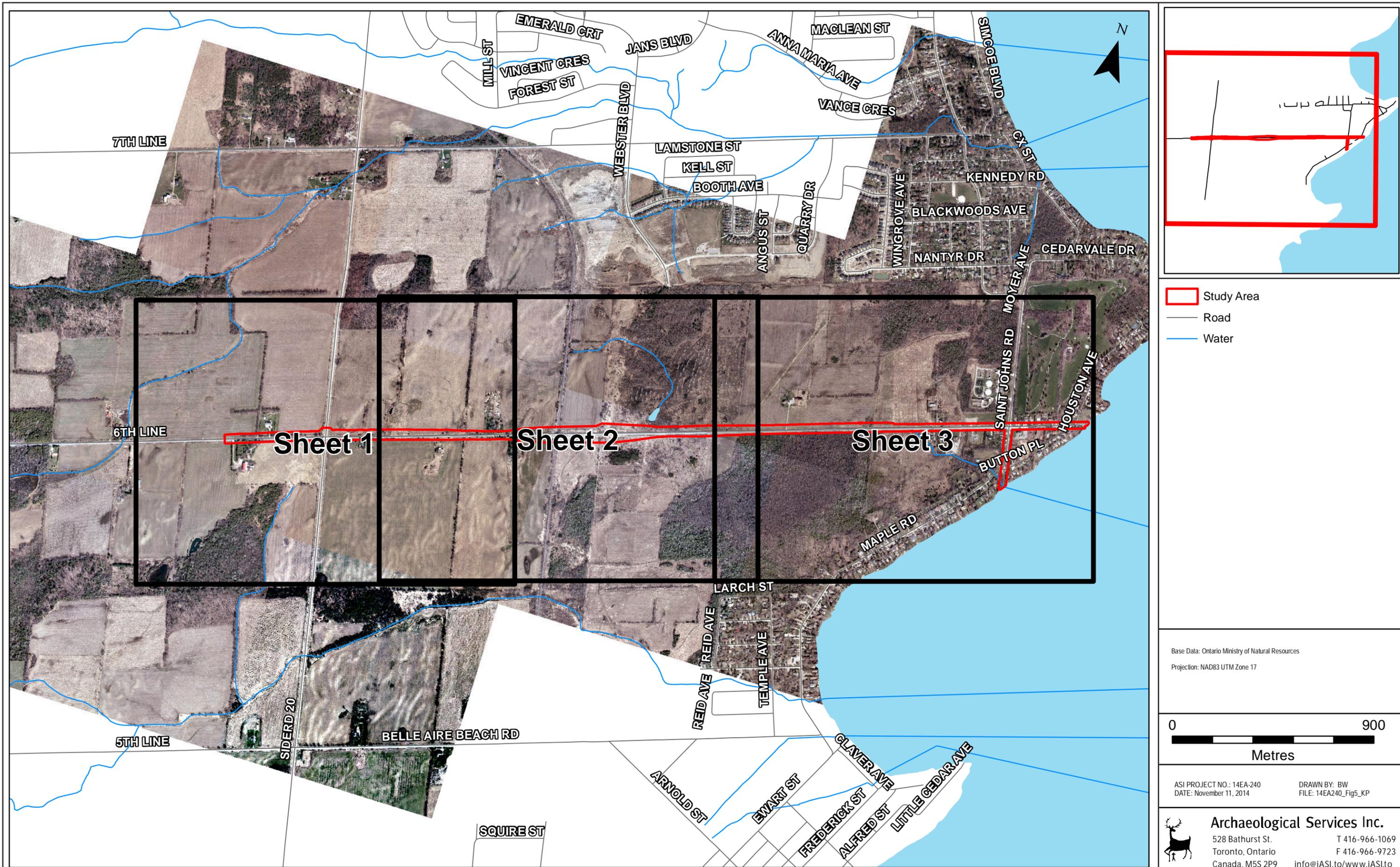
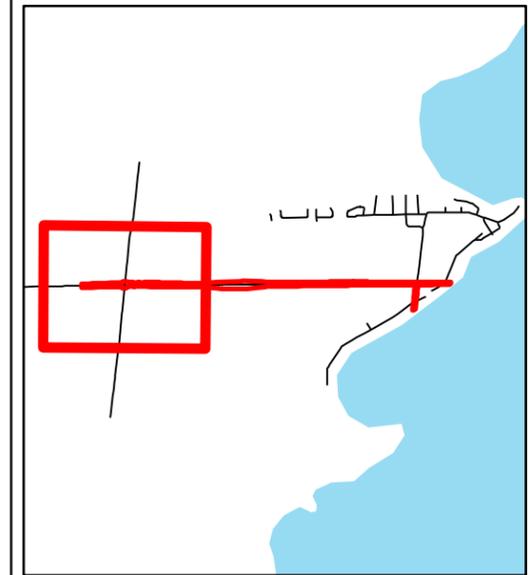
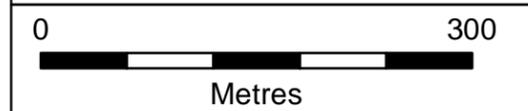


Figure 5: 6th Line (Part A) Study Area Property Inspection Results (Key Map)



- Study Area
 - Road
 - Water
 - Photo Plate
- Stage 1 Results**
- No Potential: Disturbed
 - Potential: Pedestrian survey required
 - Potential: Test Pit survey required

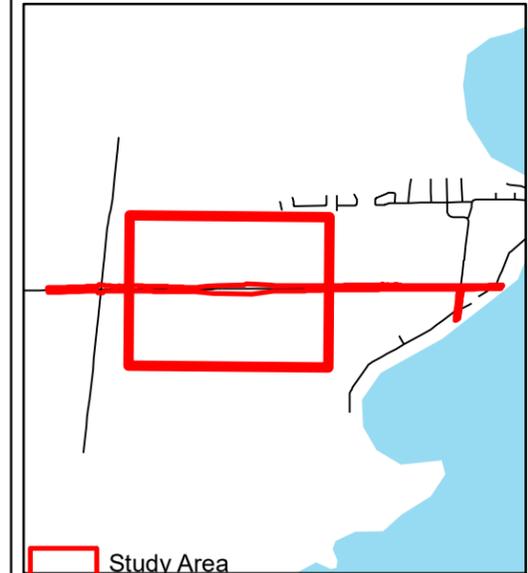
Base Data: Ontario Ministry of Natural Resources
 Projection: NAD83 UTM Zone 17



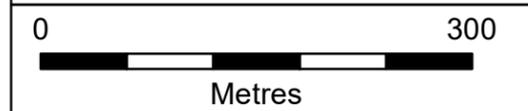
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Figure 6: 6th Line (Part A) Study Area Property Inspection Results (Sheet 1)



- Road
 - Water
 - ▲ Photo Plate
- Stage 1 Results**
- No Potential: Disturbed
 - Potential: Pedestrian survey required
 - Potential: Test Pit survey required
- Previously Assessed**
- Previously Assessed:
 - Previously Assessed: Low and wet
 - Previously Assessed :Pedestrian survey required
 - Previously Assessed (ASI
 - Previously Assessed:
 - Previously Assessed: Test pit survey required



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 DATE: November 11, 2014

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Figure 7: 6th Line (Part A) Study Area Property Inspection Results (Sheet 2)



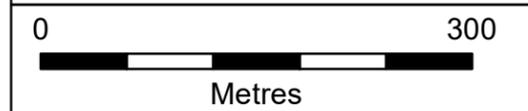
Study
 Road
 Water
 Photo Plate

Stage 1 Results

- No Potential: Disturbed
- Potential: Pedestrian survey required
- Potential: Test Pit survey

Previously

- Previously Assessed:
- Previously Assessed: Low and
- Previously Assessed :Pedestrian survey required
- Previously Assessed (ASI
- Previously Assessed: Test pit survey required



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Figure 8: 6th Line (Part A) Study Area Property Inspection Results (Sheet 3)

8.0 IMAGES





Plate 1: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 2: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 3: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 4: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 5: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 6: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 7: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 8: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 9: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 10: South view of St. Johns Road. ROW is disturbed with no archaeological potential.



Plate 11: Northwest view of study area. 6th Line ROW and lands beyond ROW has been disturbed with no archaeological potential.

9.0 APPENDIX A: DETAILED SOIL DESCRIPTIONS

Alliston sandy loam occurs on level sections of sandy outwash plain. They are imperfectly drained. The topography is level to very gently undulating. The soil is typically stone free. Soil colour ranges from a thin black layer to an underlying light grey layer. On account of its drainage this soil type can be wet for part of the year. Natural fertility is low (Hoffman *et al.* 1962: 46-47, 90).

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Black (10YR 2/1)	Sandy loam; fine crumb structure, very friable consistency, stonefree	0-3 centimetres
Ae	Light grey (10YR 6/1)	Loamy sand; single grain, loose, stonefree	3-8 centimetres
Bhfg1	Light yellowish brown (10YR 6/4)	Loamy sand; mottled, single grain, loose, stonefree	8-25 centimetres
Bhfg2	Brownish yellow (10YR 6/6)	Loamy sand; very mottled, single grain, loose, stonefree	25-79 centimetres
Btg	Yellowish brown (10YR 5/4)	Sandy loam; very mottled, weak medium nuciform, very friable, stonefree	79-84 centimetres
Horizon	Colour	Texture/Structure	Depth in profile
C	Pale brown (10YR 6/3)	Sand; mottled, single grain, loose, stonefree, calcareous	84+ centimetres

Bondhead sandy loam is a well-drained porous soil. Soil loss due to erosion may be moderate to high depending on slope and vegetation cover. Natural vegetation consists mainly of beech, sugar maple, some ironwood, elm, ash, balsam and white pine. The following soil profile has been documented (Hoffman *et al.* 1962: 33-34, 92):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark greyish brown (10YR 3/2)	Loam; fine granular structure, friable consistency, moderately stony	0-8 centimetres
Ae1	Yellowish brown (10YR 5/6)	Loam; weak fine granular, firm, slightly stony	8-46 centimetres
Ae2	Light grey (10YR 7/2)	Sandy loam; weak fine granular, firm, slightly stony	46-58 centimetres
Bt	Dark brown (10YR 4/3)	Loam; medium nuciform, plastic, slightly stony	58-79 centimetres
C	Light grey (10YR 7/2)	Loam till; prismatic, hard, moderately stony, calcareous	79+ centimetres

Guerin loam – stony phase occupies the gently undulating land between hills. As a result of this erosion is slight. Stone content is high and the soil drainage is imperfect. The soil typically ranges from very dark greyish brown to mottled yellowish brown. The soil horizon is typically acidic (Hoffman *et al.* 1962: 35, 97).



Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark greyish brown (10YR 3/2)	Sandy loam; medium crumb structure, very friable consistency, moderately stony	0-10 centimetres
Aeg	Yellowish brown (10YR 5/6)	Sandy loam; mottled, weak fine platy, very friable, moderately stony	10-30 centimetres
Btg	Brown (10YR 5/3)	Loam; mottled, weak medium nuciform, friable, moderately stony	30-48 centimetres
C	Light grey (10YR 7/2)	Sandy loam till; prismatic, hard, moderately stony	48+ centimetres

Muck soil is commonly found in depressions within uplands. These soils are saturated with water throughout the year, promoting the accumulation of organic debris. These soils do not exhibit any horizon differentiation, slightly varying in colours of black and dark brown. Soil depth is variable (Hoffman *et al.* 1962: 68).



**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**

ORIGINAL REPORT

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ASI File: 14EA-242

3 December 2015



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

EXECUTIVE SUMMARY

Archaeological Services Inc (ASI) was contracted by HDR Corporation on behalf of the Town of Innisfil to conduct a Stage 1 archaeological assessment report as part of the 6th Line Part B Municipal Class Environmental Assessment of the 6th Line right-of-way (ROW) from 20 Sideroad to County Road 27 including lands beyond in the Town of Innisfil.

The background research indicates that five previously registered archaeological sites are located within one kilometre of the study area. The background research has also identified a Euro-Canadian cemetery adjacent to the study area. Part of the study area will therefore require avoidance and cemetery investigation. A review of the geography and history of the study area suggested that the study area has potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the condition of soils.

The property inspection identified some areas that possess archaeological potential and will require Stage 2 archaeological assessment. Other lands, primarily within the 6th Line ROW as well as adjacent lands do not retain archaeological potential.

In light of these results, ASI makes the following recommendations:

1. The 6th Line Part B study area includes the Sixth Line Cemetery. These lands should be subject to Protection and Avoidance from any proposed impacts by the project. Lands 10 metres from the documented extent of the cemetery require Cemetery Investigation, in accordance with Provincial regulations;
2. The 6th Line Part B study area includes lands which are considered to possess archaeological potential. These lands should be subject to Stage 2 archaeological assessment by a combination of test pit and pedestrian survey, both at 5 m intervals, prior to any proposed impacts by the projects;
3. The remainder of the study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance or steeply sloping conditions. These lands do not require further archaeological assessment; and,
4. Should the proposed work extend beyond the current study area then further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.



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1.0 PROJECT CONTEXT

Archaeological Services Inc (ASI) was contracted by HDR Corporation (HDR) on behalf of the Town of Innisfil to conduct a Stage 1 archaeological assessment (background research and property inspection) as part of the 6th Line Class Environmental Assessment (EA) (Part B) of the 6th Line right-of-way (ROW) including lands beyond in the Town of Innisfil (Figure 1). The Town is proposing to improve 6th Line from a two lane rural road to a four lane urban major collector road.

In the *Standards and Guidelines for Consultant Archaeologists* (S & G), Section 1, the objectives of a Stage 1 archaeological assessment are discussed as follows:

- To provide information about the history, current land conditions, geography, and previous archaeological fieldwork of the study area;
- To evaluate in detail the archaeological potential of the study area that can be used, if necessary, to support recommendations for Stage 2 archaeological assessment for all or parts of the study area; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment, if necessary.

This report describes the Stage 1 archaeological assessment that was conducted for this project and is organized as follows: Section 1.0 summarizes the background study that was conducted to provide the historical and archaeological contexts for the project study area; Section 2.0 addresses the field methods used for the property inspection that was undertaken to document its general environment, current land use history and conditions of the study area; Section 3.0 analyses the characteristics of the project study area and evaluates its archaeological potential; Section 4.0 provides recommendations for the next assessment steps; and the remaining sections contain other report information that is required by the S & G, e.g., advice on compliance with legislation, works cited, mapping and photo-documentation.

1.1 Development Context

All activities carried out during this assessment were completed in accordance with the *Environmental Assessment Act*, the *Ontario Heritage Act* and the S & G. The project is being undertaken under the Municipal Class Environmental Assessment process.

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted to ASI by HDR on November 11, 2014.

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information gathered through the Stage 1 background research. First, a summary is presented of the current understanding of the Aboriginal land use of the study area. This is followed by a review of the historical Euro-Canadian settlement history.



1.2.1 *Aboriginal Land Use and Settlement*

Southern Ontario has been occupied by human populations, since the retreat of the Laurentide glacier, approximately 13,500 before present (BP) (Ferris 2013: 13). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 BP, the environment had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990: 62-63). The 6th Line Part B study area is situated below an extinct shorecliff which is generally believed to be attributed to either glacial Lake Algonquin or of glacial Lake Ardrea. Both of these lakes are believed to have drained between 10,500-10,000 BP (see Section 1.3.2; Karrow and Warner 1990:17; Kaszycki 1985: 120; Stewart 2013: 25-26).

Between approximately 10,000-5,500 BP, the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines were then submerged. This period produces the earliest evidence of heavy wood working tools and is indicative of greater investment of labour in felling trees for fuel, to build shelter, or to produce tools, and is ultimately indicative of prolonged seasonal residency at sites. By approximately 8,000 BP, evidence exists for polished stone implements and worked native copper. The source for the latter from the north shore of Lake Superior is evidence of extensive exchange networks. Early evidence exists at this time for the creation of communal cemeteries and ceremonial funerary customs. This evidence is significant for the establishment of band territories. These communal places indicate shared meaning across the community and are reflective of a people's cosmology (Brown 1995: 13; Holloway and Hubbard 2001: 74; Parker Pearson 1999: 141). Between approximately 4,500-3,000 BP, there is evidence for construction of fishing weirs. These structures indicate not only the group sharing of resources, but also the organization of communal labour (Ellis *et al.* 1990; Ellis *et al.* 2009).

Settlement and subsistence systems between 3,000 BP and 2500 BP are not entirely understood. Populations continued a semi-permanent existence and exploited seasonally-available resources. The harvesting of spawning fish continued to be an important part of their subsistence practices. There continues to be evidence for extensive and complex exchange networks (Spence *et al.* 1990:136, 138). By approximately 2,000 BP, evidence exists for macro-band camps, focusing on the seasonal exploitation of resources such as spawning fish and wild rice (Spence *et al.* 1990:155, 164). It is also during this period that maize was first introduced into southern Ontario, though it would have only supplemented people's diet (Birch and Williamson 2013:13-15). Bands likely retreated to interior camps during the winter.

By approximately 1,000 BP until approximately 300 BP, lifeways became more similar to that described in early historical documents. Populations in the study area would have been Iroquoian speaking though full expression of Iroquoian culture is not recognised archaeologically until the fourteenth century. During the Early Iroquoian phase (1000-1300), 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: 317). By the second quarter of the first millennium BP, during the Middle Iroquoian phase (1300-1450), this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd *et al.* 1990: 343). In the Late Iroquoian phase (1450-1649) this process continued with the coalescence of these small villages into larger communities (Birch and Williamson 2013). Through this process, the socio-political organization of the Aboriginal Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed.

The study area is located within the traditional territory of the Huron-Wendat (Heidenreich 1990: Figure 15.1). The Huron-Wendat initially migrated into the Lake Simcoe area around the early sixteenth century



and by the turn of the seventeenth century most of the population of the north shore of Lake Ontario had migrated there forming the Huron-Wendat Confederacy (Birch and Williamson 2013: 40). The Huron were eventually dispersed by the Five Nations Iroquois in 1649 at which point the Seneca mainly took over control of the region (Heidenreich 1990; Ramsden 1990), who used the area primarily as a hinterland for the beaver hunt (Trigger 1978). The region of the study area coincides with one of the described seventeenth century Iroquois beaver hunting grounds in southern Ontario (Lahontan 1703). The geographical accuracy of Lahontan's map may need to be taken with a grain of salt and the "*hunting countries*" may generically refer to the previous territories of the former populations dispersed from southern Ontario by the Five Nations Iroquois.

Beginning in the mid-late seventeenth century, Ojibwa people began to enter southern Ontario and replace the Iroquois as the controlling Aboriginal group. By 1710, Ojibwa groups were well established in southern Ontario (Rogers 1978).

The eighteenth century saw the ethnogenesis in Ontario of the Métis. Métis people are of mixed First Nations and French ancestry, but also mixed Scottish and Irish ancestry as well. The Métis played a significant role in the economy and socio-political history of the Great Lakes during this time. Living in both Euro-Canadian and Aboriginal societies, the Métis acted as agents and subagents in the fur trade but also as surveyors and interpreters. Métis populations were predominantly located north and west of Lake Superior, however Métis populations lived throughout Ontario (Métis Nation of Canada [MNC] n.d.; Stone and Chaput 1978:607,608).

The study area is located within the lands of the Lake Simcoe-Nottawasaga Treaty of 1818 between the Crown and the Chippewa Nation (Aboriginal Affairs and Northern Development Canada [AANDC] 2013)

1.2.2 Historic Euro-Canadian Land Use: Township Survey and Settlement

Historically, the study area is located in part of Lots 1-21, Concessions 5 and 6 in the Former Township of Innisfil, County of Simcoe.

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 which 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 Aboriginal 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 for Great Lakes traffic and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Aboriginal trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

Innisfil Township

The Township of Innisfil was surveyed in 1820 and the first settlement began that year. Growth was slow during the first ten years of the township, and the first sawmill was not erected until the 1830s; in 1835, a grist mill was constructed. Early settlement focused around Kempenfelt Bay. By 1843, the first school was constructed, and the following year the Innisfil Methodist Congregation built the first church. By 1850, the township had a population of 1,807. Following the connection of the Northern Railway, the township became an important shipping hub for the lumber industry of central Ontario (Mika and Mika 1981: 347-349).

Penetang Road

The Penetang Road is a former name for Yonge Street. The segment from Bradford to St. Paul's was surveyed in 1824. The intention was to connect the terminus of Yonge Street at Holland Landing with the Penetanguishene Road at Barrie. These latter two roads, connecting by boat via Lake Simcoe were part of a critical military transportation route from York with Penetanguishene Harbour during the War of 1812. The surveyed route from Holland Landing to Barrie by-passed the lake crossing. This road was an important colonization road during the Euro-Canadian settlement of Simcoe County (Berchem 1977).

1.2.3 Historic Map Review

The 1881 *Simcoe Supplement in Illustrated Atlas of the Dominion of Canada* was reviewed to determine the potential for the presence of historical archaeological remains within the study area during the nineteenth century (Figure 2). It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. Property owners and historical features of interest associated with the study area are detailed in Table 1.

Table 1: Nineteenth-century property owner(s) and historical features(s)
1881 Simcoe Supplement in Illustrated Atlas of the Dominion of Canada

Lot #	Concession #	Property Owner	Historical Feature(s)
1	5	n/a	n/a
2	5	R. Wallace	n/a
3	5	n/a	n/a
4	5	W.J. Scroggie	n/a
5	5	n/a	n/a
6	5	n/a	n/a
7	5	n/a	n/a
8	5	n/a	n/a
9	5	n/a	n/a



<i>1881 Simcoe Supplement in Illustrated Atlas of the Dominion of Canada</i>			
Lot #	Concession #	Property Owner	Historical Feature(s)
10	5	n/a	n/a
11	5	n/a	n/a
12	5	n/a	n/a
13	5	S. Cannrug	n/a
14	5	n/a	n/a
15	5	n/a	Church
16	5	n/a	n/a
17	5	Jno Reid	n/a
18	5	n/a	n/a
19	5	Thos McCullough	n/a
20	5	Thos Jack	n/a
21	5	Thos Jack	n/a
1	6	n/a	n/a
2	6	n/a	n/a
3	6	Wm Grey	n/a
4	6	W.J. Scroggie	Farmhouse
5	6	n/a	Schoolhouse; farmhouse; post office
6	6	n/a	n/a
7	6	n/a	n/a
8	6	n/a	n/a
9	6	n/a	n/a
10	6	n/a	n/a
11	6	n/a	n/a
12	6	n/a	n/a
13	6	n/a	n/a
14	6	n/a	n/a
15	6	J. Black (Tenant)	n/a
16	6	n/a	n/a
17	6	n/a	n/a
18	6	n/a	n/a
19	6	Thos McCullough	n/a
20	6	T. Hughes	n/a
21	6	Jas Ralston	n/a

To best use historic mapping to reconstruct/predict the location of former features within the modern landscape, maps are reviewed using geographic information systems (GIS). Using reference points which are likely to have remained constant through time, such as unimproved road intersections or Concession Lot vertices, these maps are georeferenced in order to project the most accurate location of former map features. There are numerous potential sources of error inherent in this process. These include idealism in the original map production, map scale, image resolution and reproduction accuracy. The significance of such potential error is often mitigated, however, through critical analysis of the sources in comparison with other map sources as well as the property inspection results.

The nineteenth century maps indicate that the study area includes or abuts several historic features. Specifically the church includes a large cemetery lot. Also the small crossroads community of Killyleagh is shown on the 1881 map. The historic maps also indicate that 6th Line, 20 Sideroad, Yonge Street, 10 Sideroad, 5 Sideroad and County Road 27 are all historic transportation routes.



Twentieth century maps indicate that the study area is predominantly rural with interspersed structures (likely houses). The twentieth century map also indicates a cemetery (Sixth Line Cemetery) corresponding to the location of the church on the nineteenth century mapping. The immediate lands of the study area have changed little since the late nineteenth century (Department of National Defence 1928; 1950).

1.2.4 Summary of Historical Context

The background research demonstrates that the study area has been occupied by Aboriginal peoples for thousands of years and is located on the territory of the (ancestral) Huron-Wendat. It was subsequently utilized by the Seneca and Ojibwa peoples for hunting territories, until the early nineteenth century. The background research also acknowledges the presence of the Métis across Ontario, however their presence is often muted in the historical record.

The background research and historic mapping also demonstrates that the study area is located in the Former Township of Innisfil, County of Simcoe. Nineteenth century mapping indicates that the study area includes historical transportation routes.

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 in the study area; the site record forms for registered sites housed at the Ministry of Tourism, Culture and Sport (MTCS); published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

The study area is a 12 km long corridor aligned with 6th Line from 20 Sideroad to County Road 27, and extends beyond the existing 6th Line ROW property boundary to accommodate future grading limits. The project is proposing to widen the current two lane 20 m wide rural road to a four lane 26m wide collector road. The road currently runs through a rural landscape in transition. The study area is generally agricultural fields with low density housing. Highway 400 crosses the study area and much of the land adjacent to the 6th Line Part B study area are in various stages of subdivision development. The property inspection was conducted on October 6, 2015.

1.3.2 Geography

In addition to the known archaeological sites and historic features, the state of the natural environment is an important indicator of archaeological potential. Accordingly, a description of the study area geography, physiography and soils is provided below.

The S & G, Section 1.3.1, 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 and Warner 1990: 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.

The S & G, Section 1.3.1, also lists other geographic characteristics that can indicate archaeological potential, including: elevated topography (eskers, drumlins, large knolls, 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. Physical indicators of use may be present, 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.

The study area is situated within the Peterborough Drumlin Field physiographic region of southern Ontario in drumlinized till plain (Chapman and 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 km² and contains over 3000 drumlins in addition to many other drumlinoid hills and surface flutings (Chapman and Putnam 1984: 169). The drumlins are composed of highly calcareous till but there are local differences in composition.

The till plain was 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 mill, producing a heterogeneous soil which is characteristic of glaciations (Chapman and Putnam 1984: 10, 16).

Soils within the study area consist of Bondhead loam, Bondhead sandy loam, Bondhead sandy loam – stony phase, Guerin loam, Muck, Tioga sandy loam, Lyons loam, Smithfield silty clay loam, Dundonald sandy loam and Simcoe silty clay loam (Department of Agriculture 1959). For detailed soil description see Appendix A.

The surficial geology of the study area is mapped on Figure 3. The study area is underlain by deposits of sand and gravel, diamicton (poorly sorted sediments typically of glacial origin), clay and silt, silt, sand, silt and sand and organic deposits (Ontario Geological Survey [OGS] 2010). Soil drainage information for the study area is mapped on Figure 4. The study area includes lands with well-drained, imperfectly drained and very poorly drained soils (Department of Agriculture 1959).

The 6th Line Part B study area is intersected by Innisfil Creek, a tributary of Lake Simcoe. The Innisfil Creek subwatershed drains an area of 10,700 ha (Lake Simcoe Region Conservation Authority (LSRCA) 2012). Lake Simcoe was known to the Huron-Wendat as *Ouentironk*, or “beautiful water (LSRCA 2014). Late seventeenth and early eighteenth century French sources refer to Lake Simcoe as *Lac Taronto*. The etymology of ‘Taronto’ is debated, however it is thought to be derived from the Mohawk word *tkaronto*



which means “where there are trees standing in the water” and may refer to the fish weir at the Narrows between Lake Simcoe and Lake Couchiching (Natural Resources Canada [NRCAN] 2007). Lake Simcoe was one of the terminals of the Toronto Carry Place route along the Humber River which was a vital route in fur trade (Williamson 2008: 50-52). This passage connected to Lake Ontario at the mouth of the Humber River. Lake Simcoe drains an area of 340,000 ha, subsequently draining into Lake Huron. Lake Simcoe supports a diverse aquatic ecosystem, home to over 50 different species of fish (LSRCA 2014).

1.3.3 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MTCS. 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 km east to west, and approximately 18.5 km 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 blocks *BbGv*.

According to the OASD, five previously registered archaeological sites are located within one kilometre of the study area (MTCS 2014). Details of the previously registered sites are provided in Table 2.

According to the background research, no previous assessments have been conducted within 50 metres of the study area.

Table 2: Details of previously registered archaeological sites registered within one kilometre of the study area

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
BbGv-12	Goodeve	Aboriginal	Burial	Park and O'Brien 1979
BbGv-20	Cooper	Ancestral Huron-Wendat (tenth-fifteenth century)	Village	Warrick 1986
BbGv-46	n/a	Aboriginal (pre- sixteenth century)	Lithic scatter	Janusas 2008
BbGv-47	n/a	n/a	n/a	n/a
BbGv-48	n/a	n/a	n/a	n/a

N.B. - Dates based on Ferris 2013: 13

1.3.4 Summary of Archaeological Context

The background research indicated that the study area is located in proximity to Lake Simcoe and includes well-drained sandy soils. The study area also crosses a beach line of glacial Lake Algonquin. The historic mapping indicates that the study area includes historic transportation routes. These criteria indicate that the study area possesses potential for the recovery of Aboriginal and Euro-Canadian archaeological resources, depending on the degree to which the natural topography and soils in the study area have been disturbed by historic and modern development.



2.0 FIELD METHODS: PROPERTY INSPECTION

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. All requisite S & Gs were met during the course of the property investigation.

The Stage 1 archaeological assessment property inspection was conducted by Peter Carruthers (P163) of ASI, on October 6, 2015, 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 visual inspection only and did not include excavation or collection of archaeological resources.

Weather conditions for the inspection were overcast with a temperature of approximately 17° C. Previously identified features of archaeological potential were examined; additional features of archaeological potential not visible on mapping were identified and documented as well as any features that will affect assessment strategies. Field observations are compiled onto maps of the study area in Section 7.0 (Figure 5-14) and associated photographic plates are presented in Section 8.0 (Plates 1-35).

3.0 ANALYSIS AND CONCLUSIONS

The historical and archaeological contexts were analyzed to help determine the archaeological potential of the study area. A summary of the archaeological potential of the study area is presented in Section 2.1 of this report.

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria which are indicative of potential for the identification of archaeological resources. The study area meets the following criteria indicative of archaeological potential:

- Previously registered archaeological sites (e.g. BbGv-20 Ancestral Huron-Wendat village site)
- Well-drained sandy soil (e.g. Bondhead sandy loam)
- Water source: primary, secondary, or past water source (e.g. Innisfil Creek; Lake Algonquin)
- Euro-Canadian settlement (e.g. farmsteads)
- Early transportation route (e.g. 6th Line)



These criteria characterize the 6th Line Part B study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the degree of disturbance.

The Sixth Line Cemetery is located adjacent to the 6th Line ROW and is partially included in the 6th Line Part B study area. The cemetery lands must be avoided from any impacts by the 6th Line Part B design (Figure 12: areas marked in purple). Lands within the 6th Line ROW adjacent to the cemetery possess potential for deeply buried grave shafts. These lands will require Cemetery Investigation (Figure 12: area marked in red). Cemetery Investigation should entail the controlled removal of topsoil by Gradall (or smaller machine if required) under the supervision of a licensed archaeologist. The exposed subsoil will then be shovel-shined and thoroughly examined for the presence of burial shafts.

3.2 Analysis of Property Inspection Results

The property inspection determined that parts of the study area have been previously subject to deep and extensive disturbance, associated with ROW construction and adjacent developments (Figures 6-14: areas marked in yellow). Other lands were documented to possess low and wet conditions (Figures 6, 10, 13 and 14: areas marked in blue). Other parts of the study area exhibit archaeological potential (Figures 6-14: areas marked in green and orange).

3.3 Conclusions

The background research indicates that five previously registered archaeological sites are located within one kilometre of the 6th Line Part B study area. The background research has also identified a Euro-Canadian cemetery adjacent to the study area. Part of the study area will therefore require avoidance and cemetery investigation. A review of the geography and history of the study area suggested that the study area has potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the condition of soils. The Stage 1 property inspection determined that the majority of the study area—primarily the existing 6th Line ROW as well as some adjacent lands has been previously disturbed (Figures 6-14: areas marked in yellow). Other lands are documented as possessing low and wet condition (Figures 6, 10, 13 and 14: areas marked in blue). These lands do not require further archaeological assessment.

Other lands beyond the existing ROW exhibit archaeological potential. These lands must be subject to Stage 2 archaeological assessment, prior to any proposed impacts by the project (Figures 6-14: areas marked in green and orange). The chosen survey methodology depends on the property characteristics such as the nature and extent of ground cover, the possible depth at which archaeological resources might be located and the degree and characteristics of past disturbances (S & G, Section 2.1). Active or recently cultivated agricultural lands must be subject to pedestrian survey at five metre intervals (S & G, Section 2.1.1, Standards 1-6). Lands where ploughing is not possible or viable due to terrain or where survey corridors are narrow (10 m or less) can be subject to a test-pit survey at five metre intervals. Lands in narrow corridors (10 m or less) where at the time of fieldwork possess surface conditions that permit a pedestrian survey, must be subject to a pedestrian survey at five metre intervals (S & G, Section 2.1.2, Standard 1.f).

The study area includes the Sixth Line Cemetery which dates to the nineteenth century. The lands of the cemetery should be subjected to Protection and Avoidance from any proposed impacts by the Project (Figure 12: area marked in purple). The cemetery boundary should be demonstrated by erecting a



temporary barrier and “no-go” instructions issued for all on-site crews as a precautionary measure.

The modern physical boundaries of a cemetery are not always a reliable indicator of its actual extent. There is potential for the presence of unmarked graves beyond the limits of cemeteries. Accordingly, any construction activities within 10 m of the known cemetery limits must be preceded by a Stage 3 Cemetery Investigation (Figure 12: area marked in red), in accordance with the regulations under the *Funeral, Burial and Cremation Services Act* and the *Ontario Heritage Act*.

The Stage 3 Cemetery Investigation should be completed by a licensed archaeologist and proceed by mechanical excavation using a smooth-edged bucket to reveal undisturbed ‘B’ horizon. Throughout this process the mechanical excavations should be periodically halted to permit cleaning of the exposed horizon and trench profiles by shovel and trowel and to explore any apparent subsurface deposits, such as grave shafts and *in situ* burials. If human remains are confirmed to be present, the Simcoe South Police and the Office of the Chief Coroner are to be notified to review the discoveries and confirm that the site is not of forensic interest; non-forensic findings should be subsequently communicated to the Cemeteries Registrar. Excavation should continue within the study area until the extent of a 10 m buffer is identified between the limit of excavation any identified burial features.

Upon completion of the investigations, the excavation area should be backfilled. If grave shafts are identified, this should be preceded by the laying down of geotextile and a thin layer of granular to provide contrast over any sensitive deposits encountered. Any documented human remains should be subjected to Protection and Avoidance by impacts proposed by the project.

4.0 RECOMMENDATIONS

In light of the results of this assessment, ASI makes the following recommendations:

1. The 6th Line Part B study area includes the Sixth Line Cemetery. These lands should be subject to Protection and Avoidance from any proposed impacts by the project. Lands 10 metres from the documented extent of the cemetery require Cemetery Investigation, in accordance with Provincial regulations;
2. The 6th Line Part B study area includes lands which are considered to possess archaeological potential. These lands should be subject to Stage 2 archaeological assessment by a combination of test pit and pedestrian survey, both at 5 m intervals, prior to any proposed impacts by the projects;
3. The remainder of the study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance or steeply sloping conditions. These lands do not require further archaeological assessment; and,
4. Should the proposed work extend beyond the current study area then further Stage 1 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 Tourism, Culture and Sport should be immediately notified.

5.0 ADVISE ON COMPLIANCE WITH LEGISLATION

ASI advises compliance with the following legislation:

- This report is submitted to the Minister of Tourism, Culture and Sport (MTCS) 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 MTCS, 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 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*; and,
- 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.

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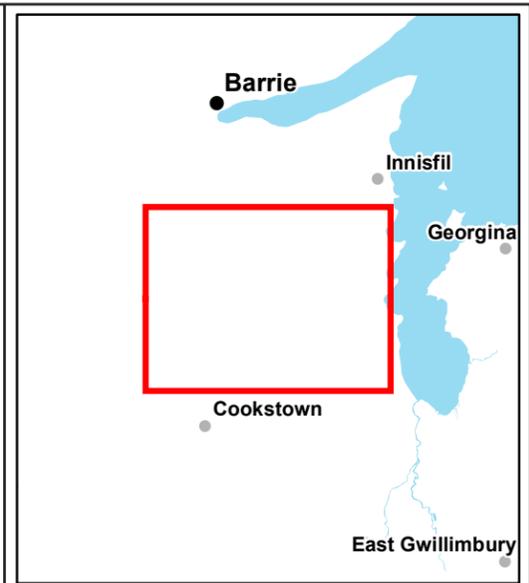
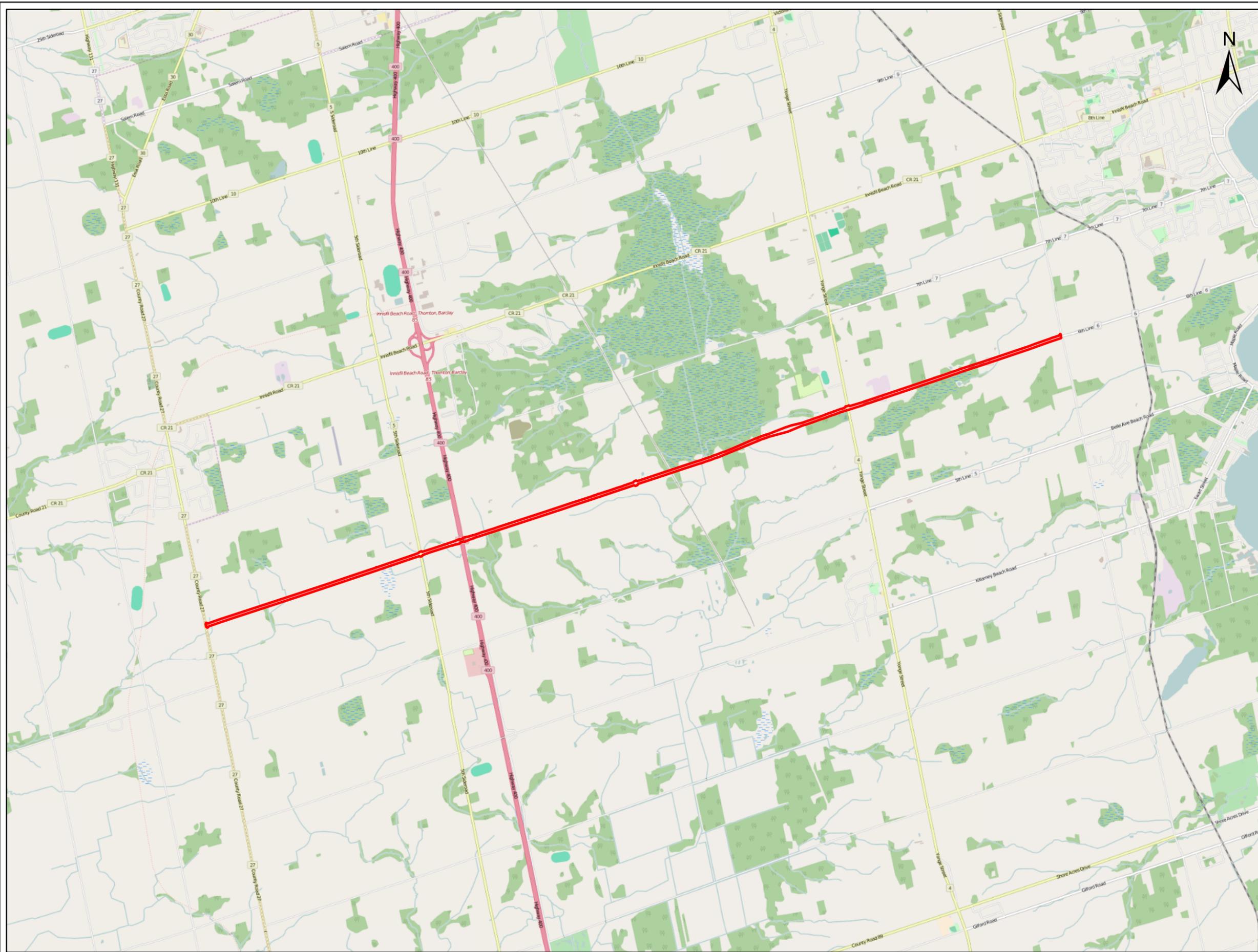
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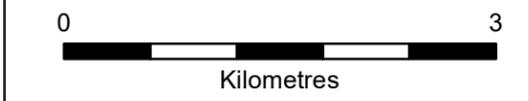
7.0 MAPS





 Study Area

BASE:
 (c) OpenStreetMap and contributors,
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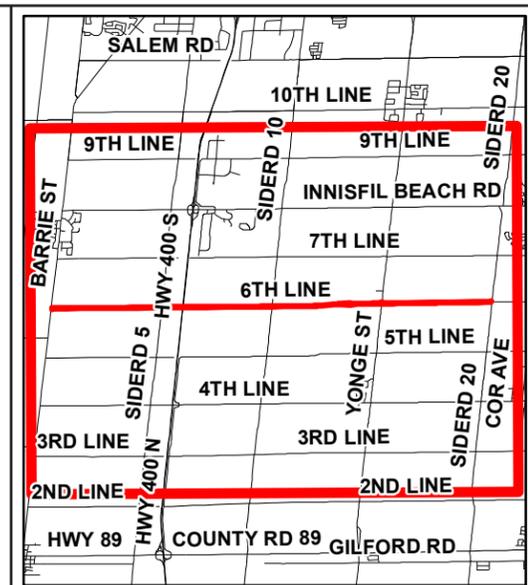
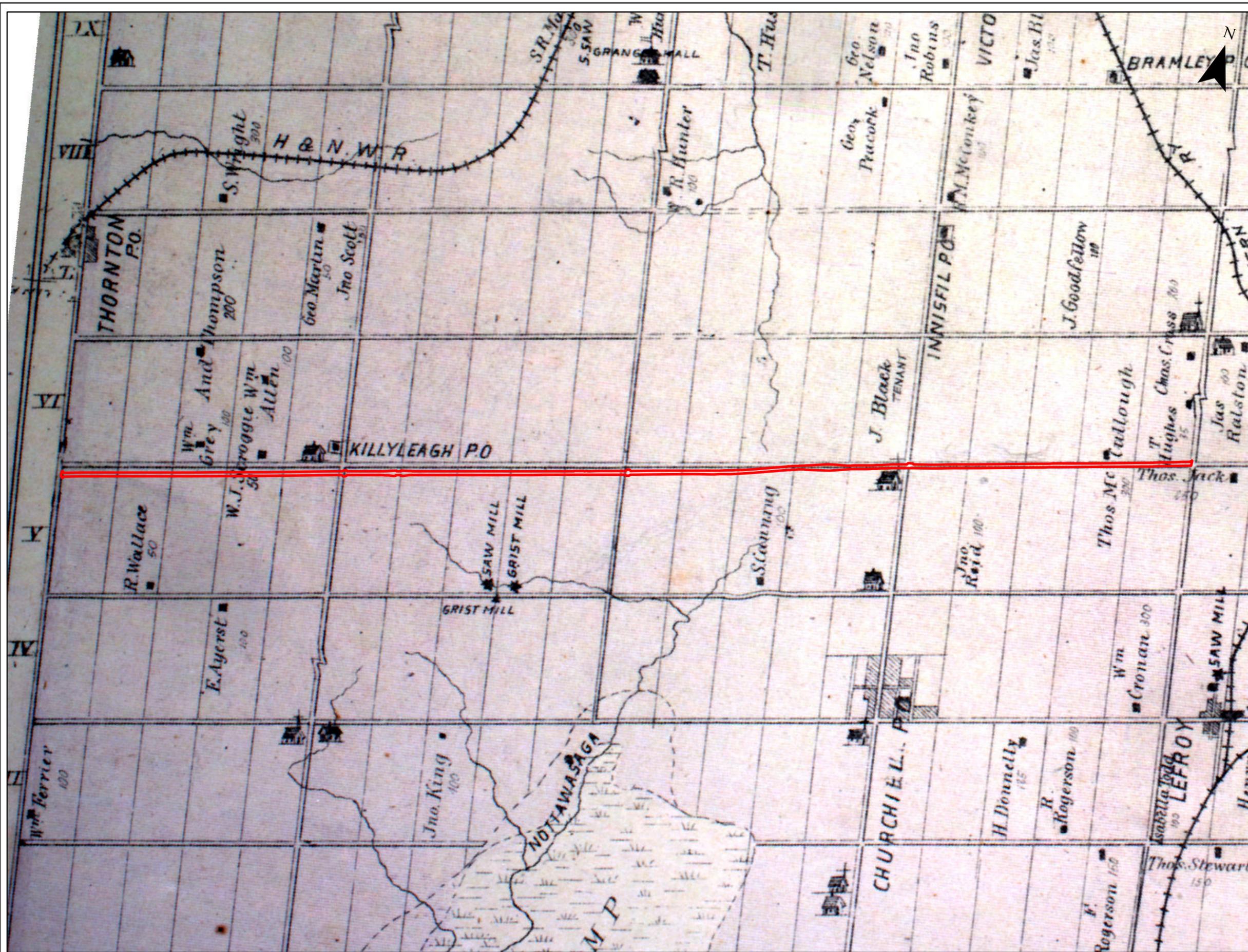


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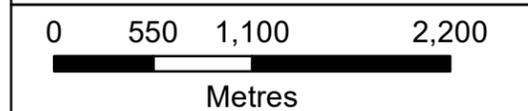
Archaeological & Cultural Heritage Services
 528 Bathurst Street Toronto, ONTARIO M5S 2P9
 416-966-1069 | F416-966-9723 | asiheritage.ca

Figure 1: 6th Line (Part B) Existing Conditions Study Area Location



Study

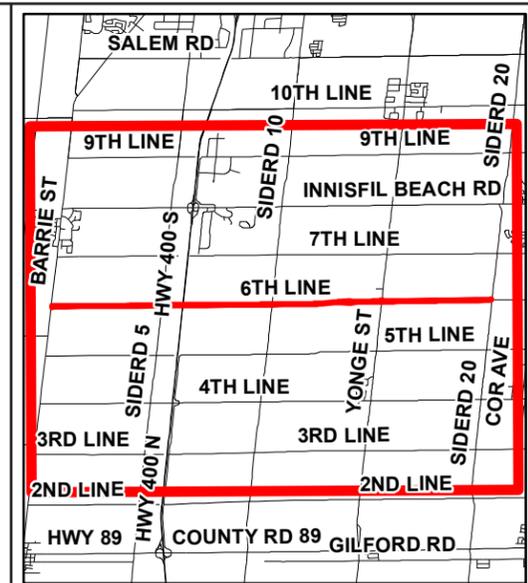
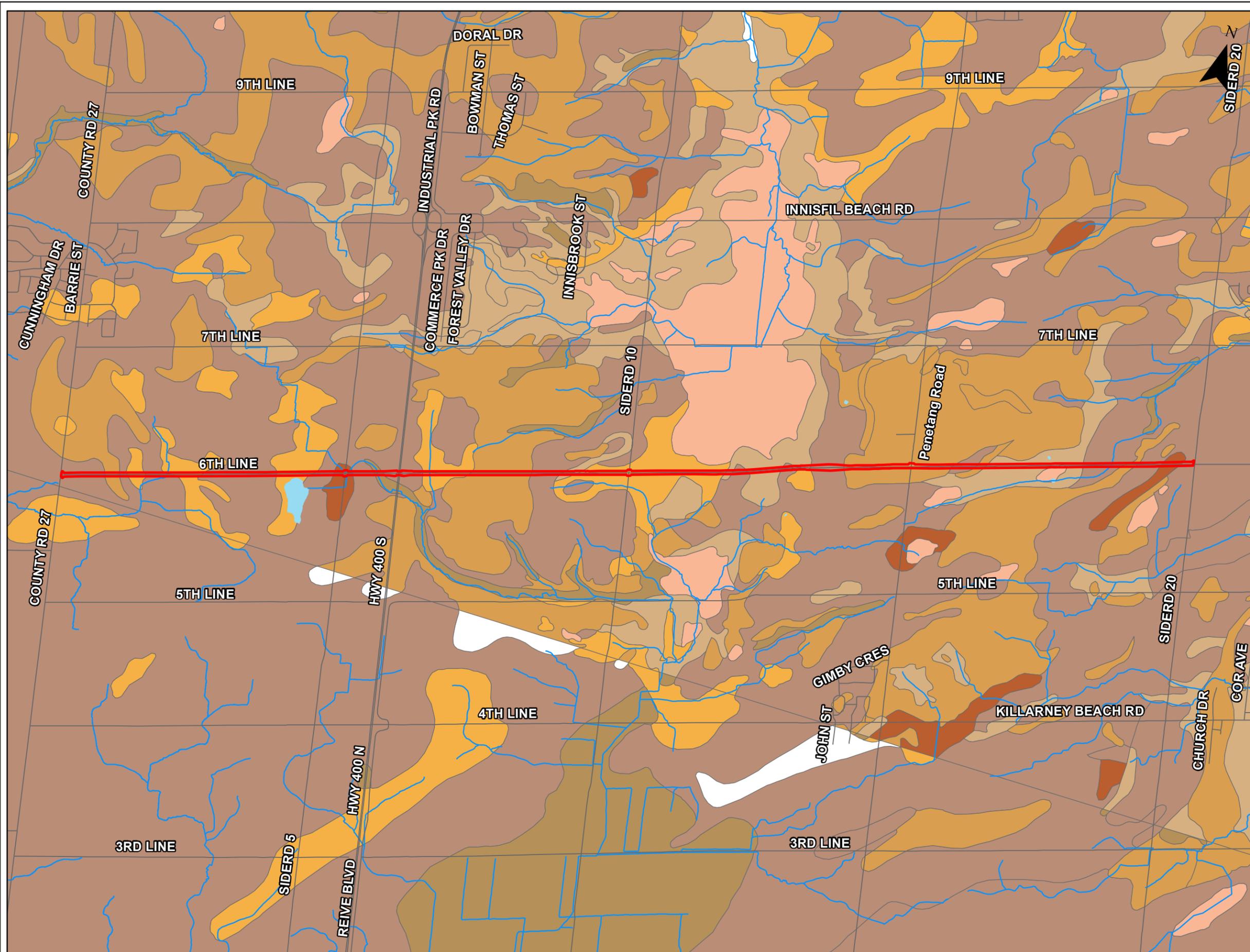
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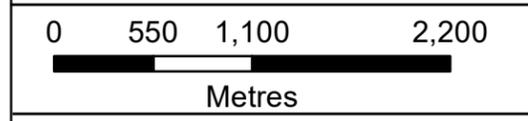
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 Canada, M5S 2P9 info@iASI.to/www.iASI.to

Figure 2: 6th Line (Part B) Study Area overlaid on 1881 map of Township of Innisfil



- Study Area
- Road
- Water
- clay, silt
- diamicton
- organic deposits
- sand
- sand, gravel
- silt
- silt, sand

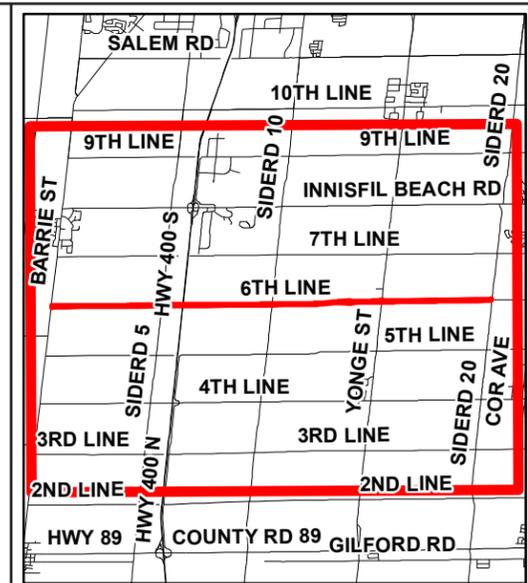
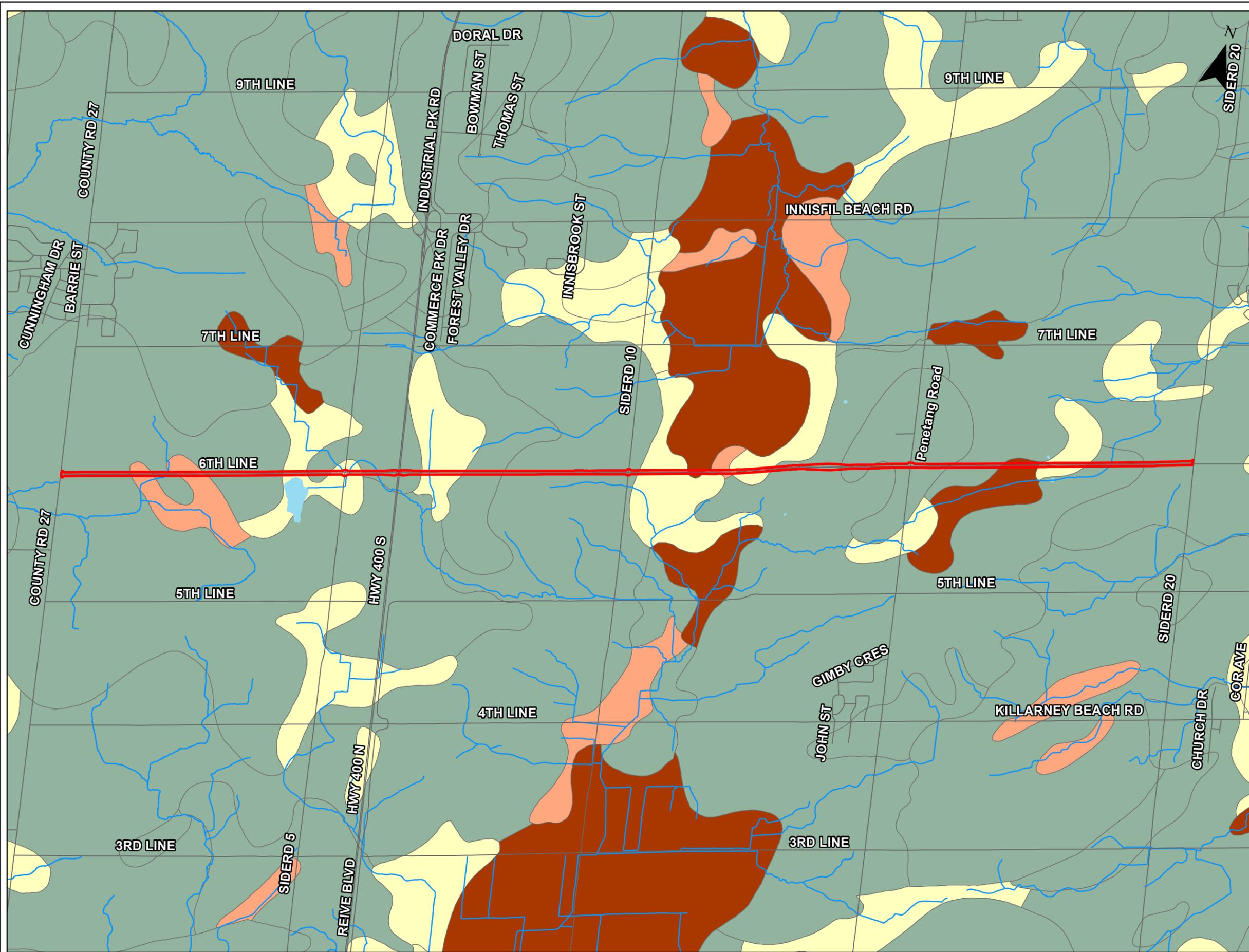
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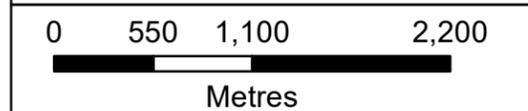
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Figure 3: 6th Line (Part B) Study Area Surficial Geology



- Study
- Road
- Water
- Well Drained
- Imperfectly Drained
- Poorly Drained
- Very Poorly Drained

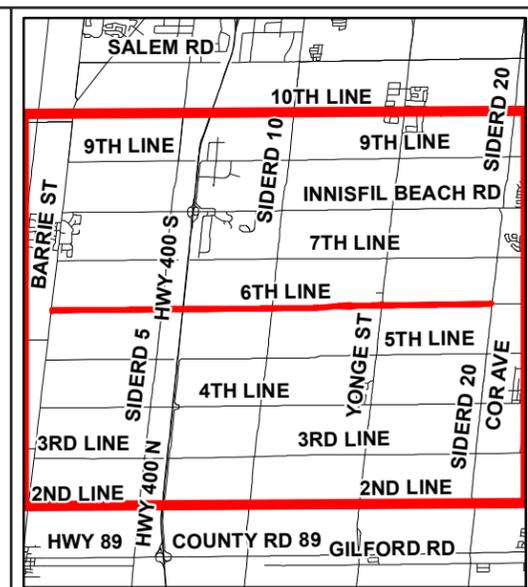
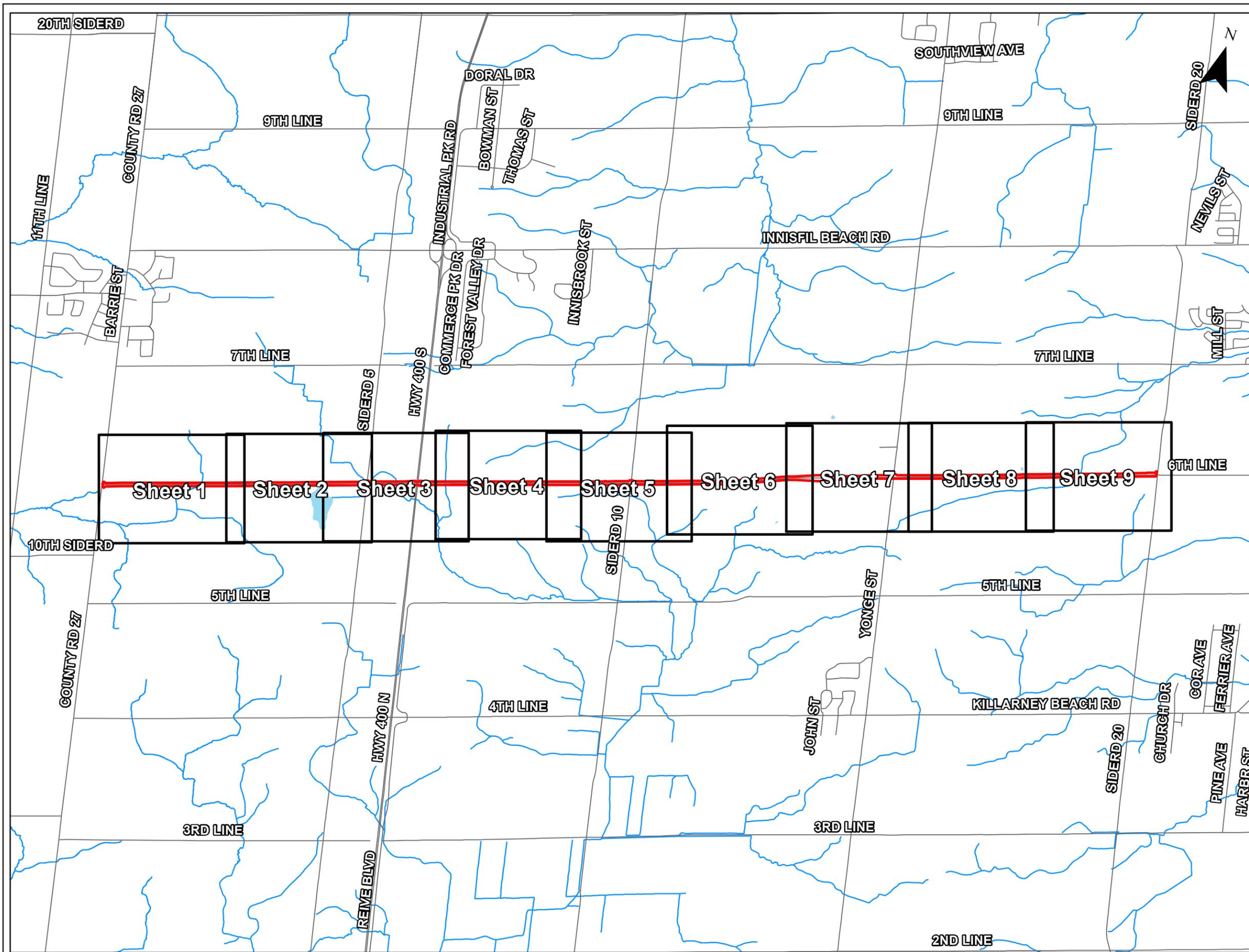
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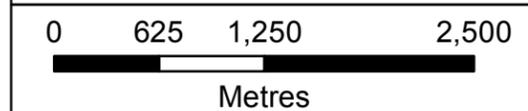
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 Canada, M5S 2P9 info@iASI.to/www.iASI.to

Figure 4: 6th Line (Part B) Study Area Soil Drainage



- Study Area
- Road
- Water

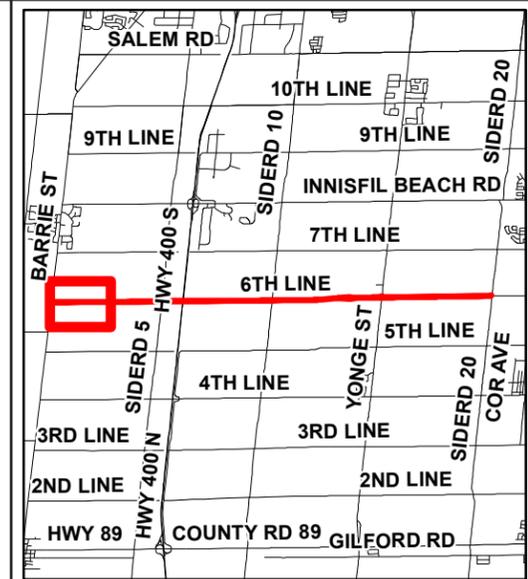
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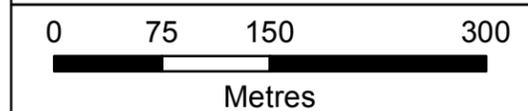
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 Canada, M5S 2P9 info@iASI.to/www.iASI.to

Figure 5: 6th Line (Part B) Study Area Property Inspection Results (Key Map)



- Study Area
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- No Potential: (Low and Wet)
- Road
- Water

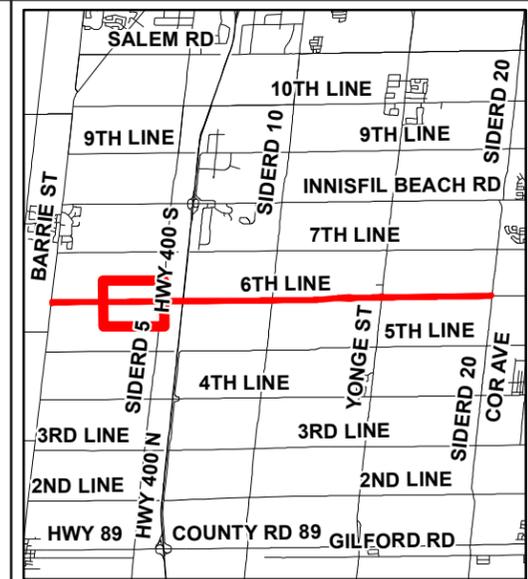
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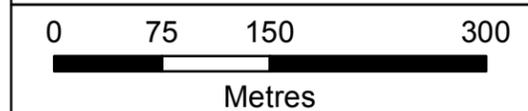
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 Canada, M5S 2P9 info@iASI.to/www.iASI.to

Figure 6: 6th Line (Part B) Study Area Property Inspection Results (Sheet 1)



- Study Area
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- Road
- Water

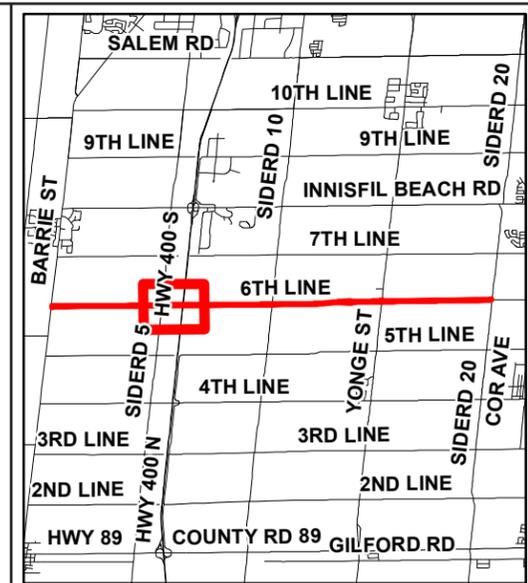
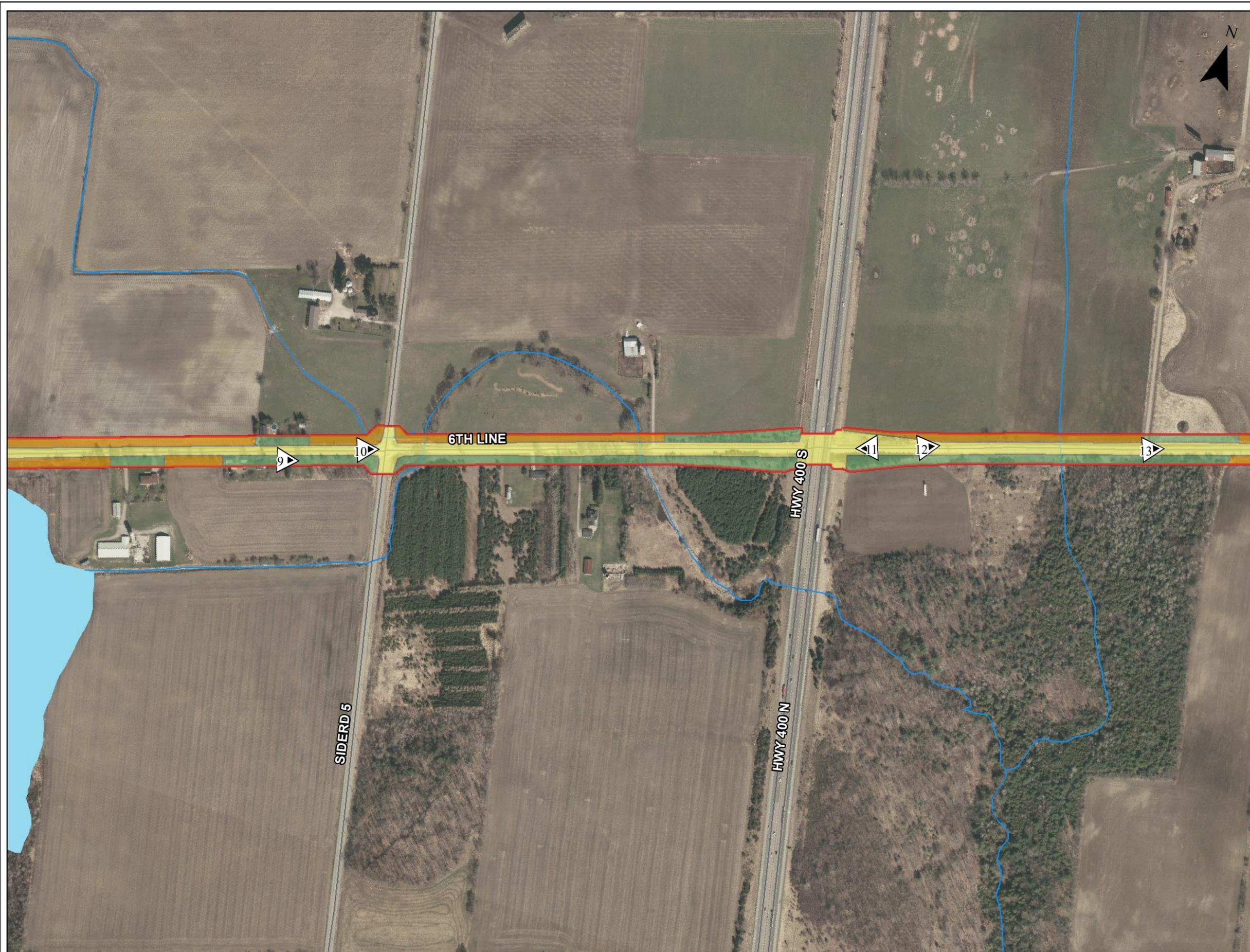
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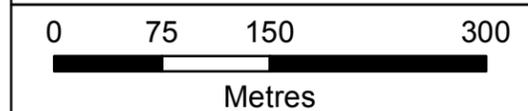
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Figure 7: 6th Line (Part B) Study Area Property Inspection Results (Sheet 2)



- Study Area
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- Road
- Water

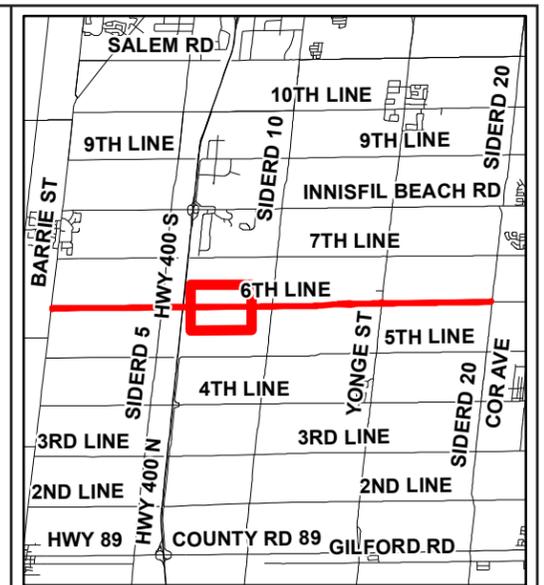
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ASI PROJECT NO.: 14EA-242 DRAWN BY: BW
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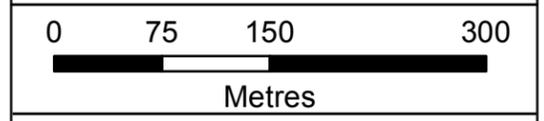
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Figure 8: 6th Line (Part B) Study Area Property Inspection Results (Sheet 3)



- Study Area
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- Road
- Water

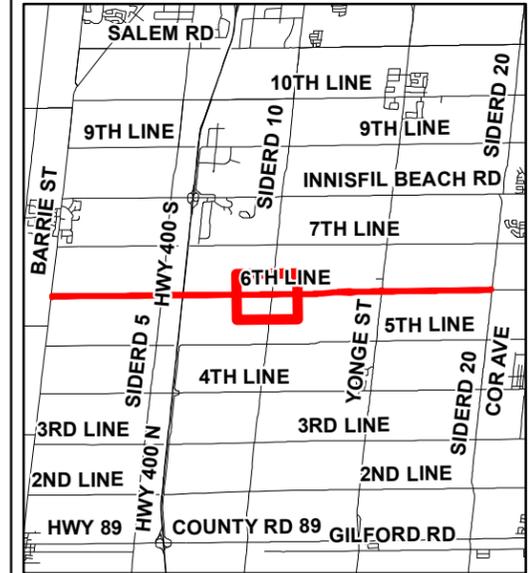
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ASI PROJECT NO.: 14EA-242 DRAWN BY: BW
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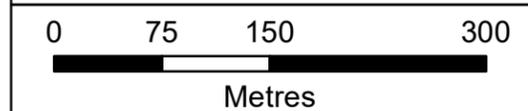
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Figure 9: 6th Line (Part B) Study Area Property Inspection Results (Sheet 4)



- Study
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- No Potential: (Low and Wet)
- Road
- Water

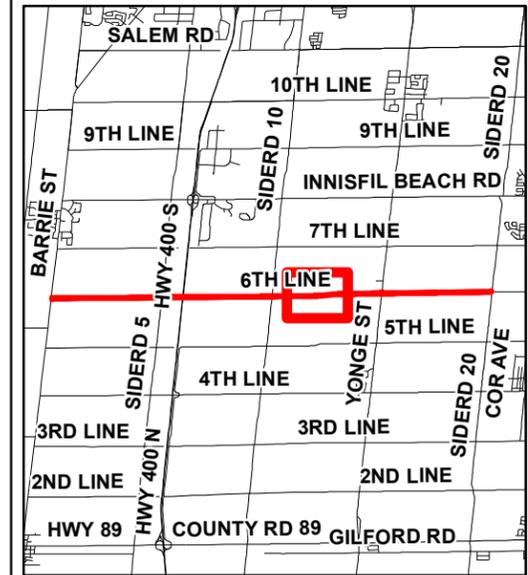
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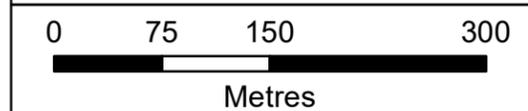
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Figure 10: 6th Line (Part B) Study Area Property Inspection Results (Sheet 5)



- Study
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- No Potential: (Low and Wet)
- Road
- Water

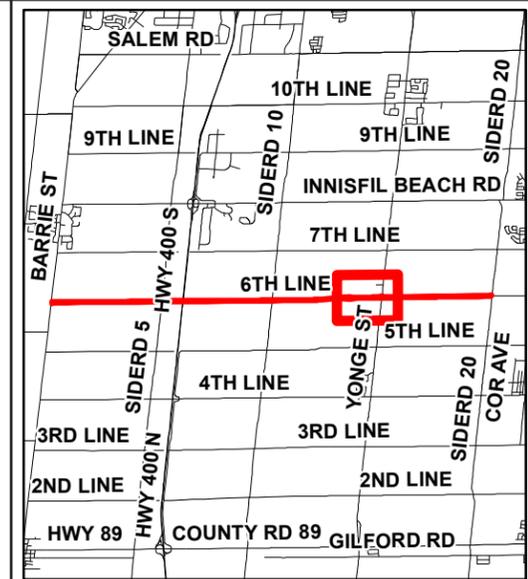
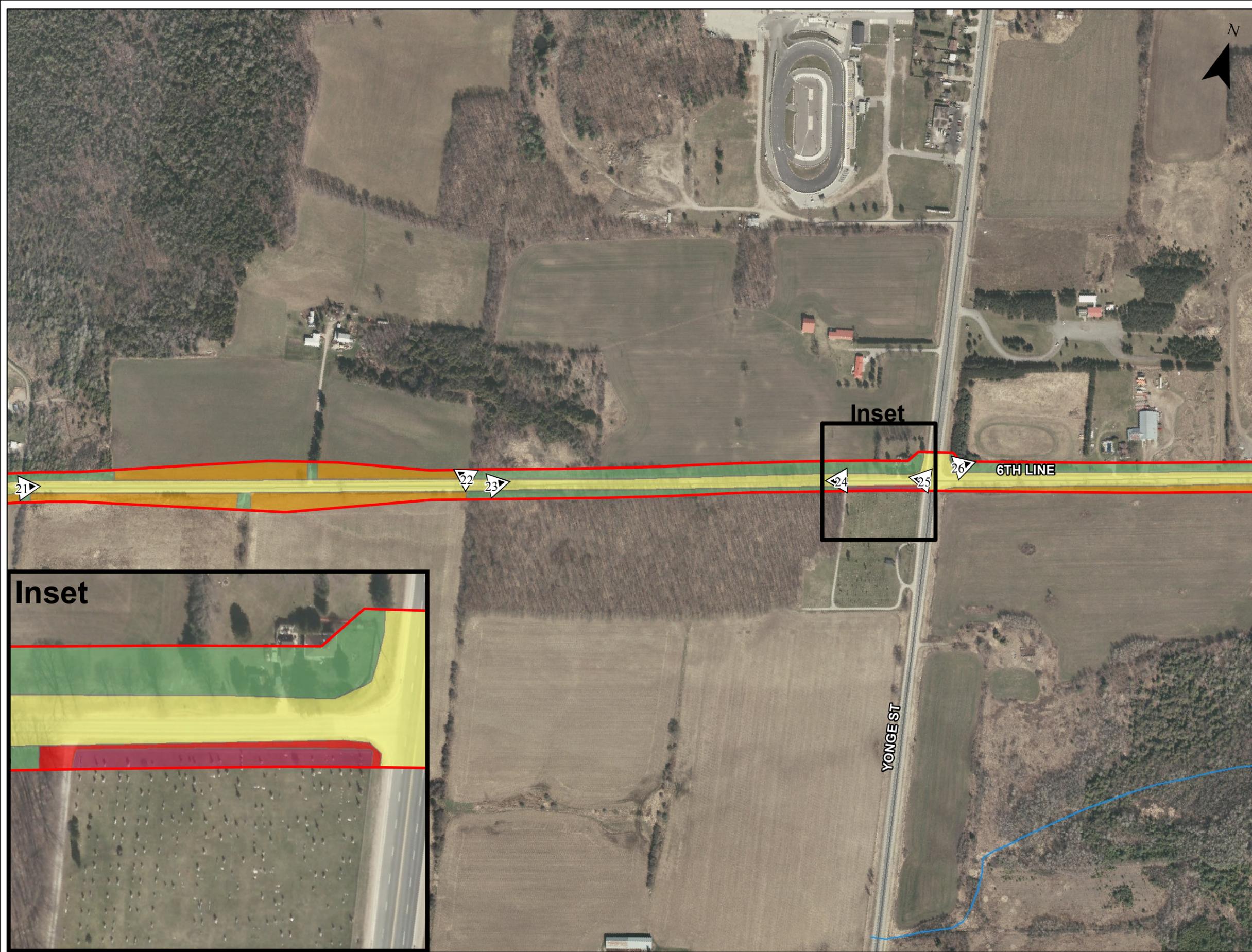
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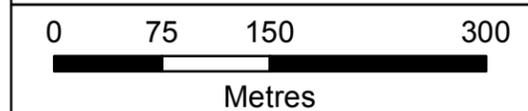
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Figure 11: 6th Line (Part B) Study Area Property Inspection Results (Sheet 6)



- Study Area
- Photo Location and Number
- Cemetery (Requires Avoidance)
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Cemetery Investigations)
- Potential (Requires Test-pit Survey)
- Road
- Water

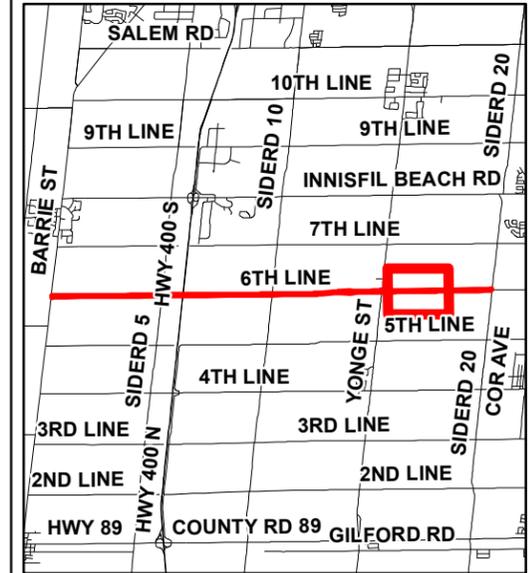
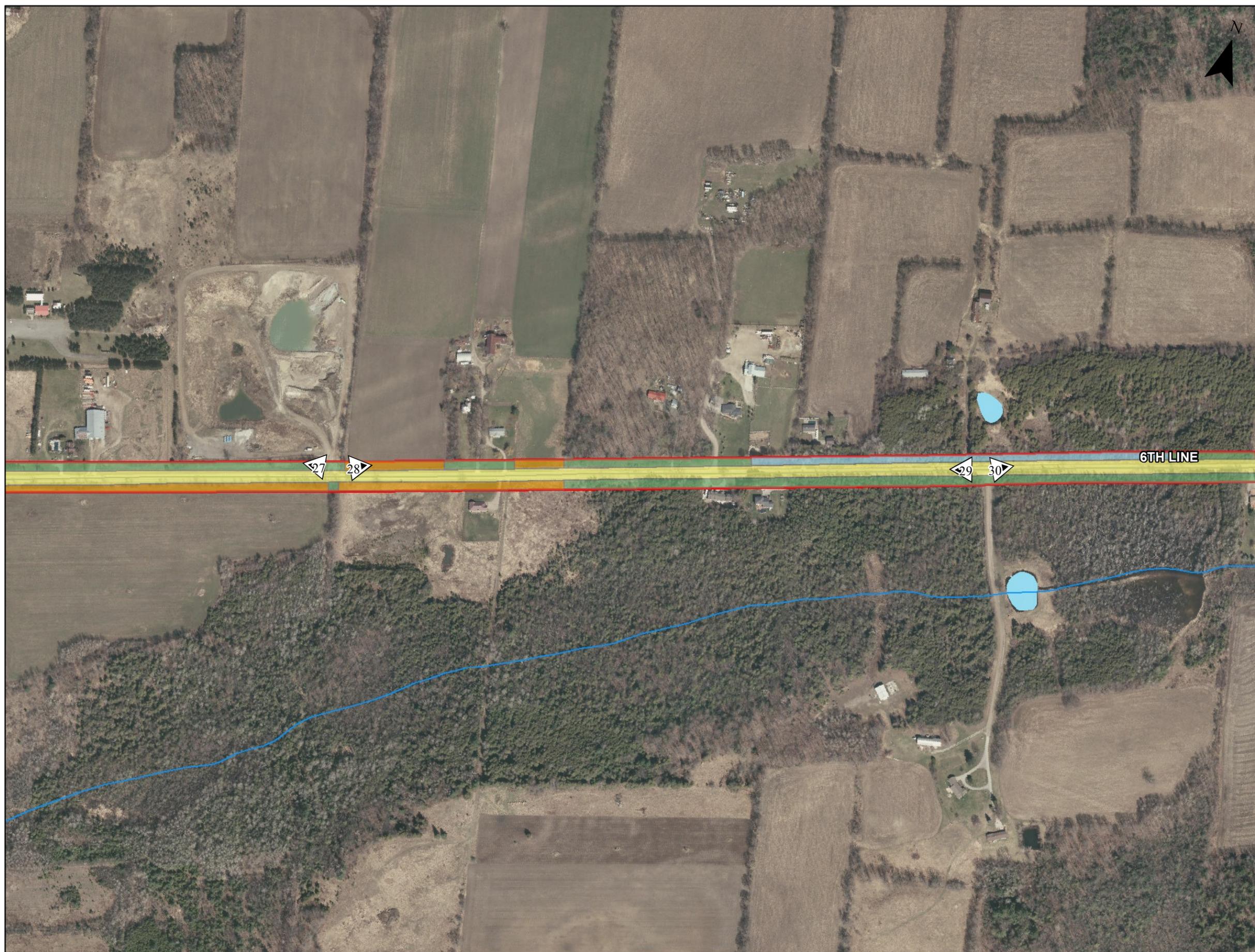
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ASI PROJECT NO.: 14EA-242 DRAWN BY: BW
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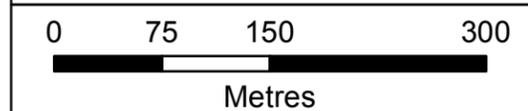
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Figure 12: 6th Line (Part B) Study Area Property Inspection Results (Sheet 7)



- Study Area
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- No Potential: (Low and Wet)
- Road
- Water

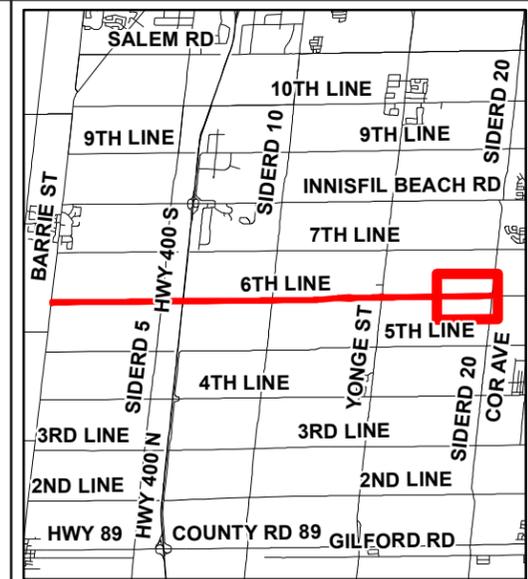
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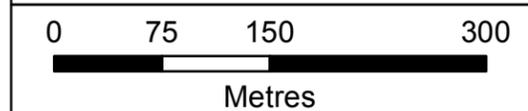
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Figure 13: 6th Line (Part B) Study Area Property Inspection Results (Sheet 8)



- Study Area
- Photo Location and Number
- No Potential: (Disturbed)
- Potential (Requires Pedestrian Survey)
- Potential (Requires Test-pit Survey)
- No Potential: (Low and Wet)
- Road
- Water

Base Data: Ontario Ministry of Natural Resources
 Projection: NAD83 UTM Zone 17



ASI PROJECT NO.: 14EA-242 DRAWN BY: BW
 DATE: November 13, 2014 FILE: 14EA242_Fig15_S9

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Figure 14: 6th Line (Part B) Study Area Property Inspection Results (Sheet 9)

8.0 IMAGES





Plate 1: South view of County Road 27 ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 2: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 3: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 4: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 5: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 6: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 7: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.

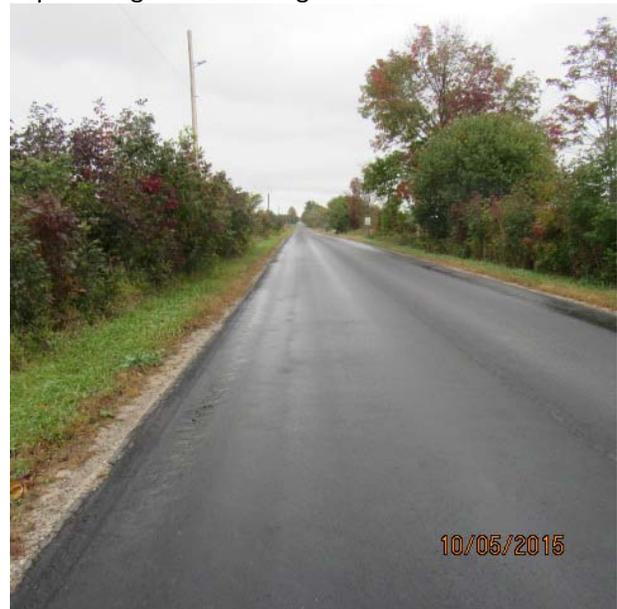


Plate 8: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 9: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 10: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 11: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 12: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 13: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 14: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 15: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 16: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 17: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 18: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 19: Northwest view of study area. Area is low and wet with no archaeological potential.



Plate 20: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 21: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 22: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 23: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 24: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 25: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Sixth Line Cemetery property should be protected and avoided from project impacts. ROW lands immediately adjacent to the cemetery require Cemetery Investigations.



Plate 26: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 27: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 28: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 29: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands north of ROW are low and wet with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 30: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands north of ROW are low and wet with no archaeological potential. Some lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 31: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 32: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 33: Southwest view of study area. Area is low and wet with no archaeological potential.



Plate 34: East view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.



Plate 35: West view of 6th Line ROW. ROW is disturbed with no archaeological potential. Lands beyond ROW possess archaeological potential and require Stage 2 archaeological assessment.

9.0 APPENDIX A: DETAILED SOIL DESCRIPTIONS

Bondhead loam and sandy loam are well drained porous soils. Soil loss due to erosion may be moderate to high depending on slope and vegetation cover. Natural vegetation consists mainly of beech, sugar maple, some ironwood, elm, ash, balsam and white pine. The following soil profile has been documented (Hoffman *et al.* 1962: 33-34, 92):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark greyish brown (10YR 3/2)	Loam; fine granular structure, friable consistency, moderately stony	0-8 cm
Ae1	Yellowish brown (10YR 5/6)	Loam; weak fine granular, firm, slightly stony	8-46 cm
Ae2	Light grey (10YR 7/2)	Sandy loam; weak fine granular, firm, slightly stony	46-58 cm
Bt	Dark brown (10YR 4/3)	Loam; medium nuciform, plastic, slightly stony	58-79 cm
C	Light grey (10YR 7/2)	Loam till; prismatic, hard, moderately stony, calcareous	79+ cm

Dundonald sandy loam is developed in sandy outwash material overlaying calcareous loam till. This soil is well drained and occurs on gently to moderately rolling topography. The following profile has been documented (Hoffman *et al.* 1962: 52, 94):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Dark greyish brown (2.5Y 4/2)	Sandy loam; fine crumb structure, very friable, stonefree	0-8 cm
Ae1	Yellowish brown (10YR 5/4)	Sandy loam; single grain, loose, stonefree	8-23 cm
Ae2	Yellowish brown (10YR 5/6)	Loamy sand; single grain, loose, stonefree	23-38 cm
Bt	Brown (10YR 5/3)	Sandy loam; very weak medium nuciform, very friable, stonefree	38-51 cm
IIC	Grey (10YR 6/1)	Loam till; fine prismatic, hard, calcareous	51+ cm

Guerin loam – stony phase occupies the gently undulating land between hills. As a result of this erosion is slight. Stone content is high and the soil drainage is imperfect. The following profile has been documented (Hoffman *et al.* 1962: 35, 97):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark greyish brown (10YR 3/2)	Sandy loam; medium crumb structure, very friable consistency, moderately stony	0-10 cm
Aeg	Yellowish brown (10YR 5/6)	Sandy loam; mottled, weak fine platy, very friable, moderately stony	10-30 cm
Btg	Brown (10YR 5/3)	Loam; mottled, weak medium nuciform, friable, moderately stony	30-48 cm
C	Light grey (10YR 7/2)	Sandy loam till; prismatic, hard, moderately stony	48+ cm



Lyons loam is a poorly drained soil which occurs in depressional areas. Organic content is high and pH is typically neutral. The following profile has been documented (Hoffman *et al.* 1962: 36, 100):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark greyish brown (10YR 3/2)	Loam; fine granular structure, friable consistency, moderately stony	0-8 cm
Bmg	Grey (10YR 6/1); mottled yellowish brown (10YR 5/6)	Loam; very mottled, massive, hard, moderately stony	8-51 cm
C	Light grey (10YR 7/2)	Loam till; mottled, prismatic, hard, moderately stony	51+ cm

Muck soil is commonly found in depressions within uplands. These soils are saturated with water throughout the year, promoting the accumulation of organic debris. These soils do not exhibit any horizon differentiation, slightly varying in colours of black and dark brown. Soil depth is variable (Hoffman *et al.* 1962: 68).

Simcoe silty clay loam is a poorly drained soil which occurs on level and slightly depressional areas. The parent material is varved and calcareous with some free carbonates in profile. The following profile has been documented (Hoffman *et al.* 1962: 63-64, 105):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark brown (10YR 2/2)	Silt loam; fine nuciform structure, friable consistency, stonefree	0-15 cm
Bmg1	Greyish brown (10YR 5/2)	Silt loam; very mottled, medium blocky, firm when dry, plastic when wet, stonefree	15-33 cm
Bmg2	Light brownish grey (10YR 6/2)	Silt loam; very mottled, massive, hard when dry, plastic when wet, stonefree, calcareous	33-61 cm
C	Greyish brown (10YR 5/2); light grey (10YR 7/2)	Silt loam and clay varves; clay, silt loam; hard when dry, plastic when wet, stone free, calcareous	61+ cm

Smithfield silty clay loam is an imperfectly drained soil that occurs on gently undulating topography in low lying land between swells and near watercourses. The soil is typically stonefree and erosion is little. The parent material is varved. The following profile has been documented (Hoffman *et al.* 1962: 62, 105):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark grey (10YR 3/1)	Silty clay loam; medium granular structure, friable consistency, stonefree	0-13 cm
Aeg	Light yellowish brown (10YR 6/4)	Silty clay loam; mottled, weak fine platy, friable, stonefree	13-20 cm
Btg	Brown (10YR 5/3)	Silty clay; mottled, coarse blocky, hard when dry, plastic when wet, stonefree, calcareous	20-48 cm



Horizon	Colour	Texture/Structure	Depth in profile
C	Greyish brown (10YR 5/2); light grey (10YR 7/2)	Silt loam and clay varves; clay; silt loam; hard when dry, plastic when wet, stonefree, calcareous	48+ cm

Tioga sandy loam is developed from calcareous outwash sands and is typically stone free. This soil is generally found on gently undulating topography with long smooth slopes. This soil is well drained. The following profile has been documented (Hoffman *et al.* 1962: 43-45, 106):

Horizon	Colour	Texture/Structure	Depth in profile
Ah	Very dark greyish brown (10YR 3/2)	Loamy sand; fine crumb structure, very friable consistency, stonefree	0-3 cm
Ae	Light grey (10YR 5/4)	Loamy sand; single grain, loose, stonefree	3-5 cm
Bhf1	Yellowish brown (10YR 5/4)	Loamy sand; very weak medium nuciform, very friable, stonefree	5-43 cm
Bhf2	Yellowish brown (10YR 5/8)	Loamy sand; very weak medium nuciform, very friable, stonefree	43-89 cm
Bt	Brown (10YR 5/3)	Sandy loam; weak medium nuciform, very friable, stonefree	89-94 cm
C	Pale brown (10YR 6/3)	Sand; single grain, loose, stonefree, calcareous	94+ cm