



ORIGINAL REPORT

Stage 1 Archaeological Assessment

*Havelock Wastewater Treatment Plant, part of Lots 4 and 5, Concession 9,
former Geographic Township of Belmont, Township of Havelock-Belmont-
Methuen, County of Peterborough, Ontario*

Licensee: Nimal Ragavan Nithiyantham (P390)

PIF Number: P390-0356-2021

Submitted to:

CIMA+

900-101 Fredrick Street
Kitchener, ON
N2H 6R2

Submitted by:

Golder Associates Ltd.

100 Scotia Court, Whitby, Ontario, L1N 8Y6, Canada

+1 905 723 2727

21459099-2000

29 April 2022

Distribution List

1 eCopy - CIMA+

1 eCopy - Golder Associates Ltd.

1 eCopy - Ministry of Heritage, Sport, Tourism and Culture Industries

Executive Summary

The Executive Summary highlights key points from the report only, for complete information and findings as well as limitations, the reader should examine the complete report.

In May 2021, Golder Associates Ltd. (Golder) was retained by CIMA+ on behalf of the Ontario Clear Water Agency (OCWA) to undertake a Stage 1 archaeological assessment in support of a Schedule C Municipal Class Environmental Assessment (EA) for the proposed expansion of the Havelock Wastewater Treatment Plant (WWTP) in the Township of Havelock-Belmont-Methuen, Ontario ('project area'). The project area is in part of Lots 4 and 5, Concession 9, Geographic Township of Belmont, Peterborough County.

Background research and a property inspection determined parts of the project area to have archaeological potential for the recovery of both pre-contact and post-contact archaeological resources. This determination was based on the proximity to a watercourse and a historical transportation route, and the presence of soil types conducive to past human settlement.

A negative indicator of archaeological potential is extensive below-grade land disturbance. Based on the property inspection, disturbances consisting of grading below topsoil, building footprints, underground utilities, and sewage and infrastructure development were encountered.

Based on the findings presented in this Stage 1 archaeological assessment report, the following recommendations are presented:

- 1) Parts of the project area that are described as having archaeological potential are recommended to be subjected to a Stage 2 archaeological assessment prior to any impacts in these areas. It is recommended these areas be subjected to test pit survey at 5 m intervals per Section 2.1.2 of the MHSTCI (2011).
- 2) Parts of the project area that are described as having no archaeological potential are recommended to be considered free from further archaeological investigations per Section 2.1, Standard 2.b. of the MHSTCI (2011).

The Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) is requested to review, and provide a letter indicating their satisfaction with the results and recommendations presented herein, with regard to the 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.

Study Limitations

Golder has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the archaeological profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty expressed or implied is made.

This report has been prepared for the specific site, design objective, developments, and purpose described to Golder by CIMA+ (the Client). The factual data, interpretations, and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

The information, recommendations, and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without Golder's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the Client, Golder may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process. Any other use of this report by others is prohibited and is without responsibility to Golder. The report, all plans, data, drawings, and other documents as well as electronic media prepared by Golder are considered its professional work product and shall remain the copyright property of Golder, who authorizes only the Client and Approved Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party without the express written permission of Golder. The Client acknowledges that electronic media is susceptible to unauthorized modification, deterioration, and incompatibility and therefore the Client cannot rely upon the electronic media versions of Golder's report or other work products.

Unless otherwise stated, the suggestions, recommendations, and opinions given in this report are intended only for the guidance of the Client in the design of the specific project.

Special risks occur whenever archaeological investigations are applied to identify subsurface conditions and even a comprehensive investigation, sampling and testing program may fail to detect all or certain archaeological resources. The sampling strategies incorporated in this study, comply with those identified in the MHSTCI' 2011 *Standards and Guidelines for Consultant Archaeologists*.

Project Personnel

Project Director	Anthony O'Brien, CET., Principal, Senior Consultant Construction Services and Materials Testing
Project Manager	Rafael Abdulla, MEng., PEng, PMP, Geotechnical Engineer
Task Manager	Ragavan Nithiyanantham (P390), MA, CAHP, Archaeologist/ Cultural Heritage Specialist
Field Director	Shawn Bayes (R356), BA (Hon), Archaeologist
Report Production	Shawn Bayes (R356), BA (Hon)
Senior Review	Jamie Lemon (P1056), MA, Senior Archaeologist
GIS	Bojan Radojevic, BA, Geomatics Technician
Administrative Support	Liz Yildiz, Administrative Assistant

Acknowledgements

CIMA+	Mina Yousif, MEng, Peng, Associate Partner, Senior Project Manger, Infrastructure
--------------	---

Table of Contents

EXECUTIVE SUMMARY	ii
STUDY LIMITATIONS	iii
1.0 PROJECT CONTEXT	1
1.1 Development Context.....	1
1.1.1 Objectives	1
1.2 Historical Context	1
1.2.1 Pre-Contact Indigenous Period.....	1
1.2.1.1 Paleo Period	3
1.2.1.2 Archaic Period.....	3
1.2.1.3 Woodland Period	5
1.2.2 Contact and Post-Contact Period	8
1.2.3 Euro-Canadian Period	8
1.2.3.1 Township of Belmont-, Peterborough County.....	8
1.2.3.2 Village of Havelock	9
1.2.3.3 Project Area	10
1.3 Archaeological Context	10
1.3.1 Existing Conditions	10
1.3.2 Physiography	11
1.3.3 Registered Archaeological Sites	11
1.3.4 Previous Archaeological Assessments.....	11
1.3.5 Cultural Heritage Resources.....	12
1.3.6 Date of Property Inspection	12
2.0 FIELD METHODS	13
3.0 ANALYSIS AND CONCLUSION	14
3.1 Assessing Archaeological Potential	14
3.1.1 Archaeological integrity.....	15
3.2 Conclusions.....	15

4.0 RECOMMENDATIONS	16
5.0 ADVICE ON COMPLIANCE	17
6.0 BIBLIOGRAPHY	18
7.0 IMAGES	22
8.0 MAPS	34

TABLES

Table 1: Overview of Pre-Contact Cultural Chronology of Southern Ontario.....	1
---	---

IMAGES

Image 1: Disturbed. Gravel entrance driveway, looking north-northwest.....	22
Image 2: Disturbed. Gravel road network and above ground facilities, looking southwest.....	22
Image 3: Disturbed. Heavily modified landscape, drainage ditches and above/below ground utilities/facilities, looking south-southeast	23
Image 4: Disturbed. Heavily modified landscape. Disturbed drainage ditches and earthen mounds, looking east.....	23
Image 5: Disturbed. Large earthen mounds, looking southeast.....	24
Image 6: Disturbed earthen mounds comprised of mix of rock and sand, looking down	24
Image 7: West settling pond, looking northeast	25
Image 8: Disturbed. Heavily modified landscape south of settling ponds, looking east.....	25
Image 9: East settling pond and sewer utilities, looking northeast.....	26
Image 10: Sewer utilities, looking down	26
Image 11: Disturbed surface conditions surrounding settling ponds. Soil is a mixture of sand and gravel, looking east	27
Image 12: Disturbed surface soil conditions surrounding the settling ponds, looking down	27
Image 13: Disturbed. Heavily modified landscape east of settling ponds, looking north-northwest	28
Image 14: East settling pond, looking west	28
Image 15: Sewer utilities, looking west.....	29
Image 16: Disturbed. Earthen mounds, looking northwest.....	29
Image 17: Disturbed. Heavily modified landscape with ditching and buried sewer and electrical utilities, looking south-southeast	30
Image 18: Disturbed. Sewer utilities buried within earthen berm, looking west-southwest.....	30
Image 19: Disturbed. Exposed manhole cover atop earthen berm, looking north	31

Image 20: Area of archaeological potential at west extent of project area, looking west.....	31
Image 21: Area of archaeological potential at west extent of project area, looking southeast	32
Image 22: Area of archaeological potential at west extent of project area, looking northeast	32
Image 23: Area of archaeological potential at east extent of project area, looking west	33
Image 24: Area of archaeological potential at east extent of project area, looking north	33

MAPS

Map 1: Location Plan	35
Map 2: Project Area Overlaid on 19th Century Historical Maps	36
Map 3: Project Area Overlaid on 1954 Aerial Photograph	37
Map 4: Stage 1 Archaeological Assessment Results	38

1.0 PROJECT CONTEXT

1.1 Development Context

In May 2021, Golder Associates Ltd. (Golder) was retained by CIMA+ on behalf of the Ontario Clear Water Agency (OCWA) to undertake a Stage 1 archaeological assessment in support of a Schedule C Municipal Class Environmental Assessment (EA) for the proposed expansion of the Havelock Wastewater Treatment Plant (WWTP) in the Township of Havelock-Belmont-Methuen, Ontario ('project area') (Map 1). The project area is in part of Lots 4 and 5, Concession 9, Geographic Township of Belmont, Peterborough County.

This Stage 1 archaeological assessment was conducted under PIF# P390-0356-2021 issued to professional archaeological consultant licensee Ragavan Nithiyantham by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). Permission to enter the Havelock WWTP to complete the property inspection was provided by OCWA.

1.1.1 Objectives

The objectives of a Stage 1 archaeological assessment, as outlined by the 2011 *Standards and Guidelines for Consultant Archaeologists* published by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), are as follows:

- to provide information about the project area's history, geography, previous archaeological fieldwork, and current land conditions;
- to evaluate in detail the project area's archaeological potential, which will support recommendations for Stage 2 survey for all or parts of the property; and,
- to recommend appropriate Stage 2 assessment strategies, if required.

1.2 Historical Context

To establish the historical context of the project area, a review of Indigenous and Euro-Canadian settlement history was undertaken. This information is presented below in chronological order.

1.2.1 Pre-Contact Indigenous Period

The general culture history of the Indigenous pre-contact period of southern Ontario, based on Ellis and Ferris (1990), is summarised in Table 1.

Table 1: Overview of Pre-Contact Cultural Chronology of Southern Ontario

Period		Time Period	Characteristics
Paleo	Early	10,950 – 10,350 BP	Gainey, Barnes and Crowfield traditions; small bands; mobile hunters and gatherers; utilization of seasonal resources and large territories; fluted projectiles
	Late	10,350 – 9950 BP	Holcombe, Hi-Lo and Lanceolate biface traditions; continuing mobility; campsite/way-station sites; smaller territories are utilized; non-fluted projectiles

Period		Time Period	Characteristics
Archaic	Early	9950 – 7950 BP	Side-notched, Corner-notched and Bifurcate Base traditions; growing diversity of stone tool types; heavy woodworking tools appear (e.g., ground stone axes and chisels)
	Middle	7950 – 4450 BP	Stemmed (Stanly/Neville), Brewerton side- and corner-notched traditions; reliance on local resources; populations increasing; more ritual activities; fully ground and polished tools; net-sinkers common; earliest copper tools
	Late	4450 – 2900 BP	Narrow Point (Lamoka), Broad Point (Genesee) and Small Point (Crawford Knoll) traditions; less mobility; use of fish-weirs; formal cemeteries appear; stone pipes emerge; long-distance trade (marine shells and galena)
Woodland	Early	2900 – 2350 BP	Meadowood tradition; cord-roughened ceramics emerge; Meadowood cache blades and side-notched points; bands of up to 35 people
	Middle	2350 – 1400 BP	Stamped ceramics appear; large variety of projectile point styles; cobble spall scrapers; Seasonal settlements and resource utilization; post holes, hearths, middens, cemeteries and rectangular structures identified
	Transitional	1400 – 1050 BP	Cord roughening, impressed lines, and punctate designs on pottery; adoption of maize horticulture; oval houses and 'incipient' longhouses; first palisades; villages with up to 75 people
	Late	1050 – 650 BP	Settled village-life based on agriculture; small villages (0.4 ha) with 75–200 people and 4–5 longhouses; semi-permanent settlements
		650 – 550 BP	Classic longhouses emerge; larger villages (1.2 ha) with up to 600 people; more permanent settlements (30 years)
		550 – 350 BP	Villages up to 5 ha with 2,500 people; extensive croplands; also hamlets, cabins, camps and cemeteries; potential tribal units; fur trade begins ca. 1580; European trade goods appear

1.2.1.1 *Paleo Period*

Occupation of south-central Ontario became possible just after the end of the Wisconsin Glacial Period. Although there were a complex series of ice retreats and advances which played a large role in shaping the local topography, south-central Ontario was finally ice free by 12,250 years ago. The first human settlement can be traced back 11,000 years, when this area was settled by Indigenous groups that had been living south of the Great Lakes. The period of these early Indigenous inhabitants is known as the Paleo Period (Ellis and Deller 1990). The Paleo period marks the beginning of human settlement in southern Ontario. It is characterized by small bands of nomadic hunter-gatherers who largely depended on the communal hunting of big game such as caribou, and possibly mammoth and/or mastodon. This early period of occupation is divided into early and late phases, which span from ca. 10,950 – 10,350 BP (Ellis and Deller 1990) and from ca. 10,350 -9950 BP (Jackson 2004), respectively.

Our current understanding of settlement patterns of Early Paleo peoples suggests that small bands, consisting of probably no more than 25 to 35 individuals, followed a pattern of seasonal mobility extending over large territories (Ellis and Deller 1990). Early Paleo sites tend to be located in elevated locations on well-drained loamy soils. Many of the known sites were located on former beach ridges associated with glacial lakes. It appears that these sites were formed when the same general locations were occupied for short periods of time over the course of many years. Given their placement in locations conducive to the interception of migratory mammals such as caribou, it has been suggested that they may represent communal hunting camps. There are also smaller Early Paleo camps scattered throughout the interior of southwestern and south-central Ontario, usually situated adjacent to wetlands.

Research suggests that population densities were very low during the Early Paleo Period (Ellis and Deller 1990). Archaeological examples of Early Paleo sites are rare.

The Late Paleo Period (10,350 – 9950 BP) has been less researched and is consequently more poorly understood. By this time, the environment of south-central Ontario was coming to be dominated by closed coniferous forests with some minor deciduous elements. It seems that many of the large game species that had been hunted in the early part of the Paleo Period had either moved further north, or in the case of the mastodons and mammoths, became extinct.

Like the early Paleo peoples, late Paleo peoples covered large territories as they moved about in response to seasonal resource fluctuations. On a province-wide basis, Late Paleo projectile points are far more common than Early Paleo projectile points, suggesting a relative increase in population.

The end of the Late Paleo Period was heralded by numerous technological and cultural innovations that appeared throughout the Archaic Period. These innovations may be best explained in relation to the dynamic nature of the post-glacial environment and region-wide population increases.

1.2.1.2 *Archaic Period*

During the Early Archaic Period (9950 – 7950 BP), the jack and red pine forests that characterized the Late Paleo environment were replaced by forests dominated by white pine with some associated deciduous trees (Ellis et al. 1990). One of the more notable changes in the Early Archaic Period is the appearance of side and corner-notched projectile points. Other significant innovations include the introduction of ground stone tools such as celts and axes, suggesting the beginnings of a simple woodworking industry. The presence of these often large and not easily portable tools suggests there may have been some reduction in the degree of seasonal movement, although it is still suspected that population densities were quite low, and band territories large.

During the Middle Archaic Period (7950 – 4450 BP) the trend to more diverse toolkits continued, as the presence of netsinkers suggests that fishing was becoming an important aspect of the subsistence economy. It was also at this time that "bannerstones" were first manufactured. Bannerstones are carefully crafted ground stone devices that served as a counterbalance for atlatls or spear throwers. Another characteristic of the Middle Archaic Period is an increased reliance on local, often poorer quality, chert resources for the manufacturing of projectile points and other stone tools. It seems that during earlier periods, when groups occupied large territories, it was possible for them to visit a primary outcrop of high-quality chert at least once during their seasonal round. However, during the Middle Archaic Period, groups inhabited smaller territories that often did not encompass a source of high-quality raw material. In these instances, lower quality materials which had been deposited by the glaciers in the local till and river gravels were utilized.

This reduction in territory size was probably the result of gradual region-wide population growth which led to the infilling of the landscape. This process forced a reorganization of Indigenous subsistence practices, as more people had to be supported from the resources of a smaller area. During the latter part of the Middle Archaic Period, technological innovations such as fish weirs have been documented, as well as stone tools especially designed for the preparation of wild plant foods.

It is also during the latter part of the Middle Archaic Period that long distance trade routes began to develop, spanning the northeastern part of the continent. In particular, native copper tools manufactured from a source located northwest of Lake Superior were being widely traded (Ellis et al. 1990). By 5500 B.C. the local environment had stabilized and began to reflect the more modern landscape (Ellis et al. 1990).

During the Late Archaic Period (4450 – 2900 BP) the trend towards decreased territory size and a broadening subsistence strategy continued. Late Archaic sites are far more numerous than either Early or Middle Archaic sites, and it seems that the local population had expanded. It is during the Late Archaic Period that formal cemeteries appear. Before this time individuals were interred close to the location where they died. During the Late Archaic Period, if an individual died while his or her group happened to be at some distance from their group cemetery, the bones would be kept until they could be placed in the cemetery. Consequently, it is not unusual to find disarticulated skeletons, or even skeletons lacking minor elements such as fingers, toes or ribs, in Late Archaic burial pits.

The appearance of formal cemeteries during the Late Archaic Period has been interpreted as a response to increased population densities and competition between local groups for access to resources. It is argued that cemeteries would have provided strong symbolic claims over a local territory and its resources. These cemeteries are often located on heights of well-drained sandy/gravel soils adjacent to major watercourses.

This suggestion of increased territoriality is also consistent with the regionalized variation present in Late Archaic Period projectile point styles. It was during the Late Archaic Period that distinct local styles of projectile points appear. It was also during the Late Archaic Period that trade networks, which had been established during the Middle Archaic Period, continued to flourish. Native copper from northern Ontario and marine shell artifacts from as far away as the mid-Atlantic coast are frequently encountered as grave goods at southern Ontario sites. Other artifacts such as polished stone pipes and banded slate gorgets also appear on Late Archaic sites in southern Ontario. One of the more unusual and interesting of the Late Archaic Period artifacts is the birdstone, which are small, bird-like effigies usually manufactured from green banded slate.

1.2.1.3 *Woodland Period*

The Early Woodland Period (2900 – 2350 BP) is distinguished from the Late Archaic Period primarily by the addition of ceramic technology. While the introduction of pottery provides a useful demarcation point for archaeologists, it may have made less difference in the lives of Early Woodland peoples. The first pots were thick walled, and friable. It has been suggested that they were used in the processing of nut oils by boiling crushed nut fragments in water and skimming off the oil. These vessels were not easily portable, and individual pots likely did not have a long use life. There have also been numerous Early Woodland sites located where no pottery was found, suggesting that these initial, undecorated vessels had yet to assume a central position in the day-to-day lives of Early Woodland peoples.

Other than the introduction of this limited ceramic technology, the life-ways of Early Woodland peoples show a great deal of continuity with the preceding Late Archaic Period. For instance, birdstones continue to be manufactured, although the Early Woodland varieties have "pop-eyes" which protrude from the sides of their heads.

Likewise, the thin, well-made projectile points which were produced during the terminal part of the Archaic Period continue in use. However, the Early Woodland Period variants were side-notched rather than corner-notched, giving them a slightly altered and distinctive appearance.

The trade networks which were established in the Middle and Late Archaic Periods also continued to function, although there does not appear to have been as much trade in marine shell during the Early Woodland Period.

In terms of settlement and subsistence patterns, the Middle Woodland Period (2350 – 1400 BP) provides a major point of departure from the Archaic and Early Woodland Periods. While Middle Woodland peoples still relied on hunting and gathering to meet their subsistence requirements, fish were becoming a more important part of the diet.

In addition, Middle Woodland peoples relied much more extensively on ceramic technology. Middle Woodland vessels are often heavily decorated with hastily impressed designs covering the entire exterior surface and upper portion of the vessel interior. Consequently, even very small fragments of Middle Woodland vessels are easily identifiable.

It is also at the beginning of the Middle Woodland Period that rich, densely occupied sites appear along the margins of major rivers and lakes. While these areas had been utilized by earlier peoples, Middle Woodland sites are significantly different in that the same location was occupied off and on for as long as several hundred years, and large deposits of artifacts often accumulated. Unlike earlier seasonally utilized locations, these Middle Woodland sites appear to have functioned as base camps, occupied off and on over the course of the year. There are also numerous small upland Middle Woodland sites, many of which can be interpreted as special purpose camps from which localized resource patches were exploited. This shift towards a greater degree of sedentism continues the trend witnessed from at least Middle Archaic times and provides a prelude to the developments that follow during the Late Woodland Period.

The Late Woodland Period began with a shift in settlement and subsistence patterns involving an increasing reliance on corn horticulture (Fox 1990; Smith 1990; Williamson 1990). Corn may have been introduced into southwestern Ontario from the American Midwest as early as 1400 BP or a few centuries before. Corn did not become a dietary staple, however, until at least three to four hundred years later, when the cultivation of corn gradually spread into south-central and southeastern Ontario.

During the Transitional Woodland Period a number of archaeological material changes have been noted including: the appearance of triangular projectile point styles, first seen during this period beginning with the Levanna form; cord-wrapped stick decorated ceramics using the paddle and anvil forming technique evolving from the mainly coil-manufactured and dentate stamped and pseudo-scallop shell impressed ceramics; and if not appearance, increasing use of maize (*Zea mays*) as a food source (e.g., Bursley 1995; Crawford et al. 1997; Ferris and Spence 1995; Martin 2004 [2007]; Ritchie 1971; Spence et al. 1990; Williamson 1990).

The Late Woodland Period is widely accepted as the beginning of agricultural life ways in south-central Ontario. Researchers have suggested that a warming trend during this time may have encouraged the spread of maize into southern Ontario, providing a greater number of frost-free days (Stothers and Yarnell 1977). Further, shifts in the location of sites have also been identified with an emphasis on riverine, lacustrine and wetland occupations set against a more diffuse use of the landscape during the Middle Woodland (Dieterman 2001).

The first agricultural villages in southern Ontario date to approximately 1000 BP. Unlike the riverine base camps of the Middle Woodland Period, these sites are located in the uplands, on well-drained sandy soils.

Village sites dating between 1050 – 650 BP share many attributes with the historically reported late Late Woodland sites, including the presence of longhouses and sometimes palisades. However, these early longhouses were not large, averaging only 12.4 m in length (Dodd et al. 1990:349; Williamson 1990). It is also quite common to find the outlines of overlapping house structures, suggesting that these villages were occupied long enough to necessitate re-building.

The Jesuits reported that the Huron moved their villages once every 10 – 15 years, when the nearby soils had been depleted by farming and conveniently collected firewood grew scarce (Pearce 2010). It seems likely that early Late Woodland people occupied their villages for considerably longer, as they relied less heavily on corn than did later groups, and their villages were much smaller, placing less demand on nearby resources.

Judging by the presence of carbonized corn kernels and cob fragments recovered from sub-floor storage pits, agriculture was becoming a vital part of the early Late Woodland economy. However, it had not reached the level of importance it would in the middle and late Late Woodland Periods. There is ample evidence to suggest that more traditional resources continued to be exploited and comprised a large part of the subsistence economy. Seasonally occupied special purpose sites relating to deer procurement, nut collection, and fishing activities have all been identified. While beans are known to have been cultivated later in the Late Woodland Period, they have yet to be identified on early Late Woodland Period sites.

The middle Late Woodland Period (650 – 550 BP) witnessed several interesting developments in terms of settlement patterns and artifact assemblages. Changes in ceramic styles have been carefully documented, allowing the placement of sites in the first or second half of this 100-year period. Moreover, villages, which averaged approximately 0.6 ha in extent during the early Late Woodland Period, now consistently range between 1 and 2 ha in size.

House lengths also change dramatically, more than doubling to an average of 30 m, while houses of up to 45 m have been documented. This increase in longhouse length has been variously interpreted. The simplest possibility is that increased house length is the result of a gradual, natural increase in population (Dodd et al. 1990; Smith 1990). However, this does not account for the sudden shift in longhouse lengths around 700 BP. Other possible explanations involve changes in economic and socio-political organization. One suggestion is that during the middle Late Woodland Period small villages were amalgamating to form larger communities for mutual defence (Dodd et al. 1990). If this was the case, the more successful leaders may have been able to absorb some of the smaller family groups into their households, thereby requiring longer structures. This hypothesis draws

support from the fact that some sites had up to seven rows of palisades, indicating at least an occasional need for strong defensive measures. There are, however, other middle Late Woodland villages which had no palisades present (Dodd et al. 1990). More research is required to evaluate these competing interpretations.

The lay-out of houses within villages also changes dramatically by 650 BP. During the early Late Woodland Period villages were haphazardly planned, with houses oriented in various directions. During the middle Late Woodland Period villages are organized into two or more discrete groups of tightly spaced, parallel aligned, longhouses. It has been suggested that this change in village organization may indicate the initial development of the clans which were a characteristic of the historically known Late Woodland peoples (Dodd et al. 1990).

During the late Late Woodland period, the Iroquoian-speaking linguistic and cultural groups developed. Prior to European Contact, neighbouring Iroquois-speaking communities united to form several confederacies known as the Huron (Huron-Wendat), Neutral (called Attiewandaron by the Wendat), Petun (Tionnontaté or Khionontateronon) in Ontario, and the Five Nations (later Six Nations) of the Iroquois (Haudenosaunee) of upper New York State (Birch 2010; Warrick 2013). Each group was distinct but shared a similar pattern of life already established by the 16th century (Trigger 1994).

Prior to European contact, the geographic distribution of pre-contact Late Woodland sites describes two major groups east and west of the Niagara Escarpment: the ancestral Attiewandaron to the west, and the ancestral Huron-Wendat to the east (Warrick 2000). Ancestral Huron-Wendat villages have been located as far east as the Trent River watershed, where “concentrations of sites occur in the areas of the Humber River valley, the Rouge and Duffin Creek valleys, the lower Trent valley, Lake Scugog, the upper Trent River and Simcoe County” (Ramsden 1990:363). These concentrations are distributed in a triangular area along the north shore of Lake Ontario, and northward bounded by the Trent River system and the Niagara Escarpment (Ramsden 1990).

There was a well developed terrestrial trail system that incorporated portage and watercourse routes throughout the north shores of Lake Ontario, through the Kawartha Lakes and Peterborough areas further inland to the upper Great Lakes. These trail systems actend like ancient “highways” in use for hundreds of years by many Indigenous groups and were a crucial for trade as well. These early trail systems would later be utilized by Euro-Canadian fur traders and many of the first established Euro-Canada roadways in would utilize these routes and build off of them (Brunger 1975; TRCA 2007).

Longhouses continued to be used, with house sizes depending on the size of the extended family that inhabited it; however, archaeological evidence suggests that the average longhouse was 7.62 m by 30.48 m with heights about the same as widths (Heidenreich 1978). Village size gradually enlarged as horticulture began to take on a more central importance in subsistence patterns, particularly the farming of maize, squash, and beans, supplemented by fishing, hunting, and gathering. Sites were chosen for their proximity to sources of “water, arable soils, available firewood, [and] a young secondary forest, [as well as] a defendable position” (Heidenreich 1978:375). Later villages consisted of up to 100 longhouses clustered closely together, and only the largest villages on the edges of territories were fortified (Heidenreich 1978).

Subsistence patterns reflect a horticultural diet that was supplemented with fish rather than red meat (Heidenreich 1978). ‘Slash-and-burn’ farming was used to quickly and efficiently clear trees and brushwood for flour and flint corn fields (Heidenreich 1978). These were consistently cultivated until no longer productive, at which point the village was abandoned, an event that took place about every 8 to 12 years according to Heidenreich (1978), though more recent research suggests this interval may have ranged between 10 and 40 years (Birch and Hart 2021). Consequently, as horticulture became the primary mode of subsistence, pre-contact Indigenous groups gradually relocated from the northern shores of Lake Ontario to further inland, likely as a result of depleting resources and growing tension between Indigenous communities.

1.2.2 Contact and Post-Contact Period

In 1615 A.D., at the time of first contact with the French, the Huron-Wendat population was reported to be approximately 30,000 individuals, whose territorial homeland roughly stretched between the Canadian Shield, Lake Ontario and the Niagara Escarpment, known as Wendake (Warrick 2008; Heidenreich 1978). It is speculated that four tribes; the Attignawantan, Tahontaenrat, Attigeneongnahac, and Arendahronon, amalgamated to form a single confederacy, the Huron-Wendat Confederacy, in response to the continual aggression of the Haudenosaunee (Warrick 2008; Trigger 1994). The Arendahronon of the Huron-Wendat Confederacy became interested in establishing a direct trading relationship with the French in order to obtain larger quantities of European goods at cheaper prices, and for the French, this opened a larger fur territory with greater quantities of furs available for trade (Trigger 1994). By 1615, the Arendahronon concluded a direct French-Huron trading alliance and by mid-1620, exhausted all available pelts in their own hunting territories and opted to trade European goods for tobacco and furs from the Attiewandaron (Trigger 1994).

During the 1630s, Jesuit missionaries attempted to convert the entire Wendat Confederacy to Christianity (Trigger 1994). However, the Jesuits' presence in the region had become precarious after a series of major epidemics of European diseases that killed nearly two-thirds of the Huron-Wendat population and lowered the total population to 10,000 individuals (Warrick 2008; Heidenreich 1978). These epidemics hit children and elderly the worst and the death of the elders deprived the Wendat of their most experienced political, spiritual and war leaders, leaving them more vulnerable to convert to Christianity (Trigger 1994; Heidenreich 1978).

The area is described verbally and cartographically by several French explorers, including Samuel de Champlain. In Champlain's 1632 map of New France, the Peterborough region is shown as a forested and largely reserved for hunting and trapping. However, by the 1640s, the increasing scarcity of beaver pelts impelled the invasion of Huron-Wendat held territories by the Haudenosaunee. By 1649, five Huron-Wendat villages were destroyed, and the remaining villages were said to be abandoned resulting in the majority of the Huron-Wendat population to seek sanctuary within the communities of the Petun, Neutral and other neighbouring groups (Earthworks Archaeological Services 2017; Stone and Chaput 1978). The Havelock area appears to have remained vacant of permanent occupation but remained in continuous use as a hunting and fur trading territory during the entire Euro-Canadian contact period including the fifty years prior to the migration of the Algonquian speaking Mississauga Ojibway bands (1650s through to 1700), who migrated south from Georgian Bay and established a permanent presence in the Trent Valley in the early 18th century (MCR 1981; Rogers 1978; Earthworks Environmental 2017).

1.2.3 Euro-Canadian Period

1.2.3.1 Township of Belmont-, Peterborough County

With French fur trade interests in the region long gone, the conquest of New France by Great Britain in 1760, and the separation of the United States from British North America 23 years later having no immediate effect on the settlement of the Peterborough County area, the region surrounding the project area did not immediately attract settlement and remained sparsely populated until the dawn of the 19th century.

The British Constitutional Act of 1791 created the province of Upper Canada, which was subsequently divided into Districts for government and administration. In 1798 the Newcastle District, north of Lake Ontario, encompassed the area of Peterborough County although the county itself was not created as an administrative unit until 1838 (Brunger 1975). The trend of settlement was focused on areas inland from Lake Ontario due to the already dense settlement in the region and the route providing the easiest access was formed by the Trent River, Rice Lake, Otonabee River, the Kawartha Lakes, and several overland portage trails (Brunger 1975). Important for waterpower and transportation, the Otonabee River, only 40 km long, funnels the waters of the Kawartha Lakes

down to Rice Lake and, via the Trent River, to Lake Ontario. Since the first 16 km of the Otonabee drop more than 33 m, early settlers could navigate only as far as Peterborough. The Indigenous inhabitants of the local area called this site Nogojwanong, “the place at the end of the rapids,” which was also the end of the long portage from Chemong Lake (Jones and Dyer 1987). Early settlement, in 1818, began in Smith and Monaghan Townships and continued very slowly until 1825, when approximately 2,000 Irish emigrants settled in Asphodel, Douro, Emily, Ennismore, Otonabee, and Smith Townships (Brunger 1975). By the 1820s and 1830s, emigration to Peterborough County increased and saw the arrival of educated and wealthy British settlers. This population influx was responsible for turning Scott’s Plains (Peterborough’s original name) into a service and market centre. Settlement was initially agricultural and spread only slowly and discontinuously beyond the area of fertile soil in the southern “drift-covered” or limestone area of the county.

Settlement of Belmont and Methuen Townships further to the east (formerly Mora and Carlos Townships prior to 1823) was comparatively sparse. According to municipal records, the first survey of the townships of Belmont and Methuen took place in 1823 but was largely incomplete; a more accurate survey was undertaken in 1833. Just prior to 1855, Asphodel Township would join Belmont and Methuen for administrative purposes and, in 1855, Belmont and Methuen became a corporate township within the greater Peterborough County. In 1998, the former Township of Belmont and Methuen and the Village of Havelock amalgamated to form the current Township of Havelock-Belmont-Methuen (Township of Havelock-Belmont-Methuen 2017a).

The land routes to be established in the Peterborough area followed established Indigenous trails systems and as Euro-Canadian settlement increased local roads were cleared by the grantees of adjacent lands as part of their settlement duties (CAGI 2014). The topography of Peterborough County made for challenging road construction. The many lakes, creeks and swampy areas of the region posed a challenge to the completion of an orderly and efficient road system; a review of 19th century maps of the Peterborough area detail the many detours and abrupt turns necessary to avoid large water bodies and bad crossings through marshes, swamps and bogs. The extension of roads and the attempts to improve water transportation/communication were important activities in the pre-railway era of Peterborough County (prior to the mid 1850s). The survey of the Trent system was first made in 1833; work commenced in 1837 on the canal but was abandoned within a few years. In the 1840s and 1850s lumbering interests were served by damming the Otonabee and other streams in the Kawartha Lakes-Trent system and creating logging chutes for transport. The construction of locks and repair of dams and other components of the Trent Canal system continued through the latter part of the 19th century in a piecemeal and generally disorganized fashion. Considerable expansion in lumbering occurred in the 1860s when most of the pine forest in the northern part of Peterborough County was alienated from settlement in timber limits.

Although water transportation greatly assisted the development of the area, it could not compete with the railway. After the opening of the Peterborough to Cobourg railway in 1854, the former town became a focus for other lines including one to Port Hope, built in 1858, and others built in the next twenty years to other centres to the east, west, and north (Brunger 1975). The importance of Peterborough was reinforced by these transportation developments and influenced the settlement of the county, providing a market centre for agricultural products and a service centre for the region.

1.2.3.2 Village of Havelock

The Village of Havelock, named after the British general, Sir Henry Havelock was incorporated on 18 June 1892. It was recognized early on as being an attractive and well served place to live with an established school, churches, and other social amenities, as well as a blacksmith, post office, bakery, general store and a millinery. Railroading was the primary reason for the founding of the Village and was fuelled by the necessity of the transportation of goods and people (associated primarily with the mining industry) across the regional landscape

to larger economic centres (Hunter 1993). The current location of the Village of Havelock, north of Ottawa Street East (and the rail line) was not the original location of the village. Sometime after 1823 (date uncertain), a small settlement arose at the four-corners location of Old Norwood Road and County Road 30, approximately 800 m northwest of the project area. In 1881, the Ontario & Quebec Railway (chartered by Canadian Pacific Railway) surveyed a right-of-way through the area north of that first four-corners location of the Village of Havelock. One year later they began to lay rails for the rail line, then began surveying land and filling the swampy area to the north of the track to make room for a larger village (Hunter 1993). The first passenger train from Toronto to Smith's Falls stopped in Havelock in the fall of 1884, after which the Village became a very important freight depot from the mid 1880s through to the 1960s. Today, the rail line in Havelock is operated by Canadian Pacific as the Kawartha Lakes Railway and concentrates solely on the transportation of nepheline syenite and crushed basalt rock from the Blue Mountain and Nephton mines north of Havelock (operated by Unimin Canada Ltd.) to markets east and west (Hunter 1993).

1.2.3.3 Project Area

The project area resides within part of Lots 4 and 5, Concession 9, Geographic Township of Belmont, now the Township of Havelock-Belmont-Methuen, Peterborough County, Ontario (Map 2). The orientation of lots and concessions in this part of Peterborough County has remained unchanged since they were first surveyed in 1823.

The 1823 Plan of the Survey of the Township of Belmont in the Newcastle District, produced by Henry Ewing (Deputy Surveyor), is the first known map to illustrate the orientation of lots and concessions as well as the placement of lakes and rivers (Map 2). In 1823, Lots 4 and 5, Concession 9 were unowned and no historical settlements are in or within 300 m of the project area. The project area is in proximity a historical transportation route, present-day Old Norwood Road.

The 1879 Map of Peterborough County produced by Miles & Co., reveals no additional information about ownership, and no historical settlements are in or within 300 m of the project area (Map 2). The aforementioned historical transportation route as well as Plato Creek are within proximity to the project area (Map 2). A creek tributary is illustrated bisecting the east arm of the project area.

A review of aerial imagery from 1954 and a comparison with recent aerial photography reveals that the surrounding area has not change substantially over the last seven decades, with only minor outward expansion of single-family residential development along the main roads, with the orientation of transportation routes (railway and roads) and flow of Plato Creek remaining unaltered (Map 3). By 1954, the project area is occupied entirely by agricultural fields and is surrounded by a rural/agricultural landscape dotted with several small bush lots; the Havelock WWTP has yet to be constructed within Lots 4 and 5, Concession 9.

1.3 Archaeological Context

1.3.1 Existing Conditions

The project area occupies an area of approximately 15.7 ha located south of Old Norwood Road in a largely rural/agricultural area south of the main Village of Havelock (Map 1). The project area resides within the lands occupied by the Havelock WWTP. The topography of the project area is variable, trending slightly down in elevation to the east, with an average elevation range of 210 m asl. The topography of the project area is, however, predominantly a modified landscape, as most of the land has been altered to accommodate the development of the Havelock WWTP.

1.3.2 Physiography

The project area resides within the Mixedwood Plains Ecozone of the Lake Simcoe – Rideau Ecoregion, which covers just over 6% of southern Ontario (Crins et al. 2009). The Lake Simcoe – Rideau Ecoregion is underlain by bedrock of dolomite and limestone and is characterized by gently rolling surface terrain interspersed by drumlin fields and moraines. Soils are primarily mineral-based and dominated by Gray Brown Luvisols and Melanic Brunisols. Most of the region is covered by cropland or pasture (57%), with 16% covered by forest and 4% covered by water (Crins et al. 2009).

The project area is situated at the intersection of three physiographic regions; the Peterborough Drumlin Field, the Dummer Moraines and the Iroquois Plains (Chapman and Putnam 1984: 170, 185-186 and 190), although the soil and landscape within the study area are most characteristic of the Dummer Maraines.

Soil texture can be an important determinant of past settlement, usually in combination with other factors, such as topography. Where the soil remains unaffected by the extensive disturbance, the natural soils within the project area consist primarily of Trent Fine Sandy Loam with intrusive instances of Wendigo Sandy Loam along the west extent. The Trent series of soils are imperfectly drained and have developed in calcareous fine sands and silt deposits in floodplains, but generally appear where the topography is very gently sloping. The Trent series of soils are good for agriculture, and are used both in mixed farming operations, and for specialized crops such as vegetables and small fruits. They do not have a high natural fertility and require supplement fertilizers for maximum yields, and some areas have been used for continuous grain corn production (Gillespie and Acton 1981). The Wendigo Series of soils have developed in noncalcareous sandy outwashes on nearly level fluvial plains and are well to excessively drained. Many areas containing Wendigo soils were sought out, cleared and farmed in the early days of settlement in the Peterborough area; however, large-scale abandonment of these lands has occurred over the years as most of these soils are prone to episodes of drought and low in fertility for successful agriculture. Some areas containing Wendigo soils are cultivated in the Havelock area, where they are slightly finer in texture and have improved moisture storage capacity. The Wendigo soils are more productive for forestry use, being suitable predominantly for conifers (Gillespie and Acton 1981).

Potable water is an important resource necessary for any extended human occupation or settlement. As water sources have remained relatively stable in Ontario since post-glacial times, proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Hydrological features such as primary water sources (i.e. lakes, rivers, creeks, streams) and secondary water sources (i.e. intermittent streams and creeks, springs, marshes, swamps) would have helped supply plant and food resources to the surrounding area. The project area sits on the western edge of the Plato Creek Wetland Complex. A small seasonal tributary of Plato Creek flows immediately north of the project area.

1.3.3 Registered Archaeological Sites

Per MHSTCI (2011), to compile an inventory of archaeological resources, the registered archaeological site records maintained by the MHSTCI in the OASD were consulted. No archaeological sites are registered in or within 1 km of the project area (OASD 2021).

1.3.4 Previous Archaeological Assessments

Per Section 1.1., Standard 1 of the MHSTCI (2011), a review of previous archaeological assessments in and 50 m of the project area was undertaken. No previous archaeological assessments are documented in or within 50 m of the project area.

1.3.5 Cultural Heritage Resources

Per Section 1.3 and 1.4 of the MHSTCI (2011), property listed on a municipal register or designated under the *Ontario Heritage Act* or that is a federal, provincial or municipal historic landmark or site is indicative of archaeological potential. Consultation with the Township of Havelock-Belmont-Methuen confirmed there are no designated or listed properties within 300 m of the project area (Smallwood 2021, pers comm.).

Per Section 1.3 of the MHSTCI (2011), early cemeteries are considered features that indicate archaeological potential. There are no cemeteries within 300 m of the project area (Township of Havelock-Belmont-Methuen 2017b).

1.3.6 Date of Property Inspection

The Stage 1 property inspection was conducted on 22 June 2021. The weather and temperature during the Stage 1 property inspection were hot, with clear skies and a high of 25°C. The lighting conditions during the inspection permitted good visibility of all parts of the study area and were conducive to identifying features and assessing the archaeological potential.

2.0 FIELD METHODS

The Stage 1 property inspection of project area was conducted in compliance with Section 1.2 of the MHSTCI (2011). The weather and ground conditions were conducive to identifying features and assessing the land's archaeological potential.

The property inspection was carried out systematically, reviewing the entire extent of the project area property to identify the presence or absence of archaeological potential. Photographic images of the project area are presented within Section 7.0. Location and orientation information associated with all photographs taken in the field is provided on Map 4.

Features of archaeological potential can be confirmed to be present, including, a watercourse and present-day Old Norwood Road which has maintained its historical the alignment.

During the property inspection, much of the project area has been extensively disturbed through the development of the existing Havelock WWTP (Images 1-10).

3.0 ANALYSIS AND CONCLUSION

3.1 Assessing Archaeological Potential

Archaeological potential is established by determining whether any features or characteristics indicating potential are located on or in the vicinity of a project area. Features and characteristics that indicate potential for archaeological resources are defined within Section 1.3.1 of the *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011:17-18) and include:

- previously identified archaeological sites
- water sources:
 - primary water sources (lakes, rivers, streams, creeks)
 - secondary water sources (intermittent streams and creeks; springs; marshes; swamps)
 - features indicating past water sources (e.g., glacial lake shorelines indicated by the presence of raised gravel, sand, or beach ridges; relic river or stream channels indicated by clear dip or swale in the topography; shorelines of drained lakes or marshes; and cobble beaches)
 - accessible or inaccessible shoreline (e.g., high bluffs, swamps or marsh fields by the edge of a lake; sandbars stretching into marsh)
- 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 (there may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings)
- resource areas including:
 - Food or medicinal plants
 - Scarce raw minerals (e.g., quartz, copper, ochre or outcrops of chert)
 - Early Euro-Canadian industry (fur trade, mining, logging)
- areas of Euro-Canadian settlement. These include places of early military or pioneer settlements (e.g., pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches and early cemeteries. There may be commemorative markers of their history, such as local, provincial, or federal monuments or heritage parks.
- early historical transportation routes (e.g., trails, passes, roads, railways, portage routes)
- property listed on a municipal register or designated under the *Ontario Heritage Act* or that is a federal, provincial or municipal historic landmark or site
- property that local histories or informants have identified with possible archaeological sites, historical events, activities, or occupations.

Many of the above features of archaeological potential have a buffer assigned to them, extending the zone of archaeological potential beyond the physical feature. The following buffers are commonly accepted by the MHSTCI and specifically indicated in Section 1.4 of the *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011:20-21):

- 300 m buffer: previously identified archaeological site; water sources; areas of early Euro-Canadian settlement; or locations identified through local knowledge or informants.
- 100 m buffer: early historical transportation route.

In the event no buffer is inherently present, the potential is restricted to the physical limits or the feature: elevated topography, pockets of well-drained sandy soil, distinctive land formations, and resources areas.

Based on the criteria outlined above, the project area was determined to have archaeological potential due to the presence or proximity of soil types conducive to human habitation, a water source, and a historical transportation route.

3.1.1 Archaeological integrity

A negative indicator of archaeological potential is extensive below-grade land disturbance. This includes widespread earth movement activities that would have removed or relocated any archaeological resources to such a degree that their information potential and CHVI has been lost.

Activities that are recognized to cause sufficient disturbance to remove archaeological potential include: quarrying, major landscaping involving grading below topsoil, building footprints, and infrastructure development. Activities including agricultural cultivation, gardening, minor grading, and landscaping do not necessarily remove archaeological potential (MHSTCI 2011:18). Based on the property inspection, disturbances consisting of grading below topsoil, building footprints, underground utilities, and sewage and infrastructure development associated with the existing Havelock WWTP were encountered Image 1 to Image 19.

The project area was also evaluated for physical features of no or low archaeological potential. These usually include but are not limited to permanently wet areas, exposed bedrock, and steep slopes (greater than 20°) except in locations likely to contain pictographs or petroglyphs, per Section 2.1, Standard 2.a (MHSTCI 2011). No physical features of no or low archaeological potential were encountered within the project area.

3.2 Conclusions

When the above data of archaeological potential and archaeological integrity is collectively applied to the project area, it can be concluded that the majority of the project area has no archaeological potential for both pre-contact and post-contact archaeological resources. However, despite, most of the project area being extensively disturbed, areas possibly retaining archaeological potential were identified. This corresponds to the treed and margins along the east and west limits of the project area (Map 4; Image20 to Image24).

4.0 RECOMMENDATIONS

Based on the findings presented in this Stage 1 archaeological assessment report, the following recommendations are presented:

- 1) Parts of the project area that are described as having archaeological potential are recommended to be subjected to a Stage 2 archaeological assessment prior to any impacts in these areas. It is recommended these areas be subjected to test pit survey at 5 m intervals per Section 2.1.2 of the MHSTCI (2011).
- 2) Parts of the project area that are described as having no archaeological potential are recommended to be considered free from further archaeological investigations per Section 2.1, Standard 2.b. of the MHSTCI (2011).

The MHSTCI is requested to review, and provide a letter indicating their satisfaction with the results and recommendations presented herein, with regard to the 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.

5.0 ADVICE ON COMPLIANCE

This report is submitted to the Minister of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c O.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the ministry stating that there are no further concerns with regards to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licenced 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 licenced archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating 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 representative of a new archaeological site or sites and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33, requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Consumer Services is also immediately notified.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.

6.0 BIBLIOGRAPHY

- bioEnvironmental Consulting Corp. 2012. Waterbodies Assessment Report, Kawartha Biogas, Havelock, Ontario. Anerobic Digestion Facility 9.8MW. Renewable Energy Application FIT Reference #: FIT-FPZXS2N. https://kawarthaethanol.ca/wp-content/uploads/2014/04/8_Water-Bodies-Assessment-Report.pdf
- Birch J. 2010. Coalescence and Conflict in Iroquoian Ontario. [originally accessed 20 August 2020]. http://uga.academia.edu/JenniferBirch/Papers/183903/Coalescence_and_Conflict_in_Iroquoian_Ontario.
- Birch J, Hart JP. 2021. Conflict, Population Movement, and Microscale Social Networks in Northern Iroquoian Archaeology. *American Antiquity* 86(2), pp. 350-367.
- Brunger AG. 1975. The Settlement of Peterborough County. In *The Geography of the Peterborough Area*, edited by Geography Department, pp. 42-51. Trent University Department of Geography, Occasional Paper 1, Peterborough.
- Burse J. 1995. The Transition from the Middle to Late Woodland Periods: A Re-Evaluation in Origins of the People of the Longhouse: Proceedings of the 21st Annual Symposium of the Ontario Archaeological Society, André Bekerman and Gary Warrick (eds.), Ontario Archaeological Society, p. 43-54.
- Central Archaeology Group Inc. (CAGI). 2014. Stage 1 Background Study Property Assessment on Belmont Lake, Part of Lot 16, Concession 3, Geographic Township of Belmont, Peterborough County. PIF No. P248-0168-2013, April 25, 2014.
- Chapman LJ, Putnam DF. 1984. Physiography of Southern Ontario. 3rd ed. Ontario Geological Survey, Special Volume 2. Toronto: Ministry of Natural Resources.
- Crawford G, Smith D, Bowyer V. 1997. Dating the entry of corn (*Zea mays*) into the Lower Great Lakes region. *American Antiquity*, 62(1): 112-119.
- Crawford G, Smith D. 1996. Migration in prehistory: Princess Point and the Northern Iroquoian case. *American Antiquity* 61(4):782-790.
- Crins WJ, Gray PA, Uhlig PWC, Wester MC. 2009. The Ecosystems of Ontario, Part I: Ecozones and Ecoregions. Peterborough, ON: Ontario Ministry of Natural Resources, Inventory, Monitoring and Assessment Section, Science and Information Branch. [originally accessed: 19 May 2021]. <https://files.ontario.ca/ecosystemspart1-accessible-july2018.pdf>. 76 p.
- Dieterman F. 2001. Princess Point: the landscape of place. Unpublished Ph.D. dissertation, Department of Anthropology, University of Toronto.
- Dodd CF, Poulton DR, Lennox PA, Smith DG, Warrick, GA. 1990. The Middle Ontario Iroquoian Stage. In Ellis, C.J. and N. Ferris (Eds.) *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 321-359.
- Earthworks Archaeological Services. 2017. Stage 3 Archaeological Assessment Crowley Farm (BbGI-3), Part of Block J, Registered Plan Number 6, Lot 17, Concession 9, Township of Asphodel-Norwood, Village of Norwood, County of Peterborough, Ontario. PIF# P310-0121-2016.
- Ellis CJ, and Deller DB. 1990. Paleo-Indians. In C.J. Ellis, and N. Ferris, (Eds.). *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 37-64.

- Ellis CJ, Ferris N (editors). 1990. The Archaeology of Southern Ontario to A.D. 1650. Occasional Publications OAS 5. London: Ontario Archaeological Society.
- Ellis CJ, Kenyon IT, Spence MW. 1990. The Archaic in The Archaeology of Southern Ontario to A.D. 1650, C.J. Ellis and N. Ferris (eds), Ontario Archaeology Society, p. 65-124.
- Ewing H. 1823. Plan of the Survey of the Township of Belmont in the Newcastle District. Archives of Ontario.http://ao.minisisinc.com/SCRIPTS/MWIMAIN.DLL/165522054/2/1/44088?RECORD&DATABASE=IMAGES_WEB
- Ferris N, Spence MW. 1995. The Woodland Traditions in Southern Ontario. *Revista de Arqueologia Americana* (9), 83-138.
- Fox WA. 1990. The Middle Woodland to Late Woodland Transition. In C.J. Ellis, and N. Ferris, (Eds.). The Archaeology of Southern Ontario to A.D. 1650. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 171-188.
- Gillespie JE, Acton CJ. 1981. Report No. 45 I Ontario Institute of Pedology. Soils of Peterborough County, Agriculture Canada Research Branch. Ontario Ministry of Agriculture and Food. Department of Land Resource Science, University of Guelph. Publication 81-I. Contribution No. 12
- Jones E, Dyer B. 1987. Peterborough: The Electric City. Windsor Publications, Burlington.
- Havelock-Belmont-Methuen Township. 2017a. Township Website. <https://www.hbmtwp.ca/en/living-here/history.aspx>
- Havelock-Belmont-Methuen Township. 2017b. Township Cemeteries Information Page. <https://www.hbmtwp.ca/en/living-here/cemeteries.aspx>. [accessed: 30 July 2021].
- Heidenreich C.E. 1978. Huron. In B.G. Trigger (Ed.). Volume 15: Northeast. Washington: Smithsonian Institution, pp.368-388.
- Hunter HR. 1993. Havelock Through the Years to Centennial. Belleville, Ontario: Mika Pub. Co. p. 148. ISBN 0-921341-46-6.
- Huntington Survey Corporation. 1954. Air Photos of Northumberland County Jan. 1, 1954. Indexed at the University of Toronto Map and Data Library. Updated: 2009; Accessed July 2021. <https://mdl.library.utoronto.ca/collections/air-photos/1954-air-photos-southern-ontario/index>.
- Jackson LJ. 2004. Changing Our Views of Late Palaeo-Indian in Southern Ontario. In *The Late Palaeo-Indian Great Lakes: Geological and Archaeological Investigations of Late Pleistocene and Early Holocene Environments*, edited by Lawrence J. Jackson and Andrew Hinshelwood, p. 25-56. Canadian Museum of Civilization, Mercury Series, Archaeology Paper 165.
- Miles & Co. 1879. Map of the County of Peterborough, Ont. McGill University, Rare Books Division. 1 map ; col. ; 51 x 41 cm. McGill University, Rare Books Division, G3463.P4 1879 M5
MAP<http://digital.library.mcgill.ca/CountyAtlas/searchmapframes.php>
- Martin S. 2004. Lower Great Lakes Region Maize and Enrichment in the First Millennium AD. *Ontario Archaeology*, 77/78: 135-159.

- MCR (Ministry of Culture and Recreation) 1981. Heritage Studies on the Rideau-Quinte-Trent-Severn Waterway. MCR Heritage Planning Studies Paper 6, Cornwall, Ontario.
- MHSTCI (Ministry of Heritage, Sport, Tourism and Culture Industries). 2011. Standards and Guidelines for Consulting Archaeologists. Queens Printer, Ontario.
- OASD (Ontario Archaeological Sites Database). 2021. Ontario Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). Search of Past Portal Database for Registered Archaeological Sites. Accessed: July 2021. Search for Previous Archaeological Assessments within 50 metres of Study Area. Accessed: July 2021.
- Pearce RJ. 2010. Southwestern Ontario: The First 12,000 Years. Available from <http://diggingontario.uwo.ca/> [originally accessed: 23 October 2017].
- Ramsden PG. 1990. The Hurons: Archaeology and Culture History. In Ellis, C.J. and N. Ferris (Eds.) The Archaeology of Southern Ontario to A.D. 1650. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 361-384.
- Ritchie W. 1971. A Typology and Nomenclature for New York Projectile Points, Revised Edition. New York State Museum and Science Service, Bulletin Number 384, The University of the State of New York, The State Education Department, Albany, New York.
- Rogers ES. 1978 Southeastern Ojibwa. In Handbook of North American Indians, William C. Sturtevant and Bruce Trigger (eds). Smithsonian Institution, Washington, D.C.
- Smallwood J. 2021. Chief Building Official/By-Law Enforcement Officer, Township of Havelock-Belmont-Methuen. Request for Information: Cultural Heritage Resources. Email to Township of Havelock-Belmont-Methuen. 23 August 2021.
- Smith DG. 1990. Iroquoian Societies in Southern Ontario: Introduction and Historic Overview in The Archaeology of Southern Ontario to A.D. 1650, C.J. Ellis and N. Ferris (eds), Ontario Archaeology Society, p. 279-290.
- Spence MW, Pihl RH, Murphy CR. 1990. Cultural Complexes of the Early and Middle Woodland Periods. In Ellis, C.J. and N. Ferris (Eds.) The Archaeology of Southern Ontario to A.D. 1650. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 125-169.
- Stone LM, Chaput D. 1978. History of the Upper Great Lakes Area. In Handbook of North American Indians, William C. Sturtevant and Bruce Trigger (eds). Smithsonian Institution, Washington, D.C.
- Stothers D, Yarnell R. 1977. An agricultural revolution in the lower Great Lakes. In: *Geobotany*. Edited by R. C. Romans. Plenum, New York, pp. 209-232.
- Theberge CB, Theberge E. 1982. At the Edge of the Shield: A History of Smith Township, 1818-1980. Alger Press Ltd. Peterborough, Ontario.
- Trigger BG. 1994. The Original Iroquoians: Huron, Petun and Neutral. In E.S. Rogers, (Ed.). Aboriginal Ontario: Historical Perspectives on the First Nations. Toronto, Ontario: Dundurn Press Limited, pp. 41-63.
- TRCA 2007. Rouge River Watershed Plan. Towards a Healthy and Sustainable Future. Report on the Rouge Watershed Taskforce. <http://trca.on.ca/dotAsset/37800.pdf>

Warrick GA. 2000. The Precontact Iroquoian Occupation of Southern Ontario. In *Journal of World Prehistory*, Vol.14, No.4, pp. 415-466.

Warrick GA. 2008. *A Population History of the Huron-Petun, A.D. 500-1650*. New York: Cambridge University Press.

Warrick GA. 2013. The Aboriginal Population of Ontario in Late Prehistory. In Munson, M.K. and Jamieson, S.M (Eds.) *Before Ontario: The Archaeology of a Province*. Montreal & Kingston, Ontario: McGill Queen's University Press.

Williamson RF. 1990. The Early Iroquoian Period of Southern Ontario. In Ellis, C.J. and N. Ferris (Eds.) *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 291-320.

Williamson RF. 2013. The Woodland Period, 900 BCE to 1700 CE. In Munson, M.K. and Jamieson, S.M (Eds.) *Before Ontario: The Archaeology of a Province*. Montreal & Kingston, Ontario: McGill Queen's University Press.

7.0 IMAGES



Image 1: Disturbed. Gravel entrance driveway, looking north-northwest



Image 2: Disturbed. Gravel road network and above ground facilities, looking southwest



Image 3: Disturbed. Heavily modified landscape, drainage ditches and above/below ground utilities/facilities, looking south-southeast



Image 4: Disturbed. Heavily modified landscape. Disturbed drainage ditches and earthen mounds, looking east



Image 5: Disturbed. Large earthen mounds, looking southeast



Image 6: Disturbed earthen mounds comprised of mix of rock and sand, looking down



Image 7: West settling pond, looking northeast



Image 8: Disturbed. Heavily modified landscape south of settling ponds, looking east



Image 9: East settling pond and sewer utilities, looking northeast



Image 10: Sewer utilities, looking down



Image 11: Disturbed surface conditions surrounding settling ponds. Soil is a mixture of sand and gravel, looking east



Image 12: Disturbed surface soil conditions surrounding the settling ponds, looking down



Image 13: Disturbed. Heavily modified landscape east of settling ponds, looking north-northwest



Image 14: East settling pond, looking west



Image 15: Sewer utilities, looking west



Image 16: Disturbed. Earthen mounds, looking northwest



Image 17: Disturbed. Heavily modified landscape with ditching and buried sewer and electrical utilities, looking south-southeast



Image 18: Disturbed. Sewer utilities buried within earthen berm, looking west-southwest



Image 19: Disturbed. Exposed manhole cover atop earthen berm, looking north



Image 20: Area of archaeological potential at west extent of project area, looking west



Image 21: Area of archaeological potential at west extent of project area, looking southeast



Image 22: Area of archaeological potential at west extent of project area, looking northeast

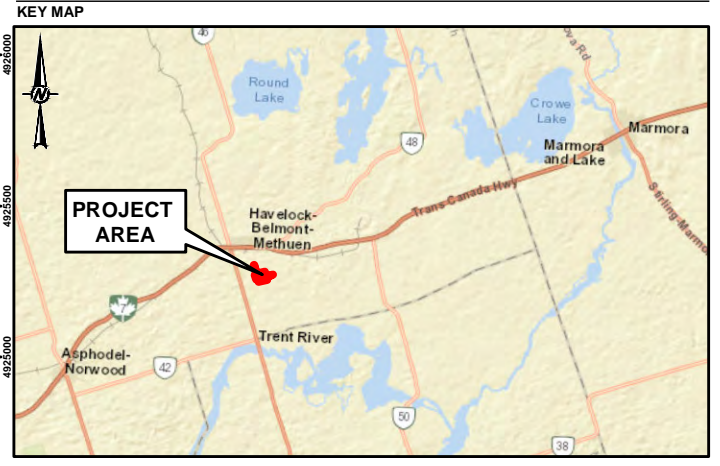
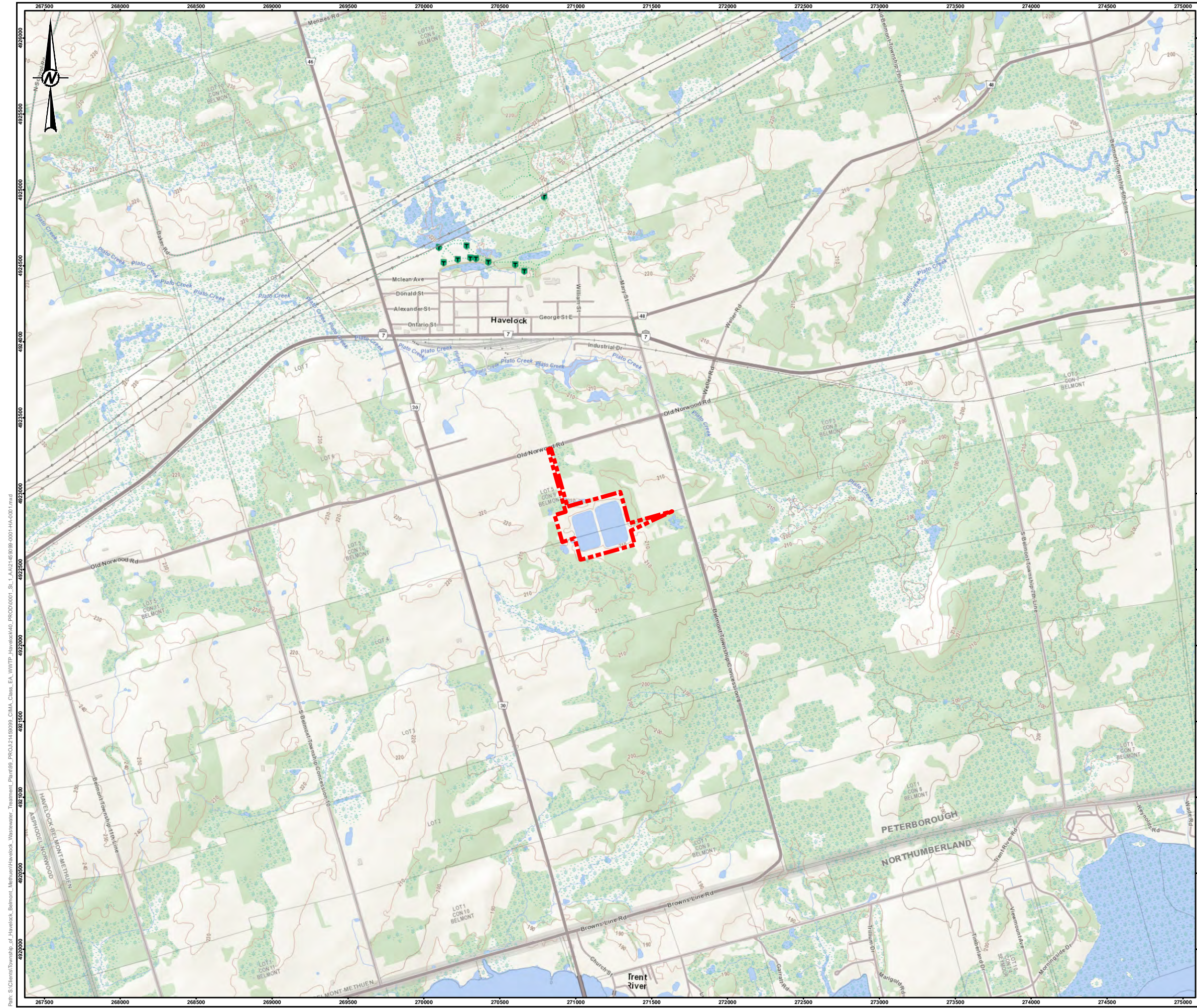


Image 23: Area of archaeological potential at east extent of project area, looking west



Image 24: Area of archaeological potential at east extent of project area, looking north

8.0 MAPS



SCALE 1:325,000

LEGEND

PROJECT AREA

NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
 1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2021
 2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
 3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28



CLIENT
 CIMA+

PROJECT
 STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 HAVELock WASTEWATER TREATMENT PLANT, PART OF LOTS 4 AND 5, CONCESSION 9, HISTORIC TOWNSHIP OF BELMONT, NOW IN THE GEOGRAPHIC TOWNSHIP OF HAVELock-BELMONT-METHUEN, COUNTY OF PETERBOROUGH, ONTARIO

TITLE
 LOCATION PLAN

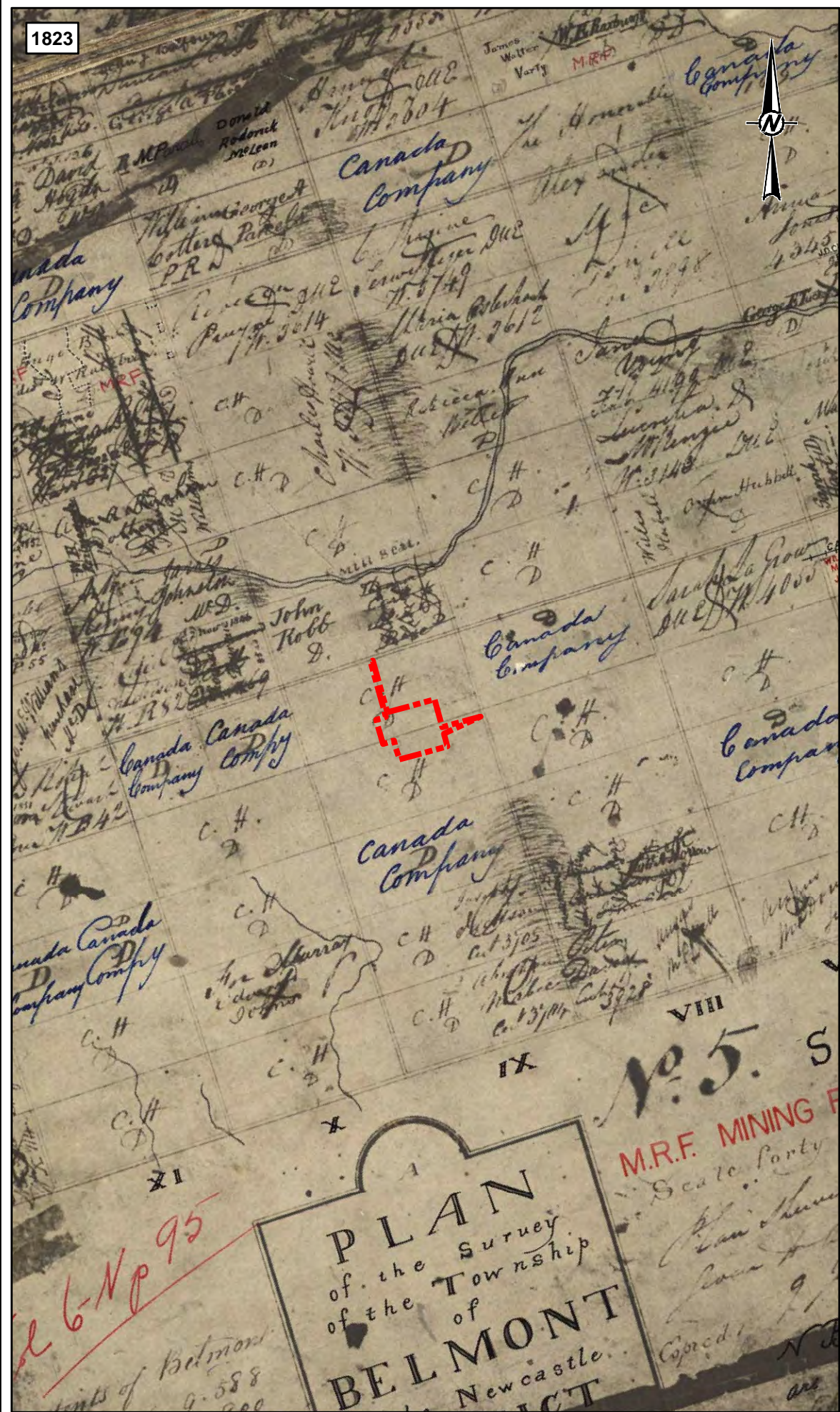
CONSULTANT	DATE	REVISION
	YYYY-MM-DD	2021-08-05
	DESIGNED	SB
	PREPARED	BR
	REVIEWED	RN
	APPROVED	MT

PROJECT NO. 21459099 CONTROL 0001 REV. 0 MAP 1

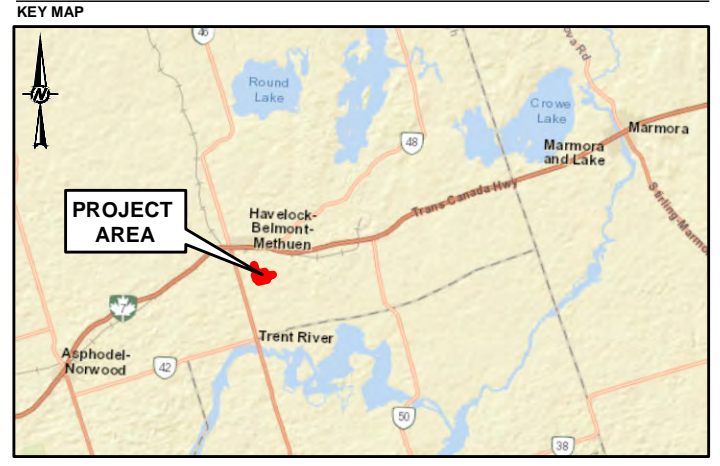
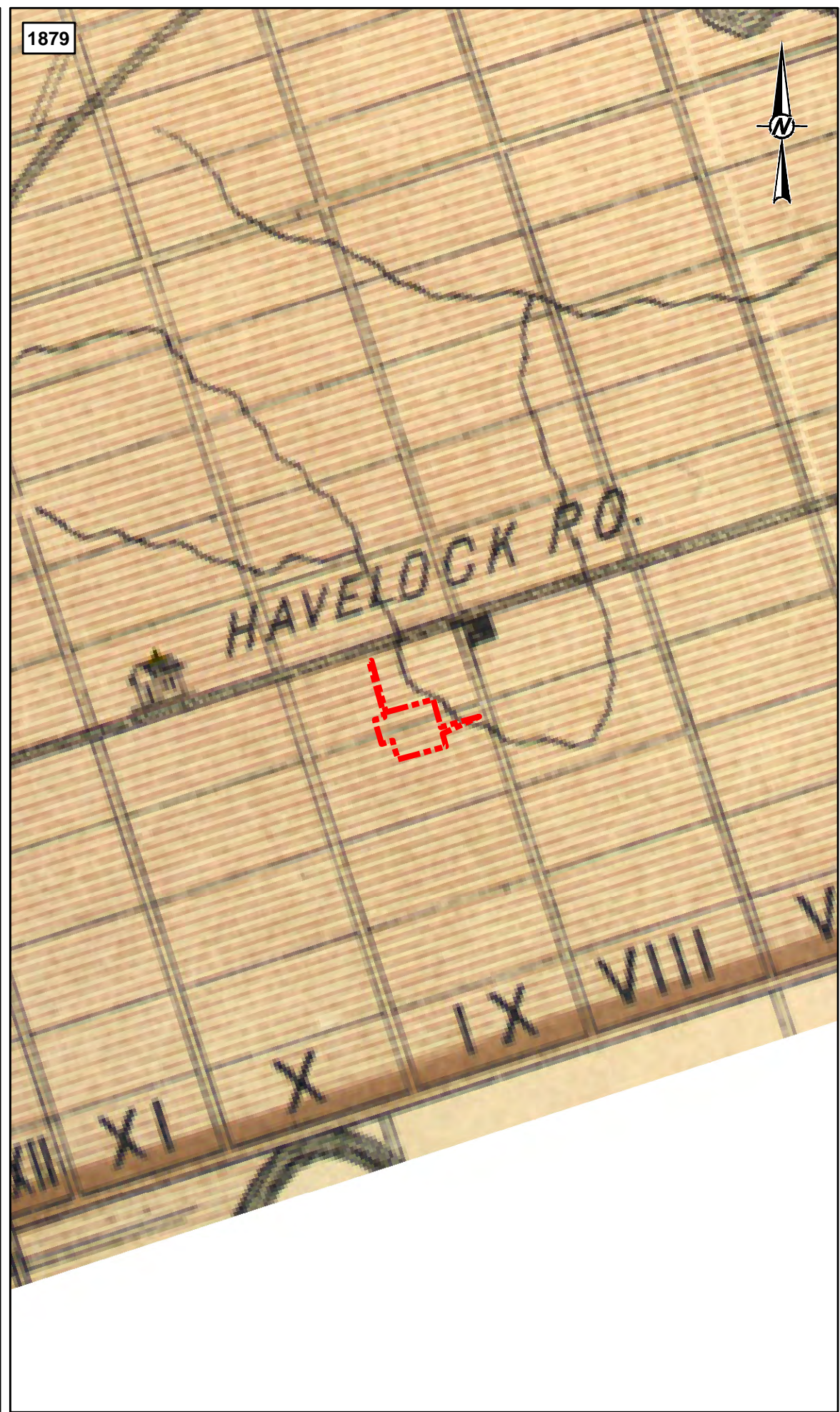
Print: S:\Client\Township of Havelock, Belmont, Methuen\Havelock, Belmont, Methuen\Havelock - Wastewater Treatment Plant\PRC\21459099_GMA_Cover_EA_WWTP_Havelock\PRC\0001_S1_L1_AA\21459099_0001-HA-001.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 28mm

1823



1879



LEGEND

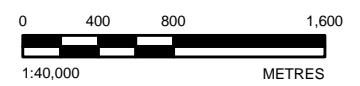
PROJECT AREA

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. 1823 PLAN OF THE SURVEY OF THE TOWNSHIP OF BELMONT IN THE NEWCASTLE DISTRICT. PRODUCED BY: HENRY EWING, DEPUTY SURVEYOR. ARCHIVES OF ONTARIO.
 2. 1879 MAP OF PETERBOROUGH COUNTY (BELMONT TOWNSHIP INSERT). SCALE CA. 1:158 400. PRODUCED BY: MILES & CO. RETRIEVED FROM: MCGILL UNIVERSITY, RARE BOOKS DIVISION, G3463.P4 1879 M5 MAP
 3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
 4. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83. COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28



CLIENT
CIMA+

PROJECT
 STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 HAVELOCK WASTEWATER TREATMENT PLANT, PART OF LOTS 4 AND 5, CONCESSION 9, HISTORIC TOWNSHIP OF BELMONT, NOW IN THE GEOGRAPHIC TOWNSHIP OF HAVELOCK-BELMONT-METHUEN, COUNTY OF PETERBOROUGH, ONTARIO

TITLE
PROJECT AREA OVERLAID ON 19th CENTURY HISTORICAL MAPS

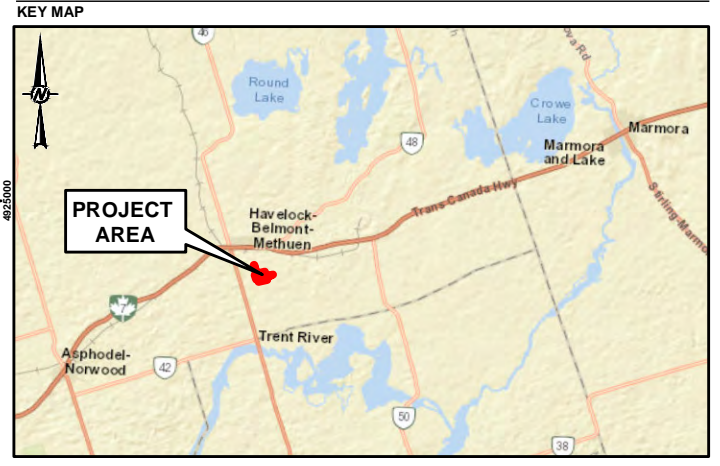
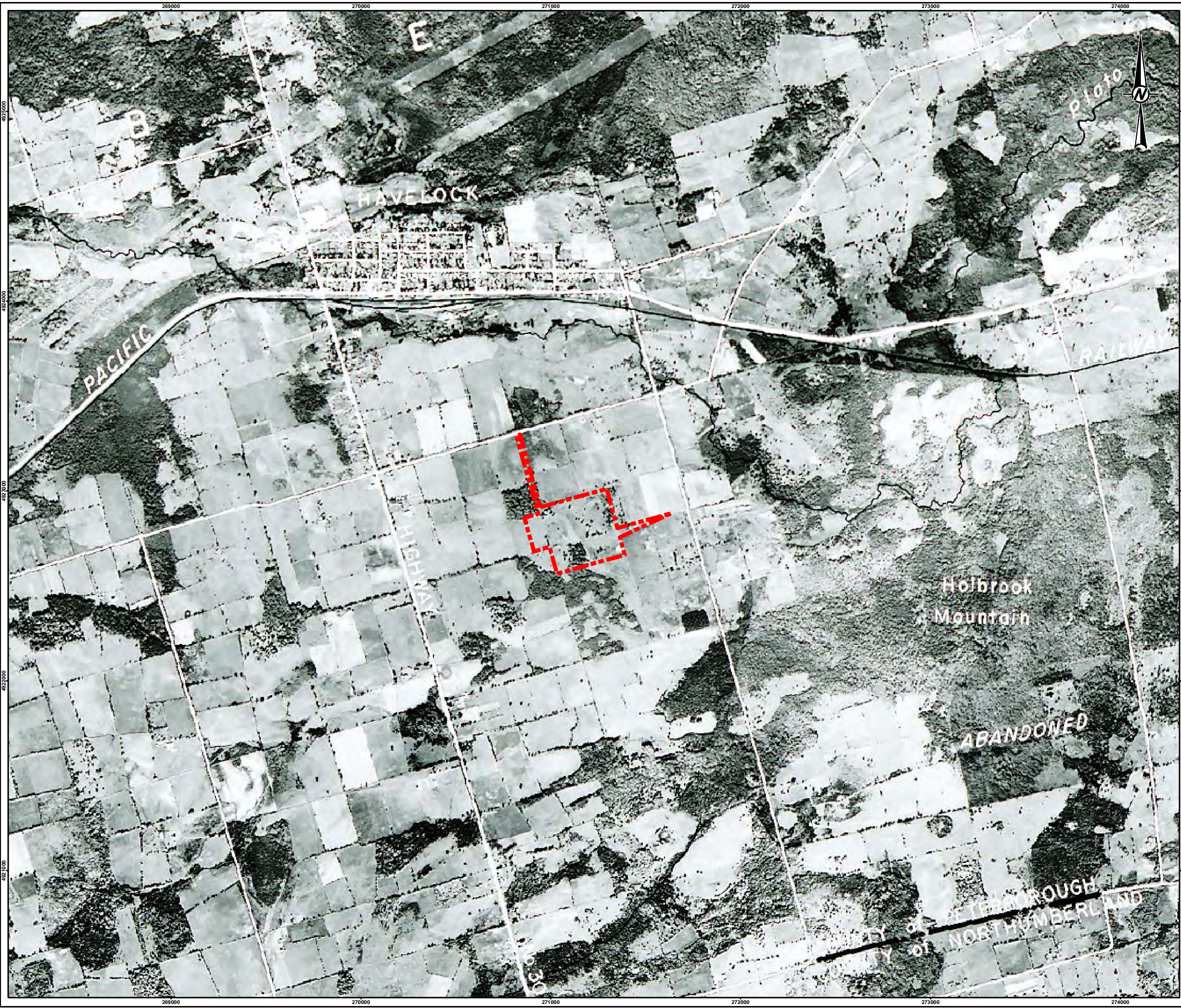
CONSULTANT	YYYY-MM-DD	2022-04-29
DESIGNED	SB	
PREPARED	BR	
REVIEWED	RN	
APPROVED	MT	



PROJECT NO. 21459099 CONTROL 0001 REV. 0 MAP 2

Path: S:\Client\Township of Havelock, Belmont, Methuen\Havelock - Methuen\... 26mm

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 26mm



LEGEND
 PROJECT AREA

NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
 1. 1954. AIR PHOTOS OF PETERBOROUGH COUNTY JAN. 1, 1954. INDEXED AT THE UNIVERSITY OF TORONTO MAP AND DATA LIBRARY. [LAST UPDATED: SEPTEMBER 18, 2017; ACCESSED: JULY 30, 2021].
 2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
 3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83.
 COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28



CLIENT
 CIMA+

PROJECT
 STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 HAVELOCK WASTEWATER TREATMENT PLANT, PART OF LOTS 4 AND 5, CONCESSION 9, HISTORIC TOWNSHIP OF BELMONT, NOW IN THE GEOGRAPHIC TOWNSHIP OF HAVELOCK-BELMONT-METHUEN, COUNTY OF PETERBOROUGH, ONTARIO

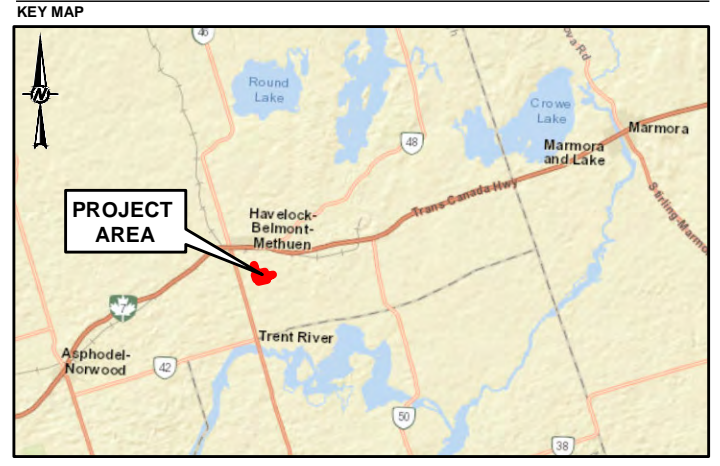
TITLE
 PROJECT AREA OVERLAID ON 1954 AERIAL PHOTOGRAPH

CONSULTANT	YYYY-MM-DD	2021-08-05
GOLDER MEMBER OF WSP	DESIGNED	SB
	PREPARED	BR
	REVIEWED	RN
	APPROVED	MT

PROJECT NO. 21459099 CONTROL 0001 REV. 0 MAP 3

Path: S:\Client\Township of Havelock, Belmont, Methuen\Havelock, Methuen\Havelock - Wastewater Treatment Plant\PROJ\21459099_CIMA_Chara_EIA_WWTP_Havelock\PROJ\0001_S1_L\A21459099-0001-HA-0031.rvt

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 28mm



- LEGEND**
- PROJECT AREA
 - STAGE 2 ARCHAEOLOGICAL ASSESSMENT RECOMMENDED, TEST PIT SURVEY AT 5 METRE INTERVALS
 - DISTURBED, NO ARCHAEOLOGICAL POTENTIAL
 - ➔ PHOTO LOCATION AND DIRECTION
 - ⬇ PHOTO LOCATION POINTING DOWN
 - ROADWAY
 - TOPOGRAPHIC CONTOUR, METRES
 - TOWNSHIP, LOT AND CONCESSION
 - WETLAND

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2021
2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
© 2022 MICROSOFT CORPORATION © 2022 MAXAR © CNES (2022) DISTRIBUTION AIRBUS DS
3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28



CLIENT
CIMA+

PROJECT
**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
HAVELOCK WASTEWATER TREATMENT PLANT, PART OF LOTS 4
AND 5, CONCESSION 9, HISTORIC TOWNSHIP OF BELMONT,
NOW IN THE GEOGRAPHIC TOWNSHIP OF HAVELOCK-
BELMONT-METHUEN, COUNTY OF PETERBOROUGH, ONTARIO**

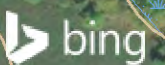
**TITLE
STAGE 1 ARCHAEOLOGICAL ASSESSMENT RESULTS**

CONSULTANT	YYYY-MM-DD	2022-04-29
GOLDER MEMBER OF WSP	DESIGNED	SB
	PREPARED	BR
	REVIEWED	RN
	APPROVED	MT

PROJECT NO. 21459099	CONTROL 0001	REV. 0	MAP 4
-------------------------	-----------------	-----------	-----------------

Path: S:\Client\Township of Havelock, Belmont, Methuen\Havelock Wastewater Treatment Plant\09 - PROJ\21459099_CIMA_Colour_EA_WWTP_Havelock\001_S1_LA\21459099_0001-HA-004.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 26mm




Signature Page

We trust that this report meets your current needs. If you have any questions, or if we may be of further assistance, please contact the undersigned.

Golder Associates Ltd.



Nimal Ragavan Nithiyantham, MA, CAHP
Archaeologist / Cultural heritage Specialist



Micheal Teal, MA
Director, Archaeology and Heritage, Ontario

SB/MT/RN/ca

[https://golderassociates.sharepoint.com/sites/143155/project files/6 deliverables/stage 1 archaeological/final/p390-0356-2021_29apr2022_re_st1_havelockwwtp.docx](https://golderassociates.sharepoint.com/sites/143155/project%20files/6%20deliverables/stage%201%20archaeological/final/p390-0356-2021_29apr2022_re_st1_havelockwwtp.docx)

Golder and the G logo are trademarks of Golder Associates Corporation



golder.com