Appendix B - Stage 1 and 2 Archeology Reports
STAGE 1 ARCHAEOLOGICAL ASSESSMENT
GRAND RIVER TRANSIT (GRT) TRANSIT NORTHFIELD DRIVE FACILITY
PART OF LOT 63, GERMAN CO. TRACT
(FORMER TOWNSHIP OF WATERLOO, COUNTY OF WATERLOO)
CITY OF WATERLOO, REGIONAL MUNICIPALITY OF WATERLOO, ONTARIO

ORIGINAL REPORT

Prepared for:

IBI Group
175 Galaxy Boulevard, Unit 100
Toronto, ON M9W 0C9
T 416-679-1930

Archaeological Licence #P128 (Hull)
Ministry of Tourism, Culture and Sport PIF# P128-0113-2015
ASI File: 15EA-057

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EXECUTIVE SUMMARY

ASI was contracted by IBI Group, on behalf of the Region of Waterloo, to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Grand River Transit Northfield Drive Facility Municipal Class Environmental Assessment (EA) in the City of Waterloo. This project involves the preliminary design, costing, and Class EA services for a Transit Facility located at 300 and 350 Northfield Drive.

The background research determined that six previously registered archaeological sites are located within one kilometre of the study area. A review of the historical and archaeological contexts of the study area also suggested that it has potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the degree to which soils have been impacted by disturbance.

The property inspection determined that part of the study area has been subject to deep and extensive land disturbance and, as such, is considered to not retain archaeological potential. Part of the study area is, however, considered to possess archaeological potential and requires further archaeological assessment.

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

1. Part of the study area is considered to possess archaeological potential. These lands require Stage 2 archaeological assessment by test-pit survey at five metre intervals, prior to any proposed impacts to the property;

2. The remainder of the study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance. 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.
PROJECT PERSONNEL

Senior Project Manager: Andrew Riddle, PhD (P347)
Senior Archaeologist, Manager
Environmental Assessment Projects (West)
Environmental Assessment Division

Project Director: Dr. Katherine L. Hull, PhD (P128)
Senior Archaeologist, Historical Manager
Environmental Assessment Division

Project Coordinator: Sarah Jagelewski, Hon BA (R405)
Staff Archaeologist, Assistant Manager
Environmental Assessment Division

Project Manager: Paul David Ritchie, MA (P392)
Staff Archaeologist

Field Director: Peter Carruthers, MA, CAHP (P163)
Senior Associate

Report Preparation: Paul David Ritchie

Graphics: Jonas Fernandez, MSc (R281)
Geomatics Specialist

Report Reviewers: Andrew Riddle

Robert Pihl, MA, CAHP (P057)
Partner and Senior Archaeologist
Manager, Environmental Assessment Division
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1.0 PROJECT CONTEXT

ASI was contracted by IBI Group, on behalf of the Region of Waterloo, to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Grand River Transit Northfield Drive Facility Municipal Class Environmental Assessment (EA) in the City of Waterloo (Figure 1). This project involves the preliminary design, costing, and Class EA services for a Transit Facility located at 300 and 350 Northfield Drive.

All activities carried out during this assessment were completed in accordance with the Ontario Heritage Act (2005), the 2011 Standards and Guidelines for Consultant Archaeologists (S & G), administered by the Ministry of Tourism, Culture and Sport (MTCS) and the Municipal Engineers’ Association document Municipal Class Environmental Assessment (2000, as amended in 2007 and 2011).

In the 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 work has been undertaken as required by the Environmental Assessment Act, RSO (1990) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the Municipal Class EA process.

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted to ASI by IBI Group on August 13, 2015.

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 pertaining to the
study area. A summary is first presented of the current understanding of the Aboriginal land use of the study area. This is then 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 13,000 years before present (BP) (Ferris 2013: 13). Populations at this time were highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 BP, the climate had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990:62-63).

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.

From approximately 1,000 BP until approximately 300 BP, evidence indicates that lifeways were similar to the historically-described Aboriginal groups. Populations in southern Ontario were Iroquoian-speaking, though full expression of Iroquoian culture is not recognized archaeologically until the fourteenth century AD. During the Early Iroquoian phase (AD 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 practiced (Williamson 1990:317). By the second quarter of the first millennium BP, during the Middle Iroquoian phase (AD 1300-1450), this episodic community disintegration was no longer practiced and populations now communally occupied sites throughout the year (Dodd et al. 1990:343). In the Late Iroquoian phase (AD 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.
Samuel de Champlain in 1615 reported that a group of Iroquoian-speaking people situated between the New York Iroquois and the Huron-Wendat were at peace and remained “la nation neutre”. In subsequent years, the French visited and traded among the Neutral, but the first documented visit was not until 1626, when the Recollet missionary Joseph de la Roche Daillon recorded his visit to the villages of the Attiwanaron, whose name in the Huron-Wendat language meant “those who speak a slightly different tongue” (the Neutral apparently referred to the Huron-Wendat by the same term). Like the Huron-Wendat, Petun, and New York Iroquois, the Neutral people were settled village agriculturalists. Several discrete settlement clusters have been identified in the lower Grand River, Fairchild-Big Creek, Upper Twenty Mile Creek, Spencer-Bronte Creek drainages, Milton, Grimsby, Eastern Niagara Escarpment and Onondaga Escarpment areas, which are attributed to Iroquoian populations. These settlement clusters are believed by some scholars to have been inhabited by populations of the Neutral Nation or pre- (or ancestral) Neutral Nation (Lennox and Fitzgerald 1990). The study area is situated on the periphery of the Kitchener settlement cluster (Lennox and Fitzgerald 1990: Figure 13.1, Table 13.1). The Kitchener settlement cluster has documented occupation from the fifteenth century (e.g. Dry Lake site, Horne 1987) until the sixteenth century (e.g. Waterloo site, Horne 1987).

Between 1647 and 1651, the Neutral were decimated by epidemics and ultimately dispersed by the New York Iroquois, who subsequently settled along strategic trade routes on the north shore of Lake Ontario for a brief period during the mid seventeenth-century. Compared to settlements of the New York Iroquois, the “Iroquois du Nord” occupation of the landscape was less intensive. Only seven villages are identified by the early historic cartographers on the north shore, and they are documented as considerably smaller than those in New York State. The populations were agriculturalists, growing maize, pumpkins, and squash. These settlements also played the important alternate role of serving as stopovers and bases for New York Iroquois travelling to the north shore for the annual beaver hunt (Konrad 1974).

Beginning in the mid-late seventeenth century, the Mississaugas began to replace the Iroquois as the controlling Aboriginal group in the north shore since the Iroquois confederacy had overstretched their territory between the 1650s and 1670s (Williamson 2008). The Iroquois could not hold the region and agreed to form an alliance with the Mississaugas and share hunting territories with them. The Mississaugas traded with both the British and the French in order to have wider access to European materials at better prices and acted as trade intermediaries between the British and tribes in the north.

Following the 1764 Niagara Peace Treaty and the follow-up treaties with Pontiac, the English colonial government considered the Mississaugas to be their allies since they had accepted the Covenant Chain. The English administrators followed the terms of the Royal Proclamation and insured that no settlements were made in the hunting grounds that had been reserved for their use (Johnston 1964; Lytwyn 2005).

Six Nations Iroquois leaders also pressured the English colonial government to respect their old treaties, especially those concerning access to hunting grounds north of Lake Ontario. In 1765, Daniel Claus, Deputy Superintendent General of Indian Affairs, wrote to Sir William Johnson and explained that he had been told that the Six Nations Iroquois’ old hunting grounds were to be treated in common, “and free to one Nation as to another, in the same manner as a large Dish of Meat would be to a Company of People who were invited to eat it, when every Guest has liberty to cut as they pleased” (Johnson 1921:917). In 1767, Chiefs from Oka and Caughnawaga met with the British Governor and also reminded him about the 1701 Peace Treaty and the promise to have shared hunting territories with the Mississaugas (Johnston 1964; Lytwyn 2005).

During the American Revolution, Mississauga warriors supported the English military. Rebel forces destroyed the villages of the Six Nations Iroquois in New York and many people were forced to move to
the Niagara area. When Six Nations Iroquois leaders learned that the English planned to make a peace

treaty with the Americans and establish a boundary line that would give away their homelands, they were

angry. The English government offered to protect Six Nations Iroquois peoples and give them land within

their boundaries. On August 8, 1783, Lord North instructed Governor Haldimand to set apart land for the

Six Nations Iroquois and ensure that they carried on their hunting and fur trading with the British. On

May 22, 1784, a tract of land along the Grand River was purchased by the British government from the

Mississaugas who lived in the vicinity (Johnston 1964; Lytwyn 2005). The land set apart is called the

Haldimand Tract.

Joseph Brant led New York Iroquois loyalists (1600 people) to the Haldimand tract in 1784 and in the fall

of 1784, Sir Frederick Haldimand formally awarded the tract to the Mohawks “and others of the Six

Nations [Iroquois].” They were authorized to “Settle upon the Banks of the River” and were allotted “for

that Purpose six miles [10 km] deep from each Side of [it] beginning at Lake Erie, & extending in the

Proportion to [its] Head.” The precise boundaries of the grant were unclear as there was no survey; for

example, the northern boundary of the original deed from the Mississaugas to the Crown stated that the

line extended “from the creek that falls from a small lake into…the bay known by the name of Waghquata

[Burlington Bay]…until it strikes the river La Tranche [Thames].” The 1790 survey by Augustus Jones

intentionally failed to include the headwaters of the Grand, an action made all the more difficult to

address given the unclear description of the extent in the original deeds (Johnston 1964; Lytwyn 2005).

Brant regarded the territory as his own to manage on behalf of the Confederacy and interpreted the

proclamation as tantamount to full national recognition of the Mohawks and fellow tribesmen. This

interpretation was strongly denied by the British (Johnston 1964; Lytwyn 2005).

In fact, appointed as Lieutenant Governor of the new colony of Upper Canada in 1791, Simcoe refused to

permit the Six Nations Iroquois to sell/lease any part of their reserve because they were arranged

independently of the Crown. Brant, on the other hand, argued for the Six Nations Iroquois’ need for an

immediate assured income from land sales as they could no longer hope to survive by hunting

exclusively. Simcoe thought that if such practices were permitted, it could lead to other Europeans

attempting to seize control by any means of the better part of the Six Nations Iroquois’ reserve, and it was

therefore unresolved as to whether Six Nations Iroquois people could dispose of their lands directly to

whomever they chose (Johnston 1964; Lytwyn 2005).

In the first few years, Brant, who had been described, by some, as a Europeanized entrepreneur, took the

initiative and invited white friends and acquaintances to the tract and provided them with rough land

titles. Over the next 25 years (1784-1810), a considerable number of Europeans and Americans obtained

similar leases authorizing them (in Brant’s opinion) to occupy and improve lots overlooking the river

(Johnston 1964; Lytwyn 2005).

The subsequent Peter Russel administration (1797-1798), however, recognized the leases and the sales

that Brant arranged with white settlers along the Grand River Valley. Trustees were appointed to act on

the behalf of the Six Nations Iroquois with the authority to receive payment of purchases. On the other

hand, some Six Nations Iroquois thought that the land sale practices violated the ancient principle that

land was not a “commodity which could be conveyed.” Two Mohawk sachems even tried to take up arms

to depose Brant because they did not agree with his ways. Their efforts were for naught and they returned

to the Bay of Quinte where other Six Nation Iroquois peoples, led by Sachem John Deseronto, had settled

after the American Revolution (Johnston 1964; Lytwyn 2005).
A formal investigation of the matter was launched in 1812, although leases were not set aside. Due to problems of white encroachment including squatters without titles, settlers who bought land from individuals or through other transactions with Six Nations Iroquois, many of the leases were confirmed by the Crown in 1834-5. Unauthorized sales and agreements remained rampant (Johnston 1964; Lytwyn 2005).

In 1841, Samuel P. Jarvis (Indian Superintendent) informed the Six Nations Iroquois that the only way to keep white intruders off their land would be for them to surrender it to the Crown, to be administered for their sole benefit. With this plan, the Six Nations Iroquois would retain lands that they actually occupied and a reserve of approximately 8,094 ha. The surrender of land was made by the Confederacy in January, 1841 (Johnston 1964; Lytwyn 2005).

Today, this history and those surrenders are still contested and there are numerous specific land claims that have been filed by the Six Nations Iroquois with the federal government in regard to lands within the Haldimand Tract (Johnston 1964; Lytwyn 2005).

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

Historically, the study area is located in the Former Township of Waterloo, Waterloo County in part of Lot 63, German Company Tract.

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

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

Waterloo Township

The historic Township of Waterloo was originally known as Block Two of the Grand River land grant which was deeded to the Six Nations Iroquois by the British in 1784 for their loyalty to the Crown in the American War of Independence. In 1796, Block Two, a 38,045 ha tract, was acquired by Richard Beasley
from Joseph Brant on behalf of the Six Nations. He subdivided and sold the land, with an approximately
24,281 ha tract of land going to the German Company of Pennsylvania, in November 1803 (Janusas
1988:2). Company members included Samuel and John Bricker, and Daniel, Jacob, and John Erb. The
German Company of Pennsylvania had the lands surveyed by Augustus Jones to subdivide the land into
128 farm lots of approximately 181 ha each and 32 farm lots of approximately 34 ha each (Janusas

When Block Two was incorporated into the District of Gore (County of Halton) in 1816, it was named
Waterloo Township, in honour of the battle that ended the Napoleonic Wars in Europe. It remained part
of Halton County in the District of Gore until 1842 and then became part of the District of Wellington.
The County of Waterloo did not come into being until 1852 (Janusas 1988:2).

The first immigrants to settle in Waterloo Township were almost exclusively German Mennonites from
Pennsylvania, who had originally emigrated from Switzerland, Germany and France. Most of these
settlers were farmers but many were tradesmen and millers. Later settlers were generally of Scottish,
English, Irish, and continental German heritage, many of them farmers, but a majority of them were
artisans and tradesmen. When the railway was laid through Waterloo Township in the mid-nineteenth
century, it became the leading industrial center of Waterloo County (Janusas 1988:10-12).

Abraham Erb purchased approximately 181 ha of land in 1805 and became the first settler in the City of
Waterloo. He transferred a portion of his land and ownership of two mills to Jacob Snider in 1829.
Snider’s son inherited approximately 129 ha which he sold to John Hoffman and Isaac Weber, who
subsequently sectioned and sold the lands in 1854, at which point the population of Waterloo began to
expand (Janusas 1988:102).

1.2.3 Historic Map Review

The 1861 Tremaine’s Map of the County of Waterloo, Canada West and the 1881 Illustrated Historical
Atlas of the County of Waterloo were reviewed to determine the potential for the presence of historical
features within or abutting the study area during the nineteenth century (Figures 2 and 3). 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. Details of recorded land tenure and noted features are given in
Table 1.

<table>
<thead>
<tr>
<th>Table 1: Nineteenth-century property owners and historical features</th>
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<td><strong>1861 Tremaine’s Map of the County of Waterloo, Canada West</strong></td>
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<tr>
<td>1881 Illustrated Historical Atlas of the County of Waterloo</td>
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Use of historic map sources to reconstruct/predict the location of former features within the modern
landscape generally proceeds by using common reference points between the various sources. These
sources are then geo-referenced in order to provide the most accurate determination of the location of any property on historic mapping sources. The results of such exercises are often imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including the vagaries of map production (both past and present), the need to resolve differences of scale and resolution, and distortions introduced by reproduction of the sources. To a large degree, the significance of such margins of error is dependent on the size of the feature one is attempting to plot, the constancy of reference points, the distances between them, and the consistency with which both they and the target feature are depicted on the period mapping.

Both the 1861 and 1881 mapping indicates that both Northfield Drive East and University Avenue East are historic transportation routes.

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 periphery of a documented Iroquoian settlement cluster. It was subsequently utilized by the Seneca and Mississauga for resource extraction and included in the treaty lands granted to the Six Nations Iroquois, although the geographical extent of this treaty is presently debated.

The background research and historic mapping also demonstrates that the study area is located in the Former Township of Waterloo, County of Waterloo in part of Lot 63, German Company Tract. The historic maps indicate that the study area is located in proximity to two historic 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: the site record forms for registered sites housed at the MTCS; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

The study area is situated at the northern boundary of the City of Waterloo. The study area is bounded to the south by light density industrial areas and residential suburbs beyond. To the north, the study area is surrounded by rural lands with agricultural land use, above the valley of the Conestogo River. The study area consists of a former industrial facility and associated grounds (parking areas, storm water management areas, utility yards) in the west, and a triangular area of green-space that is current fallow scrublands in the east. The study area immediately on the north and south is bounded by the right-of-ways (ROWs) of University Avenue East and Northfield Drive East, respectively.
1.3.2 Geography

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

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

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 BP (Karrow 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.

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

The study area is situated within the Oxford Till Plain physiographic region of southern Ontario in a former spillway (Chapman and Putnam 1984). The Oxford Till Plain is located in the centre of southwestern Ontario and covers an area of approximately 155,400 ha primarily located within Oxford County. The plain is at an approximate elevation of between 305 and 365 m above sea level. The region consists of a drumlinized till plain formed when glacier advance overrode a pre-existing moraine from a northwesterly direction. The dominant parent material is Middle Devonian limestone creating a calcareous till. The region contains the headwaters of the Thames River from a swamp within a clay plain. Many of the drainages are misfits within their valleys existing as small drainages within glacial spillways. These spillways often have gravel deposits or have sufficiently eroded overburden down to bedrock such that it is conducive for quarrying. The region is marked for being generally good for agriculture and soils in the region are primarily developed beneath a maple-beech forest (Chapman and Putnam 1984: 143-144).

Spillways are the former glacial meltwater channels. They are often found in association with moraines but in opposition are entrenched rather than elevated landforms. They are often, though not always, occupied by stream courses, the fact of which raises the debate of their glacial origin. Spillways are typically broad troughs floored wholly or in part by gravel beds and are typically vegetated by cedar swamps in the lowest beds (Chapman and Putnam 1984:15).
Figure 4 depicts surficial geology for the study area. The surficial geology mapping demonstrates that the study area is underlain by deposits of sand. These sand deposits are glaciofluvial river deposits and delta topset facies (OGS 2010). Figure 5 depicts soil drainage for the study area. Soil drainage information indicates that the study area includes well-drained and imperfectly drained soils.

Soils within the study area consist of: Caledon sandy loam with Camilla sandy loam and St. Jacobs loam; and Tuscola loam with Colwood loam and Brant loam (Dept. of Agriculture and Agri-Food Canada 1996). These soil distinctions are described by their dominant (former) and subdominant (latter) soil types. As the subdominant soil types are described on the virtue that they exist as concentrations within the dominant soil type (Ecologistics Ltd. 1996:27), they merit expanded description in addition to dominant soil types. For detailed soil descriptions, see Appendix A.

The study area is located in proximity to a tributary of the Conestogo River, itself a tributary of the Grand River. The Grand River drains an area of approximately 673,397 ha. Its main stream begins northeast of Dundalk at 526 m above sea level and flows for approximately 290 km to Lake Erie at Port Maitland (Chapman and Putnam 1984: 95). The Grand River was an important transportation route and a critical resource extraction area for generations of Aboriginal people. Historically, the Grand River has been utilized as a navigable waterway, as a power source (such power sites served as settlement nuclei) and above Brantford as a course for driving logs (Chapman and Putnam 1984: 98). It is also the focus of the Haldimand Tract; Joseph Brant was awarded 30 miles (48 km) on either side of the river (Johnston 1964: 35-38; Lytwyn 2005).

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 block AjHd.

According to the OASD, six previously registered archaeological sites are located within one kilometre of the study area (MTCS 2015a). Site details are presented in Table 2.

<table>
<thead>
<tr>
<th>Borden #</th>
<th>Site Name</th>
<th>Cultural Affiliation</th>
<th>Site Type</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>AjHd-2</td>
<td>n/a</td>
<td>Aboriginal (pre-sixteenth century)</td>
<td>Findspot</td>
<td>Pearce 1985</td>
</tr>
<tr>
<td>AjHd-3</td>
<td>Harvey Martin House</td>
<td>Euro-Canadian (1835-present)*</td>
<td>Farmstead</td>
<td>Pearce 1985</td>
</tr>
<tr>
<td>AjHd-21</td>
<td>Black Walnut III</td>
<td>Euro-Canadian (late nineteenth century)*</td>
<td>Homestead</td>
<td>ASI 1989</td>
</tr>
<tr>
<td>AjHd-22</td>
<td>n/a</td>
<td>n/a</td>
<td>Findspot</td>
<td>ASI 1989</td>
</tr>
<tr>
<td>AjHd-23</td>
<td>Black Walnut V</td>
<td>Aboriginal (ca. 8,500-4,500 BP)</td>
<td>Findspot</td>
<td>ASI 1989</td>
</tr>
<tr>
<td>AjHd-31</td>
<td>n/a</td>
<td>Aboriginal (ca. 8,500-4,500 BP)</td>
<td>Findspot</td>
<td>ASI 1993</td>
</tr>
</tbody>
</table>

N.B. – Dates based on Ferris 2013: 13; sites in bold are located within 300 m of study area; * - Dates based on MTCS 2015b
According to the background research, one previous archaeological assessment has been conducted within 50 m of the study area. ASI (1989) conducted a Stage 1-2 archaeological assessment of the Black Walnut and Foxpoint Subdivisions in part of Lot 63, City of Waterloo, Regional Municipality of Waterloo under the project direction of Dr. Ron Williamson (Licence No. 89-130B). No lands within the GRT Northfield Drive Facility study area were assessed during this archaeological assessment. The 1989 assessment identified a number of archaeological sites, however only one is located within 300 m of the GRT Northfield Drive Facility study area (AjHd-21).

1.3.4 Summary of Archaeological Context

The review of archaeological work conducted in the area demonstrated that six previously registered archaeological sites are located within one kilometre of the study area. The study area is located adjacent to a tributary of the Conestogo River. The historical context demonstrates that the study area is located in proximity to two historic transportation routes. These criteria are indicative that the study area possesses potential for Aboriginal and Euro-Canadian archaeological resources, depending on soil conditions and the degree to which soils have been subject to deep disturbance.

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 under the field direction of Peter Carruthers (P163) of ASI, on August 26, 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 22° 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 6) and associated photographic plates are presented in Section 8.0 (Plates 1-18).
3.0 ANALYSIS AND CONCLUSIONS

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the study area. These data are presented below in Section 3.1. Results of the analysis of the property inspection are then presented for the study area (Section 3.2).

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, list criteria that are indicative of archaeological potential. The GRT Northfield Drive Facility study area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites (e.g. AjHd-21);
- Water sources: primary, secondary, or past water source (e.g. tributary of the Conestogo River);
- Well-drained sandy soils (e.g. Caledon sandy loam)
- Early historic transportation routes (e.g. Northfield Drive)

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

3.2 Analysis of Property Inspection Results

The property inspection determined that the majority of the study area has been previously subject to deep and extensive disturbance, associated with previous ROW construction, utility installation and construction of former industrial facility (Figure 6: areas marked in yellow). These lands have been documented to not retain archaeological potential. Part of the study area is considered to possess archaeological potential (Figure 6: area marked in green).

3.3 Conclusions

The Stage 1 background study determined that six previously registered archaeological sites are located within one kilometre of the study area. A review of the geography of the study area suggested that the study area has potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the degree to which soils have been disturbed.

The property inspection determined that part of the study area has been subject to deep and extensive land disturbance and as such, is considered to not retain archaeological potential. No further archaeological assessment is required. Part of the study area, however, is considered to possess archaeological potential and requires further archaeological assessment. These lands require Stage 2 archaeological assessment by test-pit survey at five metre intervals, prior to any proposed disturbance to the property (Plates 17 and 18).

4.0 RECOMMENDATIONS

In light of these results, ASI makes the following recommendations:
1. Part of the study area is considered to possess archaeological potential. These lands require Stage 2 archaeological assessment by test-pit survey at five metre intervals, prior to any proposed impacts to the property;

2. The remainder of the study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance. 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 MTCS should be immediately notified.

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

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

ASI also 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, RSO 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 field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, 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 field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the Ontario Heritage Act.

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario
Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act.

- The Funeral, Burial and Cremation Services Act (2002) require that any person discovering human remains must immediately notify the police or coroner.

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Horne, M.  

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Johnson, W., Sir.  

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7.0 MAPS
Study Area
Figure 2: GRT Northfield Drive Facility Study Area overlaid on 1861 Tremaine’s Map of the County of Waterloo, Canada West

Figure 3: GRT Northfield Drive Facility Study Area overlaid on 1881 map of Township of Waterloo
Figure 4: GRT Northfield Drive Facility Study Area Surficial Geology

Figure 5: GRT Northfield Drive Facility Study Area Soil Drainage
Figure 6: GRT Northfiled Drive Facility Study Area Property Inspection Results

Study Area

Stage 1 Results

No Potential - Disturbed
Potential (Test Pit Survey)
8.0 IMAGES
Plate 1: View northeast at study area. Area is graded and disturbed by associated storm water management pond (frame left). No potential.

Plate 2: View southeast at study area. Area is graded and disturbed. No potential.

Plate 3: View southwest at study area. Area is graded and disturbed. No potential.

Plate 4: View south at study area. Area is graded and disturbed. No potential.
Plate 5: View southeast at study area. Area is graded and disturbed. No potential.

Plate 6: View northeast at study area. Area is graded and disturbed with no archaeological potential. Lands beyond possess archaeological potential and require Stage 2 test-pit survey at five metre intervals.

Plate 7: View west at study area. Area is graded and disturbed. No potential.

Plate 8: View southeast at study area. Area is graded and disturbed. No potential.
Plate 9: View northeast at study area. Area is graded and disturbed. No potential. Lands beyond (frame left) possess archaeological potential. Require Stage 2 test-pit survey at five metre intervals.

Plate 10: View northeast at study area. Area is graded and disturbed. Note: man-hole cover and graded ROW. No potential.

Plate 11: View northwest at study area. Area is graded and disturbed. No potential.

Plate 12: View southwest at study area. Area is graded and disturbed. No potential.
Plate 13: View south at study area. Area is graded and disturbed. No potential.

Plate 14: View east at study area. Area is graded and disturbed. No potential. Lands beyond (background) possess archaeological potential. Requires Stage 2 test-pit survey at five metre intervals.

Plate 15: View north at study area. Area is graded and disturbed. No potential.

Plate 16: View northwest at study area. Area is graded and disturbed. No potential.
Plate 17: View northeast at study area. Area possesses archaeological potential. Requires Stage 2 test-pit survey at five metre intervals.

Plate 18: View southwest at study area. Area possesses archaeological potential. Requires Stage 2 test-pit survey at five metre intervals.
9.0 APPENDIX A: DETAILED SOIL DESCRIPTIONS

Brant loam is developed on well-drained lacustrine sediments, mainly loam and silt loam. This soil occurs on moderately sloping and hummocky topography. Thin clay strata are commonly found within this soil which often results in perched water tables. Eroded slopes have lower organic content. B horizons usually consist of varved material, and vary from silt loam to clay textures. C horizon are occasionally interspersed within thin layers of sand or clay. This soil is prone to erosion and is highly susceptible to frost. This soil has been documented to possess the following profile (Presant and Wicklund 1971:25, 75):

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Colour</th>
<th>Texture/structure</th>
<th>Profile depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ah</td>
<td>Very dark brown (10YR 2/2 [moist])</td>
<td>Loam; weak, fine granular; very friable; mildly alkaline</td>
<td>0-13 cm</td>
</tr>
<tr>
<td>Ae1</td>
<td>Dark yellowish brown (10YR 4/4 [moist])</td>
<td>Loam; weak, fine granular; very friable; neutral</td>
<td>13-25 cm</td>
</tr>
<tr>
<td>Ae2</td>
<td>Brown (10YR 4.5/3 [moist])</td>
<td>Silt loam; weak, fine platy; very friable; neutral</td>
<td>25-36 cm</td>
</tr>
<tr>
<td>Bt</td>
<td>Dark brown (10YR 4/3 [moist]); reddish brown (7.5YR 4/4 [moist]) [at depth]; brown (10YR 4.5/3 [moist]) [interspersed layers]</td>
<td>Clay layered with sandy loam; compound, strong, coarse; coarse platy and strong; medium platy and medium angular blocky; firm; medium acid</td>
<td>36-66 cm</td>
</tr>
<tr>
<td>Btj</td>
<td>Brown (10YR 5/3 [moist]); dark brown (7.5YR 4.4 [moist]) [layered]</td>
<td>Loam layered with silt loam; loam layers are single grain and loose; silt loam layers are weak, medium platy and friable to firm; medium acid</td>
<td>66-86</td>
</tr>
<tr>
<td>Ck</td>
<td>Grayish brown (10YR 4.5/2 [moist])</td>
<td>Loam with occasional layers of silt loam and silty clay loam; weak, fine platy; loose; moderately calcareous; moderately alkaline</td>
<td>86+ cm</td>
</tr>
</tbody>
</table>

Caledon sandy loam is a well-drained soil that occurs on outwash plains and terraces. This soil has a low organic content. pH is typically neutral. This soil has a low water-holding capacity. Caledon sandy loam has been documented to possess the following profile (Presant and Wicklund 1971: 27, 78):

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Colour</th>
<th>Texture/structure</th>
<th>Profile depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ap</td>
<td>Very dark grayish brown (10YR 3/2 [moist])</td>
<td>Sandy loam; weak, medium granular; very friable; neutral</td>
<td>0-20 cm</td>
</tr>
<tr>
<td>Ae1</td>
<td>Brown (9YR 4/4 [moist]); yellowish brown (10YR 5/4 [moist]) [lower in horizon]</td>
<td>Sandy loam; single grain structure; loose; small amount of gravel; neutral</td>
<td>20-36 cm</td>
</tr>
<tr>
<td>Ae2</td>
<td>Brown (10YR 5/3 [moist])</td>
<td>Sandy loam; amorphous to weak, coarse platy; loose to friable; small amount of gravelly and shaly fragments; neutral</td>
<td>36-48 cm</td>
</tr>
<tr>
<td>Bt</td>
<td>Dark reddish brown (5YR 3/4 [moist])</td>
<td>Sandy loam; weak, coarse platy; friable; some gravel; weakly calcareous; mildly alkaline</td>
<td>48-66 cm</td>
</tr>
<tr>
<td>IIck1</td>
<td>Brown (10YR 4/3 [moist])</td>
<td>Gravelly sand; single grain; loose; gravel often concentrated along top of horizon; extremely calcareous; moderately alkaline</td>
<td>66-81</td>
</tr>
</tbody>
</table>
Camilla sandy loam is an imperfectly drained soil developed on sandy loam sediments overlying outwash gravels. This soil chiefly occurs on outwash plains and terraces formed by glacial meltwaters. This soil has a medium to low organic content and often contains more clay and finer sands higher in the A horizons. The B horizons have slight clay accumulations. There is typically a high proportion of cobbles at the interface of the B and C horizons. This soil has low fertility and a seasonally high water table. This soil has been documented to possess the following profile (Presant and Wicklund 1971:27, 78-79):

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Colour</th>
<th>Texture/structure</th>
<th>Profile depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ap</td>
<td>Very dark grayish brown (10YR 3/2 [moist])</td>
<td>Sandy loam; weak, medium granular; very friable; neutral</td>
<td>0-18 cm</td>
</tr>
<tr>
<td>Aegj1</td>
<td>Very dark grayish brown (10YR 3/2 [moist]); yellowish brown (10YR 5/4 [moist])</td>
<td>Sandy loam; many, medium, distinct mottles; weak, medium granular friable; neutral</td>
<td>18-25 cm</td>
</tr>
<tr>
<td>Aegj2</td>
<td>Brown (10YR 5/3 [moist]); yellowish brown (10YR 5/4 [moist])</td>
<td>Sandy loam; few, fine, faint mottles; single grain; loose; mildly alkaline</td>
<td>25-36 cm</td>
</tr>
<tr>
<td>Btgj</td>
<td>Dark yellowish brown (10YR 4/3.5 [moist]); yellowish brown (10YR 5/4 [moist])</td>
<td>Sandy loam; few, medium, faint mottles; compound, weak, medium subangular blocky and moderate, fine subangular and angular blocky; friable; neutral</td>
<td>36-51 cm</td>
</tr>
<tr>
<td>IICk</td>
<td>Dark brown (10YR 4/3 [moist])</td>
<td>Gravelly sandy loam; single grain; loose; some cobbles, mainly in stoneline along top of horizon; moderately effervescent; mildly alkaline</td>
<td>51+</td>
</tr>
</tbody>
</table>

Colwood loam is a poorly drained soil that was deposited in shallow lakes and streams. Deposits are very deep. This soil has a high organic content and is often capped by several centimetres of colluviums. This soil contains expanding-type clay minerals. pH is typically neutral. This soil has been documented to possess the following profile (Presant and Wicklund 1971: 28, 79):

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Colour</th>
<th>Texture/structure</th>
<th>Profile depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ah</td>
<td>Black (10YR 2/1 [moist])</td>
<td>Loam; moderate, fine granular structure; very friable; weakly calcareous; neutral</td>
<td>0-18 cm</td>
</tr>
<tr>
<td>Aeg1</td>
<td>Dark grayish brown (2.5Y 4/2 [moist])</td>
<td>Loam; compound, weak, medium subangular blocky and weak, fine platy; friable; weakly calcareous; neutral</td>
<td>18-33 cm</td>
</tr>
<tr>
<td>Aeg2</td>
<td>Light olive gray (5Y 6/2 [moist]); yellowish brown (10YR 5/4 [moist])</td>
<td>Loam; many, medium, prominent mottles; compound, weak, coarse subangular blocky; friable; neutral</td>
<td>33-51 cm</td>
</tr>
</tbody>
</table>
Horizon Colour Texture/structure Profile depth
Bg Light gray (5Y 6/1 [moist]); yellowish brown (10YR 5/8 [moist]); mottle Loam; many, medium, prominent mottles; weak, coarse and medium subangular blocky; friable; some gastropod shells near base of horizon; moderately calcareous; neutral 51-86 cm
Ckg Gray (5Y 5.5/1 [moist]; yellowish brown (10YR 5/6 [moist]); mottle Loam; sand layers at depth; many, medium, prominent mottles; compound, weak, coarse platy and moderate, medium subangular blocky; friable; strongly calcareous; mildly alkaline 86+

St. Jacobs loam is a well drained soil. This soil has a moderately high organic content. pH is typically basic. Free iron concentrations are noted in the B horizon. This soil has a relatively low water holding capacity. St. Jacobs loam has been documented to possess the following profile (Presant and Wicklund 1971: 38, 93-94):

Horizon Colour Texture/structure Profile depth
Ap Very dark grayish brown (10YR 3/2 [moist]) Silt loam; moderate, medium granular; friable 0-13 cm
Ae1 Dark yellowish brown (10YR 4/4 [moist]) Silt loam; weak, medium, subangular blocky; friable 13-23 cm
Ae2 Dark brown (10YR 4/3 [moist]) Loam; weak, medium granular; very friable 23-30 cm
IIBt Dark brown (10YR 3/4 [moist]) Gravelly sandy loam; weak, medium granular; friable; much fine gravel and some medium and coarse gravel to cobble size 30-58 cm
IICk Mixed yellowish brown (10YR 5/4 [moist]) and dark yellowish brown (10YR 4/4 [moist]) Very gravelly loamy sand; single grain; loose; very much coarse gravel and some cobbles; very strongly calcareous 58+ cm

Tuscola loam is an imperfectly drained soil that occurs in low-lying and depressional areas. This soil has a medium organic content. pH is typically neutral. This soil has a seasonally high water table and relatively high erodibility. This soil has been documented to possess the following profile (Presant and Wicklund 1971: 39, 95):

Horizon Colour Texture/structure Profile depth
Ap Very dark brown (10YR 2/2 [moist]) Loam; moderate, fine and medium granular; friable; neutral 0-18 cm
Aegj1 Dark brown (10YR 4/2.5 [moist]); yellowish brown (10YR 5/4 [moist]); mottle Loam; few, fine, distinct mottles; weak, medium subangular blocky; friable; neutral 18-25 cm
Aegj2 Brown (10YR 5/3 [moist]); 10YR 5/4 [moist]; mottle Sandy loam; common, fine, faint mottles; weak fine platy structure; very friable; a little fine gravel; neutral 25-38 cm
<table>
<thead>
<tr>
<th>Horizon</th>
<th>Colour</th>
<th>Texture/structure</th>
<th>Profile depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Btjg</td>
<td>Brown (10YR 5/3 [moist]); yellowish brown (10YR 5/4 [moist]) [mottle]</td>
<td>Sandy loam; common, medium, faint mottle; compound, weak, coarse, subangular blocky and moderate, medium platy and fine subangular blocky; friable; alkaline</td>
<td>38-51 cm</td>
</tr>
<tr>
<td>Ckg</td>
<td>Pale brown (10YR 6/5 [moist]); brownish yellow (10YR 6/6 [moist]) [mottle]; greenish gray (6GY 6/1 [moist]) [carbonate accumulation]</td>
<td>Silt loam; common, medium, prominent mottles; amorphous; friable; moderately effervescent; some fine patches and streaks of carbonate accumulation; mildly alkaline</td>
<td>51+ cm</td>
</tr>
</tbody>
</table>
STAGE 2 PROPERTY ASSESSMENT
GRAND RIVER TRANSIT (GRT) NORTHFIELD DRIVE FACILITY
PART OF LOT 63, GERMAN CO. TRACT
(FORMER TOWNSHIP OF WATERLOO, COUNTY OF WATERLOO)
CITY OF WATERLOO, REGIONAL MUNICIPALITY OF WATERLOO, ONTARIO

ORIGINAL REPORT

Prepared for:

Region of Waterloo
150 Frederick Street
Kitchener, ON N2G 4J3
T 519-575-4433

Archaeological Licence P1066 (Lytle)
Ministry of Tourism, Culture and Sport PIF# P1066-0006-2016
ASI File: 16EA-065

22 June, 2016
Stage 2 Property Assessment
Grant River Transit (GRT) Northfield Drive Facility
Part of Lot 63, German Co. Tract
Former Township of Waterloo, County of Waterloo
City of Waterloo, Regional Municipality of Waterloo, Ontario

EXECUTIVE SUMMARY

ASI was contracted by the Region of Waterloo to conduct a Stage 2 Property Assessment as part of the Municipal Class Environmental Assessment of the Grand River Transit (GRT) Northfield Drive Facility within the city of Waterloo. Specifically, this study has been commissioned to assess a portion of the project area recommended previously as requiring a Stage 2 assessment prior to any proposed impacts.

A Stage 1 Archaeological Assessment was previously completed to review background research and assess archaeological potential for the project footprint. ASI completed this assessment and the results were summarized in a report submitted to the Ministry of Tourism, Culture and Sport (MTCS). The Stage 1 assessment determined that sections of the study area had been subject to extensive and deep land alterations that have damaged the integrity of any potential archaeological resources. However, a large portion in the eastern half of the project area was considered to possess potential for archaeological resources; a Stage 2 assessment was recommended prior to any ground-disturbing activities.

The Stage 2 Property Assessment was conducted on April 19-21 and May 2, 2016 in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists (S & G). The entire Stage 2 study area, totaling approximately 2.25 ha, was subject to test-pit survey at five-metre and judgemental ten-metre intervals, as deemed appropriate. Two pre-contact Aboriginal findspots, P1 and P3, were identified during the survey. However, neither of these findspots meets the criteria for cultural heritage value or interest (CHVI) required for Stage 3 Site-Specific Assessment.

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

1. Findspots P1 and P3 do not meet the S & G criteria for cultural heritage value or interest, therefore no further archaeological assessment is required for either location;

2. The study area for the Grand River Transit (GRT) Northfield Drive Facility has been fully documented and no further archaeological assessment is required on these lands; and,

3. Should the proposed work extend beyond the current study area, then further archaeological assessment must be conducted to determine the archaeological potential of the surrounding lands.
PROJECT PERSONNEL

Senior Project Manager: Andrew Riddle, PhD [MTCS licence P347]
   Senior Archaeologist, Manager (Project West)  
   Environmental Assessment Division

Project Coordinator: Sarah Jagelewski, Hon BA [MTCS licence R405]  
   Staff Archaeologist, Assistant Manager  
   Environmental Assessment Division

Project Manager (Licencene): Jessica Lytle, MSc [MTCS licence P1066]  
   Staff Archaeologist

Field Directors: Robert Wojtowicz, BA [MTCS licence R291]  
   Staff Archaeologist
   Elizabeth Matwey, BSc [MTCS licence R390]  
   Zachary Shaw, BA [MTCS licence R1086]

Field Archaeologists: Dan Slavik  
   Nicole Belanger  
   Simon Belanger  
   Allan Jones  
   Jackson Darby

First Nations Monitors:  Mississaugas of the New Credit First Nation
   Chris Tobicoe  
   Sandy Sault  
   Logan Martin-King  
   Gilbert LaForme

Report Preparation: Jamie Houston-Dickson, MA [MTCS licence R398]

Artifact Processor: Karen Hansen, BA  
   Laboratory Assistant

Artifact Analysis: Andrew Riddle

Graphics: Blake Williams, MLitt [MTCS licence P383]  
   Geomatics Specialist, Staff Archaeologist

Report Reviewers: Andrew Riddle  
   Robert Pihl, MA, CAHP (MTCS licence P057)  
   Partner and Senior Archaeologist,  
   Manager, Environmental Assessment Division
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1.0 PROJECT CONTEXT

ASI was contracted by the Region of Waterloo to conduct a Stage 2 Property Assessment as part of the Municipal Class Environmental Assessment (EA) of the Grand River Transit (GRT) Northfield Drive Facility in the City of Waterloo (Figure 1). Specifically, this assessment has been commissioned to investigate a portion of land approximately 2.25 ha in size in the east half of the project study area that was recommended for further archaeological investigation during the previous Stage 1 Archaeological Assessment (Figure 2) (ASI 2016:12, Recommendation 1; PIF P128-0113-2015).

The objectives of this report are:

- To document all archaeological resources in the study area;
- To determine whether the study area contains archaeological resources with cultural heritage value or interest that would require further assessment; and,
- To recommend appropriate Stage 3 assessment strategies for any archaeological sites identified.

This report describes the Stage 2 Property Assessment that was conducted for this project and is organized as follows: Section 1.0 describes the project context and summarizes the background study that was conducted to provide the historical and archaeological contexts for the project study area; Section 2.0 describes the field methods used during the property assessment; Section 3.0 summarizes the results of the property assessment and describes any archaeological resources recovered during the property assessment; Section 4.0 provides an analysis of the property assessment results, evaluates the archaeological potential of the study area, and provides recommendations; and the remaining sections contain other report information that is required by the Standards and Guidelines for Consultant Archaeologists (S & G) (Ministry of Tourism and Sport [MTC] 2011), as administered by the Ministry of Tourism, Culture and Sport (MTCS), e.g., advice on compliance with legislation, works cited, mapping and photo documentation.

1.1 Development Context

All work has been undertaken as required by the Environmental Assessment Act, RSO (1990) and regulations made under the Act, and is therefore subject to all associated legislation. This project is being conducted under the Municipal Class EA process.

All activities carried out during this assessment were completed in accordance with the Ontario Heritage Act (Ministry of Culture 2005), and the S & G. Permission to carry out all activities necessary for the completion of the assessment was granted to ASI by the Region on August 13, 2015.

1.2 Historical Context

A comprehensive summary of the pre-contact Aboriginal and Euro-Canadian occupations of the Waterloo region is presented in the Stage 1 report (ASI 2016). To summarize, the background research demonstrates that the study area has been occupied by Aboriginal peoples for thousands of years and is
located on the periphery of a documented Iroquoian settlement cluster. It was subsequently utilized by the Seneca and Mississauga for resource extraction and included in the treaty lands granted to the Six Nations Iroquois, although the geographical extent of this treaty is presently debated.

The background research and historic mapping also demonstrates that the study area is located in the Former Township of Waterloo, County of Waterloo in part of Lot 63, German Company Tract. The historic maps indicate that the study area is situated in proximity to two historic transportation routes.

1.3 Archaeological Context

1.3.1 Previous Archaeological Research

According to a review of the Ontario Archaeological Sites Database (OASD), six previously registered archaeological sites are located within one kilometre of the study area (MTCS 2016).

<table>
<thead>
<tr>
<th>Borden #</th>
<th>Site Name</th>
<th>Cultural Affiliation</th>
<th>Site Type</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>AjHd-2</td>
<td>n/a</td>
<td>Aboriginal (Indeterminate)</td>
<td>Findspot</td>
<td>Pearce 1985</td>
</tr>
<tr>
<td>AjHd-3</td>
<td>Harvey Martin</td>
<td>Euro-Canadian (1835-present)*</td>
<td>Farmstead</td>
<td>Pearce 1985</td>
</tr>
<tr>
<td>AjHd-21</td>
<td>Black Walnut III</td>
<td>Euro-Canadian (late nineteenth century)*</td>
<td>Homestead</td>
<td>ASI 1989</td>
</tr>
<tr>
<td>AjHd-22</td>
<td>n/a</td>
<td>n/a</td>
<td>Findspot</td>
<td>ASI 1989</td>
</tr>
<tr>
<td>AjHd-23</td>
<td>Black Walnut V</td>
<td>Aboriginal (Middle Archaic ca. 8,500-4,500 BP)</td>
<td>Findspot</td>
<td>ASI 1989</td>
</tr>
<tr>
<td>AjHd-31</td>
<td>n/a</td>
<td>Aboriginal (Middle Archaic ca. 8,500-4,500 BP)</td>
<td>Findspot</td>
<td>ASI 1993</td>
</tr>
</tbody>
</table>

N.B. – Dates based on Ferris 2013:13
* – Dates based on MTCS 2016

In addition to the Stage 1 Archaeological Assessment for the project (ASI 2016), the background research identified one previous assessment that had been conducted on lands situated within 50 m of the current GRT Northfield Drive Facility study area. ASI (1989) conducted a Stage 1-2 Archaeological Assessment of the Black Walnut and Foxpoint Subdivisions in part of Lot 63, City of Waterloo, Regional Municipality of Waterloo under the project direction of Dr. Ron Williamson (Licence No. 89-130B). No lands within the GRT Northfield Drive Facility study area were assessed during this archaeological assessment. The 1989 assessment identified a number of archaeological sites, however none are located within 50 m of the current study area and only one (Site AjHd-21) is within 300 m of the study area.

1.3.2 Current Land Use and Field Conditions

The overall project study area is situated at the northern boundary of the City of Waterloo. It is bounded to the south by light density industrial areas and residential suburbs beyond, and to the north by rural lands with agricultural land use, above the valley of the Conestogo River. More specifically, it is situated along the northern limit of Lot 63, German Co. Tract, and the study area is bounded to the north and
south, respectively, by the road right-of-ways (ROWs) of University Avenue East and Northfield Drive East (Figures 1-2).

The larger western portion of the project area consists of a former industrial facility and associated grounds (parking areas, storm water management areas, utility yards), while the eastern triangular portion currently consists of flat, closed scrubland. Due to deep and extensive land disturbance on the western industrialized portion documented during the Stage 1 assessment, only the eastern triangular scrubland area was considered to possess archaeological potential and subsequently recommended for further archaeological assessment (ASI 2016:12, Recommendations 1-2); therefore, only this portion of the property is defined as the current Stage 2 study area. It should be noted that the Stage 1 assessment identified certain areas of disturbance within the scrubland area that were not recommended for further investigation, however during the Stage 2 assessment these areas were included in the study area in order to confirm the level and extent of the disturbance (Figure 2). The Stage 2 study area is approximately 2.25 ha in size.

1.3.3 Physiography

The study area is situated within the Oxford Till Plain physiographic region of southern Ontario, in a former spillway (Chapman and Putnam 1984). The Oxford Till Plain is located in the centre of southwestern Ontario and covers an area of approximately 155,400 ha primarily within Oxford County. The plain is at an approximate elevation of between 305 m and 365 m above sea level. The region consists of a drumlinized till plain formed when glacier advance overrode a pre-existing moraine from a northwesterly direction. The dominant parent material is Middle Devonian limestone, creating a calcareous till. The region contains the headwaters of the Thames River from a swamp within a clay plain. Many of the drainages are misfits within their valleys, existing as small drainages within glacial spillways. These spillways often have gravel deposits or have sufficiently eroded overburden down to bedrock, such that it is conducive for quarrying. The region is marked for being generally good for agriculture, and soils in the region are primarily developed beneath a maple-beech forest (Chapman and Putnam 1984:143-144).

Spillways are the former glacial meltwater channels. They are often found in association with moraines but in opposition are entrenched rather than elevated landforms. They are often, though not always, occupied by stream courses, the fact of which raises the debate of their glacial origin. Spillways are typically broad troughs floored wholly or in part by gravel beds and are typically vegetated by cedar swamps in the lowest beds (Chapman and Putnam 1984:15).

The surficial geology mapping demonstrates that the study area is underlain by deposits of sand. These sand deposits are glaciofluvial river deposits and delta topset facies (Ontario Geological Survey 2010). Soil drainage information indicates that the study area includes well-drained and imperfectly drained soils. Soils within the study area consist of: Caledon sandy loam with Camilla sandy loam and St. Jacobs loam; and, Tuscola loam with Colwood loam and Brant loam (Department of Agriculture and Agri-Food Canada 1996).

The study area is located in proximity to a tributary of the Conestogo River, itself a tributary of the Grand River. The Grand River drains an area of approximately 673,397 ha. Its main stream begins northeast of Dundalk at 526 m above sea level and flows for approximately 290 km to Lake Erie at Port Maitland (Chapman and Putnam 1984:95). The Grand River was an important transportation route and a critical resource extraction area for generations of Aboriginal people. Historically, the Grand River has been
utilized as a navigable waterway, as a power source (such power sites served as settlement nuclei), and above Brantford as a course for driving logs (Chapman and Putnam 1984:98). It is also the focus of the Haldimand Tract; Joseph Brant was awarded 30 miles (48 km) on either side of the river (Johnston 1964:35-38; Lytwyn 2005).

### 1.3.4 Summary of Archaeological Context

The review of archaeological work conducted in the area demonstrated that six previously registered archaeological sites are located within one kilometre of the study area. The study area is located adjacent to a tributary of the Conestogo River, and the historical context demonstrates that the study area is located in proximity to two historic transportation routes. These criteria are indicative that the study area possesses potential for Aboriginal and Euro-Canadian archaeological resources, depending on soil conditions and the degree to which soils have been subject to deep disturbance.

### 2.0 FIELD METHODS

The Stage 2 Property Assessment was conducted on April 19-21 and May 2, 2016 under the field direction of Robert Wojtowicz (R291), Elizabeth Matwey (R390), and Zachary Shaw (R1086), in accordance with the Ontario Heritage Act and the S & G. Fieldwork was conducted only when the weather and lighting conditions permitted good visibility of land features, as per the S & G, Section 2.1, Standard 3.

The Stage 2 study area, measuring approximately 2.25 ha in size, is comprised of the triangular section of scrubland in the eastern portion of the larger GRT Northfield Drive Facility project area (Figures 2-3). The Stage 1 assessment indicated areas of disturbance with no potential for archaeological resources at the southern corner and around the perimeter of the scrubland section adjacent to the right-of-ways (ROWs) of University Avenue and Northfield Drive East (ASI 2016; PIF P128-0113-2015). However, as best practice, these areas were included in the Stage 2 study area in order to determine the nature and extent of the ground disturbance and to confirm no archaeological potential remained (Figure 2).

The closed, heavy brush and weed growth precluded ploughing, therefore the entire study area was assessed by test-pit survey, in accordance with the procedures outlined in the S & G, Section 2.1.2 (Plates 1-6). All test pits were excavated by hand to a minimum of 30 centimetres in diameter and, where possible, into the first five centimetres of subsoil. Test pits were examined for stratigraphy, cultural features, and evidence of fill, and all excavated soil was screened through six millimetre mesh to facilitate artifact recovery. Afterwards, all test pits were backfilled and their locations were recorded on field maps. Factors that precluded the excavation of test pits (i.e. previous disturbance and low and wet conditions) were noted and the areas mapped and photographed, as per the S & G, Section 2.1, Standard 6, and Section 7.8.6. Approximately 95% of the study area was assessed at five-metre intervals in accordance with the procedures outlined in the S & G, Section 2.1.2, Standard 2 (Plates 1-5, 7-9). The remaining five percent of the study area, situated in the southern corner, was judiciously test-pitted at ten-metre intervals in order to confirm deep and extensive ground disturbance from previous construction activities, as per the S & G, Section 2.1.8, Standards 1-2 (Plates 6 and 10; Figure 3).

Two archaeological findspots, identified as P1 and P3, were identified during the course of the initial test pit survey at five-metre intervals and were subject to further intensified survey; a potential findspot designated P2 was later deemed non-cultural prior to intensification. In accordance with the S & G,
Section 2.1.3, Standard 2 (Option A), intensification at each findspot location involved the excavation of an additional eight test pits at 2.5 m intervals surrounding the positive test pit followed by the excavation of a one-metre-square test unit over top of the original positive test (see Supplementary Documentation, Figure 1). In accordance with the S & G, Section 3.2.2, each one-metre-square test unit was hand-excavated at least five centimetres into sterile subsoil or until a potential cultural feature was encountered, and all soil fills were screen through six-millimetre wire mesh to facilitate artifact recovery (Plates 11 and 13). The subsoil and walls of the test units were trowelled in order to identify any potential features, and the north wall profiles of the units were drawn and photographed (Plates 12 and 14). The test units were backfilled upon their completion.

3.0 RECORD OF FINDS

The Stage 2 study area consisted of a triangular section of scrubland approximately 2.25 ha in size within the eastern half of the GRT Northfield Drive Facility project property (Figure 2). In addition to the disturbed southern corner of the study area surveyed at judgemental intervals, the main portion of the study area that was test-pitted at five-metre intervals confirmed evidence of further ground disturbance adjacent to the road right-of-ways (ROWs) around the perimeter of the property. However, the extent of disturbance was notably less than previously expected from the Stage 1 assessment (ASI 2016; PIF P128-0113-057), particularly along the northern and western limits of the study area (Figure 3). The majority of the study area (approximately 1.90 ha, or 85%) was undisturbed or only partially-disturbed with intact topsoil deposits.

The typical test pit profile for the undisturbed majority of the study area consisted of a very dark brown (10YR 2/2) sandy loam topsoil overlying a sterile subsoil of dark yellowish-brown (10YR 3/6) sand with minor silt and sand content (Plate 7); this subsoil matrix is found throughout the undisturbed and disturbed portions of the study area. The undisturbed test pits had an average depth of 35 cm. The test pits in the disturbed areas along the perimeter of the study area contained a single layer of thoroughly-mottled topsoil and subsoil fill overlying the sterile subsoil at an average depth of 35-40 cm (Plate 8). The exception was a small, low-lying area along the southeast limit in which a layer of the same fill content from the disturbed perimeter test pits had been deposited over a separate, distinct undisturbed topsoil layer described as very dark brown (7.5YR 2/2) moist sandy loam with an average thickness of 25 cm (Plates 5 and 9; Figure 3). The disturbed fill layer, averaging 50 cm in depth, was likely spread over the undisturbed topsoil in order to even out this low-lying area of the property, creating a filled depression. The test pit profiles from the southern corner where survey was conducted at judgemental ten-metre intervals demonstrated layers of gravel and gray sand fill to an average depth of 37 cm overlying a compacted layer of the same disturbed mottled topsoil and subsoil fill found elsewhere in the study area, which averages 20 cm in this location (Plates 6 and 10; Figure 3). The gravel and sand layers were likely deposited for use as a construction staging and storage pad associated with the adjacent industrial infrastructure in the western half of the project area (Figure 2), activities which would have resulted in the compaction of the underlying topsoil/subsoil fill layer, which was not documented elsewhere in the study area.

Two pre-contact Aboriginal findspots, designated P1 and P3, respectively, were identified during the course of the Stage 2 assessment (see Supplementary Documentation, Figure 1). Situated in the southeast portion of the study area, initial test-pit excavation of P1 yielded a single lithic artifact, a secondary retouch flake, while a second lithic artifact, a secondary knapping flake, was recovered from the one-metre-square test unit (Test Unit 1) that was placed over top of the original positive test pit (Test Pit 1) where the first artifact was found. Both artifacts were manufactured from Onondaga chert (Table 2).
Documentation of the north wall profile of Test Unit 1 at P1 demonstrates the very dark brown (10YR 2/2) sandy loam topsoil matrix found throughout the undisturbed areas of the site; however, while the majority of the subsoil within the unit was comprised of the dark yellowish-brown (10YR 3/6) sand typical of the study area, the northwest corner of the unit exhibited a distinct change in the subsoil consistency to a yellowish-brown (10YR 5/8) sand with fine natural gravel and clay inclusions (Plate 12). No subsurface cultural features were encountered during excavation of Test Unit 1 at P1.

Table 2: Artifact Catalogue for Findspot P1

<table>
<thead>
<tr>
<th>Cat #</th>
<th>Context</th>
<th>Stratum</th>
<th>Type</th>
<th>Material</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>Test Pit 1</td>
<td>Topsoil</td>
<td>Secondary Retouch Flake</td>
<td>Onondaga</td>
<td>1</td>
</tr>
<tr>
<td>L2</td>
<td>Test Unit 1</td>
<td>Topsoil</td>
<td>Secondary Knapping Flake</td>
<td>Onondaga</td>
<td>1</td>
</tr>
</tbody>
</table>

P3 is situated near the northern limit of the property. A single lithic artifact, a secondary knapping flake manufactured from Onondaga chert, was recovered from the initial test-pit survey at five-metre intervals (Table 3); the intensified test-pitting and the excavation of a one-metre-square test unit over top of the positive test pit (Test Pit 1) at P3 did not yield any additional artifacts. Documentation of the north wall profile of the test unit (Test Unit 1) at P3 demonstrates the same very dark brown (10YR 2/2) sandy loam topsoil and dark yellowish-brown (10YR 3/6) sand subsoil typical of the undisturbed portion of the study area. A small deposit of black (10YR 2/1) silty loam present within the subsoil in the northeast corner of the unit was documented in the field to be disturbance from a root burn (Plate 14). No subsurface cultural features were encountered during excavation of Test Unit 1 at P3.

Table 3: Artifact Catalogue for Findspot P3

<table>
<thead>
<tr>
<th>Cat #</th>
<th>Context</th>
<th>Stratum</th>
<th>Type</th>
<th>Material</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>Test Pit 1</td>
<td>Topsoil</td>
<td>Secondary Knapping Flake</td>
<td>Onondaga</td>
<td>1</td>
</tr>
</tbody>
</table>

3.1 Documentary and Material Record

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

Table 4 provides an inventory and location of the documentary and material record for the project in accordance with the S & G, Sections 6.7 and 7.8.2.3.

Table 4: Inventory of Documentary and Material Record

<table>
<thead>
<tr>
<th>Document/Material</th>
<th>Location</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Field Notes, Annotated Field Maps, GPS Logs, etc.</td>
<td>ASI, 528 Bathurst Street, Toronto, ON M5S 2P9</td>
<td>Field notes hard copy, GPS data (digital)</td>
</tr>
<tr>
<td>Field Photography (Digital)</td>
<td>ASI, 528 Bathurst Street, Toronto, ON M5S 2P9</td>
<td>Stored on ASI network servers and/or CD-ROM</td>
</tr>
</tbody>
</table>
4.0 ANALYSIS AND CONCLUSIONS

A Stage 2 Property Assessment in the form of a test-pit survey was conducted on all lands within the GRT Northfield Drive Facility project area deemed to possess archaeological potential during the previous Stage 1 Archaeological Assessment (ASI 2016: Recommendation 1; PIF P128-0113-057). Some outlying areas identified during the Stage 1 assessment as previously disturbed with no archaeological potential were also included within the Stage 2 study area in order fully survey and confirm the extent of any ground disturbance within the assessment area (Figure 2). The Stage 2 study area was approximately 2.25 ha in size.

The Stage 2 assessment was conducted on April 19-21 and May 2, 2016 in accordance with the Ontario Heritage Act and the S & G. Approximately five percent of the study area demonstrated heavy ground disturbance and was subject to judgemental test-pitting at ten-metre survey intervals, while the remaining 95% of the study area was subject to test-pit survey at five-metre intervals. Some additional areas of disturbance were confirmed around the perimeter of the study area adjacent to the road ROWs, however the majority of the study area (approximately 85%) was documented to be undisturbed or only partially-disturbed (Figure 3).

Two pre-contact Aboriginal findspots were identified during the Stage 2 assessment (see Supplementary Documentation, Figure 1). P1 consists of two non-diagnostic lithic artifacts, while P3 consists of a single non-diagnostic lithic artifact. Due to the indeterminate nature of the artifacts, the potential cultural or temporal affiliations of these findspots cannot be ascertained. In accordance with the S & G, Section 2.2, Standard 1a(ii), neither P1 nor P3 meets the requirements for Stage 3 Site-Specific Assessment, therefore no further archaeological assessment is required.

5.0 RECOMMENDATIONS

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

1. Findspots P1 and P3 do not meet the S & G criteria for cultural heritage value or interest, therefore no further archaeological assessment is required for either location;

2. The study area for the Grand River Transit (GRT) Northfield Drive Facility has been fully documented and no further archaeological assessment is required on these lands; and,

3. Should the proposed work extend beyond the current study area, then further archaeological assessment must 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 MTCS should be immediately notified.

6.0 ADVISE ON COMPLIANCE WITH LEGISLATION

In addition, the following advice on compliance is provided:

- 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*, RSO 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 field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the 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 field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*;

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*; 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.

7.0 BIBLIOGRAPHY

ASI (Archaeological Services Inc.)


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8.0 IMAGES

Plate 1: View west, showing field conditions and test-pit survey in undisturbed portion of study area.

Plate 2: View north, showing field conditions and test-pit survey in undisturbed portion of study area.

Plate 3: View southeast, showing field conditions along disturbed perimeter of study area adjacent to road right-of-way.

Plate 4: View west, showing field conditions and test-pit survey along disturbed perimeter of study area adjacent to road right-of-way.

Plate 5: View northeast, showing low area with fill deposited overtop of undisturbed topsoil.

Plate 6: View south, showing heavily-disturbed southern corner of study area assessed at judgmental intervals.
Plate 7: View of representative test pit profile within undisturbed portion of study area.

Plate 8: View of representative test pit profile within disturbed perimeter of study area.

Plate 9: View of representative test pit profile within low area of fill overlying undisturbed topsoil.

Plate 10: View of representative test pit profile for heavily disturbed southern corner of study area.
Plate 11: View west, showing excavation of Test Unit 1 at findspot P1.

Plate 12: View north, showing north wall profile of Test Unit 1 at findspot P1.

Plate 13: View east, showing excavation of Test Unit 1 at findspot P3.

Plate 14: View north, showing north wall profile of Test Unit 1 at findspot P3.
9.0 MAPPING
Figure 1: Location of Study Area
Figure 2: Archaeological Assessment Summary

Project Area
Stage 2 Study Area (Test-Pit Survey)

- No Potential
- Arterial
- Local / Street
- Potential
- Water

Base:
Ortho
Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Archaeological & Cultural Heritage Services
528 Bathurst Street, Toronto, ONTARIO M5S 2P9
416-966-3649 | 416-966-9721 | asiheritage.ca

Archaeological & Cultural Heritage Services
528 Bathurst Street, Toronto, ONTARIO M5S 2P9
416-966-3649 | 416-966-9721 | asiheritage.ca

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Project Area
Stage 2 Study Area (Test-Pit Survey)

- No Potential
- Arterial
- Local / Street
- Potential
- Water

Base:
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416-966-3649 | 416-966-9721 | asiheritage.ca

Archaeological & Cultural Heritage Services
528 Bathurst Street, Toronto, ONTARIO M5S 2P9
416-966-3649 | 416-966-9721 | asiheritage.ca

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Figure 2: Archaeological Assessment Summary
Figure 3: Stage 2 Property Assessment Results

Stage 2 Study

Disturbed: Test Pit Survey at 10 m Intervals
Disturbed: Test Pit Survey at 5 m Intervals
Low Area with Fill Overlying Undisturbed Topsoil
Undisturbed: Test Pit Survey at 5 m Intervals

BASE:
- Arterial
- Local / Street
- Water

Ortho
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Archaeological & Cultural Heritage Services
528 Bathurst Street, Toronto, ONTARIO, M5S 2P9
416-966-9499 | 416-966-9721 | archaitage.ca

UNIVERSITY AVE E
NORTHFIELD DR E

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