From: King, Frank <email address removed>
Sent: August 9, 2013 11:19 AM
To: Haddon,David [CEAA]
Cc: Allan Webster; Myles,Debra [CEAA]; McGee, Kelly: CNSC; Virtue,Robyn-Lynne [CEAA]; a.webster<email address removed>
Subject: RE: Document Request from the DGR Joint Review Panel

David,
Here is the requested report.

Frank King

From: Haddon,David [CEAA] [mailto:David.Haddon@ceaa-acee.gc.ca]
Sent: August-08-13 10:14 AM
To: King, Frank
Cc: Allan Webster; Myles,Debra [CEAA]; McGee, Kelly; Virtue,Robyn-Lynne [CEAA]
Subject: Document Request from the DGR Joint Review Panel

Mr. King,

The Deep Geologic Repository Joint Review Panel is requesting that the document below be provided so that it can be reviewed and posted on the public registry for the Project:

1. Stage 1 – 2 Archaeological Assessment OPG 's Deep Geologic Repository Project for Low & Intermediate Level Waste, Part Lots 18-23, Lake Range, Geographic Township of Bruce, Now Municipality of Kincardine, Bruce County, Ontario. Golder Associates, June 14, 2013

As described in your letter of June 17, 2013 (CEAR #1183), this report was submitted to the Ontario Ministry of Tourism, Culture and Sport, but has not been provided to the Panel.

If you have any questions about the above request, please do not hesitate to contact me at the coordinates below.

Regards,

David Haddon
A/ Panel Manager
Canadian Environmental Assessment Agency
CEAA, 160 Elgin St., 22nd Floor, Ottawa ON K1A 0H3
David.Haddon@ceaa-acee.gc.ca
Telephone - 613-957-0716
Facsmile - 613-957-0935
Government of Canada

ORIGINAL REPORT

June 14, 2013

STAGE 1 – 2 ARCHAEOLOGICAL ASSESSMENT

OPG's Deep Geologic Repository Project for Low & Intermediate Level Waste Part Lots 18-23, Lake Range Geographic Township of Bruce, Now Municipality of Kincardine Bruce County, Ontario

Prepared for:
Nuclear Waste Management Organization
22 St. Clair Ave. E.
Sixth floor
Toronto, ON M4T 2S3

Licensee: Peter Popkin, Ph.D., MIfA,

License Number: P362

PIF Number: P362-044-2013

Report Number: 10-1151-0440

Distribution:

1 copy –- NWMO
1 copy – OPG
1 copy and 1 CD copy –- Ministry of Tourism, Culture and Sport
2 copies –- Golder Associates Ltd.

Golder Associates

Executive Summary

Ontario Power Generation (OPG) is undertaking a multi-year planning and regulatory approvals process for a deep geologic repository (DGR) for the long-term management of low and intermediate level waste. The DGR Project is located on OPG-retained lands, centrally located at the Bruce nuclear site. OPG owns the Bruce nuclear site; however, the majority of the site is controlled, under a leasing agreement by the current operator of the nuclear generating station, Bruce Power. The DGR Project Area is located on Part Lots 18, 19, 20, 21, 22, and 23, Lake Range Concession, in the Geographic Township of Bruce, now the Municipality of Kincardine, Bruce County, Ontario.

This Stage 1 and 2 Archaeological Assessment was undertaken as part of an Environmental Impact Assessment under the *Canadian Environmental Assessment Act* S.C 2012, c. 19, s. 52, (Government of Canada 2012).

The objective of this Stage 1 and 2 Archaeological Assessment was to compile available information about the known and potential cultural heritage resources within the project location (Project Area) and surrounding area, and to provide specific direction for the protection, management and/or recovery of these resources, consistent with Ministry of Tourism, Culture and Sport (MTCS) guidelines (Government of Ontario 2011).

The Stage 1 background assessment concluded that when archaeological potential criteria were applied to the Project Area, the potential for pre-contact and post-contact Aboriginal sites was moderate to high as, despite the poor soil conditions, the property is situated close to Lake Huron and all of its resources, and there is an historic account of an “Indian portage” route in the vicinity of the Project Area. The potential for historic Euro-Canadian sites was judged to be moderate given the location of the subject property along a historically important transportation route, and the documented house of Francis Smith just outside of the Project Area. Additionally, there is one registered archaeological site within one kilometre of the Project Area; however, the cultural affiliation of that site is not recorded.

The Stage 2 property assessment through test pit survey resulted in the discovery of no cultural artifacts or archaeological sites. Given this, the archaeological potential for this study area was judged to be low and no further archaeological assessment is recommended.

This report is submitted to the MTCS as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18 (Government of Ontario 1990b). The report is reviewed to confirm compliance with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations support the conservation, protection and preservation of the cultural heritage of Ontario.

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

Table of Contents

TABLES

IMAGES

MAPS

Project Personnel

Project Director	Martin Rawlings, P.Eng. (AB)
Project Manager	Alyson Beal, P.Eng.
Licenced Archaeologist	Peter Popkin, Ph.D., MIfA (P362)
Field Director	Jeremie Landry, B.A. (R413)
Field Assistants	Rachael Johnston, B.Sc., Rylan Armet, B.Sc., Robert Fleming, M.A., Stephane LePage, B.A., Zachary Ritchie, Shane Edward Teesdale, Brynn Winter, B.A.
Office Assistants	Greta Francis, B.A.
Report Production	Andrea Jackson, M.Litt. (R370), Kendra Patton, M.A. (R453)
Senior Review	Carla Parslow, Ph.D., Associate (P243)

Acknowledgements

Proponent Contact	Diane Barker, Nuclear Waste Management Organization
Ministry of Tourism, Culture and Sport	Robert von Bitter, B.A.

1.0 PROJECT CONTEXT

1.1 Development Context

Ontario Power Generation (OPG) is undertaking a multi-year planning and regulatory approvals process for a deep geologic repository (DGR) for the long-term management of low and intermediate level waste (L&ILW). Currently, the L&ILW produced as a result of the operation of OPG's nuclear reactors is stored centrally at OPG's Western Waste Management Facility (WWMF) located on the Bruce nuclear site. Although current storage practices are safe and could be continued safely for many decades, OPG's long-term plan is to manage these wastes in a long-term management facility.

The DGR Project is located on OPG-retained lands, centrally located at the Bruce nuclear site controlled by Bruce Power. Under the leasing agreement between OPG and Bruce Power, OPG has retained control of the portion of the Bruce nuclear site, including the WWMF and surrounding lands. The DGR Project Area is located on Part Lots 18, 19, 20, 21, 22, and 23, Lake Range Concession, in the Geographic Township of Bruce, now the Municipality of Kincardine, Bruce County, Ontario (Map 1).

The size of the DGR Project surface facilities will be approximately 30 hectares (ha), including the construction laydown areas and the area designated for waste rock management. The extent of the underground facilities will be approximately 40 ha. The project location (Project Area) encompasses a portion of the Bruce nuclear site that includes internal roads, infrastructure, buildings, marshy areas and woodlots.

This Stage 1-2 archaeological assessment was undertaken as part of an Environmental Impact Assessment under the *Canadian Environmental Assessment Act* S.C 2012, c. 19, s. 52 (Government of Canada 2012).

The objectives of the Stage 1 background assessment were to compile available information about the known and potential cultural heritage resources within the Project Area and surrounding area and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the Ministry of Tourism, Culture and Sport (MTCS) *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 archaeological overview/background study are to:

- provide information about the Project Area geography, history, previous archaeological fieldwork and current land conditions;
- evaluate in detail the Project Area archaeological potential to support recommendations for Stage 2 survey for all or parts of the property; and
- recommend appropriate strategies for Stage 2 survey.

To meet these objectives Golder Associates Ltd. (Golder) archaeologists employed the following research strategies:

- review of relevant archaeological, historic and environmental literature pertaining to the Project Area;
- review of the land use history, including pertinent historic maps;
- examination of the Ontario Archaeological Sites Database to determine the presence of known archaeological sites in and around the Project Area; and

- communication with the MTCS to determine previous archaeological assessments conducted in close proximity to the Project Area.

Golder applied archaeological potential criteria commonly used by the MTCS to determine areas of archaeological potential within the Project Area.

The objectives of the Stage 2 property survey were to provide an overview of archaeological resources on the property and to determine whether any of the resources might be artifacts and archaeological sites with cultural heritage value or interest, and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 2 property assessment are as follows:

- on-site documentation and inventory of all archaeological resources through test pit survey;
- analysis of data to determine the nature of archaeological resources found;
- measuring archaeological resources against set criteria to determine whether they are archaeological sites with cultural heritage value or interest requiring further assessment; and
- recommending, when necessary, the appropriate Stage 3 site-specific assessment for each identified archaeological site.

The Stage 2 property survey was conducted over five days between May 6 and 22, 2013 under the professional archaeological consulting licence P362 issued to Dr. Peter Popkin, by the MTCS (PIF P362-044-2013). The field supervisor was Jeremie Landry, B.A. (R413). Permission to enter the property and to remove artifacts was given by Gord Sullivan, Ontario Power Generation and Derek Wilson, Nuclear Waste Management Organization.

1.2 Historical Context

1.2.1 Post Contact Aboriginal Documentation

The Project Area within Bruce County was most likely occupied by Algonkian-speaking groups who exhibited cultural influence from Iroquoian-speaking groups, both before and after European contact. Generally, the pre-contact Aboriginal presence in much of southern Ontario reflects occupation by Northern Iroquoian speakers. During and following the Iroquois Wars of the mid-17th century and the dispersal of the Iroquoian-speaking Huron-Petun and Neutral, a considerable reduction in the extent of territory occupied by Iroquoian speakers occurred in southern Ontario.

Beginning about 1690, Algonkian speakers from northern Ontario began to move southwards (Ferris 2009; Rogers 1978:761; Schmalz 1991). It has been presumed that occupation of the Bruce County and the Bruce Peninsula before about 1690 would have been by Iroquoians, but the Middle Woodland Saugeen Complex, known best from locations in the Saugeen River valley such as the Donaldson site, is most often interpreted as Algonkian (Fiedel 1999), arguing for an occupation of Bruce County by Algonkian speakers for millennia.

Dating somewhat later than the Donaldson site, Wright (1974:303; Fox in Ellis and Ferris 1990:461) believed that the isolated occurrence of a palisaded village in Bruce County at the Middle Ontario Iroquoian-like (Middleport substage) Nodwell site established a case for immigration by the Iroquoian-speaking Huron. More recently; however, Rankin (2000) has argued that the Nodwell village represents a short-lived sedentary farming

experiment by hunter-gatherers, probably indigenous Algonkian speakers, who may have been ancestral to the Odawa (see also Warrick 2008:159). French missionaries indicated relatively close ties between the Odawa and the Huron-Petun (Fox in Ellis and Ferris 1990; cf. Feest and Feest 1978:773).

Ferris (1999:119-120) has identified the potential misuse in the literature of the designation "Huron" to describe sites in Bruce County. As Koenig (2005:61-61) indicates, there are some who argue that the ancestors of those Algonkian speaking First Nations now occupying the Bruce Peninsula only arrived in the mid-1800s, relating to known relocations from the United States and the establishment of reserves (Surtees 1971:48). In southwestern Ontario; however, members of the Three Fires Confederacy (Chippewa, Ottawa and Potawatomi) immigrated from Ohio and Michigan in the late 1700s (Feest and Feest 1978:778-779). Still, archaeological sites in Bruce County point to much earlier settlement, probably by at least some of their ancestors. To Koenig, "it seems likely … that many of the Saugeen Indians the newcomers joined had ties to the peninsula going back at least several generations" (2005:61). Thus, during the Late Woodland period, there is evidence that the Project Area could have been inhabited by Algonkian- or Iroquoian-speaking groups, or a combination of groups.

While it is difficult to trace ethnic affiliation during the period of initial contact between Aboriginal and European groups, Koenig states that "there is no doubt that some native groups regularly occupied sites on the [Bruce] peninsula at the end of [the early historic] period" (2005:62). Feest and Feest (1978:772-773) imply that the Bruce Peninsula was Odawa territory from 1616 and early 17th century French glass trade beads at the Glen and Cripps sites on the northern tip of the Bruce Peninsula appear to attest to this (Fox in Ellis and Ferris 1990:465-466). Fox not only points to Odawa (or Ottawa) settlement on the Bruce Peninsula during the mid-1600s at Hunter's Point, but to sites in the southern Bruce County littoral such as the Hunter site on the Saugeen Reserve, dating about 1600 (1990:462, 472), as well as the Inverhuron-Lucas site (1990:463). Abandonment of this area by the Odawa seems to have occurred, at least briefly, in the mid-1600s due to the Iroquois Wars (Ibid. 1990:472).

By 1690, Algonkian speakers from the north appear to have begun to repopulate Bruce County (Rogers 1978:761). This is the period in which the Mississaugas are known to have moved into southern Ontario and the Lower Great Lakes watersheds (Konrad 1981). Although noted as "MIS" (i.e., Mississauga), Tanner (1987: Plate 13) shows First Nation occupation at the mouth of the Saugeen River in the late 1700s. Villages, sometimes temporary, fishing camps and portage trails were documented by surveyors and other Euro-Canadian visitors and settlers (Koenig 2005:62).

In 1818, First Nations people were living at the mouth of the Saugeen when the area was visited by a fur trader from Lower Canada, Pierre Piche (Ibid. 2005:57). The Fishing Islands, just off the Huron shore, were charted in 1822 by Captain Bayfield as 'Ghegheto' (Ibid. 2005:57). Fox (Ellis and Ferris 1990:462) notes the presence of earlier, possibly Odawa, 'Puckasaw pits', thought to represent storm shelters (1990:470), on these islands, similar to those found on the Bruce Peninsula. A human burial was discovered on the islands in the 1830s, reflecting earlier Aboriginal occupation (Koenig 2005:62). Missionaries arrived in the area in 1828 (Ibid. 2005:64). In the 1830s, the village at Saugeen was inhabited by more than 300 people, but large-scale commercial fishing by Euro-Canadians was already underway in the area (Ibid. 2005). The Chippewas of "Saginge" River, along with Lieutenant-Governor Sir John Colborne, are reported to have granted fishing rights to the Huron Fishing Company, based in Goderich (Anonymous 1839; Fitzgerald 2004:3).

The nature of their settlement size, population distribution, and material culture shifted as European settlers encroached upon their territory. However, despite this shift, "written accounts of material life and livelihood, the

correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to Iroquoian systems of ideology and thought" (Ferris 2009:114). As a result, First Nation peoples of Southern Ontario have left behind archaeologically significant resources throughout Southern Ontario, which show continuity with past peoples, even if they have not been recorded in historical Euro-Canadian documentation.

The Project Area is situated within the Municipality of Kincardine (within the former Bruce Township), Bruce County, Ontario. The area is included in the Euro-Canadian historic record as part of Treaty Number 45½, which incorporates, at least in part, the historic counties of Bruce, Grey, Huron and Wellington. On August 9, 1836, Sir Francis Bond Head, the Lieutenant-Governor of Upper Canada, met with the Saugeen First Nation at Manitowaning and submitted a document for their consideration which read in part:

> *Sir Francis Bond Head, Lieut.-Governor of Upper Canada, met on August 9, 1836, at Manitowaning… the Saukings residents south of Owen Sound. <To the Saugeen> I now propose that you should surrender to your Great Father, the Sauking territory that you presently occupy, and that you shall repair either to this island <Manitoulin> or to that part of your territory which lies on the north of Owen Sound upon which proper houses shall be built for you, and proper assistance given to enable you to become civilized and to cultivate land which your Great Father engages for ever to protect for you from the encroachment of the whites.*
>
> (Morris 1943: 27-29)

While it is difficult to exactly delineate treaty boundaries today, Map 2 provides an approximate outline of the limits of Treaty Number 45½.

1.2.2 Historic Euro-Canadian Documentation

The first map to depict the Lake Huron coast was created by sulpician priest Rene-Francois de Brehant de Galinee in 1670 as he and fellow priest Francois Dollier de Casson became the first Europeans recorded to have travelled along the coast (Coyne 1903). Other early historic maps of the area include the 1788 depiction of the coastal waters between Kingston and Sault Ste. Marie by British military engineer Gother Mann, and the first detailed map of the Lake Huron and Georgian Bay shoreline created by Lieutenant Henry Bayfield while assisting Navy surveyor William Fitzwilliam Owen on a reconnaissance of the area between 1817 and 1820.

Following the 1836 Treaty Number 45½ mentioned above (Section 1.2.1), an expected influx of Euro-Canadian settlers into the surrendered territory prompted the need for provincial land surveyors to establish today's lot and concession system. This was undertaken along the Lake Huron shore in 1847 by surveyor Alexander Wilkinson and in 1951 by Allan Park Brough. One and a quarter mile square blocks were created from the survey, each containing ten 100-acre farms, with the lots fronting onto the concession road allowances (Bruce Township Historical Society 1984:5). Concession road allowances therefore occurred on every second concession line, and side road allowances were accounted for after every fifth lot.

Prior to the survey there were a number of squatters, mainly of Scottish decent, already living in Bruce Township (Robertson 1906:314). The first squatters recorded were Timothy Allen, on Lot 2, Concession 1 and Hugh and William McManamy on Concession 1, near Lake Huron.

Initially, Bruce Township was part of Kincardine Township but following a failed attempt in 1855 and a successful one in 1856, Bruce County separated from Kincardine to become an independent municipality (Robertson 1906:321). As there were no major rivers in the township to supply continuous water power, the potential for manufacturing development was poor and the typical growth of towns within the Township was not as great as others in Bruce County (Robertson 1906:322). Despite this comparatively slower growth, Bruce Township grew from a population of 109 in 1851 to 3,793 by 1891 (Robertson 1906:537).

The first major influx of settlers into the township occurred in 1854 with the "Big Land Sale" (Bruce Township Historical Society 1984:5). At this time thousands of people fled to the land agent's office in Southampton in the hopes of obtaining land. Many disputes followed this race for property because land was being officially given to people where others had already been living. This led to several years of lawsuits and many families were forced to restart on new properties. The southwest corner of Bruce Township was the earliest area to be settled, especially in the vicinity of Inverhuron.

During his 1851 survey, Allan Park Brough recorded the presence of an "Indian portage" that cut across the base of Douglas Point between Inverhuron Bay and Baie du Doré (Brough 1851:15, 17). This portage could possibly have served as the basis of the road marked on Belden's 1880 map of Bruce Township linking the early settlements of Inverhuron to the south with Port Bruce and Malta on the north. This early road is now known as Tie Road and serves as the eastern boundary of the Bruce nuclear site.

Along with the depiction of the road cutting across the Lake Shore Range, the 1880 Belden map lists three land owners on Douglas Point (Map 3). C. R. Lowe is shown on the western portion of Lot 23, while R. Walker occupied the eastern portion. The owner of Lot 18 is listed as Francis Smith and it is the only lot on Douglas Point with a structure shown on the map. This structure, presumably a house, is shown on the western side of the road (now Tie Road) and is located just outside of the current Stage 1-2 Project Area and OPG-retained lands that encompass the DGR Project.

1.3 Archaeological Context

1.3.1 The Natural Environment

The Project Area falls within the Huron Fringe physiographic region. The Huron Fringe…

> *….comprises the wave-cut terraces of glacial Lake Algonkian and Lake Nipissing with their boulders, gravel bars and sand dunes….Across the mouth of the Saugeen Valley, Lake Algonkian built a massive beach of sand and gravel. Behind it was a lagoon in which fine sand and silt were deposited to a considerable depth. Delta Sands were spread outside the beach, also, ending at a distinct bluff about half a mile from the present shore. The terrace below the bluff is ribbed with gravel bars built by Lake Nipissing and, as is the case along so much of the shoreline, the waves have washed most of the overburden off the bedrock on the lower or Nipissing terrace…*
>
> Chapman and Putnam 1984:161

The Bruce nuclear site is located on Douglas Point along the shore of Lake Huron with the Project Area approximately a kilometre (km) from the shoreline. The Little Sauble River and its tributaries flow approximately 3 km to the south and east of the Project Area to the shore at Inverhuron. Underwood Creek and its tributaries flow to the lake approximately 2.5 km to the north and east of the Project Area at Baie Du Doré.

The soil of the immediate Project Area consists mainly of a poorly drained, stone-free muck of variable composition. The southeastern portion of the Project Area has pockets of: an imperfectly drained, moderately stony, sandy outwash Brisbane loam; an imperfectly drained, moderately stony, textured till Listowel loam; and an excessive drained, stone-free, dry Plainfield sand of the same type found along the nearby shoreline.

1.3.2 Previously Known Archaeological Resources and Surveys

In order that an inventory of archaeological resources could be compiled, the registered archaeological site records kept by MTCS were consulted. In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database maintained by the MTCS. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is 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 area under review is within Borden block *BbHj.*

A consultation of the Ontario Archaeological Sites Database showed that there is one registered site within a 1 km radius (Robert von Bitter, personal communication, May, 2, 2013). The site is named “Dickie Lake” and is registered under Borden number BbHj-12. There is little information for this site registered with the MTCS at the present time. The type of site is listed by the MTCS as undetermined and there is no description provided of the material culture or any cultural features either collected or observed.

A Stage 1 background assessment (PIF: P097-025-2006) was undertaken in 2007, and a Stage 2 property survey was undertaken in 2009 (no PIF number available) for portions of the Bruce nuclear site (Fitzgerald 2007 and 2009). These investigations concluded that despite a moderate to high potential, no archaeological resources of cultural heritage value or interest were detected in the areas studied. Neither the Stage 1 nor the Stage 2 assessments have been entered into the report registry and are not currently on file with MTCS.

Information concerning specific site locations is protected by provincial policy, and is not fully subject to the Freedom of Information Act. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

1.3.3 Pre-Contact Aboriginal Archaeological Resources

Table 1 provides a general outline of the culture history of southern Ontario and is compiled from *The Archaeology of Southern Ontario to A.D. 1650* (Ellis and Ferris [eds.] 1990). Previous archaeological assessments and research surveys in the county have demonstrated that the area of highest archaeological potential occurs along the shorelines of the Great Lakes and along the rivers and creeks that drain into them.

Table 1: Cultural Chronology of Southern Ontario

Period	Characteristics	Time	Comments
Early Paleo-Indian	Fluted Projectiles	9000 to 8400 B.C.	spruce parkland/caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8400 to 8000B.C.	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8000 to 6000 B.C.	slow population growth
Middle Archaic	Brewerton-like points	6000 to 2500 B.C.	environment similar to present
Late Archaic	Lamoka (narrow points)	2000 to 1800 B.C.	increasing site size
	Broadpoints	1800 to 1500 B.C.	large chipped lithic tools
	Small Points	1500 to 1100B.C.	introduction of bow hunting
Terminal Archaic	Hind Points	1100 to 950 B.C.	emergence of true cemeteries
Early Woodland	Meadowood Points	950 to 400 B.C.	introduction of pottery
Middle Woodland	Dentate/Pseudo-Scallop Pottery	400 B.C. to A.D.500	increased sedentism
	Princess Point	A.D. 550 to 900	introduction of corn
Late Woodland	Early Ontario Iroquoian	A.D. 900 to 1300	emergence of agricultural villages
	Middle Ontario Iroquoian	A.D. 1300 to 1400	long longhouses (100 m +)
	Late Ontario Iroquoian	A.D. 1400 to 1650	tribal warfare and displacement
Contact Aboriginal	Various Algonkian Groups	A.D. 1700 to 1875	early written records and treaties
Historic	Euro-Canadian	A.D. 1796 to present	European settlement

As stated in Section 1.3.2, there is one registered archaeological site within a 1 km radius of the Project Area. The archaeological site record does not provide any information on the type of site or cultural affiliation of the site but notes that salvage archaeology was completed and a report on this salvage archaeology was produced in 1966. However, Fitzgerald (1998) documents that the original location co-ordinates provided for BbHj-12 were incorrect; placing the site along the east side of what had been the Bruce Heavy Water Plant. The site is also determined to be Late Archaic. This report was submitted to Ontario Hydro but it is uncertain if it was ever submitted to the MTCS for review. According to Fitzgerald:

> *Oral accounts and archival documentation demonstrate indisputably that the site known in the 1950s and 1960s as Dickie Lake and the area identified by Ontario Hydro in the mid-1970s and posted in the early-1980s as the "Indian Burial Ground" are the same site, The human burials investigated by James Wright in 1957 were the reason that the "Indian Burial Ground" was designated -- this evidence, however, was subsequently forgotten. The site is a Native cemetery of undetermined antiquity that is now known as Jiibegmegoong, or Spirit Place*
>
> (Fitzgerald 1998).

1.3.4 Post-Contact Aboriginal Archaeological Resources

According to the Ontario Archaeological Sites Database there is one registered archaeological site within a 1 km radius of the Project Area; however, this site is of an undetermined type and the cultural affiliation is not described in the record. Although Fitzgerald (1998) indicates that this site is Late Archaic, without adequate documentation, this site could also be a post-contact site given the moderate potential of the area; however, there is insufficient data to make that conclusion.

1.3.5 Historic Euro-Canadian Archaeological Resources

According to the Ontario Archaeological Sites Database there is one registered archaeological site within a 1 km radius of the Project Area; however, this site is of an undetermined type and the cultural affiliation is not described in the record. Although Fitzgerald (1998) indicates that this site is Late Archaic, without adequate documentation, this site could also be a historic Euro-Canadian site given the moderate potential of the area; however, there is insufficient data to make that conclusion.

1.3.6 Assessing Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. In accordance with the MTCS's 2011 *Standards and Guidelines for Consultant Archaeologists*, the following are features or characteristics that indicate archaeological potential:

- previously identified archaeological sites;
- water sources:
  - primary water sources (lakes, rivers, streams, creeks);
  - secondary water sources (intermittent streams and creek,; 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:
  - good or medicinal plants;
  - scarce raw minerals (e.g., quartz, copper, ochre or outcrops of chert);
  - early Euro-Canadian industry (e.g., fur trade, mining, logging);

- areas of Euro-Canadian settlement; and
- early historical transportation routes.

In recommending a Stage 2 property survey based on determining archaeological potential for the Project Area, MTCS stipulates the following:

- no areas within 300 m of a previously identified site, water sources, areas of early Euro-Canadian Settlement, or locations identified through local knowledge or informants can be recommended for exemption from further assessment;
- no areas within 100 m of early transportation routes can be recommended for exemption from further assessment; and
- no areas within the property containing an elevated topography, pockets of well-drained sandy soil, distinctive land formations, or resource areas can be recommended for exemption from further assessment.

1.3.6.1 Archaeological Integrity

A negative indicator of archaeological potential is extensive land disturbance. This includes widespread earth movement activities that would have eradicated or relocated any cultural material to such a degree that the information potential and cultural heritage value or interest has been lost.

Section 1.3.2 of the MTCS's 2011 Standards and Guidelines for Consultant Archaeologists states that:

> *Archaeological potential can be determined not to be present for either the entire property or a part(s) of it when the area under consideration has been subject to extensive and deep land alterations that have severely damaged the integrity of any archaeological resources.*
>
> (Government of Ontario 2011:18).

The types of disturbance referred to above includes, but is not restricted to, quarrying, sewage, infrastructure development, building footprints and major landscaping involving grading below topsoil.

As the areas to be surveyed are located amid the Bruce nuclear site buildings, roads and infrastructure, there are a number of areas that had been previously disturbed and therefore were not tested. The non-surveyed disturbed portions of the properties comprise approximately 60% of the total Project Area. These disturbed areas include areas with: high gravel content of soil, debris piles of concrete and brick, an abandoned rail bed, surface gravel, areas of poor drainage, sections of woodlot that also included poor drainage, downed trees, cobble soils with high root overgrowth, and areas of clear cut trees underneath power lines. The remaining portions of the property were surveyed through shovel test pitting at 5 metre intervals.

1.3.6.2 Potential for Pre and Post Contact Aboriginal Archaeological Resources

Following the criteria outlined in Section 1.3.6 to determine Aboriginal archaeological potential, a number of factors can be highlighted. The Project Area is located less than a kilometre from the shore of Lake Huron. Additionally, Douglas Point sits between Underwood Creek to the north and the Little Sauble River to the south. The soil of the Project Area is mostly comprised of a poorly drained muck with a dry Plainfield sand along the shoreline; neither of which would have been favourable for agriculture. The mention of an "Indian portage" route across Douglas Point in the historic account by surveyor Allan Park Brough in 1851 suggests a possibility that

the modern Tie Road could have been based on that route. There is currently one registered archaeological site within a 1 km radius of the Project Area; however, this site is of an undetermined type and the cultural affiliation is not described in the record.

When the above-noted archaeological potential criteria were applied to the Project Area, the archaeological potential for pre-contact and post-contact Aboriginal sites was deemed to be moderate to high as, despite the poor soil conditions, the property is situated close to the lake, there is an historic account of an "Indian portage" route in the vicinity of the Project Area, and there is currently one registered archaeological site listed by the MTCS within 1 km; however, the cultural affiliation of this site is not recorded.

1.3.6.3 Potential for Historic Euro-Canadian Archaeological Resources

Following the criteria outlined in Section 1.3.6 to determine Euro-Canadian archaeological potential, a number of factors can be highlighted. The Project Area falls within the geographic township of Bruce, now part of the Municipality of Kincardine, in the County of Bruce.

Early mapping of the area from 1670, 1788, and 1820 showed the lack of early European involvement in this area. In preparation for Euro-Canadian settlement of the county following the 1836 Treaty Number 45½, provincial land surveys were undertaken in 1847 and 1851 to establish today's lot and concession system.

A mention of an "Indian portage" route in the area by the surveyor in 1851 could possibly be represented by a road marked on the 1880 Belden historic atlas map. This early road is now known as Tie Road and serves as the eastern boundary of the Bruce nuclear site. Along with the depiction of this early road cutting across the Lake Shore Range, the 1880 map lists three land owners on Douglas Point. The owner of Lot 18 is listed as Francis Smith and it is the only lot on Douglas Point with a structure shown on the map. This structure, presumably a house, is shown on the western side of the road (now Tie Road) and is located just outside of the current OPG-retained lands that encompass the DGR Project.

This area would have been somewhat isolated in the early and mid-19th century. According to the 1880 Belden map, although the area was sparsely populated, the Tie Road would have been a very important link between the growing communities of Inverhuron and Port Bruce/ Malta. The lone house depicted on the map, on the west side of the road on Lot 18, would most likely have been a significant landmark for those travelling between the two communities. Given the location of the subject property along a historically important transportation route, and the documented house of Francis Smith just outside of the Project Area, the potential for recovery of Euro-Canadian historic archaeological resources was judged to be moderate. Additionally, there is currently one registered archaeological site within 1 km; however the cultural affiliation of this site is not recorded.

2.0 STAGE 2 FIELD METHODS

The Project Area consisted of approximately 95.9 hectares of mixed use land, including woodlot, buildings/warehouses, and natural wetlands. Access to the Project Area was from the internal roadways of the Bruce nuclear site off of Tie Road. The Bruce nuclear site was originally provided by Ontario Hydro for the Douglas Point Nuclear Generating Station; put into service in 1968. This site has undergone extensive development and change since its inception with the additions of new facilities and infrastructure. Prior to Ontario Hydro ownership, portions of the Bruce nuclear site had been used for agriculture, while the remainder was undeveloped. The surrounding area today is predominately used for agriculture except for areas of undeveloped woodland.

Map 4 illustrates the methods of the Stage 2 archaeological field investigation. The test pits excavated during the Stage 2 archaeological assessment revealed grey brown sandy clay with variable stone inclusions (ranging from gravel to cobbles) with yellow brown sandy clay subsoil (Plate 28).

The Stage 2 archaeological assessment of the Project Area was conducted over five days between May 6 and 22, 2013 under archaeological consulting licence P362, issued to Peter Popkin. A standard shovel test pit survey was conducted on 40% of the Project Area while 60% was avoided due to disturbance. There were several disturbance factors that limited archaeological investigation at this site including: high gravel content of soil, debris piles of concrete and brick, abandoned rail bed, surface gravel, poor drainage, sections of woodlot that also included poor drainage, downed trees, cobble soils with high root overgrowth, and areas of clear cut trees underneath power lines. (Plates 1 to 37).

The shovel test pit survey consisted of hand excavation by shovel and trowel of test pits at 5 m intervals (Plate 36). Each test pit was excavated to at least 30 centimetres in diameter and 5 centimetres into subsoil, examining the pit for stratigraphy, cultural features or evidence of fill (Plate 28). All soil was screened through 6 mm hardware cloth to facilitate the recovery of any cultural material. Each test pit was back filled upon completion and topped up with additional soil when necessary.

The global positioning system (GPS) co-ordinates have been taken from a Garmin E-trex10 handheld GPS unit with a minimal accuracy of 3 m using NAD 83. A field log was maintained for the duration of the investigations detailing pertinent information and digital photographs were taken of the tested areas and topography.

2.1 Weather and Lighting

The weather during the Stage 2 property survey is indicated in Table 2. At no time were the weather conditions detrimental to the recognition and recovery of archaeological material; lighting conditions were excellent.

Table 2: Weather Conditions during Stage 2 Property Survey of the Project Area

Date	Weather
May 6, 2013	Mostly sunny, warm, slight breeze
May 7, 2013	Sunny, warm, slight breeze
May 8, 2013	Mostly sunny, warm, slight breeze
May 21, 2013	Morning: Rain, Afternoon: Mostly cloudy, warm
May 22, 2013	Cloudy, light rain, warm, slight breeze

2.2 Description of Daily Activities

On May 6, 2013 a crew of seven, under the supervision of Jeremie Landry (R413), began at the northernmost end of the survey area. The majority of the land consisted of either poorly drained soil or gravel so dense that it was difficult to push a shovel into the ground (Plates 3, 13). Several small areas related to infrastructure have had recent gravel added to the ground surface (Plates 4, 16). A large drainage ditch runs from the north of the study area (Plate 8) for approximately 150 metres at which point a small laneway begins to the east and then runs to the access road that indicates the boundary for the work completed on May 6th (Plate 11). The area of poor drainage encountered on May 6, 2013 included the previously mentioned creek which ended in ponding surrounded by poor drainage that extended to the east and south around a small woodlot (Plates 7, 9, 10, 14). Within the woodlots there were significant boulders and downed trees which made test pit survey difficult (Plates 15, 19). The other significant disturbance in this area was a large pile of concrete and brick debris to the north-west (Plates 2, 21).

On May 7, 2013 the crew assessed a large section of the study area, south from the boundary access road from the day before to the main road that runs through the centre of the study area. The ground conditions on this day were also found to consist of areas of poor drainage and areas of dense gravel. The area north-east from an old railway bed and north from the woodlot was extensively covered in gravel (Plate 22) and future development projects were already marked out on the surface with cones. There is a small curved road that starts off perpendicular to the boundary access road from May 6th. A north-south creek runs approximately eight metres to the west of this road into further areas of poor drainage in the woodlots to the south. The small curved road leads to the east and a recently gravelled area (Plate 23). The area south-west of the old railway bed was assessed (Plate 24) and found to include a large area of poor drainage in the south-west corner as well as naturally occurring stony soils and large numbers of downed trees (Plate 25). During the survey in this section a discarded railroad nail bucket (Object 1) and a “Chocolate Soldier” drink bottle (Object 2) were found on the ground surface (Plates 38, 39). No artifacts were found in any of the test pits excavated in the five metre interval grid. Map 5 illustrates the location of the two objects and a listing of the UTM coordinates for each object location is provided below in Table 3. The objects date to when the railroad was initially installed in the mid-1960s and will be discussed further in Section 4.0.

Table 3: UTM Coordinates for Object Locations

Context	Coordinates (NAD83, 17T)	
	Easting	Northing
Object Location 1	453518	4908123
Object Location 2	453413	4908081

On May 8, 2013 the crew assessed the remaining woodlot in the north-eastern section of the study area. They found that a large section of the eastern woodlot was poorly drained (Plate 26) with some areas of visible ponding and a large number of downed trees. The forest under the hydro towers had been clear cut and left in situ making test pitting impossible along the corridor. The remaining woodlot not affected by poorly drained soils was also difficult to assess due to the number of cobbles and boulders (Plate 27).

On May 21, 2013 the crew was assessing several areas to the south of the main road through the centre of the study area and east of what had been assessed earlier in May, mostly surrounding existing infrastructure. The

first area of test pit survey was a small woodlot in the north-west of this extended study area, directly north of the industrial area (Plate 29). The area was assessed although the ground cover was an obstacle in some places (Plate 30). There was also a small area of poor drainage (Plate 31). The second area of assessment to the north-east of the extended study area was a woodlot that surrounds an existing landfill. A small area of woodlot was easily assessed (Plate 32) but the majority of the area to the north of the landfill was either poorly drained or disturbed due to construction activity (Plate 33). The third area assessed on the day was the tract of land to the east of the study area that was assessed on May 6, 7, and 8, 2013. This area was almost entirely disturbed by gravel, poor drainage, and bulldozing under the hydro towers. The fourth area of survey was to the south of the area of poor drainage in the section assessed second and east from the first landfill. The land immediately to the east of the landfill was easily assessed, adjacent to that was the hydro tower corridor where the trees had been bulldozed (Plate 34), followed by a final tract of woodlot with naturally stony soil. The section to the south of this was all poorly drained soils. The fifth and final area assessed on May 21, 2013 was the land surrounding a secondary landfill (Plate 35). There were a few small areas of woodlot that were amenable to test pitting but the majority of the woodlot was found to be disturbed by either poor drainage, the construction of hydro towers in the section to the west, or underground wiring and security fencing.

On May 22, 2013 the crew assessed two final areas of woodlot in the south-west of the study area. A woodlot to the south-west of the study area was assessed as area six. There were some instances of uprooted trees and the soil was heavily cobbled. There were also some areas that exhibited high degrees of slope. A small woodlot immediately south-west of the first landfill was assessed as area seven. Here the ground was described as heavily cobbled and there was a steep slope at the north-east edge that met up with the landfill (Plate 37). There were some sections of cleared land around these two woodlots that was not assessed due to the presence of underground utilities.

3.0 RECORD OF FINDS

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.0. An inventory of the documentary record generated by field work is provided in Table 4 below.

Table 4: Inventory of Documentary Record

Document Type	Current Location of Document	Additional Comments	Quantity
Field Notes	Golder offices in Mississauga	In original field book and photocopied in project file	29 pages in total
Hand Drawn Maps	Golder offices in Mississauga	In original field book and photocopied in project file	7 field maps with notations
Maps Provided by Client	Golder offices in Mississauga	Stored in project file	1 map/shapefile in total
Digital Photographs	Golder offices in Mississauga	Stored digitally in project file	391 photos

No artifacts were recovered during the Stage 2 archaeological assessment of the study area.

4.0 ANALYSIS AND CONCLUSIONS

The Stage 2 assessment of the study area resulted in the recovery of no artifacts; as such no analysis of cultural material was undertaken in the laboratory.

There were two objects located on May 7, 2013 near the old railway bed that were assessed in the field. Object Location 1 was a surface find of a railway nail can for standard track spikes (5/8" x 5 1/2") manufactured by Stelco (Plate 38). This object is likely related to the installation of the rail line in the 1960s (personal communication, Jim Mclay, May 7, 2013). Given the isolated nature of the object and the associated 20th Century date of the nail can, the cultural heritage value and information of Object 1 is considered to be low. Object Location 2 was a "Chocolate Soldier" glass drink bottle found on the surface (Plate 39). Chocolate Soldier was first manufactured in the 1920-30s (Whetzel n.d.) but bottle collecting websites date the product into the 1980s (personal communication, Jim Mclay, May 7, 2013). Due to the range of production dates it is also likely that that this object is related to the installation of the railway during the mid-1960s. Given the isolated nature of the object and the associated 20th Century date of the glass bottle, the cultural heritage value and information of Object 2 is considered to be low. Neither of the above objects has cultural heritage value or interest and are therefore not considered artifacts. They have not been catalogued and are only mentioned here as curios.

Because no archaeological resources were recovered on the subject property it is concluded that the DGR Project Area has been sufficiently assessed and documented through the Stage 1 and Stage 2 archaeological assessments and contains no potential to possess further cultural heritage value or interest. This conclusion is consistent with Section 2.2 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011:39-41).

5.0 RECOMMENDATIONS

Given the findings of the Stage 1 and 2 archaeological assessments it is recommended that the subject property may be considered free of further archaeological concern. As such, no additional assessment is recommended for the study area. This recommendation is supported by the Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Section 2.2, Standard 1d.

The Ontario MTCS is asked to review this report and to accept it into the Ontario Public Register of Archaeological Reports.

.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

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

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act,* R.S.O. 1990 c.O.18 (Government of Ontario 1990b) for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating 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,* R.S.O. 1990 c.O.18 (Government of Ontario 1990b). 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 *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

7.0 BIBLIOGRAPHY AND SOURCES

Anonymous

1839 *Report of the Huron Fishing Company*. Smith and Ebbs, London.

Belden, H. & Co.

1880 *Bruce Supplement in Illustrated Atlas of the Dominion of Canada*, Toronto.

Brough, Allan Park

1851 Field Notes Front of the Township of Bruce. Field Note Book 224, Crown Land Surveys, Ministry of Natural Resources, Peterborough.

Bruce Township Historical Society

1984 *Bruce Township Tales and Trails.* St. Jacobs Printery, St. Jacobs.

Chapman, Lyman John and Donald F. Putnam

1984 *The Physiography of Southern Ontario*. 3rd edition. Ontario Geological Survey Special Volume 2. Ontario Ministry of Natural Resources, Toronto.

Coyne, J.H.

1903 Galinee's Narrative Map. Ontario Historical Society Papers and Records IV.

Ellis, Chris J. and Neal Ferris (editors)

1990 *The Archaeology of Southern Ontario to A.D. 1650*. Occasional Publication of the London Chapter, Ontario Archaeological Society, Number 5.

Feest, Johanna and Christian Feest

1978 "Ottawa." In *Handbook of North American Indians. Volume 15, Northeast*, edited by Bruce Trigger, pp. 772-786. Smithsonian Institution Press, Washington.

Ferris, Neal

1999 "What's in a Name? The Implications of Archaeological Terminology Used in Nonarchaeological Contexts." In *Taming the Taxonomy*: *Toward a New Understanding of Great Lakes Archaeology*, edited by Ronald Williamson and Christopher Watts, pp. 111-121. Eastendbooks, Toronto.

2009 *The Archaeology of Native-Lived Colonialism: Challenging History in the Great Lakes.* University of Arizona Press, Tucson.

Fiedel, Stuart

1999 "Algonquians and Iroquoians: Taxonomy, Chronology and Archaeological Implications." In *Taming the Taxonomy*: *Toward a New Understanding of Great Lakes Archaeology*, edited by Ronald Williamson and Christopher Watts, pp. 193-204. Eastendbooks, Toronto.

Fitzgerald, William R.

1998 *Stage 2 Archaeological Assessment of the Bruce Used Fuel Dry Storage (BUFDS) Site*. Report submitted to Ontario Hydro, Toronto.

2004 *Ministry of Culture Stages 1 and 2 Archaeological Assessment, Al Pfluegl Subdivision Development, Part of Lot 5, Concession 6 WBR, Town of South Bruce Peninsula (former Albemarle Township), Bruce County*. Report on file, Ministry of Tourism and Culture, Toronto.

2007 *Ministry of Culture Stage 1 Archaeological Assessment, Bruce New Build Project, Bruce Nuclear Site, Municipality of Kincardine, Bruce County*.

2009 *Ministry of Culture Stage 2 Archaeological Assessment, Bruce New Build Project and Deep Geological Repository Project, Bruce Nuclear Site, Part Lots 11-31, Concession A (Lake Range), Bruce Township, Municipality of Kincardine, Bruce County*.

Government of Canada

2001 *Topographic Map Sheet 41A/04: Kincardine*. Centre for Topographic Studies, Natural Resources, Ottawa, Canada.

2012 *Canadian Environmental Assessment Act, 2012*. S.C. 2012, c.19, s.52. Electronic document: http://laws-lois.justice.gc.ca/eng/acts/C-15.21/FullText.html. Last accessed June 7, 2012.

Government of Ontario

1990a *The Environmental Protection Act*, R.S.O. 1990, CHAPTER E.19. Last amendment: 2010, c.16, Sched. 7, s. 2. Electronic document: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e19_e.htm. Last accessed May 25, 2012.

1990b *Ontario Heritage Act*, R.S.O. 1990, CHAPTER O.18. Last amendment: 2009, c. 33, Sched. 11, s. 6. Electronic document: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o18_e.htm. Last accessed May 25, 2012.

2011 *Standards and Guidelines for Consultant Archaeologists*. Cultural Programs Unit, Programs and Services Branch, Ministry of Tourism, Culture and Sport.

n.d. Archaeological Sites Database. Heritage Branch, Ministry of Tourism, Culture and Sport, Toronto.

Koenig, Edwin

2005 *Cultures and Ecologies: A Native Fishing Conflict on the Saugeen-Bruce Peninsula*. University of Toronto Press, Toronto.

Konrad, Victor

1981 "An Iroquois Frontier: The North Shore of Lake Ontario during the Late Seventeenth Century." *Journal of Historical Geography* 7(2):129-144.

Morris, J.L.

1943 *Indians of Ontario*. 1964 reprint. Department of Lands and Forests, Government of Ontario.

Rankin, Lisa

2000 *Interpreting Long-term Trends in the Transition to Farming: Reconsidering the Nodwell Site, Ontario, Canada*. British Archaeological Reports International Series 830. British Archaeological Reports, Oxford.

Robertson, Norman

1906 *The History of the County of Bruce.* William Briggs, Toronto.

Rogers. E.S.

1978 "Southeast Ojibwa." In *Handbook of North American Indians. Volume 15, Northeast*, edited by Bruce Trigger, pp. 760-771. Smithsonian Institution Press, Washington, D.C.

Schmalz, Peter S.
1991 *The Ojibway of Southern Ontario*. University of Toronto Press.

Surtees, Robert
1971 *The Original People*. Holt, Rinehart and Winston, Toronto.

Tanner, Helen (editor)
1987 *Atlas of Great Lakes Indian History*. University of Oklahoma Press, Norman.

Warrick, Gary
2008 *A Population History of the Huron-Petun, A.D. 500-1650*. Cambridge University Press, Cambridge.

Whetzel, Dan
n.d. Bottle Collecting: New and Old; All Shapes, Sizes, and Colours, Has Something for Everyone. Mountain Discoveries: 14-21.

Wright, J.V.
1974 *The Nodwell Site*. Archaeological Survey of Canada Paper No. 22. National Museums of Canada, Ottawa.

8.0 IMAGES

Plate 1: Ditch along northern road in study area, facing south-east, May 6, 2013.

Plate 2: Debris pile 50 metres north-west of entrance access road, facing south. May 6, 2013.

Plate 3: Soil with high gravel/cobble content, debris pile in background, facing west, May 6, 2013.

Plate 4: Water well with gravel disturbance, facing south-west, May 6, 2013.

Plate 5: Test pit, facing down, May 6, 2013. (N 44.19747 W 081.34785)

Plate 6: Test pit with gravel/cobble disturbance, facing down, May 6, 2013.

Plate 7: Wetland disturbance south-east of hill 25metres from road, facing south-east, May 6, 2013.

Plate 8: Drainage ditch that runs perpendicular to northernmost road, facing south-west, May 6, 2013.

Plate 9: Wetland ponding near treeline, facing east, May 6, 2013.

Plate 10: Ponding near treeline, facing south, May 6, 2013.

Plate 11: Trail leading to small access road, facing south, May 6, 2013.

Plate 12: Test pitting, facing south-east, May 6, 2013.

Plate 13: Disturbed gravel soil, facing east, May 6, 2013.

Plate 14: Wetland, facing south- east, May 6, 2013.

Plate 15: Dead-fall trees in woodlot, facing north-east, May 6, 2013.

Plate 16: Disturbed area, facing south-east, May 6, 2013.

Plate 17: Disturbed test pit, facing down, May 6, 2013.

Plate 18: Test pitting, facing east, May 6, 2013.

Plate 19: Ground conditions in woodlot, facing north, May 6, 2013.

Plate 20: Test pitting in wood lot, facing east, May 6, 2013.

Plate 21: Debris pile on east side of road, facing south, May 6, 2013.

Plate 22: Gravel pile disturbance, facing east, May 7, 2013.

Plate 23: Recent gravel disturbance, facing south-west, May 7, 2013.

Plate 24: Test pitting in woodlot, facing south-east, May 7, 2013.

Plate 25: Downed trees in woodlot, facing east, May 7, 2013.

Plate 26: Waterlogged test pit, facing down, May 8, 2013.

Plate 27: Woodlot ground conditions, facing south, May 8, 2013.

Plate 28: Test pit, facing down, May 8, 2013.

Plate 29: Area of slope, and ditch north of woodlot at north of complex, facing east, May 21, 2013.

Plate 30: Ground condition in woodlot, facing north-west, May 21, 2013.

Plate 31: Poor drainage in woodlot in north-east of complex, facing north, May 21, 2013.

Plate 32: Test Pit screening, facing north-east, May 21, 2013.

Plate 33: Construction area between complex and landfill, facing south, May 21, 2013.

Plate 34: Clear cut trees under power lines, east of landfill, facing south-west, May 21, 2013.

Plate 35: Bottom of landfill, facing north, May 21, 2013.

Plate 36: Test pitting at 5 metre intervals, facing south-east, May 22, 2013.

Plate 37: Slope in north-east edge of woodlot near the landfill, facing east, May 22, 2013.

Plate 38: Object 1, Railway nail/spike can found on surface, facing south-east, May 7, 2013.

Plate 39: Object 2, "Chocolate Soldier" glass drink bottle found on surface, facing south-west, May 7, 2013.

9.0 MAPS

All maps follow on succeeding pages.

LEGEND

- Power transmission line
- Highway
- Major Road
- Local Road
- Contour
- Railways and Abandoned Railways
- Watercourse
- Wetland
- Waterbody
- Transformer station
- Wooded area
- Project Area
- Bruce nuclear site

NTS Map - 041A05 Tiverton

REFERENCE

Base Data - CANVEC 2012
Produced by Golder Associates Ltd. under license from Ontario Ministry of Natural Resources, © Queens Printer 2012
Datum: NAD 83 Projection: UTM Zone 17N

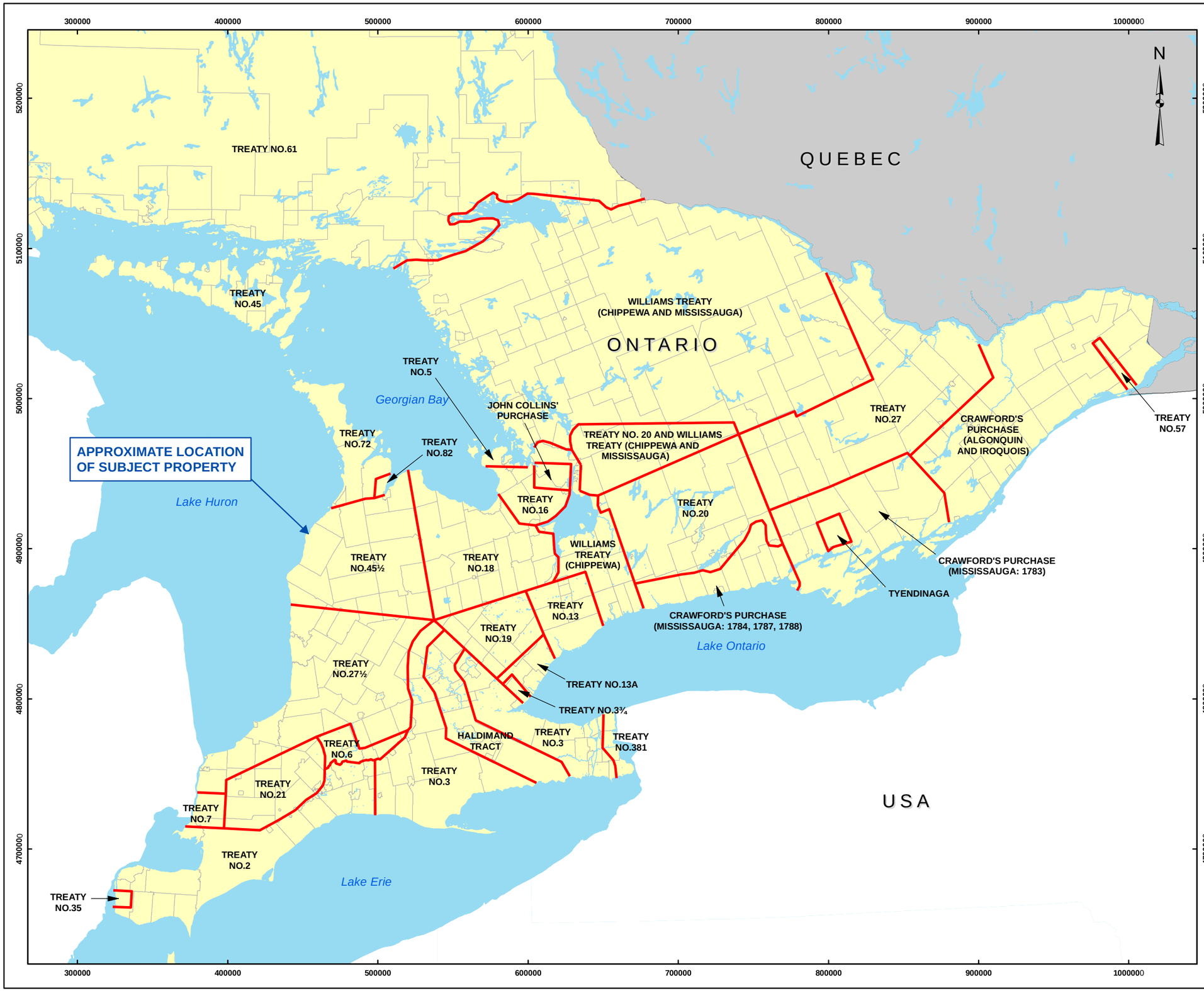
0 0.5 1 2 3
Kilometres

PROJECT
DEEP GEOLOGICAL REPOSITORY FOR LOW & INTERMEDIATE LEVEL WASTE

TITLE
PROJECT LOCATION

Golder Associates
Mississauga, Ontario

PROJECT NO. 10-1151-0440			SCALE: AS SHOWN	R000
DESIGN	ASB	17 Oct 2007	MAP 1	
GIS	BC	6 June. 2013		
CHECK	AJ	6 June. 2013		
REVIEW	CP	6 June. 2013		



LEGEND

Treaty Boundary

Treaty NO. 381, Volume 3 (May 9th, 1781): Mississauga and Chippewa
Crawford's Purchase (Oct. 9th, 1783): Algonquin and Iroquois
Crawford's Purchase (Oct. 9th, 1783): Mississauga
Crawford's Purchases (1784, 1787, 1788): Mississauga
John Collins' Purchase (1785): Chippewa
Treaty No. 2 (May 19th, 1790): Odawa, Chippewa, Pottawatomi, and Huron
Treaty No. 3 (Dec. 2nd, 1792): Mississauga
Haldimand Tract: from the Crown to the Mohawk (1793)
Tyendinaga: from the Crown to the Mohawk (1793)
Treaty No. 3¾ (Oct. 24th, 1795): from the Crown to Joseph Brant
Treaty No. 5 (May 22nd, 1798): Chippewa
Treaty No. 6 (Sep. 7th, 1796): Chippewa
Treaty No. 7 (Sep. 7th, 1796): Chippewa
Treaty No. 13 (Aug. 1st, 1805): Mississauga
Treaty No. 13A (Aug. 2nd, 1805): Mississauga
Treaty No. 16 (Nov. 18th, 1815): Chippewa
Treaty No. 18 (Oct. 17th, 1818): Chippewa
Treaty No. 19 (Oct. 28th, 1818): Chippewa
Treaty No. 20 (Nov. 5th, 1818): Chippewa
Treaty No. 21 (Mar. 9th, 1819): Chippewa
Treaty No. 27 (May 31st, 1819): Mississauga
Treaty No. 27½ (Apr. 25th, 1825): Ojibwa and Chippewa
Treaty No. 35 (Aug. 13th, 1833): Wyandot or Huron
Treaty No. 45 (Aug. 9th, 1836): Chippewa and Odawa
Treaty No. 45½ (Aug. 9th, 1836): Saugeen
Treaty No. 57 (Jun. 1st, 1847): Iroquois of St. Regis
Treaty No. 61, Robinson Treaty (Sep. 9th, 1850): Ojibwa
Treaty No. 72 (Oct. 30th, 1854): Chippewa
Treaty No. 82 (Feb. 9th, 1857): Chippewa
Williams Treaty (Oct. 31st and Nov. 15th, 1923): Chippewa and Mississauga
Williams Treaty (Oct. 31st, 1923): Chippewa

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUCTION WITH ACCOMPANYING TEXT.
ALL LOCATIONS ARE APPROXIMATE.

REFERENCE

1. Base Data - MNR NRVIS, obtained 2004, CANMAP v2006.4
2. Treaty Boundary - Approximate Treaty Boundary was created by Golder Associates Ltd. Jan. 2009.
MORRIS, J.L. 1943. Indians Of Ontario. Reprinted 1964. Department Of Lands And Forests, Toronto.

Produced by Golder Associates Ltd under licence from Ontario Ministry of Natural Resources, © Queens Printer 2008

Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

0 20 40
Kilometres

PROJECT
DEEP GEOLOGICAL REPOSITORY FOR LOW & INTERMEDIATE LEVEL WASTE

TITLE
BASE MAP - TREATY BOUNDARY

Golder Associates
Mississauga, Ontario

PROJECT No. 10-1151-0440			1:2,500,000	REV. 0.0	
DESIGN	JMC	15 Dec. 2008	MAP 2		
GIS	JMC	7 June. 2013			
CHECK	KP	7 June. 2013			
REVIEW	CP	7 June. 2013			

LEGEND

- Project Area
- Bruce Nuclear Site

REFERENCE

Belden Map, 1880
Datum: NAD 83 Projection: UTM Zone 17N

0 1 2 4
Kilometres

PROJECT
DEEP GEOLOGICAL REPOSITORY FOR
LOW & INTERMEDIATE LEVEL WASTE

TITLE
BELDEN MAP OF BRUCE TOWNSHIP, 1880

Golder Associates
Mississauga, Ontario

PROJECT NO. 10-1151-0440			SCALE: AS SHOWN	R000
DESIGN	ASB	17 Oct 2007	MAP 3	
GIS	BC	7 June. 2013		
CHECK	AJ	7 June. 2013		
REVIEW	CP	7 June. 2013		

453500 454000 454500

4909000 4908500 4908000 4907500 4907000

N

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 36 37 38 39

LEGEND

- Photo Location Direction
- DGR Project Site
- Project Area
- Restricted due to Industrial Activity, Not Assessed
- Area of Poor Drainage, Not Assessed
- Land-Fill Area, Not Assessed
- Construction or Buried Utilities – Not Assessed
- Stage 2 Test Pit Survey at 5m Intervals

REFERENCE

Base Data - MNR LIO, obtained 2009
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2012
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

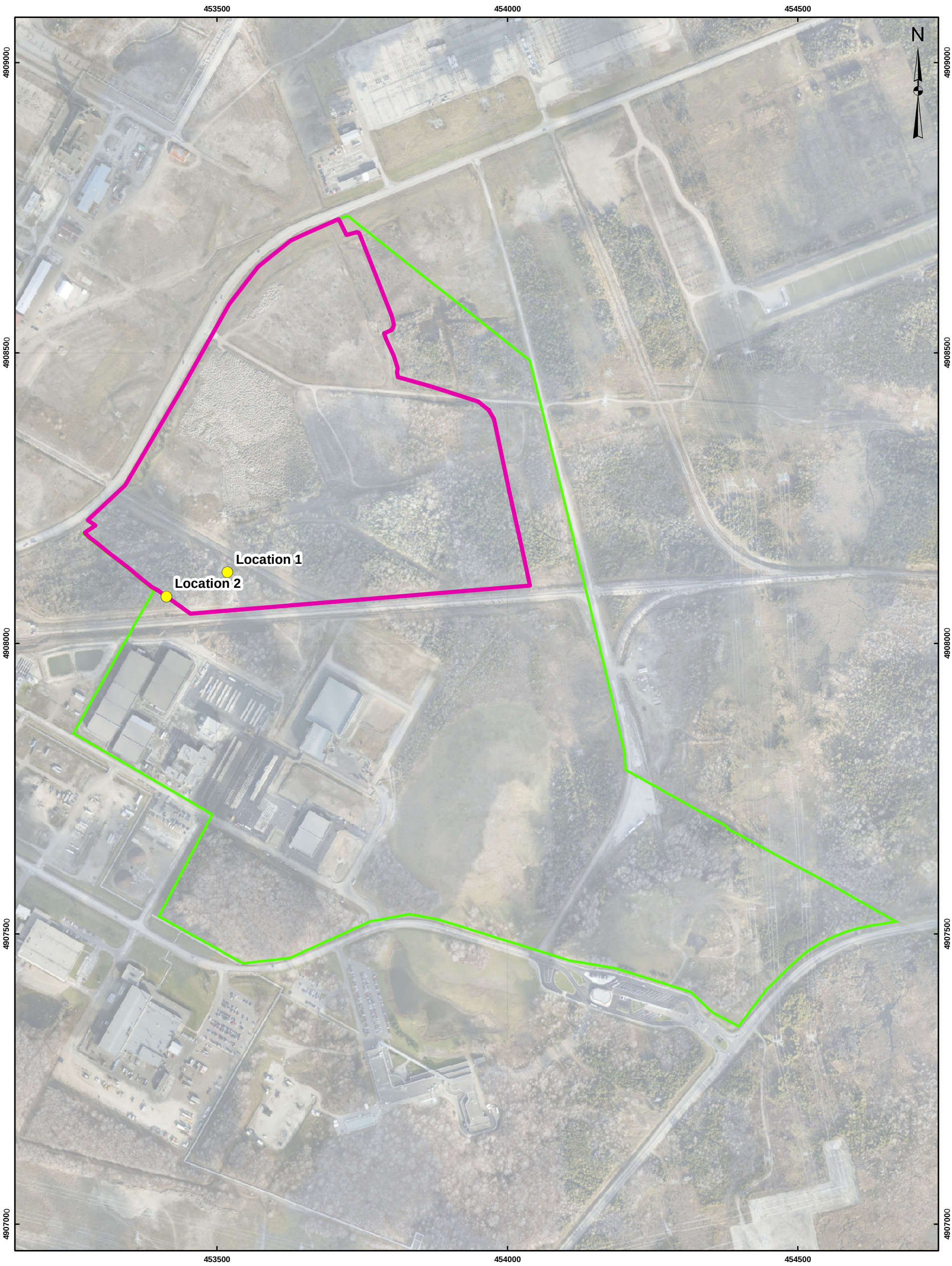
200 100 0 200 400
SCALE 1:6,500 METRES

PROJECT
DEEP GEOLOGICAL REPOSITORY FOR LOW & INTERMEDIATE LEVEL WASTE

TITLE
STAGE 2 SURVEY METHODS

Golder Associates
Mississauga, Ontario

PROJECT NO. 10-1151-0440			SCALE AS SHOWN	REV. 0.0
DESIGN	BC	29 May. 2013	MAP 4	
GIS	BC/JMC	7 June. 2013		
CHECK	KP	7 June. 2013		
REVIEW	CP	7 June. 2013		



200 100 0 200 400

SCALE 1:6,500 METRES

LEGEND

- Object Location
- DGR Project Site
- Project Area

REFERENCE

Base Data - MNR LIO, obtained 2009
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2012
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

PROJECT

DEEP GEOLOGICAL REPOSITORY FOR LOW & INTERMEDIATE LEVEL WASTE

TITLE

OBJECT LOCATIONS

Golder Associates
Mississauga, Ontario

PROJECT NO. 10-1151-0440			SCALE AS SHOWN	REV. 0.0
DESIGN	BC	29 May. 2013	MAP 5	
GIS	BC/JMC	7 June. 2013		
CHECK	KP	7 June. 2013		
REVIEW	CP	7 June. 2013		

10.0 IMPORTANT INFORMATION AND LIMITATIONS OF THIS REPORT

Golder Associates Ltd. (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 the Nuclear Waste Management Organization. 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 Standards and Guidelines for Consultant Archaeologists (Ministry of Tourism, Culture and Sport 2011).

Report Signature Page

GOLDER ASSOCIATES LTD.

Kendra Patton, M.A.
Project Archaeologist

Carla Parslow, Ph.D.
Associate, Senior Archaeologist

KP/CAP/gf

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation.

At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates Ltd.
100, Scotia Court
Whitby, Ontario, L1N 8Y6
Canada
T: +1 (905) 723 2727

Golder Associates