Stage II Archaeological Assessment

INTERIM REPORT
Stage 2 Archaeological Assessment, SPK Grand Renewable Energy Park, Haldimand County, Ontario

Various Lots in: Concessions 1-7 and Jones Tract, South Cayuga Township; Concession 1, North Cayuga Township; Concessions 2, 4 and 5, Rainham Township; and Concessions 1-2 South of Rainham Road and Concession 1 North of Rainham Road, Dunn Township

Prepared for:
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Prepared by:

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February 8, 2011

CIF # P002-211-2010

Project No.: 161010624

EXECUTIVE SUMMARY

Samsung C&T (Samsung), Korea Power Electric Corporation (KEPCO), and Pattern Energy (Pattern) plan to build and operate the world's largest renewable energy cluster in Southern Ontario (Ontario Alternative Energy Cluster). Samsung has previously launched Korea's first solar energy project and built the world's largest skyscraper (Dubai). KEPCO is one of the world's top power utilities and develops low-carbon power generation and smart grid technologies. Pattern Energy develops, constructs, owns and operates clean energy and transmission assets in the United States, Canada and Latin America. Together, these companies (referred to herein as "SPK") will be involved in the development of the first phase of the energy cluster development.

The Grand Renewable Energy Park (the Project) is proposed within the County of Haldimand and is generally bounded by Townline Road to the north, Haldimand Road 20 to the west, the Grand River to the east and Lake Erie to the south. It consists of a 153.1 MW (nameplate capacity) wind project, a 100 MW (nameplate capacity) solar project located on privately owned and Ontario Realty Corporation (ORC) managed lands and a transmission line to convey electricity to the existing power grid. According to subsection 6(3) of O. Reg. 359/09, the wind component of the Project is classified as a Class 4 Wind Facility and the solar component of the Project is classified as a Class 3 Solar Facility.

The basic components of the Project include 69 wind turbines, approximately 425,000 photovoltaic (PV) solar panels installed on fixed ground-mounted racking structures organized into 100 1 MW solar units, a collector sub-station, interconnect station and Operations and Maintenance building, temporary storage and staging areas, approximately 19 km of 230 kV transmission lines along Haldimand Road 20, approximately 96 km of new overhead 34.5 kV collector lines along public roads, approximately 45 km of new underground collector lines along turbine access roads, approximately 43 km of turbine access roads and 40 km of solar panel maintenance roads.

A Stage 1 Archaeological Assessment (AA) was completed by Stantec Consulting Ltd. (Stantec) as part of an application for the proposed SPK Grand Renewable Energy Park (GREP), also referred to as Project, consisting of both solar and wind power generation in Haldimand County, Ontario. The results of the Stage 1 AA indicated that most of the proposed project area demonstrated the potential for the presence of significant and intact archaeological resources.

Based on the results of the Stage 1 AA, Stantec archaeological staff completed Stage 2 AA for 359 ha of land for both the solar and wind turbine components of the project. The solar lands, located on Lots 26-30, Concession 4, South Cayuga Township, incorporate 276 ha of land. Archaeological survey of the solar lands included 263 ha of pedestrian survey of ploughed agricultural land and 13 ha of test pit excavation survey of woodlot. The remaining surveyed area of 83 ha occurred over the access roads and turbine pad locations of twenty turbines located throughout North Cayuga, South Cayuga, Rainham and Dunn Townships. All turbine pads and associated access roads were assessed using a pedestrian survey methodology on ploughed agricultural lands.

The Stage 2 AA completed to date by Stantec resulted in the identification and recording of 1589 discrete pre-contact period artifacts, including 106 formal or expedient tools (including 55 projectile points, or "arrowheads"), one piece of fire cracked rock and 1482 lithic flakes from the manufacture of stone tools. A deposit of A.D. 19th century historic period artifacts was also recorded during the Stage 2 AA.

Of the 55 projectile points recovered during the Stage 2 AA, 40 were able to be identified to type and/or archaeological culture period (Table 1). Four of the identifiable projectile points date to the Late Palaeo-Indian culture period (c. 10,400-9,500 years Before Present (BP)); twenty-one of the points date to the Archaic culture period (9,500-3,000 BP); and fifteen of the points date to the Woodland culture period (3,000- 400 BP). The remaining fifteen points were not identifiable as to type or archaeological culture period.

Table 1 -Archaeological Culture Period and Dates of Recovered Projectile Points

Survey Identifier #	Period	Date	Survey Identifier #	Period	Date
Point 2-24	Indeterminate	Indeterminate	Point 1-12	Early Woodland	2,850-2,350 BP
Point 2-25	Indeterminate	Indeterminate	Point 1-13	Indeterminate	Indeterminate
Point 2-1	Late Woodland (Neutral)	550-400 BP	Point 1-14	Middle Woodland	2,000-1,100 BP
Point 2-10	Indeterminate	Indeterminate	Point 1-15	Indeterminate	Indeterminate
Point 2-11	Indeterminate	Indeterminate	Point 1-16	Early Woodland	2,850-2,350 BP
Point 2-12	Indeterminate	Indeterminate	Point 1-17	Early Archaic	10,000-9,800 BP
Point 2-13	Late Archaic	3,000-2,000 BP	Point 1-18	Indeterminate	Indeterminate
Point 2-14	Late Palaeo-Indian	10,200-9,500 BP	Point 1-19	Late Archaic	4,500-4,000 BP
Point 2-15	Middle Archaic	5,000-4,500 BP	Point 1-2	Early Archaic	8,900-8,000 BP
Point 2-16	Early Woodland	2,850-2,350 BP	Point 1-20	Middle Archaic	5,000-4,500 BP
Point 2-17	Late Archaic	3,800-3,500 BP	Point 1-21	Late Archaic	3,500-2,800 BP
Point 2-18	Late Archaic	3,300-2,900 BP	Point 1-22	Indeterminate	Indeterminate
Point 2-19	Early Woodland	2,850-2,350 BP	Point 1-23	Late Archaic	3,800-3,500 BP
Point 2-2	Late Woodland (Neutral)	550-400 BP	Point 1-24	Late Middle Woodland	1,450-1,250 BP
Point 2-20	Early Woodland	2,850-2,350 BP	Point 1-25	Late Palaeo-Indian	10,400-10,000 BP
Point 2-21	Late Palaeo-Indian	10,200-9,500 BP	Point 1-26	Indeterminate	Indeterminate
Point 2-22	Late Archaic	4,500-3,800 BP	Point 1-27	Late Archaic	3,000-2,000 BP
Point 2-23	Indeterminate	Indeterminate	Point 1-28	Indeterminate	Indeterminate
Point 2-3	Re-assigned as a biface	n/a	Point 1-29	Late Archaic	3,500-2,800 BP
Point 2-4	Early Woodland	2,850-2,350 BP	Point 1-3	Early Woodland	2,850-2,350 BP
Point 2-5	Late Archaic	3,500-2,800 BP	Point 1-30	Middle Woodland	2,000-1,100 BP
Point 2-6	Indeterminate	Indeterminate	Point 1-31	Early Archaic	9,800-8,900 BP
Point 2-7	Late Archaic	3,500-2,800 BP	Point 1-4	Middle Archaic	6,500-5,000 BP
Point 2-8	Middle Woodland	2,000-1,100 BP	Point 1-5	Late Archaic	3,800-3,500 BP
Point 2-9	Indeterminate	Indeterminate	Point 1-6	Early Archaic	10,000-9,800 BP
Point 1-1	Early Woodland	2,850-2,350 BP	Point 1-7	Late Archaic	3,800-3,500 BP
Point 1-10	Middle Archaic	8,000-7,000 BP	Point 1-8	Late Palaeo-Indian	10,200-9,500 BP
Point 1-11	Middle Woodland	2,000-1,100 BP	Point 1-9	Indeterminate	Indeterminate

Based on the *Draft Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Culture in 2009 Stantec has identified a total of forty-five discrete registered archaeological site locations that will require Stage 3 and/or 4 Archaeological Assessment (Table 2).

Table 2 - Archaeological Sites Requiring Further Assessment

Stantec Site #	Borden #	Culture Period(s) Represented	Dimensions (in m)	Stantec Site #	Borden #	Culture Period(s) Represented	Dimensions (in m)
1	AfGx-710	Indeterminate	30 x 20	23	AfGw-148	Indeterminate	70 x 40
2	AfGx-711	Indeterminate	35 x 20	24	AfGw-149	Late Archaic	75 x 50
3	AfGx-712	Indeterminate	65 x 50	25	AfGw-150	Indeterminate	40 x 30
4	AfGx-713	Indeterminate	25 x 25	26	AfGw-151	Middle Archaic	10 x 10
5	AfGx-714	Indeterminate	30 x 30	27	AfGw-152	Indeterminate	40 x 35
6	AfGx-715	Indeterminate	55 x 35	28	AfGw-153	Late Palaeo-Indian	60 x 40
7	AfGx-716	Indeterminate	25 x 25	29	AfGw-154	Indeterminate	105 x 40
8	AfGx-717	Indeterminate	35 x 25	30	AfGw-155	Indeterminate	60 x 30
9	AfGx-718	Indeterminate	35 x 20	31	AfGw-156	Indeterminate	50 x 40
10	AfGx-719	Indeterminate	60 x 30	32	AfGw-157	Middle Archaic	30 x 30
11	AfGx-720	Early Woodland	90 x 90	33	AfGw-158	Early Woodland	40 x 30
12	AfGw-137	Late Palaeo-Indian/ Early Woodland	40 x 40	34	AfGw-159	Indeterminate	20 x 20
13	AfGw-138	Middle Archaic	150 x 110	35	AfGW-160	Indeterminate	10 x 10
14	AfGw-139	Late Archaic	145 x 115	36	AfGw-161	Indeterminate	80 x 50
15	AfGw-140	Indeterminate	25X20	37	AfGw-162	Indeterminate	25 x 25
16	AfGw-141	19th Century Historic	55 x 55	38	AfGw-163	Indeterminate	10 x 10
17	AfGw-142	Late Archaic	90 x 55	39	AfGw-164	Early Archaic	10 x 10
18	AfGw-143	Early Archaic	115 x 50	40	AfGw-165	Late Palaeo-Indian	20 x 20
19	AfGw-144	Early Woodland	110 x 110	41	AfGw-166	Early Archaic	10 x 10
20	AfGw-145	Indeterminate	50 x 50	42	AfGw-167	Late Palaeo-Indian	10 x 10
21	AfGw-146	Indeterminate	35 x 35	43	AfGx-721	Early Archaic	10 x 10
22	AfGw-147	Late Woodland	250 x 160	44	AfGw-184	Indeterminate	20 x 25
				45	AfGx-732	Indeterminate	20 x 25

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PROJECT PERSONNEL

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1 INTRODUCTION

Samsung C&T (Samsung), Korea Power Electric Corporation (KEPCO) and Pattern Energy (Pattern) plan to build and operate the world's largest renewable energy cluster in Southern Ontario (Ontario Alternative Energy Cluster). Together these companies (herein referred to as "SPK" are proposing to develop, construct, and operate the Grand Renewable Energy Park (the "Project") as the development of the first phase of the energy cluster development.

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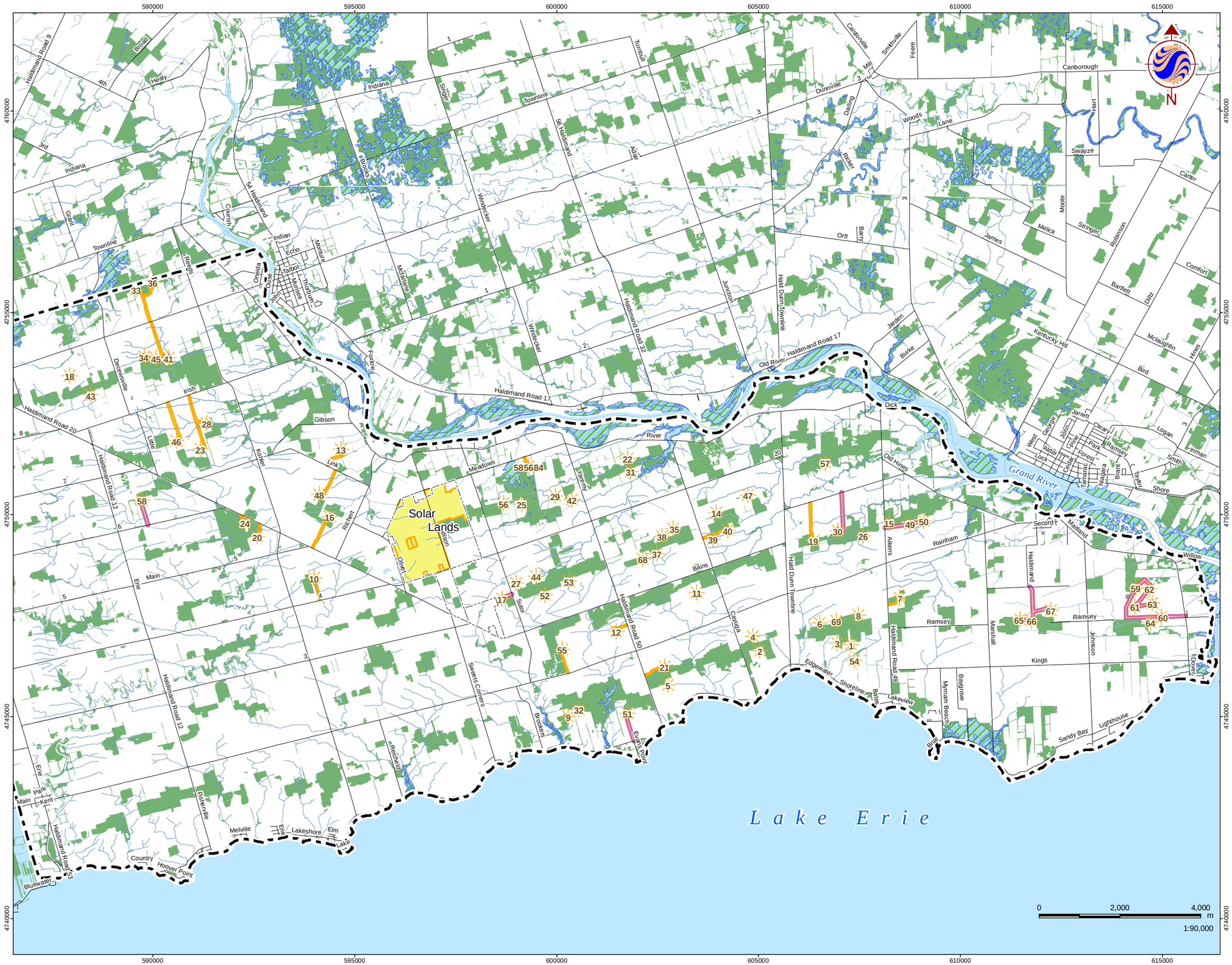
A Stage 1 Archaeological Assessment (AA) was completed by Stantec Consulting Ltd. (Stantec) as part of an application for the proposed SPK Grand Renewable Energy Park (GREP), also known as Project, consisting of both solar and wind power generation in Haldimand County, Ontario. At the time of the Stage 1 AA specific details of the proposed GREP were not available and the Stage 1 AA encompassed a large region that included most or all of Dunn, South Cayuga, North Cayuga and Rainham Townships in Haldimand County. The results of the Stage 1 AA indicated that most of the proposed project area demonstrated the potential for the presence of significant and intact archaeological resources.

Based on the widespread archaeological potential of the wider GREP project study area it was decided that all previously undisturbed (except by agricultural activity) areas where project infrastructure was planned would be subject to Stage 2 AA. Due to changing project needs new lands requiring Stage 2 AA were added late in the 2010 field season, necessitating that some project areas be assessed by Golder Associates, Inc. (Golder) (Figure 1-1). The results of the Golder Stage 2 AA are reported on in a separate report to be provided by Golder under a separate license and Project Information Form. Further, early snow cover in December resulted in some project areas remaining uncompleted at the end of 2010. These areas will be completed in 2011.

Permission to access the various project properties was secured from individual landowners by the proponent and fieldwork was conducted between September 7 and December 3, 2010. Further field work was attempted on December 6, 2010 but snow cover on the ground did not allow for the completion of all of the survey of the remaining turbine access roads and pads. Weather conditions over the period of the field assessment were quite variable, but at all times during the field assessment conditions and visibility were good to excellent.



Legend

- Stage 2 Completed by Stantec
- Stage 2 to be Completed By Stantec
- Wind Turbine Location
- Watercourse
- Road
- Wetland
- Woodlot
- Solar Lands
- Project Location

Map Area

Notes

1. Coordinate System: UTM Zone 17 NAD 83.
2. Data Sources: Ontario Ministry of Natural Resources © Queens Printer Ontario, 2009; © GREP, 2010; © Samsung, 2010.
3. Image Sources: © Google Earth Pro, 2010 (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

Stantec

January 2011
Project No. 161010624

Client/Project

SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

2-1

Title

PROJECT AREA SHOWING LOCATIONS OF COMPLETED STAGE 2 ARCHAEOLOGICAL ASSESSMENT

The Stage 2 AA completed to date by Stantec resulted in the identification and recording of 1589 discrete pre-contact period artifacts, including 106 formal or expedient tools (including 55 projectile points, or "arrowheads"), one piece of fire cracked rock and 1482 lithic flakes from the manufacture of stone tools. A deposit of A.D. 19th century historic period archaeological material was also recorded during the Stage 2 AA. Based on the 2009 *Draft Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Culture, Stantec has identified a total of 45 discrete registered archaeological site locations that will require Stage 3 and/or 4 Archaeological Assessment

2 PROJECT AREA

The majority of land use in the general Project Area is agricultural, with pockets of wooded areas throughout. In an effort to limit the amount of woodlot cutting required the majority of the proposed Project infrastructure was planned to be located on agricultural fields, which allowed for the majority of the Stage 2 AA to be conducted using a pedestrian survey strategy. Specific Lot and Concession locations for each Project component assessed, whether solar field or turbine access roads and pads, are listed in Table 3.1 in Section 3.

As described in the Stage 1 AA, the Project Area is located in the Haldimand Clay Plain physiographic region, a large region that occupies approximately 1,350 square miles and is characterised by recessional moraines in the northern part, deep river valley in the middle, and flat and low lying ground to the south (Chapman and Putnam 1984).

The surficial geology of the Project Area is predominantly silty clay loam till soils. Generally the only other soil types represented are alluvial deposits in flood plains spanning the length of the minor waterways and some small areas of lacustrine silty clay in the eastern part of the Project area. The silty clay loam tills, such as the Gobles and Kelvin series of soils, are characterised by poor to imperfect drainage (Presant and Acton, 1984).

The general homogeneity of the Project Area soils was clearly evident during the Stage 2 AA field surveys. With one exception all solar fields and turbine access road and pad locations were located in areas of heavy, blocky clay soil of medium brown colour. The only discernible difference in these areas was around the margins of small drainage channels, natural and artificial, that ran through the surveyed areas, in which case the soil was darker and somewhat siltier. The only exception to the general soil conditions was found at a single turbine access road (see Section 3.21) where the soil was very silty and powdery to walk across.

Topographically the Project Area is generally nearly level to gently rolling. Where there is micro-topographic relief, the lower ground typically acts as a water collector and drainage channel for the surrounding ground. Even in areas where there is greater relief the underlying clay subsoils do not absorb water quickly and after rain events there was usually standing water underneath the ploughed surfaces. In no locations surveyed were there any soils which could be classified as having good drainage; most soils were imperfectly or poorly drained.

As part of SPK's ongoing engagement with local First Nation communities, an archaeological monitor from the Six Nations of the Grand, Daphne Parrington, was assigned to the Stage 2 AA. Ms. Parrington was present throughout the entire Stage 2 AA field program and actively participated in both the pedestrian and test pit excavation surveys.

3 STAGE 2 ARCHAEOLOGICAL ASSESSMENT, SURVEY AREAS

The Stage 2 Archaeological Assessment of the SPK GREP conducted by Stantec resulted in the survey of a total of 359 ha (Table 3-1). Of this total area 346 ha was surveyed using a pedestrian survey methodology at 5 m intervals (see Appendix A, Photos 1-6 for examples of ploughed survey areas). When artifacts were encountered survey interval was reduced to 1-1.5 m intervals and intensified for an area of minimum 20 x 20 m from either the individual artifact or from the centre of the initial scatter encountered.

Table 3-1 Location, Size, Survey Strategy and Results of Stage 2 AA By Survey Area

Survey Area	Location (Lot, Concession, Township)	Surveyed Area (ha)	Survey Methodology	Archaeological Sites Recorded
Solar Field 1	S ½ , Lot 30, Conc. 4, South Cayuga	37	Pedestrian, 5 m intervals	AfGw-137, AfGw-138, AfGw-139, AfGw-142, AfGw-143, AfGw-144, AfGw-145, AfGw-146, AfGw-147, AgGw-164
Solar Field 2	S ½ , Lot 29, Conc. 4, South Cayuga	32	Pedestrian, 5 m intervals	Afgw-141
Solar Field 3	S ½ , Lot 28, Conc. 4, South Cayuga	32	Pedestrian, 5 m intervals	AfGw-146, AfGw-147 (south part)
Solar Field 4	N ½ , Part Lots 29 and 30, Conc. 4, South Cayuga	38	Pedestrian, 5 m intervals	AfGw-155, AfGw-156, AfGw-157, AfGw-158, AfGw-159, AfGw-160, AfGw-161, AfGw-162,AfGw-165
Solar Field 5	N ½ , Part Lots 28 and 29, Conc. 4, South Cayuga	29	Pedestrian, 5 m intervals	AfGw-154
Solar Field 6	N ½ , Lot 28, Conc. 4, South Cayuga	23	Pedestrian, 5 m intervals	AfGw-147 (north part), AfGw-166
Solar Field 7	N ½ , Lot 27, Conc. 4, South Cayuga	35	Pedestrian, 5 m intervals	AfGw-148, Afgw-149, AfGw-153
Solar Field 8	N ½ , Lot 26, Conc. 4, South Cayuga	37	Pedestrian, 5 m intervals	AfGw-150, AfGw-151, AfGw-152
Solar Woodlot	Part Lots 28 & 29, Conc. 4, South Cayuga	11 @ 5 m 2 @ 10 m	Test pit, 5 and 10 m intervals	AfGw-163
Turbines 33 & 36	Lots 39 and 40, Conc. 1, North Cayuga	9	Pedestrian, 5 m intervals	AfGx-710
Turbine 46	Lot 41, Conc. 2, South Cayuga	6	Pedestrian, 5 m intervals	AfGx-711, AfGx-712
Turbines 34 & 45	Lots 39, 40 and 41, Conc. 1 , South Cayuga	9	Pedestrian, 5 m intervals	AfGx-721
Turbines 23 & 28	Lots 39 and 40, Conc. 2, South Cayuga	11	Pedestrian, 5 m intervals	AfGx-713, AfGx-714, AfGx-715, AfGx-716, AfGx-717, AfGx-718, AfGx-719
Turbine 24	Lot 12, Conc. 5, Rainham	2	Pedestrian, 5 m intervals	none
Turbine 20	Lot 12, Conc. 5, Rainham	2	Pedestrian, 5 m intervals	AfGx-720
Turbine 13	Lots 9 and 10, Jones Tract, S. Cayuga	4	Pedestrian, 5 m intervals	AfGw-140, AfGw-184
Turbine 48	Lot 19, Jones Tract, South Cayuga	5	Pedestrian, 5 m intervals	none
Turbine 16	Lot 27, Jones Tract, South Cayuga	5	Pedestrian, 5 m intervals	none
Turbine 10	Lot 14, Conc. 4, Rainham	4	Pedestrian, 5 m intervals	AfGx-732
Turbine 55	Lot 23, Conc. 6, South Cayuga, and Lot 22, Conc. 2, Rainham	3	Pedestrian, 5 m intervals	AfGw-167
Turbine 12	Lot 19, Conc. 6, South Cayuga	3	Pedestrian, 5 m intervals	none
Turbine 21	Lot 18, Conc. 7, South Cayuga	3	Pedestrian, 5 m intervals	none
Turbines 39 & 40	Lots 11 and 12, Conc. 5, South Cayuga	5	Pedestrian, 5 m intervals	none
Turbine 7	Lot 7, Conc. 1 and Lot 7, Conc. 2 South of Rainham Road, Dunn	3	Pedestrian, 5 m intervals	none
Turbine 19	Lot 2, Conc. 1 North of Rainham Road, Dunn	6	Pedestrian, 5 m intervals	none
Turbine 585684	Lot 22, Conc. 3, South Cayuga	3	Pedestrian, 5 m intervals	none
	Total ha Surveyed	**359**		

Pedestrian survey occurred in the bulk of the solar field area (identified in this report as Solar Fields 1 through 8) and for all turbine access roads and pads. A woodlot of approximately 13 ha in the central part of the solar field area (identified in this report as Solar Woodlot 1) was surveyed using a test pit survey methodology (Photos 7 and 8, Appendix A). Most of the woodlot - 11 ha - was surveyed at 5 m intervals. The remaining 2 ha was surveyed at 10 m intervals, the different required testing intervals having been identified through the results of the archaeological potential modeling that occurred for the Stage 1 AA (Stantec 2010). The woodlot was the first project component assessed. At that time there were no documented sites within 250 m of the woodlot and thus the 10 m interval was, according to Ministry of Tourism and Culture (MTC) guidelines, the appropriate level of effort at which to test that portion of the woodlot. Subsequent discovery of archaeological resources within 250 m of the woodlot has resulted in the re-evaluation of that portion of the woodlot as requiring testing at 5 m intervals at a later date.

Field assessment followed standard procedures as outlined in the 2009 *Draft Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Culture. All pedestrian survey was completed at 5 m intervals (or less). When findspots of individual artifacts were encountered an intensified survey at 1 m intervals occurred around the artifact (or artifacts, depending on the specific location) for a 20 m radius from either the single artifact or the approximate centre of the artifact cluster initially identified. In specific instances (noted below) intensification occurred for much more than 20 m as the artifact scatter increased in size. In areas where test pit survey was completed (the woodlot in the central part of the solar project area) positive test pits resulted in the excavation of eight supplemental test pits around the initial positive test pit, one each N, NE, E, SE, S SW, W and NW at 2.5 m from the positive test pit.

For the most part each artifact found during pedestrian survey (including individual flakes) was recorded in the field using a handheld Garmin GPS75 Geographic Position System (GPS) device. In several instances one GPS point recorded the location of several tightly clustered flakes. In two instances (discussed below) GPS data was recorded only for the limits of very dense scatters of lithic flakes. Where test pit survey was completed the location of each initial positive test pit was recorded. With the exception of material recovered from test pits, only artifacts that are considered to be diagnostic or formal tools were collected during the Stage 2 AA. All other artifacts encountered during the pedestrian survey component of the Project were left *in-situ*. Formal tools collected during the field survey were given specific alpha-numeric designations by tool type (*e.g.* Point), GPS unit designation (either 1- or 2-) and sequential number of that tool type, resulting in designations such as Point 2-12 or Biface 1-5. These designations have been carried forward, where applicable, to the artifact catalogues, either of registered archaeological sites (*e.g.* AfGx-718.1 for Point 2-24) or as part of the non-site affiliated collection (*e.g.* 161010624.1).

For simplicity of discussion the solar component area has been divided into eight (8) “fields”, corresponding to the township lots (and south or north ½) in which they are located, and are identified as Solar Field 1 through 8. The woodlot that was surveyed for the solar component is referred to as the Solar Woodlot.

3.1 Solar Field 1

Solar Field 1 (SF1) is the south-westernmost of the solar fields, located in the south ½ of Lot 30, Concession 4, South Cayuga. This field encompasses a total of 37 ha and is bounded on the west side by the bottom edge of an exposed rock ridge that underlies Mt. Olivet Road (Figures 3-1 and 3-2). SF1 was surveyed on October 4-6, 2010. The topography of SF1 is gently sloped, with the highest elevation being at the north end of the field and the lowest at the south end along Haldimand Road 20. The extreme south end of the field was very poorly drained and there was standing water evident in the south-west corner throughout the Stage 2 AA period. The other major topographic feature in SF1 is a natural drainage channel that runs roughly north-south and bisects the field into a western 1/3 and an eastern 2/3. Other smaller drainage channels were noted in the eastern side of the field (Figures 3-1 and 3-2).

SF1 contained the highest number of artifacts, the highest number of diagnostic artifacts and formal tools, and resulted in the greatest number of significant archaeological sites within the solar component area (n=8). Details regarding the eight registered archaeological sites in SF1 are found in Section 4.

A total of nineteen projectile points were found in SF1 (see chart below), including: one Late Palaeo-Indian (Appendix C, Plate 1), one Early Archaic (Appendix C, Plate 1), two Middle Archaic (Appendix C, Plate 2), four Late Archaic (Appendix C, Plate 2), three probable Early Woodland (Appendix C, Plate 3), two probable Middle Woodland (Appendix C, Plate 3), and five of indeterminate date (Appendix C, Plate 4). Other non-dateable formal tools are shown on Figures 3-1 and 3-2 and are itemised in Appendix B.

596000

SOLAR FIELD NO. 4

Pt 1-1

Fire Cracked Rock

Brkn Tool

Archaeology Site No. 19

Olivet

Utfl 1-1

Cluster No. 1

Archaeology Site No. 20

Photo 4

Biface 1-1

Isolated Find No. 1

Isolated Find No. 2

SOLAR FIELD NO. 1

Pt 1-6

Archaeology Site No. 39

Cluster No. 5

Cluster No. 3

Cluster No. 4

SOLAR FIELD NO. 2

Point2-5

Point2-6

Isolated Find No. 3

Cluster No. 2

N

0 50 100 m

1:1,500

4749000

596000

4749000

Legend

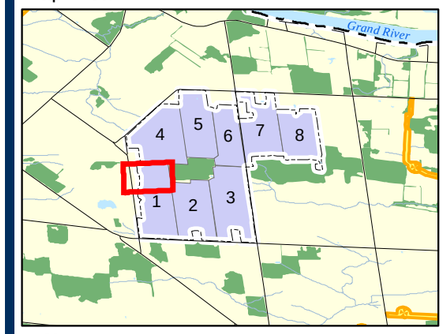
Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit
- Cluster
- Isolated Find
- Archaeological Site Stage 3 Required
- Pedestrian Survey (5 m)

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Photo Number & Direction
- Watercourse
- Road

Map Area



Notes

1. Coordinate System: UTM Zone 17 NAD 83.
2. Data Sources: Ontario Ministry of Natural Resources © Queens Printer Ontario, 2009; © GREP, 2010; © Samsung, 2010.
3. Image Sources: © Google Earth Pro, 2010 (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

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February 2011
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Client/Project

SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

3-1

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - SOLAR FIELD: 1

Survey ID #	Borden #	Period	Date
Point 2-10	n/a	Indeterminate	Indeterminate
Point 2-11	n/a	Indeterminate	Indeterminate
Point 2-4	n/a	Early Woodland	2,850-2,350 BP
Point 2-5	n/a	Late Archaic	3,500-2,800 BP
Point 2-6	n/a	Indeterminate	Indeterminate
Point 2-7	AfGw-142	Late Archaic	3,500-2,800 BP
Point 2-8	AfGw-142	Middle Woodland	2,000-1,100 BP
Point 2-9	AfGw-143	Indeterminate	Indeterminate
Point 1-1	AfGw-144	Early Woodland	2,850-2,350 BP
Point 1-10	AfGw-138	Middle Archaic	8,000-7,000 BP
Point 1-11	AfGw-138	Middle Woodland	2,000-1,100 BP
Point 1-2	AfGw-143	Early Archaic	8,900-8,000 BP
Point 1-3	AfGw-137	Early Woodland	2,850-2,350 BP
Point 1-4	AfGw-138	Middle Archaic	6,500-5,000 BP
Point 1-5	AfGw-139	Late Archaic	3,800-3,500 BP
Point 1-6	AfGw-164	Early Archaic	10,000-9,800 BP
Point 1-7	AfGw-138	Late Archaic	3,800-3,500 BP
Point 1-8	AfGw-137	Late Palaeo-Indian	10,200-9,500 BP
Point 1-9	AfGw-139	Indeterminate	Indeterminate

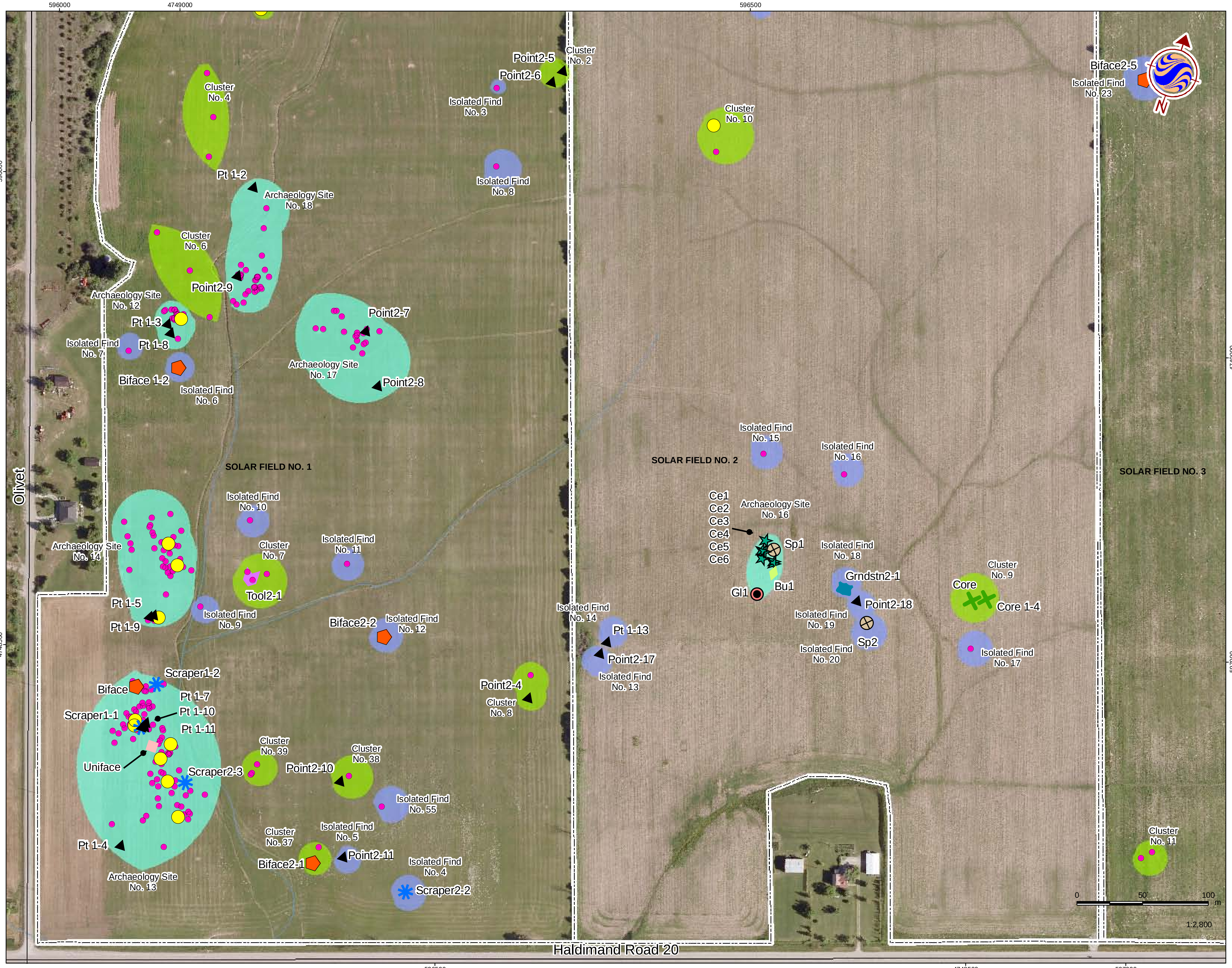
3.2 Solar Field 2

Solar Field 2 (SF2) is located in the south ½ of Lot 29, Concession 4, South Cayuga. This field encompasses a total of 32 ha (Figures 3-2 and 3-3). SF2 was surveyed on October 6, 2010. The topography of SF2 is gently sloped, with the highest elevation being at the north end of the field and the lowest at the south end along Haldimand Road 20. The extreme south-west corner of the field was poorly drained. Natural drainage channels are evident throughout the field, although none is as deeply banked as the major channel in SF1.

SF2 contained far fewer artifacts, diagnostics and formal tools than SF1. SF2 did, however, contain the only significant historic period deposit, which was the only archaeological site registered from SF2. Details regarding this site, AfGw-141 are found in Section 4.

A total of four projectile points were found in SF2 (see chart below), including: two Late Archaic (Appendix C, Plate 2), one probable Middle Woodland (Appendix C, Plate 3), and one of indeterminate date (Appendix C, Plate 4). Other non-dateable formal tools are shown on Figures 3-2 and 3-3 and are itemised in Appendix B.

Survey ID #	Borden #	Period	Date
Point 2-17	n/a	Late Archaic	3,800-3,500 BP
Point 2-18	n/a	Late Archaic	3,300-2,900 BP
Point 1-12	n/a	Early Woodland	2,850-2,350 BP
Point 1-13	n/a	Indeterminate	Indeterminate


596000
4749000
596500
Cluster No. 2
Point2-5
Point2-6
Cluster No. 4
Isolated Find No. 3
Isolated Find No. 8
Cluster No. 10
Biface2-5
Isolated Find No. 23
Pt 1-2
Archaeology Site No. 18
Cluster No. 6
Point2-9
Archaeology Site No. 12
Pt 1-3
Isolated Find No. 7
Pt 1-8
Point2-7
Archaeology Site No. 17
Point2-8
Biface 1-2
Isolated Find No. 6
SOLAR FIELD NO. 1
SOLAR FIELD NO. 2
SOLAR FIELD NO. 3
Isolated Find No. 15
Isolated Find No. 16
Olivet
Isolated Find No. 10
Archaeology Site No. 14
Cluster No. 7
Tool2-1
Isolated Find No. 11
Ce1
Ce2
Ce3
Ce4
Ce5
Ce6
Archaeology Site No. 16
Sp1
Bu1
Gl1
Isolated Find No. 18
Grndstn2-1
Point2-18
Cluster No. 9
Core
Core 1-4
Pt 1-5
Pt 1-9
Isolated Find No. 9
Biface2-2
Isolated Find No. 12
Isolated Find No. 14
Pt 1-13
Point2-17
Isolated Find No. 13
Isolated Find No. 19
Sp2
Isolated Find No. 20
Isolated Find No. 17
Scraper1-2
Biface
Pt 1-7
Pt 1-10
Scraper1-1
Pt 1-11
Point2-4
Cluster No. 8
Uniface
Cluster No. 39
Cluster No. 38
Scraper2-3
Point2-10
Isolated Find No. 55
Cluster No. 37
Isolated Find No. 5
Point2-11
Biface2-1
Isolated Find No. 4
Pt 1-4
Archaeology Site No. 13
Scraper2-2
Cluster No. 11
0
50
100
m
1:2,800
Haldimand Road 20
596500
4748500
597000
4749000
4748500

Legend

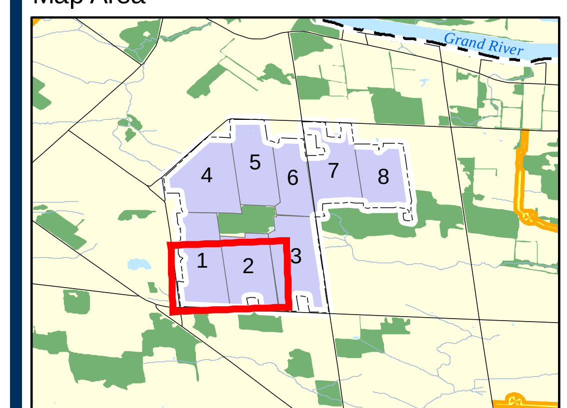
Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit
- Cluster
- Isolated Find
- Archaeological Site Stage 3 Required
- Pedestrian Survey (5 m)

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Photo Number & Direction
- Watercourse
- Road

Map Area



Notes

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Project No. 161010624

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SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

3-2

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - SOLAR FIELDS: 1 - 3

596500 597000 4749500

4749000 597500

SOLAR FIELD NO. 1

SOLAR FIELD NO. 2

SOLAR FIELD NO. 3

Ptp 2
Ptp 1
Isolated Find No. 21
Pt 1-12
int2-5
nt2-6
Cluster No. 2
Cluster No. 10
Isolated Find No. 28
Axe2-1
Cluster No. 13
Isolated Find No. 23
Biface2-5
Scraper2-5
Isolated Find No. 26
Archaeology Site No. 21
Isolated Find No. 27
Point2-12
Isolated Find No. 25
Tool2-2
Isolated Find No. 24
Cluster No. 12
Isolated Find No. 15
Isolated Find No. 16
Ce1
Ce2
Ce3
Ce4
Ce5
Ce6
Archaeology Site No. 16
Sp1
Isolated Find No. 18
Grndstn2-1
Point2-18
Sp2
Gl1
Bu1
Cluster No. 9
Core
Core 1-4
Isolated Find No. 17
Isolated Find No. 14
Pt 1-13
Point2-17
Isolated Find No. 13
Isolated Find No. 19
Isolated Find No. 20
Cluster No. 8
Isolated Find No. 22
Cluster No. 11
Wilson
Photo 1
Haldimand Road 20

4748500 597000 597500

4749000 597500

0 50 100 m
1:3,500

Legend

Artifact

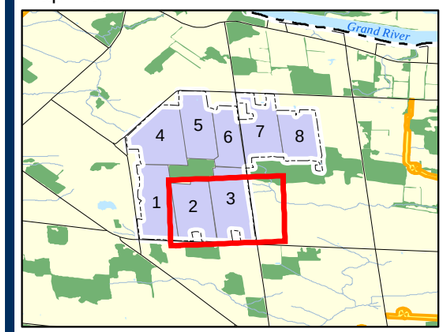
- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit

- Cluster
- Isolated Find
- Archaeological Site Stage 3 Required
- Pedestrian Survey (5 m)

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Photo Number & Direction
- Watercourse
- Road

Map Area



Notes

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GRAND RENEWABLE ENERGY PARK

Figure No.

3-3

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - SOLAR FIELDS: 2 & 3

3.3 Solar Field 3

Solar Field 3 (SF3) is located in the south ½ of Lot 28, Concession 4, South Cayuga. This field encompasses a total of 32 ha (Figures 3-3 and 3-7). SF3 was surveyed on October 7, 2010. The topography of SF3 is gently sloped, with the highest elevation being at the north end of the field and the lowest at the south end along Haldimand Road 20. Unlike SF1 and SF2, however, only one notable drainage channel is evident, at the north end of the field.

SF3 contained a number of widely scattered artifacts in the southern 2/3 of the field, one small but tightly clustered significant lithic scatter (AfGw-6) and one very extensive and rich deposit of artifacts (AfGw-147) that extended into Solar Field 6 (Figure 3-7). Details regarding these two archaeological sites are found in Section 4.

A total of four projectile points were found in SF3 (see chart below), including: two Late Woodland (Appendix C, Plate 3), and one of indeterminate date (Appendix C, Plate 4). The last projectile point was later determined to be a biface and was re-assigned. Other non-dateable formal tools are shown on Figures 3-3 and 3-7 and are itemised in Appendix B.

Survey ID #	Borden #	Period	Date
Point 2-1	AfGw-147	Late Woodland (Neutral)	550-400 BP
Point 2-12	n/a	Indeterminate	Indeterminate
Point 2-2	AfGw-147	Late Woodland (Neutral)	550-400 BP
Point 2-3	AfGw-147	Re-assigned as a biface	n/a

3.4 Solar Field 4

Solar Field 4 (SF4) is located in the north ½ of Lot 30 and north ½ of part Lot 29, Concession 4, South Cayuga. This field encompasses a total of 38 ha (Figures 3-4 and 3-5). SF1 was surveyed on October 13 and 14, 2010. The topography of SF4 is very gently rolling compared to the other fields in the solar area, particularly toward the west side of the field near the junction of Mt. Olivet and Meadows Roads. The gently rolling topography has resulted in a number of natural drainage channels running roughly east-west across the field. An area of level, poorly drained ground is located in the extreme west part of the field, along Mt. Olivet Road, where the major drainage channel meets level ground.

Artifacts were distributed widely across SF4, with the exception of the south-west part of the field. Several significant clusters of artifacts were identified in the north end of the field and resulted in the registering of 5 archaeological sites (AFgW-155, AFgW-156, AFgW-157, AFgW-158 and AFgW-165). Details regarding this site, AfGw-141 are found in Section 4.

A total of seven projectile points were found in SF4 (see chart below), including: one Late Palaeo-Indian (Appendix C, Plate 1), one Middle Archaic (Appendix C, Plate 2), one Late Archaic (Appendix C, Plate 2), two probable Early Woodland (Appendix C, Plate 3), one probable Middle Woodland, and one of indeterminate date (Appendix C, Plate 4). Other non-dateable formal tools are shown on Figures 3-4 and 3-5 and are itemised in Appendix B.

595500
4750000
596000
595500
4750000
4749500
596000
596500
4749500

Biface 1-6
Archaeology Site No. 31
Cluster No. 20
Cluster No. 19
Point2-13
Biface 1-5
Point2-15
Core2-1
Uf2-1
Archaeology Site No. 40
Archaeology Site No. 32
Biface2-3
Point2-14
Isolated Find No. 36
Archaeology Site No. 30
Biface2-4
Biface 1-7
Scraper1-4
Point2-16
Scraper2-4
Scraper1-3
Archaeology Site No. 33
Cluster No. 21
Meadows
Isolated Find No. 37
Cluster No. 23
Core 1-3
Cluster No. 25
Cluster No. 24
Cluster No. 22
Isolated Find No. 35
Pt 1-16
Isolated Find No. 38
Isolated Find No. 34
Pt 1-14
Core 1-2
Isolated Find No. 33
Cluster No. 18
Pt 1-15
Archaeology Site No. 34
Photo 2
SOLAR FIELD NO. 4
Isolated Find No. 32
Cluster No. 16
Core 1-1
Cluster No. 14
Biface 1-4
Archaeology Site No. 36
Archaeology Site No. 35
Cluster No. 17
Cluster No. 15
Isolated Find No. 30
Isolated Find No. 31
Biface 1-3
Isolated Find No. 29
Archaeology Site No. 37
Oliver
Isolated Find No. 40
Photo 3
Biface 1-8
Pt 1-18
Archaeology Site No. 29
Scraper1-5
Cluster No. 27
SOLAR FIELD NO. 5
Cluster No. 26
Isolated Find No. 39
Photo 9
0
50
100 m
1:3,100

Legend

Artifact

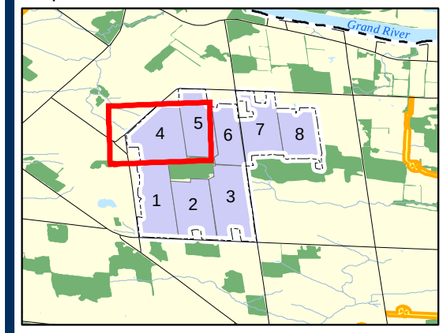
- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit

- Cluster
- Isolated Find
- Archaeological Site Stage 3 Required
- Pedestrian Survey (5 m)

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Photo Number & Direction
- Watercourse
- Road

Map Area



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GRAND RENEWABLE ENERGY PARK

Figure No.

3-4

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - SOLAR FIELDS: 4 & 5

596000
596500
4750000
4749500
597000

Biface 1-6
Archaeology Site No. 31
Cluster No. 20
Isolated Find No. 40
Photo 3
Cluster No. 19
Point2-13
Biface 1-5
Archaeology Site No. 40
Biface2-3
Point2-14
Archaeology Site No. 30
Biface 1-8
Pt 1-18
Archaeology Site No. 29
Cluster No. 21
Isolated Find No. 36
Scraper1-5
Cluster No. 27
Isolated Find No. 37
Core 1-3
Cluster No. 23
Cluster No. 22
Isolated Find No. 35
Pt 1-16
SOLAR FIELD NO. 4
SOLAR FIELD NO. 5
SOLAR FIELD NO. 6
SOLAR FIELD NO. 7
Wilson
Isolated Find No. 34
Pt 1-14
Cluster No. 18
Pt 1-15
Core 1-2
Isolated Find No. 33
Photo 2
Cluster No. 26
Isolated Find No. 32
Core 1-1
Archaeology Site No. 35
Biface 1-4
Archaeology Site No. 36
Cluster No. 17
Cluster No. 15
Isolated Find No. 31
Biface 1-3
Archaeology Site No. 37
Isolated Find No. 29
Isolated Find No. 39
Isolated Find No. 44
Pt 1-27
Isolated Find No. 41
Isolated Find No. 43
Isolated Find No. 42
Photo 9
Core 1-7
Core 1-6
Archaeology Site No. 22
Isolated Find No. 45
Archaeology Site No. 23
Cluster No. 33
Core 1-5
Graver 1-1
Pt 1-17
Cluster No. 28
Archaeology Site No. 41
Isolated Find No. 47
Isolated Find No. 46
Pt 1-19
Cluster No. 29
Cluster No. 30
Cluster No. 3
N
0 50 100 m
1:3,100

Legend

Artifact

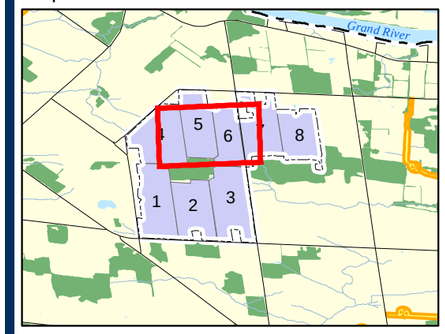
- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit

- Cluster
- Isolated Find
- Archaeological Site Stage 3 Required
- Pedestrian Survey (5 m)

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Photo Number & Direction
- Watercourse
- Road

Map Area



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GRAND RENEWABLE ENERGY PARK

Figure No.

3-5

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - SOLAR FIELDS 4 - 7

Survey ID #	Borden #	Period	Date
Point 2-13	n/a	Late Archaic	3,000-2,000 BP
Point 2-14	AfGw-165	Late Palaeo-Indian	10,200-9,500 BP
Point 2-15	AfGw-157	Middle Archaic	5,000-4,500 BP
Point 2-16	AfGw-158	Early Woodland	2,850-2,350 BP
Point 1-14	n/a	Middle Woodland	2,000-1,100 BP
Point 1-15	n/a	Indeterminate	Indeterminate
Point 1-16	n/a	Early Woodland	2,850-2,350 BP

3.5 Solar Field 5

Solar Field 5 (SF5) is located in the north ½ of part Lot 28 and north ½ of part Lot 29, Concession 4, South Cayuga. SF1 was surveyed on October 25, 2010. This field encompasses a total of 29 ha (Figures 3-4 and 3-5). The topography of SF5 is generally nearly level. Drainage channels in SF5 are generally insignificant, with the exception of one at the south end of the field, which runs into an extensive low, poorly drained area in Solar Field 6.

Relatively few artifacts were identified in SF5, with the exception of one area at the north-west part of the field (Figure 3-5). Only one projectile point of indeterminate age was found, (Appendix C, Plate 4). The point is located within the artifact cluster that was registered as AfGw-154. Details regarding this site are found in Section 4.Other non-dateable formal tools are shown on Figures 3-4 and 3-5 and are itemised in Appendix B.

Survey ID #	Borden #	Period	Date
Point 1-18	AfGw-154	Indeterminate	Indeterminate

3.4 Solar Field 6

Solar Field 6 (SF6) is located in the north ½ of part Lot 28 Concession 4, South Cayuga. This field encompasses a total of 23 ha (Figures 3-5, 3.6 and 3-7). SF1 was surveyed on October 25 and 26, 2010. The topography of SF6 is variable, with the ridge of significantly higher elevation in the south end of the field, adjoining the highest elevation of SF3. Immediately below the ridge there is a wide drainage channel during wetter parts of the year, including the survey period. North of the main drainage channel there are two smaller, but notable channels that run through the more level grade of the north part of the SF6.

Relatively few artifacts were identified in SF6, with the exception of the top of the ridge area where the site (AfGw-147) originally located in SF3 continued. Despite the relative paucity of artifacts in the other parts of the field, one significant projectile point was found that resulted in the registering of another site, AfGw-166. Details regarding these sites are found in Section 4.

A total of three projectile points were found in SF6 (see chart below), including one Early Archaic (Appendix C, Plate 1) and two Late Archaic (Appendix C, Plate 2. Other non-dateable formal tools are shown on Figures 3-5, 3-6 and 3-7 and are itemised in Appendix B.

596500 597000 597500

596500 4750500 4750000

Meadows

Archaeology Site No. 28
Biface1-10
Pt 1-25
Cluster No. 34
Pt 1-26
Isolated Find No. 50

Isolated Find No. 47
Cluster No. 28
Core 1-5
Graver 1-1
Pt 1-17
Archaeology Site No. 41
Isolated Find No. 46
Pt 1-19

Pt 1-30
Cluster No. 31

SOLAR FIELD NO. 7

SOLAR FIELD NO. 6

Wilson

SOLAR FIELD NO. 8

Isolated Find No. 53
Archaeology Site No. 26
Pt 1-28
Pt 1-20
Isolated Find No. 54
Cluster No. 35
Archaeology Site No. 27
Biface1-11
Archaeology Site No. 25
Cluster No. 36

Isolated Find No. 52
Pt 1-29
Isolated Find No. 51
Pt 1-24
Isolated Find No. 49
Pt 1-23

Cluster No. 29
Cluster No. 30
Biface 1-9
Pt 1-21
Isolated Find No. 48
Pt 1-22
Archaeology Site No. 24
Cluster No. 32

Pt 1-27
Isolated Find No. 44
Isolated Find No. 43
Isolated Find No. 45

0 50 100 m
1:3,500

597000 597500 4750000

Legend

Artifact

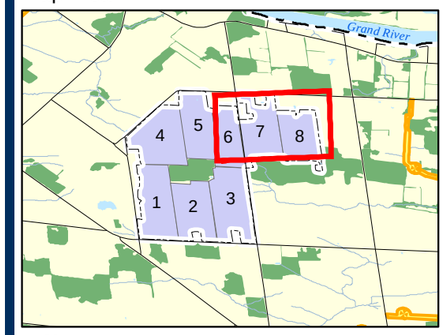
- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit

- Cluster
- Isolated Find
- Archaeological Site Stage 3 Required
- Pedestrian Survey (5 m)

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Photo Number & Direction
- Watercourse
- Road

Map Area



Notes

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GRAND RENEWABLE ENERGY PARK

Figure No.

3-6

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - SOLAR FIELDS 6 - 8

596500

4749500

Isolated Find No. 32
Core 1-1
Archaeology Site No. 35
Archaeology Site No. 36
Biface 1-4
Cluster No. 17
Cluster No. 15
Biface 1-3
Archaeology Site No. 37
Isolated Find No. 29
SOLAR FIELD NO. 4

SOLAR FIELD NO. 5
Isolated Find No. 39
Isolated Find No. 41
Isolated Find No. 42
Pt 1-27
Isolated Find No. 44
Isolated Find No. 43
SOLAR FIELD NO. 6

Photo 9

Core 1-7
Core 1-6
Point2-1
Point2-2
Scraper2-1
Archaeology Site No. 22
Point2-3

WOODLOT
Ptp 4
Archaeology Site No. 38
Ptp 3
Ptp 2
Ptp 1

SOLAR FIELD NO. 1
SOLAR FIELD NO. 2
SOLAR FIELD NO. 3
Isolated Find No. 28

0 50 100 m
1:2,200

596500
597000
4749500
597000

Legend

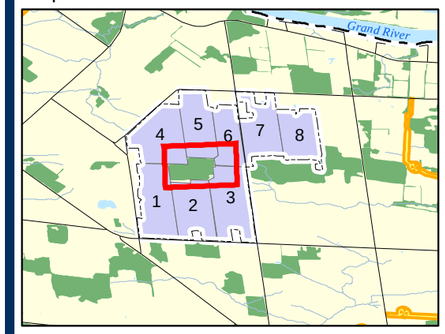
Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit
- Cluster
- Isolated Find
- Archaeological Site Stage 3 Required
- Pedestrian Survey (5 m)

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Photo Number & Direction
- Watercourse
- Road

Map Area



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Project No. 161010624

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Figure No.

3-7

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - SOLAR FIELDS: WOODLOT

Survey ID #	Borden #	Period	Date
Point 1-17	AfGw-166	Early Archaic	10,000-9,800 BP
Point 1-19	n/a	Late Archaic	4,500-4,000 BP
Point 1-27	n/a	Late Archaic	3,000-2,000 BP

3.5 Solar Field 7

Solar Field 7 (SF7) is located in the north ½ of Lot 27, Concession 4, South Cayuga. This field encompasses a total of 35 ha (Figures 3-5 and 3-6). SF7 was surveyed on October 26, 2010. The topography of SF7 is generally level, with the exception of the south end of the field, where the grade drops down and creates an area of poorly drained ground associated with the large drainage channel in SF6, just across Wilson Road from SF7 (Figure 3-5). The poorly drained ground continues along the interface of the ploughed field with the woodlot on the south side of the field (Figure 3-6). The more level ground that characterises most of SF7 was also the best drained larger area within the solar component.

Despite the generally better drained ground conditions artifacts were sparsely distributed across SF7, except for two large clusters and one smaller cluster of artifacts at opposite ends of the field. These clusters were registered as archaeological sites AFgW-148, AFgW-149 and AFgW-153. Details regarding these sites are found in Section 4.

A total of five (5) projectile points were found in SF7 (see chart below), including: one Late Palaeo-Indian (Appendix C, Plate 1), one Late Archaic (Appendix C, Plate 2), one probable Middle Woodland, and two of indeterminate date (Appendix C, Plate 4). Other non-dateable formal tools are shown on Figures 3-5 and 3-6 and are itemised in Appendix B.

Survey ID #	Borden #	Period	Date
Point 1-21	AfGw-149	Late Archaic	3,500-2,800 BP
Point 1-22	n/a	Indeterminate	Indeterminate
Point 1-25	AfGw-153	Late Palaeo-Indian	10,400-10,000 BP
Point 1-26	n/a	Indeterminate	Indeterminate
Point 1-30	n/a	Middle Woodland	2,000-1,100 BP

3.6 Solar Field 8

Solar Field 8 (SF8) is located in the north ½ of Lot 26, Concession 4, South Cayuga. This field encompasses a total of 37 ha (Figure 3-6). SF1 was surveyed on October 27 and November 25, 2010. The topography of SF8 is generally level, with the exception of the north end of the field where a drainage channel runs through a slight dip in grade.

The slight dip in grade proved to be a significant topographic feature as three clusters of artifacts were located on its margins (Figure 3-6). Despite there being only ten other artifacts outside the sites in SF8, three of those were diagnostic and dateable projectile points. The three artifact clusters noted were registered as archaeological sites AfGw-150, AfGw-151, and AfGw-152. Details regarding this site, AfGw-141 are found in Section 4.

A total of five (5) projectile points were found in SF4 (see chart below), including: two Late Archaic (Appendix C, Plate 1), one Middle Archaic (Appendix C, Plate 2), one Late Archaic

(Appendix C, Plate 2 ,one Middle Woodland, and one of indeterminate date (Appendix C, Plate 4). Other non-dateable formal tools are shown on Figure 3-6 and are itemised in Appendix B.

Survey ID #	Borden #	Period	Date
Point 1-20	AfGw-151	Middle Archaic	5,000-4,500 BP
Point 1-23	n/a	Late Archaic	3,800-3,500 BP
Point 1-24	n/a	Late Middle Woodland	1,450-1,250 BP
Point 1-28	AfGw-151	Indeterminate	Indeterminate
Point 1-29	n/a	Late Archaic	3,500-2,800 BP

3.7 Solar Woodlot

The 13 ha woodlot that comprises the central part of the solar component west of Wilson Road is located in Lots 28 and 29, Concession 4, South Cayuga Township (Figures 2-1 and 3-7). The woodlot was surveyed between September 7 and 22, 2010. The terrain of the woodlot is generally level, with only very slight topographic relief evident. Soils in the woodlot were in general better drained than the surrounding agricultural fields, although the cart paths that had been worn to below grade were often pocked with areas of standing water that had drained into them from the surrounding ground. At the far south-east corner of the woodlot there is a manmade pond feature. Tree cover in the woodlot was mixed forest, although dominated by deciduous tree species. Undergrowth cover ranged from very dense around the edges of the woodlot to relatively open. Open areas were especially prevalent in the eastern part of the woodlot.

Based on the results of archaeological potential modeling completed for the Stage 1 AA the majority of the woodlot (11 ha) was identified as being of elevated archaeological potential and was assessed using a test pit survey methodology at 5 m intervals. The remaining 2 ha, all located in the south ½ of Lot 29, was assessed at 10 m intervals.

Test pits were excavated through the topsoil and into subsoil and all soils were passed through screens of 6 mm mesh. All test pits were backfilled. Four positive test pits (PTPs 1-4) were encountered in the woodlot, two in the 5m interval testing zone and two in the 10 m interval testing zone. Three of the positive test pits (PTPs 1-3) contained a single flake of lithic debitage; one (PTP 4) contained two flakes. In all instances of positive test pits, eight (8) supplemental test pits were excavated around the initial positive test pits. Only one supplemental test pit, associated with PTP 4, contained further archaeological material of eight (8) lithic flakes. These two positive test pits contained a total of ten (10) artifacts and have thus been designated as a site of significance and been registered as archaeological site AfGw-163 (Table 3-1 and Section 4.39 below).

3.8 Turbines 33 and 36

The access roads and pads for Turbines 33 (T33) and 36 (T36) are located in Lots 39 and 40, Concession 1, North Cayuga, on the north side of Highway 3. This surveyed area encompasses a total of 9 ha (Figure 3-8). T33 and T36 were surveyed on November 26, 2010. The topography of this area is generally level from Highway 3 to where the access road divides. From there the ground is rolling along the T36 road up to the start of the pad area.

589000 589500 590000 590500 591000

4755500 4755000 4754500 4754000

36 Cluster No. 50

Archaeology Site No. 1

33

Isolated Find No. 56

Reeds

Highway 3

Kohler

3

Decewsville

Archaeology Site No. 43 Pt 1-31

34

45 Isolated Find No. 57

41

0 100 200 m

1:8,000

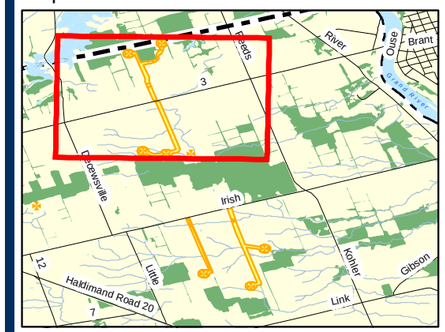
Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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Figure No.

3-8

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 33, 34, 36, 41 & 45

No notable drainage features were identified within the surveyed area, although a former railway bed does intersect the access road near Highway 3.

A few isolated flakes and one cluster of lithic debitage were recorded along the access road and pad of T36 during the survey. The cluster was registered as AfGx-710. Details regarding this site are found in Section 4. No diagnostic artifacts or formal tools were located.

3.4 Turbines 34 and 45

The access roads and pads for Turbines 34 (T34) and 45 (T45) are located in Lots 39, 40 and 41, Concession 1, South Cayuga, on the south side of Highway 3. This surveyed area encompasses a total of 9 ha (Figure 3-8). T33 and T36 were surveyed on November 26, 2010. The topography of this area is level for the entire surveyed area. A series of shallow drainage features cross the area from east to west and in combination with the level grade resulted in a thin layer standing water laying across almost the entire unploughed field surrounding the survey area. The ploughed areas that were surveyed were underlain by the same standing water, although the ploughing of the ground had elevated the surveyed soils above most of the water.

A single isolated flake was located along the south edge to the T45 pad and a single Early Archaic projectile point was located at the north side of the T34 pad. The location of the projectile was registered as AfGx-721. Details regarding this site are found in Section 4.

Survey ID #	Borden #	Period	Date
Point 1-31	AfGx-721	Early Archaic	9,800-8,900 BP

3.9 Turbine 46

The access road and pad for Turbine 46 (T46) are located in Lot 41, Concession 2, South Cayuga, south of Irish Line Road. This surveyed area encompasses a total of 6 ha (Figure 3-9). T46 was surveyed on December 3, 2010. The topography of this area rises in a series of slightly elevated and wide terraces from the roadway towards the south. Each successive slight rise in elevation is demarcated by a drainage channel running east-west. The major drainage channel is located approximately 2/3 of the distance from Irish Line to the T46 pad.

Two artifact clusters were recorded within the survey area. One cluster was located on the higher south side of the major drainage channel and has been registered as AfGx-712. The other cluster is located at about the midway point of the T46 access road and has been registered as AfGw-711. Details regarding these sites are found in Section 4. No projectile points were found during the Stage 2 AA. Other non-dateable formal tools are shown on Figure 3-9 and are itemised in Appendix B.

3.10 Turbines 23 and 28

The access road and pads for Turbines 23 (T23) and 28 (T28) are located in Lots 39 and 40, Concession 2, South Cayuga, south of Irish Line Road. This surveyed area encompasses a total of 11 ha (Figure 3-9). T46 was surveyed on November 29, 2010. The topography of this area rises in a series of slightly elevated and wide terraces from the roadway towards the south. Each successive slight rise in elevation is demarcated by a drainage channel running east-west.

590500 591000 591500

4752500 4752000

Archaeology Site No. 10
Irish
Archaeology Site No. 6
Archaeology Site No. 7
Archaeology Site No. 8
Biface 2-8
Scraper2-6
Archaeology Site No. 2
Isolated Find No. 61
28
Point2-24
Point2-25
Isolated Find No. 60
Cluster No. 41
Archaeology Site No. 9
Archaeology Site No. 5
Cluster No. 42
Archaeology Site No. 3
Isolated Find No. 58
Cluster No. 40
Isolated Find No. 59
Archaeology Site No. 4
46
23
N
0 100 200 m
1:5,200

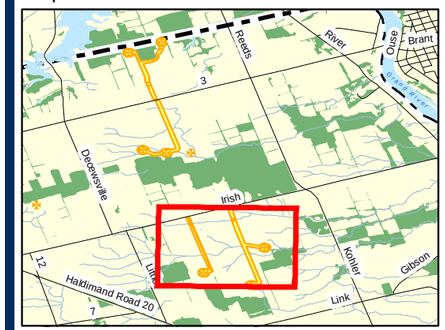
Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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Figure No.

3-9

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 23, 28 & 46

Where the access road to T28 branches off there is another rise in elevation to the T28 pad area, resulting in T28 having a quite elevated position compared to the surrounding terrain.

A large number of artifacts were recorded during the Stage 2 AA of this component, resulting in the registration of seven archaeological sites, including AfGx-713, AfGx-714, AfGx-715, AfGx-716, AfGx-717, AfGx-718, AfGx-719. Details regarding these sites are found in Section 4. Only two projectile points were located, both located on the pad area of T28 (Appendix C, Plate 4). Neither point is identifiable as to period or age. Other non-dateable formal tools are shown on Figure 3-9 and are itemised in Appendix B.

Survey ID #	Borden #	Period	Date
Point 2-24	AfGx-718	Indeterminate	Indeterminate
Point 2-25	AfGx-718	Indeterminate	Indeterminate

3.11 Turbine 24

The access road and pad for Turbine 24 (T24) are located in Lot 12, Concession 5, Rainham Township, south of Haldimand Road 20. This surveyed area encompasses a total of 2 ha (Figure 3-10). T24 was surveyed on November 29, 2010. The topography of this area is generally level and poorly drained, being slightly lower in elevation than most of the surrounding area.

No artifacts were located during the Stage 2 AA of T24. This is undoubtedly a result of the low elevation and poorly drained soils, as well as the small survey area.

3.12 Turbine 20

The access road and pad for Turbine 20 (T20) are located in Lot 12, Concession 5, Rainham Township, south of Haldimand Road 20. This surveyed area encompasses a total of 2 ha (Figure 3-10). T20 was surveyed on November 26, 2010. The topography of this area is level and poorly drained north of the drainage channel that skirts the bottom of a slight rise in elevation. The portion of the survey area south of the drain is situated on the rise, which allowed for better drainage

A series of closely associated artifact clusters were recorded within the ploughed survey area. Although there is a series of gaps between the clusters, the two projectile points recovered from the Stage 22 AA are both Early Woodland period (Appendix C, Plate 3). Since the two points are located at the east and west extremes of the larger site area it has been assumed that the entire artifact distribution likely represents one site. Details regarding the site are found in Section 4. No projectile points were found during the Stage 2 AA. Other non-dateable formal tools are shown on Figure 3-10 and are itemised in Appendix B.

Survey ID #	Borden #	Period	Date
Point 2-19	AfGx-720	Early Woodland	2,850-2,350 BP
Point 2-20	AfGx-720	Early Woodland	2,850-2,350 BP

592000
592500
4750000
4749500

Haldimand Road 20

24

Archaeology Site
No. 11
Point2-19
Point2-20
Biface1-12
Isolated Find
No. 62
20

0 50 100 m
1:2,600

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

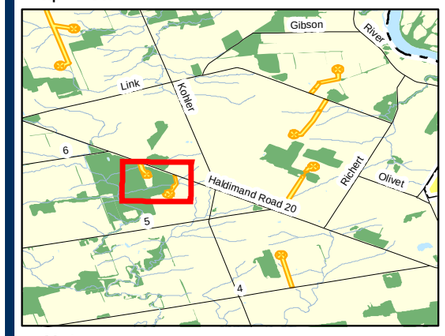

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Figure No.

3-10

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 20 & 24

3.13 Turbine 13

The access road and pad for Turbine 13 (T13) are located in Lots 9 and 10, Jones Tract, South Cayuga Township, north-east of Link Road. This proposed construction area encompasses a total of 4 ha (Figure 3-11). Most of this 4 ha was surveyed, with the exception of the previously disturbed areas around the existing barns and farm road. T13 was surveyed on December 1, 2010. The topography of the area rises gently but consistently from Link Road up to the point where the access road turns left toward the pad location.

No artifacts were found along the access road but two discrete clusters of artifacts were located within the pad area, both of which have been registered as archaeological sites AfGw-140 and AfGw-168. Two outlier flakes were also recorded on the north-east corner of the pad. One of the flake clusters, AfGw-140, recorded individual flakes. The other site, AfGw-168, was only recorded by the limits of the flake scatter due the high number of flakes identified. Details regarding the site are found in Section 4. No projectile points or other non-dateable formal tools were found.

3.14 Turbine 48

The access road and pad for Turbine 48 (T48) are located in Lot 19, Jones Tract, South Cayuga Township, south-west of Link Road. The surveyed area encompasses a total of 5 ha (Figure 3-12). T48 was surveyed on December 1, 2010. The topography of the area rises gently from Link Road up to the pad location.

A small cluster of lithic flakes was recorded at the south edge to the T48 pad and two isolated flakes were recorded along the road just south of Link Road (Figure 3-12). Neither cluster contained a sufficient number of flakes (*i.e.* greater than 10 non-diagnostic artifacts) to be considered a significant site and neither has been registered as a site. No projectile points or other non-dateable formal tools were found.

3.15 Turbine 16

The access road and pad for Turbine 16 (T16) are located in Lot 27, Jones Tract, South Cayuga Township, south-west of Link Road. The surveyed area encompasses a total of 5 ha (Figure 3-13). T16 was surveyed on November 29, 2010. The topography of the area is generally level, with some slight undulations in the pad area where there are some shallow drainage channels. Although the access road to the pad passes through a woodlot the existing farm road through the woodlot will be sufficient for the project needs and no test pit survey of the woodlot was required.

A few isolated lithic flakes were recorded scattered around the T48 pad (Figure 3-13). However, there were insufficient numbers of artifacts to warrant registration as a site. No projectile points or other non-dateable formal tools were found.

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

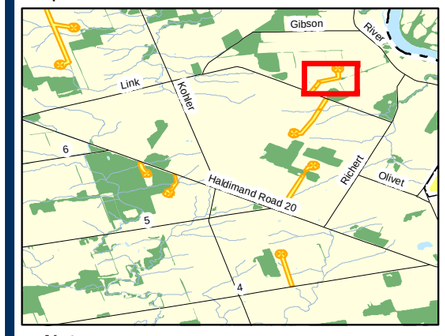

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Figure No.

3-11

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 13

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

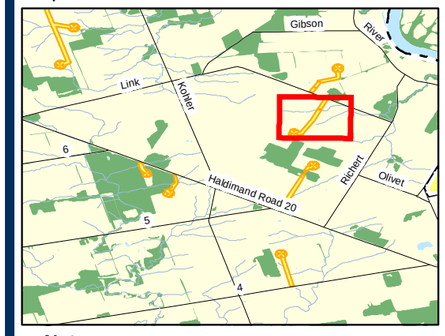

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Figure No.

3-12

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 48

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

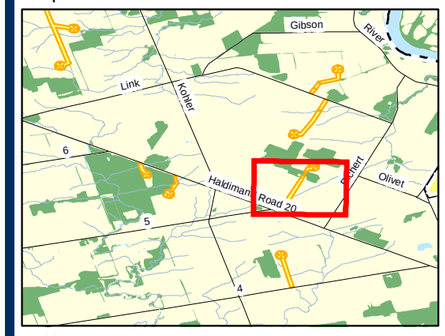

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Figure No.

3-13

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 16

3.16 Turbine 10

The access road and pad for Turbine 10 (T10) are located in Lot 14, Concession 4, Rainham Township. The surveyed area encompasses a total of 5 ha (Figure 3-14). T10 was surveyed on December 1, 2010. The topography of the area is nearly level, with a very gentle rise from the Concession 4 road at the south end of the access road up to the turbine pad. Two minor tributaries of Hemlock Creek drain the turbine pad area and much of the access road (Figure 3-14).

A small cluster of lithic flakes and a core was recorded at the eastern edge of the T10 pad, just south of a tributary (Figure 3-12). The cluster contained a sufficient number of flakes (*i.e.* greater than ten non-diagnostic artifacts) to be considered a significant site and was registered as archaeological site AfGx-732. Details regarding the site are found in Section 4. No projectile points or other non-dateable formal tools were found.

3.17 Turbine 55

The access road and pad for Turbine 55 (T55) are located in Lot 23, Concession 6, South Cayuga Township, with the very south end of the access road being in Lot 22 Concession 2, Rainham Township, on the north side of Rainham Road. The surveyed area encompasses a total of 5 ha (Figure 3-13). T55 was surveyed on December 2, 2010. The topography of the area, while overall very gently rolling, rises from Rainham Road up to the turbine pad location. A number of very minor or ephemeral tributaries of Wardells Creek either cross, or run parallel to the west side, of, the access road. The largest of the tributaries that crosses the access road also runs across the south side of the turbine pad.

A total of three artifacts were located during the survey of T55, including one flake, a Late Palaeo-Indian point (Appendix C, Plate 1) and a Late Archaic point (Appendix C, Plate 2). The location of the projectile was registered as AfGw-167.

Survey ID #	Borden #	Period	Date
Point 2-21	AfGw-167	Late Palaeo-Indian	10,200-9,500 BP
Point 2-22	n/a	Late Archaic	4,500-3,800 BP

3.18 Turbine 12

The access road and pad for Turbine 12 (T12) are located in Lot 19, Concession 6, South Cayuga Township, west of Haldimand Road 50. This surveyed area encompasses a total of 3 ha (Figure 3-15). T12 was surveyed on December 2, 2010. The survey area started at the entrance to a former small quarry alongside Haldimand Road 50. Any ground cover there had been worn and or/scraped down to bedrock and there was a considerable amount of modern refuse dumped around the quarry area. Past the quarry and dump area the ploughed access road ran along an area of moderately sloped ground. The slope trended north and west, toward the drainage channel on the north side of the access road. The turbine pad is also down grade from the access road, lying on level ground.

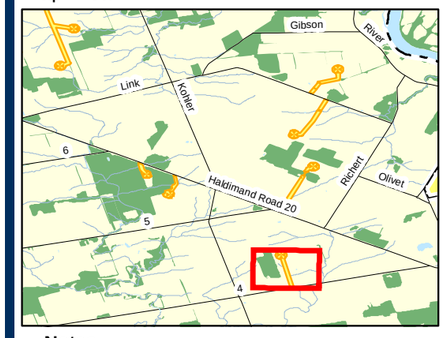
Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



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GRAND RENEWABLE ENERGY PARK

Figure No.

3-14

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 10

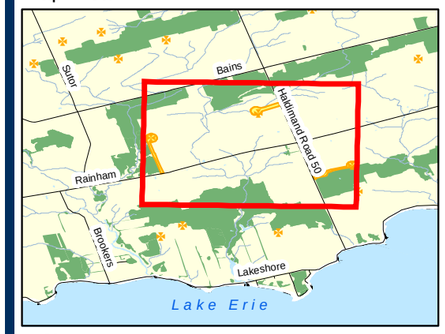
Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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Figure No.

3-15

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 12, 21 & 55

Two isolated bifaces, Biface 2.6 and Biface 2.7 (see Plate 5, Appendix C) were recovered during the Stage 2 AA, one at about the start of the turbine pad area and the second at the midway point of the access road. These non-dateable formal tools are shown on Figure 3-15 and are itemised in Appendix B.

3.19 Turbine 21

The access road and pad for Turbine 21 (T21) are located in Lot 18, Concession 7, South Cayuga Township, east of Haldimand Road 50. This surveyed area encompasses a total of 3 ha (Figure 3-15). T24 was surveyed on December 2, 2010. The topography of this area is level and poorly drained, being part of a wide flat area with no discernible drainage. Large parts of the ploughed survey area were covered with standing water.

No artifacts were located during the Stage 2 AA of T21. This is undoubtedly a result of the flat elevation and poorly drained soils making the area unfavourable to habitation.

3.20 Deleted Turbine 585684

This access road and turbine pad location were surveyed on November 26, 2010. It was determined that the turbine was superfluous to project needs and is referenced as per the last schematic on which it appeared. The former turbine located in Lot 22, Concession 3, South Cayuga Township, south of Meadows Road. This surveyed area encompasses a total of 3 ha (Figure 3-16). The topography of this area slopes gently up from Meadows Road to approximately the midway point of the access road where it begins to slope down to the south. As noted earlier, the soil associated with this turbine area was noticeably different than every other pedestrian survey location, being quite silty and powdery to walk through.

No artifacts were located during the Stage 2 AA of this location.

3.21 Turbines 39 and 40

The access road and pads for Turbines 39 (T39) and 28 (T40) are located in Lots 11 and 12, Concession 5, South Cayuga, east of South Cayuga Road. The surveyed area encompasses a total of 5 ha (Figure 3-17). T39 and T40 were surveyed on December 2, 2010. The general topography is relatively level as the road progresses east past the T39 pad to the edge of Lot 11. At the Lot 11 line the access road runs along the edge of a moderate slope down to a drainage channel that emerges out of the woodlot to the north (Figure 3-17). At the point where the T40 pad starts the grade slopes more gently towards the south and east.

A single isolated lithic flake and an isolated projectile point of indeterminate age were recorded at the T40 pad (Figure 3-17). However, there were insufficient numbers of artifacts or items with special archaeological interest to warrant registration as a site.

Survey ID #	Borden #	Period	Date
Point 2-23	n/a	Indeterminate	Indeterminate

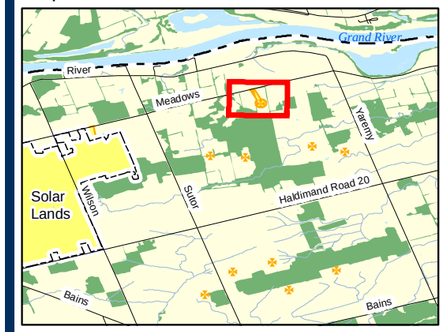
Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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Figure No.

3-16

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - FORMER TURBINE 585684

604000 604500 605000 605500 606000 606500

4750500 4750000 4749500 4749000 4748500

47
14
40
39
19
Cluster No. 49
Isolated Find No. 67
Point2-23
Isolated Find No. 68
Isolated Find No. 66
Haldimand Road 20
Dun Hald Townline
Hald Dunn Townline
Cayuga
Bains
N
0 200 400 m
1:9,000

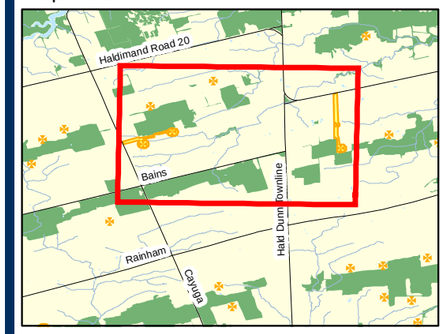
Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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Figure No.

3-17

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 19, 39 & 40

3.22 Turbine 19

The access road and pad for Turbine 19 (T19) are located in Lot 2, Concession 1 North of Rainham Road, Dunn Township, south of Haldimand Road 20. The surveyed area encompasses a total of 5 ha (Figure 3-17). T19 was surveyed on December 2, 2010. The general topography is gently rising as the road progresses south from Haldimand Road 20 to the turbine pad. At roughly the mid-point of the road there is a wide and deep drainage channel that was surrounded by a shallow area of standing water. At the far south end of the turbine pad there was also an area of mucky soils and standing water. Finally, on the east side of the access road 200 m south of Haldimand Road 20 there is an unploughed area measuring 150 x 50 m that was covered in alders and appeared to be permanently wet or very poorly drained.

A few isolated lithic flakes were recorded near the north end of the access road and a single isolated flake was located on the west side of the pad (Figure 3-13). However, there were insufficient numbers of artifacts to warrant registration as a site. No projectile points or other non-dateable formal tools were found.

3.23 Turbine 7

The access road and pad for Turbine 7 (T7) are located in Lot 7, Concession 1 and 2, South Cayuga Township, east of Haldimand Road 49. This surveyed area encompasses a total of 3 ha (Figure 3-18). T7 was surveyed on December 2, 2010. The topography of this area is level and poorly drained, being part of a wide flat area with no discernible drainage. A large part of the pad survey area was covered with standing water.

No artifacts were located during the Stage 2 AA of T7. This is undoubtedly a result of the flat elevation and poorly drained soils making the area unfavourable to habitation.

608500

4748000

7

Haldimand Road 49

N

0 50 100 m

1:2,000

608500

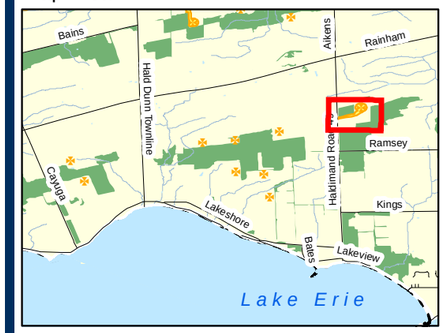
Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Cluster
- Isolated Find
- Archaeology Site Stage 3 Required
- Wind Turbine Location & Number
- Photo Number & Direction
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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Figure No.

3-18

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 7

4 STAGE 2 ARCHAEOLOGICAL ASSESSMENT RESULTS

The determination of site significance, and thus on whether a specific association of artifacts would become a registered archaeological site with the Ministry of Tourism and Culture (MTC), was based on guidelines presented in the 2009 *Draft Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Culture. In these guidelines specific criteria are set out for determining site significance, generally based on meeting a minimum number of artifacts within a defined area. Since the Project Area is located west of the Niagara Escarpment the minimum number of non-diagnostic artifacts, such as stone flakes from the production of stone tools, required to be present to designate a registerable site is higher than in the remainder of the province. These more stringent requirements for land west of the Escarpment recognize that there is a much higher occurrence of isolated artifacts and sites in this region, and in effect makes it more difficult for small scatters of non-diagnostic artifacts to be considered significant archaeological sites. As outlined in the 2009 *Draft Standards and Guidelines for Consultant Archaeologists* at least one of the following conditions should be met in order for a cluster of associated artifacts to be considered a significant archaeological site:

- Pre-contact archaeological resources containing diagnostic artifacts or a concentration of artifacts (or both):
    - In pedestrian survey, finding within a 10 x 10 metre area:
        - at least one diagnostic artifact or fire-cracked rock in addition to two or more non-diagnostic artifacts; or
        - In areas on or west of the Niagara Escarpment, at least 10 non-diagnostic artifacts.
    - In test pit survey, within a 10 m x 10 m area:
        - at least one diagnostic artifact from combined test pit and test unit excavations; or
        - at least five non-diagnostic artifacts from combined test pit and test unit excavations.
- Single examples of archaeological resources of special interest:
    - Aboriginal ceramics;
    - Exotic or period-specific cherts; and
    - An isolated Paleo-Indian or Early Archaic diagnostic artifact.

Given that artifact locations were recorded using a handheld GPS that had an average accuracy error of between 3-5 m at any given time some allowances have been made in determining sites that are not entirely within the designated 10 x 10 m area. In some instances sites that contained just over the minimum number of non-diagnostics but which were distributed over a larger area than 10 x 10 m have been designated as sites because they represented the only artifact cluster in an otherwise blank archaeological landscape. The Ministry guidelines allow for some discretion on the part of the consultant archaeologist to make decisions regarding the significance of field findings outside of the guidelines presented.

Only these sites were considered significant and, as per recent MTC practice, only significant sites received Borden number designation. Borden numbers (Borden System) are an alpha-numeric numbering system for archaeological sites that is used throughout Canada. A Borden Block is composes of four letters, two major (UPPER CASE) and two minor (lower case), each letter of which represents a major and minor subdivision within the block. In the case of site AfGw-167, for instance, **A** is the major South-North locator. Each major block represents 2 degrees of Latitude from south to north (using letters A - U); **f** is the minor South-North Locator, with each minor block representing 10 minutes of Latitude from south to north (using letters a-l). **G** is the major East-West Locator, with each major block representing 4 degrees of longitude from east to west (letters A - W); **w** is the minor East-West Locator, with each minor block representing 10 minutes of longitude from east to west (letters a - v). Within each of these blocks sites are numbered consecutively as they are registered, and each site gets a unique number. In the case of site AfGw-167 this is the 167th site found within Borden block AfGw.

The Stage 2 AA completed to date by Stantec has resulted in the identification and recording of 1589 discrete pre-contact period artifacts, including 106 formal or expedient tools (including fifty-five projectile points, or “arrowheads” (Table 4-1)), one piece of fire cracked rock and 1482 lithic flakes from the manufacture of stone tools. Unless otherwise noted, all tool forms were produced on Bois Blanc formation cherts (*e.g.* Onondaga chert or Haldimand chert) (Fox, 2009). Two locations were either partially or completely recorded based on the limits of a dense lithic scatter where individual GPS points were not taken. A deposit of A.D. 19th century historic period artifacts was also recorded during the Stage 2 AA.

Particular emphasis is placed on projectile points in this assessment as they are the most reliable artifactual indicators (*i.e.* diagnostic) of cultural period associations, and thus of age, rarity and other criteria that assist in assigning significance to archaeological sites. Such emphasis on diagnostic artifacts is reflected in the special provisions made in the *Draft Standards and Guidelines for Consultant Archaeologists* for single examples of Palaeo-Indian, Early Archaic, or Late Woodland period artifacts. All projectile points collected during the Stage 2 AA are shown in Plates 1-4, Appendix C. Every projectile point was analysed and sorted according to cultural affiliation and period. Although not all of the points could be confidently typed or given an age, analysis did lead to the identification of: four Late Palaeo-Indian points; four Early Archaic points; seventeen Middle and Late Archaic points; and fifteen Woodland period points. A further fifteen points could not be assigned to a period or date (Table 4-1). Analysis and further description of projectile points that are not part of a registered archaeological site ended at this level.

Based on the 2009 *Draft Standards and Guidelines for Consultant Archaeologists* Stantec has identified a total of 45 discrete registered archaeological site locations that will require Stage 3 and/or 4 Archaeological Assessment (Table 4-2). Of note, of the 1589 individual artifact locations recorded during the Stage 2 AA, 84.8% (n=1348) are included in the limits of the 45 archaeological sites. Descriptions of the contents of each site are provided following Table 4-2.

Table 4-2 Archaeological Culture Period and Dates of Recovered Projectile Points

Survey Location	Survey ID #	Borden #	Period	Date	Survey Location	Borden #	Survey ID #	Period	Date
T28 Pad	Point 2-24	AfGx-718	Indeterminate	Indeterminate	Solar 2	n/a	Point 1-12	Early Woodland	2,850-2,350 BP
T28 Pad	Point 2-25	AfGx-718	Indeterminate	Indeterminate	Solar 2	n/a	Point 1-13	Indeterminate	Indeterminate
Solar 3	Point 2-1	AfGw-147	Late Woodland (Neutral)	550-400 BP	Solar 4	n/a	Point 1-14	Middle Woodland	2,000-1,100 BP
Solar 1	Point 2-10	n/a	Indeterminate	Indeterminate	Solar 4	n/a	Point 1-15	Indeterminate	Indeterminate
Solar 1	Point 2-11	n/a	Indeterminate	Indeterminate	Solar 4	n/a	Point 1-16	Early Woodland	2,850-2,350 BP
Solar 3	Point 2-12	n/a	Indeterminate	Indeterminate	Solar 6	AfGw-166	Point 1-17	Early Archaic	10,000-9,800 BP
Solar 4	Point 2-13	n/a	Late Archaic	3,000-2,000 BP	Solar 5	AfGw-154	Point 1-18	Indeterminate	Indeterminate
Solar 4	Point 2-14	AfGw-165	Late Palaeo-Indian	10,200-9,500 BP	Solar 6	n/a	Point 1-19	Late Archaic	4,500-4,000 BP
Solar 4	Point 2-15	AfGw-157	Middle Archaic	5,000-4,500 BP	Solar 1	AfGw-143	Point 1-2	Early Archaic	8,900-8,000 BP
Solar 4	Point 2-16	AfGw-158	Early Woodland	2,850-2,350 BP	Solar 8	AfGw-151	Point 1-20	Middle Archaic	5,000-4,500 BP
Solar 2	Point 2-17	n/a	Late Archaic	3,800-3,500 BP	Solar 7	AfGw-149	Point 1-21	Late Archaic	3,500-2,800 BP
Solar 2	Point 2-18	n/a	Late Archaic	3,300-2,900 BP	Solar 7	n/a	Point 1-22	Indeterminate	Indeterminate
T20 Road	Point 2-19	AfGx-720	Early Woodland	2,850-2,350 BP	Solar 8	n/a	Point 1-23	Late Archaic	3,800-3,500 BP
Solar 3	Point 2-2	AfGw-147	Late Woodland (Neutral)	550-400 BP	Solar 8	n/a	Point 1-24	Late Middle Woodland	1,450-1,250 BP
T20 Road	Point 2-20	AfGx-720	Early Woodland	2,850-2,350 BP	Solar 7	AfGw-153	Point 1-25	Late Palaeo-Indian	10,400-10,000 BP
T55 Pad	Point 2-21	AfGw-167	Late Palaeo-Indian	10,200-9,500 BP	Solar 7	n/a	Point 1-26	Indeterminate	Indeterminate
T 55 Road	Point 2-22	n/a	Late Archaic	4,500-3,800 BP	Solar 6	n/a	Point 1-27	Late Archaic	3,000-2,000 BP
T40 Pad	Point 2-23	n/a	Indeterminate	Indeterminate	Solar 8	AfGw-151	Point 1-28	Indeterminate	Indeterminate
Solar 3	Point 2-3	AfGw-147	Re-assigned as a biface	n/a	Solar 8	n/a	Point 1-29	Late Archaic	3,500-2,800 BP
Solar 1	Point 2-4	n/a	Early Woodland	2,850-2,350 BP	Solar 1	AfGw-137	Point 1-3	Early Woodland	2,850-2,350 BP
Solar 1	Point 2-5	n/a	Late Archaic	3,500-2,800 BP	Solar 7	n/a	Point 1-30	Middle Woodland	2,000-1,100 BP
Solar 1	Point 2-6	n/a	Indeterminate	Indeterminate	T34 Pad	AfGx-721	Point 1-31	Early Archaic	9,800-8,900 BP
Solar 1	Point 2-7	AfGw-142	Late Archaic	3,500-2,800 BP	Solar 1	AfGw-138	Point 1-4	Middle Archaic	6,500-5,000 BP
Solar 1	Point 2-8	AfGw-142	Middle Woodland	2,000-1,100 BP	Solar 1	AfGw-139	Point 1-5	Late Archaic	3,800-3,500 BP
Solar 1	Point 2-9	AfGw-143	Indeterminate	Indeterminate	Solar 1	AfGw-164	Point 1-6	Early Archaic	10,000-9,800 BP
Solar 1	Point 1-1	AfGw-144	Early Woodland	2,850-2,350 BP	Solar 1	AfGw-138	Point 1-7	Late Archaic	3,800-3,500 BP
Solar 1	Point 1-10	AfGw-138	Middle Archaic	8,000-7,000 BP	Solar 1	AfGw-137	Point 1-8	Late Palaeo-Indian	10,200-9,500 BP
Solar 1	Point 1-11	AfGw-138	Middle Woodland	2,000-1,100 BP	Solar 1	AfGw-139	Point 1-9	Indeterminate	Indeterminate

Artifact Identification Sources: Ellis and Ferris, 1990; Justice, 1987; LCOAS, n.d..; Ritchie, 1969

Table 4-3 Archaeological Sites Requiring Further Assessment

GREP Site #	Borden #	Easting	Northing	# Tools/ Diagnostics	# non-Tools	Total # Artifacts	Cultural Period	Dimensions (in m)	Site Area (m^2)
1	AfGx-710	589964	4755625	0	11	11	Indeterminate	25 x 20	500
2	AfGx-711	590521	4752280	2	3	5	Indeterminate	35 x 20	581
3	AfGx-712	590603	4752068	0	32	32	Indeterminate	65 x 30	1950
4	AfGx-713	591237	4751861	0	22	22	Indeterminate	25 x 25	509
5	AfGx-714	591145	4752137	0	28	28	Indeterminate	30 x 30	733
6	AfGx-715	591097	4752326	0	32	32	Indeterminate	55 x 35	1571
7	AfGx-716	591169	4752307	0	11	11	Indeterminate	25 x 25	535
8	AfGx-717	591295	4752310	0	25	25	Indeterminate	35 x 25	659
9	AfGx-718	591339	4752251	2	9	11	Indeterminate	35 x 20	508
10	AfGx-719	590901	4752878	0	25	25	Indeterminate	60 x 30	1423
11	AfGx-720	592626	4749531	3	114	117	Early Woodland	90 x 90	6939
12	AfGw-137	596156	4748772	2	16	18	Late Palaeo-Indian/ Early Woodland	40 x 40	641
13	AfGw-138	596243	4748449	9	89	98	Middle/Late Archaic, Middle Woodland	150 x 110	12309
14	AfGw-139	596237	4748626	2	47	49	Late Archaic	145 x 115	4188
15	AfGw-140	596811	4748748	n/a	n/a	n/a	Indeterminate	20 x 20	303
16	AfGw-141	596644	4748742	10		10	19th Century Historic	55 x 55	1026
17	AfGw-142	596286	4748783	2	18	20	Late Archaic	90 x 55	3036
18	AfGw-143	596176	4748858	2	29	31	Early Archaic	115 x 50	3320
19	AfGw-144	596014	4749261	2	18	20	Early Woodland	110 x 110	9788
20	AfGw-145	596198	4749235	1	86	87	Indeterminate	50 x 50	1763
21	AfGw-146	597043	4749303	1	10	11	Indeterminate	35 x 35	1140
22	AfGw-147	596901	4749626	6	206	212	Late Woodland	250 x 160	29376
23	AfGw-148	597046	4749740	0	18	18	Indeterminate	70 x 40	2132
24	AfGw-149	597206	4749996	2	63	65	Late Archaic	75 x 50	3750
25	AfGw-150	597512	4750457	1	30	31	Indeterminate	40 x 30	1014
26	AfGw-151	597431	4750516	2	0	2	Middle Archaic	10 x 10	92
27	AfGw-152	597405	4750435	0	36	36	Indeterminate	40 x 35	1145
28	AfGw-153	596799	4750597	1	28	29	Late Palaeo-Indian	60 x 40	2193
29	AfGw-154	596309	4750150	2	14	16	Indeterminate	105 x 40	2723
30	AfGw-155	596193	4750040	1	10	11	Indeterminate	60 x 30	767
31	AfGw-156	596052	4750102	1	18	19	Indeterminate	50 x 40	898
32	AfGw-157	595992	4750003	2	11	13	Middle Archaic	30 x 30	473
33	AfGw-158	596044	4749943	6	35	41	Early Woodland	40 x 30	367
34	AfGw-159	596142	4749695	0	14	14	Indeterminate	20 x 20	341

35	AfGW-160	596174	4749580	0	5	5	Indeterminate	10 x 10	100
36	AfGw-161	596313	4749612	1	49	50	Indeterminate	80 x 50	3393
37	AfGw-162	596328	4749533	0	27	27	Indeterminate	25 x 25	564
38	AfGw-163	596603	4749418	0	10	10	Indeterminate	10 x 10	100
39	AfGw-164	596123	4749106	1	0	1	Early Archaic	10 x 10	100
40	AfGw-165	596105	4750015	2	2	4	Late Palaeo-Indian	20 x 20	227
41	AfGw-166	596722	4750265	1	0	1	Early Archaic	10 x 10	100
42	AfGw-167	600123	4746735	1	0	1	Late Palaeo-Indian	10 x 10	100
43	AfGx-721	589820	4753974	1	0	1	Early Archaic	10 x 10	100
44	AfGw-184	594647	4751614	0	62	62	Indeterminate	20 x 25	364
45	AfGx-732	594689	4751585	0	16	16	Indeterminate	20 x 25	389
				Total # Artifacts		1348		Total m2	104230

4.1 AfGx-710

Site AfGw-710 (GREP Site #1) was found on the access road to Turbine 36 (Figures 4-1 and 4-2). The site is composed of eleven (11) lithic flakes, which are the waste material that results from the making or sharpening of stone tools, in an area of approximately 25 x 20 m. The site is located on an elevated location above the headwaters of a minor unnamed tributary of the Grand River. This cluster of artifacts has been designated as a significant site because it was the only cluster of artifacts noted within the T36 survey area. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.2 AfGx-711

Site AfGx-711 (GREP Site #2) was located on the access road to Turbine 46 (Figures 4-1 and 4-3). The site is composed of Biface 2-8, Scraper 2-6 and three lithic flakes over an area of approximately 35 x 20 m. This site area is extended somewhat by the scraper, which is located away from the other four artifacts, but does appear to be associated with them. The site is located north of Holmes Creek, a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.3 AfGx-712

Site AfGx-712 (GREP Site #3) was located on the access road to Turbine 46 (Figures 4-1 and 4-3). The site is composed of thirty-two (32) lithic flakes over an area of approximately 65 x 30 m. The site is located at the edge of a small terrace south of Holmes Creek, a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

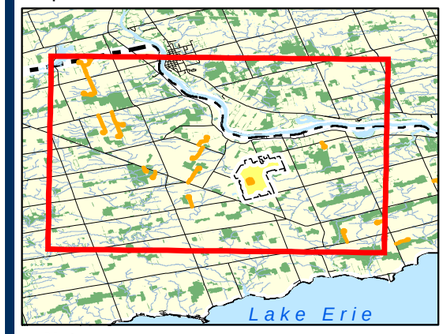
Legend

- Artifact
- Multiple Flakes
- Point
- Road
- Wind Turbine Location

Surveyed Area

- Test Pit at 5 m Interval
- Test Pit at 10 m Interval
- Pedestrian Survey
- Solar Lands
- Project Location

Map Area



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GRAND RENEWABLE ENERGY PARK

Figure No.

4-1

Title

ARCHAEOLOGICAL SITE LOCATIONS - OVERVIEW

589500

590000

4755500

36

33

Archaeology Site No. 1
AfGx. 710

N

0 50 100 m

1:2,300

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

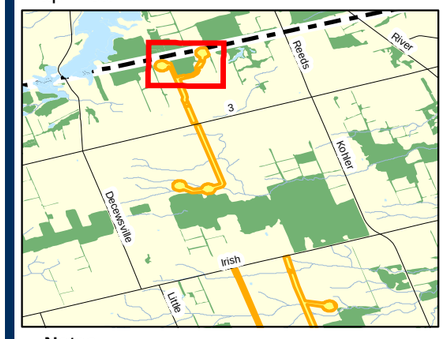

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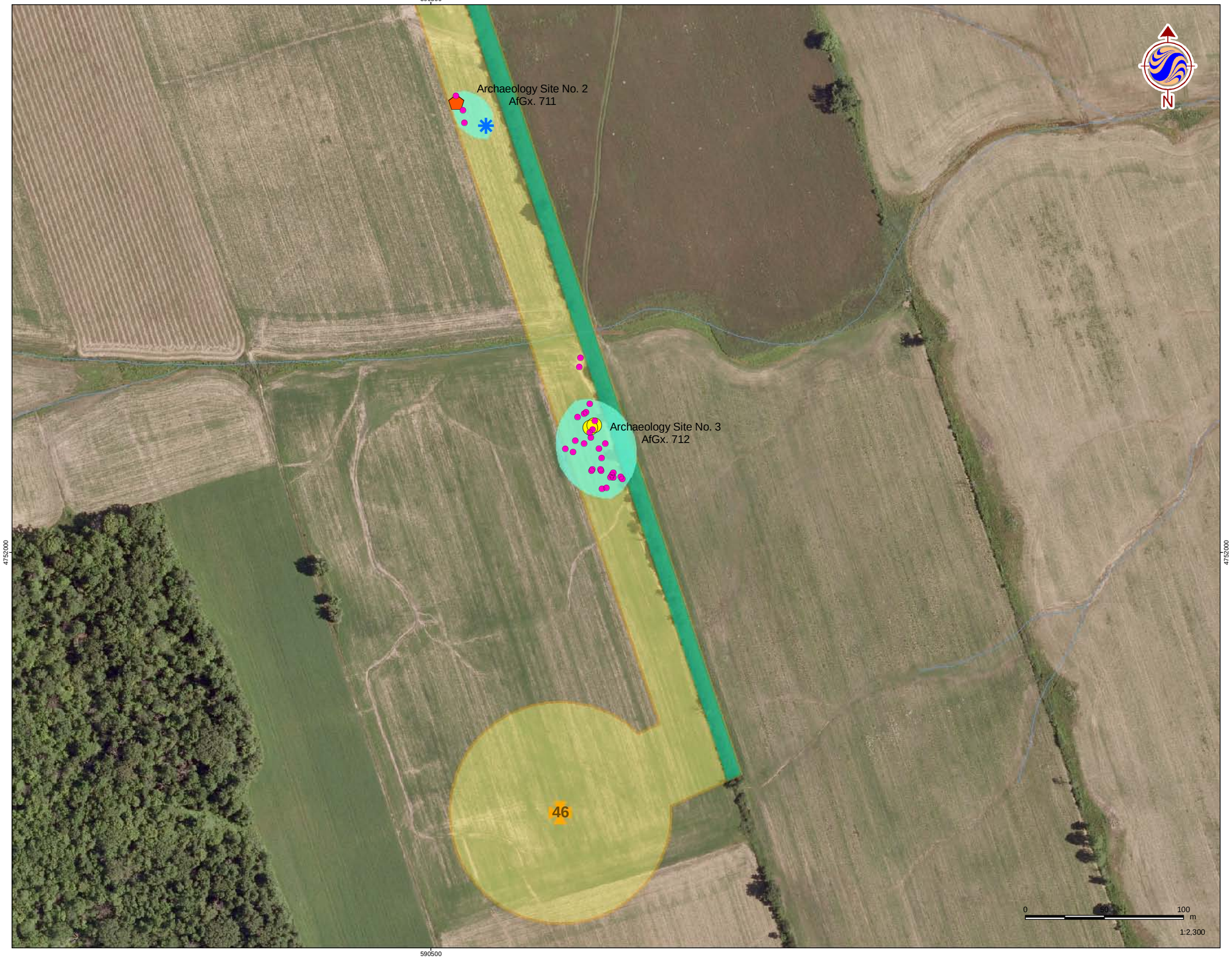
Figure No.

4-2

Title

ARCHAEOLOGICAL SITE AfGx.710

590500



4752000

590500

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

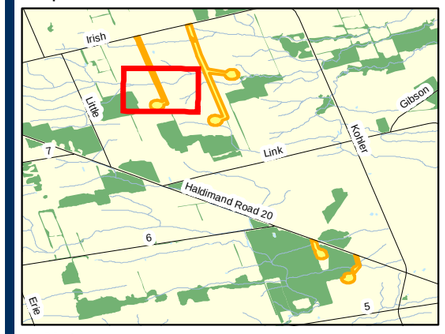


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Figure No.

4-3

Title

ARCHAEOLOGICAL SITES AfGx.711 & AfGx.712

4.4 AfGx-713

Site AfGx-713 (GREP Site #4) is located on the access road to Turbine 23 (Figures 4-1 and 4-4). The site is composed of 22 lithic flakes distributed over an area of 25 x 25 m. The site is located north of the south branch of Holmes Creek, a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.5 AfGx-714

Site AfGx-714 (GREP Site #5) is located on the access road to Turbine 23 (Figures 4-1 and 4-4). The site is composed of 28 lithic flakes distributed over an area of 30 x 30 m. The site is located south of the north branch of Holmes Creek, a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.6 AfGx-715

Site AfGx-715 (GREP Site #6) is located on the access road to Turbines 23 and 28 (Figures 4-1 and 4-4). The site is composed of 32 lithic flakes distributed over an area of 55 x 35 m. The site is located north of the north branch of Holmes Creek, a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.7 AfGx-716

Site AfGx-716 (GREP Site #7) is located on the access road to Turbine 28 (Figures 4-1 and 4-4). The site is composed of 11 lithic flakes distributed over an area of 25 x 25 m. The site is located at the top of a rise from the access road toward the Turbine 28 pad location, on the north side of the north branch of Holmes Creek, a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.8 AfGx-717

Site AfGx-717 (GREP Site #8) is located on the pad area of Turbine 28 (Figures 4-1 and 4-4). The site is composed of 25 lithic flakes distributed over an area of 35 x 25 m. The site is located on high ground above the north branch of Holmes Creek, a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

591000

591500

4752000

Archaeology Site No. 6
AfGx. 715

Archaeology Site No. 7
AfGx. 716

Archaeology Site No. 8
AfGx. 717

28

Archaeology Site No. 9
AfGx. 718

Archaeology Site No. 5
AfGx. 714

Archaeology Site No. 4
AfGx. 713

N

0 50 100 m

1:2,000

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

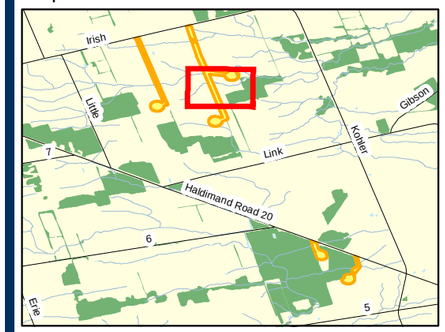

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Figure No.

4-4

Title

ARCHAEOLOGICAL SITES AfGx.713 - 718

4.9 AfGx-718

Site AfGx-718 (GREP Site #9) is located on the pad area of Turbine 28 (Figures 4-1 and 4-4). The site is composed of two projectile point tips (Point 2-24 and Point 2-25, Plate 4, Appendix C) and nine lithic flakes distributed over an area of 60 x 30 m. This site area is extended somewhat by the Point 2-25, which is located approximately 20 m east of the other artifacts, but does appear to be associated with them, especially as the form of the point tips is very similar. The site is located on high ground above the north branch of Holmes Creek, a minor tributary of the Grand River. The point tips are insufficient to be able to assign a cultural period or date to the site and thus it is presently of indeterminate culture period and/or age.

4.10 AfGx-719

Site AfGx-719 (GREP Site #10) is located on the access road to Turbines 23 and 28 (Figures 4-1 and 4-5). The site is composed of 25 lithic flakes distributed over an area of 60 x 30 m. The site is located on level ground south of a minor unnamed tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.11 AfGx-720

Site AfGx-720 (GREP Site #11) is located on the access road and pad of Turbine 20 (Figures 4-1 and 4-6). The site is composed of two points (Point 2-19 and Point 2-20, Plate 3, Appendix C), Biface 1-12 and 114 lithic flakes distributed over an area of 90 x 90 m. The site is located on elevated ground south of a minor tributary of Hemlock Creek.

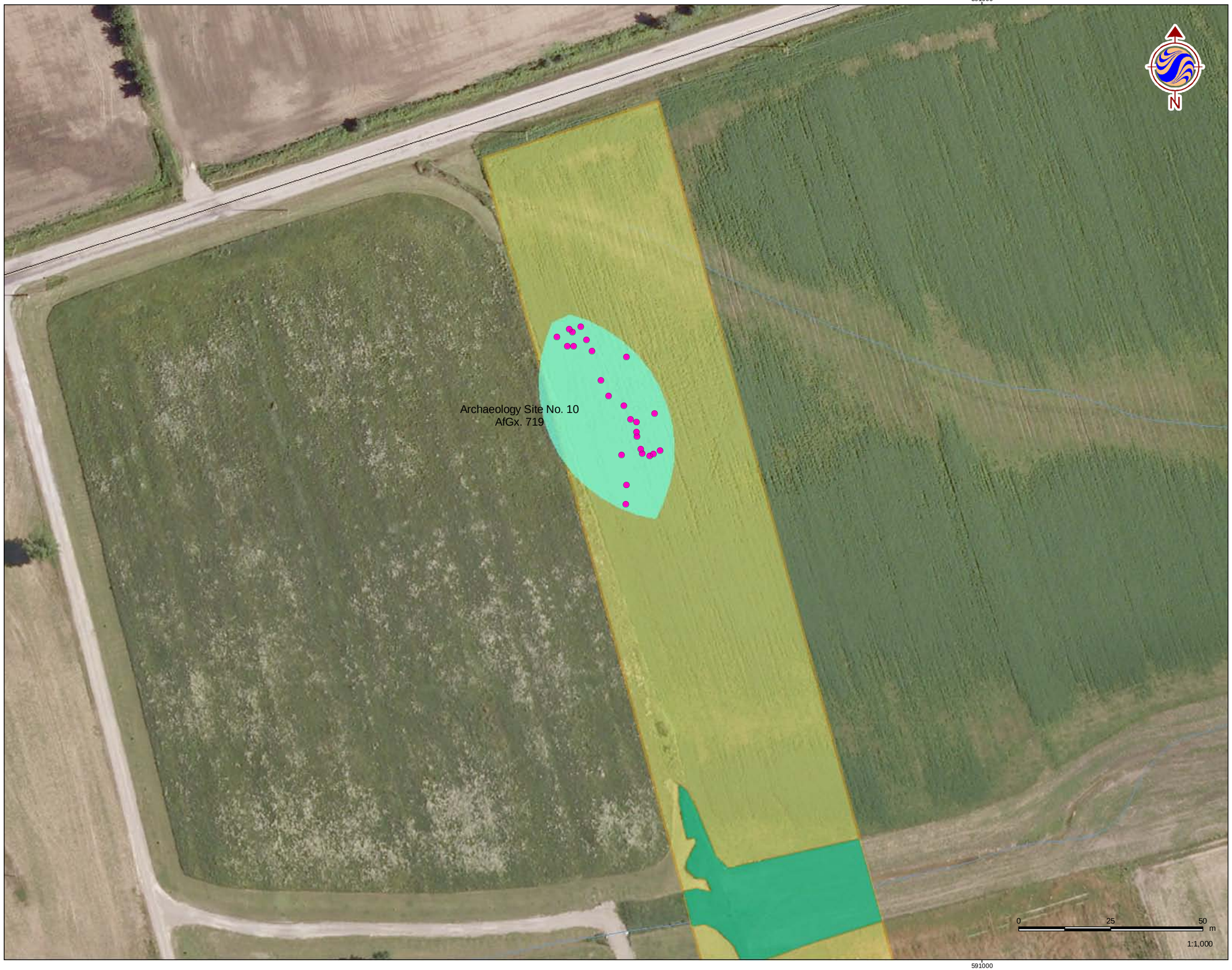
Point 2-20 is the basal end of a broken side notched point. The size, straight basal edge, characteristic side-notching and flake scars on the surface of the point indicate that it is a Meadowood type point. Point 2-19 has the basal end of the point broken off, but there is enough of the point remaining to indicate that it is also a side notched form. With regard to overall point size and flaking characteristics is it also likely a Meadowood type point, especially given its close association with Point 2-20.

Meadowood points are representative of the Early Woodland culture period of Ontario and date to 2,850-2,350 years Before Present (BP). We have therefore assigned this period and date to site AfGx-720.

4.12 AfGw-140

Site AfGw-140 (GREP Site #15) is located on the pad of Turbine 13 (Figures 4-1 and 4-7). The site is composed of a dense scatter of lithic flakes distributed over an area of 20 x 20 m. The density of flakes did into allow for individual recording of the artifacts and the GPS points taken represent the edges of the scatter. The site is located on elevated ground with respect to its immediate surroundings. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

591000



591000

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

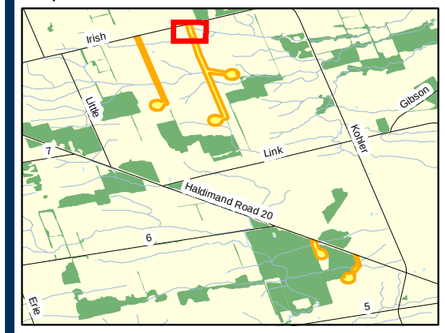


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Figure No.

4-5

Title

ARCHAEOLOGICAL SITE AfGx.719

592500

24

20

Archaeology Site No. 11
AfGx. 720

N

4749500

4749500

0 50 100 m

1:2,000

592500

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

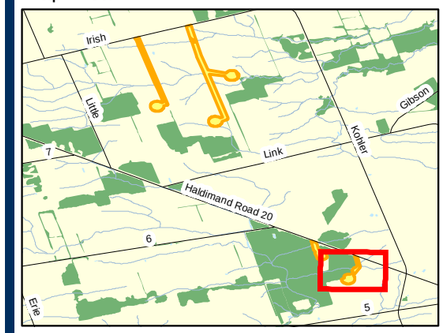

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Figure No.

4-6

Title

ARCHAEOLOGICAL SITE AfGx.720

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

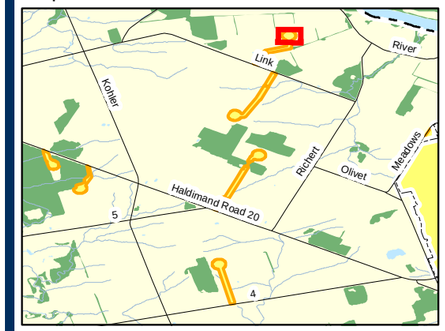

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Figure No.

4-7

Title

ARCHAEOLOGICAL SITES AfGw.140 & AfGw.184

4.13 AfGw-184

Site AfGw-184 (GREP Site #44) is located on the pad of Turbine 13 (Figures 4-1 and 4-7). The site is composed of 62 lithic flakes distributed over an area of 25 x 20 m. The site is located on elevated ground with respect to its immediate surroundings. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.14 AfGx-732

Site AfGx-732 (GREP Site #45) is located on the pad of Turbine 10 (Figures 4-1 and 4-8). The site is composed of 16 lithic flakes distributed over an area of 20 x 20 m. The site is located on elevated, level ground. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.15 AfGw-137

Site AfGw-137 (GREP Site #12) is located in Solar Field 1 (Figures 4-1 and 4-9). The site is composed of two points (Point 1-3 (Plate 3, Appendix C) and Point 1-8 (Plate 1, Appendix C)), and 16 lithic flakes distributed over an area of 40 x 40 m. The site is located on slightly elevated ground west of a drainage channel that runs into a minor tributary of Wardells Creek.

Point 1-8 is a broken medial portion of a point. The size, flaking pattern and medial ridge along one face of the point indicate that it is a Late Palaeo-Indian period lanceolate-type point. Point 1-3 has the basal end of the point broken off, but with regard to overall point size and flaking characteristics is it likely a Meadowood type point.

The Late Palaeo-Indian period represented by lanceolate type points dates to 10,200-9,500 BP. Meadowood points are representative of the Early Woodland culture period of Ontario and date to 2,850-2,350 years Before Present (BP). We have therefore designated AfGw-137 as a multiple component site.

4.16 AfGw-138

Site AfGw-138 (GREP Site #13) is located in Solar Field 1 (Figures 4-1 and 4-9). The site is composed of four points (Point 1-10 (Plate 2, Appendix C), Point 1-11 (Plate 3, Appendix C), Point 1-4 (Plate 2, Appendix C) and Point 1-7 (Plate 2, Appendix C)), Scraper 1-1 (Plate 5, Appendix C), Scraper 1-2 and Scraper 2-3 (Plate 5, Appendix C), and unifacial tool and 89 lithic flakes distributed over an area of 150 x 110 m. The site is located on slightly elevated ground west of a drainage channel that runs into a minor tributary of Wardells Creek.

Point 1-10 is an example of Middle Archaic stemmed horizon points, which date to 8,000-7,000 BP. Point 1-4 is an example of a later Middle Archaic side notched form, dating to 6,500-5,000 BP. Point 1-7 is a portion of Genesee type point, dating to the Late Archaic broad point horizon of 6,500-5,000 BP.

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

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Figure No.

4-8

Title

ARCHAEOLOGICAL SITE AfGx.732

596500

Archaeology Site No. 18
AfGw. 143

Archaeology Site No. 17
AfGw. 142

Archaeology Site No. 12
AfGw. 137

Archaeology Site No. 16
AfGw. 141

Archaeology Site No. 14
AfGw. 139

Archaeology Site No. 13
AfGw. 138

N

0 50 100 m
1:2,500

4748500

596500

Legend

Artifact
- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed
- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

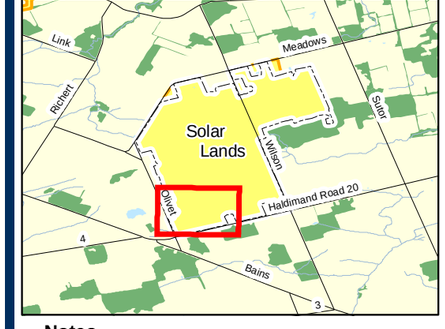

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Figure No.
4-9

Title
ARCHAEOLOGICAL SITES AfGw.137 - 139 & AfGw.141 - 143

Point 1-11 is a trianguloid point with either corner or side notching. The break point of the stem end of the point makes it impossible to determine which form of notching occurred. However, based on the size, shape and generally coarse manufacture of the point we have identified this as a probable Middle Woodland period Saugeen point, which dates to 2,000-1,100 BP. Scraper 2-3 appears to be a reworked stemmed broadpoint, which would make it contemporaneous with the Late Archaic Genesee point.

Based on the five diagnostic tools identified at the site we have designated AfGw-138 as a multiple component site.

4.17 AfGw-139

Site AfGw-139 (GREP Site #14) is located in Solar Field 1 (Figures 4-1 and 4-9). The site is composed of two points (Point 1-5 (Plate 2, Appendix C and Point 1-9 (Plate 4, Appendix C)), and 47 lithic flakes distributed over an area of 150 x 110 m. The site is located on slightly elevated ground west of a drainage channel that runs into a minor tributary of Wardells Creek.

Point 1-5 is a reworked Genesee type stemmed point, dating to the Late Archaic broad point horizon of 6,500-5,000 BP. Point 1-9 is a very rough point perform that cannot be identified to culture period.

Based on the diagnostic Genesee point at the site we have designated AfGw-138 as a Late Archaic period site.

4.18 AfGw-141

Site AfGw-141 (GREP Site #16) is located in Solar Field 2 (Figures 4-1 and 4-9). The site is a historic period scatter in the central part of the field. The dense scatter included ceramic, glass, metal and faunal remains consistent with a 19th century Euro-Canadian homestead. Although no foundations were recorded, a small number of building materials were observed including brick fragments, mortar and slate fragments which may represent roofing tiles. A total of ten individual artifacts were collected from the historic period scatter. These artifacts were considered to be both diagnostic and representative of the scatter in general.

Two kaolin smoking pipe bowl fragments were collected from the historic period scatter. Following cleaning, it was confirmed that the smaller fragment (AfGw-141.02) is, in fact, undecorated and undiagnostic. The second smoking pipe bowl fragment (AfGw-141.01) is decorated and includes embossed lettering (Plate 5, Appendix C). A raised leaf is located on the face of the bowl and likely travelled from the stem to the bowl on the complete pipe. The inscription “DIA[MOND] 18[97] JUBILEE” is located on the side of the bowl. This inscription refers to the Diamond Jubilee celebrated by Queen Victoria on June 20, 1897. It is likely that the complete pipe included an image commemorating the jubilee on the opposite side. Given the highly breakable and disposable nature of kaolin smoking pipes manufactured during the 19th century deposition of the artifact likely dates to between 1896 and 1900. This date allows for the possibility of distribution prior to 1897, in anticipation of the jubilee.

Ceramics comprised the majority of the scatter. A total of six ceramic artifacts were collected. AfGw-141.03 is a small blue shell-edged refined white earthenware rim sherd (Plate 5, Appendix C). The curvature of the sherd suggests that the complete vessel was not scalloped; however, it does include an impressed pattern along the rim. Repetitive impressed pattern and unscalloped edge suggests a date of between 1841 and 1857 (Miller, 2000). AfGw-141.04 is a rim sherd with blue transferprint decoration (Plate 6, Appendix C). The geometric motif was found to be too fragmentary to be attributed to a specific pattern; however it is consistent with a 19th century date. AfGw-141.06 is a sherd of refined white earthenware with brown transferprint decoration (Plate 6, Appendix C). The date of manufacture is post 1828 (Miller, 2000).

Three hand-painted ceramic sherds were collected from the scatter (AfGw-141.05, AfGw-141.07 and AfGw-141.08). All three sherds are of different patterns, but all three are examples of underglazed polychrome decoration. AfGw-141.07 and AfGw-141.08 are both characteristic of circa 1830 hand-painted wares in that the flowers include characteristic black stems. All three include the characteristic purplish red associated with early 19th century hand-painted wares (Plate 6, Appendix C).

Bottle and window glass was observed in large quantities throughout the scatter. Two glass artifacts were collected for their potential to yield diagnostic information. The first, a bottle base (AfGw-141.010), is likely from a rectangular bottle. The colour and form of the bottle are consistent with elixir or bitter bottles from circa 1820 to 1900 (Plate 7, Appendix C). The lack of mould number suggests a date of manufacture prior to the mid 19th century (Miller, 1986). A second glass artifact collected is a small white glass button (AfGw-141.09). The four-hole button is dome shaped, in that it is convex on both faces (Plate 7, Appendix C). Glass buttons reached their height of popularity on historic period Euro-Canadian sites between circa 1850 and 1875.

The historical atlas of Haldimand County indicates that a Thadeus Sniderhon was resident in the south ½ of Lot 29, Concession 4, South Cayuga in the later part of the 19th century (Page, 1879). The artifact assemblage collected from the historic period scatter suggests a date of deposition from the mid to late 19th century and may be associated with Mr. Sniderhon. Other observed artifacts are consistent with this date and no diagnostic artifacts were noted which would suggest a 20th century date of deposition for the scatter. Given the density of the scatter and its distance from the historic period residence, this scatter may represent a midden feature and warrants further investigation.

4.19 AfGw-142

Site AfGw-142 (GREP Site #17) is located in Solar Field 1 (Figures 4-1 and 4-9). The site is composed of two points (Point 2-7 (Plate 2, Appendix C and Point 2-8 (Plate 3, Appendix C)), and 47 lithic flakes distributed over an area of 150 x 110 m. The site is located on elevated ground south of a minor drainage channel that runs into a minor tributary of Wardells Creek.

Point 2-7 is an example of the Late Archaic Smallpoint horizon, dating to 3,500-2,800 BP. Point 2-8 is a trianguloid point with either corner or side notching. The break point of the stem end of the point makes it difficult to determine the form of notching. However, based on the size,

shape and generally coarse manufacture of the point we have identified this as a probable Middle Woodland period Saugeen point, which dates to 2,000-1,100 BP.

Based on the two diagnostic points identified at the site we have designated AfGw-142 as a multiple component site.

4.20 AfGw-143

Site AfGw-143 (GREP Site #18) is located in Solar Field 1 (Figures 4-1 and 4-9). The site is composed of two points (Point 1-2 (Plate 1, Appendix C and Point 2-9 (Plate 4, Appendix C)), and 29 lithic flakes distributed over an area of 115 x 50 m. The site is located on elevated ground east of a drainage channel that runs into a minor tributary of Wardells Creek.

Point 1-2 is Late Archaic bifurcate base horizon point, dating to 8,900-8,000 BP. This specific point form is likely a LeCroy type point. Point 2-9 is a partial point and no specific date can be attributed to it.

Based on the diagnostic LeCroy type point AfGw-143 is designated as an Early Archaic site.

4.21 AfGw-144

Site AfGw-144 (GREP Site #19) is located in the extreme north-west corner of Solar Field 1 (Figures 4-1 and 4-10). The site is composed of Point 1-2 (Plate 3, Appendix C), a broken bifacial tool, a piece of fire cracked rock and a minimum of 18 lithic flakes distributed over an area of 110 x 110 m. A high concentration of other lithic flakes occurs within this area but was only recorded at its limits. The site is located on slightly elevated ground west of a drainage channel that runs into a minor tributary of Wardells Creek.

Point 1-1 has the basal end of the point broken off, but with regard to overall point size and flaking characteristics is it likely a Meadowood type point, dating the site to the Early Woodland period, 2,850-2,350 BP.

4.22 AfGw-145

Site AfGw-145 (GREP Site #20) is located at the north end of Solar Field 1 (Figures 4-1 and 4-10). The site is composed of one utilised flake and 86 lithic flakes distributed over an area of 50 x 50 m. The site is located on elevated ground east of a drainage channel that runs into a minor tributary of Wardells Creek. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.23 AfGw-159

Site AfGw-159 (GREP Site #34) is located in middle of Solar Field 4 (Figures 4-1 and 4-10). The site is composed of Core 1-2 and 14 lithic flakes distributed over an area of 20 x 20 m. The site is located on elevated ground east of a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

596000

596500

4749500

Archaeology Site No. 34
AfGw. 159

Archaeology Site No. 36
AfGw. 161

Archaeology Site No. 35
AfGw. 160

Archaeology Site No. 37
AfGw. 162

Archaeology Site No. 38
AfGw. 163

Archaeology Site No. 19
AfGw. 144

Archaeology Site No. 20
AfGw. 145

Archaeology Site No. 39
AfGw. 164

N

0 50 100 m

1:2,500

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

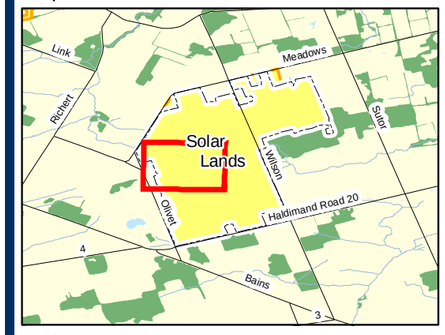

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Figure No.

4-10

Title

ARCHAEOLOGICAL SITES AfGw.144 & 145, AfGw.159 - 164

4.24 AfGw-160

Site AfGw-160 (GREP Site #35) is located in the south-east corner of Solar Field 4 (Figures 4-1 and 4-10). The site is composed of Core 1-1 and four lithic flakes in a very tight cluster of less than 3 m. Although the total number of artifacts recovered is only five, the presence of the core and four flakes in such a tight association suggested that the location warranted excavation of at least a few test units in its vicinity. The site is located on elevated ground south of a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.25 AfGw-161

Site AfGw-161 (GREP Site #36) is located in the south-east corner of Solar Field 4 (Figures 4-1 and 4-10). The site is composed of Biface 1-4 and 49 lithic flakes distributed over an area of 20 x 20 m. The site is located on elevated ground south of a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.26 AfGw-162

Site AfGw-162 (GREP Site #37) is located in the south-east corner of Solar Field 4 (Figures 4-1 and 4-10). The site is composed of 27 lithic flakes distributed over an area of 25 x 25 m. The site is located on elevated ground between two forks of a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.27 AfGw-163

Site AfGw-163 (GREP Site #38) is located in the Solar Woddlot (Figures 4-1 and 4-10). The site is composed of ten lithic flakes distributed in two test pits, one a positive test pit on the original 5 m interval grid and the second a supplemental test pit 2.5 m the south-east of the original positive test pit. The site is located on the east side of a gentle slope on soil with good drainage. This site was the only site located through test pit survey of the woodlot. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.28 AfGw-164

Site AfGw-164 (GREP Site #39) is located at the north end of Solar Field 1 (Figures 4-1 and 4-10). The site is composed of a single projectile point, Point 1-6 (Plate 1, Appendix C). The site is located on elevated ground immediately beside a drainage channel that runs into a minor tributary of Wardells Creek. Point 1-6 is an example of the Early Archaic side notched horizon type points, which date to 10,000-9,800 BP. Moreover, this point is not made from either of the predominant Bois Blanc formation cherts and may be an exotic chert type.

4.29 AfGw-154

Site AfGw-154 (GREP Site #29) is located at the north-west part of Solar Field 5 (Figures 4-1 and 4-11). The site is composed of Point 1-18, of indeterminate type or cultural affiliation (Plate 4, Appendix C), Biface 1-8 (Plate 5, Appendix C) and 14 lithic flakes distributed longitudinally over an area of 105 m x 40 m. Although the density of artifacts is relatively thin across the site area, the location of the artifacts indicates that they are associated and form a cohesive unit. The site is located on level ground between two forks of a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.30 AfGw-155

Site AfGw-155 (GREP Site #30) is located at the north-west part of Solar Field 4 (Figures 4-1 and 4-11). The site is composed of Biface 1-5 and ten lithic flakes distributed longitudinally over an area of 60 m x 30 m. Although the density of artifacts is relatively thin across the site area, the location of the artifacts indicates that they are associated and form a cohesive unit. The site is located on level ground between two forks of a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.31 AfGw-156

Site AfGw-156 (GREP Site #31) is located at the north-west part of Solar Field 4 (Figures 4-1 and 4-11). The site is composed of Biface 1-6 (Plate 5, Appendix C) and 18 lithic flakes in two clusters over an area of 50 m x 40 m. Although the density of artifacts is relatively thin across the site area, the location of the artifacts indicates that they are associated and form a cohesive unit. The site is located on level ground between two forks of a minor tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.32 AfGw-157

Site AfGw-157 (GREP Site #32) is located at the north-west part of Solar Field 4 (Figures 4-1 and 4-11). The site is composed of Point 2-15 (Plate 2, Appendix C), a uniface, Core 2-1 and 11 lithic flakes distributed over an area of 30 m x 30 m. The site is located on low, but level, ground between two forks of a minor tributary of the Grand River.

Point 2-15 is Brewerton Side Notched type point, diagnostic of a Middle Archaic occupation between 5,000-4,500 BP.

596000

4750000

Archaeology Site No. 29
AfGw. 154

Archaeology Site No. 31
AfGw. 156

Archaeology Site No. 30
AfGw. 155

Archaeology Site No. 40
AfGw. 165

Archaeology Site No. 32
AfGw. 157

Archaeology Site No. 33
AfGw. 158

N

0 50 100 m

1:2,000

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

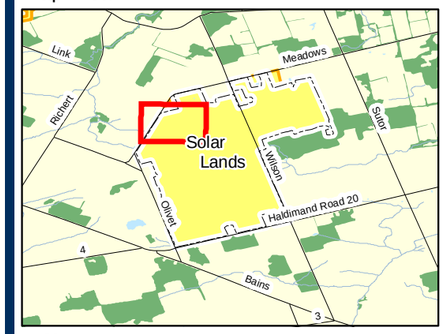

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Figure No.

4-11

Title

ARCHAEOLOGICAL SITES AfGw.154 - 158 & AfGw.165

4.33 AfGw-158

Site AfGw-158 (GREP Site #33) is located at the north-west part of Solar Field 4 (Figures 4-1 and 4-11). The site is composed of Point 2-16 (Plate 3, Appendix C), two bifaces (Biface 1-7 and Biface 2-4), three scrapers (Scraper 1-3, Scraper 1-4 (Plate 5, Appendix C) and Scraper 2-4 (Plate 5, Appendix C)), 35 lithic flakes distributed over an area of 40 m x 30 m. The site is located on low, but level, ground between two forks of a minor tributary of the Grand River.

Point 2-16 has the tip and basal ends of the point broken off, but with regard to overall point size and flaking characteristics is it likely a Meadowood type point, dating the site to the Early Woodland period, 2,850-2,350 BP.

4.34 AfGw-165

Site AfGw-165 (GREP Site #40) is located at the north-west part of Solar Field 4 (Figures 4-1 and 4-11). The site is composed of Point 2-14 (Plate 1, Appendix C), Biface 2-3 (Plate 5, Appendix C) and two lithic flakes in two clusters over an area of 20 m x 15 m. The site is located on level ground between two forks of a minor tributary of the Grand River.

Point 2-14 is the tip and medial portion of a point. The size, flaking pattern and medial ridge along one face of the point indicate that it is a Late Palaeo-Indian period lanceolate-type point. The Late Palaeo-Indian period represented by lanceolate type points dates to 10,200-9,500 BP.

4.35 AfGw-146

Site AfGw-146 (GREP Site #21) is located at the north end of Solar Field 3 (Figures 4-1 and 4-12). The site is composed of Scraper 2-5 (Plate 5, Appendix C) and ten lithic flakes distributed over an area of 35 x 20 m. The site is located on a rise toward a ridge north of the site. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.36 AfGw-147

Site AfGw-147 (GREP Site #22) is located at the north end of Solar Field 3 and the south end of Solar Field 6 (Figures 4-1 and 4-12). The site is composed of two points (Points 2-1 and 2-2 (Plate 3, Appendix C), a biface (recorded as Point 2-3), two cores (Core 1-6 and Core 1-7), a single scraper (Scraper 2-1) and 206 lithic flakes distributed over an area of 250 x 160 m. The site is located on a ridge overlooking the headwaters of an unnamed tributary to the Grand River.

The two confirmed projectile points are both of the Nanticoke Notched type, which are diagnostic of Late Woodland Neutral Iroquoian sites. Along with the two points the sheer size of the site suggests the kind of extensive semi-permanent or seasonal settlement types of Late Woodland Iroquoian peoples. Based on the point types and site size we have designated this as a Late Woodland (and Late Iroquoian) site, dating to 550-400 BP.

597000
597500
4750000
4749500

Archaeology Site No. 24
AfGw. 149

Archaeology Site No. 23
AfGw. 148

Archaeology Site No. 22
AfGw. 147

Archaeology Site No. 38
AfGw. 163

Archaeology Site No. 21
AfGw. 146

N

0 50 100 m
1:3,200

Legend

Artifact
- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed
- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

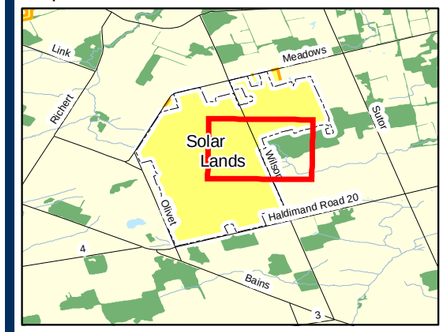

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Figure No.

4-12

Title

ARCHAEOLOGICAL SITES AfGw.146 - 149 & AfGw.163

4.37 AfGw-148

Site AfGw-148 (GREP Site #23) is located at the south-west corner of Solar Field 7 (Figures 4-1 and 4-12). The site is composed 18 lithic flakes distributed over an area of 70 x 40 m. The site is located in very low land immediately beside an unnamed tributary of the Grand River. In times of high water, such as during the Stage 2 AA, the site area may also have been part the tributary's floodplain. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.38 AfGw-149

Site AfGw-149 (GREP Site #24) is located at the south end of Solar Field 7 (Figures 4-1 and 4-12). The site is composed of Point 1-21 (Plate 2, Appendix C), Biface 1-19 and 63 lithic flakes distributed over an area of 70 x 50 m. The site is located on a small rise north of an unnamed tributary of the Grand River.

Point 1-21 is an example of the Late Archaic Smallpoint horizon, dating to 3,500-2,800 BP.

4.39 AfGw-153

Site AfGw-153 (GREP Site #28) is located at the north end of Solar Field 7 (Figures 4-1 and 4-13). The site is composed of Point 1-25 (Plate 1, Appendix C) and 36 lithic flakes distributed over an area of 60 x 40 m, although the size of the site is somewhat skewed by the distance of the point from the cluster of flakes. The site is located on a level ground away from any noted water. Although the point is located approximately 25 m from the flake cluster the two elements have been combined into one site since both elements would have required follow-up work.

Point 1-25 is the basal end of a Late Palaeo-Indian Holcombe point. Although only a small portion of the point was recovered, the concave base and diagnostic small fluting flakes on one side of the point allowed for definite typing of the point. Holcombe points are thought to date to 10,400-10,000 BP.

4.40 AfGw-150

Site AfGw-150 (GREP Site #25) is located toward the north end of Solar Field 8 (Figures 4-1 and 4-14). The site is composed of Biface 1-11 and 30 lithic flakes distributed over an area of 40 x 30 m. The site is located on level ground south of the headwater of an unnamed tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.41 AfGw-151

Site AfGw-151 (GREP Site #26) is located toward the north end of Solar Field 8 (Figures 4-1 and 4-14). The site is composed of two points, Point 1-20 (Plate 2, Appendix C) and Point 1-28 (Plate 4, Appendix C), separated by approximately 10 m. The site is located on level ground north of the headwater of an unnamed tributary of the Grand River.

597000

Archaeology Site No. 28
AfGw. 153

N

4750500

4750500

0 50 100 m
1:1,500

597000

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

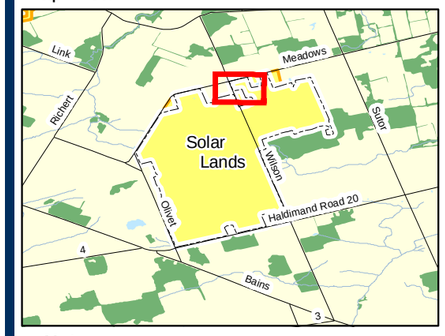

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Figure No.

4-13

Title

ARCHAEOLOGICAL SITE AfGw.153

597500

4750500

Archaeology Site No. 26
AfGw. 151

Archaeology Site No. 25
AfGw. 150

Archaeology Site No. 27
AfGw. 152

N

0 25 50 m

1:1,000

597500

Legend

Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area

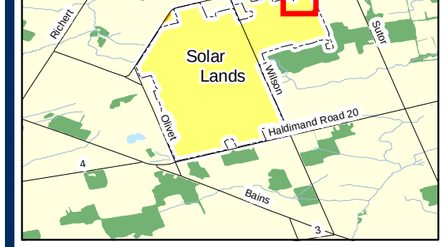

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Figure No.

4-14

Title

ARCHAEOLOGICAL SITES AfGw.150 - 152

Point 1-20 is a Brewerton Corner Notched type point, diagnostic of a Middle Archaic occupation, 5,000-4,500 BP. The other point was of indeterminate age. Although there are only two artifacts, the fact that they were located in such close proximity warrants further investigation.

4.42 AfGw-152

Site AfGw-152 (GREP Site #27) is located toward the north end of Solar Field 8 (Figures 4-1 and 4-14). The site is composed of 36 lithic flakes distributed over an area of 40 x 35 m. The site is located on level ground north of the headwater of an unnamed tributary of the Grand River. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

4.43 AfGw-167

Site AfGw-167 (GREP Site #42) is located on the pad area of Turbine 34 (Figures 4-1 and 4-15). The site is composed of a single artifact, Point 2-21 (Plate 1, Appendix C). The site is located at the end of gentle rise overlooking a tributary of Wardells Creek. Point 2-14 is the tip and medial portion of a point. The size, flaking pattern and medial ridge along one face of the point indicate that it is a Late Palaeo-Indian period lanceolate-type point. The Late Palaeo-Indian period represented by lanceolate type points dates to 10,200-9,500 BP.

4.44 AfGx-721

Site AfGx-721 (GREP Site #43) is located on the pad area of Turbine 34 (Figures 4-1 and 4-16). The site is composed of a single artifact, Point 1-31 (Plate 1, Appendix C). The site is located on flat ground through which flow a series of small unnamed tributaries of the Grand River. Point 1-31 is a Nettling type point, diagnostic of the Early Archaic corner notched horizon, which dates to 9,800-8,900 BP.

4.45 AfGw-166

Site AfGw-166 (GREP Site #41) is located at the north-east part of Solar Field 6 (Figure 3-5). The site is composed of a single artifact, Point 1-17 (Plate 1, Appendix C). The site is located on level ground near the headwater of an unnamed tributary of the Grand River. Point 1-17 is an example of the Early Archaic side notched horizon type points, which date to 10,000-9,800 BP.

600000

600500

4746500

Archaeology Site No. 42
AfGw. 167

55

N

0 50 100 m
1:3,000

Legend

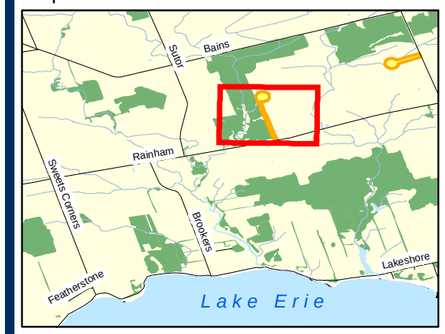
Artifact

- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake
- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

4-15

Title

ARCHAEOLOGICAL SITE AfGw.167

590000

590500

4754000

4754000

Archaeology Site No. 43
AfGx 721

34

45

41

N

0 50 100
250

590000

590500

Legend

Artifact

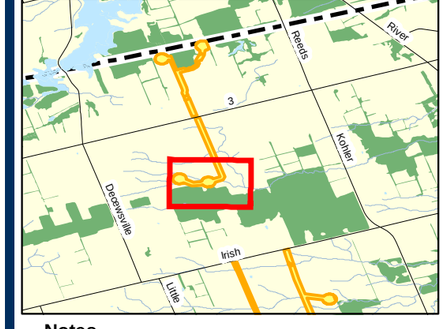
- Axe
- Biface
- Broken Tool
- Button
- Ceramics
- Core
- Fire Cracked Rock
- Flake
- Glass
- Graver
- Groundstone
- Multiple Flakes
- Lithic Scatter
- Point
- Scraper
- Smoking Pipe
- Tool
- Uniface
- Utilized Flake

- Positive Test Pit
- Wind Turbine Location & Number
- Archaeology Site Stage 3 Required

Test Pit Completed

- 5 m Interval
- 10 m Interval
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Solar Land
- Project Location
- Watercourse
- Road

Map Area



Notes

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Figure No.

4-16

Title

ARCHAEOLOGICAL SITE AfGx.721

5 RECOMMENDATIONS FOR FURTHER WORK

Stage 2 AA of the GREP to date by Stantec has resulted in the documentation of 165 archaeological resources, including 45 archaeological sites which have been registered with the MTC and of 50 artifact clusters and 70 isolated findspots.

5.1 Sites Requiring Stage 3 Archaeological Assessment

Stage 2 AA of the GREP to date by Stantec has resulted in the documentation of 45 registered archaeological sites which will require further archaeological assessment (Table 5-1). At minimum all 45 sites will require Stage 3 AA in order to determine the extent of each archaeological resource, and to further refine our understanding of the age, cultural association and cultural heritage value of the sites Stage 3 AA will also determine what appropriate mitigation options, such as avoidance or excavation, are available at each site location. Based on current calculations of site area it is anticipated that Stage 3 AA of the 45 sites will encompass an area of approximately 104,000 square metres, or 10.4 ha of the 359 ha assessed.

Table 5-1 Archaeological Sites Requiring Further Assessment

GREP Site #	Borden #	Easting	Northing	# Tools/ Diagnostics	# non-Tools	Total # Artifacts	Cultural Period	Dimensions (in m)	Site Area (m^2)
1	AfGx-710	589964	4755625	0	11	11	Indeterminate	25 x 20	500
2	AfGx-711	590521	4752280	2	3	5	Indeterminate	35 x 20	581
3	AfGx-712	590603	4752068	0	32	32	Indeterminate	65 x 30	1950
4	AfGx-713	591237	4751861	0	22	22	Indeterminate	25 x 25	509
5	AfGx-714	591145	4752137	0	28	28	Indeterminate	30 x 30	733
6	AfGx-715	591097	4752326	0	32	32	Indeterminate	55 x 35	1571
7	AfGx-716	591169	4752307	0	11	11	Indeterminate	25 x 25	535
8	AfGx-717	591295	4752310	0	25	25	Indeterminate	35 x 25	659
9	AfGx-718	591339	4752251	2	9	11	Indeterminate	35 x 20	508
10	AfGx-719	590901	4752878	0	25	25	Indeterminate	60 x 30	1423
11	AfGx-720	592626	4749531	3	114	117	Early Woodland	90 x 90	6939
12	AfGw-137	596156	4748772	2	16	18	Late Palaeo-Indian/ Early Woodland	40 x 40	641
13	AfGw-138	596243	4748449	9	89	98	Middle/Late Archaic, Middle Woodland	150 x 110	12309
14	AfGw-139	596237	4748626	2	47	49	Late Archaic	145 x 115	4188
15	AfGw-140	596811	4748748	n/a	n/a	n/a	Indeterminate	20 x 20	303
16	AfGw-141	596644	4748742	10		10	19th Century Historic	55 x 55	1026
17	AfGw-142	596286	4748783	2	18	20	Late Archaic	90 x 55	3036
18	AfGw-143	596176	4748858	2	29	31	Early Archaic	115 x 50	3320

19	AfGw-144	596014	4749261	2	18	20	Early Woodland	110 x 110	9788
20	AfGw-145	596198	4749235	1	86	87	Indeterminate	50 x 50	1763
21	AfGw-146	597043	4749303	1	10	11	Indeterminate	35 x 35	1140
22	AfGw-147	596901	4749626	6	206	212	Late Woodland	250 x 160	29376
23	AfGw-148	597046	4749740	0	18	18	Indeterminate	70 x 40	2132
24	AfGw-149	597206	4749996	2	63	65	Late Archaic	75 x 50	3750
25	AfGw-150	597512	4750457	1	30	31	Indeterminate	40 x 30	1014
26	AfGw-151	597431	4750516	2	0	2	Middle Archaic	10 x 10	92
27	AfGw-152	597405	4750435	0	36	36	Indeterminate	40 x 35	1145
28	AfGw-153	596799	4750597	1	28	29	Late Palaeo-Indian	60 x 40	2193
29	AfGw-154	596309	4750150	2	14	16	Indeterminate	105 x 40	2723
30	AfGw-155	596193	4750040	1	10	11	Indeterminate	60 x 30	767
31	AfGw-156	596052	4750102	1	18	19	Indeterminate	50 x 40	898
32	AfGw-157	595992	4750003	2	11	13	Middle Archaic	30 x 30	473
33	AfGw-158	596044	4749943	6	35	41	Early Woodland	40 x 30	367
34	AfGw-159	596142	4749695	0	14	14	Indeterminate	20 x 20	341
35	AfGW-160	596174	4749580	0	5	5	Indeterminate	10 x 10	100
36	AfGw-161	596313	4749612	1	49	50	Indeterminate	80 x 50	3393
37	AfGw-162	596328	4749533	0	27	27	Indeterminate	25 x 25	564
38	AfGw-163	596603	4749418	0	10	10	Indeterminate	10 x 10	100
39	AfGw-164	596123	4749106	1	0	1	Early Archaic	10 x 10	100
40	AfGw-165	596105	4750015	2	2	4	Late Palaeo-Indian	20 x 20	227
41	AfGw-166	596722	4750265	1	0	1	Early Archaic	10 x 10	100
42	AfGw-167	600123	4746735	1	0	1	Late Palaeo-Indian	10 x 10	100
43	AfGx-721	589820	4753974	1	0	1	Early Archaic	10 x 10	100
44	AfGw-184	594647	4751614	0	62	62	Indeterminate	20 x 25	364
45	AfGx-732	594689	4751585	0	16	16	Indeterminate	20 x 25	389
				Total # Artifacts		1348		Total m2	104230

Stage 3 AA (the Archaeological Site Assessment) of the 45 identified sites will be conducted according to the 2010 *Standards and Guidelines for Consultant Archaeologists*. The following standards for Stage 3 AA work will apply:

- Before carrying out fieldwork, review all relevant reports of previous fieldwork on the archaeological site or for that property;
- Carry out the archaeological site assessment when weather and lighting conditions permit good visibility of all parts of the archaeological site. Do not carry out the archaeological site assessment when weather and lighting conditions (e.g., snow cover, frozen ground, excessive rain or drought, heavy fog) reduce the ability to identify and document any part of the archaeological site;
- Using the Global Positioning System (GPS) record the locations of the following:
  - a central fixed point within the archaeological site
  - a permanent datum that can be tied to a development map; and
- Provide representative photographs of all field conditions (e.g., ploughed field, pasture or woodlot, disturbances).

For each site located using pedestrian survey methodology the Stage 3 AA will be composed of two elements: a controlled surface pick-up (CSP) of artifacts on the surface of ploughed fields and test unit excavation. A CSP is a detailed survey of the ground surface in open fields that allows for precise recording of artifact locations and the collection of a representative sample of artifacts, including non-diagnostic artifacts. The following standards for Stage 3 AA CSP will apply:

- If ground surface visibility has decreased in the time between the Stage 2 survey and the Stage 3 CSP, ensure that the site area is re-cultivated and weathered;
- Accurately map the location of all artifacts on the ground surface using a total station, transit and tape, stadia rod, or GPS unit. Record and catalogue artifacts by their mapped location, recording any relevant information (*e.g.*, spatial relationship of diagnostics, artifact concentration areas). Tie this map to the general site GPS readings by recording a central point in the scatter;
- For very large and dense surface scatters, conduct a full CSP by grid units (maximum 5 m by 5 m units) over the archaeological site. Record and catalogue artifacts with their grid unit designation.
- Ensure that decisions regarding the type and number of artifacts collected strike a balance between gathering enough artifacts to document the archaeological site and leaving enough in place to relocate the site if required (*e.g.*, to conduct further assessment, define a protected area or conduct excavation);
- Collect all formal artifact types and diagnostic categories, including, for 19th century archaeological sites, all refined ceramic sherds; and
- Collect a representative sample of non-diagnostic artifacts, taking into consideration the archaeological site type, type and frequency of non-diagnostic artifacts, and the likelihood that further fieldwork will be required.

Based on the results of the Stage 2 AA, use of a grid unit CSP will likely need to be conducted at AfGx-720, AfGw-144 and AfGw-147 due to their size and artifact densities. All other sites should not require grid unit CSP.

The second component of the Stage 3 AA, test unit excavation, will be required at all identified archaeological sites, including AfGw-163, the site located through test pit survey. The purpose of the test unit excavation is to document the extent of buried artifacts, cultural features, soil stratigraphy and structures and to recover a representative sample of artifacts from across the archaeological site. The following standards for Stage 3 AA test unit excavation will apply:

- Excavate by 1 m square units;
- To determine the placement of test units, establish a grid on the site based on the permanent datum to at least the accuracy of transit and tape measurements. Placing test units in unmeasured, estimated locations is not acceptable;
- Excavate test units by hand. Do not use heavy machinery (*e.g.*, gas-powered augers, backhoes) except to remove sterile or recent fill covering confirmed, deeply buried or sealed archaeological sites;
- Excavate test units by systematic levels (stratigraphic or standardized);
- Excavate test units into the first 5 cm of subsoil, unless excavation uncovers a cultural feature;
- If test unit excavation uncovers a cultural feature, do not excavate into feature fill. Instead:
    - Record the exposed plan of the feature.
    - Place geotextile fabric over the unit floor and backfill the unit;
- Screen all excavated soil through mesh with an aperture of no greater than 6 mm. For confirmed single component Paleo-Indian and Early Archaic archaeological sites, for a sample of units (at least 20% of the total number of units in sandy soil and at least 10% of the total number of units in heavy soil), screen the entire contents of each unit through mesh with an aperture of no greater than 3 mm; and

- Unless otherwise specified collect and retain all artifacts. Record and catalogue them by their corresponding grid unit designation.

Based on the results of the Stage 2 AA there are seven sites that are presently believed to be single component Palaeo-Indian or Early Archaic sites: AfGw-143; AfGw-153: AfGw-164; AfGw-165; AfGw-166: AfGw-167; and AfGx-721. All seven of these sites are located in what are considered to be heavy soils. For these seven sites 10% of the total number of test units excavated (specific number to be determined based on Table 3.1 in the 2010 *Standards and Guideline for Consultant Archaeologists*) will need to be screened using 3 mm mesh.

The 2010 *Standards and Guideline for Consultant Archaeologists* also make special Stage 3 AA provisions for large sites and Late Woodland village sites. At present we cannot determine whether the Late Woodland site AfGw-147 in Solar Fields 3 and 6 represents a Late Woodland village site or a smaller special purpose site. As such it does not qualify for the special provisions of the Late Woodland village, but it does qualify as a large site. Accordingly, this one site may only require excavation of 50% of the required total test units, as determined by Table 3.1 of the 2010 *Standards and Guideline for Consultant Archaeologists*. This determination will only be able to be made in the field after the initiation of the Stage 3 AA and these provisions should be kept in mind during that work.

It should be anticipated that several of the sites will likely require Stage 4 mitigative excavations in the event that project design cannot avoid the sites. Sites of already identified cultural heritage value and interest include all sites with Palaeo-Indian or Early Archaic components, and the Late Woodland site.

5.2 Resources Not Requiring Stage 3 Archaeological Assessment

A total of 50 artifact clusters (CL) and 70 isolated findspots (IF) were also documented at Project components during the Stage 2 AA (Table 5-2). None of these resources meet the criteria for sufficient cultural heritage significance as per the 2010 *Standards and Guideline for Consultant Archaeologists*. None of these resources require further archaeological assessment. Details regarding all identified artifacts (*e.g.,* Scraper 1-5) can be found in the Artifact Catalogue in Appendix B.

Table 5-2 Archaeological Resources Not Requiring Further Assessment

GREP Site #	Easting	Northing	# Tools	# Lithic Flakes	Total # Artifacts	Material Type	Tool Size (in mm)	Cultural Period	Dimensions (in m)	Figure #	Plate #	Comments
CL 1	596255	4749292	0	2	2	n/a	n/a	Indeterminate	25 X 5	3-1	n/a	
CL 2	596378	4749049	2	0	2	Bois Blanc	36 x 22 28 x 21	Late Archaic	25 X 10	3-1	2, 4	Point 2-5 Point 2-6
CL 3	596145	4749020	0	2	2	n/a	n/a	Indeterminate	5 X 5	3-1	n/a	
CL 4	596136	4748931	0	3	3	n/a	n/a	Indeterminate	60 X 35	3-1	n/a	
CL 5	596076	4749054	0	4	4	n/a	n/a	Indeterminate	60 X 15	3-1	n/a	
CL 6	596124	4748835	0	4	4	n/a	n/a	Indeterminate	65 X 40	3-2	n/a	
CL 7	596270	4748611	1	3	4	Bois Blanc	49 x 31 x 17	Indeterminate	40 X 40	3-2	n/a	Tool 2-1
CL 8	596504	4748588	1	1	2	Bois Blanc	40 x 26	Early Woodland	35 x 10	3-2	3	Point 2-4
CL 9	596802	4748763	2	0	2	Bois Blanc	59 x 46 x 24	Indeterminate	35 x 10	3-2	n/a	Core (not kept) , Core 1-4
CL 10	596509	4749027	0	3	3	n/a	n/a	Indeterminate	10 x 10	3-2	n/a	
CL 11	596986	4748618	0	2	2	n/a	n/a	Indeterminate	25 x 10	3-3	n/a	
CL 12	597107	4749098	0	12	12	n/a	n/a	Indeterminate	160 x 70	3-3	n/a	
CL 13	597062	4749468	1	1	2	Bois Blanc	60 x 66 x 18	Indeterminate	40 x 10	3-3	n/a	Axe 2-1
CL 14	595986	4749523	0	2	2	n/a	n/a	Indeterminate	25 x 25	3-4	n/a	
CL 15	596294	4749544	0	7	7	n/a	n/a	Indeterminate	35 X 20	3-4	n/a	
CL 16	596138	4749583	0	2	2	n/a	n/a	Indeterminate	35 x 15	3-4	n/a	
CL 17	596271	4749572	0	7	7	n/a	n/a	Indeterminate	30 x 25	3-4	n/a	
CL 18	596222	4749715	1	2	3	Bois Blanc	28 x 22	Indeterminate	35 x 25	3-4	5	Point 1-15
CL 19	596169	4750079	1	1	2	Bois Blanc	43 x 28	Late Archaic	40 x 25	3-4	2	Point 2-13
CL 20	596171	4750142	0	3	3	n/a	n/a	Indeterminate	30 x 10	3-4	n/a	
CL 21	596102	4749942	0	7	7	n/a	n/a	Indeterminate	65 x 45	3-4	n/a	
CL 22	596231	4749820	0	3	3	n/a	n/a	Indeterminate	60 x 30	3-4	n/a	
CL 23	596098	4749815	1	2	3	Bois Blanc	56 x 47 x 17	Indeterminate	45 x 10	3-4	n/a	Core 1-3
CL 24	596041	4749749	0	6	6	n/a	n/a	Indeterminate	55 x 30	3-4	n/a	
CL 25	595959	4749714	0	7	7	n/a	n/a	Indeterminate	40 X 30	3-4	n/a	
CL 26	596444	4749751	0	5	5	n/a	n/a	Indeterminate	40 x 25	3-4	n/a	
CL 27	596338	4750019	1	1	2	Bois Blanc	27 x 24	Indeterminate	30 x 15	3-4	n/a	Scraper 1-5
CL 28	596685	4750254	2	0	2	Bois Blanc	36 x 24 x 12 27 x 24	Indeterminate	35 x 20	3-5	5	Core 1-5 Graver 1-1
CL 29	597032	4749983	0	4	4	n/a	n/a	Indeterminate	30 x 20	3-5	n/a	
CL 30	597099	4749984	0	6	6	n/a	n/a	Indeterminate	30 x 15	3-5	n/a	
CL 31	597015	4750305	1	1	2	Bois Blanc	36 x 23	Middle Woodland	40 x 20	3-6	3	Point 1-30
CL 32	597203	4749883	0	2	2	n/a	n/a	Indeterminate	30 x 15	3-6	n/a	

Table 5-2 Archaeological Resources Not Requiring Further Assessment (cont'd)

GREP Site #	Easting	Northing	# Tools	# Lithic Flakes	Total # Artifacts	Material Type	Tool Size (in mm)	Cultural Period	Dimensions (in m)	Figure #	Plate #	Comments
CL 33	597104	4749687	0	3	3	n/a	n/a	Indeterminate	30 x 10	3-5	n/a	
CL 34	596893	4750628	1	3	4	prob. Local	64 x 42	Indeterminate	50 x 20	3-6	n/a	Biface 1-10
CL 35	597470	4750503	0	2	2	n/a	n/a	Indeterminate	25 x 10	3-6	n/a	
CL 36	597537	4750415	0	2	2	n/a	n/a	Indeterminate	25 x 10	3-6	n/a	
CL 37	596388	4748416	1	1	2	prob. Local	50 x 38	Indeterminate	25 x 10	3-2	n/a	Biface 2-1
CL 38	596388	4748482	1	1	2	Bois Blanc	43 x 36	Indeterminate	30 x 15	3-2	4	Point 2-10
CL 39	596322	4748466	0	3	3	n/a	n/a	Indeterminate	25 x 15	3-2	n/a	
CL 40	591178	4752032	0	2	2	n/a	n/a	Indeterminate	30 x 10	3-9	n/a	
CL 41	591119	4752236	0	5	5	n/a	n/a	Indeterminate	40 x 20	3-9	n/a	
CL 42	590594	4752117	0	2	2	n/a	n/a	Indeterminate	35 x 15	3-9	n/a	
CL 43	594711	4751650	0	3	3	n/a	n/a	Indeterminate	15 x 10	3-11	n/a	
CL 44	594469	4750961	0	2	2	n/a	n/a	Indeterminate	20 x 10	3-12	n/a	
CL 45	594120	4750435	0	6	6	n/a	n/a	Indeterminate	20 x 15	3-12	n/a	
CL 46	594409	4750003	0	3	3	n/a	n/a	Indeterminate	25 x 25	3-13	n/a	
CL 47	594358	4749899	0	2	2	n/a	n/a	Indeterminate	25 x 25	3-13	n/a	
CL 48	594390	4749953	0	2	2	n/a	n/a	Indeterminate	25 x 25	3-13	n/a	
CL 49	606258	4750182	0	6	6	n/a		Indeterminate	85 x 10	3-17	n/a	
CL 50	589998	4755730	0	3	3	n/a	n/a	Indeterminate	50 x 25	3-8	n/a	
IF 1	596042	4749141	1	0	1	Bois Blanc	49 x 37	Indeterminate	n/a	3-1	5	Biface 1-1
IF 2	596033	4749102	0	1	1	n/a	n/a	Indeterminate	n/a	3-1	n/a	Isolated lithic flake
IF 3	596335	4749021	0	1	1	n/a	n/a	Indeterminate	n/a	3-1	n/a	Isolated lithic flake
IF 4	596462	4748417	1	0	1	Bois Blanc	49 x 37	Indeterminate	n/a	3-2	5	Scraper 2-2
IF 5	596408	4748428	1	0	1	Bois Blanc	42 x 32	Indeterminate	n/a	3-2	4	Point 2-11
IF 6	596172	4748742	1	0	1	Bois Blanc	38 x 37	Indeterminate	n/a	3-2	n/a	Biface 1-2
IF 7	596132	4748742	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 8	596353	4748964	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 9	596245	4748575	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 10	596260	4748649	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 11	596341	4748641	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 12	596385	4748597	1	0	1	Bois Blanc	30 x 29	Indeterminate	n/a	3-2	n/a	Biface 2-2
IF 13	596545	4748637	1	0	1	Bois Blanc	46 x 35	Late Archaic	n/a	3-2	2	Point 2-17
IF 14	596547	4748647	1	0	1	Bois Blanc	38 x 32	Indeterminate	n/a	3-2	4	Point 1-13

Table 5-2 Archaeological Resources Not Requiring Further Assessment (cont'd)

GREP Site #	Easting	Northing	# Tools	# Lithic Flakes	Total # Artifacts	Material Type	Tool Size (in mm)	Cultural Period	Dimensions (in m)	Figure #	Plate #	Comments
IF 15	596616	4748820	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 16	596679	4748825	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 17	596812	4748729	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 18	596707	4748741	1	0	1	n/a	25 x 30 x 26	Indeterminate	n/a	3-3	n/a	Grndstn2-1
IF 19	596719	4748737	1	0	1	Bois Blanc	27 x 19	Late Archaic	n/a	3-3	2	Point 2-18
IF 20	596731	4748722	1	0	1	n/a	n/a	Euro-Canadian	n/a	3-3	6	19th century smoking pipe
IF 21	596507	4749146	1	0	1	Bois Blanc	46 x 22	Early Woodland	n/a	3-3	3	Point 1-12
IF 22	597124	4748771	0	1	1	n/a	n/a	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 23	596802	4749182	1	0	1	Bois Blanc	38 x 21	Indeterminate	n/a	3-3	n/a	Biface 2-5
IF 24	597087	4749190	1	0	1	Bois Blanc	36 x 22	Indeterminate	n/a	3-3	n/a	Tool 2-2
IF 25	597157	4749264	1	0	1	Bois Blanc	36 x 24	Indeterminate	n/a	3-3	4	Point 2-12
IF 26	597004	4749262	0	1	1	n/a	n/a	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 27	596946	4749205	0	1	1	n/a	n/a	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 28	596975	4749436	0	1	1	n/a	n/a	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 29	596368	4749536	1	0	1	Bois Blanc	38 x 32 mm	Indeterminate	n/a	3-4	n/a	Biface 1-3
IF 30	596126	4749476	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 31	596193	4749487	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 32	596284	4749660	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 33	596165	4749694	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 34	596247	4749751	1	0	1	Bois Blanc	36 x 22	Middle Woodland	n/a	3-4	3	Point 1-14
IF 35	596298	4749839	1	0	1	Bois Blanc	35 x 28	Early Woodland	n/a	3-4	3	Point 1-16
IF 36	596153	4750039	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 37	596150	4749857	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 38	596060	4749694	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 39	596591	4749651	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 40	596265	4750195	0	1	1	n/a	n/a	Indeterminate	n/a	3-4	n/a	Isolated lithic flake
IF 41	596717	4749694	0	1	1	n/a	n/a	Indeterminate	n/a	3-5	n/a	Isolated lithic flake
IF 42	596749	4749673	0	1	1	n/a	n/a	Indeterminate	n/a	3-5	n/a	Isolated lithic flake
IF 43	596767	4749716	0	1	1	n/a	n/a	Indeterminate	n/a	3-5	n/a	Isolated lithic flake
IF 44	596752	4749764	1	0	1	Bois Blanc	44 x 28	Late Archaic	n/a	3-5	2	Point 1-27
IF 45	596948	4749752	0	1	1	n/a	n/a	Indeterminate	n/a	3-5	n/a	Isolated lithic flake
IF 46	596685	4750179	1	0	1	Bois Blanc	53 x 27	Late Archaic	n/a	3-5	2	Point 1-19
IF 47	596788	4750316	0	1	1	n/a	n/a	Indeterminate	n/a	3-5	n/a	Isolated lithic flake
IF 48	597293	4750032	1	0	1	Bois Blanc	41 x 27	Indeterminate	n/a	3-6	4	Point 1-22

Table 5-2 Archaeological Resources Not Requiring Further Assessment (cont'd)

GREP Site #	Easting	Northing	# Tools	# Lithic Flakes	Total # Artifacts	Material Type	Tool Size (in mm)	Cultural Period	Dimensions (in m)	Figure #	Plate #	Comments
IF 49	597665	4750148	1	0	1	Bois Blanc	56 x 33	Late Archaic	n/a	3-6	2	Point 1-23
IF 50	596916	4750590	1	0	1	Bois Blanc	31 x 26	Indeterminate	n/a	3-6	4	Point 1-26
IF 51	597607	4750174	1	0	1	Bois Blanc	43 x 24	Middle Woodland	n/a	3-6	3	Point 1-24
IF 52	597600	4750269	1	0	1	Bois Blanc	31 x 16	Late Archaic	n/a	3-6	2	Point 1-29
IF 53	597564	4750589	0	1	1	n/a	n/a	Indeterminate	n/a	3-6	n/a	Isolated lithic flake
IF 54	597396	4750478	0	1	1	n/a	n/a	Indeterminate	n/a	3-6	n/a	Isolated lithic flake
IF 55	596424	4748473	0	1	1	n/a	n/a	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 56	589886	4755449	0	1	1	n/a	n/a	Indeterminate	n/a	3-8	n/a	Isolated lithic flake
IF 57	590112	4753820	0	1	1	n/a	n/a	Indeterminate	n/a	3-8	n/a	Isolated lithic flake
IF 58	591151	4752114	0	1	1	n/a	n/a	Indeterminate	n/a	3-9	n/a	Isolated lithic flake
IF 59	591227	4751891	0	1	1	n/a	n/a	Indeterminate	n/a	3-9	n/a	Isolated lithic flake
IF 60	591095	4752272	0	1	1	n/a	n/a	Indeterminate	n/a	3-9	n/a	Isolated lithic flake
IF 61	591277	4752296	0	1	1	n/a	n/a	Indeterminate	n/a	3-9	n/a	Isolated lithic flake
IF 62	592615	4749466	0	1	1	n/a	n/a	Indeterminate	n/a	3-10	n/a	Isolated lithic flake
IF 63	594290	4749960	0	1	1	n/a	n/a	Indeterminate	n/a	3-13	n/a	Isolated lithic flake
IF 64	601602	4747206	1	0	1	Bois Blanc	40 x 33	Indeterminate	n/a	3-15	5	Biface 2-7
IF 65	601497	4747141	1	0	1	Bois Blanc	46 x 23	Indeterminate	n/a	3-15	n/a	Biface 2-6
IF 66	606321	4749345	0	1	1	n/a	n/a	Indeterminate	n/a	3-17	n/a	Isolated lithic flake
IF 67	604246	4749585	0	1	1	n/a	n/a	Indeterminate	n/a	3-17	n/a	Isolated lithic flake
IF 68	604256	4749554	1	0	1	Bois Blanc	26 x 29	Indeterminate	n/a	3-17	4	Point 2-23
IF 69	600236	4746268	1	0	1	Bois Blanc	44 x 25	Late Archaic	n/a	3-15	2	Point 2-22
IF 70	600232	4746205	0	1	1	n/a	n/a	Indeterminate	n/a	3-15	n/a	Isolated lithic flake

5.3 Advice on Compliance with Legislation

At the close of the 2010 field season Stage 2 AA had not been completed for access roads and turbine pads for 16 turbine installations. All of these areas are slated to be assessed using a pedestrian survey methodology. The total area left to be assessed is 61 ha, or approximately 14% of the total of 420 ha that Stantec was scheduled to assess. It is anticipated that the remaining Stage 2 AA will require about 12 person days of field time to complete. It is recommended that the remaining Stage 2 and 3 assessment work for this project be completed as required under the Ontario Heritage Act and that the Ministry of Tourism and Culture provide concurrence with the recommendations made within this report by accepting it into the Ontario Public Register Archaeology Reports.

Stantec cautions, however, that it is possible that deeply buried archaeological resources, could still exist within the limits of the proposed project and that the following standard conditions will continue to apply:

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest , and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*;
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject 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*; and
- 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.

6 CLOSURE

This report has been prepared for the sole benefit of PK, and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and SPK. Any use which a third party makes of this report is the responsibility of such third party.

This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, 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

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this project.

Yours truly,

Stantec Consulting Ltd.

SIGNED ORIGINAL ON FILE

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APPENDIX A

Fieldwork Photos

Photo 1 - Crew Conducting Pedestrian Survey, Solar Field 3, Looking North

Photo 2 - Artifact Scatter Marked with Flags for Recording, Solar Field 4

Photo 3 Typical Field Conditions and Ploughing Technique for Solar Fields

Photo 4 - Site AfGw-145 Flake Scatter, Flagged For Recording, Solar Field 1

Photo 7 Typical Field and Weather Conditions For Turbine Surveys, Turbine 12

Photo 8 Stake Marking Centrelines for Turbine Access Roads in Ploughed Fields

Photo 9 - Conducting Test Pit Survey in Solar Woodlot

Photo 10 - Typical Test Pit, Solar Woodlot

Photo 9 - Point 1-12, As Found During Field Survey, Solar Field 2

Photo 10 - Point 1-13, As Found During Field Survey, Solar Field 2

Photo 11 - Field Conditions on December 6, 2010

APPENDIX B

Artifact Catalogues

AfGx-711 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGx-711.1	Scraper 2-6	12/3/2010	P	T46	1	Lithic, side scraper, 34 x 25 mm, Bois Blanc formation chert.	590535	4752270
AfGx-711.2	Biface 2-8	12/3/2010	P	T46	1	Lithic, biface, corner piece of a large bifacially reduced tool in early stages of reduction, 39 x 38 mm, Bois Blanc formation chert.	590516	4752285

AfGx-718 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGx-718.1	Point 2-24	11/29/2010	P	T28	1	Lithic, projectile point tip , indeterminate type or age, 24 x 20 mm, Bois Blanc formation chert.	590535	4752269.73
AfGx-718.2	Point 2-25	11/29/2010	P	T28	1	Lithic, projectile point tip , indeterminate type or age, 26 x 22 mm, Bois Blanc formation chert.	590516	4752285

AfGx-720 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGx-720.1	Biface 1-12	11/29/2010	P	T20	1	Lithic, biface, 39 x 28 mm, Bois Blanc formation chert.	592624	4749507
AfGx-720.2	Point 2-19	12/1/2010	P	T20	1	Lithic, projectile point, tip and medial portion, side or corner notched, probable Early Woodland Meadowood , 41 x 25 mm, Bois Blanc formation chert.	592585	4749551
AfGx-720.3	Point 2-20	12/1/2010	P	T20	1	Lithic, projectile point, base and medial portion, side notched, Early Woodland Meadowood , 30 x 24 mm, Bois Blanc formation chert.	592663	4749534

AfGx-711 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-137 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-137.1	Point 1-3	10/4/2010	P	Solar 1	1	Lithic, projectile point, medial portion, probable Early Woodland Meadowood , 42 x 20 mm, Bois Blanc formation chert.	590516	4752285
AfGw-137.2	Point 1-8	10/4/2010	P	Solar 1	1	Lithic, projectile point, tip and medial portion, Early Palaeo-Indian lanceolate type, 44 x 24 mm, Bois Blanc formation chert.	590516	4752285

AfGw-138 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-138.1	Point 1-10	10/4/2010	P	Solar 1	1	Lithic, projectile point; tip, medial and part stem portion, Middle Archaic stemnmed type, 60 x 27mm, Bois Blanc formation chert.	596234	4748475
AfGw-138.2	Point 1-11	10/4/2010	P	Solar 1	1	Lithic, projectile point, notched medial portion, probable Middle Woodland Saugeen type , 36 x 20 mm, probable bleached Bois Blanc formation chert.	596233	4748478
AfGw-138.3	Point 1-4	10/4/2010	P	Solar 1	1	Lithic, projectile point, side notched, Middle Archaic side notched form, 65 x 34mm, Bois Blanc formation chert.	596244	4748383
AfGw-138.4	Point 1-7	10/4/2010	P	Solar 1	1	Lithic, projectile point, medial portion, Late Archaic Genesse type , 57 x 45 mm, Bois Blanc formation chert.	596158	4748766
AfGw-138.5	Scraper 1-1	10/4/2010	P	Solar 1	1	Lithic, hafted end and side scraper, 34 x 23 mm, Bois Blanc formation chert.	596231	4748473
AfGw-138.6	Scraper 1-2	10/4/2010	P	Solar 1	1	Lithic, side scraper and spokeshave, 46 x 42 mm, Bois Blanc formation chert	596232	4748508
AfGw-138.7	Scraper 2-3	10/4/2010	P	Solar 1	1	Lithic, hafted end scraper refashioned form stemmed projectile point, 46 x 36 mm, Bois Blanc formation chert.	596276	4748443
AfGw-138.8	Uniface 1-1	10/4/2010	P	Solar 1	1	Lithic, unifaciallyy worked piece of chert, probably broken in process of bifacial reduction	596243	4748462

AfGx-711 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-139 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-139.1	Point 1-5	10/4/2010	P	Solar 1	1	Lithic, projectile point, medial portion, Late Archaic Genesee type , 52 x 36 mm, Bois Blanc formation chert.	596213	4748558
AfGw-139.2	Point 1-9	10/4/2010	P	Solar 1	1	Lithic, projectile point, in very early stages of production from large secondary reduction falke, 43 x 29 mm, Bois Blanc formation chert.	596211	4748556

AfGw-141 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey Date	Location	Survey Type	# of Pieces		Description	Date
AfGw-141.1	10/6/2010	Solar 2	P	1		Kaolin smoking pipe bowl fragment, laurel wreath decoration with embossed inscription "DIA[MOND] 18[97] JU[BILEE]" referring to the Diamond Jubilee of Queen Victoria on June 20, 1897	1897
AfGw-141.2	10/6/2010	Solar 2	P	1		Kaolin smoking pipe bowl fragment, undecorated	
AfGw-141.3	10/6/2010	Solar 2	P	1		Ceramic, WRE, rim sherd, blue shell-edged, unscalloped, moulded impressed repeated pattern along rim	c. 1841-1857
AfGw-141.4	10/6/2010	Solar 2	P	1		Ceramic, WRE, rim sherd, blue transferprint decoration, geometric border decoration	1828-present
AfGw-141.5	10/6/2010	Solar 2	P	1		Ceramic, WRE, handpainted underglazed polychrome decoration, blue and tuscan red, hollowware	post c. 1830
AfGw-141.6	10/6/2010	Solar 2	P	1		Ceramic, WRE, brown transferprint decoration, floral and geometric components, border/rim decoration, plate or saucer	1828-present
AfGw-141.7	10/6/2010	Solar 2	P	1		Ceramic, WRE, handpainted underglazed polychrome decoration,black and red, floral motif, hollowware	post c. 1830
AfGw-141.8	10/6/2010	Solar 2	P	1		Ceramic, WRE, handpainted underglaze polychrome decoration, green, black, red and blue, floral motif, hollowware	post c. 1830
AfGw-141.9	10/6/2010	Solar 2	P	1		Button, white glass, four button-holes, 11mm diametre	popular c. 1850-1875
AfGw-141.10	10/6/2010	Solar 2	P	1		Glass, aqua, base/heel fragment, likely food or household bottle, machine-made, no mould number, rectangular or possibly Philadelphia oval, indented base, no signs of empontilling	19th century

AfGx-711 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-142 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-142.1	Point 2-7	10/7/2010	P	Solar 1	1	Lithic, projectile point, side notched Late Archaic Smallpoint Horizon type , 38 x 26 mm, Bois Blanc formation chert.	596298	4748814
AfGw-142.2	Point 2-8	10/7/2010	P	Solar 1	1	Lithic, projectile point, corner notched, possible Middle Woodland Saugeen type point, 44 x 25 mm	596320	4748777

AfGw-143 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-143.1	Point 2-9	10/8/2010	P	Solar 1	1	Lithic, projectile point, indeterminate, probably broken in manufacture as point is rough form, 42 x 25 mm, Bois Blanc formation chert.	596192	4748823
AfGw-143.2	Point 1-2	10/4/2010	P	Solar 1	1	Lithic, projectile point, bifurcate base, corner notched, Early Archaic LeCroy type point, 29 x 21 mm	596183	4748891

AfGw-144 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-144.1	Point 1-1	10/4/2010	P	Solar 1	1	Lithic, projectile point, corner notched Early Woodland Meadowood type , 47 x 24 mm, Bois Blanc formation chert.	595997	4749280
AfGw-144.2	Broken Tool	10/4/2010	P	Solar 1	1	Lithic, lithic toolin early stages of reduction, 29 x 22 mm, Bois Blanc formation chert.	595999	4749274
AfGw-144.3	Large Flake	10/4/2010	P	Solar 1	1	Lithic, large secondary reduction flake 29x 23 mm, bleached chert	595999	4749263

AfGx-711 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-145 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-145.1	Utilised Flake 1-1	10/8/2010	P	Solar 1	1	Lithic, large secondary reduction flake exhibiting microflaking along working edge , 30 x 24 mm, Bois Blanc formation chert.	596180	4749252

AfGw-146 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-146.1	Scraper 2-5	10/15/2010	P	Solar 3	1	Lithic, end scraper on seconfdary reduction flake, 29 x 26 mm, Bois Blanc formation chert.	597038	4749299

AfGw-147 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-147.1	Point 2-1	10/7/2010	P	Solar 3	1	Lithic, projectile point; tip missing, point worked on only one side on a thing flake, Late Woodland Nanticoke Notched type, 22 x 17 mm, Bois Blanc formation chert.	596893	4749577
AfGw-147.2	Point 2-2	10/7/2010	P	Solar 3	1	Lithic, projectile point, Complete, Late Woodland Nanticoke Notched type, 36 x 16 mm, Bois Blanc formation chert.	596816	4749541
AfGw-147.3	Point 2-3	10/7/2010	P	Solar 3	1	Lithic, not a projectile point but re-assigned as a biface after processing, 47 x 28 mm, Bois Blanc formation chert.	596856	4749514
AfGw-147.4	Scraper 2-1	10/7/2010	P	Solar 3	1	Lithic, thunbnail scraper, probably hafted , 31 x 24 mm, Bois Blanc formation chert.	596874	4749570

AfGx-711 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-149 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-149.1	Point 1-21	10/27/2010	P	Solar 7	1	Lithic, projectile point, corner notchedLate Archaic Smallpoint horizon, 47 x 24 mm, Bois Blanc formation chert.	597192	4749986
AfGw-149.2	Biface 1-9	10/27/2010	P	Solar 7	1	Lithic, biface with very uneven reduction along edges, possibly for removed expedient flake tools, 29 x 28 mm, Bois Blanc formation chert.	597195	4749274

AfGw-150 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-150.1	Biface 1 -11	11/25/2010	P	Solar 8	1	Lithic, biface in alte stages of reduction, possibly very nearly a formal tool, 52 x 29 mm, Bois Blanc formation chert.	597515	4750454

AfGw-151 Artifact Catalogue — *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-151.1	Point 1-20	10/27/2010	P	Solar 8	1	Lithic, projectile point, tip missing, corner notched Middle Archaic Brewterton type, 37 x 34 mm, Bois Blanc formation chert.	597430	4750521
AfGw-151.2	Point 1-28	11/25/2010	P	Solar 8	1	Lithic, projectile point, base missing, notching type indeterminate, point type or age indeterminate, 42 x 29 mm, Bois Blanc formation chert.	597425	4750519

AfGx-711 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-153 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-153.1	Point 1-25	10/27/2010	P	Solar 7	1	Lithic, projectile point, concave point base with small fluting flakes, Early Palaeo-Indian Holcombe type, 21 x 15 mm, Bois Blanc formation chert.	596793	4750582

AfGw-154 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-154.1	Point 1-18	10/25/2010	P	Solar 5	1	Lithic, projectile point, base missing, notching type indeterminate, point type or age indeterminate, 47 x 29 mm, Bois Blanc formation chert.	596277	4750116
AfGw-154.2	Biface 1-8	10/25/2010	P	Solar 5	1	Lithic, biface, 36 x 29 mm, Bois Blanc formation chert.	596337	4750143

AfGw-155 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-155.1	Biface 1-5	10/15/2010	P	Solar 4	1	Lithic, large partial biface, 49 x 45 mm, Bois Blanc formation chert.	596179	4750052

AfGw-156 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-156.1	Biface 1-6	10/15/2010	P	Solar 4	1	Lithic, biface basal portion, 30 x 25 mm, bleached chert.	596049	4750124

AfGx-711 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-157 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-157.1	Point 2-15	10/15/2010	P	Solar 4	1	Lithic, projectile point, tip missing, corner notched Middle Archaic Brewterton type, 44 x 28 mm, Bois Blanc formation chert.	596003	4750020
AfGw-157.2	Uniface 2-1	10/15/2010	P	Solar 4	1	Lithic, thumbnail-type scraper, small 21 x 18 mm, Bois Blanc formation chert.	595995	4750012

AfGw-158 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-158.1	Biface 1-7	10/15/2010	P	Solar 4	1	Lithic, narrow biface tip, lightly worked on one side , 27 x 21 mm, Bois Blanc formation chert.	596032	4749954
AfGw-158.2	Biface 2-4	10/15/2010	P	Solar 4	1	Lithic, narrow biface tip, lightly worked on one side , 21 x 25 mm, Bois Blanc formation chert.	596031	4749951
AfGw-158.3	Point 2-16	10/15/2010	P	Solar 4	1	Lithic, projectile point, tip and base missing, notched Early Woodland Meadowood type, 31 x 26 mm, Bois Blanc formation chert.	596031	4749937
AfGw-158.4	Scraper 1-3	10/15/2010	P	Solar 4	1	Lithic, thumbnail-type scraper from biface tip, 29 x 25 mm, Bois Blanc formation chert.	596033	4749948
AfGw-158.5	Scraper 1-4	10/15/2010	P	Solar 4	1	Lithic, thumbnail-type scraper, small 21 x 18 mm, Bois Blanc formation chert.	596032	4749953
AfGw-158.6	Scraper 2-4	10/15/2010	P	Solar 4	1	Lithic, hafted end scraper,30 x 22 mm, Bois Blanc formation chert.	596033	4749957

AfGw-159 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-159.1	Core 1-2	10/15/2010	P	Solar 4	1	Lithic, core, 40 x 42 mm, Bois Blanc formation chert.	596139	4749689

AfGx-711 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-160 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-160.1	Core 1-1	10/15/2010	P	Solar 4	1	Lithic, core, 23 x 42 mm, Bois Blanc formation chert.	596178	4749590

AfGw-161 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-161.1	Biface 1-4	10/15/2010	P	Solar 4	1	Lithic, biface , Bois Blanc formation chert.	596303	4749608

AfGw-163 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-163.1	PTP 4	9/21/2010	TP	Solar Woodlot	2	Lithic, flakes, Bois Blanc formation chert	596601	4749426
AfGw-163.2	PTP 4-S1	9/21/2010	TP	Solar Woodlot	8	Lithic, flakes, Bois Blanc formation chert	596601	4749426

AfGw-164 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-164.1	Point 1-6	10/4/2010	P	Solar 1	1	Lithic, projectile point, side notched, somewhat concave base, Early Archaic Side Notched horizon type, 41 x 27 mm, non-local chert type	596123	4749102

AfGx-711 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGw-165 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-165.1	Biface 2-3	10/15/2010	P	Solar 4	1	Lithic, biface, short and wide, 33 x 30 mm, Bois Blanc formation chert	596097	4750021
AfGw-165.2	Point 2-14	10/15/2010	P	Solar 4	1	Lithic, projectile point, tip and medial portion, Early Palaeo-Indian lanceolate type, 44 x 24 mm, Bois Blanc formation chert.	596109	4750025

AfGw-166 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-166.1	Point 1-17	10/25/2010	P	Solar 6	1	Lithic, projectile point, side notched, concave base, Early Archaic Side Notched horizon type, 50 x 31 mm, Bois Blanc formation chert.	596725	4750264

AfGw-167 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-167.1	Point 2-21	12/2/2010	P	T55	1	Lithic, projectile point, tip and medial portion, Early Palaeo-Indian lanceolate type, 47 x 22 mm, Bois Blanc formation chert.	600129	4746735

AfGx-721 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
AfGw-721.1	Point 1-31	11/26/2010	P	T34	1	Lithic, projectile point,Early Archaic Nettling type, 39 x 33 mm, Bois Blanc formation chert.	589822	4753959

AfGx-711 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing

AfGx-721 Artifact Catalogue — Stantec Consulting Ltd

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
161010624.1	Axe 2-1	10/4/2010 3:	P	Solar 3	1	Lithic, bifacially worked and broken possible axehead, 68 x 64 mm, Bois Blanc formation chert.	597062	4749468
161010624.2	Biface 1-1	10/4/2010 3:	P	Solar 1	1	Lithic, broken biface, large rounded form, 48 x 44 mm, Bois Blanc formation chert	596042	4749141
161010624.3	Biface 1-2	10/15/2010 1	P	Solar 1	1	Lithic, broken biface, possibly stemmed end of knife or large point, 38 x 37 mm, Bois Blanc formation chert	596172	4748742
161010624.4	Biface 1-3	10/27/2010 3	P	Solar 4	1	Lithic, corner of larger bifacially worked tool, 38 x 32 mm, Bois Blanc formation chert	596368	4749536
161010624.5	Biface 1-10	10/8/2010 9:	P	Solar 7	1	Lithic, very rough bifacially worked core, 65 x 42 mm, non-local chert	596893	4750628
161010624.6	Biface 2-1	10/7/2010 5:	P	Solar 1	1	Lithic, bifacee, 49 x 37 mm, Bois Blanc formation chert	596388	4748416
161010624.7	Biface2-2	10/15/2010 5	P	Solar 1	1	Lithic, medial portion of a bifacially worked tool, possibly a broken point, 30 x 29 mm, Bois Blanc formation chert	596385	4748597
161010624.8	Biface2-5	10/15/10	P	Solar 2	1	Lithic, medial portion of bifacially worked tool, broken at both ends , 38 x 21 mm, Bois Blanc formation chert	596802	4749182
161010624.9	Biface2-6	12/1/2010 3:	P	T12	1	Lithic, broken biface, early stages of reduction, 40 x 33 mm, Bois Blanc formation chert	601497	4747141
161010624.10	Biface2-7	10/15/2010 2	P	T12	1	Lithic, biface, possibly in process of being worked into a knife or point, 46 x 23 mm, Bois Blanc formation chert	601602	4747206
161010624.11	Core 1-3	10/15/2010 4	P	Solar 4	1	Lithic, core, 52 x 47 mm, Bois Blanc formation chert.	596098	4749815
161010624.12	Core 1-4	10/25/2010 1	P	Solar 2	1	Lithic, core, 61 x 49 mm, Bois Blanc formation chert.	596802	4748763
161010624.13	Core 1-5	10/25/2010 1	P	Solar 6	1	Lithic, microblade core, 37 x 24 mm, Bois Blanc formation chert.	596686	4750257
161010624.14	Graver 1-1	10/15/2010 4	P	Solar 6	1	Lithic, spurred graver, bifacially worked along working edge, 27 x 23 mm, Bois Blanc formation chert	596685	4750254
161010624.15	Grndstn2-1	11/29/10	P	Solar 2	1	Lithic, groundstone item of indeterminate origin or purpose, ground squared exterior surface, concave ground surface interior, 25 x 30 x 26 mm, unknown sandstone material	596707	4748741
161010624.16	Point 2-11	10/8/2010 9:	P	Solar 1	1	Lithic, projectile point, very rough side notched point preform, indeterminate age or type, 42 x 30 mm, Bois Blanc formation chert.	591354	4752247
161010624.17	Point2-10	10/8/2010 9:	P	Solar 1	1	Lithic, projectile point, tip and medial portion, indeterminate age or type, 34 x 24 mm, Bois Blanc formation chert.	596388	4748482

AfGx-711 Artifact Catalogue *Stantec Consulting Ltd*

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
161010624.18	Point2-12	10/15/2010 1	P	Solar 3	1	Lithic, projectile point, tip and medial portion, indeterminate age or type, Bois Blanc formation chert.	597157	4749264
161010624.19	Point2-13	10/15/2010 3	P	Solar 4	1	Lithic, projectile point, tip broken, corner notched, Late Archaic Innes type, 43 x 30 mm, Bois Blanc formation chert.	596169	4750079
161010624.20	Point2-17	10/15/2010 4	P	Solar 2	1	Lithic, projectile point, corner notched, broken tip and base, Late Archaic Genesee type, 43 x 32 mm, Bois Blanc formation chert	596545	4748637
161010624.21	Point2-18	12/2/2010 9:	P	Solar 2	1	Lithic, projectile point, corner notched, Late Archaic Crawford Knoll type, 27 x 20mm, Bois Blanc formation chert	596719	4748737
161010624.22	Point2-22	12/2/2010 3:	P	T55	1	Lithic, projectile point, Late Archaic Narrow Point horizon type, 42 x 23 mm, Bois Blanc formation chert.	600236	4746268
161010624.23	Point2-23	10/7/2010 3:	P	T40	1	Lithic, projectile point tip , indeterminate age or type, 26 x 28 mm, Bois Blanc formation chert.	604256	4749554
161010624.24	Point2-4	10/7/2010 4:	P	Solar 1	1	Lithic, projectile point, tip and medial portion, probable Early Woodland Meadowood type, 37 x 27 mm, Bois Blanc formation chert	596504	4748588
161010624.25	Point2-5	10/7/2010 4:	P	Solar 2	1	Lithic, projectile point, stemmed , Late Archaic Smallpoint Horizon, 28 x 18 mm, Bois Blanc formation chert.	596379	4749050
161010624.26	Point2-6	10/08/10	P	Solar 1	1	Lithic, projectile point, very rough point preform, indeterminate age or type, 35 x 21 mm, Bois Blanc formation chert.	596373	4749039
161010624.27	Point 1-12	10/08/10	P	Solar 2	1	Lithic, projectile point, boken base/stem, probable Early Woodland Meadowood type, 47 x 24 mm, Bois Blanc formation chert	596507	4749146
161010624.28	Point 1-13	10/15/2010 1	P	Solar 2	1	Lithic, projectile point, tip and medial portion, indeterminate age or type, 41 x 29 mm, Bois Blanc formation chert.	596547	4748647
161010624.29	Point 1-14	10/15/2010 1	P	Solar 4	1	Lithic, projectile point, base broken, corner notched, possible Middle Woodland Saugeen type, 35 x 24 mm, Bois Blanc formation chert.	596247	4749751
161010624.30	Point 1-15	10/15/2010 2	P	Solar 4	1	Lithic, projectile point, medial portion, indeterminate age or type, 30 x 22 mm, Bois Blanc formation chert.	596222	4749715
161010624.31	Point 1-16	10/25/2010 1	P	Solar 4	1	Lithic, projectile point, medial portion, probable Early Woodland Meadowood type, 34 x 27 mm, Bois Blanc formation chert	596298	4749839
161010624.32	Point 1-19	10/27/2010 1	P	Solar 6	1	Lithic, projectile point, stemmed, possible Late Archaic Lamoka type, 55 x 24 mm, Bois Blanc formation chert.	596685	4750179
161010624.33	Point 1-22	10/27/2010 1	P	Solar 7	1	Lithic, projectile point, tip medial portion, indeterminate age or type, 41 x 27 mm, Bois Blanc formation chert.	597293	4750032
161010624.34	Point 1-23	10/27/2010 1	P	Solar 8	1	Lithic, projectile point, Late Archaic Broad Point horizon type, 57 x 34 mm, Bois Blanc formation chert.	597665	4750148

AfGx-711 Artifact Catalogue						Stantec Consulting Ltd		
Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description	Easting	Northing
161010624.35	Point 1-24	10/27/2010 3	P	Solar 8	1	Lithic, projectile point, corner broken, corner notched, Late Middle Woodland Port Maitland variant type, 45 x 22 mm, Bois Blanc formation chert.	597607	4750174
161010624.36	Point 1-26	10/27/2010 4	P	Solar 7	1	Lithic, projectile point, medial portion, indeterminate age or type, 30 x 24 mm, Bois Blanc formation chert.	596916	4750590
161010624.37	Point 1-27	11/25/2010 1	P	Solar 6	1	Lithic, projectile point, side notched , flat base, Late Archaic Innes type, 46x 28 mm, Bois Blanc formation chert.	596752	4749764
161010624.38	Point 1-29	10/4/2010 3:	P	Solar 8	1	Lithic, projectile point, tip broken,corner notched or stemmed form, Late Archaic Smallpoint horizon, 32 x 17 mm, Bois Blanc formation chert.	597600	4750269
161010624.39	Point 1-30	10/4/2010 2:	P	Solar 7	1	Lithic, projectile point, base broken, corner notched, possible Middle Woodland Saugeen type, 34 x 24 mm, Bois Blanc formation chert.	597015	4750305
161010624.40	Scraper 2-2	10/08/10	P	Solar 1	1	Lithic, large scraper from very large primary reduction flake working edge sshatterd from use(?), 51 x 44 mm, Bois Blanc formation chert	596462	4748417
161010624.41	Tool 2-1	10/08/10	P	Solar 1	1	Lithic, roughly flaked, possibly a core or early stages biface	596274	4748608
161010624.42	Tool 2-2	10/08/10	P	Solar 1	1	Lithic, broken tool, possible knife blade as evidenced by small serration along one edge, 36 x 22 mm, Bois Blanc formation chert	597087	4749190

Artifact Type and Date Sources: Collard, 1967; Ellis and Ferris , 1990; Godden, 1964; Jones and Sullivan, 1989; Justice, 1987; LCOAS, n.d; Miller *et al* ., 2000; Ritchie, 1969 Samford, 2000; Sussman, 1985; Kenyon, 1980.

APPENDIX C

Artifact Plates

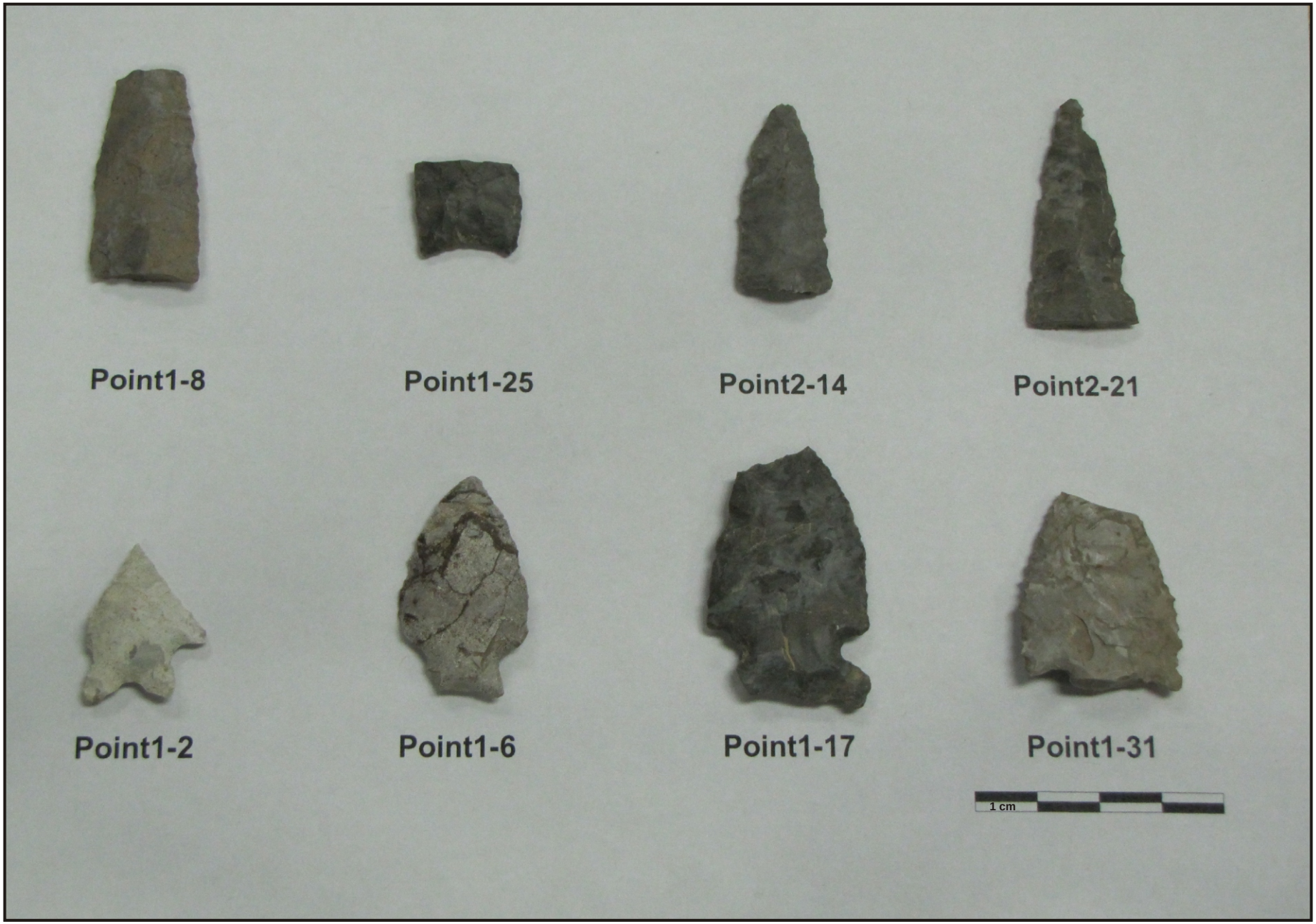

Plate 1 - Palaeo-Indian (top) and Early Archaic (bottom) Projectile Points

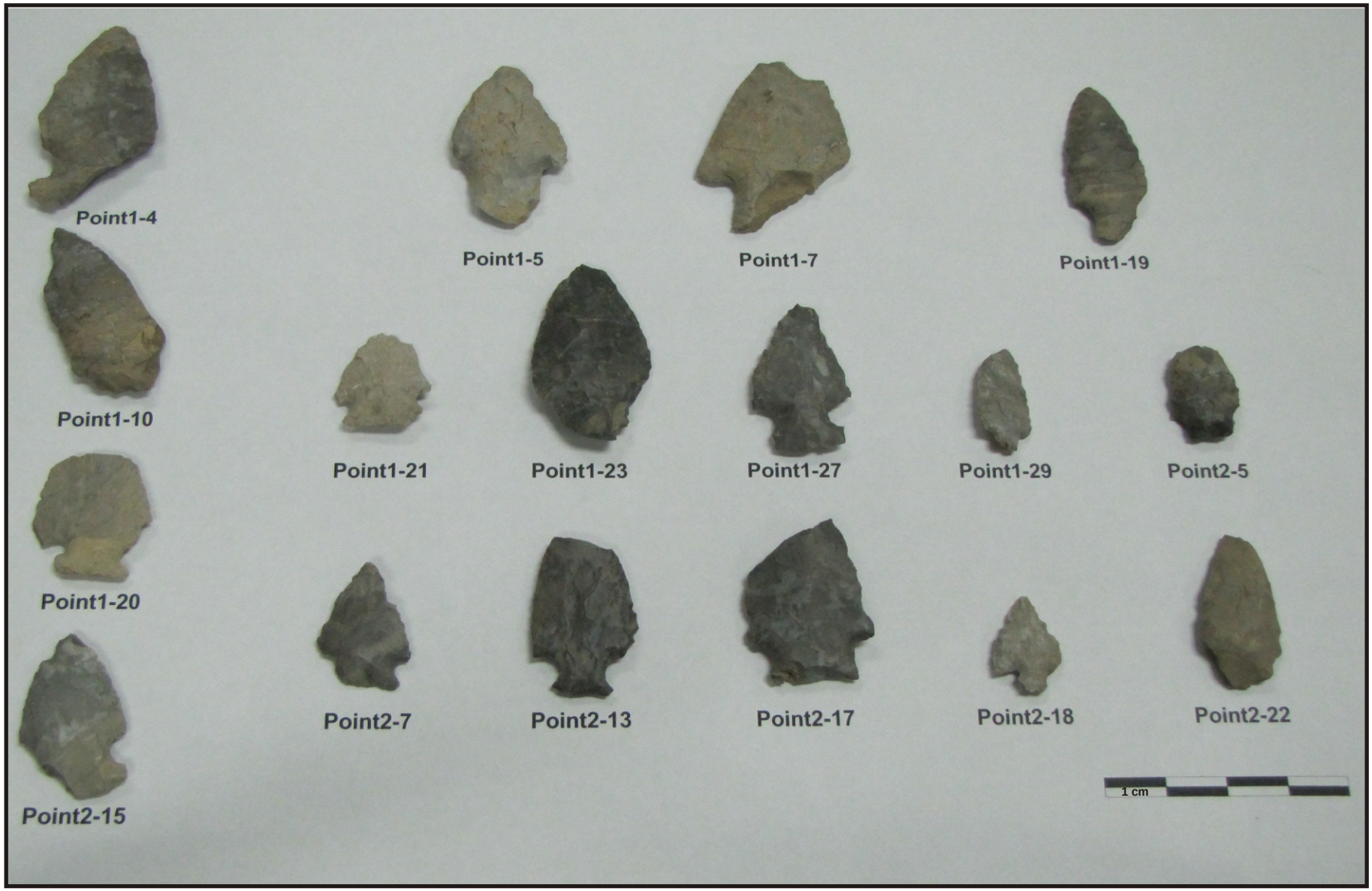

Plate 2 - Middle (left) and Late (right) Archaic Projectile Points

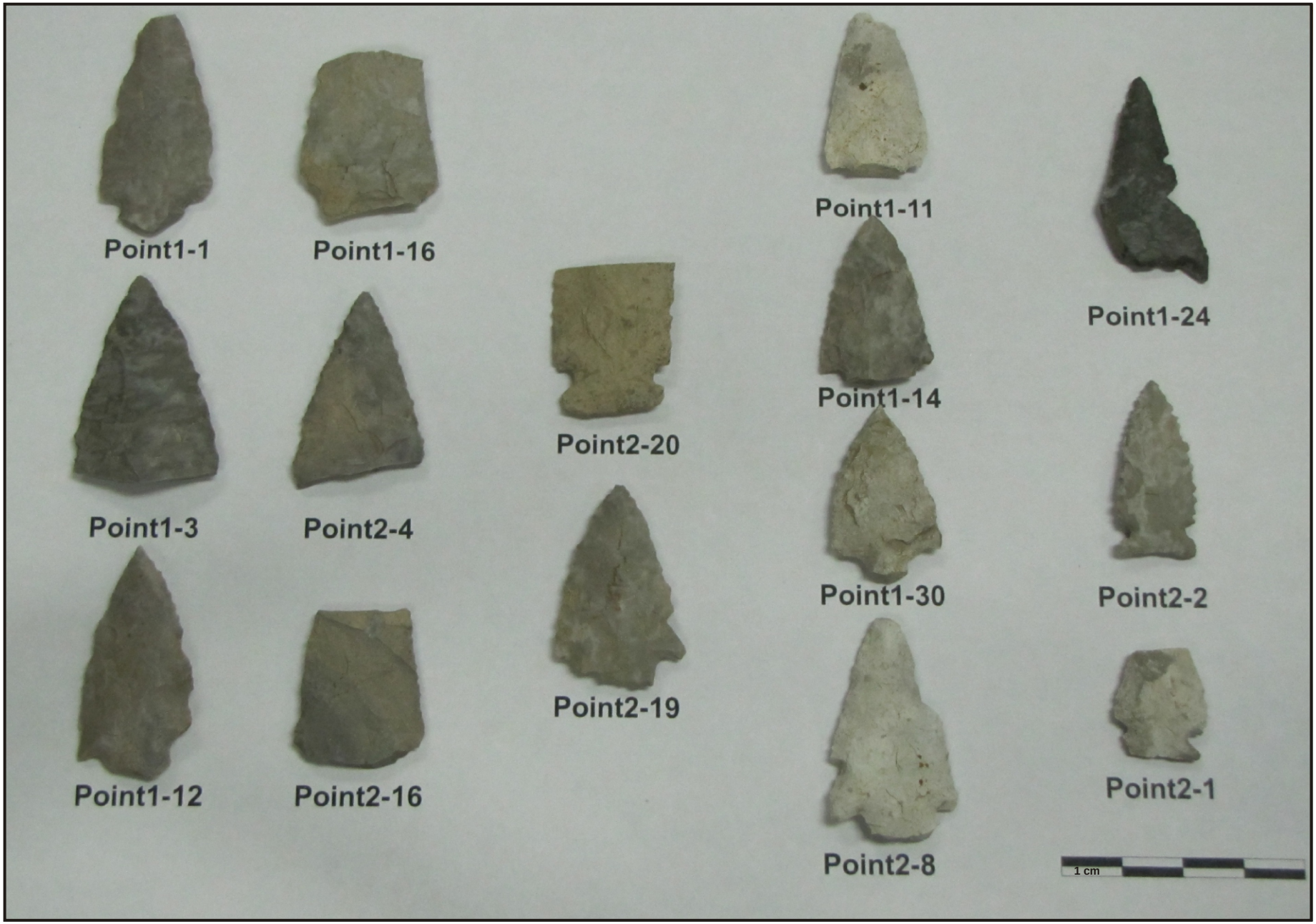

Plate 3 - Early (left three rows), Middle (second from right) and Late (far right) Woodland Projectile Points

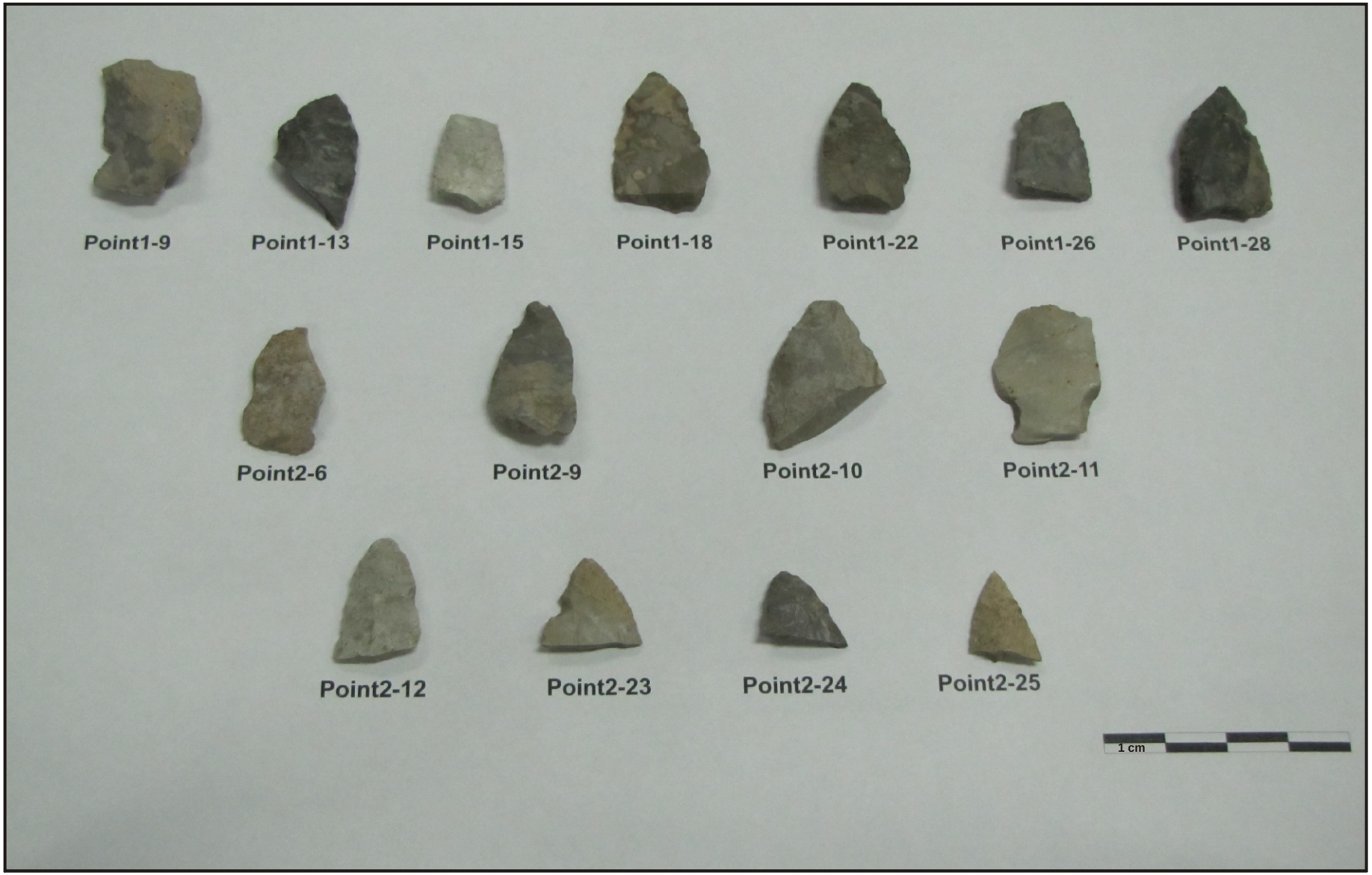

Plate 4 - Indeterminate Projectile Points

Plate 5 - Representative sample of bifaces, scrapers and graver

Plate 6 - Smoking pipe bowl fragments
(left to right AfGw141.01 and AfGw141.02)

Plate 7 - Ceramic assemblage
(top left to right AfGw141.03, AfGw141.04 and AfGw141.05;
bottom left to right AfGw141.06, AfGw141.07 and AfGw141.08)

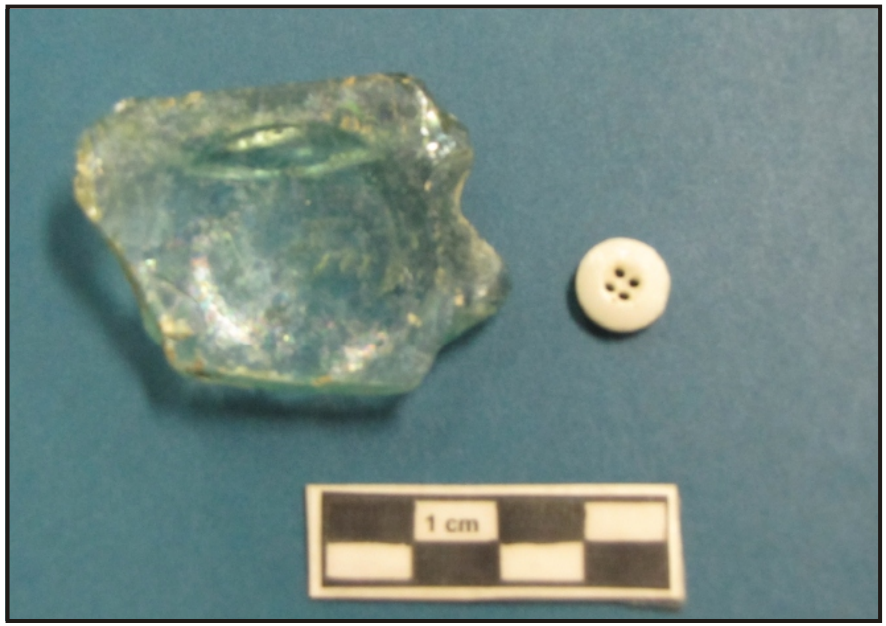

Plate 8 - Glass assemblage (left to right AfGw141.10 and AfGw141.09)

Stantec Project # 161010624

FINAL REPORT
Stage 2 Archaeological Assessment, SPK Grand Renewable Energy Park, Haldimand County, Ontario

Cayuga Township – Lot 39, Concession 1 South; Lot 25, Concession 5 South
Rainham Township – Lot 8, Concession 6; Lot 24, Concession 1
Dunn Township – Lot 4, Concession 1 North of Rainham Road; Lots 7-9, Concession 1 North of Rainham Road; Lots 15-17, Concession 2 South of Rainham Road; Lots 21-24, Concession 2 South of Rainham Road

Prepared for:
Samsung Renewable Energy Inc.
55 Standish Court, Mississauga, ON L5R 4B2 (905) 542-3535

Prepared by:
Stantec Consulting, Ltd.
2781 Lancaster Road
Ottawa, ON K2B 1A7

July 6, 2011

CIF # P002-222-2011

Project No.: 161010624

EXECUTIVE SUMMARY

Samsung C&T (Samsung), Korea Power Electric Corporation (KEPCO), and Pattern Energy (Pattern) plan to build and operate the world's largest renewable energy cluster in Southern Ontario (Ontario Alternative Energy Cluster). Together, these companies (referred to herein as "SPK") will be involved in the development of the first phase of the energy cluster development.

The Grand Renewable Energy Park (the Project) is proposed within the County of Haldimand and is generally bounded by Townline Road to the north, Haldimand Road 20 to the west, the Grand River to the east and Lake Erie to the south. It consists of a 1513.1 MW (nameplate capacity) wind project, a 100 MW (nameplate capacity) solar project located on privately owned and Ontario Realty Corporation (ORC) managed lands and a transmission line to convey electricity to the existing power grid. According to subsection 6(3) of O. Reg. 359/09, the wind component of the Project is classified as a Class 4 Wind Facility and the solar component of the Project is classified as a Class 3 Solar Facility.

The basic components of the Project include 67 wind turbines, approximately 425,000 photovoltaic (PV) solar panels installed on fixed ground-mounted racking structures organized into 100 1 MW solar units, a collector sub-station, interconnect station and Operations and Maintenance building, temporary storage and staging areas, approximately 19 km of 230 kV transmission lines along Haldimand Road 20, approximately 82 km of new overhead 34.5 kV collector lines along public roads, approximately 48 km of new underground collector lines along turbine access roads, approximately 45 km of turbine access roads and 40 km of solar panel maintenance roads.

A Stage 1 Archaeological Assessment (AA) was completed by Stantec Consulting Ltd. (Stantec) as part of an application for the proposed SPK Grand Renewable Energy Park (GREP), also referred to as Project, consisting of both solar and wind power generation in Haldimand County, Ontario. The results of the Stage 1 AA indicated that most of the proposed Project Area demonstrated the potential for the presence of significant and intact archaeological resources.

Stantec archaeological staff completed Stage 2 AA for 359 ha of land for both the solar and wind turbine components of the Project in 2010. At the end of the 2010 field season a total of 50 ha remained to be surveyed over 17 turbine pads and their associated access roads. As well, two other access roads where modifications were required were assessed. With the exception of one supplemental area surveyed using a test pit excavation methodology, all turbine pads and associated access roads were assessed using a pedestrian survey methodology on ploughed agricultural lands.

The Stage 2 AA completed by Stantec in 2011 resulted in the identification and recording of several hundred discrete pre-contact period artifacts, including 12 formal or expedient tools (11 projectile points, or "arrowheads" and one core). One other archaeological site was discovered where the density of lithic flakes was too high to record individually. Several features, including building foundations, from a possibly mid-20th century military incinerator associated with the Dunnville Airport were also recorded during the Stage 2 AA.

Based on the 2010 *Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Tourism and Culture Stantec has identified a further ten (10) discrete archaeological site locations, in addition to the 45 sites previously reported (Stantec, 2011), that will require Stage 3 Archaeological Assessment (Table 1).

Table 1 - Archaeological Sites Requiring Further Assessment

Stantec Site #	Borden #	Culture Period(s) Represented	Dimensions (in m)	Stantec Site #	Borden #	Culture Period(s) Represented	Dimensions (in m)
46	AfGx-768	Indeterminate	145 x 40	51	AfGx-770	Indeterminate	40 x 40
47	AfGx-769	Indeterminate	65 x 40	52	AfGx-771	Indeterminate	30 x 20
48	AfGv-124	Indeterminate	30x 30	53	AfGx-772	Indeterminate	35 x 20
49	AfGv-125	Middle Woodland	50 x 50	54	AfGv-126	20th Century historic	100 x 60
50	AfGw-229	Indeterminate	50 x 50	55	AfGv-127	Early Woodland	30 x 10

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PROJECT PERSONNEL

Project Director	Colin Varley, M.A., R.P.A. (P002)
Field Director	Colin Varley, M.A., R.P.A.
Field Crew	Christienne Uchiyama, B.A. (Hons) (R309) Tavis Maplesden, B.A. (Hons) Steve Jarrett, M.A. Mike Rooney, B.A. (Hons) Daphne Parrington
Report and Graphics	Colin Varley, M.A., R.P.A. Sarah Rogers, B.Sc (Hons) G.Dip. Christienne Uchiyama, B.A. (Hons)

1 INTRODUCTION

Samsung C&T (Samsung), Korea Power Electric Corporation (KEPCO) and Pattern Energy (Pattern) plan to build and operate the world's largest renewable energy cluster in Southern Ontario (Ontario Alternative Energy Cluster). Together these companies (herein referred to as "SPK" are proposing to develop, construct, and operate the Grand Renewable Energy Park (the "Project") as the development of the first phase of the energy cluster development.

The Grand Renewable Energy Park (the Project) is proposed within the County of Haldimand and is generally bounded by Townline Road to the north, Haldimand Road 20 to the west, the Grand River to the east and Lake Erie to the south. It consists of a 1513.1 MW (nameplate capacity) wind project, a 100 MW (nameplate capacity) solar project located on privately owned and Ontario Realty Corporation (ORC) managed lands and a transmission line to convey electricity to the existing power grid. According to subsection 6(3) of O. Reg. 359/09, the wind component of the Project is classified as a Class 4 Wind Facility and the solar component of the Project is classified as a Class 3 Solar Facility.

The basic components of the Project include 67 wind turbines, approximately 425,000 photovoltaic (PV) solar panels installed on fixed ground-mounted racking structures organized into 100 1 MW solar units, a collector sub-station, interconnect station and Operations and Maintenance building, temporary storage and staging areas, approximately 19 km of 230 kV transmission lines along Haldimand Road 20, approximately 82 km of new overhead 34.5 kV collector lines along public roads, approximately 48 km of new underground collector lines along turbine access roads, approximately 45 km of turbine access roads and 40 km of solar panel maintenance roads.

A Stage 1 Archaeological Assessment (AA) was completed by Stantec Consulting Ltd. (Stantec) as part of an application for the proposed SPK Grand Renewable Energy Park (GREP), also known as Project, consisting of both solar and wind power generation in Haldimand County, Ontario. At the time of the Stage 1 AA specific details of the proposed GREP were not available and the Stage 1 AA encompassed a large region that included most or all of Dunn, South Cayuga, North Cayuga and Rainham Townships in Haldimand County. The results of the Stage 1 AA indicated that most of the proposed Project Area demonstrated the potential for the presence of significant and intact archaeological resources.

Based on the widespread archaeological potential of the wider GREP Project study area it was decided that all previously undisturbed (except by agricultural activity) areas where Project infrastructure was planned would be subject to Stage 2 AA. Due to changing Project needs new lands requiring Stage 2 AA were added late in the 2010 field season, necessitating that some Project Areas be assessed by Golder Associates, Inc. (Golder) (Figure 1-1). Further, early snow cover in December resulted in some Project Areas remaining uncompleted at the end of 2010. The portion of the areas that had been assigned to Stantec for Stage 2 AA and remained incomplete at the end of the 2010 field season are the subject of the present report.

2 PROJECT CONTEXT

2.1 Environmental Context

The majority of land use in the general Project Area is agricultural, with pockets of wooded areas throughout. In an effort to limit the amount of woodlot cutting required the majority of the proposed Project infrastructure was planned to be located on agricultural fields, which allowed for the majority of the Stage 2 AA to be conducted using a pedestrian survey strategy. Specific Lot and Concession locations for each Project component assessed, whether solar field or turbine access roads and pads, are listed in Table 3.1 in Section 3.

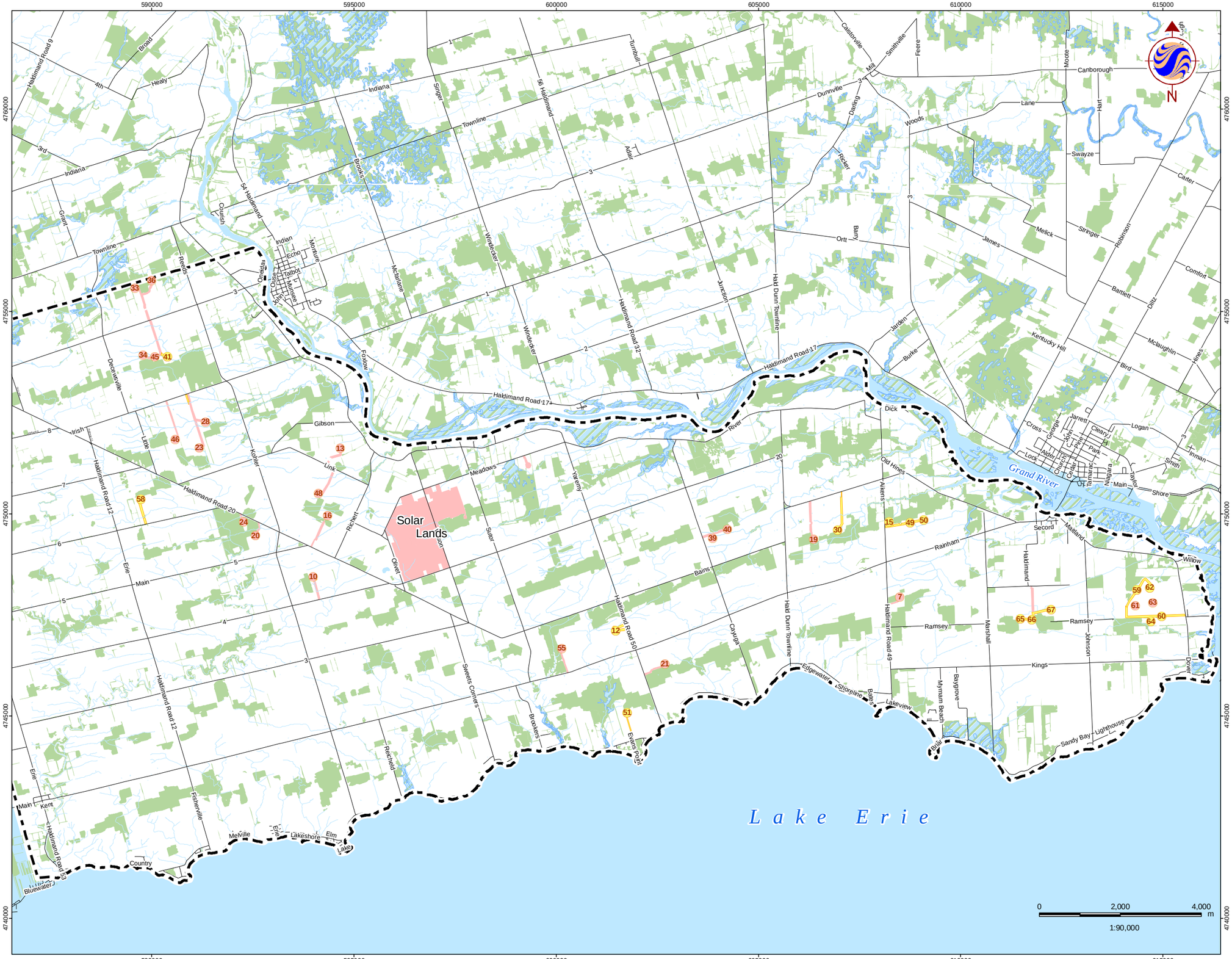
As described in the Stage 1 AA, the Project Area is located in the Haldimand Clay Plain physiographic region, a large region that occupies approximately 1,350 square miles and is characterised by recessional moraines in the northern part, deep river valley in the middle, and flat and low lying ground to the south (Chapman and Putnam 1984).

The surficial geology of the Project Area is predominantly silty clay loam till soils. Generally the only other soil types represented are alluvial deposits in flood plains spanning the length of the minor waterways and some small areas of lacustrine silty clay in the eastern part of the Project Area. The silty clay loam tills, such as the Gobles and Kelvin series of soils, are characterised by poor to imperfect drainage (Presant and Acton, 1984). The general homogeneity of the Project Area soils was clearly evident during the Stage 2 AA field surveys. With one exception all solar fields and turbine access road and pad locations were located in areas of heavy, blocky clay soil of medium brown colour. The only discernible difference in these areas was around the margins of small drainage channels, natural and artificial, that ran through the surveyed areas, in which case the soil was darker and somewhat siltier.

Topographically the Project Area is generally nearly level to gently rolling. Where there is micro-topographic relief, the lower ground typically acts as a water collector and drainage channel for the surrounding ground. Even in areas where there is greater relief the underlying clay subsoils do not absorb water quickly and after rain events there was usually standing water underneath the ploughed surfaces. In no locations surveyed were there any soils which could be classified as having good drainage; most soils were imperfectly or poorly drained.

2.2 Summary of Previous Stages 1 and 2 Archaeological Assessment

A Stage 1 Archaeological Assessment (AA) completed by Stantec Consulting Ltd. (Stantec) indicated that most of the proposed Project Area demonstrated the potential for the presence of significant and intact archaeological resources (Stantec, 2010). Based on the widespread archaeological potential of the wider GREP Project study area it was decided that all previously undisturbed (except by agricultural activity) areas where Project infrastructure was planned would be subject to Stage 2 AA.



Legend

- ● Turbine Location & Number
- 🟨 Completed 2011
- 🟥 Completed 2010
- Watercourse
- ▨ Wetland
- Waterbody
- 🟩 Woodlot
- ▭ Project Location

Map Area

Notes

1. Coordinate System: UTM Zone 17 NAD 83.
2. Data Sources: Ontario Ministry of Natural Resources
   © Queens Printer Ontario, 2009; © GREP, 2010;
   © Samsung, 2010.
3. Image Sources: © Google Earth Pro, 2010
   (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

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Figure No.

2-1

Title

PROJECT AREA SHOWING LOCATIONS OF COMPLETED STAGE 2 ARCHAEOLOGICAL ASSESSMENT

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As noted previously, most of the Project infrastructure areas were assessed during the 2010 field season. Stage 2 AA of Project components was completed by Stantec and, under separate license, Golder Associates Ltd. (Golder, 2011; Stantec, 2011). Stage 2 AA completed by Stantec in 2010 on 359 ha of solar and wind component lands resulted in the identification of 165 archaeological resources, composed of 70 isolated findspots of limited cultural heritage value or interest, 50 discrete artifact clusters of limited cultural heritage value or interest and 45 locations of high cultural heritage value or interest, which were designated as archaeological "sites" (Stantec, 2011). Each site, cluster or isolated findspot was given a discrete number. The following report continues on from those numbers, such that the first site in this report is GREP Site #46, the first artifact cluster is CL51 and the first isolated find is IF71. The results of the 2010 Stage 2 archaeological field program confirmed the general conclusions of the Stage 1 AA study.

3 STAGE 2 ASSESSMENT METHODOLOGY AND REROC OF FINDS

At the completion of the 20110 Stage 2 AA field program (halted by snowfall and enduring winter conditions on December 6, 20101) there were 16 turbine pads and their associated access roads that still required Stage 2 field assessment. During the winter of 2010-2011 adjustments were also made to three wind components that had been surveyed during the 2010 field season. These three adjustments also required completion of Stage 2 field assessment for the 2011 field season. Permission to access the various Project properties was secured from individual landowners by the proponent and fieldwork was conducted between April 13-15 and June 15-16, 2011. As part of SPK's ongoing engagement with local First Nation communities, an archaeological monitor from the Six Nations of the Grand, Daphne Parrington, was assigned to the Stage 2 AA. Ms. Parrington was present throughout the Stage 2 AA field program and actively participated in the field surveys.

Field assessment followed standard procedures as outlined in the 2010 *Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Tourism and Culture (MTC). All pedestrian survey was completed at 5 m intervals (or less). When artifacts were encountered survey interval was reduced to 1-1.5 m intervals and intensified for an area of minimum 20 x 20 m from either the individual artifact or from the centre of the initial scatter encountered. In the portion of the access road for Turbines 23 and 28 where test pit survey was completed positive test pits resulted in the excavation of eight supplemental test pits around the initial positive test pit, one each N, NE, E, SE, S SW, W and NW at 2.5 m from the positive test pit.

For the most part each artifact found during pedestrian survey (including individual flakes) was recorded in the field using a handheld Garmin GPS75 Geographic Position System (GPS) device. In several instances one GPS point recorded the location of several tightly clustered flakes. In one instance (discussed below) GPS data was recorded only for the limits of a very dense scatter of lithic flakes. Where test pit survey was completed the location of each initial positive test pit was recorded. With the exception of material recovered from test pits, only artifacts that are considered to be diagnostic or formal tools were collected during the Stage 2 AA. All other artifacts encountered during the pedestrian survey component of the Project were left *in-situ*. Formal tools collected during the field survey were given specific alpha-numeric designations by tool type (*e.g.* Point), GPS unit designation of 3 to differentiate the 2011 survey results from those in 2010 and sequential number of that tool type, resulting in designations such as Point 3-9. These designations have been carried forward, where applicable, to the artifact catalogues, either of registered archaeological sites (*e.g.* AfGv-125.1 for Point 3-2) or as part of the non-site affiliated collection (*e.g.* 161010624.45).

Table 3-1 Location, Size, Survey Strategy and Results of Stage 2 AA By Survey Area

Survey Area	Location (Lot, Concession, Township)	Surveyed Area (ha)	Survey Methodology	Archaeological Sites Recorded
Turbine 41	Lot 39, Concession 1, South Cayuga	2	Pedestrian, 5 m intervals	AfGX-768, AfGx-769
Turbines 65-67	Lots 14-16, Concession 2 South of Rainham Road, Dunn	10.5	Pedestrian, 5 m intervals	AfGv-124, AfGv-125, AfGv-127
Turbine 58	Lot 8, Concession 6, Rainham	4.2	Pedestrian, 5 m intervals	AfGx-770, AfGx-771, AfGx-772
Turbine 51	Lot 24, Concession 1, Rainham	3.3	Pedestrian, 5 m intervals	AfGw-229
Turbine 30	Lot 4, Concession 1 North of Rainham Road, Dunn	5.5	Pedestrian, 5 m intervals	none
Turbines 59-64 (Complex 3)	Lots 21-24, Concession 2 South of Rainham Road, Dunn and Lot 2, Concession 3 South of Rainham Road, Dunn	15	Pedestrian, 5 m intervals	AfGv-126
Turbines 14, 49 and 50	Lots 7-9, Concession 1 North of Rainham Road, Dunn	8.3	Pedestrian, 5 m intervals	none
Turbine 12, New Access Road	Lot 19, Concession 6, South Cayuga	1.6	Pedestrian, 5 m intervals	none
Turbines 23 and 28, Access Road	Lots 39 and 40, Concession 2, South Cayuga	0.75	Test pit, 5 m intervals	none
Turbine 10, Turn-Around	Lot14, Concession4, Rainham	0.05	Test Pit, 5 m intervals	none
	Total ha Surveyed	**52**		

The determination of site *cultural heritage value*, and thus on whether a specific association of artifacts would become a registered archaeological site with the MTC, was based on guidelines presented in the 2010 *Standards and Guidelines for Consultant Archaeologists* prepared by the MTC. In these guidelines specific criteria are set out for determining a site's Cultural Heritage Value, generally based on meeting a minimum number of artifacts within a defined area. Since the Project Area is located west of the Niagara Escarpment the minimum number of non-diagnostic artifacts, such as stone flakes from the production of stone tools, required to be present to designate a registerable site is higher than in the remainder of the province. These more stringent requirements for land west of the Escarpment recognise that there is a much higher occurrence of isolated artifacts and sites in this region, and in effect makes it more difficult for small scatters of non-diagnostic artifacts to be considered significant archaeological sites. As outlined in the 2010 *Standards and Guidelines for Consultant Archaeologists* at least one of the following conditions should be met in order for a cluster of associated artifacts to be considered an archaeological site of Cultural Heritage Value:

- Pre-contact archaeological resources containing diagnostic artifacts or a concentration of artifacts (or both):
    - In pedestrian survey, finding within a 10 x 10 metre area:
        - at least one diagnostic artifact or fire-cracked rock in addition to two or more non-diagnostic artifacts; or
        - in areas on or west of the Niagara Escarpment, at least 10 non-diagnostic artifacts.

    - In test pit survey, within a 10 m x 10 m area:
        - at least one diagnostic artifact from combined test pit and test unit excavations; or
        - at least five non-diagnostic artifacts from combined test pit and test unit excavations.
- Single examples of archaeological resources of special interest:
    - Aboriginal ceramics;
    - Exotic or period-specific cherts; and
    - An isolated Paleo-Indian or Early Archaic diagnostic artifact.

Given that artifact locations were recorded using a handheld GPS that had an average accuracy error of between 3-5 m at any given time some allowances have been made in determining sites that are not entirely within the designated 10 x 10 m area. In some instances sites that contained just over the minimum number of non-diagnostics but which were distributed over a larger area than 10 x 10 m have been designated as sites because they represented the only artifact cluster in an otherwise blank archaeological landscape. The MTC guidelines allow for some discretion on the part of the consultant archaeologist to make decisions regarding the Cultural heritage value or interest of field findings outside of the guidelines presented.

Only these resources were considered to have cultural heritage value or interest and, as per recent MTC practice, only sites determined to have Cultural heritage value received Borden number designation. Borden numbers are an alpha-numeric numbering system for archaeological sites that is used throughout Canada. A Borden Block is composes of four letters, two major (UPPER CASE) and two minor (lower case), each letter of which represents a major and minor subdivision within the block. In the case of site AfGw-167, for instance, **A** is the major South-North locator. Each major block represents 2 degrees of Latitude from south to north (using letters A - U); **f** is the minor South-North Locator, with each minor block representing 10 minutes of Latitude from south to north (using letters a-l). **G** is the major East-West Locator, with each major block representing 4 degrees of longitude from east to west (letters A - W); **w** is the minor East-West Locator, with each minor block representing 10 minutes of longitude from east to west (letters a - x). Within each of these blocks sites are numbered consecutively as they are registered, and each site gets a unique number. In the case of site AfGx-768 this is the 768th site found within Borden block AfGx.

The Stage 2 AA completed by Stantec in 2011 resulted in the identification and recording of several hundred pre-contact period artifacts, including 12 formal or expedient tools (11 projectile points, or “arrowheads” and one core). Unless otherwise noted, all tool forms were produced on Bois Blanc formation cherts (*e.g.* Onondaga chert or Haldimand chert) (Fox, 2009). One location was completely recorded based on the limits of a dense lithic scatter where individual GPS points were not taken. Several features, including building foundations, from a potetnially mid-20th century military incinerator associated with the Dunnville Airport were also recorded during the Stage 2 AA .

The majority of artifacts located were flakes or chips of stone that are the results of stone tool making. Lithic flakes exhibit different characteristics, depending on when in the tool making process they were produced. In general tool stone making follows four general stages.

Once a piece of lithic material has been chosen *primary reduction* of the material begins. This stage typically involves the removal of the outside, or cortex, of the stone so that a rough tool shape is produced. The product of this stage is referred to as a primary blank, which can be further

modified into a wide array of formal tools. The flakes produced at this stage are often rectangular and blocky and exhibit a large amount of cortex on the flakes.

Secondary reduction occurs when a primary blank is further reduced through the removal of material from both sides of the piece, referred to as bifacial thinning. The product of this work, the secondary blank, can be used as a tool itself, or can be further refined into more formal tools. Flakes produced in this stage of reduction show some flake scarring (the marks left when flakes are removed from a piece of stone), have reduced striking platforms (the spot where percussion is applied to remove the flake), have no, or very little, cortex, and are less blocky.

The further reduction of secondary blanks into formal tool shapes is referred to as *tertiary reduction*. The same basic processes are used here as in secondary reduction, although there is the addition of more precise flake removal through pressure flaking, where the maker applies direct pressure onto a specific part of the tool in order to facilitate flake removal. Pressure flaking generally produces smaller, thinner flakes than does percussion flaking. These tertiary flakes also exhibit many more flake scars.

The fourth stage of reduction involves the sharpening, or retouching, of tool edges after the final tool shape has been achieved. These *retouch* flakes are also produced as tools are resharpened after they wear down and become dull. Retouch flakes are produced by careful pressure flaking and produce very small, narrow, and thin flakes.

Particular emphasis is placed on projectile points in this assessment as they are the most reliable artifactual indicators (*i.e.* diagnostic) of cultural period associations, and thus of age, rarity and other criteria that assist in assigning Cultural heritage value or interest to archaeological sites. Such emphasis on diagnostic artifacts is reflected in the special provisions made in the 2010 *Standards and Guidelines for Consultant Archaeologists* for single examples of Palaeo-Indian, Early Archaic, or Late Woodland period artifacts. All projectile points collected during the Stage 2 AA are shown on Plate 1, Appendix C. Every projectile point was analysed and sorted according to cultural affiliation and period. Although not all of the points could be confidently typed or given an age, analysis did lead to the identification of: four Middle and Late Archaic points; two Early Woodland and one Middle Woodland period points. A further four points could not be assigned to a period or date due to their incomplete nature (Table 3-2).

Based on the 2010 *Standards and Guidelines for Consultant Archaeologists* Stantec has identified a total of 9 discrete registered archaeological site locations that will require Stage 3 Archaeological Assessment (Table 3-3). A further 9 artifact clusters and 13 isolated findspots which did not meet the minimum standards of cultural heritage value or interest described earlier were also documented during the Stage 2 AA.

Table 3-2 Archaeological Culture Period and Dates of Recovered Projectile Points

Survey Location	Survey ID #	Borden #	Period	Date
T65 Pad	Point 3-1	n/a	Early Woodland	2,850-2,350 BP
T66 Pad	Point 3-2	AfGv-125	Middle Woodland	2,500-1,500 BP
T58 Road	Point 3-3	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-4	n/a	Poss. Late Archaic	4,000-3,500 BP
T58 Road	Point 3-5	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-6	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-7	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-8	n/a	Late Archaic	3,500-2,800 BP
T58 Road	Point 3-9	n/a	Late Archaic	3,500-2,800 BP
T41 Pad	Point 3-10	n/a	Middle Archaic	5,000-4,500 BP
Turbine Complex 3 Road	Point 3-11	n/a	Early Woodland	2,850-2,350 BP

Artifact Identification Sources: Ellis and Ferris, 1990; Justice, 1987; LCOAS, n.d.; Ritchie, 1969

Table 3-3 Archaeological Sites Requiring Further Assessment

GREP Site #	Location	Borden #	Easting	Northing	# Tools/ Diagnostics	# non-Tools	Total # Artifacts	Cultural Period	Dimensions (in m)	Site Area (m^2)
46	T41	AfGx-768	590371	4753914	0	160	160	Indeterminate	145 X 40	5800
47	T41	AfGx-769	590343	4753844	0	n/a	n/a	Indeterminate	65 x 40	2600
48	T66	AfGv-124	611796	4747848	0	38	38	Indeterminate	30 x 30	900
49	T66	AfGv-125	611792	4747430	1	15	16	Middle Woodland	50 x 50	2500
50	T51	AfGw-229	604826	4745058	1	12	13	Indeterminate	50 x 50	2500
51	T58	AfGx-770	589736	4750399	0	10	10	Indeterminate	25 x 25	625
52	T58	AfGx-771	589726	4750195	1	7	8	Indeterminate	30 x 20	600
53	T58	AfGx-772	589794	4749961	1	5	6	Indeterminate	35 x 20	700
54	T60	AfGv-126	615444	4747529	0	0	0	20th century	100 x 60	6000
55	T65	AfGv-127	611441	4747446	1	3	4	Early Woodland	30 x 10	300
					Total # Artifacts		255		Total m2	22525

3.1 Turbine 41

The access road and pad for Turbine is located in Lot 39, Concession 1, South Cayuga, on the south side of Highway 3. The access road for T41 is also common to Turbines 34 and 45. Both of those turbine pads and the west half of the access road were surveyed in 2010. The east half of the access road and T41 were surveyed on April 15, 2011. This surveyed area encompasses a total of 2.05 ha (Figure 3-1). The topography of this area is level for the entire surveyed area. A series of shallow drainage features cross the area from west to east, which during wetter times of the year results in a thin overlay of water across the fields. Eventually these drainage channels flow into the Grand River, approximately 3 km to the east.

Two sites composed exclusively of lithic debitage were located on the T41 pad during the survey (Figure 3-1). These sites were registered as AfGx-768 and AfGx-769. A cluster of five lithic debitage artifacts was recorded on the access from the common access road. There were also three isolated artifacts, including a Middle Archaic projectile point, were also located during the survey (Figure 3-1).

3.1.1 Turbine 41 Sites

3.1.1.1 GREP Site #46 (AfGx-768)

GREP Site #46 (AfGx-768) is composed of 160 lithic flakes across an area of approximately 145 x 40 m in two major clusters on the north side of the T41 pad at its junction with the access road (Figure 3-1). The site is located on level ground north of a very shallow drainage channel that bisects the T41 pad area. This group of artifacts has been designated as being of cultural heritage value due to the high number of artifacts in very tight association. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

Based on the criterion of total number of artifacts Site #46 has cultural heritage value and is recommended for Stage 3 AA.

3.1.1.2 GREP Site #47 (AfGx-769)

GREP Site #47 (AfGx-769) is composed of an undetermined number lithic flakes across an area of approximately 65 x 40 m in the south-west corner of the T41 pad (Figure 3-1). The site is located on level ground south of the shallow drainage channel that bisects the T41 pad area, opposite Site #46. There were too many flakes, estimated in the hundreds, within this area to be meaningfully recorded with the hand held GPS. It is possible that these artifacts are part of the same site as AfGx-768 but based on the distance between the two concentrations of artifacts, a distinct break in the lithic scatter pattern between the two sites and the presence of the drainage channel between them it was decided that for the time being they should be considered as separate entities. This group of artifacts has been designated as being of cultural heritage value due to the high number of artifacts in very tight association. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

Based on the criterion of total number of artifacts Site #47 has cultural heritage value and is recommended for Stage 3 AA.

590000

590500

4754000

4754000

Isolated Find
No. 71

Cluster
No. 51

Isolated Find
No. 72

Archaeology Site
No. 46

45

41

Isolated Find
No. 57

Archaeology Site
No. 47

Point 3-10

Isolated Find
No. 73

N

0 50 100 m

1:1,800

590000

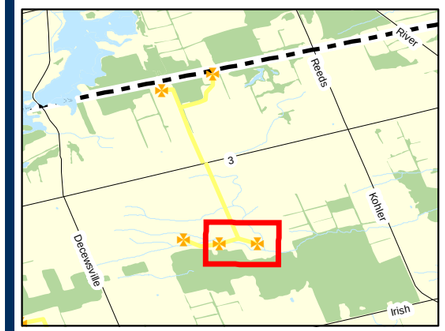
590500

Wednesday, July 6, 2011 12:05:09 PM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\July Stage 2 Revisions\map_dft_samsung_arch_stage2_sr.mxd

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

1. Coordinate System: UTM Zone 17 NAD 83.
2. Data Sources: Ontario Ministry of Natural Resources © Queens Printer Ontario, 2009; © GREP, 2011; © Samsung, 2011.
3. Image Sources: © Google Earth Pro, 2010 (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

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July 2011
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GRAND RENEWABLE ENERGY PARK

Figure No.

3-1

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 41 &45

3.1.2 Turbine 41 Artifact Clusters

3.1.2.1 Artifact Cluster #51

CL #51 is composed of five lithic flakes in very close proximity located on the T41 access road (Figure 3-1). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

3.1.3 Turbines 41 Isolated Findspots

3.1.3.1 Isolated Findspot 71

IF #71 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation located to the west of GREP Site #46 (Figure 3-1). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.1.3.2 Isolated Findspot 72

IF #72 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation located to the west of GREP Site #46 (Figure 3-1). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.1.3.3 Isolated Findspot 73

IF #73 is composed of a single projectile point, Point 3-10, approximately 30 m to the south-east of GREP Site #47 (Figure 3-1). Point 3-10 is a Middle Archaic Brewerton Side Notched type projectile point, and dates to between 5,000-4,500 BP. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.2 Turbines 65, 66 and 67

The access roads and pads for Turbines 65, 66 and 67 (T65-T67) are located in Lots 14, 15 and 16, Concession 2 South of Rainham Road in Dunn Township, south of Haldimand Tract Road (Figure 3-2). This surveyed area encompasses a total of 10.5 ha (Figure 3-2). Survey of this Project Area was completed on April 14, 2011. The topography of this area is almost level, with only gentle undulations. A headwater for the Mazi Drain, which empties into the Grand River to the east, crosses the common access road just north of where the separate turbine access roads branch off (Figure 3-2; Photo 1, Appendix A). Just before the T67 pad there is another wide ditch that is part of the Mazi Drain (Figure 3-2; Photo 3, Appendix A). Other than these two narrow areas all of the access road and turbine pad areas were surveyed by pedestrian survey.

Three sites, one composed exclusively of lithic debitage(AfGv-124) and the other two composed of lithic flakes and a projectile point (AfGv-125 and AfGv-127 were located during the survey (Figure 3-2). One isolated artifact were also located during the survey (Figure 3-2). Locations of all formal tools are shown on Figure 3-2 and are itemised in the Artifact Catalogues in Appendix B.

3.2.1 Turbines 65, 66 and 67 Sites

3.2.1.1 GREP Site #48 (AfGv-124)

GREP Site #48 (AfGv-124) is composed of 38 flakes of lithic debitage in an area of approximately 30 m x 25 m, located on the east side of the common access road, approximately midway between Haldimand Tract Road and the Mazi Drain (Figure 3-2). The site is located on level ground between a series of small ephemeral drainage channels.

Based on the criterion of total number of artifacts Site #48 has cultural heritage value and is recommended for Stage 3 AA.

3.2.1.2 GREP Site #49 (AfGv-125)

GREP Site #49 (AfGv-125) is composed of a Point 3-2 and 15 pieces of lithic debitage (Plate 1, Appendix C), located on the north-east corner of the T34 pad (Figure 3-2). The site is located on level ground between a number of small ephemeral drainage channels approximately 140 m south of the Mazi Drain (Figure 3-2). Point 3-2 is a Middle Woodland Saugeen type point manufactured on Onondaga chert

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

3.2.1.3 GREP Site #55 (AfGv-127)

GREP Site # 55 (AfGv-127) is composed of Point 3-1 and three pieces of lithic debitage located on the north-west edge of the T65 pad over an area of approximately 30 m x 25 m (Figure 3-2). The point and two of the flakes are separated by approximately 7 m. Point 3-1 is the distal end of an Early Woodland projectile point manufactured on Bois Blanc formation shert (Plate 1, Appendix C). The site is located on level ground near no notable topographic features.

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

3.2.2 Turbines 65, 66 and 67 Isolated Findspots

3.2.2.1 Isolated Findspot 74

IF 74 was composed of a single flake of Bois Blanc formation chert that was located on the south side of the drainage ditch that runs across the T65-67 access road and approximately 90 m north of GREP site #49 (Figure 3-2). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

611500

612000

4748000

4747500

Haldimand Tract

Archaeology Site
No. 48

Photo 1

Photo 3

Isolated Find
No. 74

67

Point 3-1

Archaeology Site
No. 55

65

Point 3-2

Archaeology Site
No. 49

66

Photo 2

N

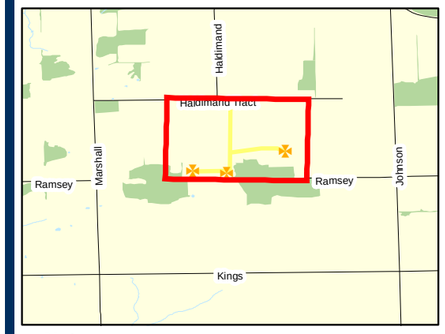
0 50 100 m

1:3,500

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

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Figure No.

3-2

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 65 - 67

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3.3 Turbine 58

The access road and pad for Turbine 58 (T58) are located in Lot 8, Concession 6, Rainham Township, north of Concession Road 6 (Figure 5-3). This surveyed area encompasses a total of 4.2 ha (Figure 3--3). T20 was surveyed on April 14, 2011. The topography of this area is characterised by gently sloping grade, rising to the north and south of the tributary of Hemlock Creek that intersects the access road toward the south end of the Project location (Figure 3-3; Photos 6 and 7, Appendix A). Hemlock Creek drains into Lake Erie near Selkirk, to the south-west of T58. During the fall of 2010 the tributary was very full, and was uncrossable on foot due to its wide and shallow bed. In the spring of 2011 the water level had subsided considerably and allowed for pedestrian survey on the north side of the stream. The wide stream bed was not surveyed, as indicated on Figure 3-3 (Photo 4, Appendix A). The T58 turbine is located an the east side of a treeline from the access road, and the narrow limits of the unploughed tree line were not archaeologically surveyed, although the width of the unsurveyed area was less than 5 m and did not compromise the efficacy of the pedestrian survey.

A proportionately large number of artifacts were documented on the T58 access road and pad, including three registered sites (AfGx-770, AfGx-771 and AfGx-772), a cluster of lithic debitage and six isolated findspots, five of which are projectile points or projectile point fragments (Figure 3-3). Locations of all formal tools are shown on Figure 3-3 and are itemised in the Artifact Catalogues in Appendix B.

3.3.1 Turbines 58 Sites

3.3.1.1 GREP Site #51 (AfGx-770)

GREP Site #51 (AfGx-770) is located on the turbine pad of T58 (Figure 3--3). The site is composed of 10 lithic flakes distributed over an area of 25 x 25 m, although seven of those flakes are within an area of 12 m x 7 m. Moreover, this group of flakes is noticeably contained in a relatively small area over 100 m from the nearest other artifacts. The site is located on elevated, level ground approximately 400 m north of the tributary of Hemlock Creek.

Based on the criterion of total number of artifacts Site #48 has cultural heritage value and is recommended for Stage 3 AA.

3.3.1.2 GREP Site #52 (AfGx-771)

GREP Site #52 (AfGx-771) is located on the access road of T58 (Figure 3-3). The site is composed of Point 3-3 and 7 lithic flakes distributed over an area of 30 x 20 m. The site is located on level, elevated ground between the channels of two ephemeral drainages, approximately 300 m north of the tributary of Hemlock Creek. Point 3-3 is a point tip of indeterminate age or cultural affiliation (Plate 1, Appendix C).

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

589500

590000

4750000

Archaeology Site No. 51

58

Cluster No. 52

Point 3-3

Archaeology Site No. 52

Point 3-4

Isolated Find No. 76

Point 3-5

Isolated Find No. 77

Archaeology Site No. 53

Point 3-6

Point 3-7

Isolated Find No. 78

Photo 5

Photo 4

Photo 6

Point 3-8

Isolated Find No. 79

Isolated Find No. 80

6

Point 3-9

Isolated Find No. 81

N

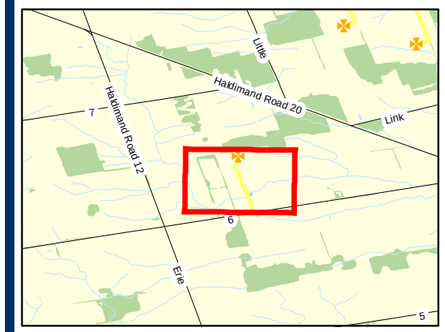
0 50 100 m

1:2,700

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

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Figure No.

3-3

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 58

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3.3.1.3 GREP Site #53 (AfGx-772)

GREP Site #53 (AfGx-752) is located on the access road of T58, approximately 50 m north of the tributary of Hemlock Creek (Figure 3-3). The site is composed of Point 3-6 and 5 lithic flakes distributed over an area of 35 m x 20 m. Point 3-6 is the basal end of a broken finely flaked point, either a corner notched or eared point form, manufactured on Bois Blanc formation chert (Plate 1, Appendix C). Due to the fragmentary nature of the point it is of indeterminate age or cultural affiliation.

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

3.3.2 Turbine 58 Artifact Clusters

3.3.2.1 Artifact Cluster #52

CL #52 is composed of four lithic flakes scattered across an area of 25 m x 15 m on the T58 access road (Figure 3-3). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

3.3.3 Turbine 58 Isolated Findspots

3.3.3.1 Isolated Findspot 76

IF #76 is composed of Point 3-4, the basal end of a possibly Late Archaic corner notched from that was broken early in its manufacture based on the relatively limited amount of flaking evident (Figure 3-2; Plate 1, Appendix C). IF #76 is located approximately 25 m south-east of GREP Site #52 (Figure 3-2). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.3.3.2 Isolated Findspot 77

IF #77 is composed of Point 3-5 (Figure 3-2; Plate 1, Appendix C). The point, located approximately70 m south of GREP Site #52, is the medial section of a narrow projectile point, worked on only one side and manufactured on light Onondaga chert. Due to its incomplete nature the point is of indeterminate age or cultural affiliation. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.3.3.3 Isolated Findspot 78

IF #78 is composed of Point 3-7, a small fragment of a point manufactured from Selkirk chert that was located immediately north of the tributary of Hemlock Creek (Figure 3-2; Plate 1, Appendix C). The point fragment is very small and appears to have been shattered during use rather than broken during manufacture as there is no discernible portion that shows a flaw in the stone or any specific flaking error. Due to the small size of the point fragment it is not possible to determine cultural affiliation or age of the artifact. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.3.3.4 Isolated Findspot 79

IF #79 is composed of Point 3-8, a very finely made Late Archaic Small Point Horizon type point manufactured on Bois Blanc formation chert (Figure 3-2; Plate 1, Appendix C). IF #79 is located approximately 40 m south of the tributary of Hemlock Creek and 30 m north-west of IF #80. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.3.3.5 Isolated Findspot 80

IF #80 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation located approximately 30 m south-east of IF #79 (Figure 3-2). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.3.3.6 Isolated Findspot 81

IF #81 is composed of Point 3-9, a Late Archaic Small Point Horizon type point (Figure 3-2; Plate 1, Appendix C). The point is not flaked on one side and appears to have been broken during manufacture. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.4 Turbine 51

The access road and pad for Turbine 51 (T51) are located in Lot 24, Concession 1, Rainham Township, to the north of Lakeshore Road (Figure 3-4). This surveyed area encompasses a total of 3.3 ha (Figure 3-4). T51 was surveyed on April 14, 2010 under sunny skies. The topography of this area gently rises as it moves north from Lakeshore Road. The ground is well drained throughout the length of the access road, and is notably sandier and better drained in the T51 pad area. A narrow tree line (less than 5 m in width) near the north end of the access road was not pedestrian surveyed, but was of sufficiently narrow width as to allow for full survey coverage at 5 m intervals throughout the access road area.

A site composed of a single core (Core 3-1) and 12 pieces of lithic debitage was located on the south-eastern edge of theT51 pad during the survey (Figure 3-4).

3.4.1 Turbines 51 Sites

3.4.1.1 GREP Site #50 (AfGw-229)

GREP Site #50 (AfGw-229) is located on the south-eastern edge of the T51 pad (Figure 3-4). The site is composed of a single core and 12 lithic flakes distributed over an area of 30 x 30 m. The site is located on elevated ground overlooking the headwaters of several unnamed drainage channels.

Based on the presence of the core and several flakes within a relatively concentrated area Site #50 has cultural heritage value and is recommended for Stage 3 AA.

601500

602000

4745000

4744500

51

Archaeology Site
No. 50

Core 3-1

N

Lakeshore

0 50 100 m

1:3,000

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

Notes

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Figure No.

3-4

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 51

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3.5 Turbine 30

The access road and pad for Turbine 30 (T30) are located in Lot 4, Concession 1 North of Rainham Road, Dunn Township, to the south of Haldimand Road 20 (Figure 3-5). This Project Area encompasses a total of 5.5 ha (Figure 3-5). For the first 120 m south of Haldimand Road 20 a width of approximately 20 m was surveyed as there was an existing house, yard and pond on the west side of the access road (Figure 3-5). Past that area, however, the access road was surveyed for the full 40 m width. T30 was surveyed on April 14, 2011 under sunny skies. Approximately 2/3 of the way south along the access road there is a very narrow and shallow drainage channel that ploughed through allowing for full survey coverage. Where the access road turns tot eh south-west to reach the T30 pad area the road passes on the north-west side of a small man-made pond. That pond is not within the limits of the access road RoW and full survey coverage was completed.

Only a single artifact was recovered during the survey of the T30 pad and access road.

3.5.1 Turbine 30 Isolated Findspots

3.5.1.1 Isolated Findspot 75

IF #75 is composed of a single lithic flake located at the north end of the access road, just south of Haldimand Road 20 (Figure 3-5). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.6 Turbines 59-64 (Complex 3)

The access road and pads for Turbines 59-64 (T59-64), also known as Complex 3, are located in Lots 21-24, Concession 2 South of Rainham Road, Dunn Township. The surveyed area encompasses a total of 15 ha in and around the Dunnville Airport (Figure 3-6). Complex 3 was surveyed on April 15 and June 16, 2011, both episodes under dry, sunny conditions. The topography of the area is generally level. The area of the airport runways and infield is slightly, and unnaturally, elevated from the access road on the south. Discussions with Frank Collins, the General Manager of the Dunnville Airport, during the field visits determined that all of the land associated with the airport runways and infield was heavily disturbed during construction of the airfield during the Second World War (Collins, pers. comm.). Beyond the grading and paving that were readily evident there are also several drains that have been installed throughout the airfield subgrade. Because of the significant construction disturbance associated with the construction and improvements of the airport over the last 70 years the portion of the Project Area within the limits of the airfield were considered to have low potential for intact archaeological resources and was not archaeologically surveyed. All other areas of the Complex 3 Project Area were pedestrian surveyed at 5 m intervals. There was some corn stubble left on the field along the south portion of the access road; however, visibility was generally sufficient to meet a minimum of 80 % visibility (Photos 9 and 10, Appendix A).

Stage 2 AA of Complex 3 resulted in the identification of a historic period site (GREP Site #54) and two artifact clusters (CL #53 and 56).

606500 607000 607500

4750500 4750000

Haldimand Road 20

Isolated Find No. 75

Photo 7

30

N

0 50 100 m

1:4,000

Legend

Artifact
- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

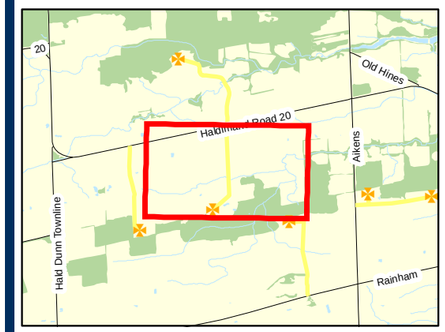

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Figure No.

3-5

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 30

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614500 615000 615500

4748500 4748000 4747500

59 62 63 61 60 64

Zoom to Archaeology Site No. 54

Photo 14 Foundation 1
Well
Foundation 2
Photo 13
Photo 12 Trough
Photo 11
Foundation 3

Photo 10
Archaeology Site No. 54
Photo 8
Photo 9
Cluster No. 56
Point 3-11
Cluster No. 53

0 100 200 m
1:5,000

Legend

Artifact
- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Stage 3 Required
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

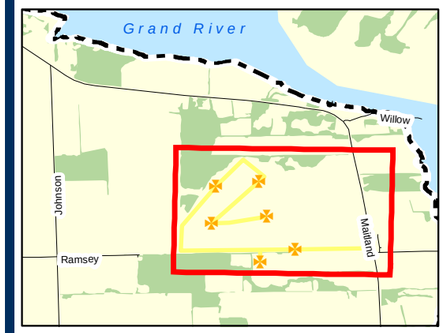

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Figure No.
3-6

Title
SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 59 - 64

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3.6.1 Turbine 59-64 (Complex 3) Sites

3.6.1.1 GREPSite #54 (AfGv-126)

GREP Site #54 (AfGv-126) is located immediately north of the Complex 3 access road and approximately 120 m west of Port Maitland Road (Figure 3-6). The site is composed of a series of building foundations distributed through an unploughed knoll of ground. Initial documentation of the site recorded three small building foundations, what appears to be a water trough, and another feature that may be a well (Figure 3-6 and Photos 11-14, Appendix A). No associated artifacts were located within the ploughed limits of the Complex 3 access road and because the site is technically outside of the RoW no test pits were excavated within the limits of the knoll. The foundation material is an unusual type of concrete with reinforcement bars (rebar) evident in the foundations.

Examination air photos subsequent to the field assessment indicate that there was a series of farm buildings located in the vicinity in 1934, but that by 1950 those buildings had been razed as part of the Second World War period construction of the airfield. When the General Manager of the Dunnville Airport was asked about the foundations he indicated that they were from an incinerator associated with the wartime airfield (Collins, pers. comm.). Although no air photos of the area are available from the 1940s, air photos from 1950 suggest that those foundations are in the same location as the farm buildings noted in 1934. As noted previously, the foundation material is not what we would typically associate with residential or farmstead construction and it may be that any wartime facilities were constructed over or in the same location as the previous farmstead buildings.

Due to the inexact knowledge of the nature of the foundation features at Site #54 it has been recommended for Stage 3 AA, and in particular more detailed recording of the precise location of all features and a more detailed analysis of their construction methods and potential origin. If the foundations are associated with Second World War period activities then they should be considered to have cultural heritage value. While it is unlikely that current Project activities will impact on the site a more thorough understanding of the site will allow for the development of appropriate protection of the resources.

3.6.2 Turbine 59-64 (Complex 3) Artifact Clusters

3.6.2.1 Artifact Cluster #53

CL #53 is composed of three lithic flakes in an area of 25 m x 10 m located at the south-east end of the T64 pad, on the south side of the Ramsay Road right-of-way (Figure 3-6). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended.

3.6.2.2 Artifact Cluster #56

CL #56 is composed of Point 3-11 and a single lithic flake in close proximity along the south edge of the of the Complex 3 access road just to the west of Port Maitland Road (Figure 3-6). The point and flake were initially discovered in April 2011, but an effective intensified survey could not be completed at that time due to some concentrations of corn stalks on the field. During the June 2011 field work the corn stalks were carefully removed using hand rakes and

the appropriate 20 x 20 m area surveyed on the north, east and west sides. The Project RoW on the south side was only 15 m south of the artifacts and thus survey only occurred to that distance on the south. No further artifacts were identified during the intensification. Point 3-11 is a finely manufactured Early Woodland Meadowood point on Bois Blanc formation chert (Plate 1, Appendix C).

The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended.

3.7 Turbines 15, 49 and 50

The access road and pad for Turbines 15, 49 and 50 are located in Lots 7-9, Concession 1 North of Rainham Road, Dunn Township (Figure 3-7). The surveyed area encompasses a total of 8.3 ha (Figure 3-7). The three turbine pads and access roads were surveyed on April 13, 2011. The topography of the area is generally level, with some slight undulations between the pads for T49 and T50 (Photo 17, Appendix A) area where there are some shallow drainage channels. At the east side of the T49 pad there was an area of standing water that did not allow for ground visibility, although the low elevation and very wet soil conditions resulted in this specific area being reassigned as of low archaeological potential (Photo 18, Appendix A). Although the ground along the access roads is generally level there is a notable rise in elevation to the south of the Project Area, and in particular a small knoll located south of the T15 pad area (Photos 15 and 16, Appendix A).

No artifacts were located during the Stage 2 AA of Turbines 15, 49 and 50. It is possible that the specific area where the wind power infrastructure is planned was of generally low archaeological potential in relation to the distinct elevated knoll to the south and south-west of the turbine locations and that the more elevated ground was a more attractive landscape feature than the lower ground. The persistence of water across some of the access road suggests that this area is much less well-drained than the knoll.

3.8 New Access Road, Turbine 12

The access road and pad for Turbine 12 (T12) are located in Lot 19, Concession 6, South Cayuga Township, west of Haldimand Road 50 (Figure 3-8). The 3 ha of access road and turbine pad for the original T12 was originally surveyed on December 2, 2010. The access road was subsequently moved south of the existing former quarry site (Figure 3-8). The present survey area encompasses 1.6 ha and runs almost due west from Haldimand Road 50 the the T12 pad location. From Haldimand Road 50 the ground slopes down gently to the T12 pad location to the west. At the western-most end of the access road, and at the lowest relief point, there is a small drainage channel that runs between the end of the access road and the T12 pad (Figure 3-8). At the time of the survey the channel was dry, but muddy soil was evident in that area and it is likely that water flows through there during wetter periods of the year.

Two small clusters of lithic flakes and two isolated lithic flakes were recorded at the eastern 1/3 of the new T12 access road.

608000
608500
609000
4750000
4749500

Aikens

Photo 15
Photo 16
Photo 17
Photo 18

15
49
50

N

0 50 100 m
1:4,000

Legend

Artifact
- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

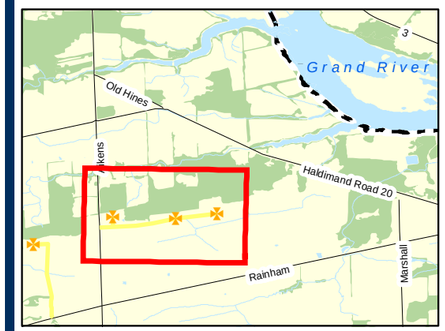

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Figure No.

3-7

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 45, 49 & 50

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601500

4747000

Isolated Find
No. 64

Biface2-7

Isolated Find
No. 65

Biface2-6

Isolated Find
No. 83

Cluster
No. 54

Isolated Find
No. 82

Cluster
No. 55

12

Haldimand Road 50

N

0 50 100 m

1:2,000

601500

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Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

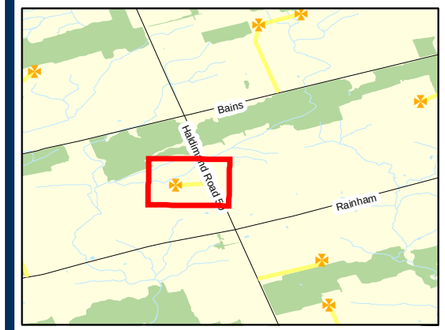

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Figure No.

3-8

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 12

3.8.1 New Access Road, Turbine 12 Artifact Clusters

3.8.1.1 Artifact Cluster #54

CL #54 is composed of five lithic flakes across an area of approximately 15 m x 10 m (Figure 3-8). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

3.8.1.2 Artifact Cluster #55

CL #55 is composed of five lithic flakes in a roughly linear pattern over an area measuring 20 m x 6 m and located approximately 22 m south-west of Cluster #55 (Figure 3-8). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

3.8.2 New Access Road, Turbine 12 Isolated Findspots

3.8.2.1 Isolated Findspot 82

IF #82 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation 60 m west the western-most artifact in Cluster #56 (Figure 3-8). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.8.2.2 Isolated Findspot 83

IF #83 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation 20 m north of Cluster #56 and 20 m east of Cluster #55 (Figure 3-8). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

3.9 Access Road, Turbines 23 and 28

The access road for Turbines 23 (T23) and 28 (T28) is located in Lots 39 and 40, Concession 2, South Cayuga, south of Irish Line Road. These turbines were originally surveyed in 2010 but a small section to the west of the original access road immediately south of Irish Line was subsequently required and needed to be surveyed (Figure 3-9). The total area of new surveyed ground was 0.76 ha and all of it was in unploughed lawn area and was surveyed using a test pit excavation methodology, appropriate for areas of less than 1 ha as per the 2010 *Standards and Guidelines for Consultant Archaeologists* (Photo 19, Appendix A). The area was surveyed on June 15, 2011. The topography of the surveyed area is generally level, with a very slight rise at the extreme south end of the surveyed area. This area was, however, considered to be of low archaeological potential. Where the access road to T28 branches off there is another rise in elevation to the T28 pad area, resulting in T28 having a quite elevated position compared to the surrounding terrain.

590500

591000

4753000

4753000

Irish

Cluster
No. 58

Archaeology Site
No. 10

Cluster
No. 59

Photo 19

N

0 50 100 m

1:2,500

590500

591000

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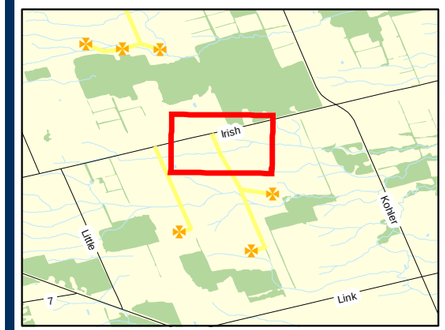
Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

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Figure No.

3-9

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 28 & 23

Two on-grid positive test pits were encountered at two discrete locations during the test pit survey. Supplemental test pit excavation of eight test pits surrounding each initial positive test pit did not yield either a diagnostic artifact or sufficient numbers of non-diagnostic artifacts to warrant registration of the archaeological resources. The resources have been classified as artifact clusters and are documented below. All artifacts from the test pit survey are recorded in the Artifact Catalogue in Appendix B.

3.9.1 Access Road, Turbines 23 and 28 Artifact Clusters

3.9.1.1 Artifact Cluster #58

CL #58 is composed of three lithic flakes in close proximity located on the T23 and T28 access road, between two small branches of Holmes Creek, approximately 60 m south of Irish Line, 40 m west of GREP Site #10 identified in 2010 and 30 m north of CL #59 (Figure 3-9). The three flakes were found in three separate test pits, one in the primary on-grid test pit, and one each in supplemental test pits to the south and north-west of the primary test pit. The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended here.

3.9.1.2 Artifact Cluster #59

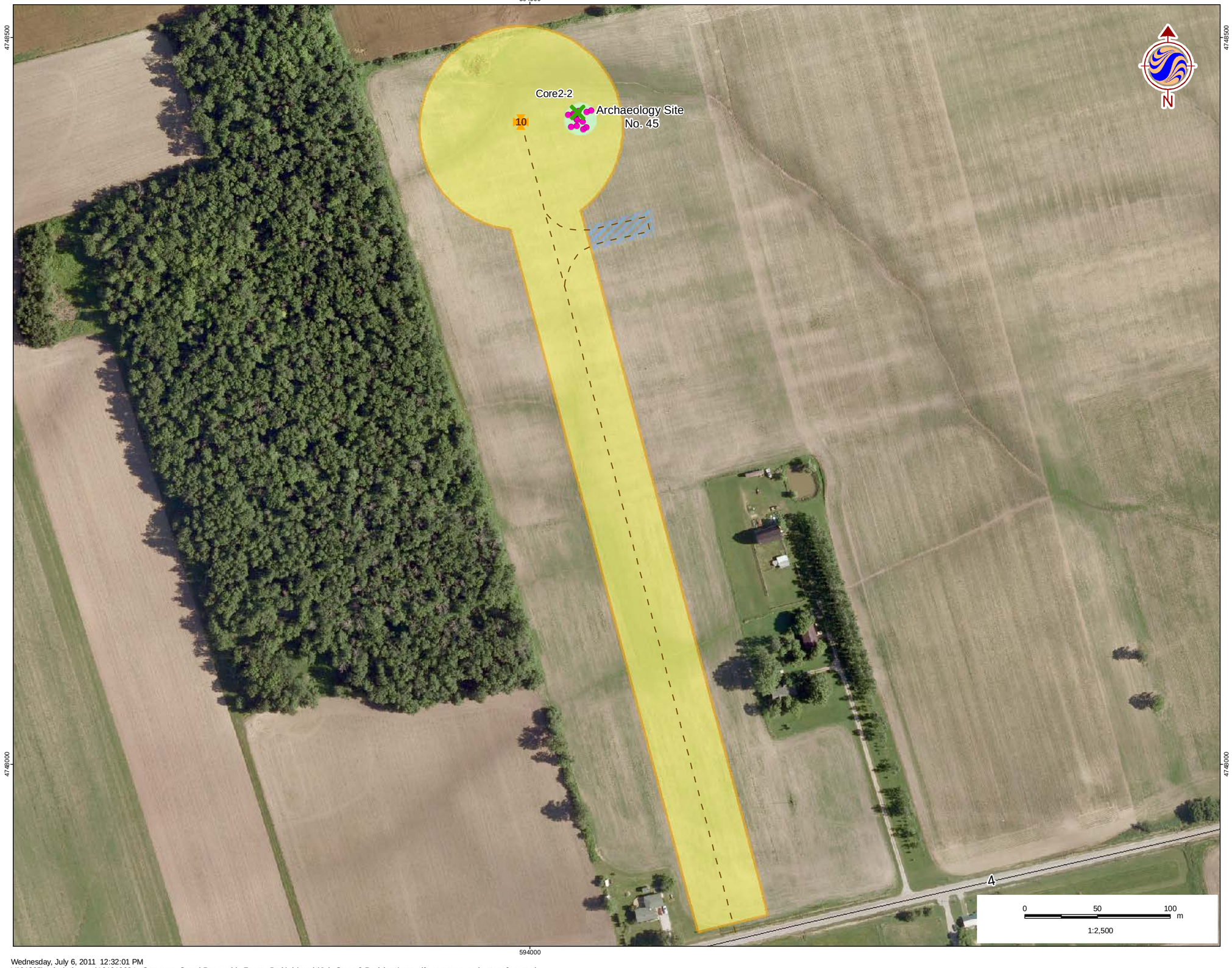
CL #59 is composed of three lithic flakes in close proximity located on the T23 and T28 access road, between two small branches of Holmes Creek, approximately 40 m west of GREP Site #10 identified in 2010 and 30 m south of CL #58 (Figure 3-9). The two flakes were found in two separate test pits, one in the primary on-grid test pit, and one in the supplemental test-pit excavated to the north-east of the primary test pit. The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

3.10 Access Road Turn-Around, Turbine 10

The access road and turbine pad for Turbine 10 (T10) is located in Los 14, Concession 4, Rainham Township. This location was originally surveyed in 2010 but a small turn-around road was subsequently determined to be required on the east side of the access (Figure 3-10). The total area of new needed ground was 50 m x 10 m (0.05 ha) in size. The field was visually assessed in April, 2011 but did not meet the required amount of visibility and was thus surveyed using a test pit excavation methodology, appropriate for areas of less than 1 ha as per the 2010 *Standards and Guidelines for Consultant Archaeologists*, on June 16, 2011.

The small area was considered to have archaeological potential as the 2010 survey had identified an archaeological resource (GREP Site #45) on the turbine pad to the north of the turn-around. Four rows of test pits were excavated at 5 m intervals from east to west across the length of the proposed turn-around up to the limits of the previous 2010 pedestrian assessment (Figure 3.10). A total of 32 test pits were excavated, all of which were negative.

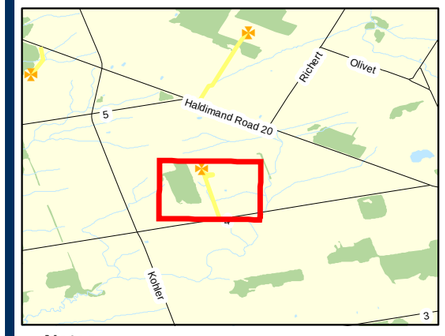
No artifacts or other resources were located during the Stage 2 AA of the T10 turn-around extension.



Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

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Figure No.

3-10

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 10

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4 ANALAYSIS AND RECOMMENDATIONS FOR FURTHER WORK

The Stage 2 AA of the GREP completed in 2011 resulted in the identification of 31 archaeological resources, including 9 archaeological sites which have been registered with the MTC and of 9 artifact clusters and 13 isolated findspots. The full Stage 2 AA of GREP infrastructure by Stantec has resulted in the documentation of 196 archaeological resources, including 55 archaeological sites which have been registered with the MTC and of 58 artifact clusters and 83 isolated findspots.

4.1 Sites Requiring Stage 3 Archaeological Assessment

The 2011 Stage 2 AA of the GREP by Stantec has resulted in the documentation of 10 registered archaeological sites which will require further archaeological assessment (Table 4-1). At minimum all 10 sites will require Stage 3 AA in order to determine the extent of each archaeological resource, and to further refine our understanding of the age, cultural association and cultural heritage value of the sites Stage 3 AA will also determine what appropriate mitigation options, such as avoidance or excavation, are available at each site location.

Table 4-1 Archaeological Sites Requiring Further Assessment

GREP Site #	Location	Borden #	Easting	Northing	# Tools/ Diagnostics	# non-Tools	Total # Artifacts	Cultural Period	Dimensions (in m)	Site Area (m^2)
46	T41	AfGx-768	590371	4753914	0	160	160	Indeterminate	145 X 40	5800
47	T41	AfGx-769	590343	4753844	0	n/a	n/a	Indeterminate	65 x 40	2600
48	T66	AfGv-124	611796	4747848	0	38	38	Indeterminate	30 x 30	900
49	T66	AfGv-125	611792	4747430	1	15	16	Middle Woodland	50 x 50	2500
50	T51	AfGw-229	604826	4745058	1	12	13	Indeterminate	50 x 50	2500
51	T58	AfGx-770	589736	4750399	0	10	10	Indeterminate	40 x 40	1600
52	T58	AfGx-771	589726	4750195	1	7	8	Indeterminate	30 x 20	600
53	T58	AfGx-772	589794	4749961	1	5	6	Indeterminate	35 x 20	700
54	T60	AfGv-126	615444	4747529	0	0	0	20th century	100 x 60	6000
55	T65	AfGv-127	611441	4747446	1	3	4	Early Woodland	30 x 10	300
					Total # Artifacts		255		Total m2	23500

Stage 3 AA (the Archaeological Site Assessment) of the 10 identified sites will be conducted according to the 2010 *Standards and Guidelines for Consultant Archaeologists*. The following standards for Stage 3 AA work will apply:

- Before carrying out fieldwork, review all relevant reports of previous fieldwork on the archaeological site or for that property;
- Carry out the archaeological site assessment when weather and lighting conditions permit good visibility of all parts of the archaeological site. Do not carry out the archaeological site assessment when weather and lighting conditions (e.g., snow cover, frozen ground, excessive rain or drought, heavy fog) reduce the ability to identify and document any part of the archaeological site;
- Using GPS record the locations of the following:
    - a central fixed point within the archaeological site

  - a permanent datum that can be tied to a development map; and
- Provide representative photographs of all field conditions (e.g., ploughed field, pasture or woodlot, disturbances).

For each site located using pedestrian survey methodology the Stage 3 AA will be composed of two elements: a controlled surface pick-up (CSP) of artifacts on the surface of ploughed fields and test unit excavation. A CSP is a detailed survey of the ground surface in open fields that allows for precise recording of artifact locations and the collection of a representative sample of artifacts, including non-diagnostic artifacts. The following standards for Stage 3 AA CSP will apply:

- If ground surface visibility has decreased in the time between the Stage 2 survey and the Stage 3 CSP, ensure that the site area is re-cultivated and weathered;
- Accurately map the location of all artifacts on the ground surface using a total station, transit and tape, stadia rod, or GPS unit. Record and catalogue artifacts by their mapped location, recording any relevant information (*e.g.*, spatial relationship of diagnostics, artifact concentration areas). Tie this map to the general site GPS readings by recording a central point in the scatter;
- For very large and dense surface scatters, conduct a full CSP by grid units (maximum 5 m by 5 m units) over the archaeological site. Record and catalogue artifacts with their grid unit designation.
- Ensure that decisions regarding the type and number of artifacts collected strike a balance between gathering enough artifacts to document the archaeological site and leaving enough in place to relocate the site if required (*e.g.*, to conduct further assessment, define a protected area or conduct excavation);
- Collect all formal artifact types and diagnostic categories, including, for 19th century archaeological sites, all refined ceramic sherds; and
- Collect a representative sample of non-diagnostic artifacts, taking into consideration the archaeological site type, type and frequency of non-diagnostic artifacts, and the likelihood that further fieldwork will be required.

Based on the Stage 2 AA use of a grid unit CSP may need to be conducted at AfGx-768 and -769 due to their size and artifact densities. No other sites should require grid unit CSP.

The second component of the Stage 3 AA, test unit excavation, will be required at all identified archaeological sites. The purpose of the test unit excavation is to document the extent of buried artifacts, cultural features, soil stratigraphy and structures and to recover a representative sample of artifacts from across the archaeological site. The interval of the Stage 3 AA grid (of either 5 m or 10 m intervals) will be dependent on the age, type and nature of each identified site. Specific guidelines for this interval are provides in the 2010 *Standards and Guidelines for Consultant Archaeologists.* The following standards for Stage 3 AA test unit excavation will apply:

- Excavate by 1 m square units;
- To determine the placement of test units, establish a grid on the site based on the permanent datum to at least the accuracy of transit and tape measurements. Placing test units in unmeasured, estimated locations is not acceptable;
- Excavate test units by hand. Do not use heavy machinery (*e.g.*, gas-powered augers, backhoes) except to remove sterile or recent fill covering confirmed, deeply buried or sealed archaeological sites;
- Excavate test units by systematic levels (stratigraphic or standardized);
- Excavate test units into the first 5 cm of subsoil, unless excavation uncovers a cultural feature;
- If test unit excavation uncovers a cultural feature, do not excavate into feature fill. Instead:
  - Record the exposed plan of the feature.
  - Place geotextile fabric over the unit floor and backfill the unit;

- Screen all excavated soil through mesh with an aperture of no greater than 6 mm. For confirmed single component Paleo-Indian and Early Archaic archaeological sites, for a sample of units (at least 20% of the total number of units in sandy soil and at least 10% of the total number of units in heavy soil), screen the entire contents of each unit through mesh with an aperture of no greater than 3 mm; and
- Unless otherwise specified collect and retain all artifacts. Record and catalogue them by their corresponding grid unit designation.

With the large number of Aboriginal archaeological sites documented through the Stage 2 AA it is expected that the involvement of First Nations in subsequent Stage 3 and/or Stage 4 AA will increase beyond the current level of the Stage 2 AA. Ongoing Aboriginal consultation will be part of the overall Project development, for archaeological resources and for other environmental components, and is a requirement of the 2010 *Standards and Guideline for Consultant Archaeologists*. It is recommended that Aboriginal Engagement be carried out as required by the Standards and Guidelines and as outlined in the bulletin *Engaging Aboriginal Communities in Archaeology.*

4.2 Resources Not Requiring Stage 3 Archaeological Assessment

A total of 8 artifact clusters (CL) and 13 isolated findspots (IF) were also documented at Project components during the 2011 Stage 2 AA (Table 4-2). None of these resources meet the criteria for sufficient Cultural heritage value or interest as per the 2010 *Standards and Guideline for Consultant Archaeologists*. None of these resources require further archaeological assessment. Details regarding all collected formal tools or diagnostic artifacts can be found in the Artifact Catalogue in Appendix B.

Table 4-2 Archaeological Resources Not Requiring Further Assessment

GREP Site #	Location	Easting	Northing	# Tools	# Lithic Flakes	Total # Artifacts	Cultural Period	Dimensions (in m)	Figure #	Plate #	Comments
CL 51	T41	590284	4753931	0	5	5	Indeterminate	25 X 5	3-1	n/a	
CL 52	T58	589709	4750284	0	4	4	Indeterminate	35 x 20	3-3	n/a	
CL 53	C 3	614752	4747296	0	3	3	Indeterminate	25 x 10	3-6	n/a	
CL 54	T12	601773	4747147	0	5	5	Indeterminate	15 x 10	3-8	n/a	
CL 55	T12	601746	4747120	0	5	5	Indeterminate	20 x 6	3-8	n/a	
CL 56	C 3	615369	4747479	1	1	2	Early Woodland	5 x 5	3-6	1	Point 3-11
CL 57	T23	590859	4752883	0	3	3	Indeterminate	10 x 10	3-9	n/a	Test pits
CL 58	T23	590870	4752854	0	2	2	Indeterminate	10 x 10	3-9	n/a	Test pits
IF 71	T41	590256	4753947	0	1	1	Indeterminate	n/a	3-1	n/a	Isolated lithic flake
IF 72	T41	590265	4753914	0	1	1	Indeterminate	n/a	3-1	n/a	Isolated lithic flake
IF 73	T41	590387	4753818	1	0	1	Indeterminate	n/a	3-1	n/a	Point 3-10
IF 74	T65	611782	4747544	0	1	1	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 75	T30	607058	4750523	0	1	1	Indeterminate	n/a	3-5	n/a	Isolated lithic flake
IF 76	T58	589748	4750168	1	0	1	Poss. Late Archaic	n/a	3-3	1	Point 3-4
IF 77	T58	589750	4750126	1	1	1	Indeterminate	n/a	3-3	1	Point 3-5
IF 78	T58	589808	4749932	1	0	1	Indeterminate	n/a	3-3	1	Point 3-7
IF 79	T58	589825	4749865	1	0	1	Late Archaic	n/a	3-3	1	Point 3-8
IF 80	T58	589848	4749857	0	1	1	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 81	T58	589859	4749763	1	0	1	Late Archaic	n/a	3-3	1	Point 3-9
IF 82	T12	601681	4747121	0	1	1	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 83	T12	601744	4747143	0	1	1	Indeterminate	n/a	3-3	n/a	Isolated lithic flake

5 ADVICE ON COMPLIANCE WITH LEGISLATION

Stantec cautions that it is possible that deeply buried archaeological resources, could still exist within the limits of the proposed Project and that the following standard conditions will continue to apply:

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest , and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*;
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject 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*; and

- 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.

6 CLOSURE

This report has been prepared for the sole benefit of SPK, and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and SPK. Any use which a third party makes of this report is the responsibility of such third party.

This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the Project Area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, 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

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

Stantec Consulting Ltd.

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7.2 Personal Communications

Collin, Frank, General Manager, Dunnville Airport, Dunnville, Ontario. June 16, 2011.

APPENDIX A

Fieldwork Photos

Photo 1 - Unsurveyed Ditch Area Across Access Road to T65-67, Looking West

Photo 2 - Pedestrian Survey of T65-67 Access Road, Looking South

Photo 3 - Ditch West of T67, Looking North

Photo 4 - Watercourse Across Turbine Access Road 58, Looking West

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Photo 5 - Turbine 58 Access Road, Looking North From Watercourse

Photo 6 - Turbine 58 Access Road, Looking South From Watercourse to Road

Photo 7 - Looking Toward T30 From Access Road, Pond Outside of RoW to Left

Photo 8 - Looking East Along Ramsay Road RoW Between Turbine Complex 3 Access Road and T64

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Photo 9 - Showing Visibility of Ground Between Corn Rows, East End of Complex 3 Access Road, Looking West

Photo 10 - Point 3-11, As Found During Pedestrian Survey of Complex 3 Access Road

Photo 11 - Foundation 1, Looking East From West End of Foundation

Photo 12 - Water Trough, Looking East From North Side of Foundation 1

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Photo 13 - “Well” Feature Between Foundations at Incincerator

Photo 14 - Foundation 2, North-East Corner, Looking From South

Photo 15 - Looking South From Aikens Road to Knoll

Photo 16 - Looking South-West From T49 to Knoll

Photo 17 - Looking East From T49 to T50

Photo 18 - Wet Area, T50 Pad, Looking West

Photo 19 - Excavating Test Pits Along West Side of T23 and T26 Access Road

APPENDIX B

Artifact Catalogues

AfGx-771 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGx-771.1	Point 3-3	14/04/2011	P	T58	1	Lithic, projectile point, point tip, indeterminate type or age, 18x 23 x 7 mm

AfGx-772 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGx-772.1	Point 3-6	14/04/2011	P	T58	1	Lithic, projectile point, basal end of broken point, corner notched or possibly eared form, finely made, indeterminate type or age, 25 x 24 x 4 mm, Bois Blanc formation chert

AfGv-127 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGv-127.1	Point 3-1	14/04/2011	P	T58	1	Lithic, projectile point, distal end of broken point, probably Early Woodland Meadowood type point, 26 x 22 x 4 mm, Bois Blanc formation chert

AfGv -125 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGv-125.1	Point 3-2	14/04/2011	P	T66	1	Lithic, projectile point, Middle Woodland period Saugeen type point 37 x 25 x 7 mm, Onondaga chert

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
161010624.43	Point 3-4	14/04/2011	P	T58	1	Lithic, projectile point, corner notched from, broken early in manufacture, indeterminate age, possibly Late Archaic Broad Point horizon, 38 x 38 x 10 mm, Bois Blanc formation chert
161010624.44	Point 3-5	14/04/2011	P	T58	1	Lithic, projectile point, medial section of narrow projectile point form, one side worked only, light Onondaga chert,46 x 26 x 12 mm
161010624.45	Point 3-7	14/04/2011	P	T58	1	Lithic, projectile point, lateral edge of broken point, small point form on Selkirk chert, 27 x 19 x 6 mm
161010624.46	Point 3-8	14/04/2011	P	T58	1	Lithic, projectile point, complete, corner notched Late Archaic Small Point horizon, 38 x 25 x 7 mm, Bois Blanc formation chert
161010624.47	Point 3-9	14/04/2011	P	T58	1	Lithic, projectile point, one side worked only, prob. corner notched Late Archaic Small Point horizon, 37 x 27 x 9 mm,
161010624.48	Point 3-10	15/04/2011	P	T41	1	Lithic, projectile point, Middle Archaic Brewerton side notched point, small portion of one basal ear missing, otherwise complete, 55 x 35 x 8 mm, Bois Blanc formation chert
161010624.49	Point 3-11	15/04/2011	P	Complex 3	1	Lithic, projectile point, Early Woodland Meadowood type point, nearly complete, 54 x 25 x 4 mm, Bois Blanc formation chert
161010624.50	Cluster 58	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.51	Cluster 58	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.52	Cluster 58	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Kettle Point chert
161010624.53	Cluster 59	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.54	Cluster 59	15/06/2011	TP	T23&T28	1	Lithic, flake, shatter, Onondaga chert

APPENDIX C

Artifact Plates

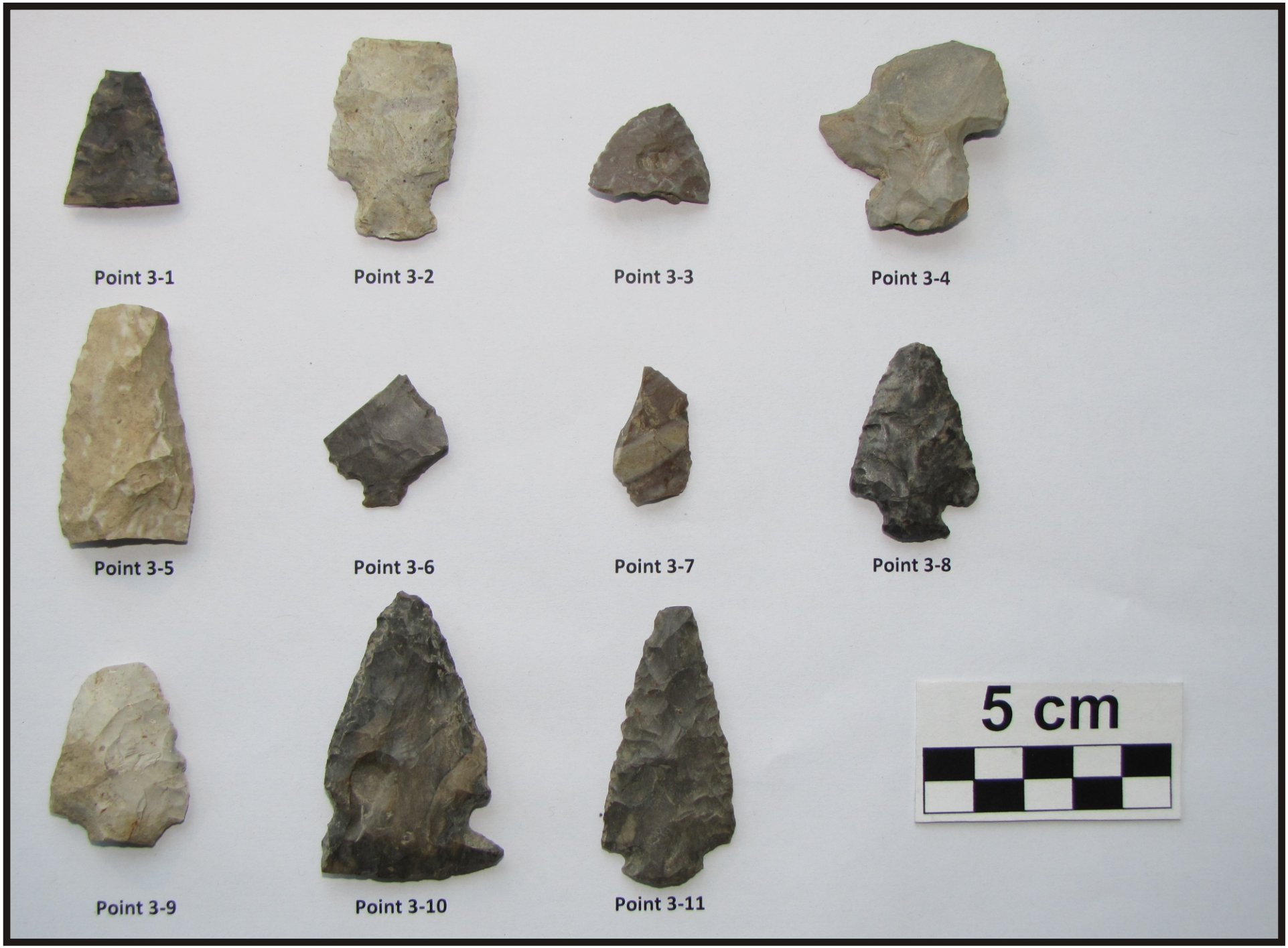

Plate 1 - Formal and Diagnostic Tools Collected During 2011 Stage 2 AA, GREP

REVISED FINAL REPORT
Stage 2 Archaeological Assessment, SPK Grand Renewable Energy Park, Haldimand County, Ontario

Cayuga Township – Lot 39, Concession 1 South; Lot 25, Concession 5 South
Rainham Township – Lot 8, Concession 6; Lot 24, Concession 1
Dunn Township – Lot 4, Concession 1 North of Rainham Road; Lots 7-9, Concession 1 North of Rainham Road; Lots 15-17, Concession 2 South of Rainham Road; Lots 21-24, Concession 2 South of Rainham Road

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August 4, 2011

CIF # P002-222-2011

Project No.: 161010624

EXECUTIVE SUMMARY

Samsung C&T (Samsung), Korea Power Electric Corporation (KEPCO), and Pattern Energy (Pattern) plan to build and operate the world's largest renewable energy cluster in Southern Ontario (Ontario Alternative Energy Cluster). Together, these companies (referred to herein as "SPK") will be involved in the development of the first phase of the energy cluster development.

The Grand Renewable Energy Park (the Project) is proposed within the County of Haldimand and is generally bounded by Townline Road to the north, Haldimand Road 20 to the west, the Grand River to the east and Lake Erie to the south. It consists of a 1513.1 MW (nameplate capacity) wind project, a 100 MW (nameplate capacity) solar project located on privately owned and Ontario Realty Corporation (ORC) managed lands and a transmission line to convey electricity to the existing power grid. According to subsection 6(3) of O. Reg. 359/09, the wind component of the Project is classified as a Class 4 Wind Facility and the solar component of the Project is classified as a Class 3 Solar Facility.

The basic components of the Project include 67 wind turbines, approximately 425,000 photovoltaic (PV) solar panels installed on fixed ground-mounted racking structures organized into 100 1 MW solar units, a collector sub-station, interconnect station and Operations and Maintenance building, temporary storage and staging areas, approximately 19 km of 230 kV transmission lines along Haldimand Road 20, approximately 82 km of new overhead 34.5 kV collector lines along public roads, approximately 48 km of new underground collector lines along turbine access roads, approximately 45 km of turbine access roads and 40 km of solar panel maintenance roads.

A Stage 1 Archaeological Assessment (AA) was completed by Stantec Consulting Ltd. (Stantec) as part of an application for the proposed SPK Grand Renewable Energy Park (GREP), also referred to as Project, consisting of both solar and wind power generation in Haldimand County, Ontario. The results of the Stage 1 AA indicated that most of the proposed Project Area demonstrated the potential for the presence of significant and intact archaeological resources.

Stantec archaeological staff completed Stage 2 AA for 359 ha of land for both the solar and wind turbine components of the Project in 2010. At the end of the 2010 field season a total of 50 ha remained to be surveyed over 17 turbine pads and their associated access roads. As well, two other access roads where modifications were required were assessed. With the exception of one supplemental area surveyed using a test pit excavation methodology, all turbine pads and associated access roads were assessed using a pedestrian survey methodology on ploughed agricultural lands.

The Stage 2 AA completed by Stantec in 2011 resulted in the identification and recording of several hundred discrete pre-contact period artifacts, including 12 formal or expedient tools (11 projectile points, or "arrowheads" and one core). One other archaeological site was discovered where the density of lithic flakes was too high to record individually. Several features, including building foundations, from a possibly mid-20th century military incinerator associated with the Dunnville Airport were also recorded during the Stage 2 AA.

Based on the 2011 *Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Tourism and Culture Stantec has identified a further ten (10) discrete archaeological site locations, in addition to the 45 sites previously reported (Stantec, 2011), that will require Stage 3 Archaeological Assessment (Table 1).

Table 1 - Archaeological Sites Requiring Further Assessment

Stantec Site #	Borden #	Culture Period(s) Represented	Dimensions (in m)	Stantec Site #	Borden #	Culture Period(s) Represented	Dimensions (in m)
46	AfGx-768	Indeterminate	145 x 40	51	AfGx-770	Indeterminate	40 x 40
47	AfGx-769	Indeterminate	65 x 40	52	AfGx-771	Indeterminate	30 x 20
48	AfGv-124	Indeterminate	30x 30	53	AfGx-772	Indeterminate	35 x 20
49	AfGv-125	Middle Woodland	50 x 50	54	AfGv-126	20th Century historic	100 x 60
50	AfGw-229	Indeterminate	50 x 50	55	AfGv-127	Early Woodland	30 x 10

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PROJECT PERSONNEL

Project Director	Colin Varley, M.A., R.P.A. (P002)
Field Director	Colin Varley, M.A., R.P.A.
Field Crew	Christienne Uchiyama, B.A. (Hons) (R309) Tavis Maplesden, B.A. (Hons) Steve Jarrett, M.A. Mike Rooney, B.A. (Hons) Daphne Parrington
Report and Graphics	Colin Varley, M.A., R.P.A. Sarah Rogers, B.Sc (Hons) G.Dip. Christienne Uchiyama, B.A. (Hons)

1 INTRODUCTION

Samsung C&T (Samsung), Korea Power Electric Corporation (KEPCO) and Pattern Energy (Pattern) plan to build and operate the world's largest renewable energy cluster in Southern Ontario (Ontario Alternative Energy Cluster). Together these companies (herein referred to as "SPK" are proposing to develop, construct, and operate the Grand Renewable Energy Park (the "Project") as the development of the first phase of the energy cluster development.

A Stage 1 Archaeological Assessment (AA) was completed by Stantec Consulting Ltd. (Stantec) as part of an application for the proposed SPK Grand Renewable Energy Park (GREP), also known as Project, consisting of both solar and wind power generation in Haldimand County, Ontario. At the time of the Stage 1 AA specific details of the proposed GREP were not available and the Stage 1 AA encompassed a large region that included most or all of Dunn, South Cayuga, North Cayuga and Rainham Townships in Haldimand County. The results of the Stage 1 AA indicated that most of the proposed Project Area demonstrated the potential for the presence of significant and intact archaeological resources.

Based on the widespread archaeological potential of the wider GREP Project study area it was decided that all previously undisturbed (except by agricultural activity) areas where Project infrastructure was planned would be subject to Stage 2 AA. Due to changing Project needs new lands requiring Stage 2 AA were added late in the 2010 field season, necessitating that some Project Areas be assessed by Golder Associates, Inc. (Golder) (Figure 1-1). Further, early snow cover in December resulted in some Project Areas remaining uncompleted at the end of 2010. The portion of the areas that had been assigned to Stantec for Stage 2 AA and remained incomplete at the end of the 2010 field season are the subject of the present report.

2 PROJECT CONTEXT

2.1 Development Context

The Grand Renewable Energy Park (the Project) is proposed within the County of Haldimand and is generally bounded by Townline Road to the north, Haldimand Road 20 to the west, the Grand River to the east and Lake Erie to the south. It consists of a 1513.1 MW (nameplate capacity) wind project, a 100 MW (nameplate capacity) solar project located on privately owned and Ontario Realty Corporation (ORC) managed lands and a transmission line to convey electricity to the existing power grid. According to subsection 6(3) of O. Reg. 359/09, the wind component of the Project is classified as a Class 4 Wind Facility and the solar component of the Project is classified as a Class 3 Solar Facility.

The basic components of the Project include 67 wind turbines, approximately 425,000 photovoltaic (PV) solar panels installed on fixed ground-mounted racking structures organized into 100 1 MW solar units, a collector sub-station, interconnect station and Operations and Maintenance building, temporary storage and staging areas, approximately 19 km of 230 kV transmission lines along Haldimand Road 20, approximately 82 km of new overhead 34.5 kV collector lines along public roads, approximately 48 km of new underground collector lines along turbine access roads, approximately 45 km of turbine access roads and 40 km of solar panel maintenance roads.

The Stages 1 and 2 Archaeological Assessment of the Project occurred in the pre-submission stage of the Project development. Permission to access lands and undertake archaeological fieldwork, including recovery of artifacts, associated with this Stage 2 Archaeological Assessment were provided by landowners through the proponents representatives.

2.2 O.Reg. 359/09 Requirements, Archaeological Assessment

This Stage 2 Archaeological Assessment Report has been conducted in accordance with O.Reg. 359/09, s.22 (1), (2) and (3). O. Reg.359/09 s.22 states that:

22. (1) This section applies to a person if,

> *(a) as a result of the consideration mentioned in subsection 20 (1), the person concludes that engaging in the renewable energy project may have an impact on an archaeological resource described in paragraph 1 of subsection 20 (1); or*
>
> *(b) the person concludes, after complying with section 21, that the project location is situated as described in subclause 21 (2) (a) (i) or (ii) or clause 21 (2) (b). O. Reg. 359/09, s. 22 (1).*

(2) A person to whom this section applies shall ensure that,

> *(a) an archaeological assessment is conducted by a consultant archaeologist; and*
>
> *(b) an archaeological assessment report is prepared by the consultant archaeologist mentioned in clause (a) and submitted to the Ministry of Culture. O. Reg. 359/09, s. 22 (2).*

(3) As part of an application for the issue of a renewable energy approval, a person to whom this section applies shall submit,

> *(a) written comments provided by the Ministry of Culture in respect of the archaeological assessment conducted under clause (2) (a);*
>
> *(b) the archaeological assessment report prepared under clause (2) (b); and*
>
> *(c) if the project location is on property described in subclause 21 (2) (a) (ii), a copy of the permit issued by the Minister of Culture to excavate or alter the property or to remove an artifact from that property, as the case may be. O. Reg. 359/09, s. 22 (3).*

2.3 Historical Context

Named after Sir Frederick Haldimand, a German mercenary soldier fighting for the British in the American War of Independence and later Governor of Quebec, Haldimand County was originally created as part of Norfolk County in 1792 from lands originally seeded to the Joseph Brant and the Six Nations People in 1784, but sold back to and taken back by, the Crown. Haldimand County was designated as its own County in 1800 (Brueton, 1967). Originally, the land given to the Six Nations was an area of six miles on either side of the Grand River, from its head to its mouth at Lake Erie. Brant, who had fought for and alongside the British in the American War of Independence subsequently leased tracts of the land to allies of the Six Nations, particularly members of the 'Butler's Rangers', a Loyalist unit that fought for the British. These men were the first European settlers in the county.

The county was officially opened for settlement by the Government in 1832 but settlement was slow due to the tough conditions of the heavily forested and sometimes swampy lands. The land was so poor in spots, in fact, that it had been fairly unused by Native populations since the destruction and dispersion of the Neutral tribe by the Iroquois in the mid-15th Century (Harper, 1950). Like much of Ontario, settlers were a mix of United Empire Loyalists (UEL) fleeing a post-revolution United States and immigrants from Britain and other European countries. In Haldimand County, these settlers found that the waterfront (front) of the county was far more acceptable than the interior and tended to set up residence close to the banks of Lake Erie. Even though grants were given for lots in the rear of the County, it would take much longer for these to be cleared and settled (Nelles, 1905).

2.3.1 Dunn Township, Township Survey and Early Settlement

Two of Butler's Rangers had land leased to them by Joseph Brant in Dunn Township. In and around 1784, Hugh Earl, Brant's brother-in-law, and a man name William Butler Sheehan each received 1000 acres which would become known as the 'Earl' and 'Sheehan' tracts. Another 1000 acres was leased, in 1803, to a James Muirhead and would become known as the 'Haldimand tract' (Nelles, 1905).

The first settler after the opening of the township was a Colonel Agnew P. Farrell, who arrived in 1833 in a small clearing in the otherwise untouched wilderness. Mainly settled by Irish and Scottish immigrants, Dunn Township quickly expanded and thrived. By 1845, fifteen hundred acres were cultivated and by 1850 that number had risen to seven thousand (Cowell, 1967).

In 1835, the population of the relatively small township was only 200 people but by the time of the 1861 Census that number had grown to 955. Of the 10,000 acres of the township at the time, just over 4,000 were under cultivation (Irwin and Burnham, 1867).

2.3.2 Rainham Township, Township Survey and Early Settlement

The Township of Rainham was surveyed by Thomas Walsh around the same time as Walpole Township. Like Walpole, Rainham had not been part of the lands given to Brant and was opened at an earlier date and in keeping, was equally slow in attracting settlers. By 1816, in fact, only six families were living in the entire township after others had come and gone, finding it much too hard to settle. One of the earliest and most successful families to immigrate to Rainham was the Hoover family, displaced Loyalists of Swiss heritage that had originally fled Europe in fear of persecution who arrived and quickly prospered (Nelles, 1905).

By the time of the 1861 Census, the population of Rainham Township had steadily grown to 2,116; up from 552 in 1835 and 1,618 in 1852. Of the 23,000 acres of good quality soil at the time, over 15,000 was under cultivation (Irwin and Burnham, 1867).

2.3.3 South Cayuga Township, Township Survey and Early Settlement

The only 'Brant Lease' in South Cayuga was given to a John Dochstader, who, like John Huff, deserted to the Americans during the War of 1812. His land, however, was not expropriated, but was instead passed down to his family (Harper, 1950).

South Cayuga was officially opened for settlement in 1832 but records indicate that the first man to settle there was a John Honsburger in 1835 (Harper, 1950). The majority of early settlers were of German descent, some of whom were Mennonite and are still represented in the area.

By the time of the 1861 Census, roughly half of the 14,000 acres of the township were under cultivation with the other half consisting of still wild and wooded land (Irwin and Burnham, 1867).

2.3.4 North Cayuga Township, Township Survey and Early Settlement

The first European settlement of North Cayuga Township consisted of two tracts of land leased out by Joseph Brant. These 'Brant Leases' as they were known were usually given in out in good faith to people who had either helped or become friendly with the Six Nations People. The earliest of these leases was given to a Butler's Ranger by the name of John Huff. The land would subsequently be known as the 'Huff tract.' During the War of 1812, Huff deserted to America and his land was repossessed. In 1797, a parcel of land of 4800 acres was leased to Augustus Jones, the man who had surveyed the lands around the Grand River that had been ceded to Brant, as payment for services rendered (Harper, 1950).

In 1826, another tract, the 'Claus tract', was leased to a William Claus in return for having close ties and a family history with the Six Nations Peoples. The 15,300 acre claim, which along with the 'Jones tract' made up the entirety of North Cayuga Township, was deemed by the Government to have been somewhat fraudulent and exploitive of the Native peoples and was cancelled. The land was subsequently taken over by the Government and opened for settlement in 1832.

In 1835, the population of both North and South Cayuga was only 296 and yet by 1852, that number had multiplied almost ten-fold. The Census of 1861 indicates that, at the time, the population of both North and South Cayuga was 2,919 with just under half the 30,000 acres of North Cayuga Township being under cultivation (Irwin and Burnham, 1867).

2.3.5 Walpole Township, Township Survey and Early Settlement

Walpole Township was initially surveyed in 1780 by Thomas Walsh, Registrar with the County of Norfolk. Unlike the previously mentioned townships, Walpole was never part of the land ceded to Joseph Brant and, as such, was available to be opened for settlement by Europeans much earlier (Nelles, 1905). The first settlers started to arrive over the course of the next decade. Settlement was slow and grueling as the land itself was either thick forest or swamp and the initial survey marks aged poorly or disappeared, making Lots and Concessions nearly impossible to properly locate. The majority of settlers who did come to the township settled close to the lakeshore where the land was more suitable for both agriculture and building. By 1833, the settlers had petitioned for a new township survey on the grounds that new settlers were wary of choosing the township and that the lack of numbers in the area made the upkeep of roads and bridges much too difficult. In spite of the rejection of the survey petition the township continued to grow and develop and by the 1830s was beginning to establish industries, stores and the small towns of Nanticoke and Selkirk. The township was not incorporated until 1850, one year after being officially declared part of Haldimand County. Prior to that, it had been considered part of Norfolk County (Brueton, 1967).

The growth of the large township of Walpole was much faster and more intensive than the majority of the others in the county owing to the high quality of the land and the vast amount of it available. In 1835, the population was only 683 but that number would jump dramatically to 2,778 by 1850 and further still to 4,842 by the time of the 1861 Census. Of the roughly 60,000 acres in the township, over 30,000 were under cultivation by the same time (Irwin and Burnham, 1867).

2.4 Archaeological Context

At the time of the completion of the Stage 1 AA report by Stantec (Stantec, 2010) two hundred and ten (210) registered prehistoric period archaeological sites or components had been recorded within the Project area (MTC, 2010). Of these 210 sites, eight (8) sites, or site components of multi-component sites, date to the Palaeo-Indian period, sixty-seven (67) date to the Archaic period, thirty-five (35) date to the Woodland period and sixty-nine (69) are undetermined as to age or cultural affiliation. Another fifty-one (51) sites had no date or cultural affiliation information attached to their records.

Stage 2 AA completed on Project components by Stantec and Golder in 2010 resulted in the identification of a further 60 sites (45 by Stantec, 25 by Golder) within the limits of Project components (Golder, 2011; Stantec, 2011)

The large number of archaeological sites in the Project area is largely due to intensive and systematic surveys carried out by four main research programs. The first and most extensive research program was completed by David Stothers of the Archaeological Survey of Canada in 1974. He undertook a survey of the Grand River from Cayuga to the mouth of the river, and registered ninety-six individual sites. Fred Moerschfelder and Bill Fox did some survey work together in 1981, also along the Grand River. Later, in 1981 and again in 1985, Moerschfelder surveyed parts of the interior of the county, particularly in South Cayuga, North Cayuga and Rainham Townships, and a section of Rainham along the Lake Erie shoreline. Moerschfelder and Fox's work accounts for another fifty-three (53) sites. Also in 1985, and again in 1986 and 1987, Lorenz Bruechert surveyed inland parts of Walpole Township and parts of the Lake Erie shoreline in Rainham. Bruechert's work resulted in the registration of a further twenty-two (22) sites. The last directed research program in the Project area was Gary Crawford's work in 1997 along the Grand River, just below Cayuga. Crawford's survey registered another nine archaeological sites.

The information presented by the sites database suggests that archaeological resources are widespread and numerous throughout western Haldimand County. Part of the reason for such intensive use of the region by prehistoric peoples is the fact that there are three well known sources of high quality tool stone in the region, all of which occur within the limits of the Project area (Fox, 2009). These tool stone sources include Selkirk chert, Haldimand chert and Onondaga chert. Onondaga and Haldimand chert are found in the Bois Blanc geological formation and have general similarities in colour and workability. Onondaga chert outcrops are located along the Lake Erie shoreline. Haldimand chert has its source along the Grand River near Cayuga. Selkirk chert is found in the later Dundee formation, and outcrops near the western extreme of the county (Fox, 2009). The result of these rich tool stone sources is that there are numerous quarry and lithic reduction sites (MTC, 2010).

Overall conditions in the Project area were very favourable for prehistoric occupation, including access to a wide variety of econiches for the harvesting of plant, fish and animal resources, a number of excellent sources of tool stone, and access to major transportation routes along the Grand River and Lake Erie shoreline.The majority of land use in the general Project Area is agricultural, with pockets of wooded areas throughout. In an effort to limit the amount of woodlot cutting required the majority of the proposed Project infrastructure was planned to be located on agricultural fields, which allowed for the majority of the Stage 2 AA to be conducted using a pedestrian survey strategy. Specific Lot and Concession locations for each Project

component assessed, whether solar field or turbine access roads and pads, are listed in Table 3.1 in Section 3.

As described in the Stage 1 AA, the Project Area is located in the Haldimand Clay Plain physiographic region, a large region that occupies approximately 1,350 square miles and is characterised by recessional moraines in the northern part, deep river valley in the middle, and flat and low lying ground to the south (Chapman and Putnam 1984).

The surficial geology of the Project Area is predominantly silty clay loam till soils. Generally the only other soil types represented are alluvial deposits in flood plains spanning the length of the minor waterways and some small areas of lacustrine silty clay in the eastern part of the Project Area. The silty clay loam tills, such as the Gobles and Kelvin series of soils, are characterised by poor to imperfect drainage (Presant and Acton, 1984). The general homogeneity of the Project Area soils was clearly evident during the Stage 2 AA field surveys. With one exception all solar fields and turbine access road and pad locations were located in areas of heavy, blocky clay soil of medium brown colour. The only discernible difference in these areas was around the margins of small drainage channels, natural and artificial, that ran through the surveyed areas, in which case the soil was darker and somewhat siltier.

Topographically the Project Area is generally nearly level to gently rolling. Where there is micro-topographic relief, the lower ground typically acts as a water collector and drainage channel for the surrounding ground. Even in areas where there is greater relief the underlying clay subsoils do not absorb water quickly and after rain events there was usually standing water underneath the ploughed surfaces. In no locations surveyed were there any soils which could be classified as having good drainage; most soils were imperfectly or poorly drained.

2.4.1 Summary of Previous Stages 1 and 2 Archaeological Assessment

A Stage 1 Archaeological Assessment (AA) completed under PIF P002-208-2010 by Stantec Consulting Ltd. (Stantec) indicated that most of the proposed Project Area demonstrated the potential for the presence of significant and intact archaeological resources (Stantec, 2010). Based on the widespread archaeological potential of the wider GREP Project study area it was decided that all previously undisturbed (except by agricultural activity) areas where Project infrastructure was planned would be subject to Stage 2 AA.

As noted previously, most of the Project infrastructure areas were assessed during the 2010 field season. Stage 2 AA of Project components was completed by Stantec (PIF P002-211-2010) and, Golder Associates Ltd. (PIF P218-012-2010) (Golder, 2011; Stantec, 2011). Stage 2 AA completed by Stantec in 2010 on 359 ha of solar and wind component lands resulted in the identification of 165 archaeological resources, composed of 70 isolated findspots of limited cultural heritage value or interest, 50 discrete artifact clusters of limited cultural heritage value or interest and 45 locations of high cultural heritage value or interest, which were designated as archaeological “sites” (Stantec, 2011). Each site, cluster or isolated findspot was given a discrete number. The following report continues on from those numbers, such that the first site in this report is GREP Site #46, the first artifact cluster is CL51 and the first isolated find is IF71. The results of the 2010 Stage 2 archaeological field program confirmed the general conclusions of the Stage 1 AA study.

The 45 archaeological sites identified during the first phase of the Stage 2 AA completed in 2010 are shown in Table 2-1 below. Each site identified was recommended to undergo Stage 3 AA.

Table 2-1 Archaeological Sites Identified During 2010 Stage 2 Archaeological Assessment

Stantec Site #	Borden #	Culture Period(s) Represented	Dimensions (in m)	Stantec Site #	Borden #	Culture Period(s) Represented
1	AfGx-710	Indeterminate	30 x 20	23	AfGw-148	Indeterminate
2	AfGx-711	Indeterminate	35 x 20	24	AfGw-149	Late Archaic
3	AfGx-712	Indeterminate	65 x 50	25	AfGw-150	Indeterminate
4	AfGx-713	Indeterminate	25 x 25	26	AfGw-151	Middle Archaic
5	AfGx-714	Indeterminate	30 x 30	27	AfGw-152	Indeterminate
6	AfGx-715	Indeterminate	55 x 35	28	AfGw-153	Late Palaeo-Indian
7	AfGx-716	Indeterminate	25 x 25	29	AfGw-154	Indeterminate
8	AfGx-717	Indeterminate	35 x 25	30	AfGw-155	Indeterminate
9	AfGx-718	Indeterminate	35 x 20	31	AfGw-156	Indeterminate
10	AfGx-719	Indeterminate	60 x 30	32	AfGw-157	Middle Archaic
11	AfGx-720	Early Woodland	90 x 90	33	AfGw-158	Early Woodland
12	AfGw-137	Late Palaeo-Indian/ Early Woodland	40 x 40	34	AfGw-159	Indeterminate
13	AfGw-138	Middle Archaic	150 x 110	35	AfGW-160	Indeterminate
14	AfGw-139	Late Archaic	145 x 115	36	AfGw-161	Indeterminate
15	AfGw-140	Indeterminate	25X20	37	AfGw-162	Indeterminate
16	AfGw-141	19th Century Historic	55 x 55	38	AfGw-163	Indeterminate
17	AfGw-142	Late Archaic	90 x 55	39	AfGw-164	Early Archaic
18	AfGw-143	Early Archaic	115 x 50	40	AfGw-165	Late Palaeo-Indian
19	AfGw-144	Early Woodland	110 x 110	41	AfGw-166	Early Archaic
20	AfGw-145	Indeterminate	50 x 50	42	AfGw-167	Late Palaeo-Indian
21	AfGw-146	Indeterminate	35 x 35	43	AfGx-721	Early Archaic
22	AfGw-147	Late Woodland	250 x 160	44	AfGw-184	Indeterminate
				45	AfGx-732	Indeterminate

3 STAGE 2 ASSESSMENT FIELD METHODS

At the completion of the 2010 Stage 2 AA field program (halted by snowfall and enduring winter conditions on December 6, 2010) there were 16 turbine pads and their associated access roads that still required Stage 2 field assessment. During the winter of 2010-2011 adjustments were also made to three wind components that had been surveyed during the 2010 field season. These three adjustments also required completion of Stage 2 field assessment for the 2011 field season. Permission to access the various Project properties was secured from individual landowners by the proponent and fieldwork was conducted between April 13-15 and June 15-16, 2011. As part of SPK's ongoing engagement with local First Nation communities, an archaeological monitor from the Six Nations of the Grand, Daphne Parrington, was assigned to the Stage 2 AA. Ms. Parrington was present throughout the Stage 2 AA field program and actively participated in the field surveys.

Field assessment followed standard procedures as outlined in the 2011 *Standards and Guidelines for Consultant Archaeologists* prepared by the Ministry of Tourism and Culture (MTC). All pedestrian survey was completed at 5 m intervals (or less). When artifacts were encountered survey interval was reduced to 1-1.5 m intervals and intensified for an area of minimum 20 x 20 m from either the individual artifact or from the centre of the initial scatter encountered. In the portion of the access road for Turbines 23 and 28 where test pit survey was completed positive test pits resulted in the excavation of eight supplemental test pits around the initial positive test pit, one each N, NE, E, SE, S SW, W and NW at 2.5 m from the positive test pit. A 1 x 1 m test unit was also excavated over each initial positive test pit.

For the most part each artifact found during pedestrian survey (including individual flakes) was recorded in the field using a handheld Garmin GPS75 Geographic Position System (GPS) device. In several instances one GPS point recorded the location of several tightly clustered flakes. In one instance (discussed below) GPS data was recorded only for the limits of a very dense scatter of lithic flakes. Where test pit survey was completed the location of each initial positive test pit was recorded. With the exception of material recovered from test pits, only artifacts that are considered to be diagnostic or formal tools were collected during the Stage 2 AA. All other artifacts encountered during the pedestrian survey component of the Project were left *in-situ*. Formal tools collected during the field survey were given specific alpha-numeric designations by tool type (*e.g.* Point), GPS unit designation of 3 to differentiate the 2011 survey results from those in 2010 and sequential number of that tool type, resulting in designations such as Point 3-9. These designations have been carried forward, where applicable, to the artifact catalogues, either of registered archaeological sites (*e.g.* AfGv-125.1 for Point 3-2) or as part of the non-site affiliated collection (*e.g.* 161010624.45).

Table 3-2 Location, Size, Survey Strategy and Results of Stage 2 AA By Survey Area

Survey Area	Location (Lot, Concession, Township)	Area Surveyed (ha)	Area Not Surveyed (ha)	Survey Methodology	Archaeological Sites Recorded
Turbine 41	Lot 39, Concession 1, South Cayuga	2	0	Pedestrian, 5 m intervals	AfGX-768, AfGx-769
Turbines 65-67	Lots 14-16, Concession 2 South of Rainham Road, Dunn	10.5	0.11	Pedestrian, 5 m intervals	AfGv-124, AfGv-125, AfGv-127
Turbine 58	Lot 8, Concession 6, Rainham	4.2	0.12	Pedestrian, 5 m intervals	AfGx-770, AfGx-771, AfGx-772
Turbine 51	Lot 24, Concession 1, Rainham	3.3	0	Pedestrian, 5 m intervals	AfGw-229
Turbine 30	Lot 4, Concession 1 North of Rainham Road, Dunn	5.5	0	Pedestrian, 5 m intervals	none
Turbines 59-64 (Complex 3)	Lots 21-24, Concession 2 South of Rainham Road, Dunn and Lot 2, Concession 3 South of Rainham Road, Dunn	15	8.13	Pedestrian, 5 m intervals	AfGv-126
Turbines 14, 49 and 50	Lots 7-9, Concession 1 North of Rainham Road, Dunn	8.3	0	Pedestrian, 5 m intervals	none
Turbine 12, New Access Road	Lot 19, Concession 6, South Cayuga	1.6	0	Pedestrian, 5 m intervals	none
Turbines 23 and 28, Access Road	Lots 39 and 40, Concession 2, South Cayuga	0.76	0.03	Test pit, 5 m intervals	none
Turbine 10, Turn-Around	Lot14, Concession4, Rainham	0.075	0	Test Pit, 5 m intervals	none
	Total ha	**52**			

The determination of site *Cultural Heritage Value*, and thus on whether a specific association of artifacts would become a registered archaeological site with the MTC, was based on guidelines presented in the 2011 *Standards and Guidelines for Consultant Archaeologists* prepared by the MTC. In these guidelines specific criteria are set out for determining a site's Cultural Heritage Value, generally based on meeting a minimum number of artifacts within a defined area. Since the Project Area is located west of the Niagara Escarpment the minimum number of non-diagnostic artifacts, such as stone flakes from the production of stone tools, required to be present to designate a registerable site is higher than in the remainder of the province. These more stringent requirements for land west of the Escarpment recognise that there is a much higher occurrence of isolated artifacts and sites in this region, and in effect makes it more difficult for small scatters of non-diagnostic artifacts to be considered significant archaeological sites. As outlined in the 2011 *Standards and Guidelines for Consultant Archaeologists* at least one of the following conditions should be met in order for a cluster of associated artifacts to be considered of Cultural Heritage Value and thus an archaeological site:

- Pre-contact archaeological resources containing diagnostic artifacts or a concentration of artifacts (or both):
    - In pedestrian survey, finding within a 10 x 10 metre area:
        - at least one diagnostic artifact or fire-cracked rock in addition to two or more non-diagnostic artifacts; or
        - in areas on or west of the Niagara Escarpment, at least 10 non-diagnostic artifacts.

  - In test pit survey, within a 10 m x 10 m area:
    - at least one diagnostic artifact from combined test pit and test unit excavations; or
    - at least five non-diagnostic artifacts from combined test pit and test unit excavations.
- Single examples of archaeological resources of special interest:
  - Aboriginal ceramics;
  - Exotic or period-specific cherts; and
  - An isolated Paleo-Indian or Early Archaic diagnostic artifact.

Given that artifact locations were recorded using a handheld GPS that had an average accuracy error of between 3-5 m at any given time some allowances have been made in determining sites that are not entirely within the designated 10 x 10 m area. In some instances sites that contained just over the minimum number of non-diagnostics but which were distributed over a larger area than 10 x 10 m have been designated as sites because they represented the only artifact cluster in an otherwise blank archaeological landscape. The MTC guidelines allow for some discretion on the part of the consultant archaeologist to make decisions regarding the Cultural heritage value or interest of field findings outside of the guidelines presented.

Only these resources were considered to have cultural heritage value or interest and, as per recent MTC practice, only resources determined to have Cultural Heritage Value were considered to be an archaeological site and received Borden number designation. Borden numbers are an alpha-numeric numbering system for archaeological sites that is used throughout Canada. A Borden Block is composes of four letters, two major (UPPER CASE) and two minor (lower case), each letter of which represents a major and minor subdivision within the block. In the case of site AfGw-167, for instance, **A** is the major South-North locator. Each major block represents 2 degrees of Latitude from south to north (using letters A - U); **f** is the minor South-North Locator, with each minor block representing 10 minutes of Latitude from south to north (using letters a-l). **G** is the major East-West Locator, with each major block representing 4 degrees of longitude from east to west (letters A - W); **w** is the minor East-West Locator, with each minor block representing 10 minutes of longitude from east to west (letters a - x). Within each of these blocks sites are numbered consecutively as they are registered, and each site gets a unique number. In the case of site AfGx-768 this is the 768th site found within Borden block AfGx.

4 RECORD OF FINDS

The documentary record generated in the field during the Stage 2 AA includes: field notes, photographs, GPS points and tracks. This information is housed at the Stantec office in Ottawa.

The Stage 2 AA completed by Stantec in 2011 resulted in the identification and recording of several hundred pre-contact period artifacts, including 12 formal or expedient tools (11 projectile points, or “arrowheads” and one core). Unless otherwise noted, all tool forms were produced on Bois Blanc formation cherts (*e.g.* Onondaga chert or Haldimand chert) (Fox, 2009). One location was completely recorded based on the limits of a dense lithic scatter where individual GPS points were not taken. Several features, including building foundations, from a potentially mid-20th century military incinerator associated with the Dunnville Airport were also recorded during the Stage 2 AA.

The majority of artifacts located were flakes or chips of stone that are the results of stone tool making. Lithic flakes exhibit different characteristics, depending on when in the tool making process they were produced. In general tool stone making follows four general stages.

Once a piece of lithic material has been chosen *primary reduction* of the material begins. This stage typically involves the removal of the outside, or cortex, of the stone so that a rough tool shape is produced. The product of this stage is referred to as a primary blank, which can be further modified into a wide array of formal tools. The flakes produced at this stage are often rectangular and blocky and exhibit a large amount of cortex on the flakes.

Secondary reduction occurs when a primary blank is further reduced through the removal of material from both sides of the piece, referred to as bifacial thinning. The product of this work, the secondary blank, can be used as a tool itself, or can be further refined into more formal tools. Flakes produced in this stage of reduction show some flake scarring (the marks left when flakes are removed from a piece of stone), have reduced striking platforms (the spot where percussion is applied to remove the flake), have no, or very little, cortex, and are less blocky.

The further reduction of secondary blanks into formal tool shapes is referred to as *tertiary reduction*. The same basic processes are used here as in secondary reduction, although there is the addition of more precise flake removal through pressure flaking, where the maker applies direct pressure onto a specific part of the tool in order to facilitate flake removal. Pressure flaking generally produces smaller, thinner flakes than does percussion flaking. These tertiary flakes also exhibit many more flake scars.

The fourth stage of reduction involves the sharpening, or retouching, of tool edges after the final tool shape has been achieved. These *retouch* flakes are also produced as tools are resharpened after they wear down and become dull. Retouch flakes are produced by careful pressure flaking and produce very small, narrow, and thin flakes.

Particular emphasis is placed on projectile points in this assessment as they are the most reliable artifactual indicators (*i.e.* diagnostic) of cultural period associations, and thus of age, rarity and other criteria that assist in assigning Cultural heritage value or interest to archaeological sites. Such emphasis on diagnostic artifacts is reflected in the special provisions made in the 2011 *Standards and Guidelines for Consultant Archaeologists* for single examples of Palaeo-Indian, Early Archaic, or Late Woodland period artifacts. All projectile points collected during the Stage 2 AA are shown on Plate 1. Every projectile point was analysed and sorted according to cultural affiliation and period. Although not all of the points could be confidently typed or given an age, analysis did lead to the identification of: four Middle and Late Archaic points; two Early Woodland and one Middle Woodland period points. A further four points could not be assigned to a period or date due to their incomplete nature (Table 4-1).

Based on the 2011 *Standards and Guidelines for Consultant Archaeologists* Stantec has identified a total of 10 discrete registered archaeological site locations that will require Stage 3 Archaeological Assessment (Table 4-2). A further 9 artifact clusters and 13 isolated findspots which did not meet the minimum standards of cultural heritage value or interest described earlier were also documented during the Stage 2 AA.

Table 4-1 Archaeological Culture Period and Dates of Recovered Projectile Points

Survey Location	Survey ID #	Borden #	Period	Date
T65 Pad	Point 3-1	n/a	Early Woodland	2,850-2,350 BP
T66 Pad	Point 3-2	AfGv-125	Middle Woodland	2,500-1,500 BP
T58 Road	Point 3-3	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-4	n/a	Poss. Late Archaic	4,000-3,500 BP
T58 Road	Point 3-5	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-6	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-7	n/a	Indeterminate	Indeterminate
T58 Road	Point 3-8	n/a	Late Archaic	3,500-2,800 BP
T58 Road	Point 3-9	n/a	Late Archaic	3,500-2,800 BP
T41 Pad	Point 3-10	n/a	Middle Archaic	5,000-4,500 BP
Turbine Complex 3 Road	Point 3-11	n/a	Early Woodland	2,850-2,350 BP

Artifact Identification Sources: Ellis and Ferris, 1990; Justice, 1987; LCOAS, n.d.; Ritchie, 1969

Table 4-2 Archaeological Sites Requiring Further Assessment

GREP Site #	Location	Borden #	Easting	Northing	# Tools/ Diagnostics	# non-Tools	Total # Artifacts	Cultural Period	Dimensions (in m)	Site Area (m^2)
46	T41	AfGx-768	590371	4753914	0	160	160	Indeterminate	145 X 40	5800
47	T41	AfGx-769	590343	4753844	0	n/a	n/a	Indeterminate	65 x 40	2600
48	T66	AfGv-124	611796	4747848	0	38	38	Indeterminate	30 x 30	900
49	T66	AfGv-125	611792	4747430	1	15	16	Middle Woodland	50 x 50	2500
50	T51	AfGw-229	604826	4745058	1	12	13	Indeterminate	50 x 50	2500
51	T58	AfGx-770	589736	4750399	0	10	10	Indeterminate	25 x 25	625
52	T58	AfGx-771	589726	4750195	1	7	8	Indeterminate	30 x 20	600
53	T58	AfGx-772	589794	4749961	1	5	6	Indeterminate	35 x 20	700
54	T60	AfGv-126	615444	4747529	0	0	0	20th century	100 x 60	6000
55	T65	AfGv-127	611441	4747446	1	3	4	Early Woodland	30 x 10	300
					Total # Artifacts		255		Total m2	22525

4.1 Turbine 41

The access road and pad for Turbine is located in Lot 39, Concession 1, South Cayuga, on the south side of Highway 3. The access road for T41 is also common to Turbines 34 and 45. Both of those turbine pads and the west half of the access road were surveyed in 2010. The east half of the access road and T41 were surveyed on April 15, 2011. This surveyed area encompasses a total of 2.05 ha (Figure 4-1). The topography of this area is level for the entire surveyed area. A series of shallow drainage features cross the area from west to east, which during wetter times of the year results in a thin overlay of water across the fields. Eventually

these drainage channels flow into the Grand River, approximately 3 km to the east. At the time of the Stage 2 AA the channels were dry and all parts of the pad were assessed.

Two sites composed exclusively of lithic debitage were located on the T41 pad during the survey (Figure 4-1). These sites were registered as AfGx-768 and AfGx-769. A cluster of five lithic debitage artifacts was recorded on the access from the common access road. There were also three isolated artifacts, including a Middle Archaic projectile point, were also located during the survey (Figure 4-1).

4.1.1 Turbine 41 Sites

4.1.1.1 GREP Site #46 (AfGx-768)

GREP Site #46 (AfGx-768) is composed of 160 lithic flakes across an area of approximately 145 x 40 m in two major clusters on the north side of the T41 pad at its junction with the access road (Figure 4-1). The site is located on level ground north of a very shallow drainage channel that bisects the T41 pad area. This group of artifacts has been designated as being of cultural heritage value due to the high number of artifacts in very tight association. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

Based on the criterion of total number of artifacts Site #46 has cultural heritage value and is recommended for Stage 3 AA.

4.1.1.2 GREP Site #47 (AfGx-769)

GREP Site #47 (AfGx-769) is composed of an undetermined number lithic flakes across an area of approximately 65 x 40 m in the south-west corner of the T41 pad (Figure 4-1). The site is located on level ground south of the shallow drainage channel that bisects the T41 pad area, opposite Site #46. There were too many flakes, estimated in the hundreds, within this area to be meaningfully recorded with the hand held GPS. It is possible that these artifacts are part of the same site as AfGx-768 but based on the distance between the two concentrations of artifacts, a distinct break in the lithic scatter pattern between the two sites and the presence of the drainage channel between them it was decided that for the time being they should be considered as separate entities. This group of artifacts has been designated as being of cultural heritage value due to the high number of artifacts in very tight association. There were no diagnostic tools located at the site and thus it is presently of indeterminate culture period and/or age.

Based on the criterion of total number of artifacts Site #47 has cultural heritage value and is recommended for Stage 3 AA.

4.1.2 Turbine 41 Artifact Clusters

4.1.2.1 Artifact Cluster #51

CL #51 is composed of five lithic flakes in very close proximity located on the T41 access road (Figure 4-1). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

4.1.3 Turbines 41 Isolated Findspots

4.1.3.1 Isolated Findspot 71

IF #71 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation located to the west of GREP Site #46 (Figure 4-1). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.1.3.2 Isolated Findspot 72

IF #72 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation located to the west of GREP Site #46 (Figure 4-1). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.1.3.3 Isolated Findspot 73

IF #73 is composed of a single projectile point, Point 3-10, approximately 30 m to the south-east of GREP Site #47 (Figure 4-1). Point 3-10 is a Middle Archaic Brewerton Side Notched type projectile point, and dates to between 5,000-4,500 BP. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.2 Turbines 65, 66 and 67

The access roads and pads for Turbines 65, 66 and 67 (T65-T67) are located in Lots 14, 15 and 16, Concession 2 South of Rainham Road in Dunn Township, south of Haldimand Tract Road (Figure 4-2). This surveyed area encompasses a total of 10.5 ha (Figure 4-2). Survey of this Project Area was completed on April 14, 2011. The topography of this area is almost level, with only gentle undulations. A headwater for the Mazi Drain, which empties into the Grand River to the east, crosses the common access road just north of where the separate turbine access roads branch off (Figure 4-2; Photo 1). Just before the T67 pad there is another wide ditch that is part of the Mazi Drain (Figure 4-2; Photo 3). Other than these two narrow areas all of the access road and turbine pad areas were surveyed by pedestrian survey.

Three sites, one composed exclusively of lithic debitage(AfGv-124) and the other two composed of lithic flakes and a projectile point (AfGv-125 and AfGv-127 were located during the survey (Figure 4-2). One isolated artifact were also located during the survey (Figure 4-2). Locations of all formal tools are shown on Figure 4-2 and are itemised in the Artifact Catalogues in Appendix B.

4.2.1 Turbines 65, 66 and 67 Sites

4.2.1.1 GREP Site #48 (AfGv-124)

GREP Site #48 (AfGv-124) is composed of 38 flakes of lithic debitage in an area of approximately 30 m x 25 m, located on the east side of the common access road, approximately midway between Haldimand Tract Road and the Mazi Drain (Figure 4-2). The site is located on level ground between a series of small ephemeral drainage channels.

Based on the criterion of total number of artifacts Site #48 has cultural heritage value and is recommended for Stage 3 AA.

4.2.1.2 GREP Site #49 (AfGv-125)

GREP Site #49 (AfGv-125) is composed of a Point 3-2 and 15 pieces of lithic debitage (Plate 1), located on the north-east corner of the T34 pad (Figure 4-2). The site is located on level ground between a number of small ephemeral drainage channels approximately 140 m south of the Mazi Drain (Figure 4-2). Point 3-2 is a Middle Woodland Saugeen type point manufactured on Onondaga chert

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

4.2.1.3 GREP Site #55 (AfGv-127)

GREP Site # 55 (AfGv-127) is composed of Point 3-1 and three pieces of lithic debitage located on the north-west edge of the T65 pad over an area of approximately 30 m x 25 m (Figure 4-2). The point and two of the flakes are separated by approximately 7 m. Point 3-1 is the distal end of an Early Woodland projectile point manufactured on Bois Blanc formation chert (Plate 1). The site is located on level ground near no notable topographic features.

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

4.2.2 Turbines 65, 66 and 67 Isolated Findspots

4.2.2.1 Isolated Findspot 74

IF 74 was composed of a single flake of Bois Blanc formation chert that was located on the south side of the drainage ditch that runs across the T65-67 access road and approximately 90 m north of GREP site #49 (Figure 4-2). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.3 Turbine 58

The access road and pad for Turbine 58 (T58) are located in Lot 8, Concession 6, Rainham Township, north of Concession Road 6 (Figure 5-3). This surveyed area encompasses a total of 4.2 ha (Figure 4-3). T20 was surveyed on April 14, 2011. The topography of this area is characterised by gently sloping grade, rising to the north and south of the tributary of Hemlock Creek that intersects the access road toward the south end of the Project location (Figure 4-3; Photos 6 and 7). Hemlock Creek drains into Lake Erie near Selkirk, to the south-west of T58. During the fall of 2010 the tributary was very full, and was uncrossable on foot due to its wide and shallow bed. In the spring of 2011 the water level had subsided considerably and allowed for pedestrian survey on the north side of the stream. The wide stream bed was not surveyed, as indicated on Figure 4-3 (Photo 4). The T58 turbine is located an the east side of a treeline from the access road, and the narrow limits of the unploughed tree line were not archaeologically surveyed, although the width of the unsurveyed area was less than 5 m and did not compromise the efficacy of the pedestrian survey.

A proportionately large number of artifacts were documented on the T58 access road and pad, including three registered sites (AfGx-770, AfGx-771 and AfGx-772), a cluster of lithic debitage and six isolated findspots, five of which are projectile points or projectile point fragments (Figure 4-3). Locations of all formal tools are shown on Figure 4-3 and are itemised in the Artifact Catalogues in Appendix B.

4.3.1 Turbines 58 Sites

4.3.1.1 GREP Site #51 (AfGx-770)

GREP Site #51 (AfGx-770) is located on the turbine pad of T58 (Figure 4-3). The site is composed of 10 lithic flakes distributed over an area of 25 x 25 m, although seven of those flakes are within an area of 12 m x 7 m. Moreover, this group of flakes is noticeably contained in a relatively small area over 100 m from the nearest other artifacts. The site is located on elevated, level ground approximately 400 m north of the tributary of Hemlock Creek.

Based on the criterion of total number of artifacts Site #48 has cultural heritage value and is recommended for Stage 3 AA.

4.3.1.2 GREP Site #52 (AfGx-771)

GREP Site #52 (AfGx-771) is located on the access road of T58 (Figure 4-3). The site is composed of Point 3-3 and 7 lithic flakes distributed over an area of 30 x 20 m. The site is located on level, elevated ground between the channels of two ephemeral drainages, approximately 300 m north of the tributary of Hemlock Creek. Point 3-3 is a point tip of indeterminate age or cultural affiliation (Plate 1).

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

4.3.1.3 GREP Site #53 (AfGx-772)

GREP Site #53 (AfGx-752) is located on the access road of T58, approximately 50 m north of the tributary of Hemlock Creek (Figure 4-3). The site is composed of Point 3-6 and 5 lithic flakes distributed over an area of 35 m x 20 m. Point 3-6 is the basal end of a broken finely flaked point, either a corner notched or eared point form, manufactured on Bois Blanc formation chert (Plate 1). Due to the fragmentary nature of the point it is of indeterminate age or cultural affiliation.

Based on the criterion of a diagnostic artifact and two or more non-diagnostic artifacts the site is considered to have cultural heritage value and is recommended for Stage 3 AA.

4.3.2 Turbine 58 Artifact Clusters

4.3.2.1 Artifact Cluster #52

CL #52 is composed of four lithic flakes scattered across an area of 25 m x 15 m on the T58 access road (Figure 4-3). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

4.3.3 Turbine 58 Isolated Findspots

4.3.3.1 Isolated Findspot 76

IF #76 is composed of Point 3-4, the basal end of a possibly Late Archaic corner notched from that was broken early in its manufacture based on the relatively limited amount of flaking evident (Figure 4-2; Plate 1). IF #76 is located approximately 25 m south-east of GREP Site #52 (Figure 4-2). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.3.3.2 Isolated Findspot 77

IF #77 is composed of Point 3-5 (Figure 4-2; Plate 1). The point, located approximately70 m south of GREP Site #52, is the medial section of a narrow projectile point, worked on only one side and manufactured on light Onondaga chert. Due to its incomplete nature the point is of indeterminate age or cultural affiliation. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.3.3.3 Isolated Findspot 78

IF #78 is composed of Point 3-7, a small fragment of a point manufactured from Selkirk chert that was located immediately north of the tributary of Hemlock Creek (Figure 4-2; Plate 1). The point fragment is very small and appears to have been shattered during use rather than broken during manufacture as there is no discernible portion that shows a flaw in the stone or any specific flaking error. Due to the small size of the point fragment it is not possible to determine cultural affiliation or age of the artifact. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.3.3.4 Isolated Findspot 79

IF #79 is composed of Point 3-8, a very finely made Late Archaic Small Point Horizon type point manufactured on Bois Blanc formation chert (Figure 4-2; Plate 1). IF #79 is located approximately 40 m south of the tributary of Hemlock Creek and 30 m north-west of IF #80. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.3.3.5 Isolated Findspot 80

IF #80 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation located approximately 30 m south-east of IF #79 (Figure 4-2). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.3.3.6 Isolated Findspot 81

IF #81 is composed of Point 3-9, a Late Archaic Small Point Horizon type point (Figure 4-2; Plate 1). The point is not flaked on one side and appears to have been broken during manufacture. The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.4 Turbine 51

The access road and pad for Turbine 51 (T51) are located in Lot 24, Concession 1, Rainham Township, to the north of Lakeshore Road (Figure 4-4). This surveyed area encompasses a total of 3.3 ha (Figure 4-4). T51 was surveyed on April 14, 2010 under sunny skies. The topography of this area gently rises as it moves north from Lakeshore Road. The ground is well drained throughout the length of the access road, and is notably sandier and better drained in the T51 pad area. A narrow tree line (less than 5 m in width) near the north end of the access road was not pedestrian surveyed, but was of sufficiently narrow width as to allow for full survey coverage at 5 m intervals throughout the access road area.

A site composed of a single core (Core 3-1) and 12 pieces of lithic debitage was located on the south-eastern edge of theT51 pad during the survey (Figure 4-4).

4.4.1 Turbines 51 Sites

4.4.1.1 GREP Site #50 (AfGw-229)

GREP Site #50 (AfGw-229) is located on the south-eastern edge of the T51 pad (Figure 4-4). The site is composed of a single core and 12 lithic flakes distributed over an area of 30 x 30 m. The site is located on elevated ground overlooking the headwaters of several unnamed drainage channels.

Based on the presence of the core and several flakes within a relatively concentrated area Site #50 has cultural heritage value and is recommended for Stage 3 AA.

4.5 Turbine 30

The access road and pad for Turbine 30 (T30) are located in Lot 4, Concession 1 North of Rainham Road, Dunn Township, to the south of Haldimand Road 20 (Figure 4-5). This Project Area encompasses a total of 5.5 ha (Figure 4-5). For the first 120 m south of Haldimand Road 20 a width of approximately 20 m was surveyed as there was an existing house, yard and pond on the west side of the access road (Figure 4-5). Past that area, however, the access road was surveyed for the full 40 m width. T30 was surveyed on April 14, 2011 under sunny skies. Approximately 2/3 of the way south along the access road there is a very narrow and shallow drainage channel that ploughed through allowing for full survey coverage. Where the access road turns tot eh south-west to reach the T30 pad area the road passes on the north-west side of a small man-made pond. That pond is not within the limits of the access road RoW and full survey coverage was completed.

Only a single artifact was recovered during the survey of the T30 pad and access road.

4.5.1 Turbine 30 Isolated Findspots

4.5.1.1 Isolated Findspot 75

IF #75 is composed of a single lithic flake located at the north end of the access road, just south of Haldimand Road 20 (Figure 4-5). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.6 Turbines 59-64 (Complex 3)

The access road and pads for Turbines 59-64 (T59-64), also known as Complex 3, are located in Lots 21-24, Concession 2 South of Rainham Road, Dunn Township. The surveyed area encompasses a total of 15 ha in and around the Dunnville Airport (Figure 4-6). Complex 3 was surveyed on April 15 and June 16, 2011, both episodes under dry, sunny conditions. The topography of the area is generally level. The area of the airport runways and infield is slightly, and unnaturally, elevated from the access road on the south. Discussions with Frank Collins, the General Manager of the Dunnville Airport, during the field visits determined that all of the land associated with the airport runways and infield was heavily disturbed during construction of the airfield during the Second World War (Collins, pers. comm.). Beyond the grading and paving that were readily evident there are also several drains that have been installed throughout the airfield subgrade. Because of the significant construction disturbance associated with the construction and improvements of the airport over the last 70 years the portion of the Project Area within the limits of the airfield were considered to have low potential for intact archaeological resources and was not archaeologically surveyed (Photos 9-11). All other areas of the Complex 3 Project Area were pedestrian surveyed at 5 m intervals. There was some corn stubble left on the field along the south portion of the access road; however, visibility was sufficient to meet a minimum of 80% visibility along the pedestrian transects (Photos 12 and 13).

Stage 2 AA of Complex 3 resulted in the identification of a historic period site (GREP Site #54) and two artifact clusters (CL #53 and 56).

4.6.1 Turbine 59-64 (Complex 3) Sites

4.6.1.1 GREPSite #54 (AfGv-126)

GREP Site #54 (AfGv-126) is located immediately north of the Complex 3 access road and approximately 120 m west of Port Maitland Road (Figure 4-6). The site is composed of a series of building foundations distributed through an unploughed knoll of ground. Initial documentation of the site recorded three small building foundations, what appears to be a water trough, and another feature that may be a well (Figure 4-6 and Photos 14-17). No associated artifacts were located within the ploughed limits of the Complex 3 access road and because the site is technically outside of the RoW no test pits were excavated within the limits of the knoll. The foundation material is an unusual type of concrete with reinforcement bars (rebar) evident in the foundations.

Examination air photos subsequent to the field assessment indicate that there was a series of farm buildings located in the vicinity in 1934, but that by 1950 those buildings had been razed as part of the Second World War period construction of the airfield. When the General Manager of the Dunnville Airport was asked about the foundations he indicated that they were from an incinerator associated with the wartime airfield (Collins, pers. comm.). Although no air photos of the area are available from the 1940s, air photos from 1950 suggest that those foundations are in the same location as the farm buildings noted in 1934. As noted previously, the foundation material is not what we would typically associate with residential or farmstead construction and it may be that any wartime facilities were constructed over or in the same location as the previous farmstead buildings.

Due to the inexact knowledge of the nature of the foundation features at Site #54 it has been recommended for Stage 3 AA, and in particular more detailed recording of the precise location of all features and a more detailed analysis of their construction methods and potential origin. If the foundations are associated with Second World War period activities then they should be considered to have cultural heritage value. While it is unlikely that current Project activities will impact on the site a more thorough understanding of the site will allow for the development of appropriate protection of the resources.

4.6.2 Turbine 59-64 (Complex 3) Artifact Clusters

4.6.2.1 Artifact Cluster #53

CL #53 is composed of three lithic flakes in an area of 25 m x 10 m located at the south-east end of the T64 pad, on the south side of the Ramsay Road right-of-way (Figure 4-6). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended.

4.6.2.2 Artifact Cluster #56

CL #56 is composed of Point 3-11 and a single lithic flake in close proximity along the south edge of the of the Complex 3 access road just to the west of Port Maitland Road (Figure 4-6). The point and flake were initially discovered in April 2011, but an effective intensified survey could not be completed at that time due to some concentrations of corn stalks on the field. During the June 2011 field work the corn stalks were carefully lifted and removed using wide toothed hand rakes and the appropriate 20 x 20 m area surveyed on the north, east and west sides. The Project RoW on the south side was only 15 m south of the artifacts and thus survey only occurred to that distance on the south. Movement of items on the ground surface was not affected as demonstrated by the presence and persistence of stones remaining on the ground surface after removal of the corn stalks. No further artifacts were identified during the intensification. Point 3-11 is a finely manufactured Early Woodland Meadowood point on Bois Blanc formation chert (Plate 1).

The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended.

4.7 Turbines 15, 49 and 50

The access road and pad for Turbines 15, 49 and 50 are located in Lots 7-9, Concession 1 North of Rainham Road, Dunn Township (Figure 4-7). The surveyed area encompasses a total of 8.3 ha (Figure 4-7). The three turbine pads and access roads were surveyed on April 13, 2011. The topography of the area is generally level, with some slight undulations between the pads for T49 and T50 (Photo 20) area where there are some shallow drainage channels. At the east side of the T49 pad there was an area of standing water that did not allow for ground visibility, although the low elevation and very wet soil conditions resulted in this specific area being reassigned as of low archaeological potential (Photo 21). Although the ground along the access roads is generally level there is a notable rise in elevation to the south of the Project Area, and in particular a small knoll located south of the T15 pad area (Photos 18 and 19).

No artifacts were located during the Stage 2 AA of Turbines 15, 49 and 50. It is possible that the specific area where the wind power infrastructure is planned was of generally low

archaeological potential in relation to the distinct elevated knoll to the south and south-west of the turbine locations and that the more elevated ground was a more attractive landscape feature than the lower ground. The persistence of water across some of the access road suggests that this area is much less well-drained than the knoll.

4.8 New Access Road, Turbine 12

The access road and pad for Turbine 12 (T12) are located in Lot 19, Concession 6, South Cayuga Township, west of Haldimand Road 50 (Figure 4-8). The 3 ha of access road and turbine pad for the original T12 was originally surveyed on December 2, 2010. The access road was subsequently moved south of the existing former quarry site (Figure 4-8). The present survey area encompasses 1.6 ha and runs almost due west from Haldimand Road 50 the the T12 pad location. From Haldimand Road 50 the ground slopes down gently to the T12 pad location to the west. At the western-most end of the access road, and at the lowest relief point, there is a small drainage channel that runs between the end of the access road and the T12 pad (Figure 4-8). At the time of the survey the channel was dry, but muddy soil was evident in that area and it is likely that water flows through there during wetter periods of the year.

Two small clusters of lithic flakes and two isolated lithic flakes were recorded at the eastern 1/3 of the new T12 access road.

4.8.1 New Access Road, Turbine 12 Artifact Clusters

4.8.1.1 Artifact Cluster #54

CL #54 is composed of five lithic flakes across an area of approximately 15 m x 10 m (Figure 4-8). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

4.8.1.2 Artifact Cluster #55

CL #55 is composed of five lithic flakes in a roughly linear pattern over an area measuring 20 m x 6 m and located approximately 22 m south-west of Cluster #55 (Figure 4-8). The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

4.8.2 New Access Road, Turbine 12 Isolated Findspots

4.8.2.1 Isolated Findspot 82

IF #82 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation 60 m west the western-most artifact in Cluster #56 (Figure 4-8). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.8.2.2 Isolated Findspot 83

IF #83 is composed of a single piece of lithic debitage of indeterminate age or cultural affiliation 20 m north of Cluster #56 and 20 m east of Cluster #55 (Figure 4-8). The single artifact does not meet minimum requirements to be of cultural heritage value or interest and no further work is recommended at this location.

4.9 Access Road, Turbines 23 and 28

The access road for Turbines 23 (T23) and 28 (T28) is located in Lots 39 and 40, Concession 2, South Cayuga, south of Irish Line Road. These turbines were originally surveyed in 2010 but a small section to the west of the original access road immediately south of Irish Line was subsequently required and needed to be surveyed (Figure 4-9). The total area of new surveyed ground was 0.76 ha and all of it was in unploughed land that has not been recently cultivated and was overgrown with high grasses and was surveyed using a test pit excavation methodology, appropriate for areas of less than 1 ha as per the 2011 *Standards and Guidelines for Consultant Archaeologists* (Photo 22). The area was surveyed on June 15, 2011. Excavation of test units over initial positive test pits occurred on July 28, 2011. The topography of the surveyed area is generally level, with a very slight rise at the extreme south end of the surveyed area. This area was, however, considered to be of low archaeological potential. Where the access road to T28 branches off there is another rise in elevation to the T28 pad area, resulting in T28 having a quite elevated position compared to the surrounding terrain.

Two on-grid positive test pits were encountered at two discrete locations during the test pit survey. Supplemental test pit excavation of eight test pits surrounding each initial positive test pit and excavation of a test unit above the initial positive test pits did not yield either a diagnostic artifact or sufficient numbers of non-diagnostic artifacts to warrant registration of the archaeological resources. The resources have been classified as artifact clusters and are documented below. All artifacts from the test pit survey are recorded in the Artifact Catalogue in Appendix B.

4.9.1 Access Road, Turbines 23 and 28 Artifact Clusters

4.9.1.1 Artifact Cluster #58

CL #58 is composed of three lithic flakes in close proximity located on the T23 and T28 access road, between two small branches of Holmes Creek, approximately 60 m south of Irish Line, 40 m west of GREP Site #10 identified in 2010 and 30 m north of CL #59 (Figure 4-9). The three flakes were found in three separate test pits, one in the primary on-grid test pit, and one each in supplemental test pits to the south and north-west of the primary test pit. The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended here.

4.9.1.2 Artifact Cluster #59

CL #59 is composed of three lithic flakes in close proximity located on the T23 and T28 access road, between two small branches of Holmes Creek, approximately 40 m west of GREP Site #10 identified in 2010 and 30 m south of CL #58 (Figure 4-9). The two flakes were found in two separate test pits, one in the primary on-grid test pit, and one in the supplemental test-pit excavated to the north-east of the primary test pit. The low artifact density of the cluster does not meet minimum standards for cultural heritage value or interest and no further work is recommended at this location.

4.10 Access Road Turn-Around, Turbine 10

The access road and turbine pad for Turbine 10 (T10) is located in Los 14, Concession 4, Rainham Township. This location was originally surveyed in 2010 but a small turn-around road

was subsequently determined to be required on the east side of the access (Figure 4-10). The total area of new needed ground was 50 m x 10 m (0.05 ha) in size. The field was visually assessed in April, 2011 but did not meet the required amount of visibility and was thus surveyed using a test pit excavation methodology, appropriate for areas of less than 1 ha and as a linear area of 10 m or less width as per the 2011 *Standards and Guidelines for Consultant Archaeologists*, on June 16, 2011.

The small area was considered to have archaeological potential as the 2010 survey had identified an archaeological resource (GREP Site #45) on the turbine pad to the north of the turn-around. Four rows of test pits were excavated at 5 m intervals from east to west across the length of the proposed turn-around up to the limits of the previous 2010 pedestrian assessment (Figure 4.10). A total of 32 test pits were excavated, all of which were negative.

No artifacts or other resources were located during the Stage 2 AA of the T10 turn-around extension.

5 ANALYSIS AND RECOMMENDATIONS FOR FURTHER WORK

The Stage 2 AA of the GREP completed in 2011 resulted in the identification of 31 archaeological resources, including 9 archaeological sites which have been registered with the MTC and of 9 artifact clusters and 13 isolated findspots. The full Stage 2 AA of GREP infrastructure by Stantec has resulted in the documentation of 196 archaeological resources, including 55 archaeological sites which have been registered with the MTC and of 58 artifact clusters and 83 isolated findspots.

5.1 Sites Requiring Stage 3 Archaeological Assessment

The 2011 Stage 2 AA of the GREP by Stantec has resulted in the documentation of 10 registered archaeological sites which will require further archaeological assessment (Table 5-1). At minimum all 10 sites will require Stage 3 AA in order to determine the extent of each archaeological resource, and to further refine our understanding of the age, cultural association and cultural heritage value of the sites Stage 3 AA will also determine what appropriate mitigation options, such as avoidance or excavation, are available at each site location.

Table 5-1 Archaeological Sites Requiring Further Assessment

GREP Site #	Location	Borden #	Easting	Northing	# Tools/ Diagnostics	# non-Tools	Total # Artifacts	Cultural Period	Dimensions (in m)	Site Area (m^2)
46	T41	AfGx-768	590371	4753914	0	160	160	Indeterminate	145 X 40	5800
47	T41	AfGx-769	590343	4753844	0	n/a	n/a	Indeterminate	65 x 40	2600
48	T66	AfGv-124	611796	4747848	0	38	38	Indeterminate	30 x 30	900
49	T66	AfGv-125	611792	4747430	1	15	16	Middle Woodland	50 x 50	2500
50	T51	AfGw-229	604826	4745058	1	12	13	Indeterminate	50 x 50	2500
51	T58	AfGx-770	589736	4750399	0	10	10	Indeterminate	40 x 40	1600
52	T58	AfGx-771	589726	4750195	1	7	8	Indeterminate	30 x 20	600
53	T58	AfGx-772	589794	4749961	1	5	6	Indeterminate	35 x 20	700

54	T60	AfGv-126	615444	4747529	n/a	n/a	n/a	20th century	100 x 60	6000
55	T65	AfGv-127	611441	4747446	1	3	4	Early Woodland	30 x 10	300
					Total # Artifacts		255		Total m2	23500

Stage 3 AA (the Archaeological Site Assessment) of the 10 identified sites will be conducted according to the 2011 *Standards and Guidelines for Consultant Archaeologists*. The following standards for Stage 3 AA work will apply:

- Before carrying out fieldwork, review all relevant reports of previous fieldwork on the archaeological site or for that property;
- Carry out the archaeological site assessment when weather and lighting conditions permit good visibility of all parts of the archaeological site. Do not carry out the archaeological site assessment when weather and lighting conditions (e.g., snow cover, frozen ground, excessive rain or drought, heavy fog) reduce the ability to identify and document any part of the archaeological site;
- Using GPS record the locations of the following:
  - a central fixed point within the archaeological site
  - a permanent datum that can be tied to a development map; and
- Provide representative photographs of all field conditions (e.g., ploughed field, pasture or woodlot, disturbances).

For each site located using pedestrian survey methodology the Stage 3 AA will be composed of two elements: a controlled surface pick-up (CSP) of artifacts on the surface of ploughed fields and test unit excavation. A CSP is a detailed survey of the ground surface in open fields that allows for precise recording of artifact locations and the collection of a representative sample of artifacts, including non-diagnostic artifacts. The following standards for Stage 3 AA CSP will apply:

- If ground surface visibility has decreased in the time between the Stage 2 survey and the Stage 3 CSP, ensure that the site area is re-cultivated and weathered;
- Accurately map the location of all artifacts on the ground surface using a total station, transit and tape, stadia rod, or GPS unit. Record and catalogue artifacts by their mapped location, recording any relevant information (*e.g.*, spatial relationship of diagnostics, artifact concentration areas). Tie this map to the general site GPS readings by recording a central point in the scatter;
- For very large and dense surface scatters, conduct a full CSP by grid units (maximum 5 m by 5 m units) over the archaeological site. Record and catalogue artifacts with their grid unit designation.
- Ensure that decisions regarding the type and number of artifacts collected strike a balance between gathering enough artifacts to document the archaeological site and leaving enough in place to relocate the site if required (*e.g.*, to conduct further assessment, define a protected area or conduct excavation);
- Collect all formal artifact types and diagnostic categories, including, for 19th century archaeological sites, all refined ceramic sherds; and
- Collect a representative sample of non-diagnostic artifacts, taking into consideration the archaeological site type, type and frequency of non-diagnostic artifacts, and the likelihood that further fieldwork will be required.

Based on the Stage 2 AA use of a grid unit CSP may need to be conducted at AfGx-768 and -769 due to their size and artifact densities. No other sites should require grid unit CSP.

The second component of the Stage 3 AA, test unit excavation, will be required at all identified archaeological sites. The purpose of the test unit excavation is to document the extent of buried artifacts, cultural features, soil stratigraphy and structures and to recover a representative sample of artifacts from across the archaeological site. The interval of the Stage 3 AA grid (of either 5 m or 10 m intervals) will be dependent on the age, type and nature of each identified

site. Specific guidelines for this interval are provides in the 2011 *Standards and Guidelines for Consultant Archaeologists.* The following standards for Stage 3 AA test unit excavation will apply:

- Excavate by 1 m square units;
- To determine the placement of test units, establish a grid on the site based on the permanent datum to at least the accuracy of transit and tape measurements. Placing test units in unmeasured, estimated locations is not acceptable;
- Excavate test units by hand. Do not use heavy machinery (*e.g.*, gas-powered augers, backhoes) except to remove sterile or recent fill covering confirmed, deeply buried or sealed archaeological sites;
- Excavate test units by systematic levels (stratigraphic or standardized);
- Excavate test units into the first 5 cm of subsoil, unless excavation uncovers a cultural feature;
- If test unit excavation uncovers a cultural feature, do not excavate into feature fill. Instead:
    - Record the exposed plan of the feature.
    - Place geotextile fabric over the unit floor and backfill the unit;
- Screen all excavated soil through mesh with an aperture of no greater than 6 mm. For confirmed single component Paleo-Indian and Early Archaic archaeological sites, for a sample of units (at least 20% of the total number of units in sandy soil and at least 10% of the total number of units in heavy soil), screen the entire contents of each unit through mesh with an aperture of no greater than 3 mm; and
- Unless otherwise specified collect and retain all artifacts. Record and catalogue them by their corresponding grid unit designation.

With the large number of Aboriginal archaeological sites documented through the Stage 2 AA it is expected that the involvement of First Nations in subsequent Stage 3 and/or Stage 4 AA will increase beyond the current level of the Stage 2 AA. Ongoing Aboriginal consultation will be part of the overall Project development, for archaeological resources and for other environmental components, and is a requirement of the 2010 *Standards and Guideline for Consultant Archaeologists*. It is recommended that Aboriginal Engagement be carried out as required by the Standards and Guidelines and as outlined in the bulletin *Engaging Aboriginal Communities in Archaeology.*

5.2 Resources Not Requiring Stage 3 Archaeological Assessment

A total of 8 artifact clusters (CL) and 13 isolated findspots (IF) were also documented at Project components during the 2011 Stage 2 AA (Table 5-2). None of these resources meet the criteria for sufficient Cultural heritage value or interest as per the 2011 *Standards and Guidelines for Consultant Archaeologists*. None of these resources require further archaeological assessment. Details regarding all collected formal tools or diagnostic artifacts can be found in the Artifact Catalogue in Appendix B.

Table 5-2 Archaeological Resources Not Requiring Further Assessment

GREP Site #	Location	Easting	Northing	# Tools	# Lithic Flakes	Total # Artifacts	Cultural Period	Dimensions (in m)	Figure #	Plate #	Comments
CL 51	T41	590284	4753931	0	5	5	Indeterminate	25 X 5	3-1	n/a	
CL 52	T58	589709	4750284	0	4	4	Indeterminate	35 x 20	3-3	n/a	
CL 53	C 3	614752	4747296	0	3	3	Indeterminate	25 x 10	3-6	n/a	
CL 54	T12	601773	4747147	0	5	5	Indeterminate	15 x 10	3-8	n/a	
CL 55	T12	601746	4747120	0	5	5	Indeterminate	20 x 6	3-8	n/a	
CL 56	C 3	615369	4747479	1	1	2	Early Woodland	5 x 5	3-6	1	Point 3-11
CL 57	T23	590859	4752883	0	3	3	Indeterminate	10 x 10	3-9	n/a	Test pits
CL 58	T23	590870	4752854	0	2	2	Indeterminate	10 x 10	3-9	n/a	Test pits
IF 71	T41	590256	4753947	0	1	1	Indeterminate	n/a	3-1	n/a	Isolated lithic flake
IF 72	T41	590265	4753914	0	1	1	Indeterminate	n/a	3-1	n/a	Isolated lithic flake
IF 73	T41	590387	4753818	1	0	1	Indeterminate	n/a	3-1	n/a	Point 3-10
IF 74	T65	611782	4747544	0	1	1	Indeterminate	n/a	3-2	n/a	Isolated lithic flake
IF 75	T30	607058	4750523	0	1	1	Indeterminate	n/a	3-5	n/a	Isolated lithic flake
IF 76	T58	589748	4750168	1	0	1	Poss. Late Archaic	n/a	3-3	1	Point 3-4
IF 77	T58	589750	4750126	1	1	1	Indeterminate	n/a	3-3	1	Point 3-5
IF 78	T58	589808	4749932	1	0	1	Indeterminate	n/a	3-3	1	Point 3-7
IF 79	T58	589825	4749865	1	0	1	Late Archaic	n/a	3-3	1	Point 3-8
IF 80	T58	589848	4749857	0	1	1	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 81	T58	589859	4749763	1	0	1	Late Archaic	n/a	3-3	1	Point 3-9
IF 82	T12	601681	4747121	0	1	1	Indeterminate	n/a	3-3	n/a	Isolated lithic flake
IF 83	T12	601744	4747143	0	1	1	Indeterminate	n/a	3-3	n/a	Isolated lithic flake

6 ADVICE ON COMPLIANCE WITH LEGISLATION

Stantec cautions that it is possible that deeply buried archaeological resources, could still exist within the limits of the proposed Project and that the following standard conditions will continue to apply:

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest , and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*;
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject 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*; and

- 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 CLOSURE

This report has been prepared for the sole benefit of SPK, and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and SPK. Any use which a third party makes of this report is the responsibility of such third party.

This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the Project Area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, 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

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

Stantec Consulting Ltd.

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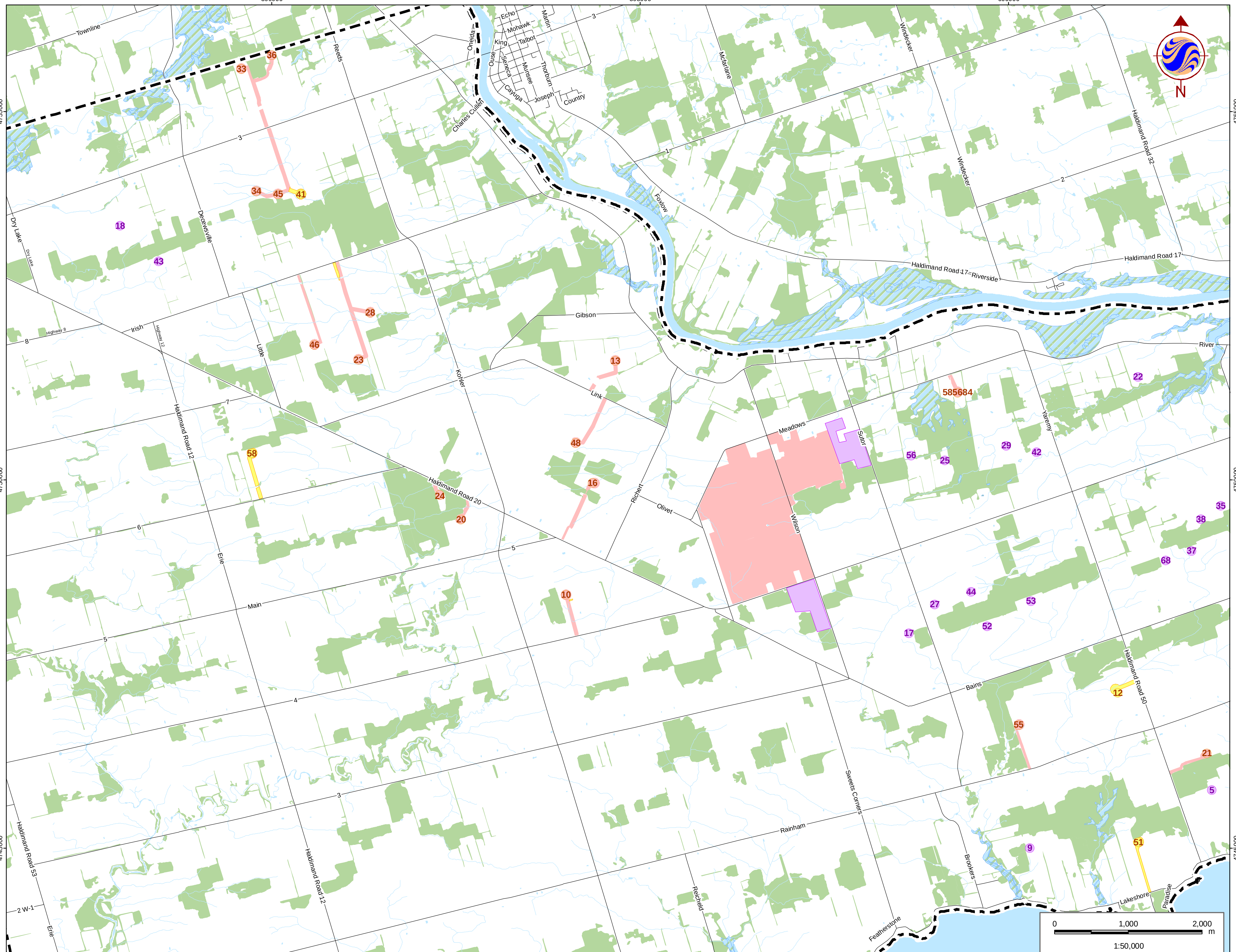
8.2 Personal Communications

Collin, Frank, General Manager, Dunnville Airport, Dunnville, Ontario. June 16, 2011.

9 MAPS



Legend

- Completed by Golder
- Completed by Stantec 2010
- Completed by Stantec 2011
- Watercourse
- Wetland
- Waterbody
- Woodlot
- Project Location

Map Area

Notes

1. Coordinate System: UTM Zone 17 NAD 83.
2. Data Sources: Ontario Ministry of Natural Resources © Queens Printer Ontario, 2009; © GREP, 2010; © Samsung, 2010.
3. Image Sources: © Google Earth Pro, 2010 (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

Stantec

July 2011
Project No. 161010624

Client/Project

SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

2-1A

Title

PROJECT AREA SHOWING LOCATIONS OF COMPLETED STAGE 2 ARCHAEOLOGICAL ASSESSMENT

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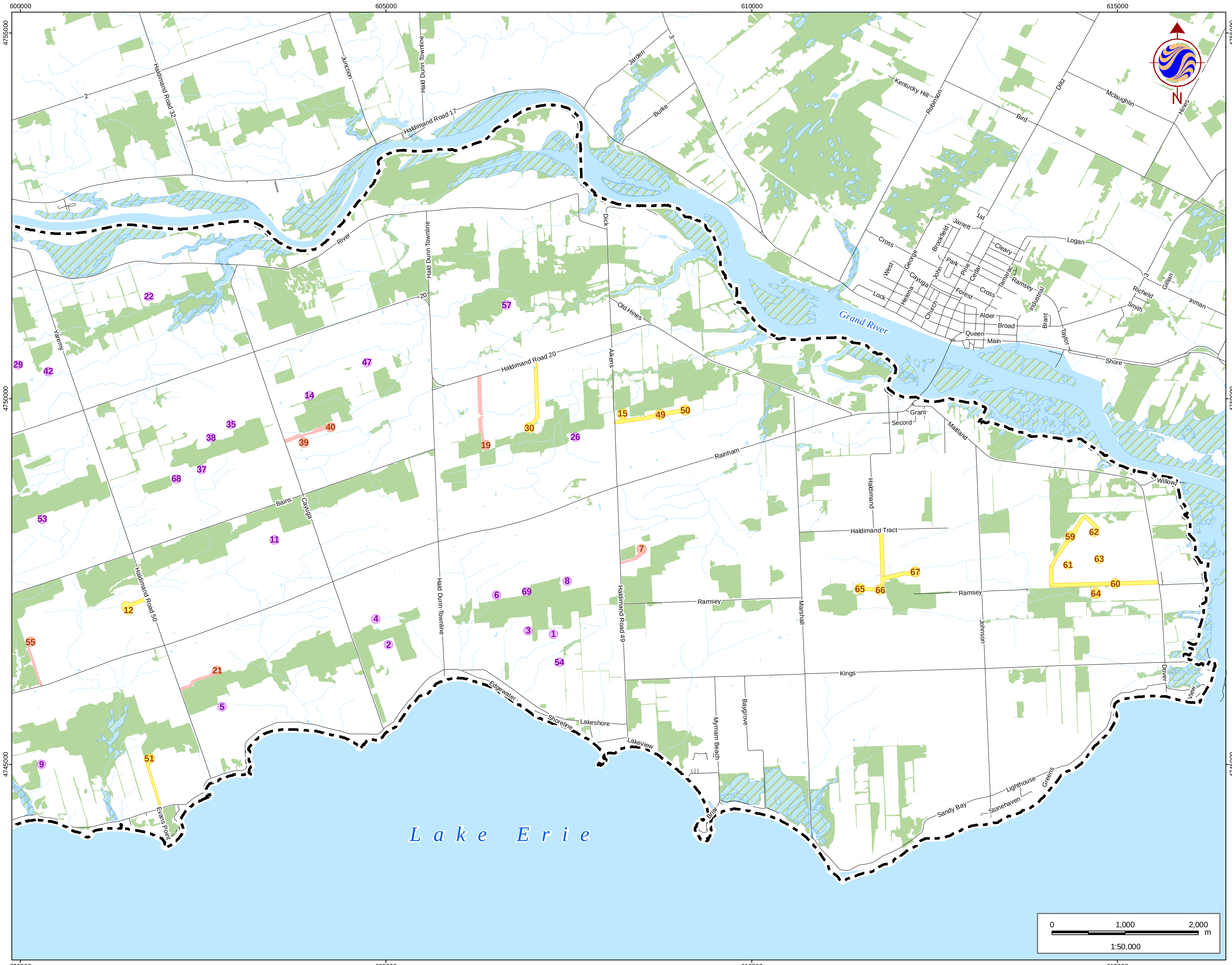

Lake Erie
Grand River
Haldimand Road 17
Haldimand Road 20
Haldimand Road 32
Haldimand Road 49
Haldimand Road 50
Hald Dunn Townline
Haldimand Tract
Rainham
Ramsey
Kings
Bains
Cayuga
Marshall
Johnson
Aikens
Dick
Old Hines
Edgewater
Shoreline
Lakeshore
Lakeview
Sandy Bay
Stonehaven
Lighthouse
Greens
Evans Point
Mymam Beach
Baygrove
Dover
Willow
Maitland
Secord
Grant
Shore
Logan
Kentucky Hill
Robinson
Bird
Diltz
Mclaughlin
Hines
Jarden
Burke
Junction
River
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Legend

- Completed by Golder
- Completed by Stantec 2010
- Completed by Stantec 2011
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Map Area

Notes

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Stantec

July 2011
Project No. 161010624

Client/Project

SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

2-1B

Title

PROJECT AREA SHOWING LOCATIONS OF COMPLETED STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Thursday, August 4, 2011 11:23:31 AM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\July Stage 2 Revisions\map_dft_overview_20110706_sr.mxd

590000

590500

4754000

4754000

Isolated Find
No. 71

Cluster
No. 51

Archaeology Site
No. 46

Isolated Find
No. 72

45

41

Isolated Find
No. 57

Archaeology Site
No. 47

Point 3-10

Isolated Find
No. 73

N

0 50 100 m

1:1,800

590000

590500

Thursday, August 4, 2011 11:53:09 AM
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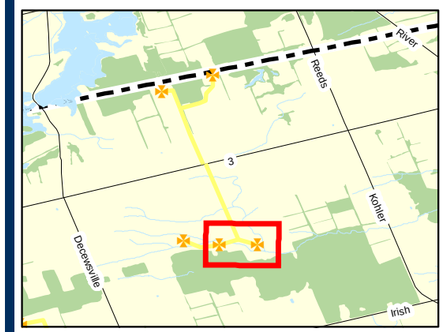
Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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GRAND RENEWABLE ENERGY PARK

Figure No.

4-1

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 41 & 45

611500

612000

4748000

4747500

Haldimand Tract

Archaeology Site
No. 48

Photo 1

Photo 3

Isolated Find
No. 74

67

Point 3-1

Archaeology Site
No. 55

65

Point 3-2

Archaeology Site
No. 49

66

Photo 2

N

0 50 100 m

1:3,500

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

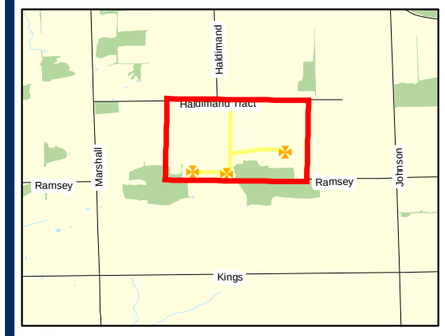

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Figure No.

4-2

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 65 - 67

Thursday, August 4, 2011 11:53:09 AM
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589500

590000

4750000

Archaeology Site No. 51

58

Cluster No. 52

Point 3-3

Archaeology Site No. 52

Point 3-4

Isolated Find No. 76

Point 3-5

Isolated Find No. 77

Archaeology Site No. 53

Point 3-6

Point 3-7

Isolated Find No. 78

Photo 5

Photo 4

Photo 6

Point 3-8

Isolated Find No. 79

Isolated Find No. 80

6

Point 3-9

Isolated Find No. 81

N

0 50 100 m

1:2,700

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

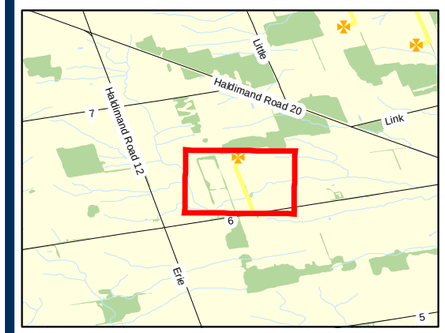

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Figure No.

4-3

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 58

Thursday, August 4, 2011 11:53:09 AM
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601500

602000

4745000

4744500

51

Archaeology Site
No. 50

Core 3-1

N

Lakeshore

0 50 100 m

1:3,000

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road

Notes

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Project No. 161010624

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Figure No.

4-4

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 51

Thursday, August 4, 2011 12:06:42 PM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\august stage II revisions\map_fnl_fig_samsung_arch_stage2_sr.mxd

606500 607000 607500

4750500

4750000

Haldimand Road 20

Isolated Find No. 75

N

Photo 7

30

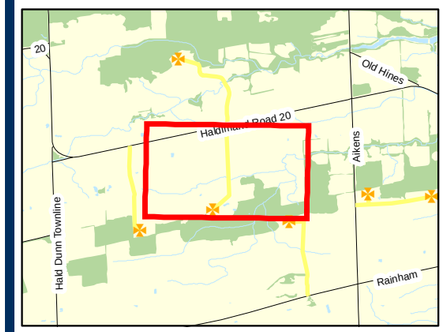
0 50 100 m

1:4,000

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

4-5

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 30

Thursday, August 4, 2011 12:06:42 PM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\august stage II revisions\map_fnl_fig_samsung_arch_stage2_sr.mxd

614000 614500 615000 615500

4748500 4748000 4747500

Photo 9
Photo 10
Photo 11
Photo 8
Photo 12
Photo 13
59
60
61
62
63
64
Archaeology Site No. 54
Cluster No. 56
Point 3-11
Cluster No. 53

Zoom to Archaeology Site No. 54

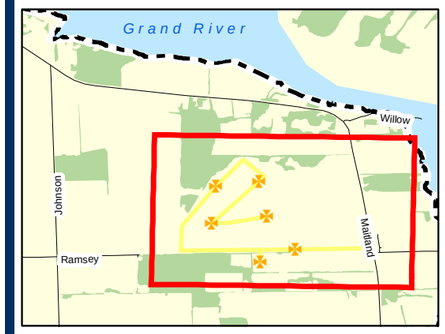
Photo 17
Foundation 1
Well
Foundation 2
Photo 16
Photo 15
Trough
Photo 14
Foundation 3

N

0 100 200 m
1:6,000

Legend

Artifact
- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Stage 3 Required
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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Project No. 161010624

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GRAND RENEWABLE ENERGY PARK

Figure No.
4-6

Title
SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 59 - 64

Wednesday, July 6, 2011 11:49:23 AM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\July Stage 2 Revisions\map_dft_samsung_arch_stage2_fig3-6_sr.mxd

608000
608500
609000
4750000
4749500

Aikens

Photo 18
Photo 19
Photo 20
Photo 21

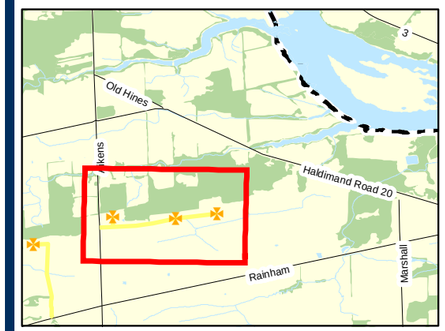
15
49
50

N

0 50 100 m
1:4,000

Legend

Artifact
- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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Project No. 161010624

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Figure No.
4-7

Title
SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 45, 49 & 50

Thursday, August 4, 2011 12:14:33 PM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\august stage II revisions\map_fnl_fig_samsung_arch_stage2_sr.mxd

601500

Isolated Find No. 64
Biface2-7
Isolated Find No. 65
Biface2-6
Isolated Find No. 83
Cluster No. 54
Isolated Find No. 82
Cluster No. 55
12
Haldimand Road 50

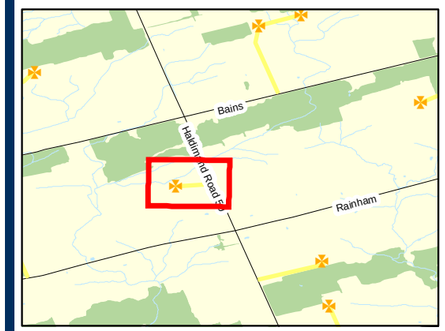
4747000

0 50 100 m
1:2,000

601500

Legend

Artifact
- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

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Project No. 161010624

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GRAND RENEWABLE ENERGY PARK

Figure No.
4-8

Title
SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 12

Thursday, August 4, 2011 12:15:58 PM
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590500

591000

4753000

4753000

Irish

Cluster
No. 58

Archaeology Site
No. 10

Cluster
No. 59

Photo 22

N

0 50 100 m

1:2,500

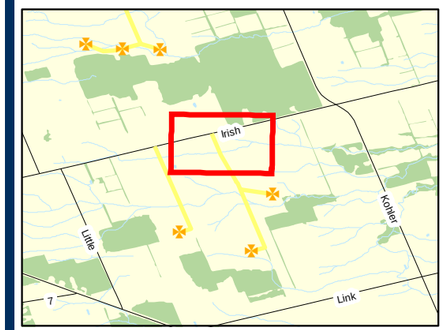
590500

591000

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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Project No. 161010624

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GRAND RENEWABLE ENERGY PARK

Figure No.

4-9

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINES 28 & 23

Thursday, August 4, 2011 12:19:07 PM
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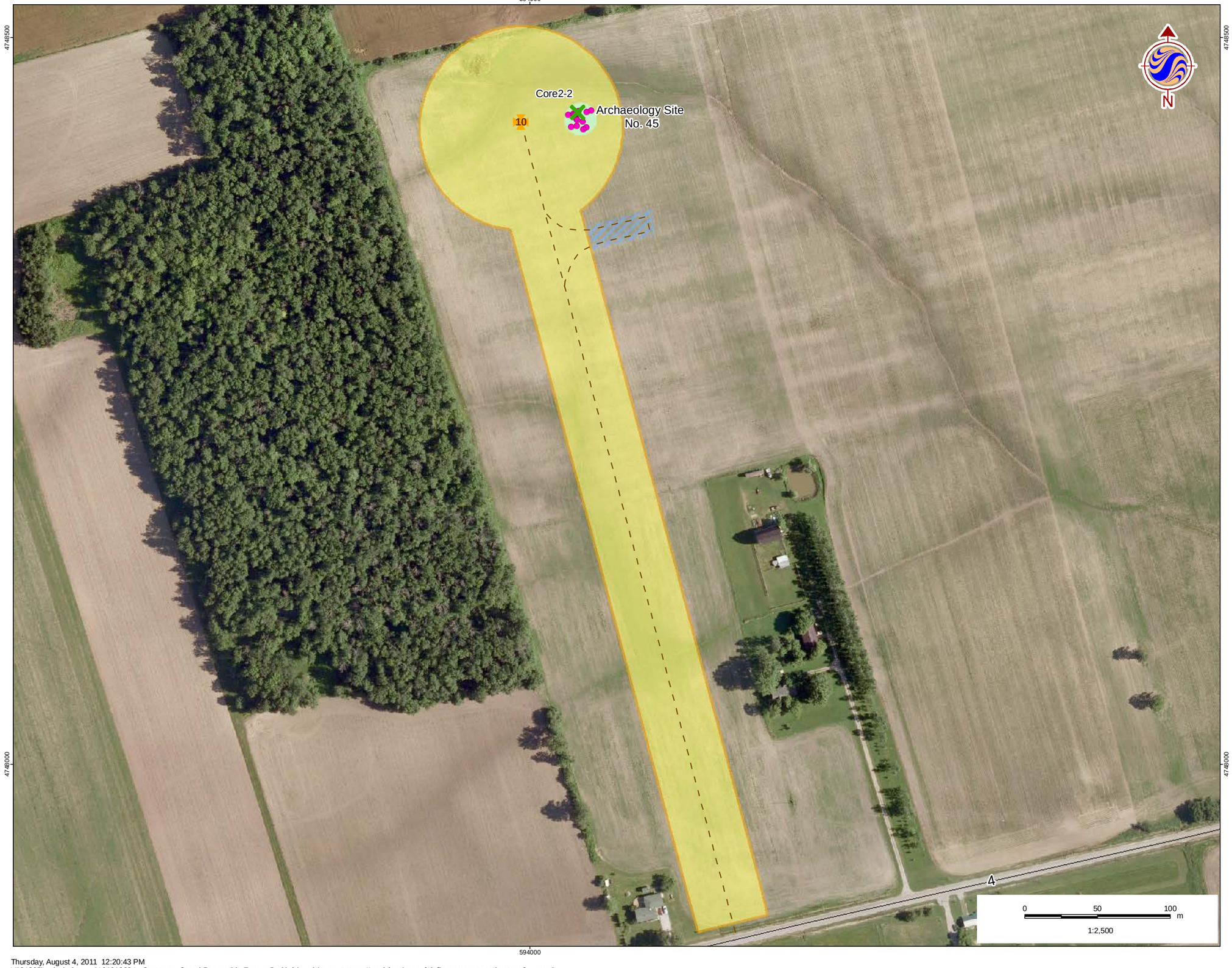
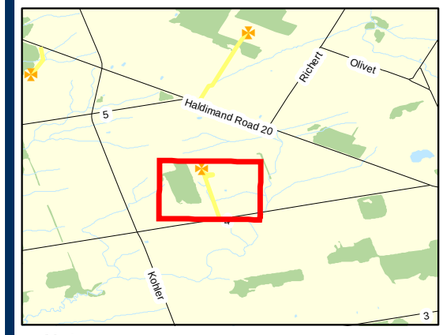


Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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GRAND RENEWABLE ENERGY PARK

Figure No.

4-10

Title

SURVEYED AREAS & ARTIFACT LOCATIONS - TURBINE 10

Thursday, August 4, 2011 12:20:43 PM
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10 IMAGES

Photo 1 - Unsurveyed Ditch Area Across Access Road to T65-67, Looking West

Photo 2 - Pedestrian Survey of T65-67 Access Road, Looking South

Photo 3 - Ditch West of T67, Looking North

Photo 4 - Watercourse Across Turbine Access Road 58, Looking West

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Photo 5 - Turbine 58 Access Road, Looking North From Watercourse

Photo 6 - Turbine 58 Access Road, Looking South From Watercourse to Road

Photo 7 - Looking Toward T30 From Access Road, Pond Outside of RoW to Left

Photo 8 - Looking East Along Ramsay Road RoW Between Turbine Complex 3 Access Road and T64

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Photo 9 - Looking South Across Airfield From North of Turbine 62

Photo 10 - Decaying Asphalt of Old Runway Under Weeds, South of Access Road for Turbine 61

Photo 11 - Concrete Under Weeds In Infield of Runways

Photo 12 - Showing Visibility of Ground Between Corn Rows, East End of Complex 3 Access Road, Looking West

Stantec

Photo 13 - Point 3-11, As Found During Pedestrian Survey of Complex 3 Access Road

Photo 14 - Foundation 1, Looking East From West End of Foundation

Photo 15 - Water Trough, Looking East From North Side of Foundation 1

Photo 16 - “Well” Feature Between Foundations at Incincerator

Photo 17 - Foundation 2, North-East Corner, Looking From South

Photo 18 - Looking South From Aikens Road to Knoll

Photo 19 - Looking South-West From T49 to Knoll

Photo 20- Looking East From T49 to T50

Photo 21- Wet Area, T50 Pad, Looking West

Photo 22 - Excavating Test Pits Along West Side of T23 and T26 Access Road

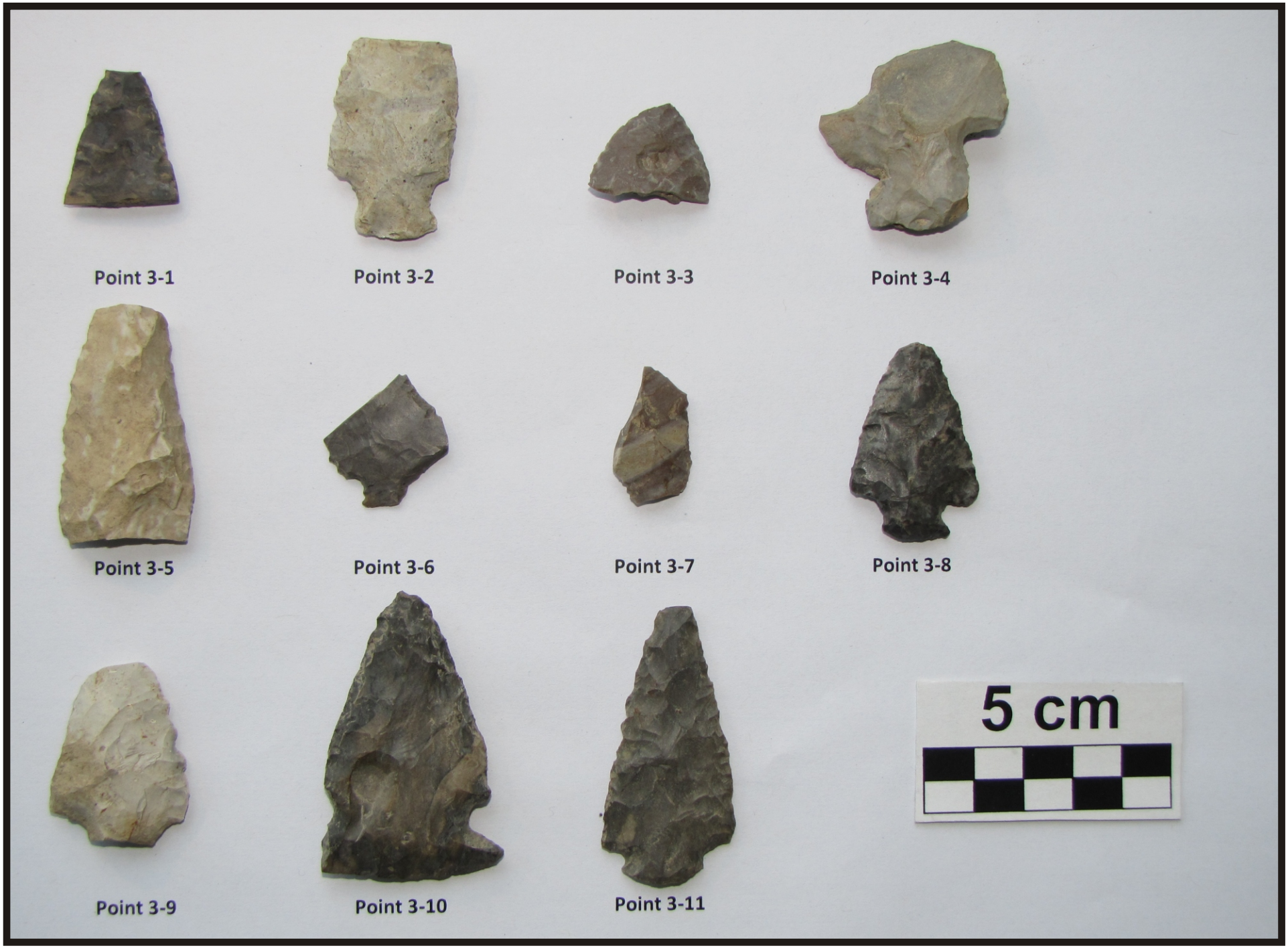

Plate 1 - Formal and Diagnostic Tools Collected During 2011 Stage 2 AA, GREP

APPENDIX A

Archaeological Sites Information and Mapping

GREP Site #	Location	Borden #	Easting	Northing	# Tools/ Diagnostics	# non-Tools	Total # Artifacts	Cultural Period	Dimensions (in m)	Site Area (m^2)
46	T41	AfGx-768	590371	4753914	0	160	160	Indeterminate	145 X 40	5800
47	T41	AfGx-769	590343	4753844	0	n/a	n/a	Indeterminate	65 x 40	2600
48	T66	AfGv-124	611796	4747848	0	38	38	Indeterminate	30 x 30	900
49	T66	AfGv-125	611792	4747430	1	15	16	Middle Woodland	50 x 50	2500
50	T51	AfGw-229	604826	4745058	1	12	13	Indeterminate	50 x 50	2500
51	T58	AfGx-770	589736	4750399	0	10	10	Indeterminate	40 x 40	1600
52	T58	AfGx-771	589726	4750195	1	7	8	Indeterminate	30 x 20	600
53	T58	AfGx-772	589794	4749961	1	5	6	Indeterminate	35 x 20	700
54	T60	AfGv-126	615444	4747529	n/a	n/a	n/a	20th century	100 x 60	6000
55	T65	AfGv-127	611441	4747446	1	3	4	Early Woodland	30 x 10	300
						Total # Artifacts	255		Total m2	23500

590000

590500

4754000

4754000

Isolated Find
No. 71

Cluster
No. 51

Archaeology Site
No. 46

Isolated Find
No. 72

45

41

Isolated Find
No. 57

Archaeology Site
No. 47

Point 3-10

Isolated Find
No. 73

N

0 50 100 m

1:1,800

590000

590500

Thursday, August 4, 2011 11:53:09 AM
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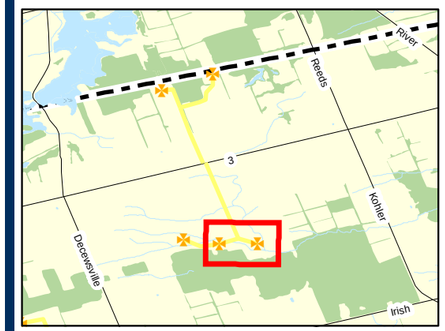
Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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GRAND RENEWABLE ENERGY PARK

Figure No.

APPENDIX A

Title

ARCHAEOLOGICAL SITE LOCATIONS - TURBINES 41 & 45

611500

612000

4748000

4747500

Haldimand Tract

Archaeology Site
No. 48

Photo 1

Photo 3

Isolated Find
No. 74

67

Point 3-1

Archaeology Site
No. 55

65

Point 3-2

Archaeology Site
No. 49

66

Photo 2

N

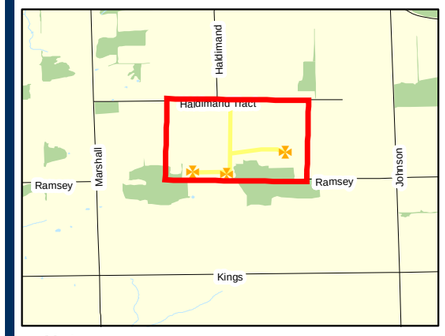
0 50 100 m

1:3,500

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



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Project No. 161010624

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Figure No.

APPENDIX A

Title

ARCHAEOLOGICAL SITE LOCATIONS - TURBINES 65 - 67

Thursday, August 4, 2011 11:53:09 AM
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589500

590000

4750000

Archaeology Site No. 51

58

Cluster No. 52

Point 3-3

Archaeology Site No. 52

Point 3-4

Isolated Find No. 76

Point 3-5

Isolated Find No. 77

Archaeology Site No. 53

Point 3-6

Point 3-7

Isolated Find No. 78

Photo 5

Photo 4

Photo 6

Point 3-8

Isolated Find No. 79

Isolated Find No. 80

Point 3-9

Isolated Find No. 81

6

0 50 100 m

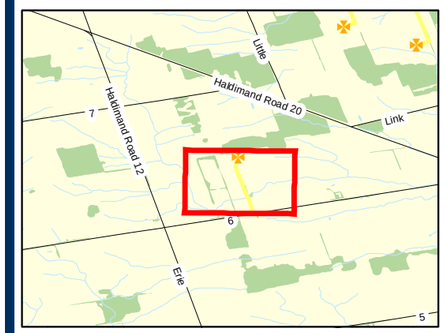
1:2,700

N

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

1. Coordinate System: UTM Zone 17 NAD 83.
2. Data Sources: Ontario Ministry of Natural Resources © Queens Printer Ontario, 2009; © GREP, 2011; © Samsung, 2011.
3. Image Sources: © Google Earth Pro, 2010 (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

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August 2011
Project No. 161010624

Client/Project

SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

APPENDIX A

Title

ARCHAEOLOGICAL SITE LOCATIONS - TURBINE 58

Thursday, August 4, 2011 11:53:09 AM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\august stage II revisions\map_fnl_fig_samsung_arch_stage2_sr.mxd

601500

602000

4745000

4744500

51

Archaeology Site
No. 50

Core 3-1

N

Lakeshore

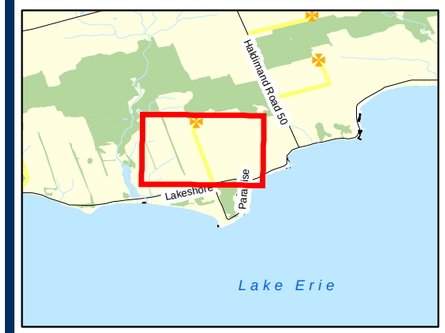
0 50 100 m

1:3,000

Legend

Artifact

- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Site
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

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2. Data Sources: Ontario Ministry of Natural Resources © Queens Printer Ontario, 2009; © GREP, 2011; © Samsung, 2011.
3. Image Sources: © Google Earth Pro, 2010 (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

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Project No. 161010624

Client/Project

SAMSUNG C & T
GRAND RENEWABLE ENERGY PARK

Figure No.

APPENDIX A

Title

ARCHAEOLOGICAL SITE LOCATION - TURBINE 51

Thursday, August 4, 2011 12:06:42 PM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\august stage II revisions\map_fnl_fig_samsung_arch_stage2_sr.mxd

614000 614500 615000 615500

4748500 4748000 4747500

Photo 9
Photo 10
Photo 11
Photo 8
Photo 12
Photo 13
59
60
61
62
63
64
Archaeology Site No. 54
Cluster No. 56
Point 3-11
Cluster No. 53

Zoom to Archaeology Site No. 54

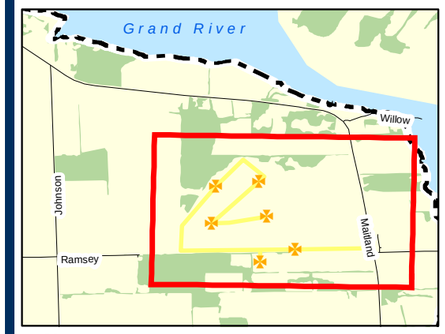
Photo 17
Foundation 1
Well
Foundation 2
Photo 16
Photo 15
Trough
Photo 14
Foundation 3

N

0 100 200 m
1:6,000

Legend

Artifact
- Point
- Core
- Flake
- Multiple Flakes
- Limit of Dense Flake Scatter
- Turbine Location & Number
- Photo Number & Direction
- Archaeology Stage 3 Required
- Cluster
- Isolated Find
- Test Pit Completed (5 m)
- Pedestrian Survey (5 m)
- Not Assessed
- Previously Disturbed
- Project Location
- Watercourse
- Access Road
- Road



Notes

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3. Image Sources: © Google Earth Pro, 2010 (© First Base Solutions, 2010; © TeleAtlas, 2010 -Imagery Date: April 7, 2006)

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Project No. 161010624

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Figure No.
APPENDIX A

Title
ARCHAEOLOGICAL SITE LOCATION - TURBINES 59 - 64

Wednesday, July 6, 2011 11:49:23 AM
V:\01225\active\other_pc\161010624 - Samsung, Grand Renewable Energy Park\gis\mxds\July Stage 2 Revisions\map_dft_samsung_arch_stage2_fig3-6_sr.mxd

APPENDIX B

Artifact Catalogues

AfGx-771 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGx-771.1	Point 3-3	14/04/2011	P	T58	1	Lithic, projectile point, point tip, indeterminate type or age, 18x 23 x 7 mm

AfGx-772 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGx-772.1	Point 3-6	14/04/2011	P	T58	1	Lithic, projectile point, basal end of broken point, corner notched or possibly eared form, finely made, indeterminate type or age, 25 x 24 x 4 mm, Bois Blanc formation chert

AfGv-127 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGv-127.1	Point 3-1	14/04/2011	P	T58	1	Lithic, projectile point, distal end of broken point, probably Early Woodland Meadowood type point, 26 x 22 x 4 mm, Bois Blanc formation chert

AfGv -125 Artifact Catalogue ***Stantec Consulting Ltd***

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
AfGv-125.1	Point 3-2	14/04/2011	P	T66	1	Lithic, projectile point, Middle Woodland period Saugeen type point 37 x 25 x 7 mm, Onondaga chert

Catalogue #	Survey ID	Survey Date	Survey Type	Location	# of Pieces	Description
161010624.43	Point 3-4	14/04/2011	P	T58	1	Lithic, projectile point, corner notched from, broken early in manufacture, indeterminate age, possibly Late Archaic Broad Point horizon, 38 x 38 x 10 mm, Bois Blanc formation chert
161010624.44	Point 3-5	14/04/2011	P	T58	1	Lithic, projectile point, medial section of narrow projectile point form, one side worked only, light Onondaga chert,46 x 26 x 12 mm
161010624.45	Point 3-7	14/04/2011	P	T58	1	Lithic, projectile point, lateral edge of broken point, small point form on Selkirk chert, 27 x 19 x 6 mm
161010624.46	Point 3-8	14/04/2011	P	T58	1	Lithic, projectile point, complete, corner notched Late Archaic Small Point horizon, 38 x 25 x 7 mm, Bois Blanc formation chert
161010624.47	Point 3-9	14/04/2011	P	T58	1	Lithic, projectile point, one side worked only, prob. corner notched Late Archaic Small Point horizon, 37 x 27 x 9 mm,
161010624.48	Point 3-10	15/04/2011	P	T41	1	Lithic, projectile point, Middle Archaic Brewerton side notched point, small portion of one basal ear missing, otherwise complete, 55 x 35 x 8 mm, Bois Blanc formation chert
161010624.49	Point 3-11	15/04/2011	P	Complex 3	1	Lithic, projectile point, Early Woodland Meadowood type point, nearly complete, 54 x 25 x 4 mm, Bois Blanc formation chert
161010624.50	Cluster 58	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.51	Cluster 58	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.52	Cluster 58	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Kettle Point chert
161010624.53	Cluster 59	15/06/2011	TP	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.54	Cluster 59	15/06/2011	TP	T23&T28	1	Lithic, flake, shatter, Onondaga chert
161010624.55	Cluster 58	28/08/2011	TU	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.56	Cluster 58	28/08/2011	TU	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.57	Cluster 58	28/08/2011	TU	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.58	Cluster 59	28/08/2011	TU	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.59	Cluster 59	28/08/2011	TU	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert
161010624.60	Cluster 59	28/08/2011	TU	T23&T28	1	Lithic, flake, thinning flake, Onondaga chert

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