Canada

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Canada-United States-Ontario-Michigan Border Transportation Partnership

Practical Alternatives Evaluation Working Paper

Archaeology

March 2008
(Revised April 2008)

Executive Summary

The Detroit River International Crossing (DRIC) Environmental Assessment Study is being conducted by a partnership of the federal, state and provincial governments in Canada and the United States in accordance with the requirements of the Canadian Environmental Assessment Act (CEAA), the Ontario Environmental Assessment Act (OEAA), and the U.S. National Environmental Policy Act (NEPA).

As part of the overall analysis of Practical Alternatives for the Detroit River International Crossing (DRIC) study, an analysis of potential archaeological impacts of the alternatives was undertaken. Archaeological considerations fall under the "Protection of Cultural Resources" evaluation factor. This is one of seven major factors being used throughout the DRIC study. The detailed assessment of potential archaeological implications is documented under the associated technical report.

A Stage 1 Archaeological Assessment which involves detailed documentary research of the archaeological and land use history of an area under investigation was initially conducted. This assessment also included an inspection visit to the area to gain first hand knowledge of the area's geography, topography, and current conditions. Considered together, this information was employed to determine and map the potential for archaeological resources within the study area.

A Stage 2 Archaeological Assessment consists of the systematic field investigation of areas determined to have archaeological potential. This assessment was conducted on properties in these areas of interest impacted by or in proximity to the Practical Alternatives. This assessment involves the documentation and inventory of archaeological resources within those areas.

The lands to be subject to archaeological assessment have been assigned survey priorities (Priorities 1 to 5, with 1 being the highest). The survey priorities are based on expert judgment with respect to potential for the presence of archaeological sites, the need to identify significant sites as soon as possible in areas common to all alternatives, and the need to gather sufficient information to contribute meaningfully to the evaluation of Practical Alternatives with respect to potential impact to archaeological sites and areas of archaeological potential. This report represents the initial findings of the Stage 2 Archaeological Assessment for the DRIC Environmental Assessment (EA) for Priority 1 to 5 lands, excluding lands where permission to enter (PTE) was not granted. Although the non-PTE lands still remain to be assessed, sufficient investigation of lands with the Area of Investigation has been undertaken to allow a comparative assessment to be made among the alternatives.

To date, 42 sites have been located within the Area of Investigation. All artifacts recovered from these sites were processed in Archaeological Services Inc.'s (ASI) laboratory. Data analysis includes the evaluation of each site with respect to those that require further investigation through additional surface or sub-surface testing in order to assess the cultural heritage value of the individual archaeological site.

Once a technically and environmentally preferred alternative is selected, a Stage 2 assessment is required for those lands that were not surveyed because permission to enter these properties is either unknown or denied. Furthermore, a Stage 3 site-specific assessment will be conducted on those sites determined to have cultural heritage potential or interest that will be disturbed or destroyed by the undertaking.

Preface

The Detroit River International Crossing (DRIC) Environmental Assessment Study is being conducted by a partnership of the federal, state and provincial governments in Canada and the United States in accordance with the requirements of the Canadian Environmental Assessment Act (CEAA), the Ontario Environmental Assessment Act (OEAA), and the U.S. National Environmental Policy Act (NEPA). In 2006, the Canadian and U.S. Study Teams completed an assessment of illustrative crossing, plaza and access road alternatives. This assessment is documented in two reports: *Generation and Assessment of Illustrative Alternatives Report - Draft (November 2006)* (Canadian side) and *Evaluation of Illustrative Alternatives Report (December 2006)* (U.S. side). The results of this assessment led to the identification of an Area of Continued Analysis (ACA) as shown in Exhibit 1.

Within the ACA, practical alternatives were developed for the crossings, plazas and access routes alternatives. The evaluation of practical crossing, plaza and access road alternatives is based on the following seven factors:

- Changes to Air Quality
- Protection of Community and Neighbourhood Characteristics
- Consistency with Existing and Planned Land Use
- Protection of Cultural Resources
- Protection of the Natural Environment
- Improvements to Regional Mobility
- Cost and Constructability

This report pertains to the Protection of Cultural Resources factor, specifically Archaeological Sites, and is one of several reports that will be used in support of the evaluation of practical alternatives and the selection of the technically and environmentally preferred alternative. This report will form a part of the environmental assessment documentation for this study.

Additional documentation pertaining to the evaluation of practical alternatives is available for viewing/downloading at the study website (www.partnershipborderstudy.com).

Practical Alternatives Evaluation Working Paper Archaeology

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1. INTRODUCTION

1.1 Background

The Canada-U.S. – Ontario-Michigan Border Transportation Partnership includes the transportation authorities from two federal governments and two provincial/state governments. The Federal Highway Administration (FHWA) and Transport Canada (TC) represent federal levels of government, while the Ontario Ministry of Transportation (MTO) and the Michigan Department of Transportation (MDOT) are the provincial and state agencies with roadway jurisdictions on either side of the border. The purpose of the Partnership is to improve the movement of people, goods, and services across the United States and Canada border within the region of Southeast Michigan and Southwestern Ontario.

This international transportation improvement project will require approvals from governments on both sides of the border. The Partnership has developed a coordinated process that will enable the joint selection of a recommended crossing location that meets the requirements of Canadian Environmental Assessment Act (CEAA), Ontario Environmental Assessment Act (OEAA), and National Environmental Policy Act (NEPA).

In accordance with the requirements of the CEAA, any change a project may cause in the environment and any such change's effects on, among other things, cultural heritage and structures, sites, or things of archaeological significance, must be considered together with an evaluation of the significance of these effects (*Canadian Environmental Assessment Act,* S.C. 1992, c.7, s.2 and s.16).

In accordance with the requirements of the OEAA, a description of the environment that may be affected by an undertaking must be prepared (*Environmental Assessment Act*, R.S.O. 1990, c.E.18, s.6.1) with the understanding that the environment includes, among other things, "the social, economic and cultural conditions that influence the life of humans or a community,...any building, structure, machine or other device or thing made by humans,...[and] any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities..." (*Environmental Assessment Act*, R.S.O. 1990, c.E.18, s.1). Together with this description of the environment, there must be descriptions of, among other things, the effects that might reasonably be caused and the actions that may be necessary to prevent, change, mitigate, or remedy these effects (*Environmental Assessment Act*, R.S.O. 1990, c.E.18, s.6.1).

In accordance with the policies of both Canada and Ontario, archaeological resources are considered to be aspects of the environment, the effects on which must be evaluated in fulfillment of the requirements of the CEAA and the OEAA. The Government of Ontario has also recognized the importance of conserving Ontario's archaeological resources in the *Ontario Heritage Act*, the *Planning Act*, the 2005 *Provincial Policy Statement* (providing "...policy direction on matters of provincial interest related to land use planning and development" [MMAH 2005: 1] pursuant to the Planning Act), and other documents. As well, several local governments in the Windsor area have officially recognized the desire to properly manage archaeological resources, and to ensure that archaeological concerns are addressed during the planning stages of development projects.

Archaeological assessment activities during planning, design, construction, and operation/ maintenance of the Detroit River International Crossing (DRIC) must conform to the legislation and policies—provincial and federal, as applicable—governing cultural heritage preservation and archaeological assessment/excavation in Ontario, and must be undertaken in accordance with the technical guidelines and requirements for archaeological assessment set out by the Ontario Ministry of Culture (MCL) (*Standards and Guidelines for Consultant Archaeologists*; MCL 2006). The MCL recognizes that all lands cannot be investigated and that the proponent must do what it can in order to obtain an accurate assessment, respecting individual property rights.

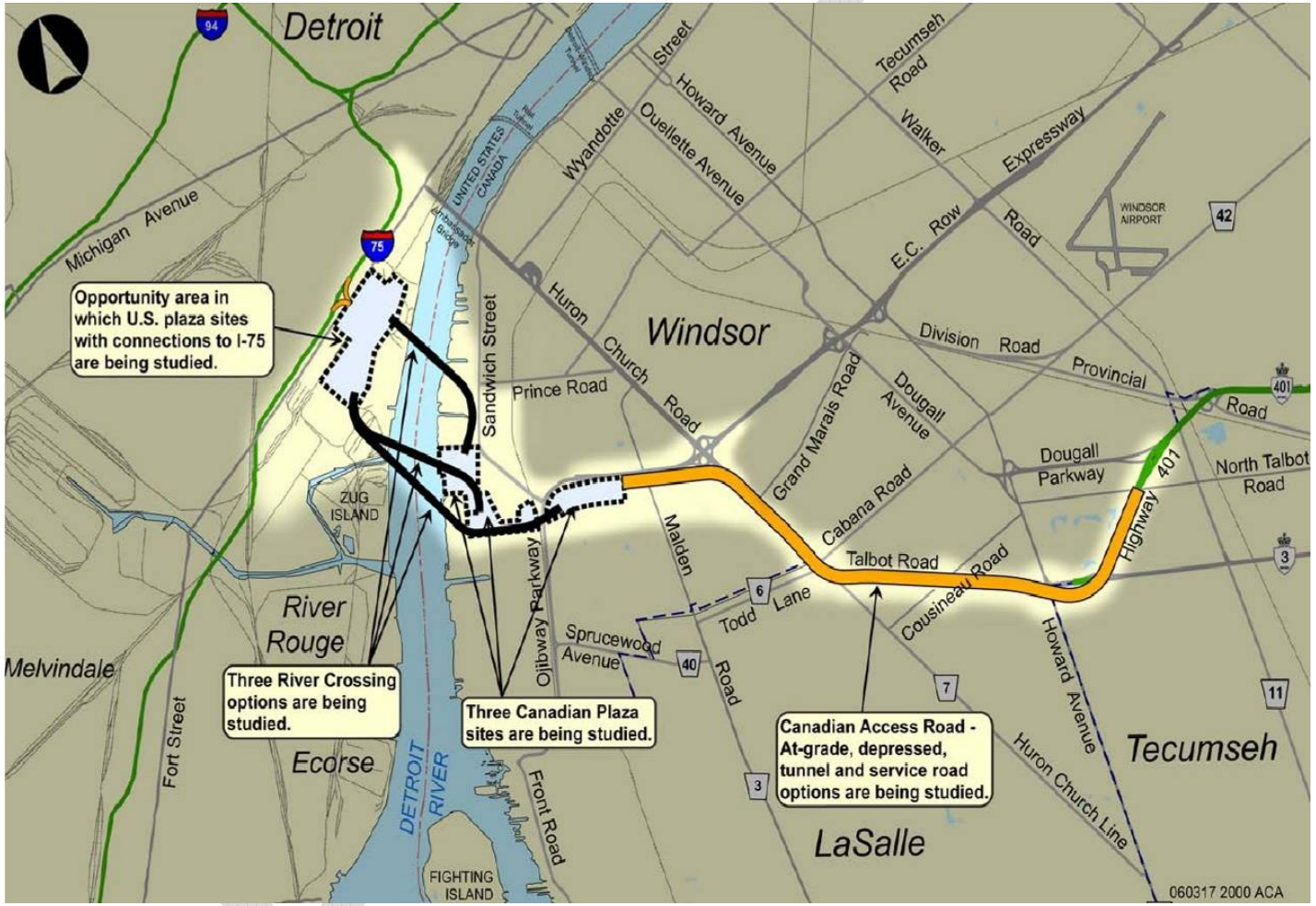
1.2 Purpose and Scope

Archaeological Services Inc. (ASI) was contracted by URS Canada Inc., Markham, to conduct an Archaeological Impact Assessment for the Detroit River International Crossing Study.

This archaeological assessment is being conducted under the project direction of Mr. Robert Pihl and Dr. Carla Parslow, ASI, under an archaeological licence (P057) issued to Mr. Pihl. This report was prepared by Dr. Carla Parslow (P243), Ms. Katie Bryant (P264) and Mr. Robert Pihl, with historical research undertaken by Dr. Colin McFarquhar, analysis and interpretation of historic artifacts by Ms. Eva MacDonald (P125), Stage 1 fieldwork conducted by Mr. Peter Carruthers (P163), and Stage 2 fieldwork directed by Dr. Tom Arnold (P006), Dr. Michael Brand (P160), Dr. Carla Parslow (P243), and Ms. Aleksandra Pradzynski (R190), supported by ten qualified field technicians. All artifact processing was undertaken in ASIs laboratory in Toronto.

This report presents the results of background research conducted within lands on the Canadian side of the Detroit river area as a whole (the Focused Analysis Area). It then describes the results of an intensive field investigation within significant portions of the Area of Continued Analysis (Exhibit 1). It finally provides an inventory of archaeological resources discovered within the properties assessed within the Area of Investigation.

EXHIBIT 1. KEY PLAN OF THE AREA OF CONTINUED ANALYSIS



2. DATA COLLECTION

The evaluation of archaeological resources undergoes up to four phases of study: Stage 1—Background Research, Stage 2—Property Assessment, Stage 3—Site Assessment, and Stage 4—Site Mitigation (MCL 2006). To date, ASI has completed for the DRIC Study a Stage 1 archaeological assessment—existing conditions report (ASI 2005a), a Stage 1 archaeological assessment report for the Area of Continued Analysis (ASI 2006), and a Stage 2 archaeological assessment within a more refined Area of Investigation.

2.1 Stage 1: Background Research

The Stage 1 archaeological assessment involves detailed documentary research of the archaeological and land use history of an area under investigation. This assessment also includes an inspection visit to the area to gain first hand knowledge of the area's geography, topography, and current conditions. Considered together, this information is employed to determine and map the potential for archaeological resources within the study area. The objective of the Stage 1 archaeological assessment is to evaluate the potential for archaeological remains within the Area of Continued Analysis.

2.1.1 Criteria Used in the Archaeological Potential Model for the Stage 1 Archaeological Assessment Area

Based on the MCLs criteria for determining archaeological potential (MCL 2006), the following areas are considered to have archaeological site potential, but these areas must be field reviewed to determine the integrity of the lands:

For Pre-Contact and Contact Aboriginal Archaeological Sites

- areas within 250 metres of a known archaeological site, where location information for the site is relatively precise;
- for sites with relatively imprecise location information, the area wherein such sites are likely to be located based on available descriptive information;
- areas within 300 metres of a primary water source such as a lakeshore, river, or large creek;
- areas within 300 metres of an ancient water source such a glacial shoreline, relict beach features, or a former watercourse as shown on historic mapping;
- areas within 200 metres of a secondary water source such as a stream, spring, wetland, swale, or drain;
- areas within 200 metres of the edge of the Ojibway Prairie;

For Euro-Canadian Archaeological Sites

- areas within 250 metres of a known archaeological site, where location information for the site is relatively precise;
- for sites with relatively imprecise location information, the area wherein such sites are likely to be located based on available descriptive information;
- designated heritage properties and easements;
- cemeteries
- core settlement areas (towns, villages) where it is possible to make a reliable determination based on analysis of period maps;
- areas within 100 metres of the centreline of existing roadways that follow the approximate alignment of historic roadways, or within 100 metres of the approximate alignment of no-longer-extant roadway corridors as determined by period map examination;
- areas within 250 metres of the likely location of historic features (dwellings, mills, churches, cemeteries, etc.) as shown on more precise period maps.

2.1.2 Summary of Archaeological Site Potential for the Area of Continued Analysis

Stage 1 archaeological assessment of the Area of Continued Analysis confirmed the presence of ten archaeological sites registered with the Province of Ontario, together with nine unregistered archaeological sites of relatively certain location but of uncertain nature, and two unregistered burial sites, the exact location of which are not known but for which a larger location area can be defined (ASI 2006). In addition, several unregistered archaeological sites of uncertain location, including burial sites, have been listed.

A ranking has been assigned to archaeological sites of known location, in order to provide a preliminary indication of site significance. The highest rank—Rank 1 (out of four)—indicates that the site is either a burial site or a site of national heritage significance. Four such sites—all burial sites—have been identified in the study area, including two sites for which the exact locations are unknown but for which larger areas of location can be defined. The Rank 1 sites are: the Lucier site (AbHs-1), the E. C. ROW site (AbHs-7), an area west of Maplewood Drive and north of Sprucewood Avenue wherein a Euro-Canadian burial site was identified, and the block bounded by Russell, Chippawa, Sandwich, and Brock Streets, wherein a burial was identified. As well, there may be a cemetery of unknown location associated with the Sandwich First Baptist Church on Peter Street at Prince Road, in the northwestern corner of the Area of Continued Analysis.

Field review determined that, within a large proportion of the assessment area, there will be an increased likelihood of localized areas of no archaeological potential due to intensive and extensive modern alteration of the landscape. Conversely, large portions of the Area of Continued Analysis, especially west of Huron Church Line in the Ojibway Prairie Complex area, have been characterized as predominately unaltered landscapes. In these areas, the model of archaeological potential presented in this report can be considered a more robust predictor of the presence of significant archaeological resources. It must be stressed, however, that certain alterations such as filling may result

in deep burial of archaeological sites rather than in damage to site integrity. As well, regardless of site integrity, the presence of human remains on an archaeological site is a matter of special significance and sensitivity.

As a result of the findings of this Stage 1 archaeological assessment, it was recommended to the DRIC consultant team, to The Partnership, to the affected municipalities, and to MCL, that potential impacts to archaeological resources be considered at each stage of alternatives selection, evaluation, and design during this environmental assessment, in accordance with the accepted Terms of Reference and MCL guidelines (MCL 2006).

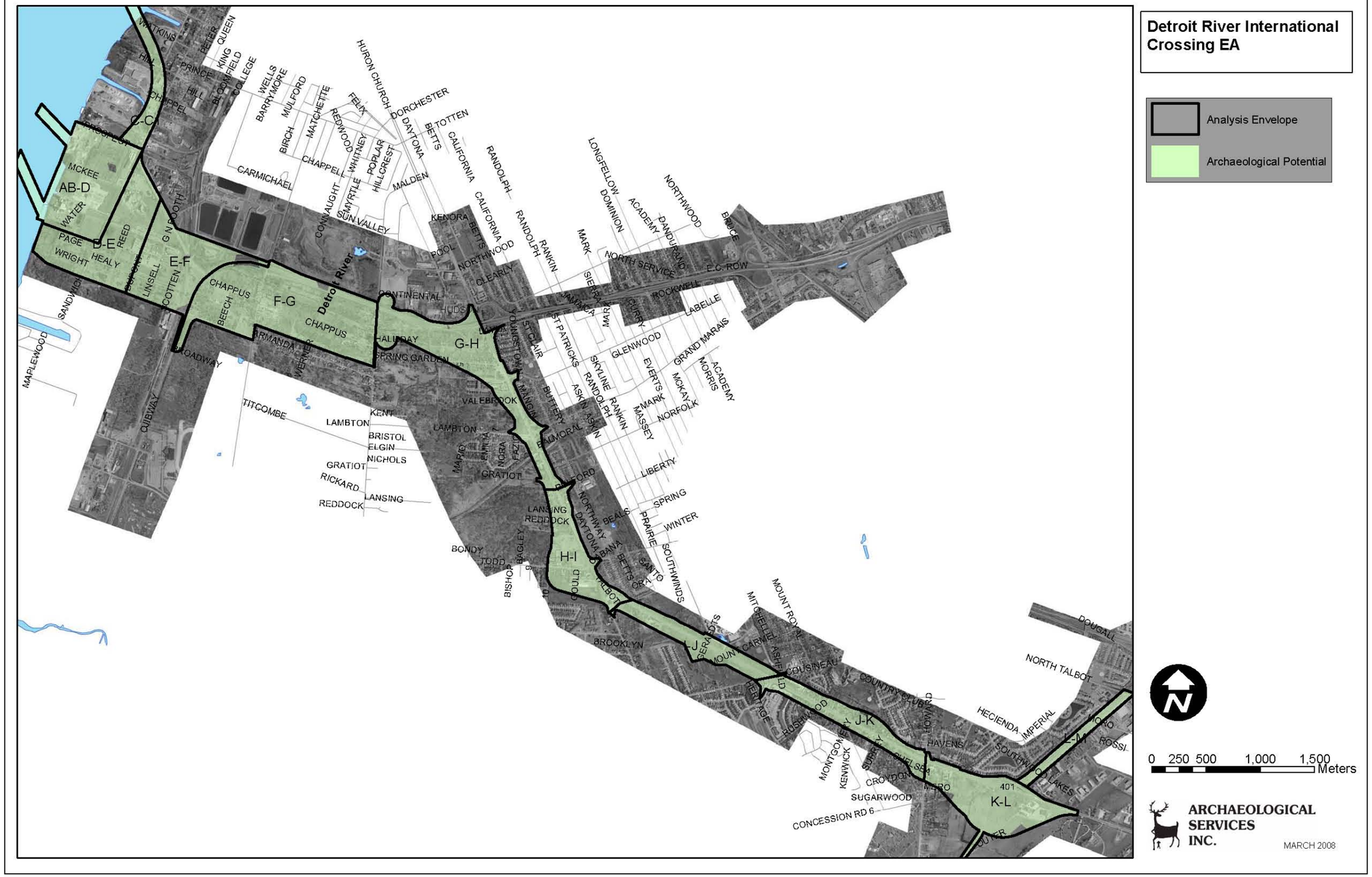
Furthermore, the typical recommendations that are generated as a result of a Stage 1 archaeological assessment, when archaeological potential is confirmed within a study area, are applicable to this project and are as follows:

1) Prior to any proposed disturbance within areas of archaeological site potential, a Stage 2 archaeological assessment should be conducted in accordance with Ontario Ministry of Culture guidelines, in order to identify any archaeological resources that may be present within the study area limits. Exhibit 2 illustrates the areas of archaeological site potential identified in the Stage 1 archaeological assessment for the initial Area of Continued Analysis (ASI 2006).

2) Should deeply buried archaeological remains be found during construction activities, the Heritage Operations Unit of the Ministry of Culture should be notified immediately.

3) In the event that human remains are encountered during construction, the proponent should immediately contact both the Ontario Ministry of Culture, and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ontario Ministry of Consumer and Business Services, Consumer Protection Branch at (416) 326-8404 or toll-free at 1-800-889-9768.

EXHIBIT 2. ARCHAEOLOGICAL SITE POTENTIAL WITHIN THE AREA OF INVESTIGATION



2.2 Stage 2: Property Assessment

This is a critical stage during the evaluation of archaeological resources as it provides an intensive examination of lands within the Area of Investigation (see Exhibit 2) as well as a preliminary determination of whether any of the resources identified might be of cultural heritage value or interest. (MCL 2006: Unit 1D: 2)

2.2.1 Methods for Stage 2 Archaeological Assessment

The Stage 2 archaeological assessment consists of the systematic field investigation of areas determined to have archaeological potential. This assessment was conducted on properties in these areas of interest impacted by, or in proximity to, the practical alternatives. This assessment involves the documentation and inventory of archaeological resources within those areas. Field methodology involves two types of survey: pedestrian and test pit.

Pedestrian survey is conducted on lands with open surface visibility (e.g. lands that are ploughed or with open, immature crops), and it involves the location, mapping and collecting of artifacts observed on the surface.

Test pit survey is conducted on lands with closed surface visibility (e.g. scrub farmland, windrows, lands within forest or valley floor, or with dense, mature crop), and it involves the location, mapping and collection of artifacts by shovel test pitting. The soil fills of all test pits are screened through 6-millimetre mesh to facilitate the recovery of artifactual remains and all test pits are back-filled.

2.2.2 Survey Priorities for Stage 2 Archaeological Assessment

The lands subject to archaeological assessment have been assigned survey priorities (Priorities 1 to 5, with 1 being the highest), excluding lands where PTE was not granted. The survey priorities are based on expert judgment with respect to potential for the presence of archaeological sites, the need to identify significant sites as soon as possible in areas common to all alternatives, and the need to gather sufficient information to contribute meaningfully to the evaluation of practical alternatives with respect to potential impact to archaeological sites and areas of archaeological potential.

The survey priority levels were based on the following assumptions:

1) No assessment will be done north of the E.C. Row right-of-way, north of Chappus Street to the west of Ojibway Parkway, or west of Sandwich Street until further research has been conducted into development history;

2) Areas of very significant archaeological sites (i.e., the Huron Church Line / E.C. Row intersection) should be examined first;

3) Areas where timing is a factor must be bumped up in priority where appropriate;

4) Certain types of Aboriginal archaeological sites could take significant time to address properly, or could present a significant challenge to the siting of proposed infrastructure;

5) Areas where there is no real choice of alternatives—i.e., areas common to all alternatives—should be assessed as soon as possible to provide the maximum time window for addressing any sites that may be identified;

6) In light of Assumptions 4 and 5, it can be assumed that lands with potential for the presence of Aboriginal archaeological sites, in areas relatively common to all alternatives, must be reviewed as soon as possible to find any sites that may be present;

7) Areas that represent the real choice between practical alternatives (e.g., plazas and crossings) should be tested prior to the selection of the technically preferred alternative; and

8) Areas wherein there is a potentially wide range of possible routings (i.e., connections to existing routes at the eastern end of the Area of Investigation would be best assessed prior to the start of Concept Design, in order to allow for any minor design changes that may be necessitated by the identification of a significant archaeological site.

Based on these assumptions, a 5-step priority scale was applied to the properties. The priority areas were divided based on expert judgment rather than on a rigid definition of each level of the scale.

Priority 1 lands are those lands in close proximity to the E.C. Row and Lucier sites at the intersection of Huron Church and E.C. Row, as well as two large ploughed properties at the 401 which, during the summer of 2006, were at optimum surface conditions (minimal crop growth) for pedestrian survey.

Priority 2 lands are lands with potential for the presence of pre-contact archaeological sites in core areas common to all alternatives.

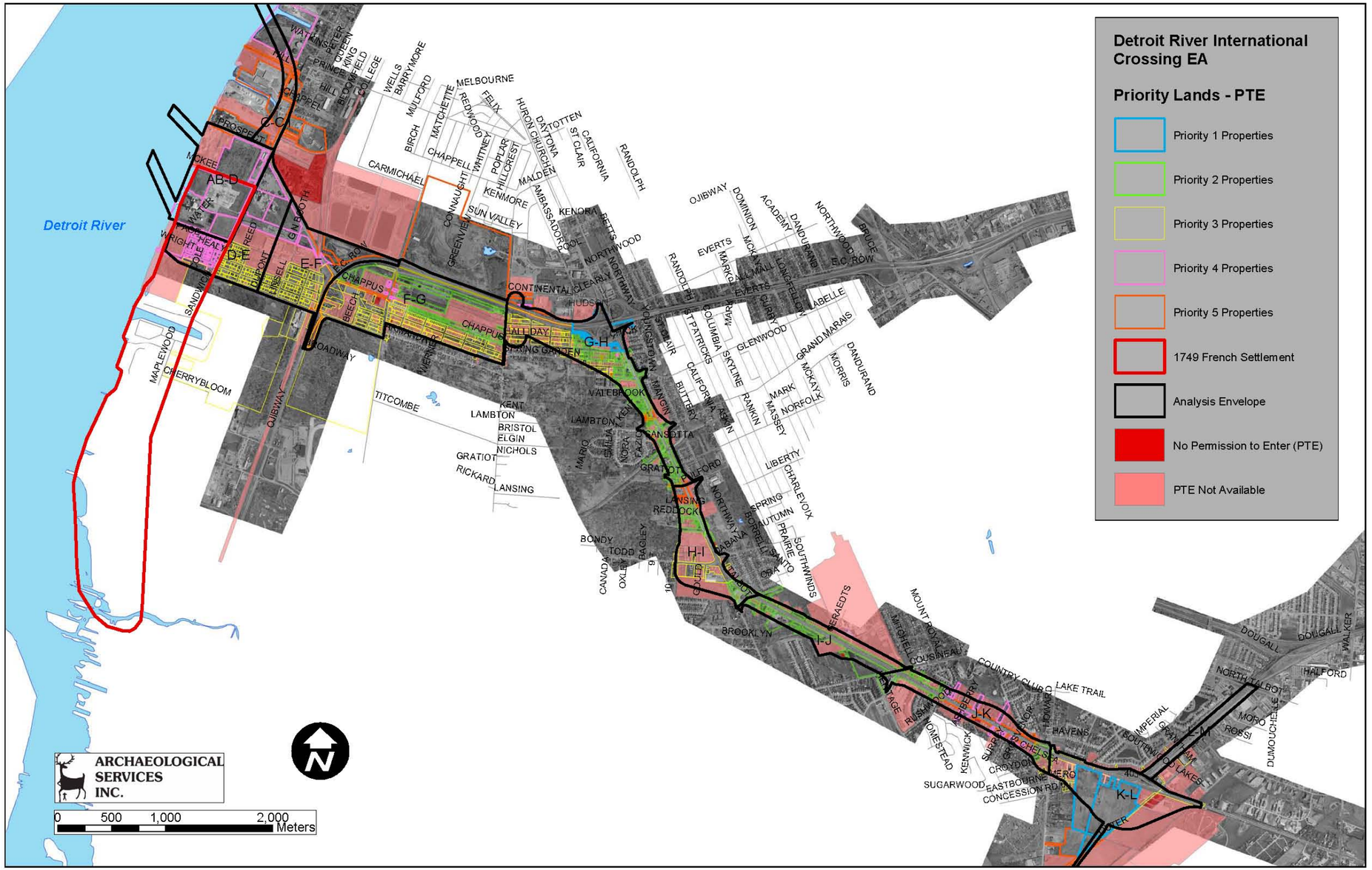
Priority 3 lands are those lands which can be surveyed without further prior research and which will enable archaeology to be considered meaningfully during the comparative evaluation of practical alternatives (i.e., areas that represent the real choice between practical alternatives).

Priority 4 lands are generally located in the western portion of the area of investigation, plaza and crossing areas which required additional background historical/map research prior to the start of field survey, due to the long history and intensive land use of the properties. In the eastern portion of the area of investigation, Priority 4 lands were identified that have a potentially higher likelihood of site integrity (relative to Priority 5) that were not assigned to Priority 1, 2, or 3.

Priority 5 lands are, for the most part, those with a lower potential for archaeological site integrity, together with some additional marginal lands in the eastern portion of the area of investigation.

Exhibit 3 illustrates the locations of Priority 1 through 5 lands in the Area of Investigation.

EXHIBIT 3. PRIORITY 1 THROUGH 5 LANDS IDENTIFIED FOR STAGE 2 ARCHAEOLOGICAL ASSESSMENT



2.2.3 Data Collection – Access Roads

To date, 100% of all Priority 1 lands in the Area of Investigation have been assessed. There are no outstanding properties that require permission to enter (PTE) for Priority 1.

One hundred percent of all Priority 2 lands with PTE have been surveyed. Of the remaining Priority 2 lands identified, PTE has either not been granted or the PTE form was not returned.

Ninety-eight percent of all Priority 3 lands with PTE have been surveyed. Of the remaining Priority 3 lands identified, PTE has either not been granted or the PTE form was not returned.

Ninety-nine percent of all Priority 4 lands with PTE have been surveyed. Of the remaining Priority 4 lands identified, PTE has either not been granted or the PTE form was not returned.

Ninety-nine percent of all Priority 5 lands with PTE have been surveyed. Of the remaining Priority 5 lands identified, PTE has either not been granted or the PTE form was not returned.

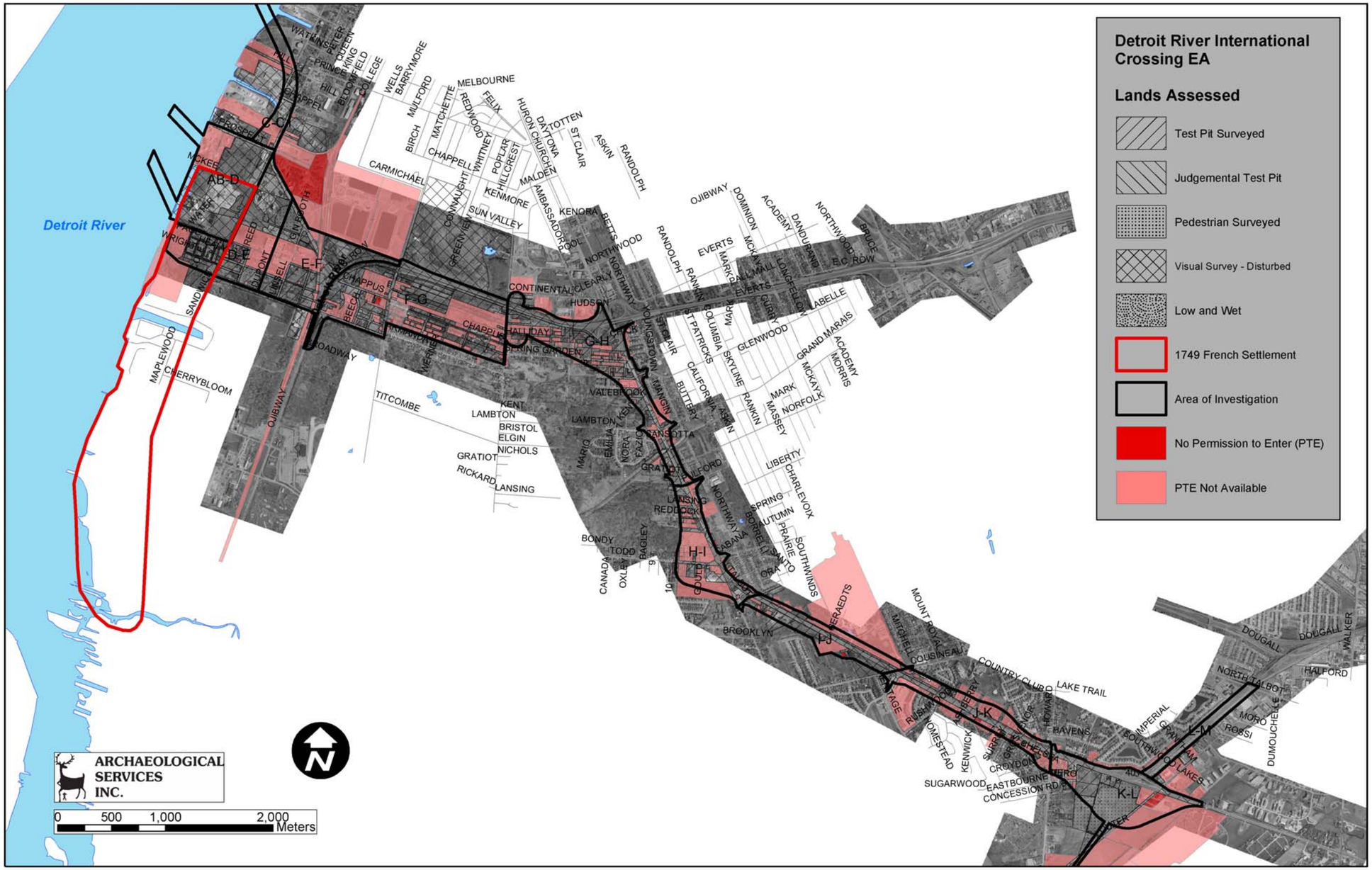
Although all Priority 2 to 5 lands have not been assessed, sufficient area has been investigated to allow ASI to generally characterize the alternatives for comparison purposes. Exhibit 4 illustrates the location of Priority 1 through 5 lands, as well as the method of survey.

Appendix A contains a series of maps illustrating the location of all Priority 1 through 5 lands assessed within the Area of Investigation during the 2006 and 2007 field seasons. The maps are arranged by survey priority, and each depicts the location of the survey areas assessed and by which survey methodology, the location of all archaeological sites discovered, and the location and orientation of representative field photographs taken during the survey.

Appendix B includes the representative field photographs illustrated in Appendix A. The photographs are arranged by survey priority and map sequence.

Appendix C includes a description of all sites located during the Stage 2 field survey. Results are arranged by survey priority and map sequence.

EXHIBIT 4. PRIORITY 1 THROUGH 5 LANDS ASSESSED BY METHOD OF SURVEY



2.2.4 Data Collection – Plazas and Crossings

Non-field investigation of Priority 4 and 5 lands in the western portion of the Area of Investigation has included a review of the historical information available and a further review of the City of Windsor Archaeological Master Plan (CRMGL 2005). Historical information reveals that the shore of the Detroit River has a long history of human occupation. Euro-Canadian occupational history is well documented from the mid-eighteenth century to present times.

The first detailed French map of the south (Ontario) shore was not produced until the mid-eighteenth century. Entitled "*Carte de la Riviere Du Detroit*", this map was published by Chaussegros De Lery in Paris in 1749. It showed the first "nouvelle habitation française de 1749" with the land divided along the river into the long, narrow "seigneurial" allotments characteristic of the French *ancien regime*. A few farms were somewhat larger, such as a tract of approximately 700 metres in width occupied by Mr. Le Chevalier de Longueuil. The main area of the "nouvelle habitation" was situated along the Detroit River south of the area that would later become the old town of Sandwich. This area was known as Petite Côte.

According to the City of Windsor Archaeological Master Plan (CRMGL 2005:2-16), "European settlement on the south shore of the Detroit River began in 1749 when the governor at Quebec sponsored the movement of farming families to the area in order to promote Detroit as a granary for more distant outposts." The settlers initially took up lots fronted onto the river in the Petite Côte area between the communities of Sandwich and Turkey Creek. Within a few years, this settlement had extended south well past Turkey Creek.

After the British Conquest of 1760 and after the American Revolutionary War, British names began to appear on landowners lists of the *circa* 1800 survey. Not until the nineteenth century were the inland areas of the township surveyed, using the standard British grid system where possible.

According to the City of Windsor Archaeological Master Plan (CRMGL 2005:2-17), although most of the French farmstead sites lie within areas that have undergone extensive nineteenth century development, none of them have ever been properly examined as archaeological sites. Furthermore, communities such as Brighton Beach, Ojibway and LaSalle may retain the most potential. As Windsor's French settlement is the earliest of its kind in Ontario, the search for intact eighteenth century French sites, which may include the remains of building footings, foundations, and the remnants of palisades, is of potentially significant heritage value and interest.

Exhibit 5 illustrates the location of the eighteenth century French Settlement in relation to the Area of Investigation, the identified Priority 2, 3, 4 and 5 lands, lands that have been assessed in relation to the general location of the plaza and crossing alternatives, and areas identified by ASI as having no potential due to disturbance. In addition, a series of later historical maps (1877 Walling Historical Atlas; the 1905 McPhillips City of Windsor Map; and the 1967 Pathfinder, Metropolitan Windsor Map) are used to illustrate the changing landscape from the 1870s to 1960s within Priority 4 and 5 lands in the western portion of the Area of Investigation (Exhibits 6 to 8).

Further investigation of the eighteenth century French settlement area, where it intersects with the Priority 3 and 4 lands, has narrowed the area of interest by confirming additional areas lacking archaeological integrity and subjecting residual areas to Stage 2 test-pit survey. The Area of Investigation is bounded in the north by McKee Avenue (now the northern limit of the Brighton

Beach Generating Station), in the west by the Detroit River, in the south by the limits of the Area of Continued Analysis (essentially the westerly extension of Broadway Boulevard), and in the east by Sandwich Street. The land immediately to the south of this area has been designated as the Ojibway Industrial Park by the City of Windsor (Dillon *et al*. 2007: 14).

The northern half of this area, north of Chappus Street, is the Brighton Beach generating station. Opened in 2004, this facility was a joint project by ATCO Power Canada Ltd. and Ontario Power Generation Inc. to re-develop the former J. Clark Keith power plant site (ATCO 2004). The J. Clark Keith power plant was originally a coal-fired plant that began production in 1951 (OPG 2007). Eventually refitted to burn natural gas, the plant was closed in 1984 and demolished in 1997 (ATCO 2004). In 1990, Hugh Daechsel, then with the Cataraqui Archaeological Research Foundation, carried out a "Phase 1 Evaluation of Heritage and Archaeological Resources" of the J. Clark Keith power plant site, concluding that the property was very disturbed and did not warrant any further archaeological investigation. A 1955 aerial photograph of the site (Plate 1) illustrates the original extent of disturbance on the property. When compared with the current extent of disturbance, associated with the Brighton Beach generating station (Exhibit 9), it becomes clear that only two small areas may have retained any archaeological integrity, and these were subjected to test pit survey, as illustrated in Exhibit 9. No archaeological remains were encountered in these areas.

South of Chappus Street, a combination of judgmental and systematic test pit survey has been carried out within the precincts of a former residential subdivision that also appears in the 1955 aerial photograph of the area (Plate 1). No archaeological remains were encountered therein. However, systematic test pit survey to the south of this subdivision has yielded archaeological remains, as illustrated in Exhibit 13 and documented in Appendix A, Map 20, and detailed in Appendix C. Designated sites H16 and H17— together with nearby site H18 — yielded mid-nineteenth century artifacts that have been tentatively attributed to farmsteads established in that area *circa* 1861.

The remainder of the French settlement area, located south of Chappus Street and west of Water Street, comprises an area where there had also once been some modern residential occupation, as illustrated in Plate 1. Situated along the waterfront, this area exhibits the highest potential for both eighteenth and nineteenth century occupation, as suggested by early maps (see Exhibit 6). Currently, permissions to enter have not been received for this area.

Plate 1: J. Clark Keith Power Station and Environs, 1955 (Ontario Dept. Lands & Forests 1955)

EXHIBIT 5. LOCATION OF 1749 PETITE CÔTE FRENCH SETTLEMENT IN RELATION TO AREAS DEFINED AS HAVING NO POTENTIAL IN THE PLAZA AND CROSSING ALTERNATIVE LOCATIONS

EXHIBIT 6. EXCERPT OF 1877 WALLING ATLAS WITH WESTERN PORTION OF AREA OF INVESTIGATION

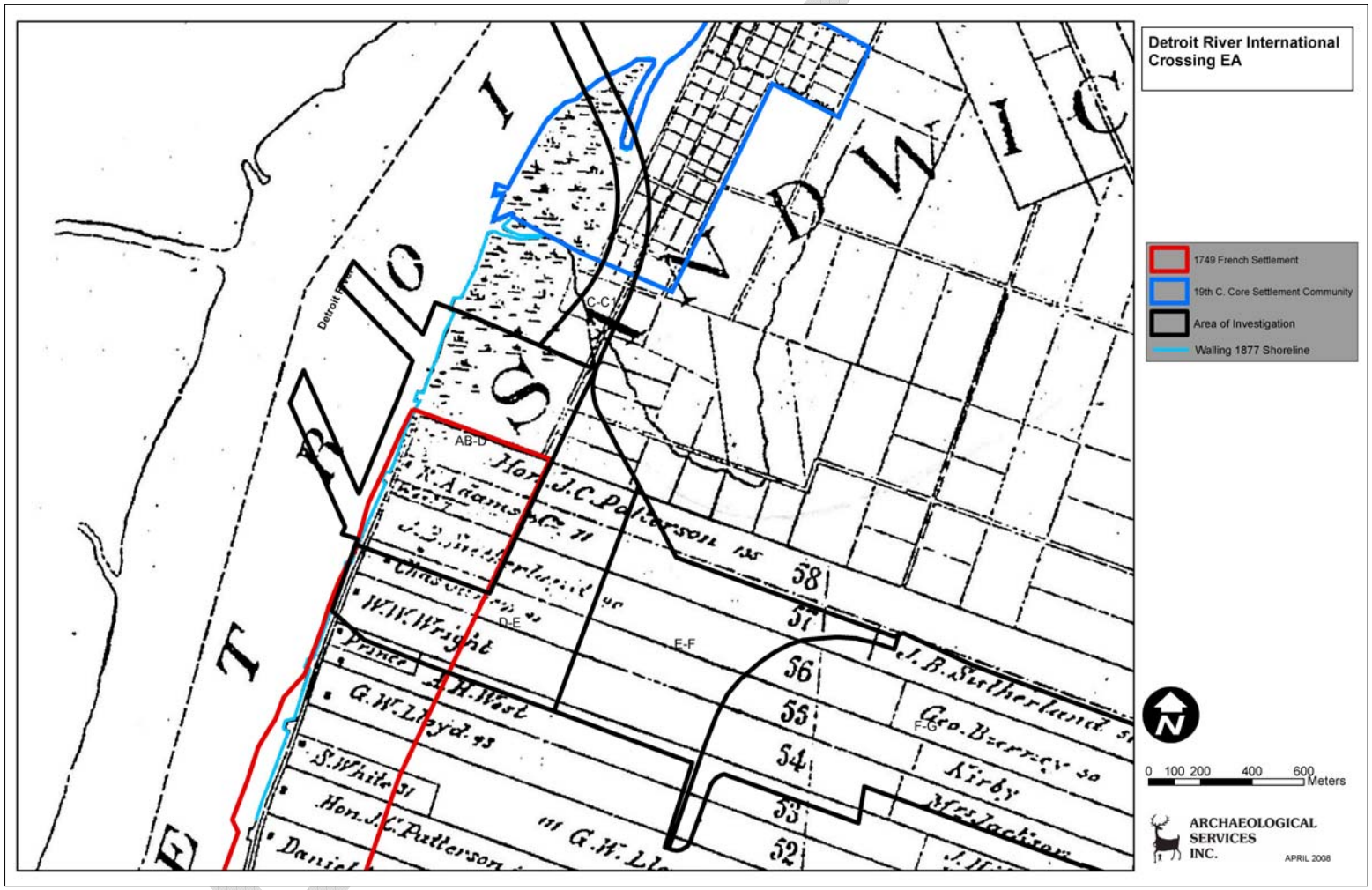


EXHIBIT 7. EXCERPT OF 1905 MCPHILLIPS MAP WITH WESTERN PORTION OF AREA OF INVESTIGATION

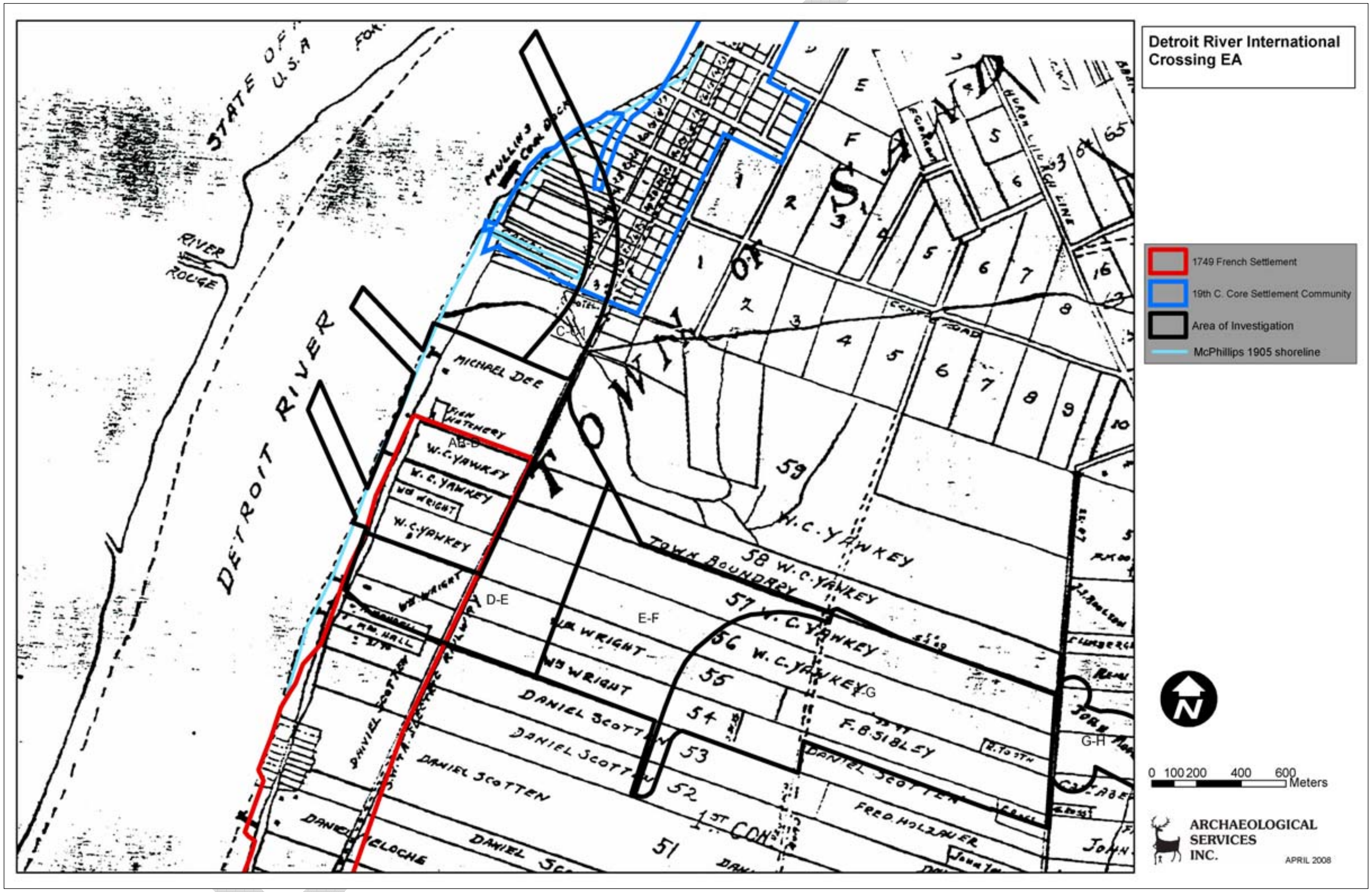


EXHIBIT 8. EXCERPT OF 1967 PATHFINDER METRO WINDSOR MAP WITH WESTERN PORTION OF AREA OF INVESTIGATION

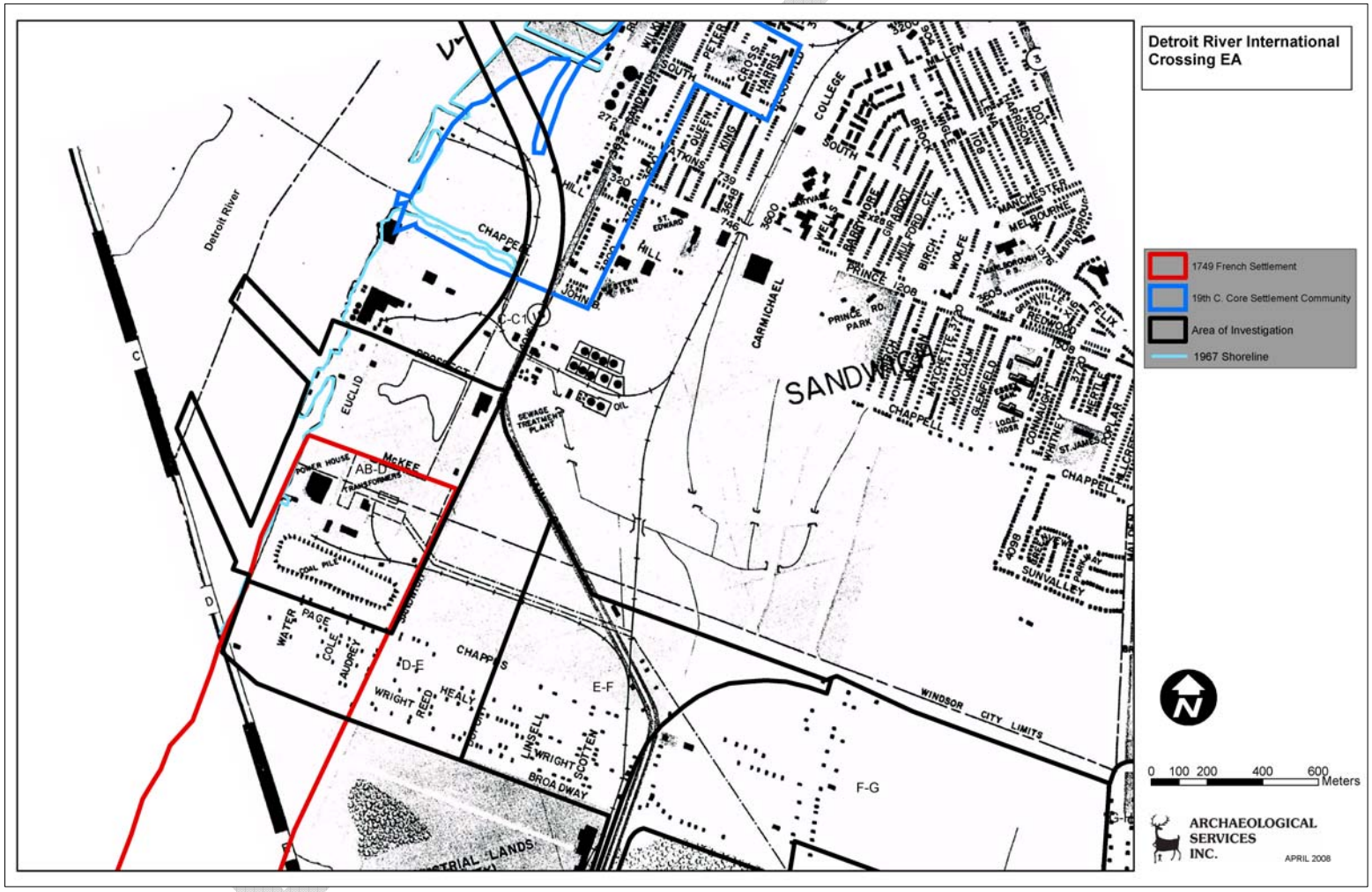
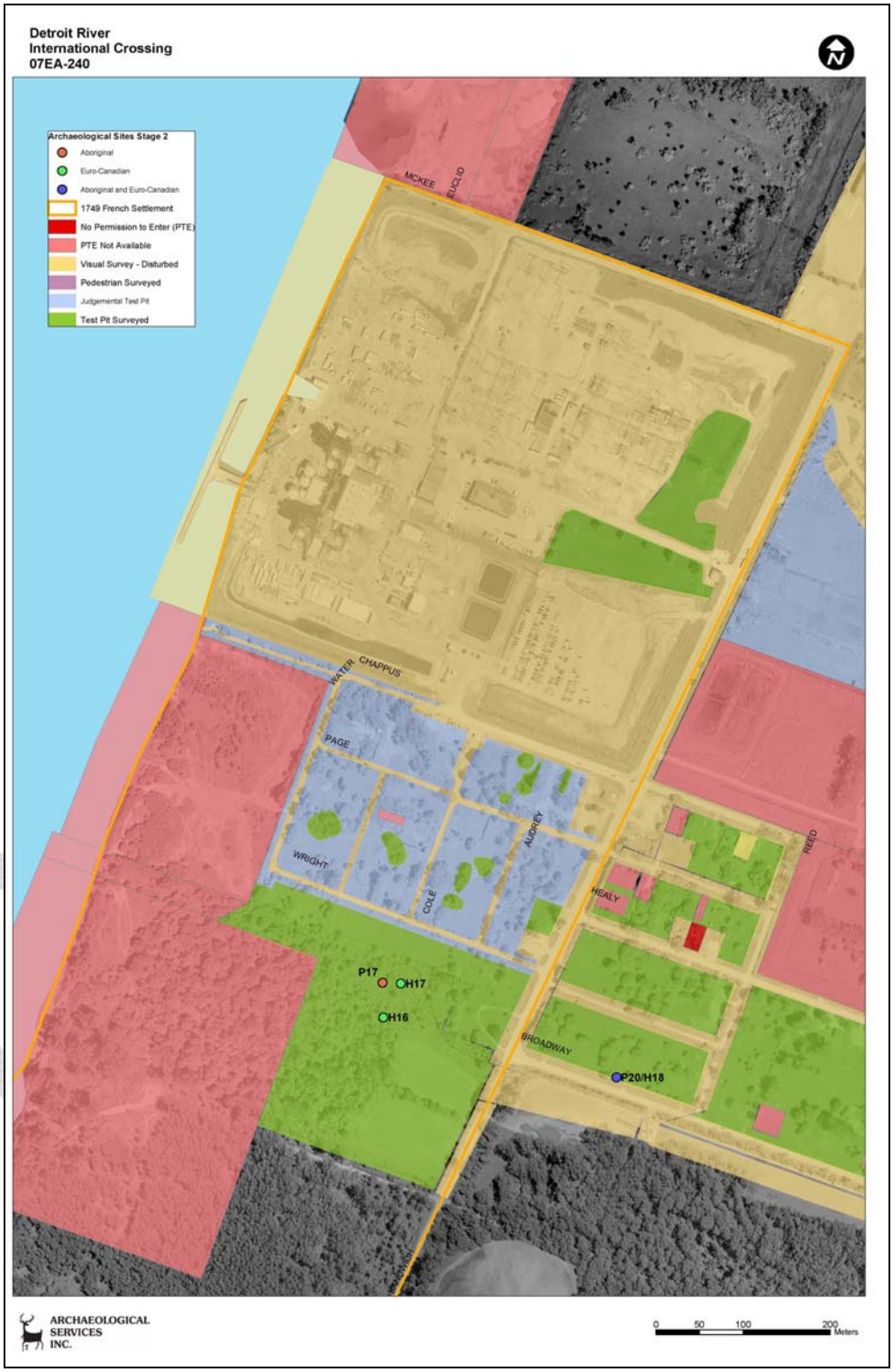


EXHIBIT 9: FRENCH SETTLEMENT AREA SHOWING BRIGHTON BEACH GENERATING STATION (FORMER J. CLARK KEITH POWER PLANT)



3. DATA ANALYSIS

To date, 42 sites have been located within the Area of Investigation. Summary details on these sites are provided in Table 1 and their general locations are illustrated in Exhibit 10. Appendix C contains a summary description of each site identified during the 2006 and 2007 field seasons.

All artifacts recovered from these sites were processed in ASIs laboratory. Data analysis includes the evaluation of each site with respect to those that require further investigation through additional surface or sub-surface testing in order to assess the cultural heritage value of the individual archaeological site. Included in the data analysis is the registration of archaeological sites within the Ontario Archaeological Sites Database (OASD) by assigning numbers within the Borden system.

Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 kilometres north to south. A four-letter designator references each Borden block, and sites within a block are numbered sequentially as they are found. The study area under review is located within the *AbHr and AbHs* Borden blocks.

In total, the analysis has identified 20 Aboriginal site components and 23 Euro-Canadian components within the Area of Investigation.

3.1 Aboriginal sites

The Aboriginal sites identified by the "P" designation include 16 sites represented only by flaked lithics, three sites that also include fragments of prehistoric ceramics; and one (Site P18) that, after lab processing and analysis, was determined to be non-cultural and removed from further consideration. Within the former group, only two sites P1[1] and P2[2] yielded diagnostic artifacts that provide information pertaining to cultural affiliation: Site P1 is represented by an Early Archaic Nettling point dating to *ca*. 9800-8900 B.P. (Ellis *et al.* 1990: Figure 4.3, pp. 73-78), and Site P2 is characterized by a Middle Archaic Brewerton Corner-notched point dating *ca*. 5000-4500 B.P. (Ellis *et al*. 1990: Figure 4.3, pp. 83-93). The remaining sites feature non-diagnostic flaking detritus. Of the three ceramic-bearing Aboriginal sites, none have specimens large enough to provide observable evidence of surface preparation or decoration, and all are characteristic of the Woodland period, which dates post-3000 B.P.

To date, only two Aboriginal sites were surface-collected, the rest are represented by a limited number of positive test pits. All are considered to be either isolated findspots or limited scatters.

3.2 Euro-Canadian Sites

The Euro-Canadian sites identified by the "H" designation include 17 components based on material culture that includes refined white earthenware, various types of window and bottle glass, saw-cut bone, and a variety of metal objects and personal items, to name a few. All artifact collections from the Euro-Canadian sites were examined by Ms. Eva MacDonald, ASIs Manager of Historic Archaeology, and a series of detailed land use histories were compiled for selected sites to

[1] Borden number – AbHr-10

[2] Borden number – AbHr-11

provide assistance in evaluating their heritage potential and significance. Selection of sites for further evaluation is based on the analysis of artifact material from each site. Materials recovered from sites that are characteristic of nineteenth century life were identified as having heritage potential. A general land use summary gives information on the history and ownership of lands settled by Euro-Canadians in the area. Exhibit 11 illustrates the Lots investigated in the land use history assessment in relation to relevant portions of the 1881 Belden map. The Concessions and Lots that underwent a land use history assessment include:

- Concession 1, Lots 53 – 57, Sandwich West Township;
- Concession 2, Lots 48, 56, and 57, Sandwich West Township;
- Concession 4, Lot 1, Sandwich West Township;
- Concession 5, Lot 1, Sandwich West Township; and
- Lot 306, Sandwich East Township.

EXHIBIT 10. GENERAL LOCATION OF ARCHAEOLOGICAL SITES RECOVERED IN STAGE 2 ARCHAEOLOGICAL ASSESSMENT

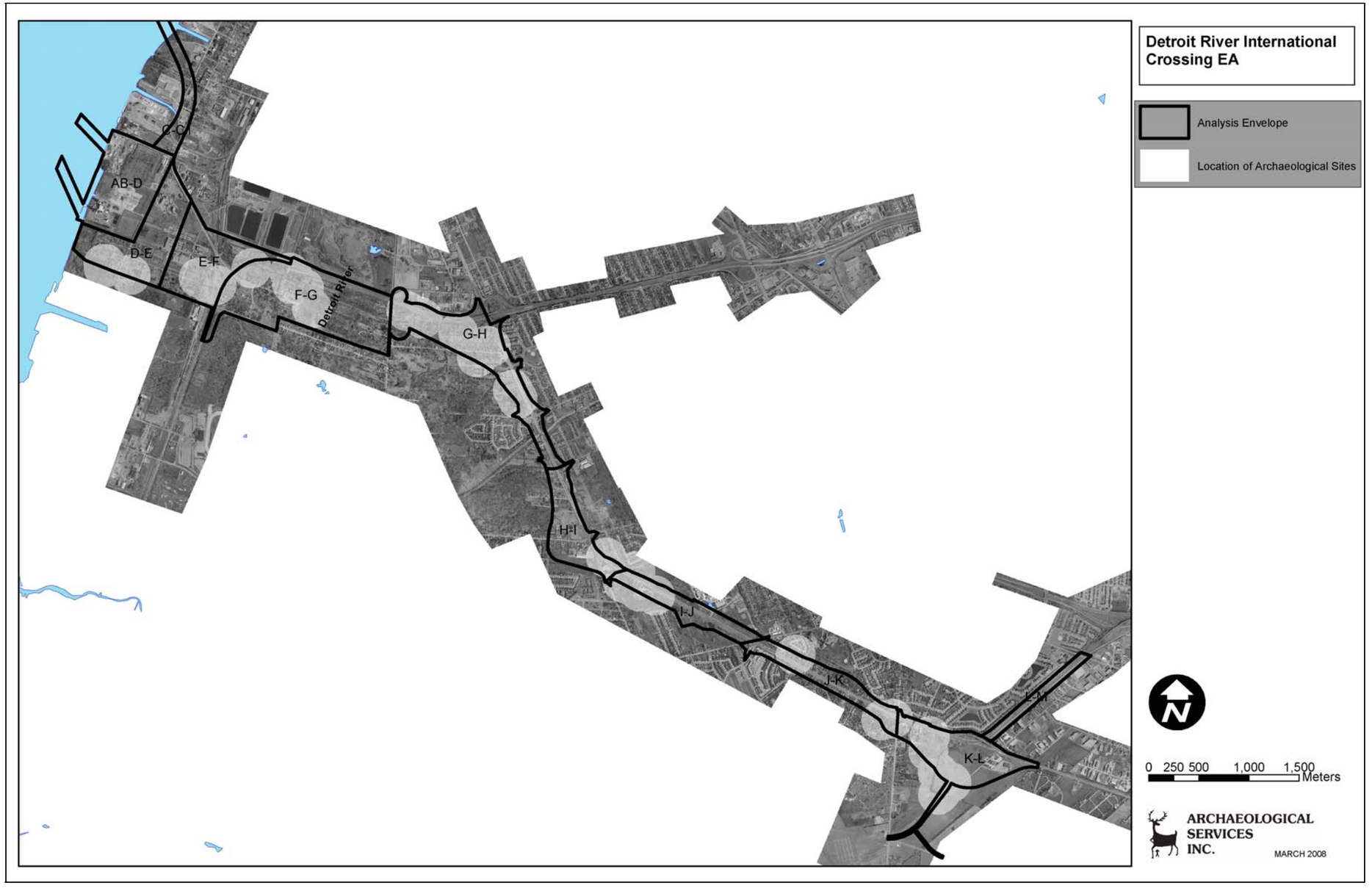
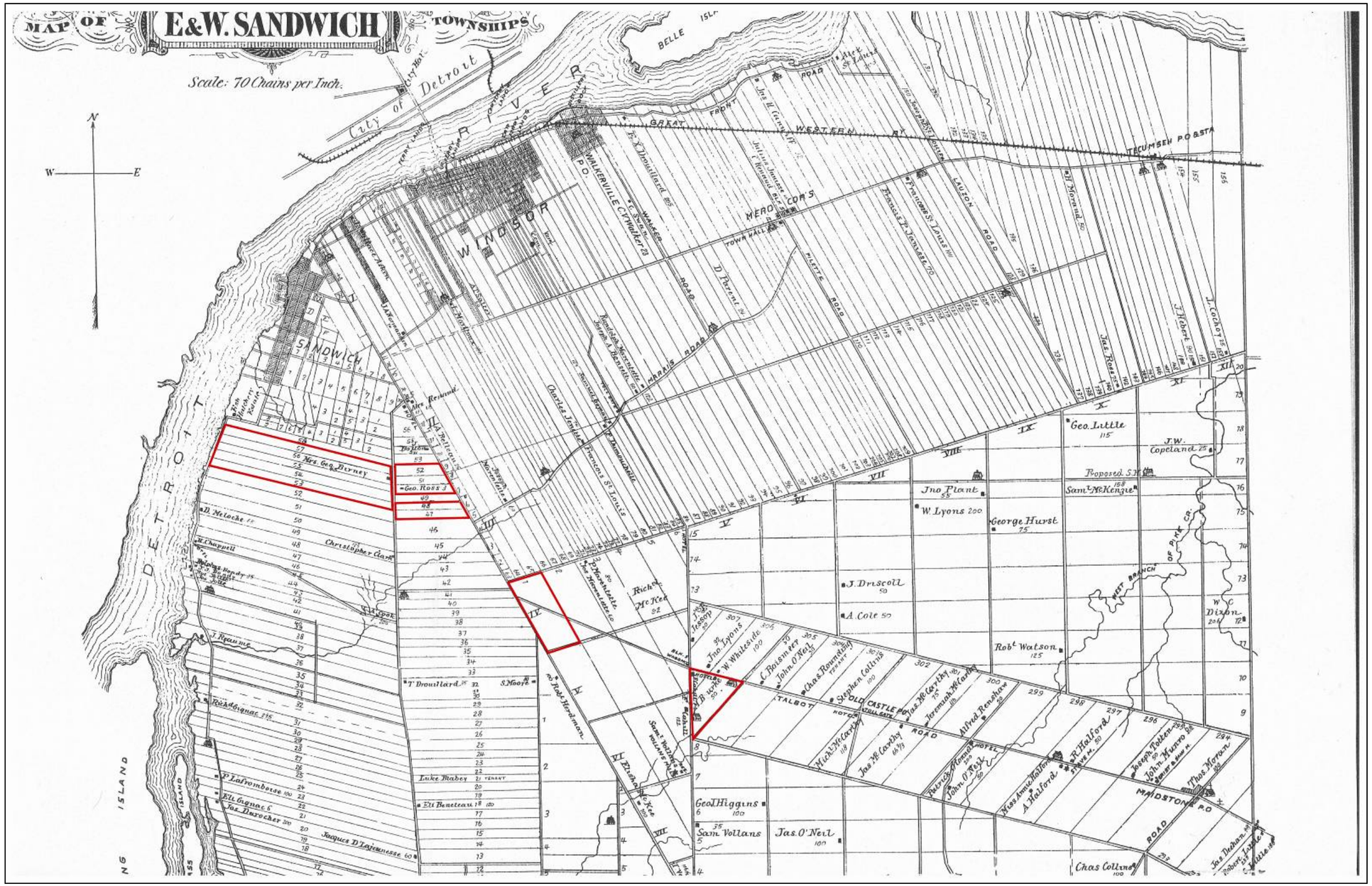


TABLE 1. ARCHAEOLOGICAL SITES IDENTIFIED DURING STAGE 2 ASSESSMENT

SITE	MAP	UNIT	CULTURE	SITE TYPE	ARTIFACTS
PRIORITY 1					
H1	1	1	Euro-Can	scatter	whiteware, flat glass, stoneware
H2	1	5	Euro-Can	scatter	various
H3	1	3	Euro-Can	scatter	glass, metal, ceramic
P1	1	1	Aboriginal	isolated	projectile point fragment and flake
P2	1	1	Aboriginal	isolated	isolated corner-notched point
P3	1	2	Aboriginal	isolated	flake
PRIORITY 2					
H4	1	3	Euro-Can	scatter	various
H5	2	3	Euro-Can	scatter	various
H6	7	2	Euro-Can	scatter	glass, ceramics, nails
H7	5	2	Euro-Can	scatter	midden, filled cellar, or privy
H8	14	3	Euro-Can	findspot	plastic frags, wire nail (not kept)
H11	10	12	Euro-Can	scatter	metal, square nail, blue transfer print
H12	16	2	Euro-Can	scatter	various
H13	16	4	Euro-Can	scatter	various
H14	16	13	Euro-Can	isolated	polychrome painted ware
P4/H9	14	1	Aboriginal Euro-Can	isolated isolated	flakes historic material
P9/H10	10	6	Aboriginal Euro-Can	scatter scatter	flakes various
P5	13	13	Aboriginal	isolated	flake
P6	11	7	Aboriginal	isolated	flake
P7/H23	10	1	Aboriginal Euro-Can	disturbed	bone frags and flake
P8	10	7	Aboriginal	isolated	flake
P10	10	13	Aboriginal	isolated	retouched flake
P11	5	7	Aboriginal	isolated	flake fragment
P12	15	3	Aboriginal	isolated	flake fragments
P13	16	3	Aboriginal	isolated	flakes and bone
P14	16	4	Aboriginal	isolated	flake
PRIORITY 3					
H15	18	57	Euro-Can	scatter	blue transfer print, glass
H16	20	1	Euro-Can	isolated	blue transfer print
H17	20	1	Euro-Can	isolated	whiteware
H18/P20	17	54	Euro-Can Aboriginal	scatter isolated	various flake
H19	25	2	Euro-Can	isolated	single nodule of glass
H20	25	2	Euro-Can	isolated	cut shell frag.
P15	19	7	Aboriginal	scatter	fragmentary sherds, flakes and bones
P16	19	28	Aboriginal	isolated	flake fragment
P17	20	1	Aboriginal	isolated	flake
P18/H21	25	10	n/a Euro-Can	n/a scatter	n/a various
P19/H22	26	1	Aboriginal Euro-Can	findspot scatter	fragmentary sherds and flakes various

EXHIBIT 11. BELDEN 1881 EAST AND WEST SANDWICH HISTORICAL ATLAS WITH LAND USE HISTORY OF LOTS OUTLINED



3.3 Data Analysis – Plazas and Crossings

In 2005, a field review of the Area of Continued Analysis was conducted as part of the Stage 1 archaeological assessment. This review was broadly defined into three categories of land use: areas that predominately feature intensive industrial land use; areas that predominately feature residential or commercial land use; and other areas that typically are predominately less intensively altered or are currently open space. The purpose of this field review was to provide an initial characterization of modern land use, and to provide clues to the likely integrity of archaeological sites within the Stage 1 archaeological assessment area. It cannot be assumed that all areas identified as predominately industrial in character are entirely without archaeological potential (ASI 2006:41).

Further assessment of these heavily impacted areas was conducted through visual inspection of aerial photography for the Area of Investigation. Road rights-of-way and areas identified as predominately residential or commercial land use, where grading, servicing, paving, building construction, and other activities have significantly altered any potential archaeological resources, were identified as disturbed with no archaeological potential. Additionally, lands west of the 1877 Walling historic shoreline were also identified as disturbed with no potential due to early twentieth century land filling and shoreline extension. These areas are identified in Exhibit 5.

As discussed in section 2.2.4, the City of Windsor Archaeological Master Plan stipulates that although most of the French farmstead sites lie within areas that have undergone extensive nineteenth century development, none of them have ever been properly examined as archaeological sites. Therefore, those properties that may have been identified as heavily impacted and industrial cannot be automatically ruled out as having no archaeological potential.

4. EVALUATION OF ALTERNATIVES

The evaluation of alternatives was carried out based on an assessment of potential disturbances to or destruction of archaeological sites with cultural heritage value or interest using a comparative criterion. This included the results of the Matrices Evaluation.

The process of evaluating cultural heritage value is based on a number of over-lapping considerations that are applied on a case-by-case basis. These considerations fall into three basic categories: information value, value as a public resource, and community value.

Information value refers to the likelihood that investigation of a site will contribute to an increased understanding of the past. Such an assessment must be carried out through consideration of several major criteria: the degree to which a site will contribute to our understanding of the past (its cultural, historical and scientific value); the relative rarity or commonness of similar sites locally or regionally; its productivity or richness in terms of the artifacts it contains; and the degree to which it has been disturbed by more recent land uses or natural processes.

Value as a public resource refers to the degree that a site will contribute to an enhanced understanding and appreciation of Ontario's past on the part of the general public.

Value to a community refers to whether or not the site has intrinsic value to a particular community, First Nation or other group.

The results of the evaluation of access road and plaza/crossing alternatives are presented in Tables 2 and 3 (see Appendix E for detailed results).

The impact assessment undertaken for this study is based on a ranking or significance and impact evaluation for known archaeological sites as well as the archaeological site potential affected by each practical alternative. The archaeological rankings and factor score values were determined as follows:

Archaeological Sites: known archaeological sites registered with the Ministry of Culture, as well as sites found in the Stage 2 archaeological assessment, are scored as follows:

1. sites with human remains (or potential for burials) or on National Inventory are given a rank of high significance;
2. large pre-contact Aboriginal sites (villages) are given a rank of high significance;
3. small pre-contact Aboriginal sites (e.g. campsites) or Euro-Canadian homestead sites are given a rank of moderate significance;
4. isolated pre-contact Aboriginal findspots are ranked as low significance.

These rankings reflect cultural heritage value or interest of a particular site. For example, any site with human remains is of high heritage value. Large pre-contact

Aboriginal sites, such as villages are also perceived to have high heritage value because of the potential for burials.

Impact Evaluation: *disturbance to or destruction of known archaeological sites* within each study area (route segment, plaza or crossing) was evaluated based on the cumulative score of all archaeological sites mapped within an access road corridor:

- Cumulative scores of 100+ for each access road alternative are considered to have High Impact
- Cumulative scores of 50-99 for each access road alternative are considered to have Medium Impact
- Cumulative scores of 25-49 for each access road alternative are considered to have Low Impact
- A cumulative score of 0 for each access road alternative are considered to have No Impact

Archaeological Site Potential Impact Evaluation: *disturbance to areas of archaeological site potential* by each access road, plaza or crossing was evaluated as follows:

- An alternative impacting over 50% of lands with site potential are considered to have High Impact
- An alternative impacting between 25% and 50% of lands with site potential are considered to have Medium Impact
- An alternative impacting up to 25% of lands with site potential are considered to have Low Impact
- An alternative impacting 0% of lands with site potential are considered to have No Impact

4.1 Preliminary Evaluation – Access Road

Based on the assessment of impacts to known archaeological sites in the lands surveyed, there is little to no difference between access road alternatives. All alternatives have a low impact. Although all lands have not been 100% surveyed, sufficient area has been investigated to allow ASI to generally characterize the alternatives for comparison purposes.

Examining the individual access roads alternatives (alternatives 1, 2, 3, and the Parkway), there are no alternatives that impact either human remains or large pre-contact Aboriginal sites. The Parkway alternatives have the highest counts of small pre-contact Aboriginal or Euro-Canadian sites, averaging 3.5 sites within the Parkway footprint. The at-grade access road alternatives 1A and 1B have the lowest counts of small pre-contact Aboriginal sites, with an average of 1.5 sites, compared to the tunnel access road alternative 3, which averages 2 sites, and the depressed-grade access road alternatives 2A and 2B, which have an average of 2.5 sites. In examining access road alternatives with pre-contact Aboriginal

findspots, access road alternatives 1, 2 and 3 are relatively equal, averaging 9, 10.1 and 8 sites respectively. The Parkway alternatives have the highest counts, averaging 16 sites. Table 2 illustrates the breakdown of the number of known archaeological sites in each access road alternative.

Given that no access road alternatives have sites with human remains or large pre-contact Aboriginal (village) sites (based on the evidence to date), all access road alternatives are assessed to have low to medium archaeological impact to known archaeological sites.

4.2 Preliminary Evaluation – Crossings and Plazas

Based on the assessment of impacts to known archaeological sites in the lands surveyed, there is little difference between plaza/crossing alternatives. All alternatives have a low/medium impact. Exhibits 12 through 18 illustrate the location of the plazas and their corresponding crossings in relation to areas known for potential archaeological features. Although Plaza B, B1 and C have not been 100% surveyed, sufficient area has been investigated to allow ASI to generally characterize the alternatives for comparison purposes.

Examining each plaza/crossing alternative, there are no alternatives that impact either human remains or large pre-contact Aboriginal sites. The Plaza A alternatives are all fairly equal, with six archaeological sites within the Crossing A, B an C1 footprints, and five archaeological sites within the Crossing C footprint. Plaza B and B1 are also similar with seven archaeological sites located within the Plaza B from Crossing C alternative, and six archaeological sites located within the Plaza B1 from Crossing B alternative. Plaza C has the least amount of archaeological sites, with only four sites within the Plaza C from Crossing C footprint. Table 3 illustrates the breakdown of the number of known archaeological sites in each plaza/crossing alternative.

Stage 2 survey results for the plazas options indicate the following (see Table 4).

- Three Euro-Canadian and two Aboriginal sites have been recorded within the Plaza A footprint.
- Two Euro-Canadian, four Aboriginal, and one multi-component (Euro-Canadian and Aboriginal) sites have been recorded within the Plaza B footprint.
- Two Euro-Canadian, three Aboriginal, and one multi-component (Euro-Canadian and Aboriginal) sites have been recorded within the Plaza B1 footprint.
- One Euro-Canadian and three Aboriginal sites have been recorded within the Plaza C footprint.

TABLE 2. SUMMARY OF ACCESS ROAD ALTERNATIVES

Performance Measure	Criteria Indicator	Measurement/Units	Alt 1A		Alt 1B		Alt 2A		Alt 2B		Alt 3	Parkway
			Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2		
ARCHAEOLOGICAL FEATURES	Disturbance or destruction of known significant archaeological sites	a) Number of known Rank 1 archaeological sites affected (sites with human remains [or potential for burials] or on National Inventory)	0	0	0	0	0	0	0	0	0	0
		b) Number of known Rank 2 archaeological sites affected (large pre-contact Aboriginal sites [villages])	0	0	0	0	0	0	0	0	0	0
		c) Number of known Rank 3 archaeological sites affected (small pre-contact Aboriginal sites [e.g. campsites] or Euro-Canadian homestead sites)	1 to 2	1 to 2	1 to 2	1 to 2	2 to 3	2 to 3	2 to 3	2 to 3	1 to 3	3 to 4
		d) Number of known Rank 4 archaeological sites affected (pre-contact findspots)	9	9	9	9	10 to 11	10	10 to 11	9 to 10	8	15 to 17
		e) Percentage area with archaeological site potential affected	> 50%	> 50%	> 50%	> 50%	> 50%	> 50%	> 50%	> 50%	> 50%	> 50%

TABLE 3. SUMMARY OF PLAZA / CROSSING ALTERNATIVES

Performance Measure	Criteria Indicator	Measurement/Units	Plaza A				Plaza B	Plaza B1	Plaza C
			From Crossing A	From Crossing B	From Crossing C	From Crossing C1 (CEG)	From Crossing C	From Crossing B	From Crossing C
ARCHAEOLOGICAL FEATURES	Disturbance or destruction of known significant archaeological sites	a) Number of known Rank 1 archaeological sites affected (sites with human remains [or potential for burials] or on National Inventory)	0	0	0	0	0	0	0
		b) Number of known Rank 2 archaeological sites affected (large pre-contact habitation sites [villages])	0	0	0	0	0	0	0
		c) Number of known Rank 3 archaeological sites affected (small pre-contact habitation sites [e.g. campsites] or Euro-Canadian homestead sites)	0	0	0	0	3	2	1
		d) Number of known Rank 4 archaeological sites affected (pre-contact findspots)	6	6	5	6	4	4	3
		e) Percentage of acreage with archaeological site potential affected	> 50%	> 50%	> 50%	> 50%	> 50%	> 50%	> 50%

TABLE 4. SUMMARY OF PLAZA OPTIONS

Performance Measure	Criteria Indicator	Measurement/Units	Plaza A	Plaza B	Plaza B1	Plaza C
ARCHAEOLOGICAL FEATURES	Disturbance or destruction of known significant archaeological sites	a) Number of known Rank 1 archaeological sites affected (sites with human remains [or potential for burials] or on National Inventory)	0	0	0	0
		b) Number of known Rank 2 archaeological sites affected (large pre-contact habitation sites [villages])	0	0	0	0
		c) Number of known Rank 3 archaeological sites affected (small pre-contact habitation sites [e.g. campsites] or Euro-Canadian homestead sites)	0	3	2	1
		d) Number of known Rank 4 archaeological sites affected (pre-contact findspots)	5	4	4	3
		e) Percentage of acreage with archaeological site potential affected	> 50%	> 50%	> 50%	> 50%

EXHIBIT 12. CROSSING A TO PLAZA A

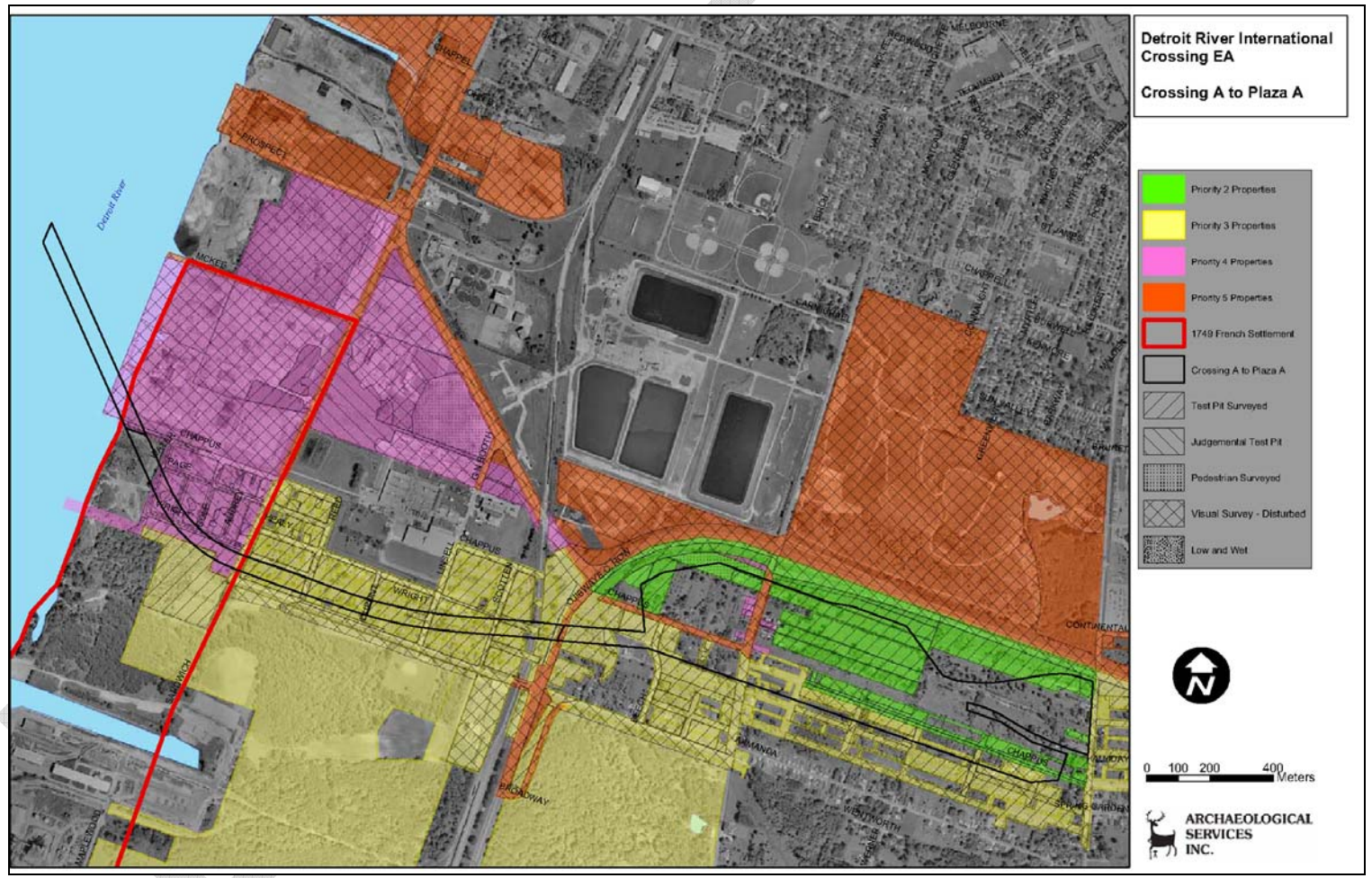


EXHIBIT 13. CROSSING B TO PLAZA A

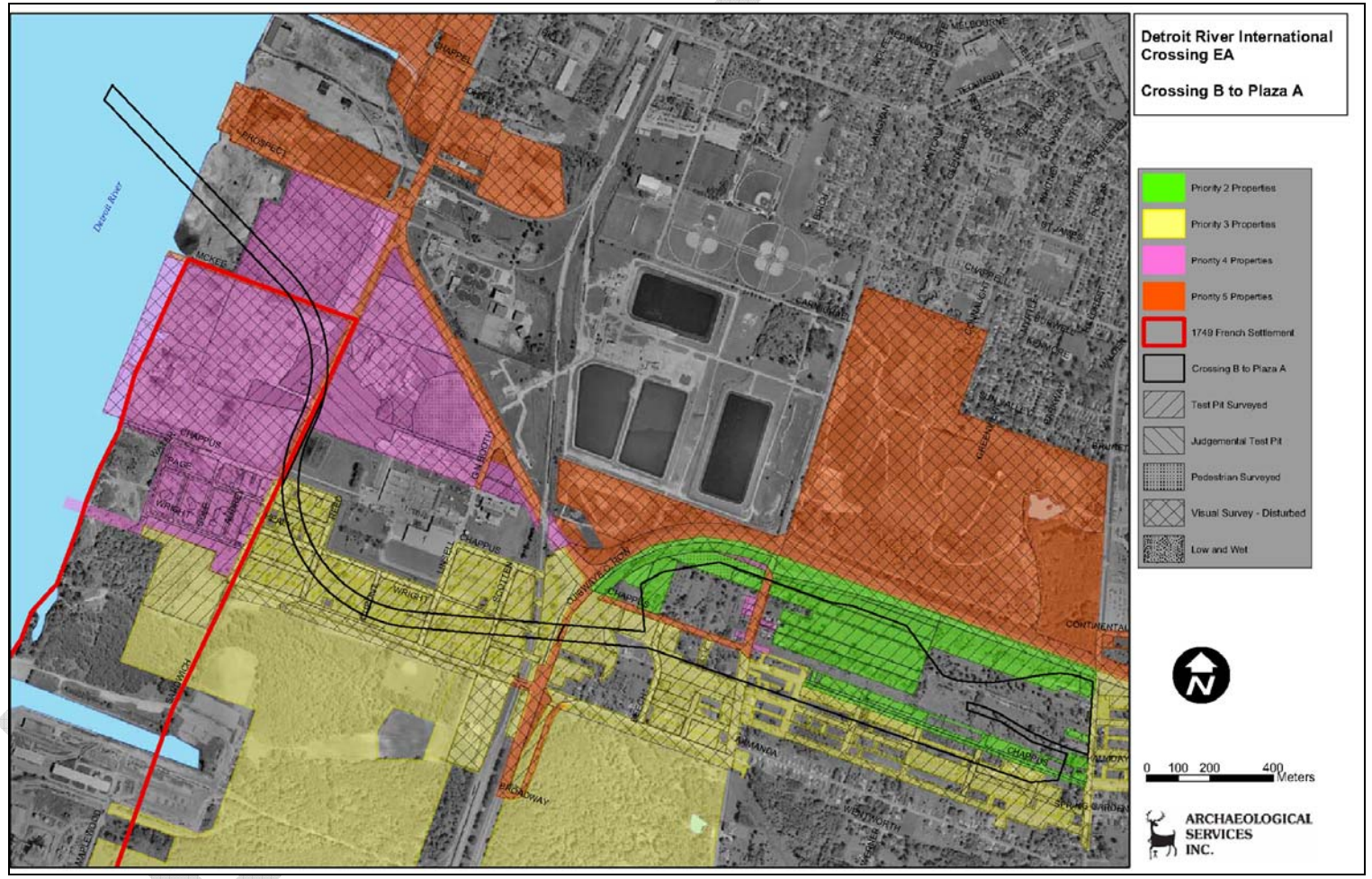


EXHIBIT 14. CROSSING C TO PLAZA A

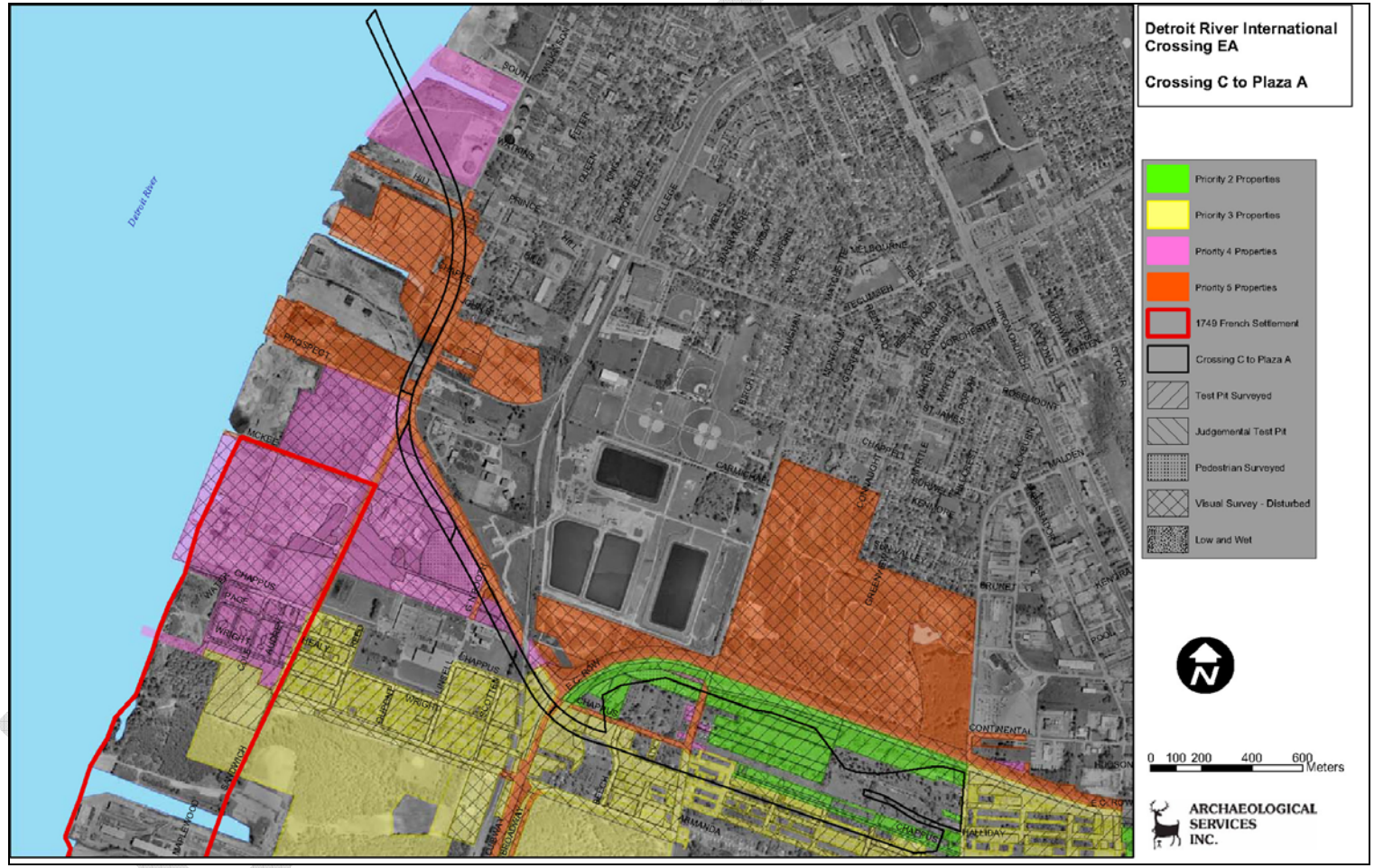


EXHIBIT 15. CROSSING C1 TO PLAZA A

EXHIBIT 16. CROSSING C TO PLAZA B

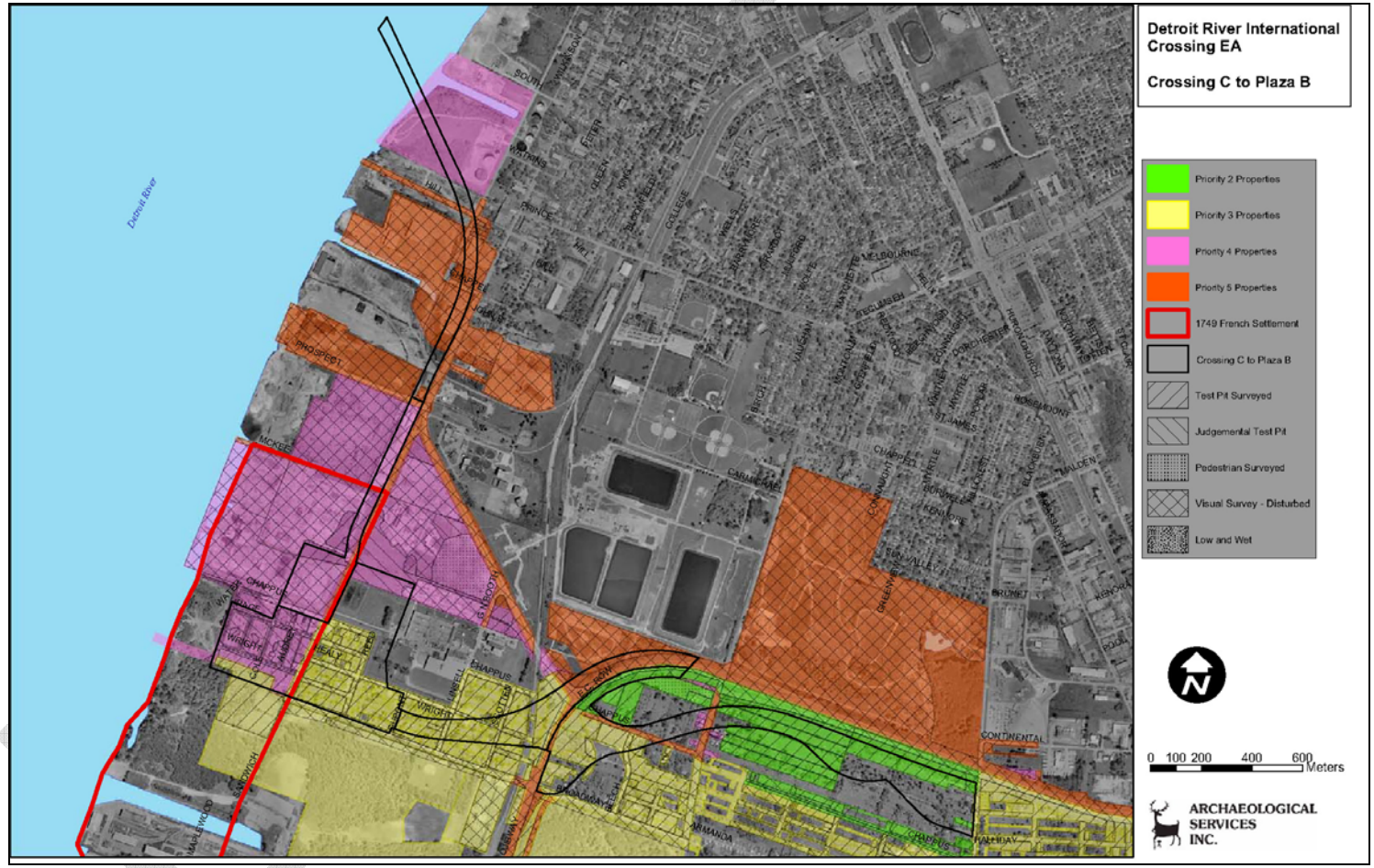


EXHIBIT 17. CROSSING B TO PLAZA B1

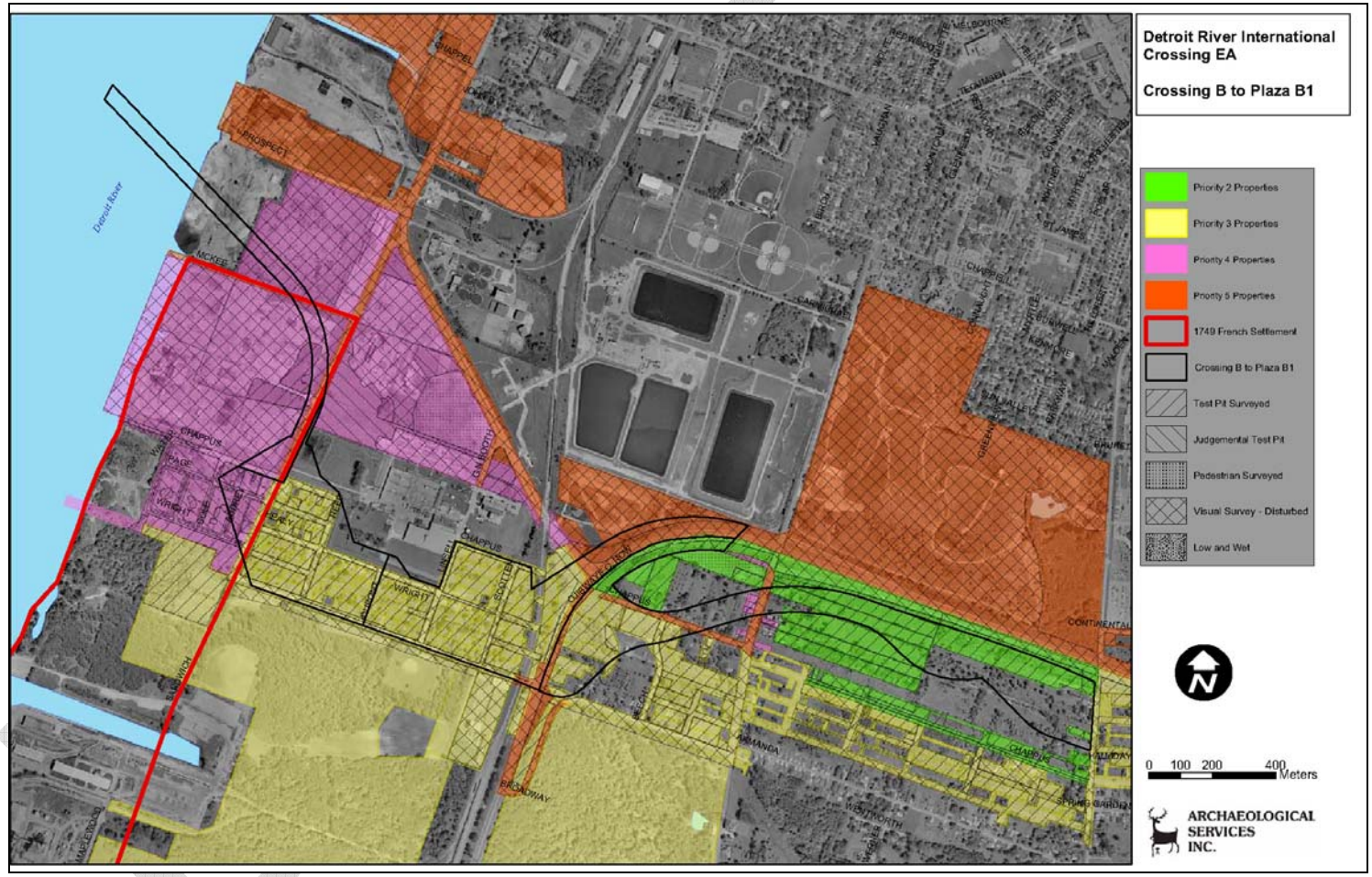
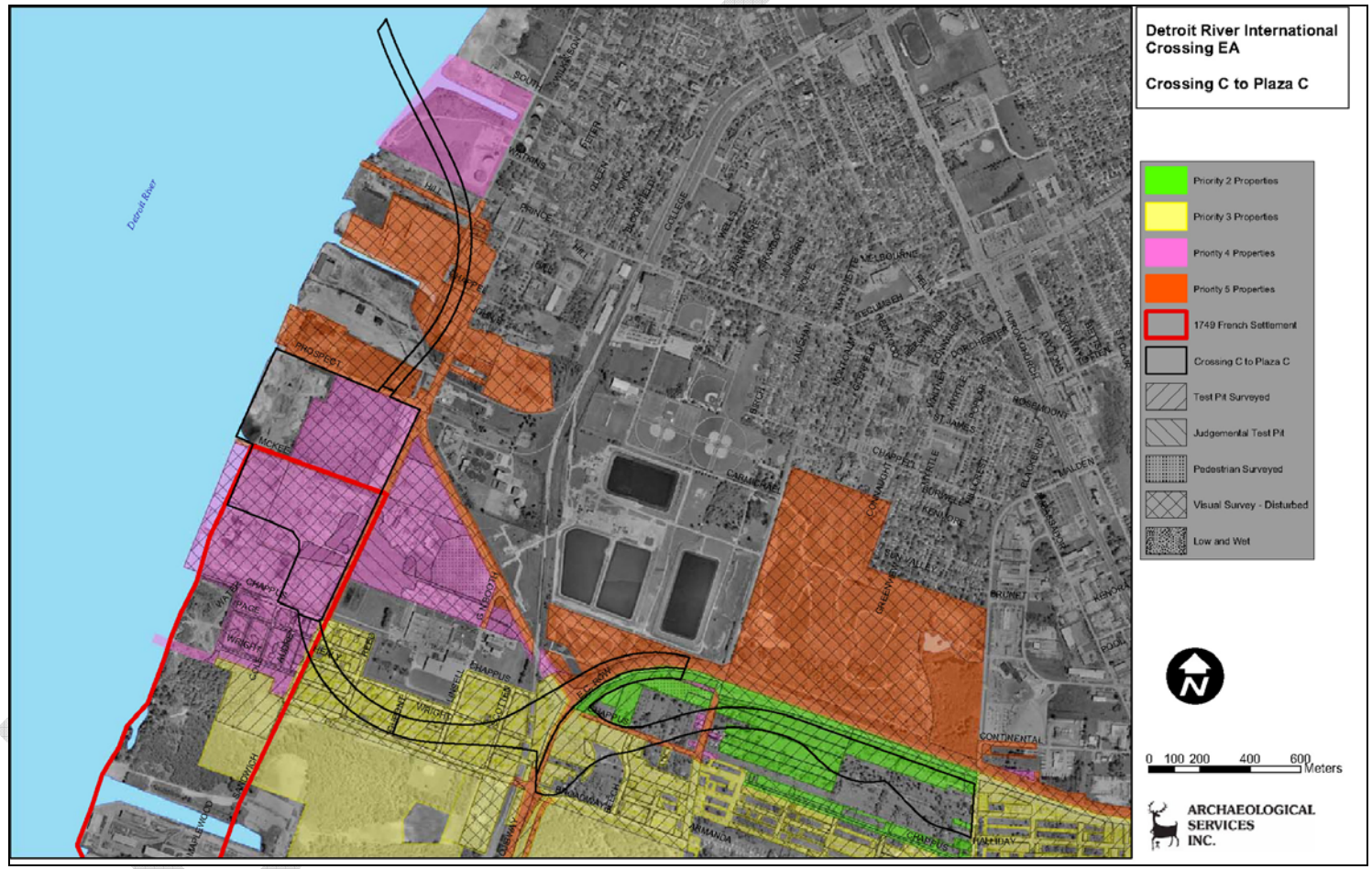


EXHIBIT 18. CROSSING C TO PLAZA C



5.0 FURTHER WORK REQUIRED

The following is the proposed work plan to complete archaeological assessment activities within the Technically and Environmentally Preferred Alternative (TEPA) to be selected.

5.1 Priority 2 through 5 Properties without Permission to Enter (PTE) within the TEPA

All properties in the TEPA where permission to enter is either unknown or denied, remain to be surveyed.

5.2 Stage 3 Archaeological Assessment within the TEPA

All archaeological sites provide information about the past and reflect the human history of Ontario, but some have greater cultural heritage value or interest than others (MCL 2006: Unit 1E-2). A Stage 3 site-specific assessment will be conducted on sites within the TEPA that have been identified by the Stage 2 assessment as requiring further investigation pertinent to its cultural heritage value or interest.

The required assessment method, either controlled surface pick-up or test unit excavation, depends on field conditions, techniques used during the Stage 2 assessment, and type of archaeological site. The assessment may include one or both methods.

Controlled Surface Pick-up (CSP)

According to the Ministry of Culture (Unit 1E-3), a CSP involves an examination of the ground surface of the archaeological site and vicinity, and recording the location and collection of surface artifacts. This method is for open or ploughed fields where archaeological sites were discovered through pedestrian survey. The goal of the CSP is to gather a sufficient artifact sample to document the extent of the archaeological site on the surface.

Test Unit Excavation

According to the Ministry of Culture (Unit 1E-4), test unit excavation includes the controlled excavation of one-metre squares in selected locations across the site to determine the presence of buried artifacts, structures, stratigraphy and cultural features, and collect a representative sample of material. This method must be used as a follow-up to the CSP and for archaeological sites discovered through Stage 2 test pit excavation.

The goal of test unit excavation is to conduct adequate documentation of artifacts and cultural features in both the core (centre of surface scatter density or cluster of positive test pits) and the periphery of the site.

The objectives of the Stage 3 site-specific assessment are to:

- Delineate the complete extent of the archaeological site;
- Determine the cultural affiliation and time period of the archaeological site;
- Assess the cultural heritage value or interest of the archaeological site; and
- Determine whether Stage 4 work is required and the extent of Stage 4 work.

Once a TEPA is selected, Stage 3 site-specific assessments will only be conducted on those sites determined to have cultural heritage potential or interest that will be disturbed or destroyed by the undertaking.

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