Stage 1 Archaeological Assessment
Beach Boulevard
(Lots 31-32, Broken Front Concession, Geographical Saltfleet Township, County of Wentworth)
City of Hamilton, Regional Municipality of Hamilton-Wentworth, Ontario

Original Report

Prepared for:

IBI Group

55 St. Clair Avenue West; 7th Floor
Toronto Ontario M4V 2Y7

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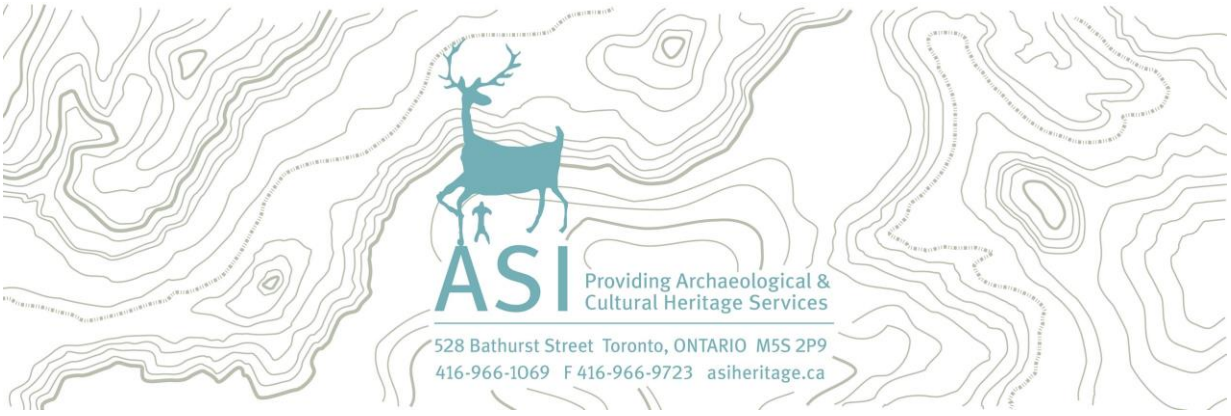

Executive Summary

Archaeological Services Inc. was contracted by IBI Group to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Beach Boulevard project in the City of Hamilton. This project involves the development of flood remediation measures, which may include but are not limited to enhanced operations, maintenance, land transfers, amendments to legislation/programs, lot level works, and infrastructure upgrades, as well as four new pumping stations.

The Stage 1 Study Area scope involves:

- Existing storm sewer inspection at Eastport Outlet at the Queen Elizabeth Way Crossing, Lagoon Outlet at the Queen Elizabeth Way Crossing, and the trunk storm sewer between Eastport Channel and Windmere Basin Park;
- Existing storm sewer upgrades at Harbour Outlet at the Queen Elizabeth Way Crossing (twin or larger replacement), Dunraven Outlet at the Queen Elizabeth Way Crossing (twin or larger replacement);
- New storm sewer installation and ditch restoration at Wark Outlet at the Queen Elizabeth Way Crossing for proposed pumping station, connection from Eastport Ditch to Harbour opposite Dunraven, and on the east side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive to support pumping station construction;
- Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way, and between Windermere Basin Park and Red Hill Creek;
- Modifications to road grading on Eastport Drive at Beach Boulevard intersection; and
- Proposed pumping station locations (Bayside Avenue, Wark Avenue, Fletcher Avenue, Windermere Basin Park).

The Stage 1 background study determined three previously registered archaeological sites are located within one kilometre of the Study Area, none of which are located within 50 metres of the Preferred Alternatives. The property

inspection determined that parts of the Preferred Alternatives exhibit archaeological potential and will require archaeological assessment.

The following recommendations are made:

1) Parts of the Preferred Alternatives exhibit archaeological potential, including Hamilton Harbour Outlet at the Queen Elizabeth Way Crossing, the Fletcher Avenue Pumping Station, the east side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive, the Harbour Outlet at the Queen Elizabeth Way Crossing, and the proposed pumping station locations at Bayside Avenue and Fletcher Avenue. These lands require Stage 2 archaeological assessment by test pit survey at five metre intervals (Figure 17 to Figure 19: areas highlighted in green and pink). Stage 2 is required prior to any proposed construction activities on these lands;

   a) Test pit survey should extend to a sufficient depth, greater than 50 centimetres and up to 1.2 metres to determine if there are intact moderately deeply buried cultural deposits;

   b) Areas previously surveyed which did not reach sufficient depths of test pits should be reassessed (P083-044-2010, P321-0038-2019, P321-0219-2020, P017-0982-2021);

2) The remainder of the Preferred Alternatives do not retain archaeological potential on account of deep and extensive land disturbance or being previously assessed with no outstanding archaeological concerns. These lands do not require further archaeological assessment; and,

3) Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

Project Personnel

- **Senior Project Manager**: Lisa Merritt, MSc. (P094) Partner, Director, Environmental Assessment Division
- **Project Manager**: Eliza Brandy, MA (R1109), Associate Archaeologist, Project Manager, Environmental Assessment Division; etc.
- **Project Director**: Jessica Lytle, MSc (P1066), Lead Archaeologist, Technical Writer and Fieldwork Coordinator, Environmental Assessment Division
- **Division Coordinator**: Katrina Thach, BA Hons. (R1225), Associate Archaeologist, Division Coordinator, Environmental Assessment Division
- **Project Administrator**: Catherine Kitchen, BA, Archaeologist, Project Administrator, Environmental Assessment Division
- **Field Director**: Jessica Lytle
- **Report Preparation**: Danielle Bella, BA Hons., Archaeologist, Technical Writer, Environmental Assessment Division
- **Graphics**: Jonas Fernandez, MSc (R281), Lead Archaeologist, Manager - Geomatics, Operations Division
- **Report Review**: Lisa Merritt

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1.0 Project Context

Archaeological Services Inc. (ASI) was contracted by IBI Group to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Beach Boulevard project in the City of Hamilton. This project involves the development of flood remediation measures, which may include but are not limited to enhanced operations and maintenance, land transfers, amendments to legislation/programs, lot level works, and infrastructure upgrades, as well as four new pumping stations.

The Stage 1 Study Area scope involves the following Preferred Alternatives (Figure 1):

- Existing storm sewer inspection at Eastport Outlet at the Queen Elizabeth Way Crossing, Lagoon Outlet at the Queen Elizabeth Way Crossing, and the trunk storm sewer between Eastport Channel and Windmere Basin Park;
- Existing storm sewer upgrades at Harbour Outlet at the Queen Elizabeth Way Crossing (twin or larger replacement), Dunraven Outlet at the Queen Elizabeth Way Crossing (twin or larger replacement);
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- Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way, and between Windermere Basin Park and Red Hill Creek;
- Modifications to road grading on Eastport Drive at Beach Boulevard intersection; and
- Proposed pumping station locations (Bayside Avenue, Wark Avenue, Fletcher Avenue, Windermere Basin Park).

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (Ontario Heritage Act, R.S.O. c. O.18, 1990, as amended in 2019) and the 2011 *Standards and Guidelines for Consultant*

Archaeologists (S & G), administered by the Ministry of Citizenship and Multiculturalism (MCM 2011).

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act, RSO* (Environmental Assessment Act, R.S.O., 1990 as amended 2020) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the Municipal Engineers' Association document *Municipal Class Environmental Assessment* (Municipal Class Environmental Assessment, 2000, as amended 2015).

The *City of Hamilton Archaeology Management Plan 2016* (Warrick et al., 2016) was also consulted.

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment and property inspection was granted by IBI Group on January 12, 2021.

1.1.1 Treaties

The Study Area is within Treaty 3, the Between the Lakes Purchase. Following the 1764 Niagara Peace Treaty and the follow-up treaties with Pontiac, the English colonial government considered the Mississaugas to be their allies since they had accepted the Covenant Chain. The English administrators followed the terms of the Royal Proclamation and insured that no settlements were made in the hunting grounds that had been reserved for their use (Johnston, 1964; Lytwyn, 2005). In 1784, under the terms of the "Between the Lakes Purchase" signed by Sir Frederick Haldimand and the Mississaugas, the Crown acquired over one million acres of land in-part spanning westward from near modern day Niagara-on-the-Lake along the south shore of Lake Ontario to modern day Burlington (Aboriginal Affairs and Northern Development Canada, 2016).

The Study Area also lies within the scope of the 1701 Deed, or Nanfan Treaty, signed by the British Crown with the Haudenosaunee Confederacy. The Deed

was for the Beaver Hunting Grounds, which included much of what is now southern and southwestern Ontario.

1.2 Historical Context

1.2.1 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (B.P.) (Ferris, 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 B.P., the environment had progressively warmed (Edwards & Fritz, 1988) and populations now occupied less extensive territories (Ellis & Deller, 1990).

Between approximately 10,000-5,500 B.P., the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. This period produces the earliest evidence of heavy wood working tools, an indication of greater investment of labour in felling trees for fuel, to build shelter, and watercraft production. These activities suggest prolonged seasonal residency at occupation sites. Polished stone and native copper implements were being produced by approximately 8,000 B.P.; the latter was acquired from the north shore of Lake Superior, evidence of extensive exchange networks throughout the Great Lakes region. The earliest evidence for cemeteries dates to approximately 4,500-3,000 B.P. and is indicative of increased social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Brown, 1995, p. 13; Ellis et al., 1990, 2009).

Between 3,000-2,500 B.P., populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. The Woodland period begins around 2,500 B.P. and exchange and interaction networks broaden at this time (Spence et al., 1990, pp. 136, 138) and by approximately 2,000 B.P., evidence exists for small community camps, focusing on the seasonal harvesting of resources (Spence et al., 1990, pp. 155, 164). By 1,500 B.P. there is macro botanical evidence for maize in southern Ontario, and it is thought that maize only supplemented people's diet. There is earlier

phytolithic evidence for maize in central New York State by 2,300 B.P. - it is likely that once similar analyses are conducted on Ontario ceramic vessels of the same period, the same evidence will be found (Birch & Williamson, 2013, pp. 13–15). As is evident in detailed Anishinaabek ethnographies, winter was a period during which some families would depart from the larger group as it was easier to sustain smaller populations (Rogers, 1962). It is generally understood that these populations were Algonquian-speakers during these millennia of settlement and land use.

From the beginning of the Late Woodland period at approximately 1,000 B.P., lifeways became more similar to that described in early historical documents. Between approximately 1000-1300 Common Era (C.E.), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource base was still practised (Williamson, 1990, p. 317). By 1300-1450 C.E., this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al., 1990, p. 343). By the mid-sixteenth century these small villages had coalesced into larger communities (Birch et al., 2021). Through this process, the socio-political organization of the First Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed.

By 1600 C.E., the Huron-Wendat communities within Simcoe County had formed the Confederation of Nations encountered by the first European explorers and missionaries. Samuel de Champlain in 1615 reported that a group of Iroquoian-speaking people situated between the Haudenosaunee and the Huron-Wendat were at peace and remained “la nation neutre”. Like the Huron-Wendat, Petun, and Haudenosaunee, the Neutral or Attawandaron people were settled village agriculturalists. In the 1640s, the Attawandaron and the Huron-Wendat (and their Algonquian allies such as the Nippissing and Odawa) were decimated by epidemics and ultimately dispersed by the Haudenosaunee. Shortly afterwards, the Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario. By the 1690s however, the Anishinaabeg were the only communities with a permanent presence in southern Ontario. From the beginning of the eighteenth century to

the assertion of British sovereignty in 1763, there was no interruption to Anishinaabeg control and use of southern Ontario.

1.2.2 Post-Contact Settlement

Historically, the Study Area is located in the Geographical Saltfleet Township, County of Wentworth in Lots 31-32 & Broken Front Concession.

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

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

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Indigenous trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

Saltfleet Township

The first township survey was undertaken in 1788 by Augustus Jones, and the first legal settlers occupied their land holdings in the same year. The township was named for several saline springs which existed in the bed of the Big Creek and produced salt. Saltfleet was initially settled by disbanded soldiers, mainly Butler's Rangers, and other Loyalists following the end of the American Revolutionary War. Among the first settlers were Levi Lewis, John Pettit, Gershom Carpenter, Augustus Jones, John Biggar, John Wilson, Samuel Dean, who took up land west of the 50 Mile Creek. In 1815 the first assessment rolls counted 102 householders. By the 1840s, the township was noted for its excellent land and well-cultivated farms (Boulton 1805:87; Smith 1846:163; Armstrong 1985:147; Rayburn 1997:305; W. H. Irwin & Co. 1905).

The Beach Bar

The beach bar shaped early Euro-Canadian settlement activity and travel, just as it had done in precontact times. The very narrow band of dry land across the lake confined and concentrated travel routes. John Graves Simcoe's 1790s military road, the 1820s Beach Road, the 1876 rail lines and 1896 electric radial lines, the 1930s Queen Elizabeth Way and hydro transmission lines, circa 1910, all occupied and vied for space. In addition, the construction and opening of the Burlington Canal in 1832, together with the installation of a bridge and construction of wharves resulted in a booming beach economy and the birth of a small but thriving port community.

The strategic importance of the head of the lake attracted the attention of American forces during the War of 1812. In the summer of 1813 two American schooner landed a contingent of 200 troops. After a brief skirmish with a small British garrison stationed at the Kings Head Inn, they razed the buildings there, as well as destroying a redoubt at the outlet on the north end of the beach bar.

After the war, the importance of the area as a transportation hub continued to grow apace. Ships off-loaded their cargo on the beach and these goods were then taken across the bar on log roads to be loaded on to barges that crossed the bay to Hamilton. A tavern, storehouses and some residences were built along the beach in support of these activities. In order to improve the

movement of goods, a canal was constructed through the bar in the early 1820s. Officially opened in 1832, the Burlington Bay Canal, underwent numerous modifications in order to expand its capacity and to repair damage to its associated facilities such as the swing bridge, ferry, lighthouse, and piers as well as the store and staff houses, which were prone to damage, both from ice and wind off the lake and fire due to sparks from the engines of the steamers that passed through. The evolution of the canal continued into the modern era and has entailed multiple reconstructions on massive scales.

The arrival of the railway line spurred on a different and sustained form of development: a late-nineteenth and early-twentieth century recreational community of cottages and ornate summer residences that accommodated some of Hamilton's most prosperous families. The Hamilton Electric Railway line ran from the terminal at King and Catherine Streets in Hamilton, east to the beach bar then over the canal and on through to Burlington and Oakville. Throughout the 1920s to the 1950s, Hamilton Beach slowly declined as a holiday venue. A housing shortage caused by two World Wars assured its survival, if not revival. With an affordable and modest range of housing, the beach bar continued to function as a unique residential enclave. Despite attempts to remove houses and establish a publicly owned system of parks and open space, the Beach community continued to survive and by the 1990s had consolidated itself as a viable and sustainable community.

The Burlington Skyway Bridge

The first bridge designed for automobile traffic at this location was built in 1922. It was replaced by the Burlington Bay Skyway bridge which was constructed in the mid-1950s. The Burlington Bay Skyway Bridge was necessitated by growing traffic along the beach corridor, in part the result of the completion of a divided highway across the Burlington Beach in 1937. This highway was a segment of what would become the Queen Elizabeth Way in 1939. The traffic problem was brought to a head in 1952 when the bascule bridge malfunctioned and was destroyed by a 7000-ton vessel which couldn't avoid it and toppled it into the canal. It was temporarily replaced by a fixed trestle bridge until 1962 when the current lift bridge was completed (ASI, 2005).

It took two and a half years from the demolition of the earlier bridge to come up with any concrete announcement on its replacement. Most of the discussion centred on the cost sharing. The cost of the skyway bridge was estimated at $13,300,000 in 1954 with the estimated cost of the entire project placed at $16 million. Ultimately, the province assumed two-thirds of the cost and the federal government assumed one-third of the cost on the understanding that the province would assume full responsibility for traffic over the canal. Eventually, Arthur Sedgwick was announced as the coordinator of the project. He had been a bridge designer for the Ontario Department of Highways for forty-five years and was the chief bridge engineer for the province from 1929 until his retirement in May of 1954 (ASI, 2005).

Construction started in 1954 and tenders were awarded to Pigott Construction Company for the northern and central sections of the substructure and to S. McNally and Sons for the southern section of the substructure. This work commenced in March of 1955. The earth works were completed by September and at that time the province announced the anticipated completion date for the project as December 31, 1957. The steel work approaching spans contract was awarded to Runnymede Construction Company of Toronto. Opening ceremonies for the bridge were held on October 30, 1958 and the Burlington Bay Skyway Bridge was twinned in 1985 (ASI, 2005).

The Burlington Canal

At the northern end of the Study Area is the Burlington Canal. Ships had begun to travel through the Burlington Canal in the early 1820's, however, the narrow and shallow channel restricted the movement of larger vessels. Private citizens appealed to the provincial government in 1924 for a wider and deeper canal. The Burlington Bay Canal was to be one of a series of waterways that would provide uninterrupted navigation from Lake Erie to the Atlantic Ocean and construction began in 1925. The canal was open for larger vessels by 1830, although it was not completed as planned until 1832. During this period, a toll system was employed and in the first year of toll collection almost the full cost of the canal improvements was recovered (ASI, 2005).

The canal, has been dredged and modified over the years, was originally maintained by the Department of Railways and Canals and was called the

Burlington Channel, Wentworth County. Control of the canal was reallocated to the Department of Public Works in 1885 and renamed to the Burlington Bay Channel. The canal has been credited with opening Hamilton up to international trade and providing the foundation for the city's industrialization and development. As part of the construction of the canal, a lighthouse and keeper's cottage were also built. The first of this pair of structures were erected in 1837. Both the lighthouse and cottage were destroyed by a fire in 1856. In 1857-1858, the present stone and brick structures were constructed. The lighthouse was maintained without major repairs until 1958 when it was damaged in a storm. It was repaired after the storm and removed from service in 1961 when it was superseded by a modern light erected on the new lift bridge. The lighthouse officially ceased operations in 1968. The associated keeper's cottage was moved a short distance in the late 1890's to its present location and was continuously occupied until 1991 by lightkeepers (ASI, 2005).

The Hamilton Harbour

Hamilton Harbour has always been a place of both recreation and commerce. After the canal was cut through the Beach Bar in the 1820s, Hamilton became an important port bringing passengers and raw materials for industry and exporting agricultural and industrial products (Freeman, 2001:164). Until the 1920s the bay was used extensively for recreation with swimming spots dotting the full length of the shoreline. The presence of numerous inlets, such as the Sherman Inlet, provided space for recreation as well as habitats for plant and animal life (ASI, 2013).

The face of Hamilton Harbour changed dramatically in the 1920s when swimming areas were closed due to extensive pollution caused by the industry located along and in proximity to the waterfront. During this period docking facilities were built to facilitate commercial and industrial shipping and large-scale landfill projects in Hamilton Harbour were approved (Freeman 2001:165). The biggest of these projects were located in the east end of Hamilton Harbour where steel companies such as Dofasco and Stelco filled portions of the waterfront with slag, a waste product of the steel making process, to created new land that was used to expand their plants and docking facilities (Freeman

2001:165). The cumulative effect of this filling was that the original shoreline of Hamilton Harbour was completely altered during the beginning of the twentieth century (ASI, 2013).

1.2.3 Map Review

The 1815 *Map of Niagara District in Upper Canada* (Nesfield, 1815), 1859 *Map of Wentworth County* (Surtees, 1859), 1900 *Fire Insurance Plans of Hamilton* (Goad, 1900), and the 1909 *Topographic Map Burlington Sheet* (Department of Militia and Defence, 1909) were examined to determine the presence of historic features within the Study Area during the nineteenth century (Figures 2-5).

The 1815 map (Figure 2) shows the beach bar with a main historical road connecting early settler homes. Three channels are shown along the strip of land allowing passage between Burlington Bay and Lake Ontario. A small island is shown west of the strip of land.

The 1859 map (Figure 3) labels the road "Beach Road", shown approximately in the alignment of the present-day Beach Boulevard. Baldry's Hotel is shown north of the Eastport Outlet at the Queen Elizabeth Way Crossing Preferred Alternative, adjacent the canal. Snooks Hotel is shown fronting Beach Road opposite the existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way Preferred Alternative. A filtering basin is depicted southeast of the proposed pumping station location at Fletcher Avenue Preferred Alternative. A strip of land is shown branching from the main beach near the existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way Preferred Alternative. A wharf is illustrated connecting the strip to the main beach bar.

The 1900 Fire Insurance Plans (Figure 4 to Figure 5) show a tank adjacent the existing storm sewer upgrades at Harbour Outlet at the Queen Elizabeth Way Crossing, and a barn and residential building adjacent Dunraven Outlet at the Queen Elizabeth Way Crossing.

The 1909 map (Figure 6) shows "Hamilton Beach", with the Toronto and Niagara Power line, the Grand Trunk Hamilton Radial Electric Railway, and the metalled

road[1] Beach Road. There has been an increase in structures, again shown fronting Beach Road. Marsh areas are shown along the western limits of the sand bar.

1.2.4 Aerial and Orthoimagery Review

The 1934 aerial photography of Hamilton (Ministry of Natural Resources, 1934), the 1962-1963 orthoimagery of Hamilton (McMaster University, 1962), and 1999 orthoimagery of Hamilton (McMaster University, 1999) were examined (Figures 7-11).

The 1934 aerial photography (Figure 7) shows additional streets off Beach Road, with houses built along each. The shape of the strip of land branching from the main beach on the 1859 and 1909 topo is visible in the aerial. Parts of the Preferred Alternatives are within Hamilton Harbour.

The 1962-1963 orthoimagery shows Bayside Avenue Pumping Station within a yard between two residential buildings, north of the Queen Elizabeth Way (Figure 8). Four residential buildings are shown within the Wark Avenue Pumping Station (Figure 9). Eight residential buildings are shown within the Fletcher Avenue Pumping Station, and the Windermere Basin Pumping Station is shown within Hamilton Harbour (Figure 10). The Queen Elizabeth Way has been built between Preferred Alternatives.

The 1999 orthoimagery (Figure 11) shows the shape of Hamilton Beach altered, with made land added along the western side of the main beach into Hamilton Harbour. Earthmoving activities and industrial use can be seen in this new portion of made land. The Queen Elizabeth Way and Eastport Drive follow the length of Hamilton Beach splitting the new western portion of land and the residential neighbourhoods to the east. The residential areas show increased growth by 1999.

[1] Metalled roads were constructed from crushed stone bound by tar which was then compressed with a steam roller, also known as “tarmac” (Neill, 2016)

A review of available Google satellite imagery since 2004 shows:

- A bar of made land has been added in Hamilton Harbour as part of a larger artificial pond area at the connection from Eastport Ditch to Harbour opposite Dunraven between 2015 and 2016 (Image 21 to Image 22);
- A parking lot and trail constructed within Windermere Basin Park Pumping Station between 2005 and 2009 (Image 23 to Image 24); and
- Tennis and basketball courts constructed by 2015 within Fletcher Avenue Pumping Station by 2015 (Image 24 to Image 25).

1.3 Archaeological Context

This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Study Area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the MCM through "Ontario's Past Portal"; published and unpublished documentary sources; and the files of ASI.

1.3.1 Geography

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

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

stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 B.P. (Karrow & Warner, 1990, fig. 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

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

The Study Area is located within the beaches of the Iroquois Plain physiographic region of southern Ontario (Chapman & Putnam, 1984). The Iroquois Plain is a lowland region bordering Lake Ontario. This region is characteristically flat and formed by lacustrine deposits laid down by the inundation of Lake Iroquois, a body of water that existed during the late Pleistocene. This region extends from the Trent River, around the western part of Lake Ontario, to the Niagara River, spanning a distance of 300 kilometres (Chapman and Putnam 1984:190). The old shorelines of Lake Iroquois include cliffs, bars, beaches and boulder pavements. The old sandbars in this region are good aquifers that supply water to farms and villages. The gravel bars are quarried for road and building material, while the clays of the old lake bed have been used for the manufacture of bricks (Chapman and Putnam 1984:196).

Figure 12 depicts surficial geology for the Study Area. The surficial geology mapping demonstrates that the Study Area is underlain by coarse-texture lacustrine deposits of sand, gravel, minor silt and clay, Littoral deposits, and modern alluvial deposits of clay, silt, sand, gravel, and organic remains (Ontario Geological Survey, 2010).

Soil information is not available for the Beach Boulevard Study Area due to the early urban development of the City of Hamilton and industrialization of the Hamilton Harbour Shoreline, with the exception of the south end which is indicated to be very poorly drained muck (Presant et al., 1965).

Hamilton Harbour, also known as Burlington Bay, is located at the western tip of Lake Ontario and is separated from the Lake by a sandbar. The harbour is a 2,150 hectares embayment of Lake Ontario draining a watershed of 49,400 hectares. It is surrounded on three sides by the Niagara Escarpment. The harbour's watershed is drained by three major tributaries, the Grindstone, Spencer, and Red Hill creeks. Red Hill Creek is closest to the Study Area. In the nineteenth century, the watershed was heavily forested, and Hamilton Harbour had vast marshes, and abundant fish and wildlife.

1.3.2 Previously Registered Archaeological Sites

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database maintained by the MCM. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 kilometres north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden block *AhGw.*

According to the Ontario Archaeological Sites Database, three previously registered archaeological sites are located within one kilometre of the Study Area, none of which are located within 50 metres of the Preferred Alternatives (MHTSCI 2022). A summary of the sites is provided below in Table 1.

Table 1: Registered Sites within One Kilometre of the Study Area

Borden number	Site Name	Temporal/ Cultural Affiliation	Site type	Researcher	CHVI
AhGw-76	Watson	Pre-Contact Indigenous; Euro-Canadian	Unknown; Inn	Ferris 1987	
AhGw-77	Mint Julip	Late Woodland	Campsite	Warrick 1989	
AhGw-264	Dynes	Euro-Canadian	Tavern/restaurant, inn	Cornies 2008	

1.3.3 Previous Archaeological Assessments

ASI reviewed previous archaeological assessments that detail fieldwork within 50 metres of the Study Area. Only those specific archaeological assessments of direct relevance to the present undertaking will be included here:

Reports within the Study Area

(ASI, 2007) Stage 1 Archaeological Assessment Windermere Basin Class Environmental Assessment, City of Hamilton, Ontario [P057-418-2007]

This project area overlaps the trunk storm sewer between Eastport Channel and Windermere Basin Park and park of Windermere Basin Park pumping station. Background research determined the project area was once almost entirely under the waters of Hamilton Harbour. A property inspection determined the land portion of the project area to consist of landfill made up of dredge, scrap, slag, and crushed stone. It was recommended the project area be free of further archaeological concern.

(Earthworks Archaeological Services Inc., 2019) Stage 1-2 Archaeological Assessment 358 Beach Boulevard Part of Lot 12, Registered Plan 364 Geographic Township of Saltfleet City of Hamilton. P321-0038-2019.

This project area overlaps part of the new storm and channel rehabilitation east of Queen Elizabeth Way from Towers Drive to Van Wagners Drive, at 358 Beach Boulevard, within the current Study Area. Test pit survey was conducted at five metre intervals, with depths of approximately 39 centimetres, and no archaeological resources were encountered. No further archaeological assessment was recommended.

(Earthworks Archaeological Services Inc., 2020) Stage 1 & 2 Archaeological Assessment 352 Beach Boulevard Part 3 of Lot 12, Registered Plan 364 Geographic Township of Saltfleet City of Hamilton. P321-0219-2020.

This project area overlaps part of the new storm and channel rehabilitation east of Queen Elizabeth Way from Towers Drive to Van Wagners Drive, at 352 Beach Boulevard, within the current Study Area. Test pit survey was conducted at five metre intervals, with depths of approximately 25 centimetres. No archaeological material or features were encountered, and no further work was recommended.

(Timmins Martelle Heritage Consultants Inc., 2010) Stage 1 & 2 Archaeological Assessment Beach Boulevard Park Developments Three Sites 0, 80 and 189 Beach Boulevard City of Hamilton. P083-044-2010.

The project area overlaps the upgrade storm sewer replacement at the Hamilton Harbour Outlet at Jimmy Lomax Park and at the Fletcher Avenue Pumping Station at Skyway Park. Test pit survey was conducted at five metre intervals. No archaeological materials were encountered. The report noted that there is potential for deeply buried archaeological deposits based on a known site on the Burlington Beach with depths of up to one metre. Archaeological monitoring of deep construction impacts was recommended.

(Detritus Consulting Limited, 2022)Stage 1-2 Archaeological Assessment 218 Beach Boulevard, Part of Lot 32, Broken Front Concession, Geographic Township of Saltfleet, Historical County of Wentworth, Now the City of Hamilton, Ontario. P017-0982-2021.

The project area overlaps part of the new storm and channel rehabilitation east of Queen Elizabeth Way from Towers Drive to Van Wagners Drive, at 218 Beach Boulevard, within the current Study Area. Test pit survey was conducted at five-metre intervals to depths of approximately 30 centimetres. No artifacts or other archaeological resources were identified. No further archaeological assessment was recommended.

Additional Reports within 50 metres of the Study Area

(Archaeological Consultants Canada, 2022) Stage 1 and 2 Archaeological Assessment 248 Beach Boulevard, Lot 32, Broke Front Concession, City of Hamilton, Historically Located in the Township of Saltfleet, County of Wentworth, Ontario. P1208-0148-2022.

The project area is within 50 metres of the new storm and channel rehabilitation east of Queen Elizabeth Way from Towers Drive to Van Wagners Drive, at 248 Beach Boulevard. Test pit survey was conducted at five-metre intervals. No artifacts or other archaeological resources were identified. No further archaeological assessment was recommended.

2.0 Property Inspection

2.1 Field Methods

A Stage 1 property inspection must adhere to the S & G, Section 1.2, Standards 1-6, which are discussed below. The entire property and its periphery must be inspected. The inspection may be either systematic or random. Coverage must be sufficient to identify the presence or absence of any features of archaeological potential. The inspection must be conducted when weather conditions permit good visibility of land features. Natural landforms and watercourses are to be confirmed if previously identified. Additional features such as elevated topography, relic water channels, glacial shorelines, well-

drained soils within heavy soils and slightly elevated areas within low and wet areas should be identified and documented, if present. Features affecting assessment strategies should be identified and documented such as woodlots, bogs or other permanently wet areas, areas of steeper grade than indicated on topographic mapping, areas of overgrown vegetation, areas of heavy soil, and recent land disturbance such as grading, fill deposits and vegetation clearing. The inspection should also identify and document structures and built features that will affect assessment strategies, such as heritage structures or landscapes, cairns, monuments or plaques, and cemeteries.

The Stage 1 archaeological assessment property inspection was conducted under the field direction of Jessica Lytle (P1066) of ASI, on November 24, 2022, in order to gain first-hand knowledge of the geography, topography, and current conditions and to evaluate and map archaeological potential of the Study Area. It was a systematic visual inspection from publicly accessible lands/public right-of-ways only and did not include excavation or collection of archaeological resources. Fieldwork was conducted when weather conditions were deemed clear with good visibility (overcast with temperatures of six degrees Celsius), per S & G Section 1.2., Standard 2. Field photography is presented in Section 7.0 (Image 1 to Image 20), and field observations are overlaid onto the existing conditions of the Study Area in Section 8.0 (Figure 13 to Figure 19).

2.2 Current Land Use and Field Conditions

The Stage 1 Study Area scope involves the following Preferred Alternatives:

- Existing storm sewer inspection at Eastport Outlet at the Queen Elizabeth Way Crossing, Lagoon Outlet at the Queen Elizabeth Way Crossing, and the trunk storm sewer between Eastport Channel and Windmere Basin Park.
    - The Eastport Outlet at the Queen Elizabeth Way Crossing (Image 1) is between Eastport Drive and Hamilton Harbour, crossing under the Burlington Skyway bridge. The land includes part of Eastport Drive and a grass field below the Burlington Skyway bridge.
    - The Lagoon Outlet at the Queen Elizabeth Way Crossing (Image 5) includes part of the residential Lagoon Avenue, the Queen Elizabeth

Way, and the ditch between Eastport Drive and the Queen Elizabeth Way.
    - The trunk storm sewer between Eastport Channel and Windmere Basin Park (Image 14) includes the Eastport Channel ditch, Eastport Drive, and grass fields of Windermere Basin Park.

- Existing storm sewer upgrades at Harbour Outlet at the Queen Elizabeth Way Crossing (Image 2 to Image 4), Dunraven Outlet at the Queen Elizabeth Way Crossing (twin or larger replacement).
    - The storm sewer goes from Beach Boulevard, along the eastern edge of Jimmy Lomax Park, under the Queen Elizabeth Way bridge, and through Eastport Drive to Hamilton Harbour. The Dunraven Outlet follows the residential Dunraven Avenue from Beach Boulevard, south under the Queen Elizabeth Way bridge, and through Eastport Drive to Hamilton Harbour.

- New storm sewer installation at Wark Outlet at the Queen Elizabeth Way Crossing for proposed pumping station, connection from Eastport Ditch to Harbour opposite Dunraven, and on the east side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive to support pumping station construction.
    - This land consists of bushes, reeds, trees, and grass, located within residential properties west of Beach Boulevard. It includes part of the Hamilton Beach Rescue Unit parking lot.

- Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way (Image 6 to Image 7) and between Windermere Basin Park and Red Hill Creek (Image 20)
    - The ditches are long and narrow, filled with water. The banks decline towards the ditch, and are filled with reeds, bushes, and trees. They are bound by Eastport Drive and the Queen Elizabeth Highway.
- Modifications to road grading on Eastport Drive at Beach Boulevard intersection.

    - Eastport Road at Beach Boulevard consists of a two lane each way road with a left turn lane to Beach Boulevard. The western sidewalk ends at the intersection.
- Proposed pumping station locations (Bayside Avenue, Wark Avenue, Fletcher Avenue, Windermere Basin Park).
    - Bayside Avenue site (Image 9) consists of lawn at 11 Bayside Avenue between a residential house and the noise barrier wall of the Queen Elizabeth Way.
    - Wark Avenue site (Image 11) is on the lot of the demolished houses at 3 Wark Avenue.
    - Fletcher Avenue site (Image 16 to Image 17) includes the Skyway Park, which has grassed fields, a tennis court, a basketball court, and two paved paths from the courts to Beach Boulevard.
    - Windermere Basin pumping station is within the late twentieth-century made lands along the western side of Eastport Drive, which are grassed with some trees, a dirt parking lot and paths.

3.0 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria that are indicative of archaeological potential. The Study Area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites (See Table 1);
- Water sources: primary, secondary, or past water source (Lake Ontario, Hamilton Harbour);
- Proximity to early settlements (cottages on the Beach Bar); and
- Early historic transportation routes (Beach Road)

According to the S & G, Section 1.4 Standard 1e, no areas within a property containing locations listed or designated by a municipality can be recommended for exemption from further assessment unless the area can be documented as disturbed. The Municipal Heritage Register was consulted and three properties within the Preferred Alternatives are Listed or Designated under the *Ontario Heritage Act*:

- 198 Beach Boulevard, Residence, Listed
- 218 Beach Boulevard, Demolished, Listed
- 1064 Beach Boulevard, Residence, Designated

The *City of Hamilton Archaeology Management Plan 2016* (Warrick et al., 2016) was reviewed for background information and to help inform any indicators of archaeological potential not captured in other research. Generally speaking, archaeological management plans are high-level analyses of archaeological potential for non-specialists but cannot be considered a replacement for Stage 1 archaeological assessments. ASI's review of the above archaeological management plan indicates parts of the Preferred Alternatives have archaeological potential:

- Existing storm sewer inspection at Lagoon Outlet at the Queen Elizabeth Way Crossing, and the trunk storm sewer between Eastport Channel and Windmere Basin Park;
- Existing storm sewer upgrades at Dunraven Outlet at the Queen Elizabeth Way Crossing (twin or larger replacement);
- New storm sewer installation and ditch restoration at Wark Outlet at the Queen Elizabeth Way Crossing for proposed pumping station, connection from Eastport Ditch to Harbour opposite Dunraven, and on the east side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive to support pumping station construction;
- Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way, and between Windermere Basin Park and Red Hill Creek; and
- Proposed pumping station locations (Fletcher Avenue, Windermere Basin Park).

3.1 Analysis of Preferred Alternatives

The background research and the context of Indigenous archaeological sites found in the Beach Bar area indicates potential for intact natural soil horizons below beach sand deposits, and nineteenth century and modern disturbances. Parts of the Preferred Alternatives exhibit archaeological potential (Image 8 to

Image 12, Image 13, Image 15, Image 18 to Image 19; Figure 17 to Figure 19: areas highlighted in green):

- Hamilton Harbour Outlet at the Queen Elizabeth Way Crossing;
- New storm sewer installation and ditch restoration on the east side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; and,
- The proposed pumping station locations at Bayside Avenue and Fletcher Avenue Pumping Station

ASI recommends Stage 2 survey to proceed following S & G Section 2.1.7 Standard 2 because there is potential for both deeply buried and near surface archaeological resources. Test pit survey should extend to a sufficient depth, greater than 50 centimetres and up to 1.2 metres to determine if there are intact near surface cultural deposits and to determine the extent and degree of disturbance. Depending on the results of the Stage 2 test pit survey, additional Stage 2 trenching with heavy machinery may be required following S & G Section 2.1.7 Standard 3.

Areas previously assessed (P083-044-2010, P321-0038-2019, P321-0219-2020, P017-0982-2021) are recommended for reassessment by test pit survey which should extend to a sufficient depth, greater than 50 centimetres and up to 1.2 metres, to account for the deeply buried potential in these parts of the Study Area (Image 16 to Image 17; Figure 17, Figure 19: areas highlighted in pink).

The Hamilton Harbour Outlet Preferred Alternative is along the southern border of the Jimmy Lomax Park at 0 Beach Boulevard (Image 14). This area was assessed in 2010 under PIF P083-044-2010 and was noted to have potential for deeply buried archaeological deposits. However, utilities mapping reviewed for the current report shows that there is a deeply buried storm sewer in this location which has thoroughly disturbed this part of the Study Area. Further work in this location will not be required.

Parts of the Preferred Alternatives have been previously assessed by ASI in 2007 (P057-418-2007) and do not require further archaeological assessments due to being entirely under the waters of Hamilton Harbour and disturbance from the landfill made up of dredge, scrap, slag, and crushed stone. These parts of the

Preferred Alternatives include: Eastport Drive and the Queen Elizabeth Way proposed for ditch rehabilitation; between Windermere Basin Park and Red Hill Creek; and the Windermere Basin pumping station (Figure 17 to Figure 19: areas highlighted in red).

The remainder of the Preferred Alternatives have been subjected to deep soil disturbance events due to land making activities in the late twentieth and twenty-first centuries, construction of the Queen Elizabeth Way and Eastport Drive right-of-ways, and construction of existing storm sewers, outlets, channels and ditches. According to the S & G Section 1.3.2 these areas do not retain archaeological potential (Image 1 to Image 7, Image 10 to Image 11, Image 14, Image 20; Figure 14 to Figure 19: areas highlighted in yellow) and do not require further survey.

3.2 Conclusions

The Stage 1 background study determined three previously registered archaeological sites are located within one kilometre of the Study Area, none of which are located within 50 metres of the Preferred Alternatives. The property inspection determined that parts of the Preferred Alternatives exhibit archaeological potential and will require further archaeological assessment.

4.0 Recommendations

The following recommendations are made:

1) Parts of the Preferred Alternatives exhibit archaeological potential, including Hamilton Harbour Outlet at the Queen Elizabeth Way Crossing, the Fletcher Avenue Pumping Station, the east side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive, the Harbour Outlet at the Queen Elizabeth Way Crossing, and the proposed pumping station locations at Bayside Avenue and Fletcher Avenue. These lands require Stage 2 archaeological assessment by test pit survey at five metre intervals (Figure 17 to Figure 19: areas highlighted in green and pink). Stage 2 is required prior to any proposed construction activities on these lands;

a) Test pit survey should extend to a sufficient depth, greater than 50 centimetres and up to 1.2 metres to determine if there are intact moderately deeply buried cultural deposits;

b) Areas previously surveyed which did not reach sufficient depths of test pits should be reassessed (P083-044-2010, P321-0038-2019, P321-0219-2020, P017-0982-2021);

2) The remainder of the Preferred Alternatives do not retain archaeological potential on account of deep and extensive land disturbance or being previously assessed with no outstanding archaeological concerns. These lands do not require further archaeological assessment; and,

3) Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Archaeology Programs Unit of the Ministry of Citizenship and Multiculturalism should be immediately notified.

The above recommendations are subject to Ministry approval, and it is an offence to alter any archaeological site without Ministry of Citizenship and Multiculturalism concurrence. No grading or other activities that may result in the destruction or disturbance of any archaeological sites are permitted until notice of MCM approval has been received.

5.0 Legislation Compliance Advice

ASI advises compliance with the following legislation:

- This report is submitted to the Ministry of Citizenship and Multiculturalism as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, RSO 2005, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation, and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism, a letter will be issued by the Ministry stating that there are no further concerns with regards to alterations to archaeological sites by the proposed development.

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

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

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

- Archaeological sites recommended for further archaeological field work or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, nor may artifacts be removed from them, except by a person holding an archaeological license.

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7.0 Images

7.1 Field Photography

Image 1 Eastport Outlet at the Queen Elizabeth Way Crossing; Area is disturbed, no potential

Image 2 Harbour Outlet at the Queen Elizabeth Way Crossing; Area is disturbed, no potential

Image 3 Harbour Outlet at the Queen Elizabeth Way Crossing; Area is disturbed, no potential

Image 4 Dunraven Outlet at the Queen Elizabeth Way Crossing; Area is disturbed, no potential

Image 5 Lagoon Outlet at the Queen Elizabeth Way Crossing; Area is disturbed, no potential

Image 6 Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way; Area is disturbed, no potential

Image 7 Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way; Area is disturbed, no potential

Image 8 East side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; Area requires Stage 2 survey

Image 9 Bayside Avenue site; Area requires Stage 2 survey

Image 10 east side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; Area south of disturbed parking lot requires Stage 2 survey

Image 11 Wark Avenue site; Area is disturbed, no potential

Image 12 East side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; Area requires Stage 2 survey

Image 13 East side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; Area requires Stage 2 survey

Image 14 Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way; Area is disturbed, no potential

Image 15 East side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; Area requires Stage 2 survey

Image 16 Fletcher Avenue site; Area has deeply buried potential, construction monitoring required

Image 17 Fletcher Avenue site; Area has deeply buried potential, construction monitoring required

Image 18 East side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; Area requires Stage 2 survey

Image 19 East side of the Queen Elizabeth Way from Towers Drive to Van Wagners Drive; Area requires Stage 2 survey

Image 20 Existing ditch rehabilitation between Eastport Drive and the Queen Elizabeth Way; Area is disturbed, no potential

7.2 Historical Imagery

Image 21 Connection from Eastport Ditch to Harbour opposite Dunraven in 2015 (Google Earth Pro, 2021)

Image 22 Connection from Eastport Ditch to Harbour opposite Dunraven in 2016 (Google Earth Pro, 2021)

Image 23 Fletcher Avenue and Windermere Basin Park Pumping Stations in 2005 (Google Earth Pro, 2021)

Image 24 Fletcher Avenue and Windermere Basin Park Pumping Stations in 2009 (Google Earth Pro, 2021)

Image 25 Fletcher Avenue Pumping Station in 2015 (Google Earth Pro, 2021)

8.0 Maps

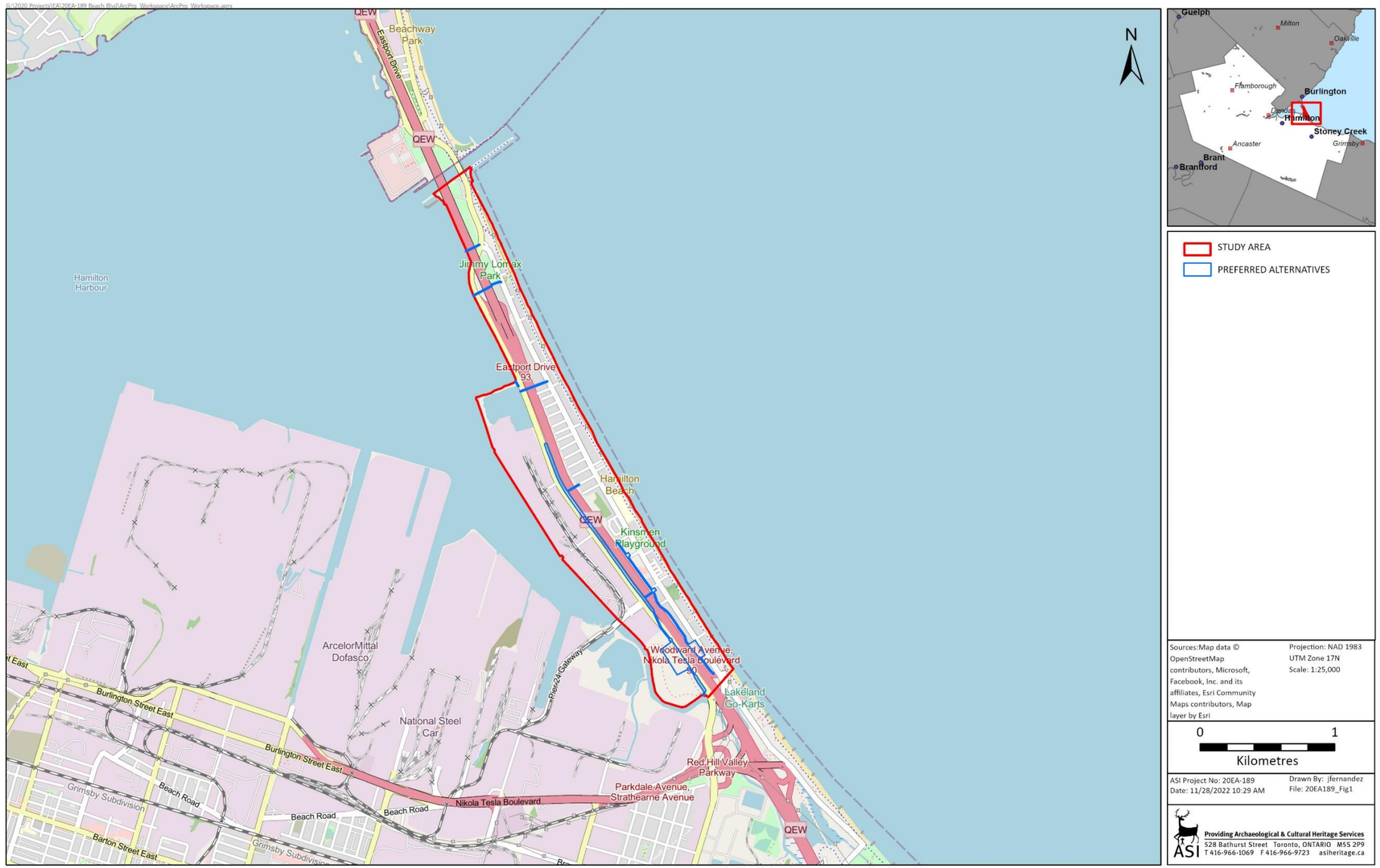

Figure 1: Beach Boulevard Study Area

Figure 2 Study Area (Approximate Location) Overlaid on the 1815 Map of Niagara District in Upper Canada

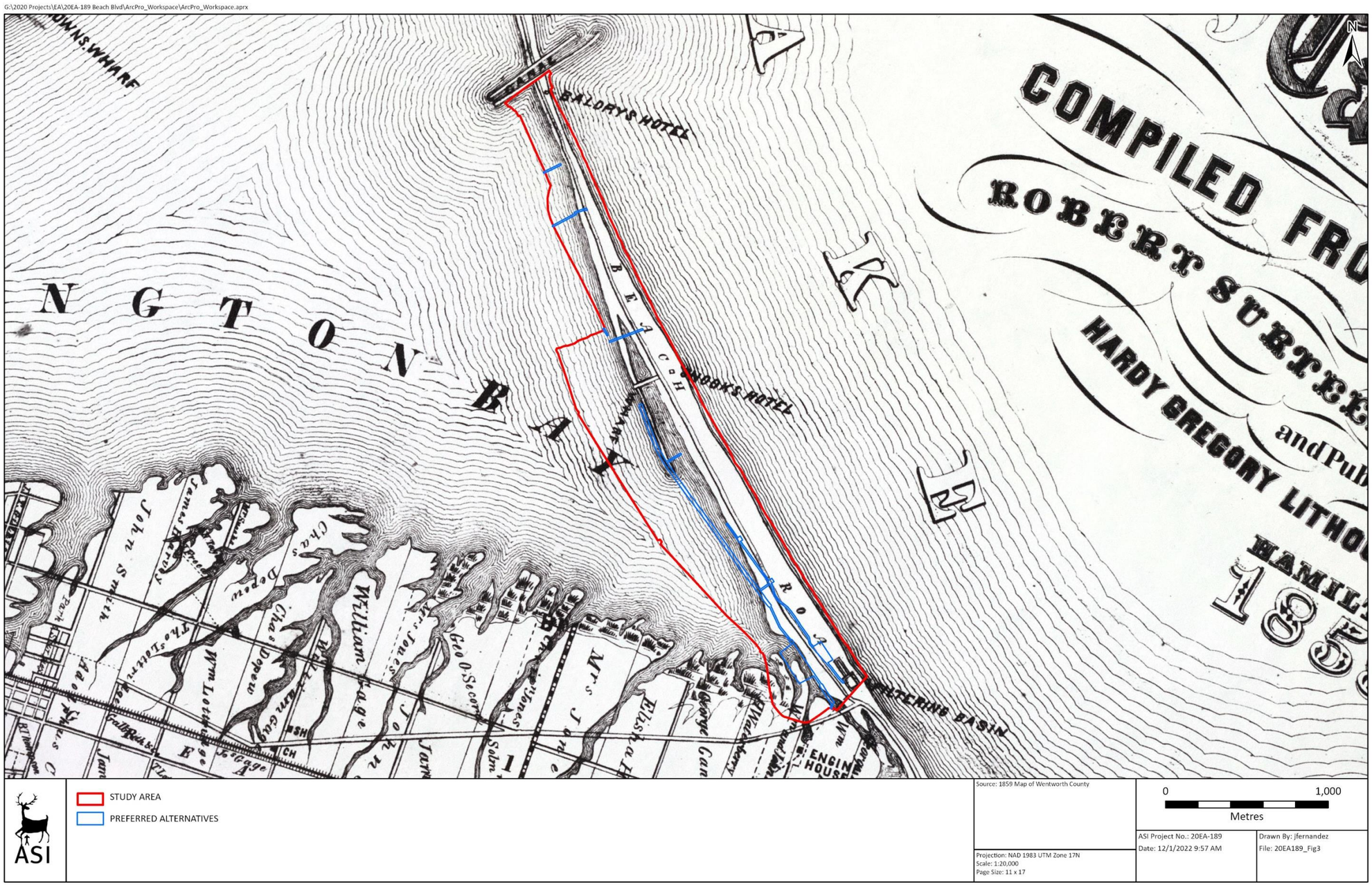

Figure 3: Study Area (Approximate Location) Overlaid on the 1859 Map of Wentworth County

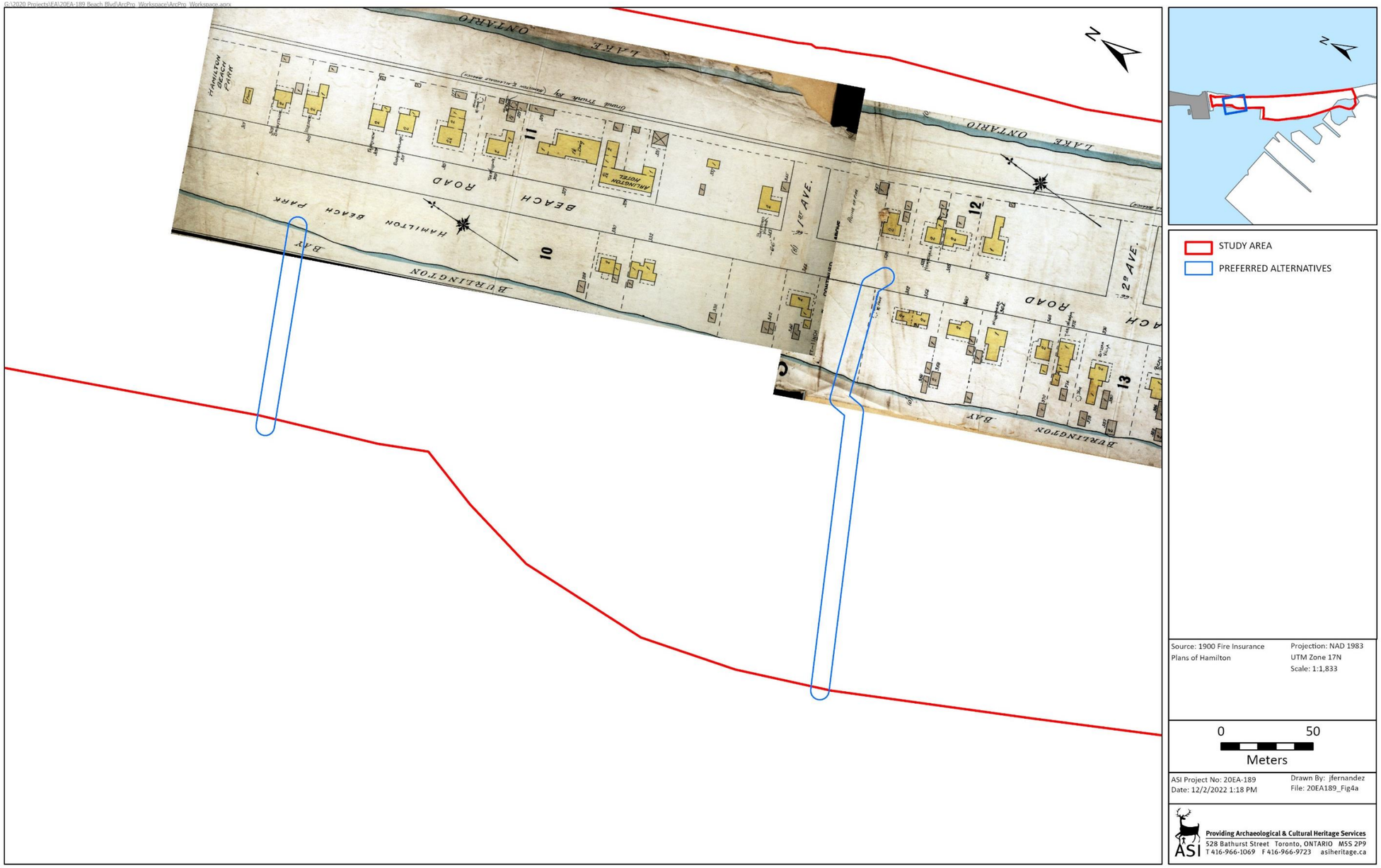

Figure 4: Study Area (Approximate Location) Overlaid on the 1900 Fire Insurance Plans of Hamilton

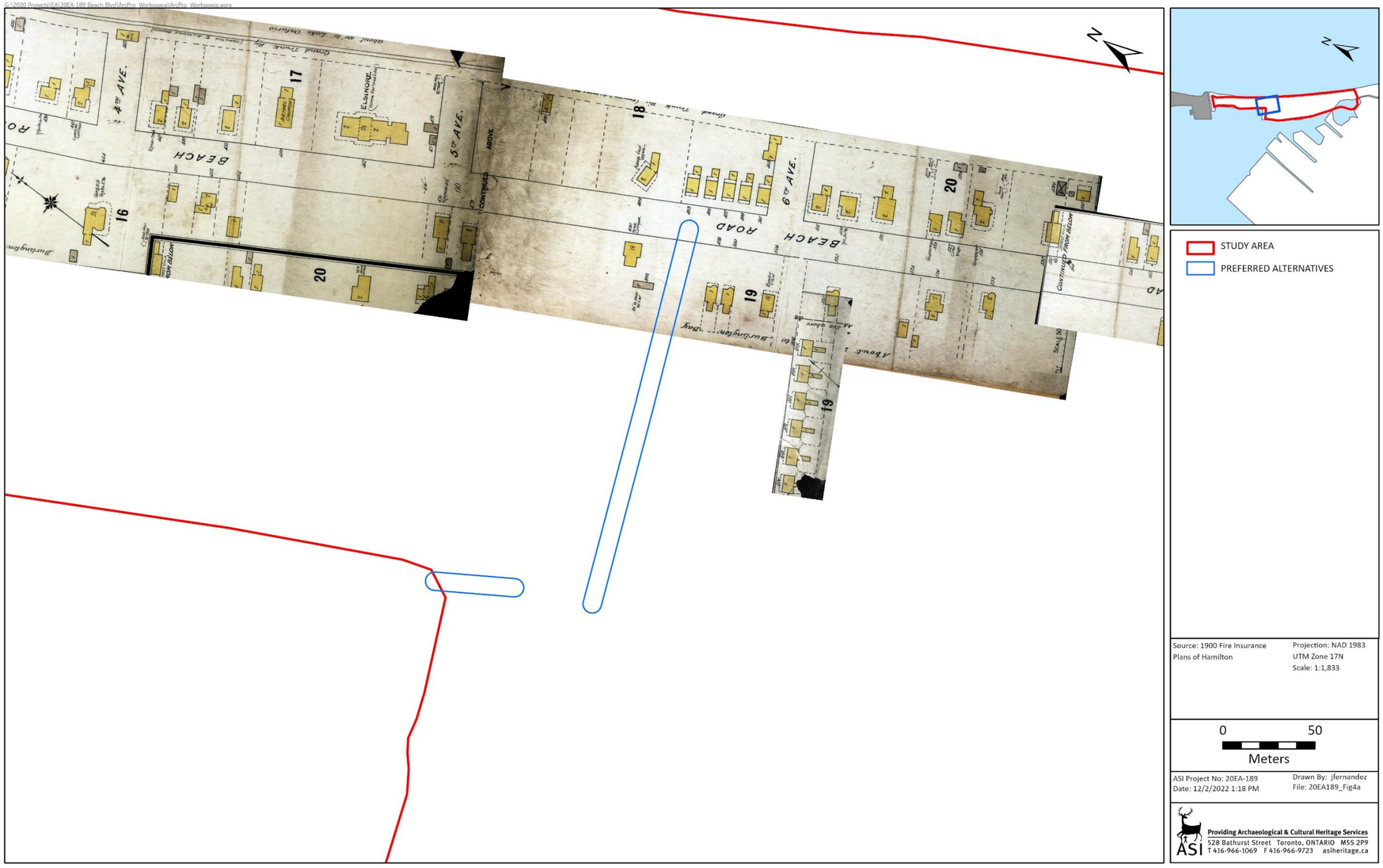

Figure 5: Study Area (Approximate Location) Overlaid on the 1900 Fire Insurance Plans of Hamilton

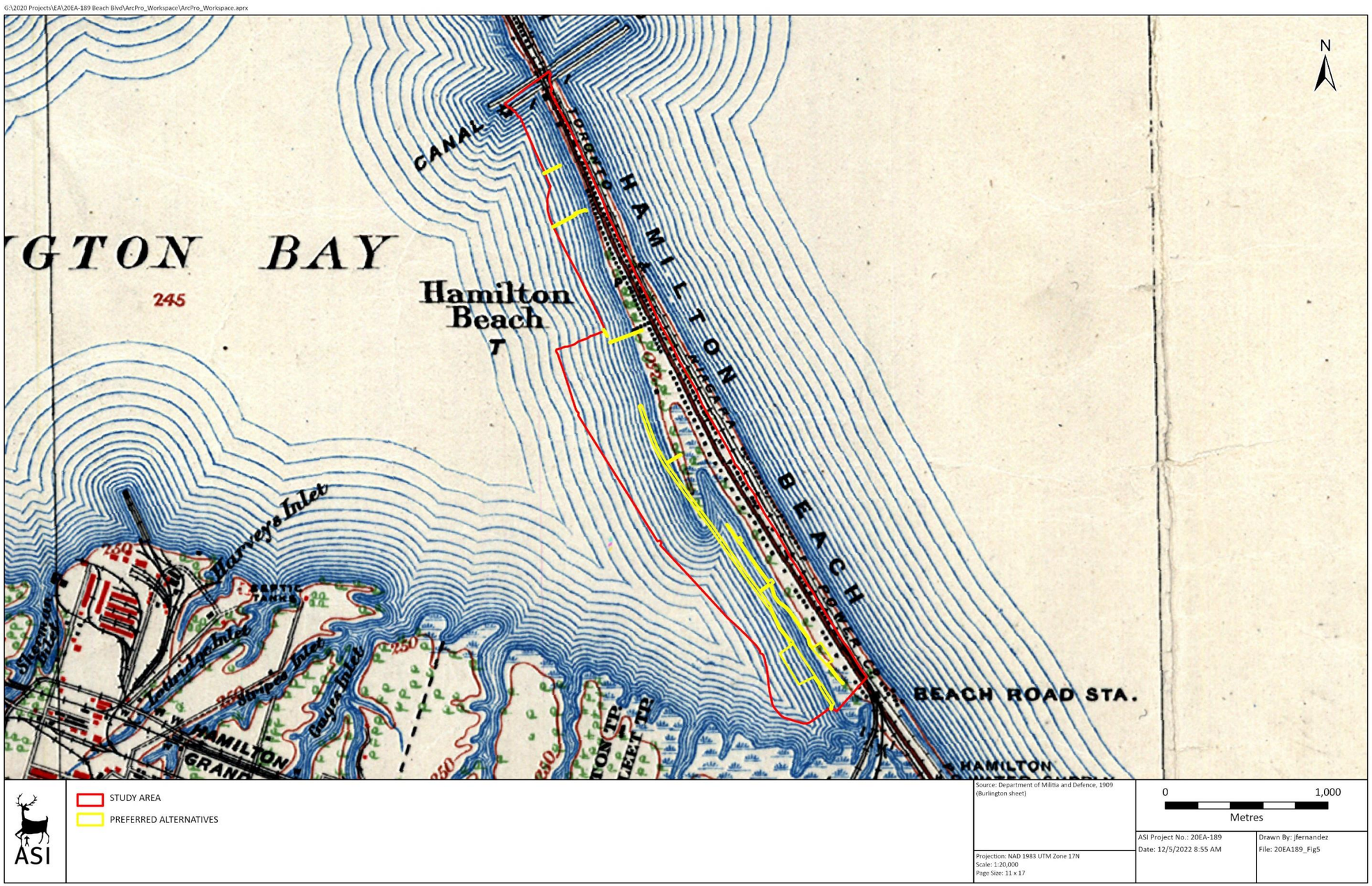

Figure 6: Study Area (Approximate Location) Overlaid on the 1909 Topographic Map Burlington sheet

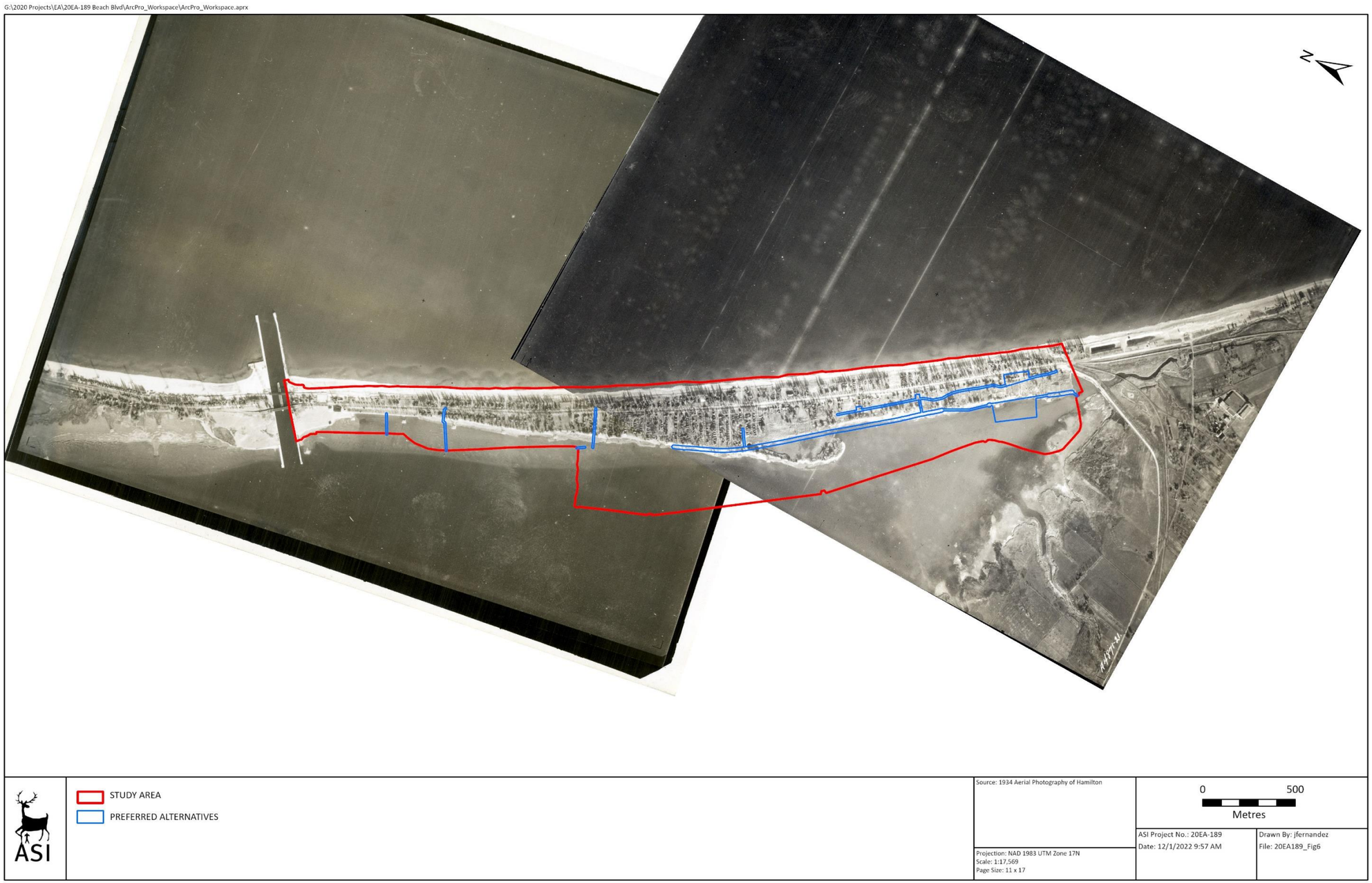

Figure 7: Study Area (Approximate Location) Overlaid on the 1934 Aerial Photography

Figure 8: Preferred Alternatives including Bayside Avenue Pumping Station (Approximate Location) Overlaid on the 1962 Aerial Photography

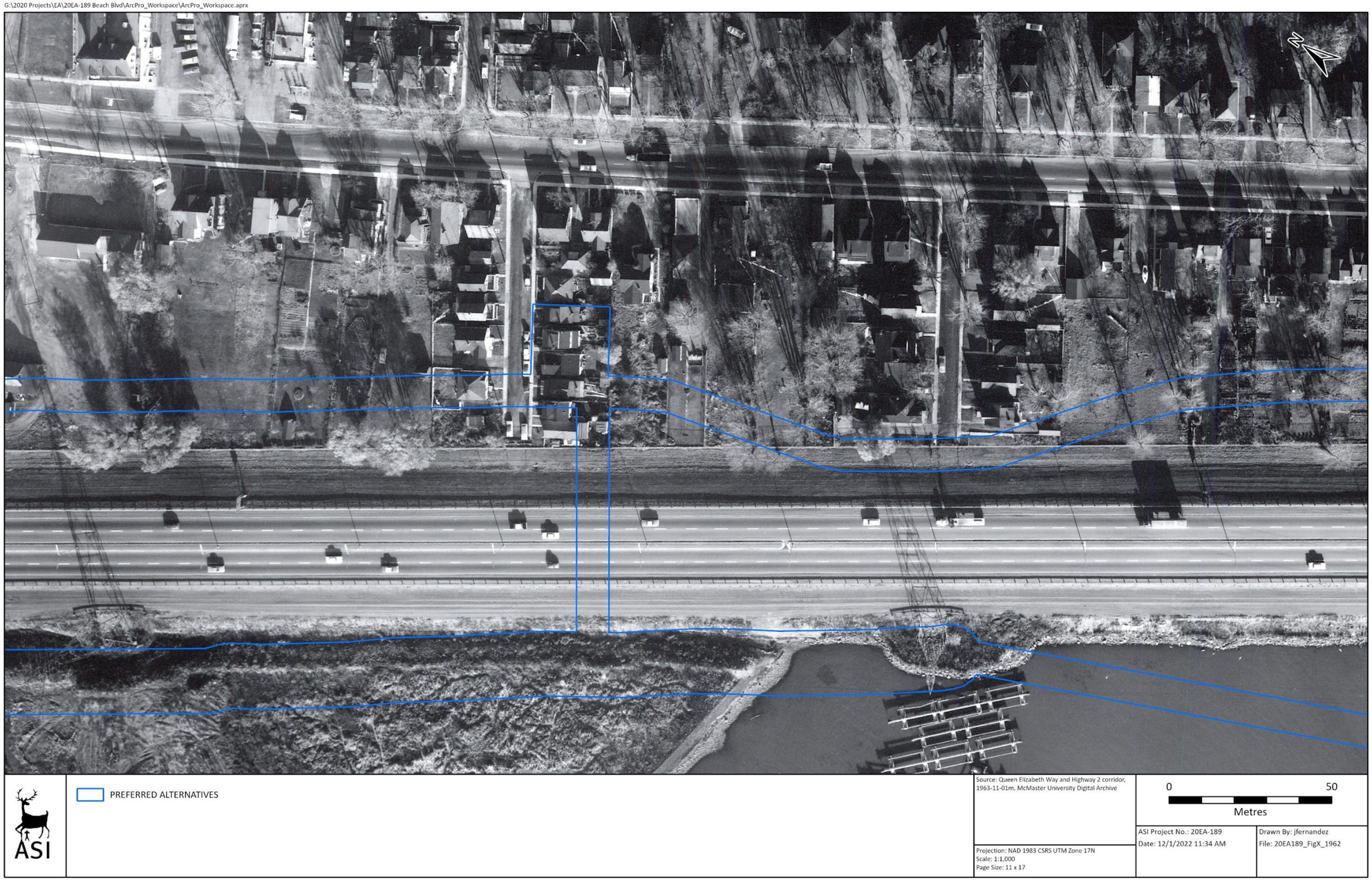

Figure 9: Preferred Alternatives including Wark Avenue Pumping Station (Approximate Location) Overlaid on the 1962 Aerial Photography

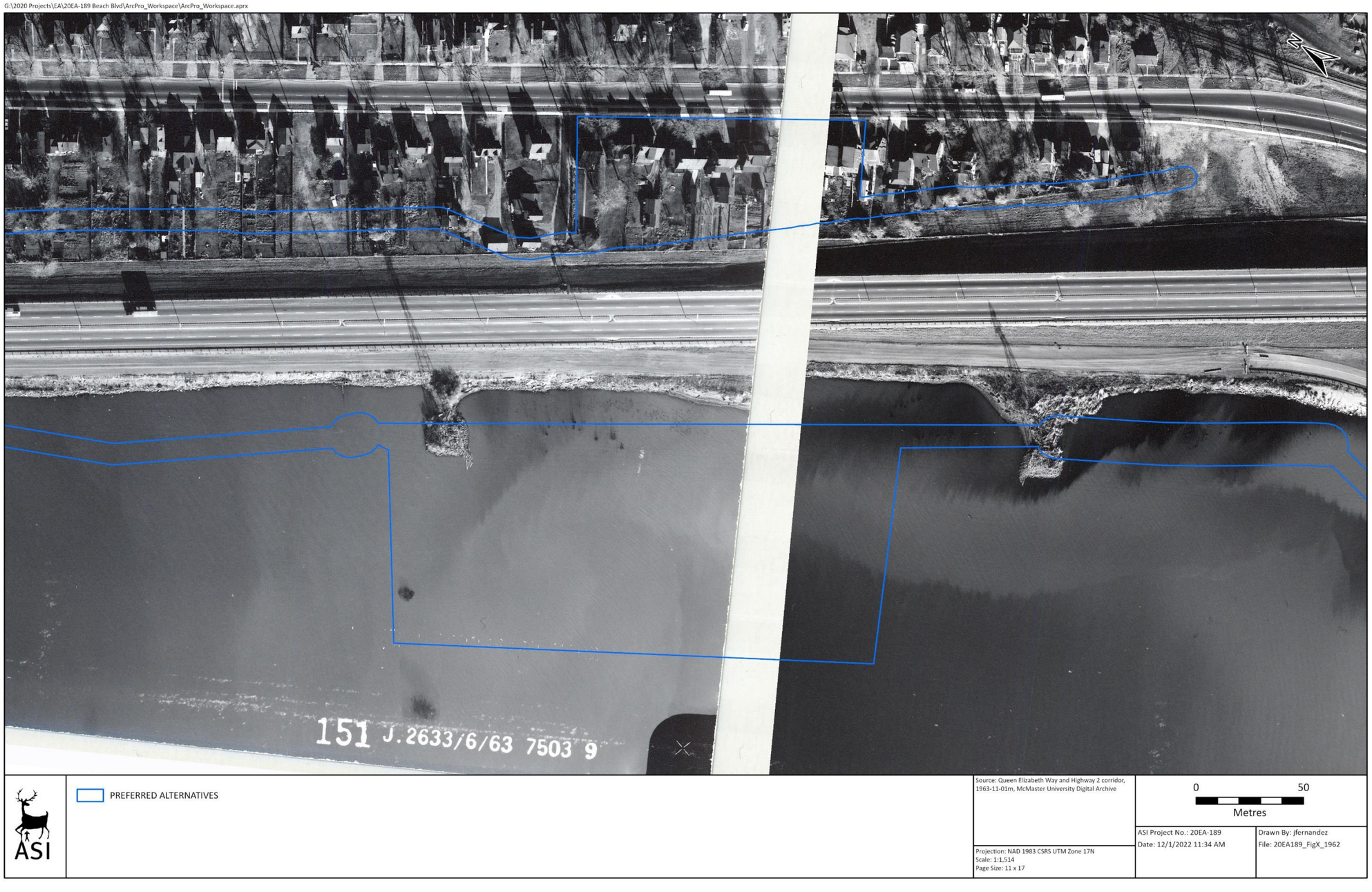

Figure 10: Preferred Alternatives including Windermere Basin Park and Fletcher Avenue Pumping Station (Approximate Location) Overlaid on the 1962 Aerial Photography

Figure 11: Study Area (Approximate Location) Overlaid on the 1999 Orthoimagery

Figure 12: Study Area – Surficial Geology

Figure 13: Beach Boulevard – Results of Stage 1 (Key Map)

Figure 14: Beach Boulevard – Results of Stage 1 (Sheet 1)

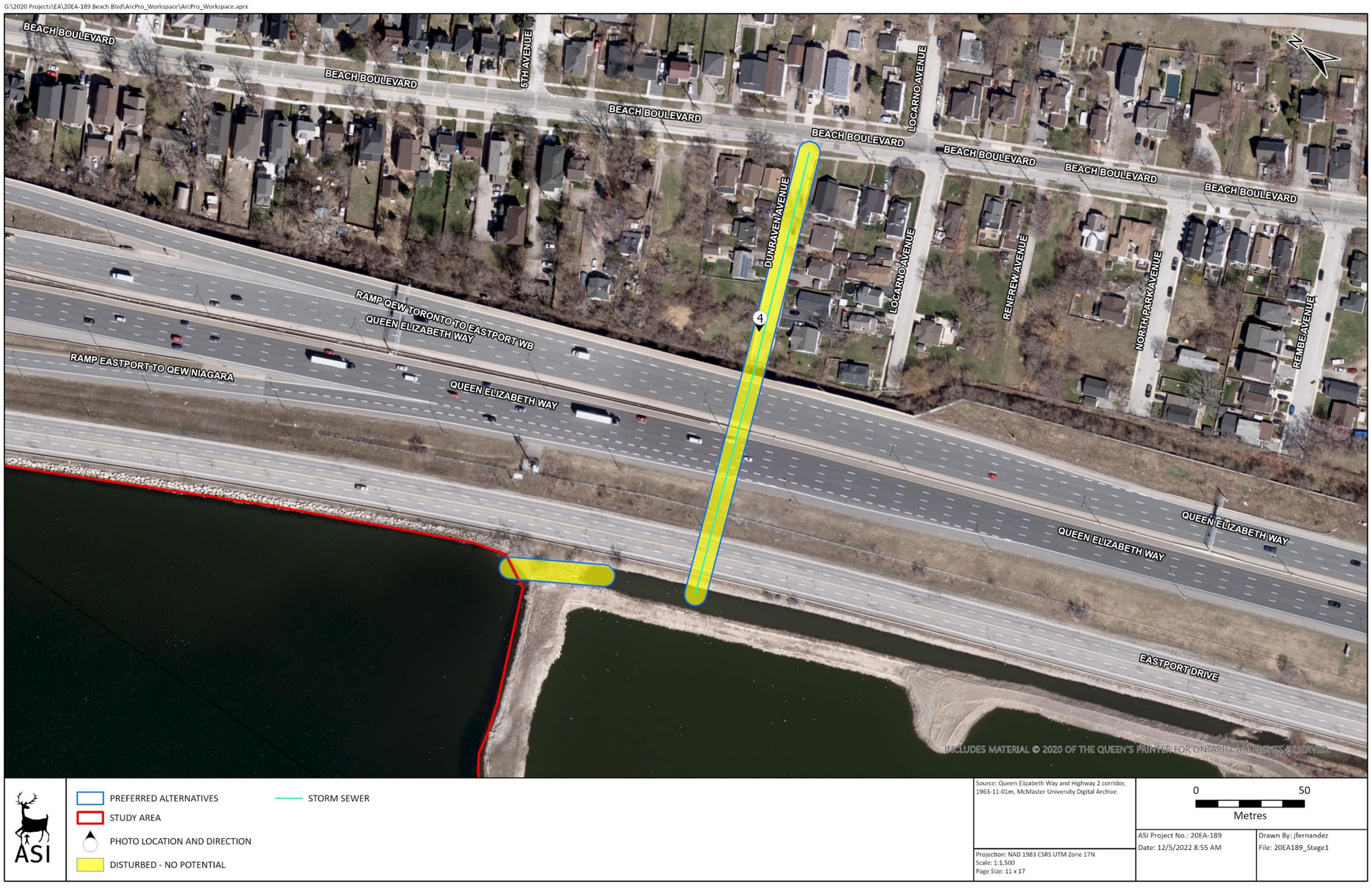

Figure 15: Beach Boulevard – Results of Stage 1 (Sheet 2)

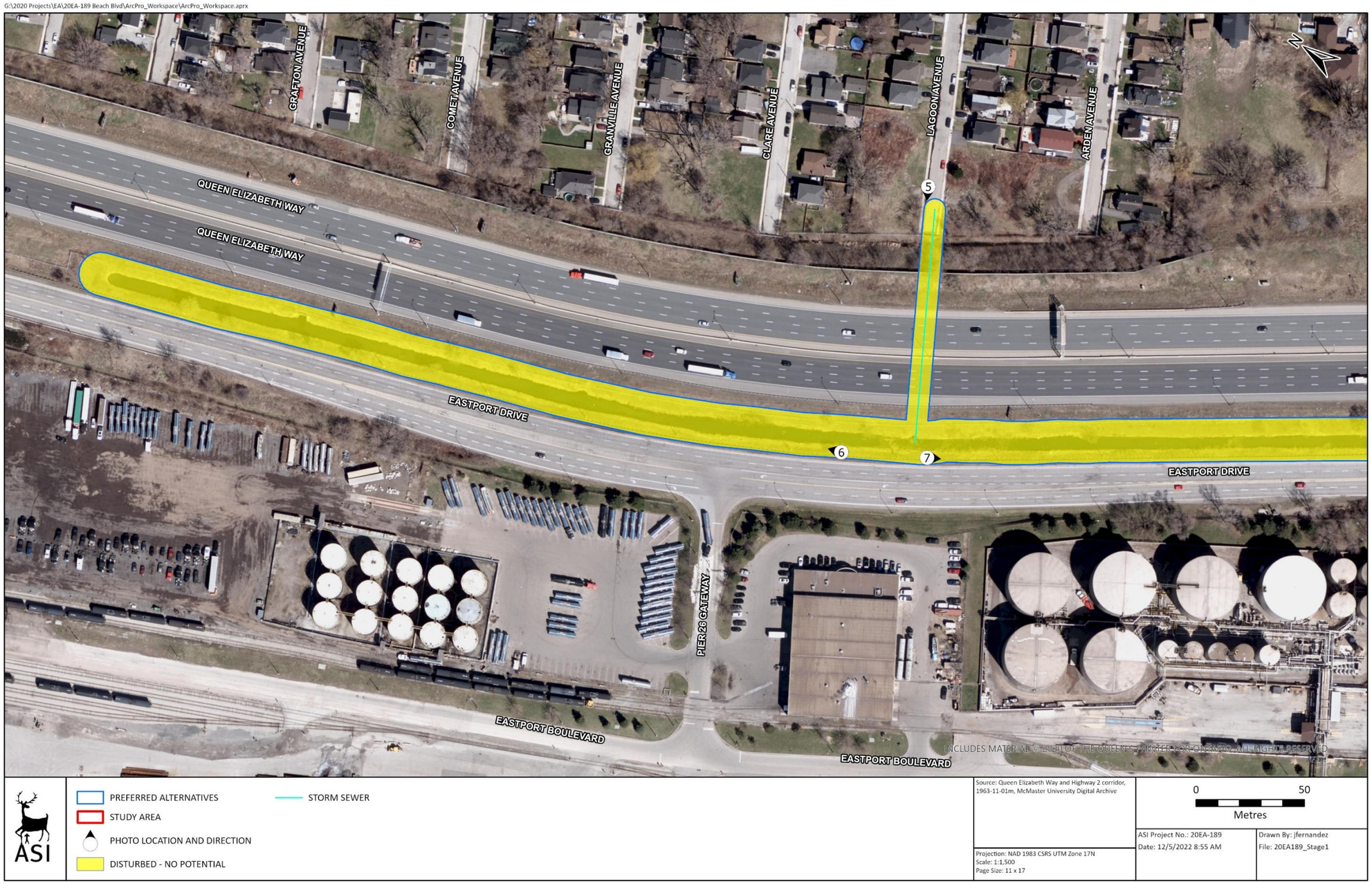

Figure 16: Beach Boulevard – Results of Stage 1 (Sheet 3)

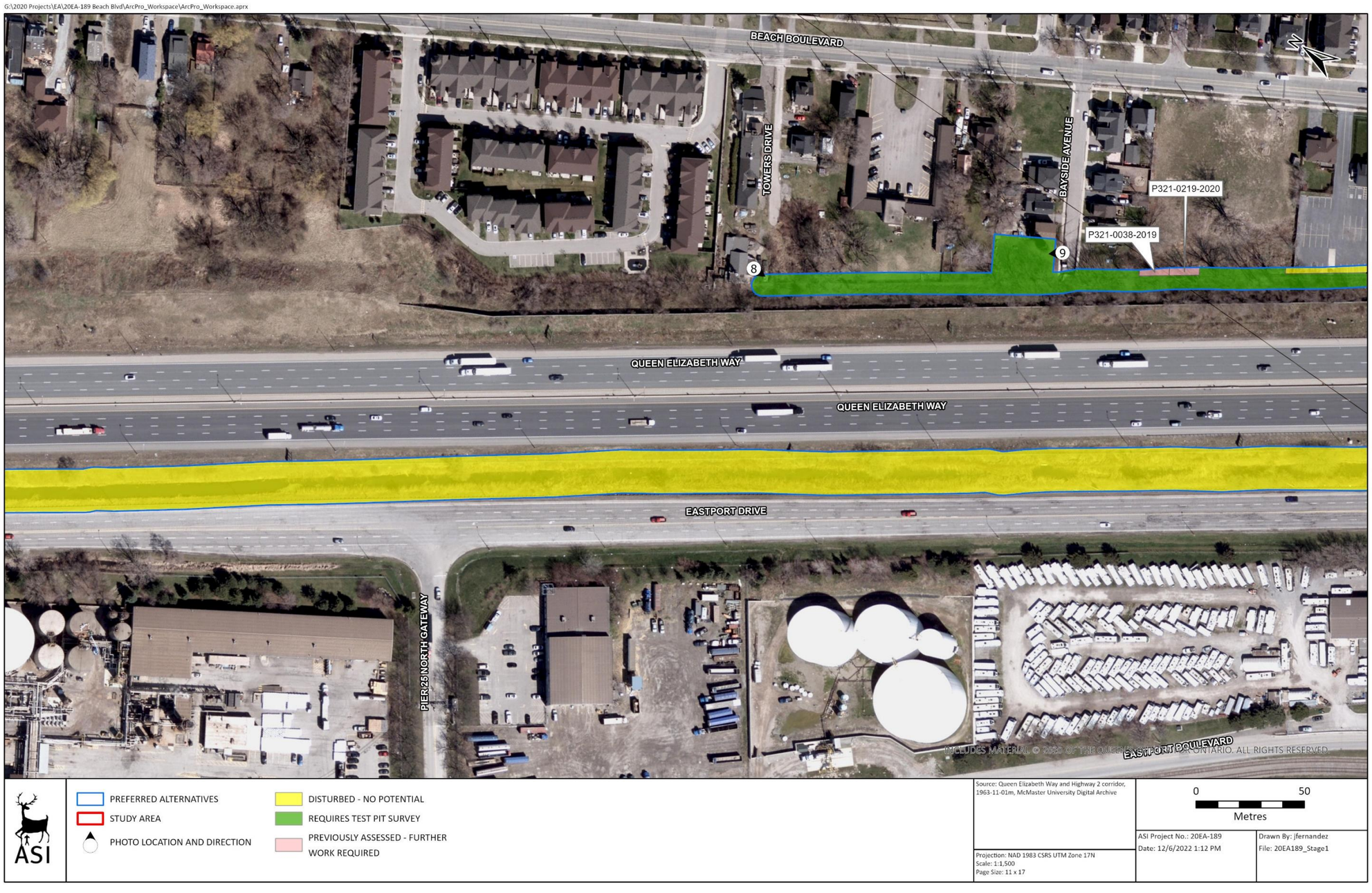

Figure 17: Beach Boulevard – Results of Stage 1 (Sheet 4)

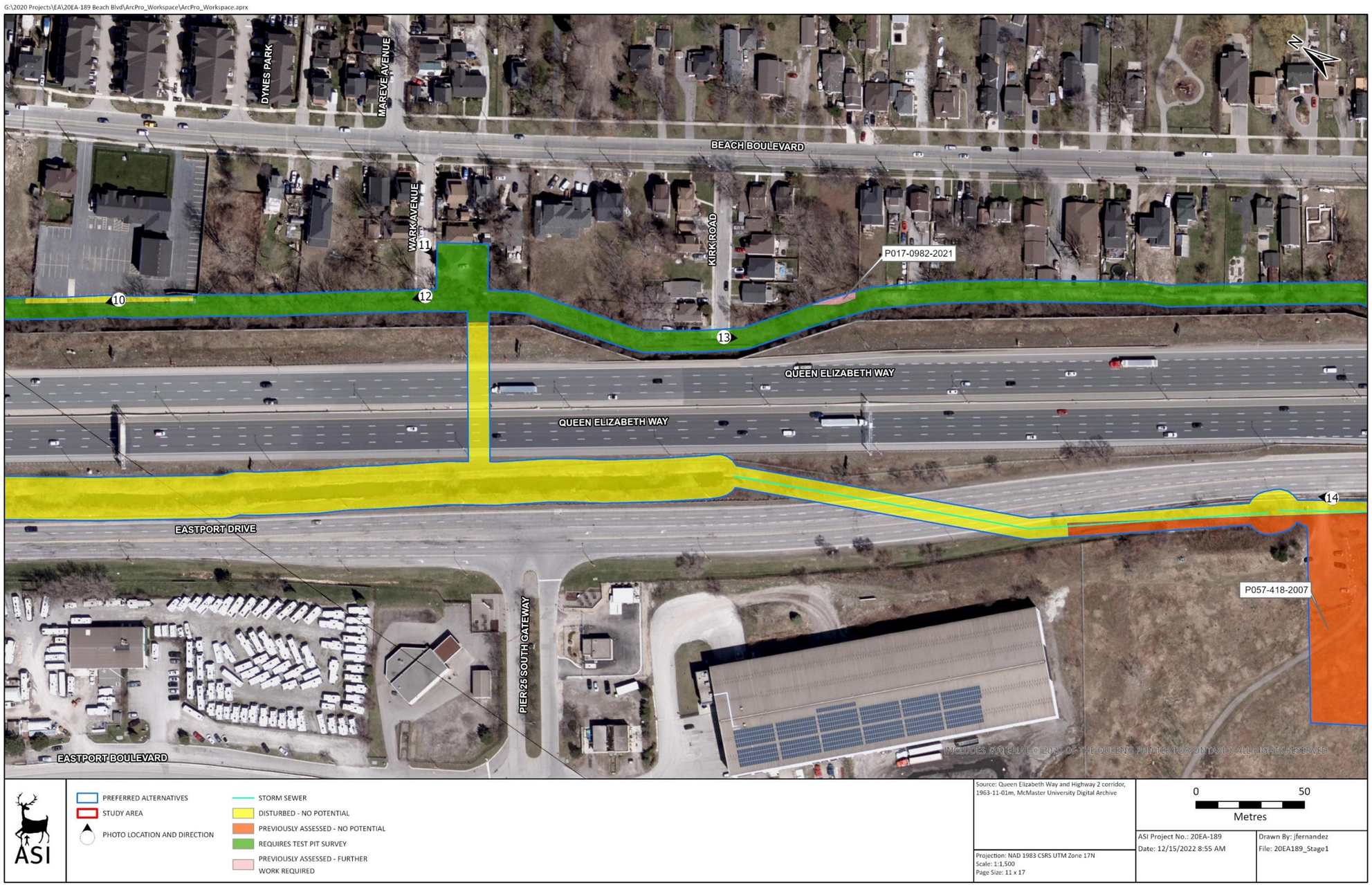

Figure 18: Beach Boulevard – Results of Stage 1 (Sheet 5)

Figure 19: Beach Boulevard – Results of Stage 1 (Sheet 6)