

# Appendix J

**Marine Archaeology  
Assessment Report**

**Marine Archaeological Assessment  
Runway End Safety Areas  
Billy Bishop Toronto City Airport  
Centre Island, City of Toronto, Ontario**

Prepared for  
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Licensed under  
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Ministry of Citizenship and Multiculturalism Licence #P027  
Licence #2024-30  
ARA File #2024-0337

**30/07/2025**

**ORIGINAL**

## **EXECUTIVE SUMMARY**

Under a contract awarded in July 2024, Archaeological Research Associates (ARA) carried out a marine archaeological assessment in support of an Environmental Assessment for the implementation of Runway End Safety Areas (RESAs) for Runway 08/26 at Billy Bishop Toronto City Airport (the Project). The Billy Bishop Toronto City Airport is owned and operated by PortsToronto (the Project proponent) and is located in the City of Toronto on the Toronto Islands.

The purpose of the Project is to comply with the Canadian Aviation Regulations Part III, Subpart 2, Division VI – Runway End Safety Area (RESA), published in January 2022, which mandate RESAs for airports serving over 325,000 commercial passengers annually. RESAs are designated open spaces at both ends of runways, designed to minimize damage if an aircraft overshoots or undershoots the runway. At Billy Bishop Toronto City Airport, the RESA requirements apply only to the primary runway, Runway 08/26, which enables commercial aircraft use.

Although there are no regulatory requirements under the federal or the provincial acts that mandate the Environmental Assessment process for the Project, a Section 82 evaluation under the Impact Assessment Act is required for all Project components that fall on Transport Canada-owned land. A Section 82 evaluation is a requirement under the Impact Assessment Act for projects located on federal lands or being carried out by federal authorities. In the City of Toronto's Official Plan (2024), policies exist that require projects where lakefilling in Lake Ontario is proposed to undertake an Environmental Assessment. As such, PortsToronto has undertaken a non-statutory Environmental Assessment process for the RESA project at Billy Bishop Toronto City Airport.

As part of the Environmental Assessment, PortsToronto has identified and evaluated alternatives for implementing RESAs at Billy Bishop Toronto City Airport. The Environmental Assessment also considers the opportunities to enhance airport operational safety. This includes minimizing regular non-airport and airport vehicular crossings on Runway 08/26, currently necessary for both airport operations and Toronto Islands access requiring co-ordination with the airport traffic control tower. This effort supports Transportation Safety Board of Canada's objective to reduce the risk of runway incursions at airports. Additionally, the Environmental Assessment examined measures to reduce emissions and ground-based noise levels along the lakefront.

The subject study areas of the Marine Archaeological Assessment consist of two rectilinear-shaped parcels of land located at the east and west ends of Runway 08/26 with a total area of 22.14 ha. The Marine Archaeological Assessment included an in-water marine archaeological assessment of these two areas off the west and east ends of runway 08/26 using side scan sonar and magnetometer survey and ground truthing of possible cultural targets encountered during the survey. The assessment also included background research of the study area, in order to anticipate possible cultural resources in the area. Borehole data was reviewed for the report as well.

Archaeological work was conducted under marine archaeological Licence #2024-30 issued to Scarlett Janusas. A Stage 1 land archaeological assessment (P438-0011-2014) was conducted by AECOM for the land portion between the current two study areas in 2015. The Stage 1 assessment determined that the study area addressed within the scope of AECOM's 2015 study did not retain archaeological potential and no further assessment was recommended (AECOM 2015). In addition, a cultural heritage review memorandum was prepared by AECOM in 2015 for the same area. A marine archaeological assessment (background research only) was conducted under Licence #2015-16, but as of the date of this report, it has not been accepted in the Public Registry of Archaeological Reports.

Historic research indicates that the majority of the Toronto Islands did not exist until quite late, resulting from the movement of sands and sediments from the Scarborough Bluffs. The formation of the Islands was further influenced by the dredging of the Don River. When the islands first started to be formed, they were attractive to both pre-contact peoples and later post-contact Indigenous and Euro-Canadian alike. In 1906, the study area contained small fingers of land, no longer resembling the islands today. Historically, the islands were subject to much infilling to create "made land." The majority of the Billy Bishop Toronto City Airport is almost all made land. A considerable amount of fill was dredged from the Toronto Harbour and sands were brought in from the Scarborough beaches to completely fill in the northwestern portion of the island in order to artificially create the land required for the development and construction of the airport. The area surrounding the airport land was water and generally shallow in nature. There is one recorded shipwreck on an early 1833 map. The contour line on which the wreck sits is described as a shoal of hard, compact sand with a very steep grade along the length of the contour line. South of the contour line, the depths range from 0.9 to 1.2 m, and on the other side (towards the mainland), the edge drops off to 4.8 to 5.5 m. Based on this description, it would appear that the ship grounded onto the shallows and could not be recovered. No information is known about the shipwreck. No exact location is available, but the shipwreck appears to be located towards the eastern boundary of the study area.

Borehole drilling was conducted in the study area following the side scan and magnetometer survey to ensure the boreholes were not being taken in an area of a cultural resource. A total of 11 boreholes were taken. Trace organic material (unidentified) was found in all boreholes except borehole BH24-OFF-08. In borehole BH24-OFF-01, the trace organics were found between 10.7 and 12.3 m below the lakebed. In borehole BH24-OFF-02, they were found between 10.7 and 12.2 m below the lakebed. In borehole BH24-OFF-03, they were found at a shallower depth of 7.6 m. In borehole BH24-OFF-04, they were found between 9.1 and 10.1 m below the lakebed. In borehole BH24-OFF-05, trace organics were found between 9.9 and 13.8 m below the lakebed. In borehole BH24-OFF-06, they were found between 4.9 and 6.9 m below the lakebed. In borehole BH24-OFF-07, they were found between 4.7 and 5.7 m and again between 8.7 to 12.3 m below the lakebed. BH24-OFF-09 had trace organics in two locations: between 4.1 and 5.0 m and 8.7 and 9.9 m below the lakebed. In borehole BH24-OFF-10, trace organics were found between 11.0 and 11.6 m below the lakebed, and finally, in BH24-OFF-11, trace organics were found between 6.86 and 10.70 m below the lakebed. Without knowing

exactly what these organics are, a definitive interpretation cannot be made as to whether these trace organics are representative of an original floor. Certainly, those boreholes with fill material (Boreholes 5, 7, 9, and 10) with organic material are likely contaminated and not representative of a true original floor. None of the boreholes had any trace of a blue clay layer, which was a possible indicator of pre-contact use.

The side scan sonar and magnetometer survey produced 28 targets, of which 10 were non-cultural buoy markers (S13, S14, S15, S18, S20, S26, S33, S35, S36 and S37). Another 15 targets were only detectable with the magnetometer implying that they were buried in the lakebed or lying flat on the lakebed (Targets S2, S8, S11, S16, S17, S19, S21, S22, S23, S24, S25, S28, S30, S31, and S32). Side scan sonar of the same areas did not produce any results of objects standing proud off the bottom. The targets were either buried or lying flat on the bottom, undetectable to the side scan sonar. None of the magnetometer hits were extremely large in magnitude, and some are probably refuse from planes (directly off the end of the west runway for Targets S2, S16 and S17). The east end of the airport, especially in areas in close proximity to the man-made land base, also has magnetometer hits, suggestive again of refuse associated either with planes or the construction of the man-made base. In no circumstances did the stand-alone magnetometer hits suggest any object that might be considered of historical significance, given the background history of the development of this land base.

Target 32 presents as a series of linear dots on the bottom. These occur near the breakwater and associated pilings, connected to the breakwater construction. The vintage of the breakwater is post-1930 and is not considered historically significant.

Another notable target presents as a possible marine railway. Target S29 is located at the northwest corner of the east half of the study area. It aligns with an existing concrete (in poor repair) boat ramp. It post-dates the construction of the man-made lands of the airport property and is not considered historically significant.

Pilings were detected alongside an existing breakwater built post-1930 and are not considered historically significant.

Therefore, based on the marine archaeological background research and the field survey, the following is recommended:

- The study areas, as indicated in Figures 1 and 2, are considered free of any marine archaeological resources, and no additional archaeological mitigation is required.
- Compliance legislation must be adhered to in the event of the discovery of deeply buried cultural material or features.

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## **GLOSSARY OF ABBREVIATIONS**

ARA – Archaeological Research Associates Ltd.  
RESA – Runway End Safety Area

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## **1.0 PROJECT CONTEXT**

### **1.1 Development Context**

Under a contract awarded in July 2024, Archaeological Research Associates (ARA) carried out a marine archaeological assessment in support of an Environmental Assessment for the implementation of Runway End Safety Areas (RESAs) at Billy Bishop Toronto City Airport (the Project). The Billy Bishop Toronto City Airport is owned and operated by PortsToronto (the Project proponent) and is located in the City of Toronto on the Toronto Islands. Figure 1 shows the Project Study Area.

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Figure 1: Project Study Area



The subject study areas of the Marine Archaeological Assessment consist of two rectilinear-shaped parcels of land located at the east and west ends of Runway 08/26 with a total area of 22.14 ha (Figure 2). The current western study area extends 210 m outward from the face of the existing western seawall and 170 m and 160 m to the north and south from the runway centre line, respectively. The current eastern study area extends 135 m outward from the face of the existing eastern seawall and 225 m and 185 m to the north and south from the runway centre line, respectively.

The Marine Archaeological Assessment included an in-water marine archaeological assessment of these two areas using side scan sonar and magnetometer survey and ground truthing of possible cultural targets encountered during the survey. The assessment also included background research of the study area, in order to anticipate possible cultural resources in the area. Borehole data was reviewed for the report as well.

Archaeological work was conducted under marine archaeological Licence #2024-30 issued to Scarlett Janusas.

In 2015, AECOM completed a Stage 1 archaeological assessment for proposed Runway Extension and introduction of Jets at Billy Bishop Toronto City Airport. The Stage 1 assessment determined that the study area addressed within the scope of that report did not retain archaeological potential, and no further assessment was recommended (AECOM 2015). Additional lands have been identified as required for the implementation of the RESA. AECOM has conducted a Stage 1 Terrestrial Archaeological Assessment for these additional areas, which is presented in a separate standalone report.

Figure 2: Marine Archaeology Assessment Study Area



## 1.2 Indigenous Engagement

The study area is located within the traditional territory of the Mississaugas of the Credit First Nation. Their traditional territory extends from the Rouge River Valley in the east, across to the headwaters of the Thames River, down to Long Point on Lake Erie, and back along the shores of Lake Erie, the Niagara River, and Lake Ontario to the Rouge River Valley. It encompasses present-day London, Hamilton and Toronto.

The Mississaugas of the Credit First Nation have expressed and asserted to the federal government, unextinguished aboriginal title to all water in their traditional territory. Mississaugas of the Credit First Nation will be submitting a claim to Canada and Ontario to all water, land under water and floodplains, in their traditional territory. The Huron-Wendat have also expressed an archaeological interest in the study area, but at this time, have not submitted a claim. PortsToronto is also conducting engagement with Six Nations of the Grand River.

The Toronto Port Authority undertook Indigenous engagement for this project. All Indigenous communities contacted regarding the project confirmed that they would not be providing a monitor for the marine archaeological assessment.

## 1.3 Current Environment

The study area is located on the western tip of the Toronto Islands at the Billy Bishop Toronto City Airport, more specifically at the west and east end of Runway 08/26. The Inner Harbour and the Western Channel surrounding the eastern and northern shorelines of the Billy Bishop Toronto City Airport study area are commonly used by commercial, recreational, and ferry vessels.

Figure 3 of the east end depicts the current status of the study area. The land at the north, east and south ends is bordered by a retaining wall. There is a concrete projection/barrier running from the existing retaining wall to the north at the northeast end of the area. Armour stone is located where the retaining wall ends on both the north and south sides.

Figure 4 depicts the west end with a retaining wall on the west and north sides, a small portion on the south side of the land base. A beach is located at the south end where the retaining wall ends.

There are no piers, wharves, or other marine infrastructure noted at either the east or west ends of the study area.

**Figure 3: Current Conditions of the East Study Area (Google Earth Imagery 11/06/2022)**



**Figure 4: Current Conditions of the West Study Area (Google Earth Imagery 11/06/2022)**



### 1.3.1 Natural Environment

The following is taken from AECOM (2015: 10-11):

The modern physiography of Southern Ontario is largely a product of events of the last major glacial stage, the Wisconsin and Late Wisconsin time (ca. 25,000-10,000 B.P). The landscape in York County is made up of a complex arrangement of features and deposits produced during the last series of glacial advances and retreats by the Simcoe Lobe and Ontario Lobe of the North American Laurentide ice sheet prior to the withdrawal of the glacier from Southern Ontario (Ellis and Ferris, 1990). Those features and deposits that were formed by glacial action are represented by till plains, end moraines, and drumlins.

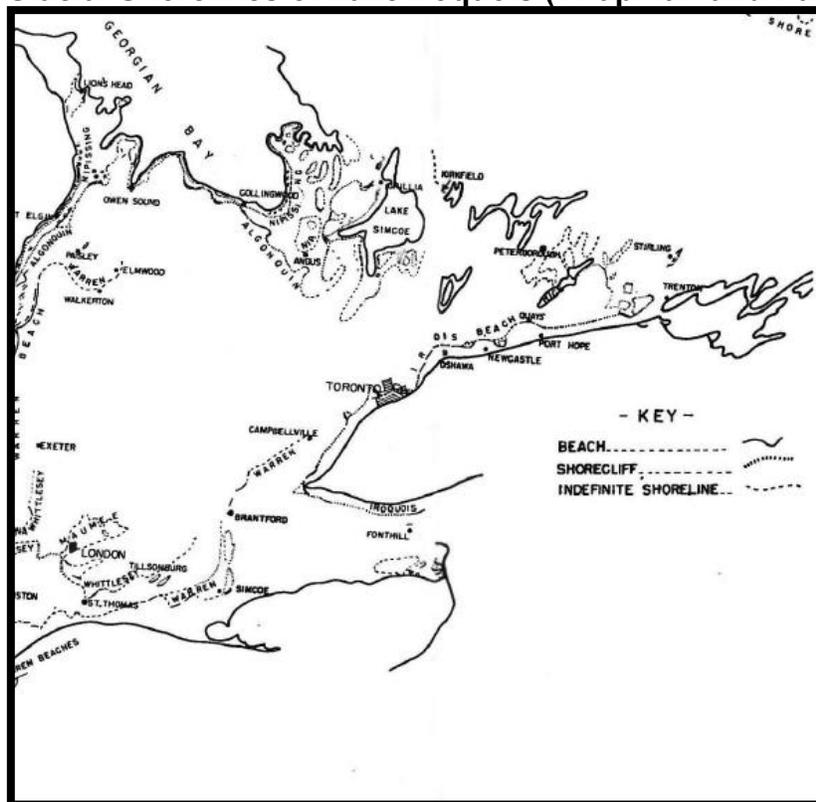
The estimated location of the glacial Lake Iroquois is situated just north of the Billy Bishop Toronto City Airport study area. Based on the strength of its shorecliffs and beaches, Lake Iroquois was much longer lived than any of the earlier glacial lakes. The lake was, essentially, an enlargement of present-day Lake Ontario which was formed as a result of the glacial blockage of the St. Lawrence River. Chapman and Putnam (1984:34) provide an approximate location of the northern shoreline of Lake Iroquois based on the presence of shorecliffs, known as the Iroquois Shoreline, which runs from west to east just south of present-day St. Clair Avenue West. The Scarborough Bluffs also mark the edge of the glacial lake shoreline further to the east. The Iroquois shoreline rises from 365 feet above sea level at the present city of Hamilton to 700 feet east of Stirling. Another ancient shoreline exists between 2-4 km off of the Toronto Shoreline and is known as the Toronto Scarp. The Toronto Scarp is an underwater bluff which stretches from Bluffer's Park in Scarborough to just west of the Billy Bishop Toronto City Airport study area at Hanlan's Point. The present-day City of Toronto, as well as the Toronto Islands, would have been inundated by Lake Iroquois until the glaciers withdrew from the slope at Covey Hill in Quebec, uncovering lower outlets into the Hudson Valley (Chapman and Putnam, 1984). [Figure 5] illustrates the ancient shoreline of glacial Lake Iroquois.

Soon after the glaciers, glacial lakes, and seas retreated approximately 10,000 years ago, forests spread throughout Southern Ontario and through the analysis of pollen profiles vegetation associations can be determined.

By 12,500 years ago, closed black and white spruce forests were well-established in Southern Ontario and provided residence for many migratory animals such as caribou and deer (Ellis and Ferris, 1990; Karrow and Warner, 1990). By 9,000 years ago, white pine and deciduous trees dominated the forest cover, and the Toronto area was located within predominantly deciduous forest, an ecological zone described as having the most diverse forest life in Ontario. This area is characterized by a wide range of tree and shrub species, including eastern white pine, red pine, white cedar, yellow birch, sugar and red

maple, basswood, red oak, black walnut, butternut, tulip, magnolia, black gum, and many types of oaks and hickories. A number of species of mammals, birds, plants, and insects reside in the deciduous forest ecosystem. In pre-contact times, these dense forests would have been particularly bountiful. It is believed that the First Nations of the Great Lakes region exploited close to 500 plant and animal species since this diverse vegetation would have served as both home and food for a wide range of game animals, including white tailed deer, wild turkey, pigeon, cottontail rabbit, elk, muskrat, and beaver (Mason, 1981:59–60). Today, relatively little of the forest cover remains standing as a result of forest clearing by early Euro-Canadian agriculturalists and the present day urban and industrial expansion of the Greater Toronto Area (MNR, 2011).

Figure 5: Glacial Shorelines of Lake Iroquois (Chapman and Putnam 1984)

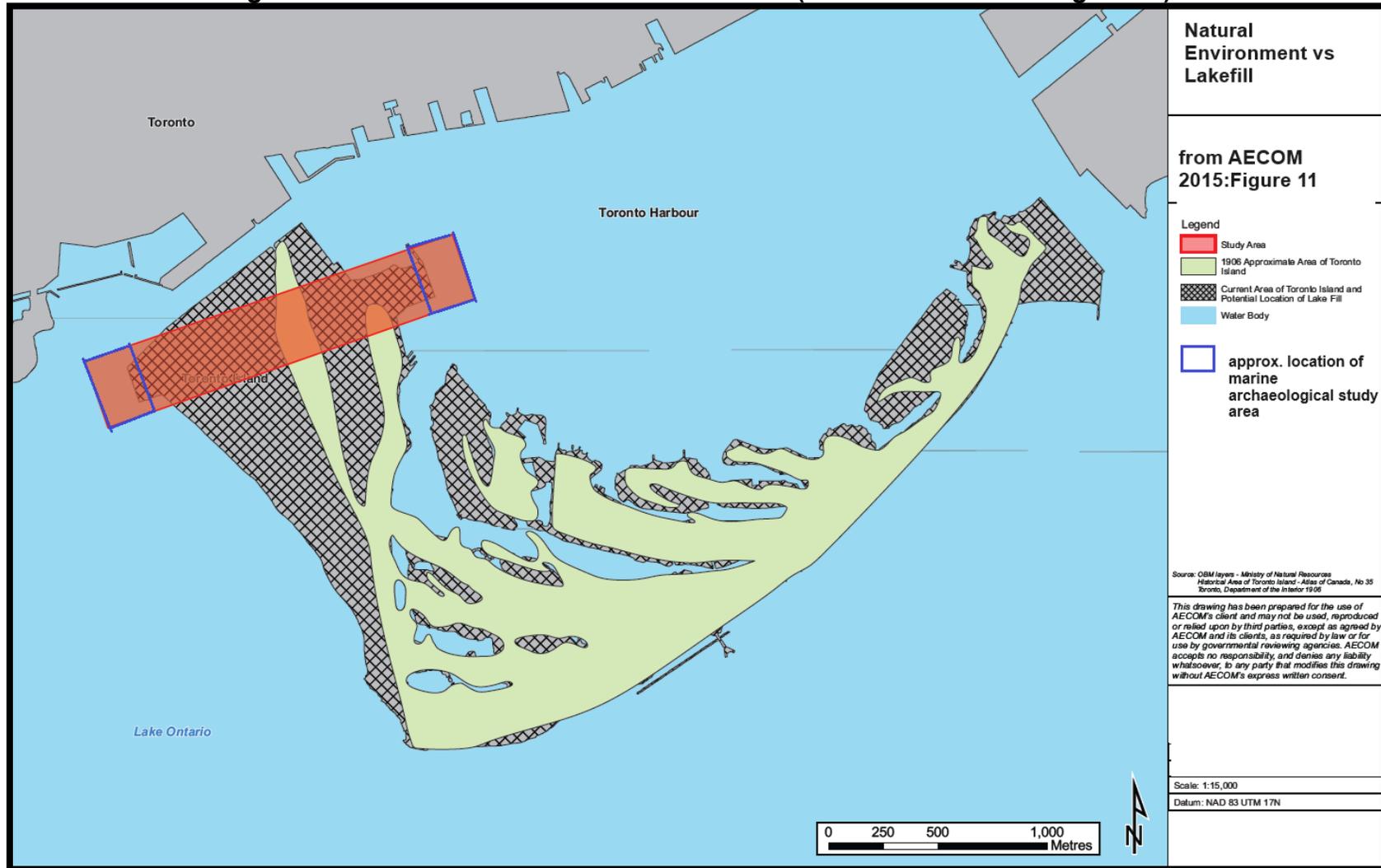


The Toronto Islands were formed in the late glacial and post glacial periods by sediment supplied to Lake Ontario from the rivers and from bluff erosion along the Scarborough Bluffs (Sharpe, 1980). This supply of sediment resulted in the formation of a sand spit extending from Ashbridge's Bay to the Toronto Islands. A considerable amount of fill has been added to the islands and waterfront since the turn of the 20th century, including the west end of the Toronto Islands to create the present-day Billy Bishop Toronto City Airport [Figure 6]. These harbor alterations resulted in the isolation of the inner harbor from past sediment sources although significant amounts of sediment still settle within

the harbor. The Don River, once a source of sediment, now empties into the Keating Channel, which is regularly dredged by PortsToronto.

While Figure 6 illustrates landfill operations at Billy Bishop Toronto City Airport, invariable infilling spreads unless blocked by permanent cofferdams and/or retaining walls. While there are retaining walls at either end of the runway, there is likely some infilling spread on the adjacent lake bottom.

Figure 6: Natural Environment versus Lakefill (from AECOM 2015: Figure 11)



### 1.3.2 Hydrogeology

Toronto is located on the Georgian Bay and Russel Formation (geology and stratigraphic units), which by extension is part of the near shore of Lake Ontario (including the study area) (Martini and Bowlby 1991: Figure 2).

Figure 7 illustrates the early glacial stages and early lake (Lake Iroquois) of the study area. During the Lake Iroquois stage, water levels were much higher than present-day Lake Ontario water levels, effectively “drowning” any lands and placing the shoreline much further inland than the current shoreline. This suggests that if Indigenous populations were in the area, they would have been near the former Lake Iroquois shoreline and not in the deeper waters (upwards of 135 metres at that time) of the study area (Martini and Bowlby 1991: 1508).

Toronto (including the study area) has an accumulation of nearshore sediments. These sediments are derived from three sources: stream discharge, eroding glacial deposits on nearshore slopes, and eroding shore bluffs (Scarborough Bluffs). Currents redistribute these sediments into the study area (Rukavina 1976: 187). The study area is part of the Niagara Basin, and bathymetry indicates that the study area is in very shallow waters (Figure 8).

Sedimentation rates and changes in organic carbon, nitrogen, phosphorus and mercury concentrations were determined for 14 core locations, representing basins of fine-grained sediment in Lake Ontario and two other lakes. The rates were estimated by averaging the weight of sediment deposited above the *Castanea* (chestnut) pollen decline dated in 1930 for Lake Ontario and above the *Ambrosia* (ragweed) pollen rise, dated at 1850. Present-day sedimentation rates were low to intermediate in Lake Ontario, ranging from 366 to 1,156 g/m<sup>2</sup>/yr. The nutrient and mercury (Hg) concentrations are enriched at the sediment surface in all the cores from Lake Ontario. The enrichments are attributed to increased nutrient and mercury (Hg) loading to the Ontario sediments, with the major increases after about 1950. The present-day loading of nutrients and Hg to the sediment parallels the rate of sedimentation. Early colonial loading of nutrients and Hg to Lake Ontario is generally similar to the modern loading of Lake Huron (Kemp et al 1974: abstract).

**Figure 7: Glacial map showing edge of glaciers and extent of early stages of the Great Lakes (A) 12,800 years BP and (B) 12,500 years BP (from Prest 1970)**

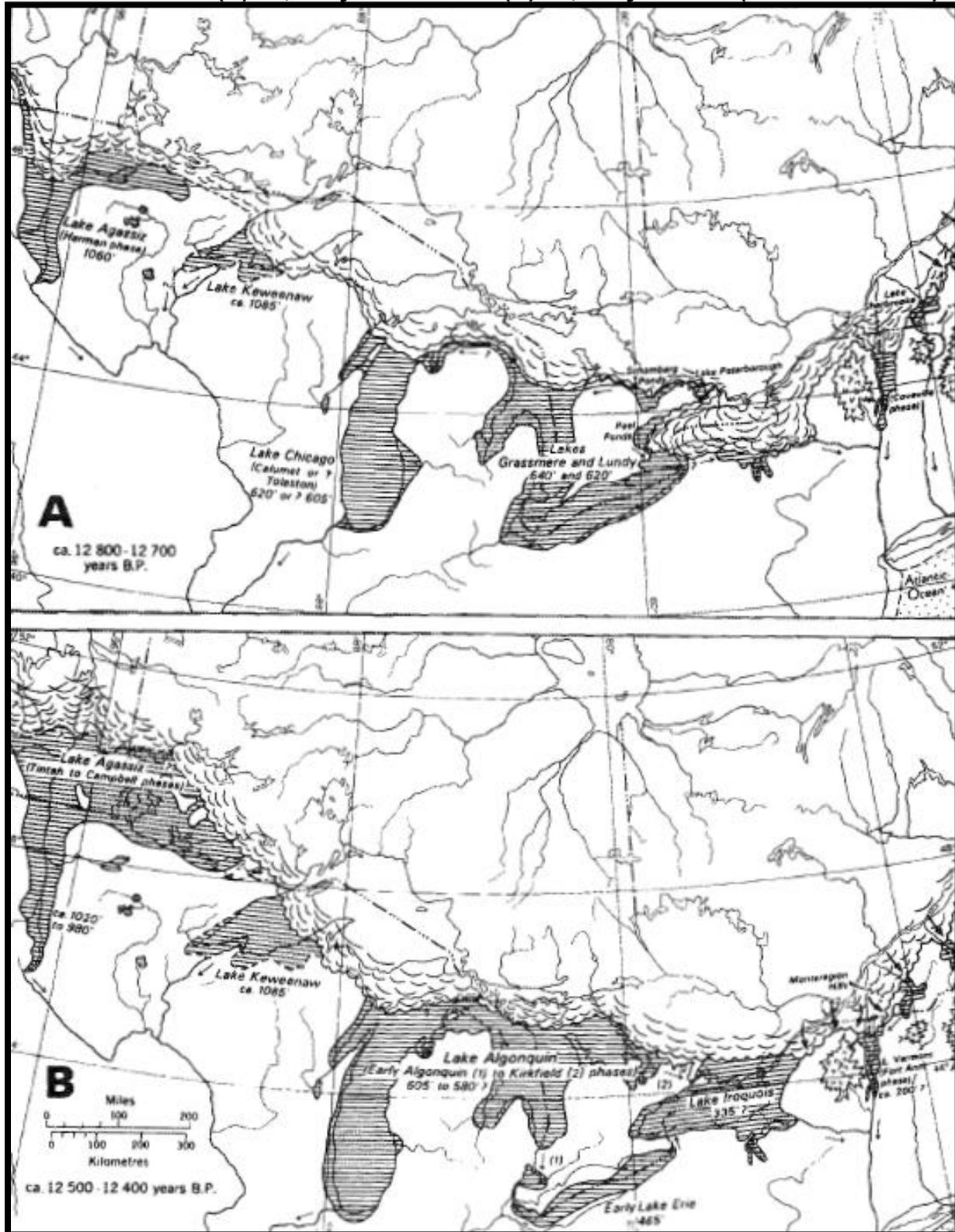
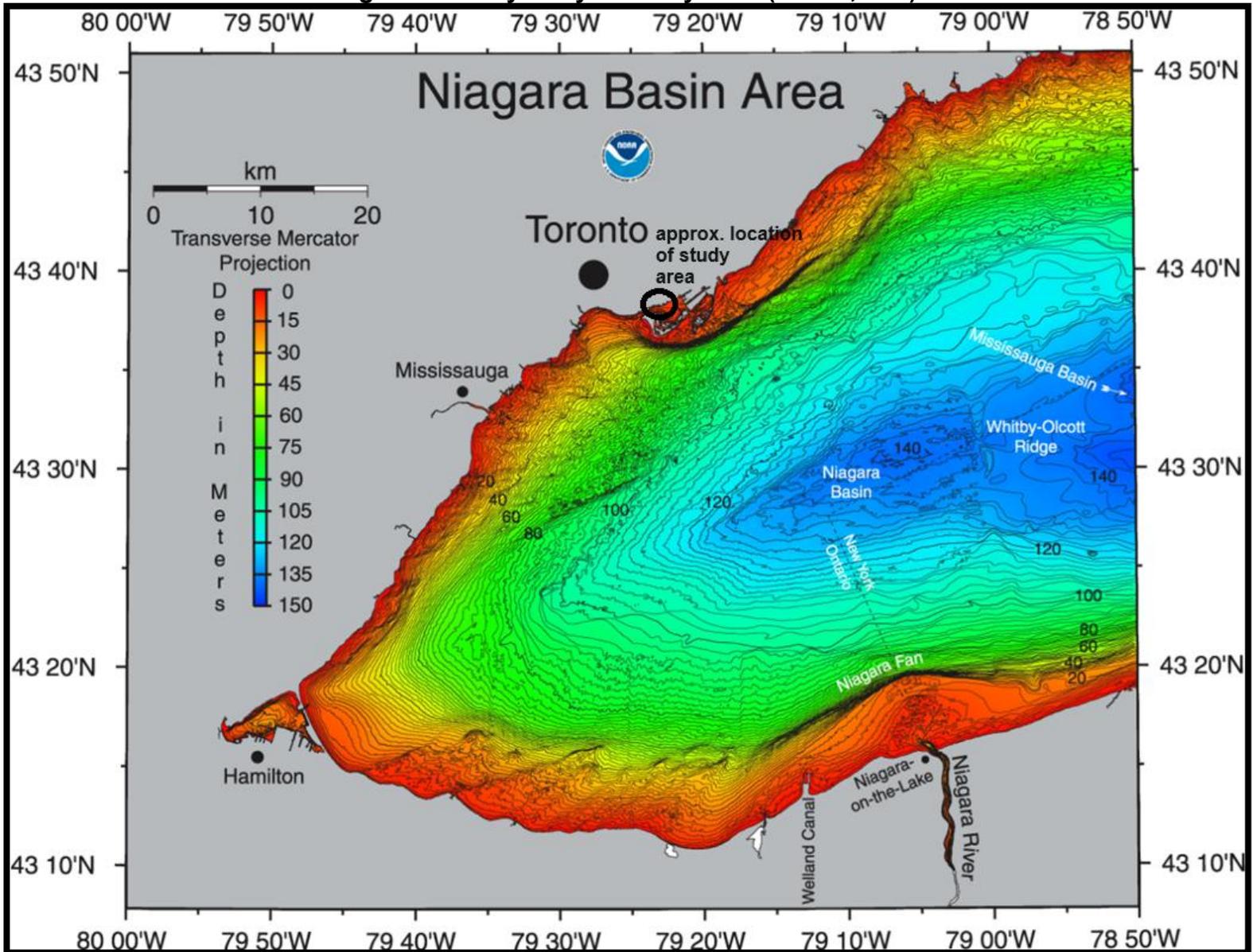


Figure 8: Bathymetry of Study Area (NOAA, n.d.)



### 1.3.3 Borehole Data from 2024

Table 1 presents the locations of the bore holes displayed in Figure 9 and Figure 10. Table 2 presents the borehole data.

**Table 1: Borehole Locations**

Borehole ID	Onshore/ offshore	Borehole Coordinates UTM NAD83, Zone 17		Elevation of Lake Ontario (masl)	Elevation of Lakebed (masl)	Elevation of Bedrock Surface (masl)
		Northing (m)	Easting (m)			
BH24-OFF-01	Offshore	4831748.4157	628609.1732	75.0	72.0	58.0
BH24-OFF-02	Offshore	4831773.6841	628679.3634	75.0	73.0	58.0
BH24-OFF-03	Offshore	4831692.8212	628689.5334	75.0	73.0	58.0
BH24-OFF-04	Offshore	4831617.8422	628628.7013	75.0	72.0	58.0
BH24-OFF-05	Offshore	4831614.9468	628716.3964	75.0	73.0	58.0
BH24-OFF-06	Offshore	4832212.1758	629710.0507	75.0	72.0	60.0
BH24-OFF-07	Offshore	4832309.2633	629973.6117	75.0	72.0	60.0
BH24-OFF-08	Offshore	4832278.9918	630099.0096	75.0	67.0	60.0
BH24-OFF-09	Offshore	4832193.1413	630079.2559	75.0	72.0	60.0
BH24-OFF-10	Offshore	4832138.786	630149.441	75.0	67.0	60.0
BH24-OFF-11	Offshore	4832047.3481	629994.8117	75.0	70.00	60.0

Trace organic material (unidentified) was found in all boreholes except borehole BH24-OFF-08. In borehole BH24-OFF-01, the trace organics were found between 10.7 and 12.3 m below the lakebed. In borehole BH24-OFF-02, they were found between 10.7 and 12.2 m below the lakebed. In borehole BH24-OFF-03, they were found at a shallower depth of 7.6 m. In borehole BH24-OFF-04, they were found between 9.1 and 10.1 m below the lakebed. In borehole BH24-OFF-05, trace organics were found between 9.9 and 13.8 m below the lakebed. In borehole BH24-OFF-06, they were found between 4.9 and 6.9 m below the lakebed. In borehole BH24-OFF-07, they were found between 4.7 and 5.7 m and again between 8.7 to 12.3 m below the lakebed. BH24-OFF-09 had trace organics in two locations: between 4.1 and 5.0 m and 8.7 and 9.9 m below the lakebed. In borehole BH24-OFF-10, trace organics were found between 11.0 and 11.6 m below the lakebed, and finally, in BH24-OFF-11, trace organics were found between 6.86 and 10.70 m below the lakebed. Without knowing exactly what these organics are, a definitive interpretation cannot be made as to whether these trace organics are representative of an original floor. Certainly, those boreholes with fill material (Boreholes 5, 7, 9, and 10) with organic material are likely contaminated and not representative of a true original floor. None of the boreholes had any trace of a blue clay layer, which constitutes a possible feature of archaeological potential due to its association with early 20th-century reports of blue clay having preserved footprints of Indigenous peoples (See Section 2.2.1).

Figure 9: Borehole Locations on West Side

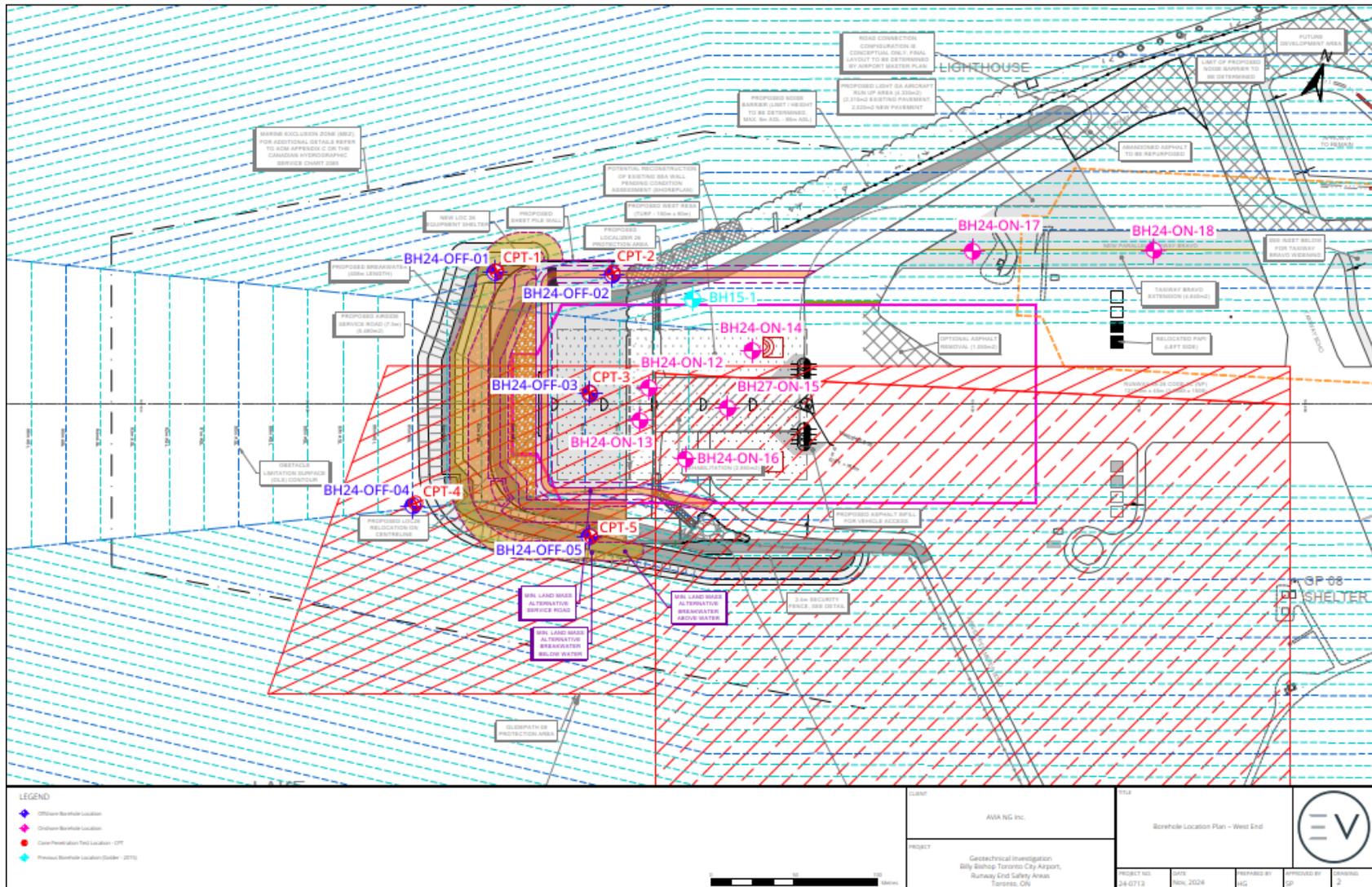
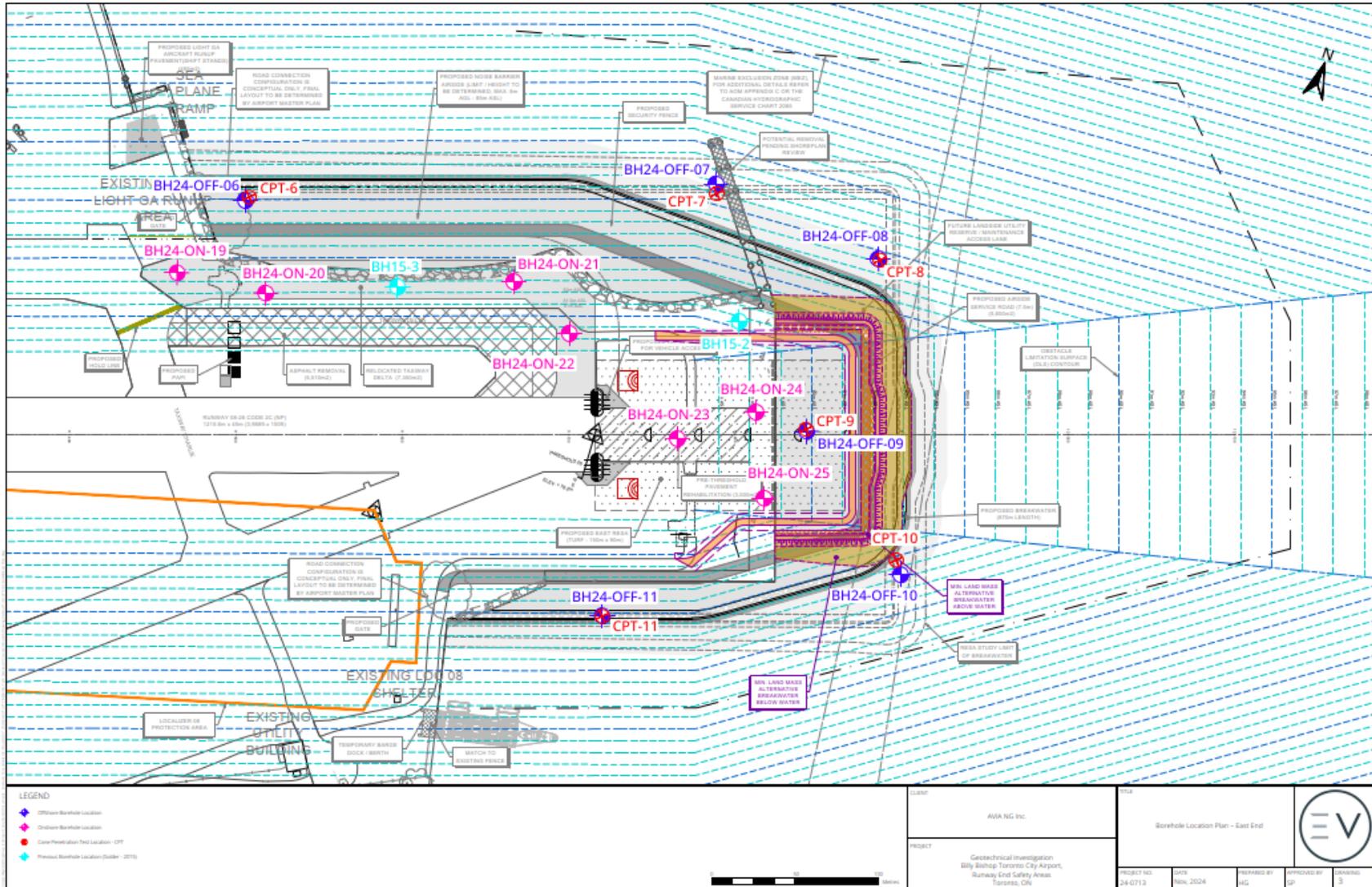


Figure 10: Borehole Locations on East Side



**Table 2: Borehole Data**

Borehole #	Depth from drilling platform to lakebed (m)	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated
<b>BHOFF-01</b>	4.1	4.1 – 10.7 m  SAND: trace silt, trace shell pieces, black stain, dark grey to grey, wet, very loose to compact.	10.7 m – 12.3 m  SANDY SILT: trace clay, trace organics, grey to dark grey, wet, very loose to compact.	12.3 m  BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation) Rock coring start	12.3 – 15.5 m  Bedrock coring  Slightly weathered (W2) to fresh (W1), thinly laminated to thinly bedded, grey, weak, SHALE (95%-98%), interbedded with thinly laminated to thinly bedded, slightly weathered to fresh, light grey, strong to very strong SILTSTONE and LIMESTONE (2%-5%). Bedding almost horizontal (=90°). (Georgian Bay Formation) Siltstone and limestone (hard) layers generally less than 50 mm thick except at noted depths. 75 mm thick hard layer at 15.09 m.
<b>BHOFF-02</b>	3.25	At 3.3 -10.7 m At 3.3 m SAND: trace silt, brownish grey to grey, wet, loose to compact. - grey below 3.8 m - trace gravel above 4.6 m - occasional black stain below 7.6 m - 50 mm silty sand at 10.5 m	10.7 – 12.2 m  At 10.7 m  SILT: some sand, trace clay, trace organics, grey, wet, loose.  - some sand to sandy below 11.3 m	12.2 -16.8 m  BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation) Rock coring started from 12.24 m.	12.24 – 16.81 m  Sample lost from 12.24 m to 12.85 m, inferred highly weathered (W4) to moderately weathered (W3).  12.85 m slightly weathered (W2) to fresh (W1), thinly laminated to thinly bedded, grey, weak, SHALE (92%-98%), interbedded with thinly laminated to thinly bedded, slightly weathered to fresh, light grey, strong to very strong SILTSTONE and LIMESTONE (2%-8%). Bedding almost horizontal (=90°). (Georgian Bay Formation) Siltstone and

Borehole #	Depth from drilling platform to lakebed (m)	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated
					limestone (hard) layers generally less than 50 mm thick except at noted depths. 100 mm thick hard layer at 14.86 m.
<b>BHOFF-03</b>	2.9	2.9 – 9.1 m at 2.9 m SAND: trace silt, brownish grey to grey, wet, loose to compact.  - grey below 5.3 m  - trace organics at 7.6 m	9.1 – 9.9 m  SILTY SAND: trace clay, grey, wet, loose.	9.9 - 10.7 m  SILT: some sand, trace clay, silty clay seams, grey, wet, very loose.  10.7 – 12.7 m  SANDY SILT: trace clay, grey, wet, very loose to loose.	12.7 – 12.8 m  BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)
<b>BHOFF-04</b>	5.41	5.4 – 9.1 m  At 5.4 m  SAND: trace silt, occasional black stain, slight hydrocarbon odour, brownish grey to grey, wet, very loose to dense.  - grey below 7.1 m  -trace shell debris at 8.4 m	9.1 – 10.1 m  SANDY SILT: trace clay, trace organics, black stain, slight hydrocarbon odour, grey, wet, very loose.  10.1 – 11.4 m  SILTY SAND: trace clay, shell debris, black stain clayey silt seams, slight hydrocarbon odour, grey, wet, loose.	11.4 – 13.3 m  SANDY SILT: trace clay, trace shell debris, slight hydrocarbon odour, grey, wet, very loose.	13.3 – 13.4 m  BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)

Borehole #	Depth from drilling platform to lakebed (m)	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated
<b>BHOFF-05</b>	3.2	<p>3.2 – 9.9 m</p> <p>At 3.2 m FILL: sand, trace silt, trace gravel, slight hydrocarbon odour, brownish grey to grey, wet, very loose to compact.</p> <p>- With shale and limestone fragments at 5.8 m</p> <p>- slight hydrocarbon odour below 6.4 m</p> <p>- black stain clayey silt /silt seams at 6.9 m</p> <p>- trace brick pieces at 7.6 m</p>	<p>9.9 – 10.7 m</p> <p>SILTY SAND: trace clay, trace organics, black stain clayey silt seams, grey, wet, very loose.</p>	<p>10.7 – 13.8 m</p> <p>SILT: some sand, trace clay, grey, wet, loose to compact.</p> <p>- trace organics, clayey silt seams.</p>	<p>13.8 – 14.1 m</p> <p>BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)</p>
<b>BHOFF-06</b>	4.88	<p>4.9 – 5.5. m</p> <p>SILT: with clayey silt seams, trace organics, dark grey, wet, very loose.</p>	<p>5.5 – 6.9 m</p> <p>SILTY SAND: trace clay, trace organics, shell debris, dark grey, wet, very loose.</p> <p>6.9 – 8.7 m</p> <p>SANDY SILT: trace clay, grey, wet, very loose to loose.</p>	<p>8.7 – 10.7 m</p> <p>SAND: trace silt, grey, wet, very loose to loose.</p> <p>10.7 – 11.5 m</p> <p>SILT: trace to some sand, trace clay, grey, wet, loose.</p>	<p>11.5 – 11.7 m</p> <p>BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)</p>

Borehole #	Depth from drilling platform to lakebed (m)	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated
<b>BHOFF-07</b>	4.72	4.7 – 5.7 m  FILL: gravelly silty sand, trace to some clay, trace organics, dark grey, wet, compact.  5.7 – 8.7 m  FILL: silty sandy gravel with grey shale and limestone fragments, trace clay, grey, wet, loose to compact.	8.7 - 9.5 m  SILT: trace to some clay, trace gravel, trace organics, clayey silt seams, grey to dark grey, wet, very loose.	9.5 - 9.9 m  SILTY SAND: trace clay, trace organics, dark grey to grey, wet, very loose.  9.9 – 12.3 m  SILT: some sand, trace clay, trace organics, grey to dark grey, wet, very loose.	12.3 – 12.5 m  BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)
<b>BHOFF-08</b>	8.94	8.94 – 11.28 m  Tricone went straight through from 8.94 m to 11.28 m without drilling.	11.28 – 12.2 m  SAND: trace to some silt, trace clay, grey, wet, very dense.	12.2 - 13.0 m  SANDY SILT: trace clay, grey, wet, loose to very dense.	13.0 – 13.4 m  BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)
<b>BHOFF-09</b>	4.14	4.14 – 5.0 m  FILL: clayey silt to silt, trace to some sand, trace gravel, trace organics/wood fragments, black stain, grey, moist to wet, very soft.	6.1 – 8.7 m  FILL: gravelly silty sand, with shale and limestone fragments, grey, wet, loose.  - inferred cobbles at 6.9 m	8.7 – 9.8 m  SILT: some sand, trace clay, occasional gravel, trace organics, shell pieces, black stain, dark grey, wet, very loose.	9.8 m  End of borehole

Borehole #	Depth from drilling platform to lakebed (m)	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated
		5.0 – 6.1 m FILL: silty sand, trace clay, dark grey, wet, very loose.			
<b>BHOFF-10</b>	11.05	11.05 – 11.1 m FILL: clayey silt to silt, some sand, trace gravel, trace organics/wood fragments, black stain, dark grey, moist to wet, very soft.	11.1 – 11.6 m FILL: clayey silt to silt, some sand, trace gravel, trace organics/wood fragments, black stain, dark grey, moist to wet, very soft.	11.6 – 14.3 SAND: trace silt, trace gravel, trace shell pieces, grey, wet, very loose. - silty sand seams /lenses below 14.0m 14.3 – 16.2 m SILT: some sand, trace clay, occasional gravel, grey, wet, very loose. - with silty clay seams below 15.2 m	16.2 m BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)
<b>BHOFF-11</b>	6.86	6.86 – 10.7 m At 6.9 m FILL: silty sand, trace clay, trace gravel, trace organics, black stain, black to dark grey, wet, very loose to compact.	10.7 – 12.5 m SAND: trace to some silt, grey, wet, very loose.	12.5 – 16.0 m SILT: some sand, trace clay, occasional gravel, grey, wet, very loose.	16.2 m BEDROCK: grey shale interbedded with siltstone /limestone. (Georgian Bay Formation)

Borehole #	Depth from drilling platform to lakebed (m)	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated	Descriptor with depth indicated
		- black to dark grey below 7.6 m  - inferred cobbles at 8.7 m with silty clay seams /lenses below 9.9 m			

## 2.0 BACKGROUND RESEARCH

After a century of archaeological work in southern Ontario, scholarly understanding of the historic usage of the area has become very well-developed. With occupation beginning in the Palaeo period approximately 11,000 years ago, the greater vicinity of the study area comprises a complex chronology of Indigenous and Euro-Canadian histories. Section 2.1 summarizes the region’s settlement history. Multiple previous archaeological reports containing relevant background information were obtained during the research component of the study. These reports are summarized in Section 2.2.2, and the references (including title, author and Project Information Form number) appear in Section 6.0.

### 2.1 Historical Context

#### 2.1.1 Indigenous Pre-Contact

The Pre-Contact history of the region is lengthy and rich, and a variety of Indigenous groups inhabited the landscape. Archaeologists generally divide this vibrant history into three main periods: Palaeo, Archaic and Woodland. Each of these periods comprises a range of discrete sub-periods characterized by identifiable trends in material culture and settlement patterns, which are used to interpret Indigenous lifeways. The principal characteristics of these sub-periods are summarized in Table 3.

**Table 3: Pre-Contact Settlement History**  
(Wright 1972; Ellis and Ferris 1990; Warrick 2000; Munson and Jamieson 2013)

Sub-Period	Timeframe	Characteristics
Early Palaeo	9000–8400 BC	Gainey, Barnes and Crowfield traditions; Small bands; Mobile hunters and gatherers; Utilization of seasonal resources and large territories; Fluted projectiles
Late Palaeo	8400–7500 BC	Holcombe, Hi-Lo and Lanceolate biface traditions; Continuing mobility; Campsite/Way-Station sites; Smaller territories are utilized; Non-fluted projectiles
Early Archaic	7500–6000 BC	Side-notched, Corner-notched (Nettling, Thebes) and Bifurcate traditions; Growing diversity of stone tool types; Heavy woodworking tools appear (e.g., ground stone axes and chisels)
Middle Archaic	6000–2500 BC	Stemmed (Kirk, Stanly/Neville), Brewerton side- and corner-notched traditions; Reliance on local resources; Populations increasing; More ritual activities; Fully ground and polished tools; Net-sinkers common; Earliest copper tools
Late Archaic	2500–900 BC	Narrow Point (Lamoka), Broad Point (Genesee) and Small Point (Crawford Knoll) traditions; Less mobility; Use of fish-weirs; True cemeteries appear; Stone pipes emerge; Long-distance trade (marine shells and galena)
Early Woodland	900–400 BC	Meadowood tradition; Crude cord-roughened ceramics emerge; Meadowood cache blades and side-notched points; Bands of up to 35 people
Middle Woodland	400 BC–AD 600	Point Peninsula tradition; Vinette 2 ceramics appear; Small camp sites and seasonal village sites; Influences from northern Ontario and Hopewell area to the south; Hopewellian influence can be seen in continued use of burial mounds

Sub-Period	Timeframe	Characteristics
Middle/Late Woodland Transition	AD 600–900	Princess Point tradition; Cord roughening, impressed lines and punctate designs on pottery; Adoption of maize horticulture at the western end of Lake Ontario; Oval houses and ‘incipient’ longhouses; First palisades; Villages with 75 people
Late Woodland (Early)	AD 900–1300	Glen Meyer tradition; Settled village-life based on agriculture; Small villages (0.4 ha) with 75–200 people and 4–5 longhouses; Semi-permanent settlements
Late Woodland (Middle)	AD 1300–1400	Uren and Middleport traditions; Classic longhouses emerge; Larger villages (1.2 ha) with up to 600 people; More permanent settlements (30 years)
Late Woodland (Late)	AD 1400–1600	Huron-Petun tradition; Globular-shaped ceramic vessels, ceramic pipes, bone/antler awls and beads, ground stone celts and adzes, chipped stone tools, and even rare copper objects; Large villages (often with palisades), temporary hunting and fishing camps, cabin sites and small hamlets; Territorial contraction in early 16 <sup>th</sup> century; Fur trade begins ca. 1580; European trade goods appear

Prior to any human occupation, glaciers covered much of southern Ontario. As these glaciers retreated, they left behind large meltwater lakes and streams and a landscape of barren tundra interspersed with open forests. This environment supported large mammals such as moose, elk and large herds of caribou and left the waters teeming with fish. The first human inhabitants probably moved into this region of Ontario approximately 11,000 years ago following the retreat of the Laurentide Ice Sheet. Nomadic Paleo hunters usually maintained a band-level society while living in small camps, moving often as they followed the various herds across the area. Their population was small, and they did not stay in the same place for long, making evidence of their existence somewhat scarce. However, some Paleo campsites have been found along the shorelines of glacial waters where a number of their stone tools and weapons have been found. At present, there are no known Paleo occupations within one kilometre of the study area.

Once the glacial meltwaters had drained out of the Great Lakes, circa 11,400 years ago, Lake Ontario was approximately 80 m below the present water level. Evidence of Indigenous occupations dating from that time until circa 4,000 years ago has likely been destroyed by rising waters or, much more recently, by the dredging of the lake bottom by the ‘stone hookers’ in the mid-1800s.

People of the Early and Middle Archaic periods (7,500–2,500 BC) lived similar lives as during the Paleo period. They remained in small nomadic groups, often moving further inland during the winters as they followed the caribou herds. However, their stone tools and weapons became more advanced as the level of their skill and craftsmanship progressed, often adding ornamentation and intricately carved details to their items. By the Late Archaic period (2,500–900 BC) they were involved in trade networks for sought after raw materials such as tobacco and also engaged in burial ceremonies.

Although daily life probably remained relatively the same, there were at least two changes earmarking the subsequent Early Woodland period (900–400 BC). During this period, ceramics appear to have come into use and very elaborate burial practices made an appearance that included the burial of precious and ornate objects with the dead. The

Middle Woodland period saw an increase in the trading of these objects and limited agricultural practices, coupled with longer site occupations, which made an appearance during the transitional Woodland period (900–600AD). There is the possibility of very deeply buried early Indigenous activity in the blue clay sediments underlying Toronto Harbour (Toronto Evening Telegram 1908).

During the Late Woodland period (900–1650 AD), there was a major shift to agriculture as well as the establishment of more permanent camps and villages. The social structure of communities also changed with the development of political systems based on families and the need for alliances with other groups of people. The early villages were small with a series of longhouses surrounded by wooden palisades. Later villages housed as many as two thousand people and had a very entrenched political structure. Prehistoric lake activities include the use of dugout canoes and, later, birch bark canoes. The organic nature of these types of watercraft means they do not often survive unless buried in anaerobic environments (Janusas 2000:5).

### **2.1.2 Indigenous Historic Period**

Indigenous groups have travelled through this area, but this would have occurred when the area was nothing more than shallow water and possibly marsh/wetland. The area of the Billy Bishop Toronto City Airport is man-made, and all possible evidence of any Indigenous activities in this area has been buried under dredged material when the airport land was created. The study area, while located on either side of the existing airport, undoubtedly underwent dredging and also some spillage during made-land creation.

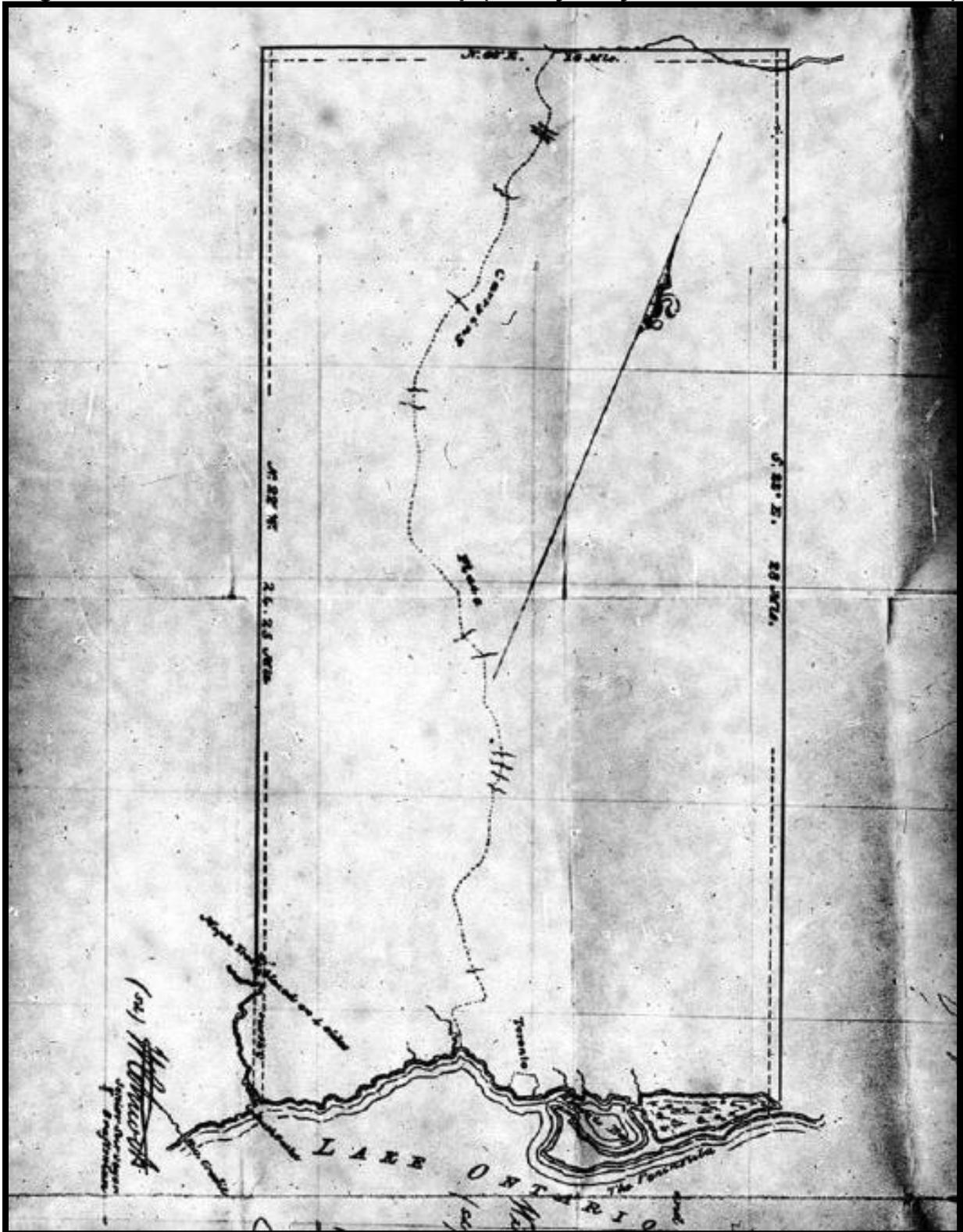
Southern Ontario lay virtually vacant for a period of about 15 years for Indigenous populations following the dispersal of the Petun and Huron by the Iroquois in 1650. The Iroquois, during the mid-1660s, established several villages along the north shore of Lake Ontario. The Mississaugas moved into the area in the early 1700s and established themselves in current Etobicoke and Mississauga. The Mississaugas were semi-nomadic, and utilized resources found in watersheds and along the lakeshore, especially those areas of marsh and/or wetland.

The Mississaugas were the first people to inhabit Toronto Island when it was still a peninsula connected to the mainland at what is now called Cherry Beach. The Island of Hiawatha, as it was once romantically known, was said to have been a type of health spa for Indigenous peoples and a favourite place for tribes to hold native council meetings. The Anishinaabeg, who named the peninsula (as it was at the time) "Menecing", brought their sick to the peninsula to recover in its healthful atmosphere. To the descendants of the Ojibwa, now the Mississaugas of the Credit First Nation, the Toronto Islands are sacred land.

The Toronto Purchase of 1787 (Figure 11) and 1805, according to the British, included the Islands. In 1867, when control of the island passed from the Crown to the City of Toronto, plans were drawn up to subdivide and lease some of the islands (HCPAD 1985:108-109). The Mississaugas, in a land claim settlement process started in 1986, claimed that the Islands were never included. In 2010, the Government of Canada and

the Mississaugas reached a settlement, which resulted in a cash payment to the Mississaugas from the Government of Canada. In return, the Mississaugas relinquished their claim to the islands.

Figure 11: 1787 Toronto Purchase Map (surveyed by William Chewitt 1787-1805)



### **2.1.3 Euro-Canadian Historic Period**

During the late 16<sup>th</sup> and early 17<sup>th</sup> centuries, European explorers sailed along the north shore of Lake Ontario and likely camped in the area later to become Toronto, Scarborough and Mississauga.

#### **2.1.3.1 York County**

After the creation of the Provinces of Upper and Lower Canada, Lieutenant Governor Simcoe created a series of 19 counties to divide the province of Upper Canada in 1791. One of these was the County of York. The County of York extended from the County of Durham westward to the River Thames. The County was part of the Home District, which included the counties of Northumberland, Durham, and Simcoe, and in 1798, the county itself was divided into East and West Ridings. What would later become the City of Toronto and the Toronto Islands was part of the East Riding. This division of East and West Ridings remained undisturbed until 1816, when the District, County and Township boundaries started to shift (Mulvany et al. 1885).

Settlement of the Home District, which included the County of York, was slow, as much of the land had been taken up by Clergy Reserves, Crown and non-residents wanting to make money off of land so close to the provincial capital. In 1798, it included only 749 people, and by 1817, it had only 1,200 people. The land between Kingston and York was sparsely farmed. It was settled mainly by United Empire loyalists or immigrants after the American Revolution (Mulvany et al. 1885).

The boundaries and townships within the County of York continued to change, and by 1852 it included the townships of Etobicoke, Vaughan, Markham, Scarborough, York, King, Whitchurch, Gwillimbury East and Gwillimbury North. Between 1853 and 1926, about a dozen areas separated from York Township and became incorporated as individual municipalities, considerably reducing the size of the township. From 1883 to 1912, several of these municipalities, including Yorkville, Brockton, Parkdale, East Toronto, West Toronto and North Toronto, were annexed to the city of Toronto. (TPL 2019).

The Humber River was an important route for accessing the Huron lands to the north during the Fur Trade, and the French built a fort near the mouth of the Humber River to guard it against the English. After the 'conquest of Canada by the English,' the fort was burned and deserted (Mulvany et al. 1885).

#### **2.1.3.2 City of Toronto**

It was the Lieutenant Governor of Upper Canada, John Graves Simcoe who visited the Toronto area in 1793, that decided it would be an ideal location for a city and military outpost with its protected harbour and centralized location. London, Ontario, was supposed to be the new capital, but Simcoe abandoned that plan, and York was named the permanent capital in 1796. He named it York after the Duke of York. The forest was cleared, and the town plot was laid out over the next few years. Although the town of York was to be the new parliamentary capital it did not in its early years have more than 10-12

families, and 200 soldiers residing there. The little town grew fast as it rose to importance, with the building of government structures, mills, roads, a garrison and the draining of the marsh to create fertile lands (Mulvany et al. 1885).

The early Bouchette map (Bouchette 1792) (Figure 12) shows soundings of the study area. The soundings show a very shallow area one to two feet around a sandy shoal and then a slightly deeper depth of between two to three feet, but with a hard sand bottom.

**Figure 12: 1792 Plan of Toronto Harbour with the Rocks, shoals & Soundings Thereof (Bouchette 1792)**



In 1797, the garrison that became Fort York was built at the entrance to Toronto Harbour. Tensions between the British and Americans persisted, and war broke out in 1812. In 1813, the garrison was attacked and overrun by the Americans forcing the British to

retreat. The Americans, who lost their commanding officer in the explosion, proceeded to sack the town and burn down the government buildings but did not take possession of York (Mulvany et al. 1885). Despite this setback, Toronto grew steadily during the 19th century, becoming a major port of distribution, and Toronto continued to grow by annexing outlying villages up until the early 1900s.

The Toronto Islands were not always islands but actually a series of continuously moving sandbars, the material of which originated from the Scarborough Bluffs and was carried westward by Lake Ontario currents. By the early 1800s, the longest of these sandbars had extended nearly nine km southwest from Woodbine Avenue through Ashbridge's Bay and the marshes of the lower Don River, forming a natural harbour between the lake and the mainland (City of Toronto 2019). The sandbars were first surveyed in 1792 by the British Navy, but they were well known by Indigenous people, who considered them a place of leisure and relaxation. The main peninsula became known to European settlers as the "Island of Hiawatha." A number of severe storms and their strong wave action worked to erode the peninsula, requiring frequent repair to small gaps until finally, in 1858, an island was created when a storm completely separated the peninsula from the mainland, and the gap was not repaired.

The 1792 Bouchette map was updated in 1815 (Figure 13) and again in 1818 map of the study area shows that Gibraltar Point (the original location – now located south of the study area) is located at the southwest end of the east end of the study area (Phillpotts 1818). It is important to understand that overlays of maps are not always accurate, but it does suggest that some land was located just outside of the study area (Figure 14).

The Plan of the Town and Harbour of York (1833) depicts the original Gibraltar Point location, but also a "wreck" which aligns in the area of the eastern section of the study area (Figure 15). The contour line on which the wreck sits is described as a shoal of hard compact sand, with a very steep grade along the length of the contour line. South of the contour line the depths range from 0.9 to 1.2 m, and on the other side (towards the mainland), the edge drops off to 4.8 to 5.5 m. Based on this description, it would appear that the ship grounded on to the shallows and could not be recovered. No information is known about the shipwreck.

Figure 13: Bouchette's 1815 map of the Plan of York Harbour, adapted from the original 1793 survey mapping

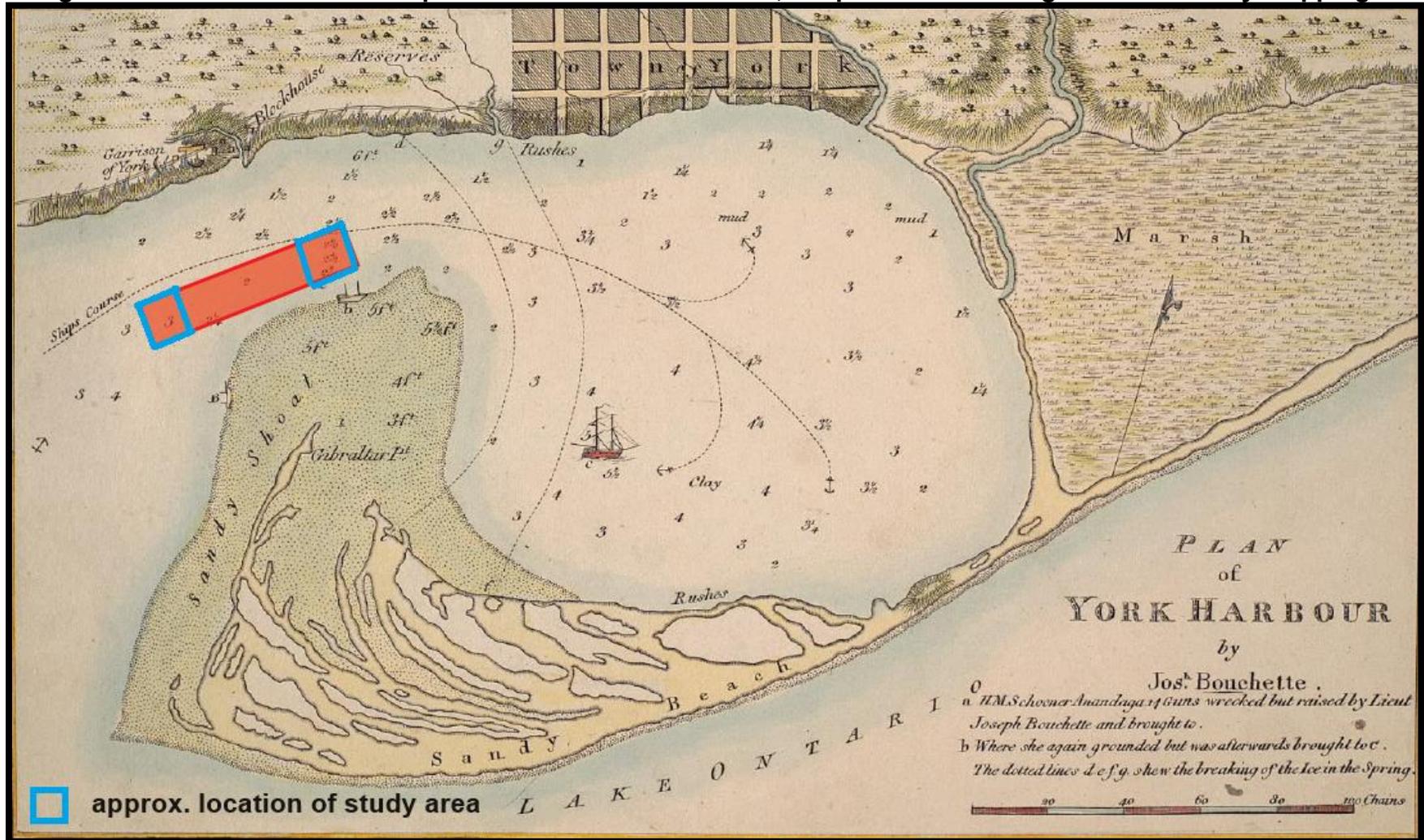


Figure 14: 1818 map of the study area (City of Toronto 2024)

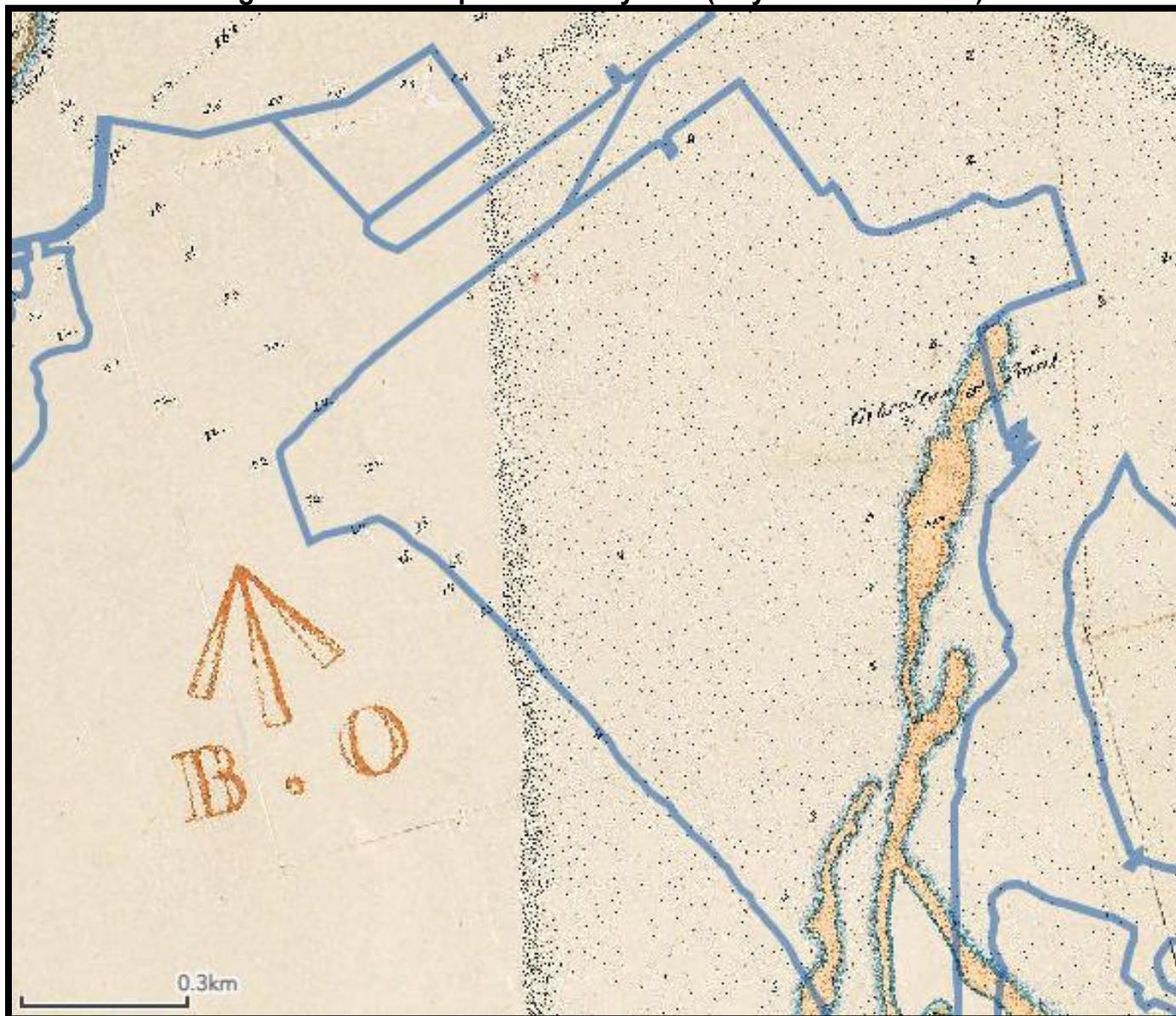
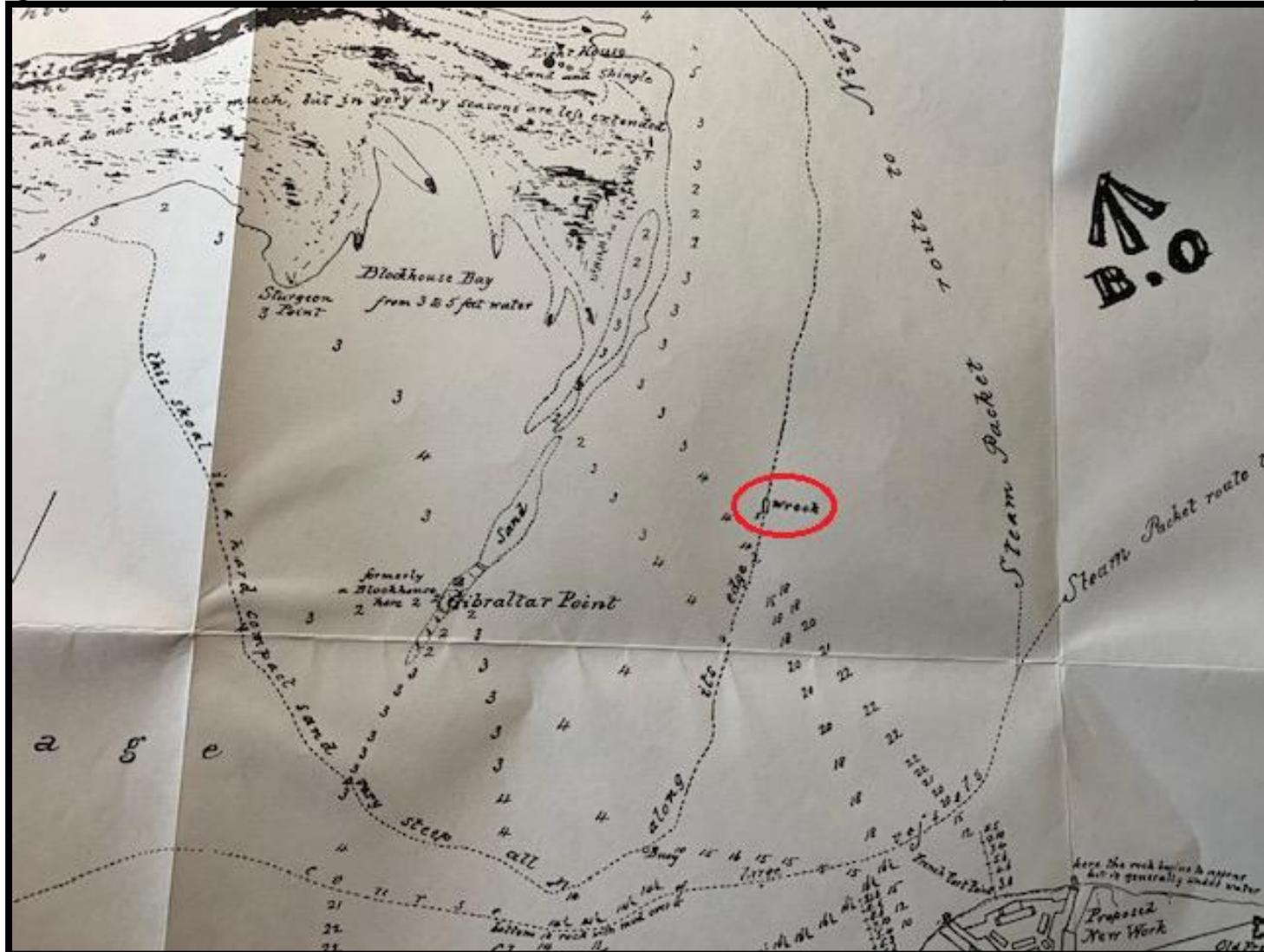


Figure 15: Section of the Plan of the Town and Harbour of York, 1833, Wreck (Firth 1966, map inlay)



Scale 1000 yards = 1 inch No north arrow provided.

### *2.1.3.3 Toronto Island*

Toronto Island was originally a long, narrow peninsula jutting out into Lake Ontario from the eastern boundary of the harbour, from what is now called Cherry Beach (HCPAD 1985:107). Formed over thousands of years by the mechanical action of the waves, the peninsula was actually 'imported' from the Scarborough Bluffs. Winds, waves and lake currents battering at the shore of the 91-metre-high Scarborough Bluffs carried eroded sand and gravel westward to the shore of the Don River.

The base of the peninsula was fed by the waters of the Don River. There, deposits piled up, creating a sand ridge and a series of sandbars. Westerly winds helped shape the land, curving it into a five-mile-long (around 8 km) hook, broken on the inside into tiny lagoons and islets. The sandy spit, enclosing part of the waters of the lake, created a natural harbour that later became the site of the Town of York or Toronto as it was renamed in 1834. It was an obvious location for early settlers since the peninsula provided protection from the fury of the lake and also acted as a fortress where military troops could keep a watchful eye on the movement of ships in and out of the harbour.

Upper Canada's first Lieutenant-Governor, John Graves Simcoe, acquired the peninsula as Crown property in the late 1700s and built a fortress at the western entrance to the harbour where there was a navigable gap between the peninsula and the mainland. Lieutenant-Governor Simcoe considered the peninsula another advance posted of the Empire and felt that if suitably fortified, it could be made impregnable. Therefore, he named it for a renowned Mediterranean military strongpoint, Gibraltar Point. This is not the location of the current Gibraltar Point but was located further north.

The first comprehensive survey of the island was conducted in 1846, and it showed more than 280 acres (113 ha) of land. The size of the islands has significantly increased since that time (HCPAD 1985:112). In 1879 the islands covered an area of just 360 acres (146 ha), but this grew to 563 acres (228 ha) in 1912 through landfilling. Since that date, with more infilling, they have increased to their present [1985] size of 820 acres (332 ha).

In 1867, a decade after storms had broken the island away from the mainland [Eastern Channel], control of the Crown lands formally passed to the City of Toronto. Soon afterward, developments began to turn the island into a picturesque recreational centre. The City also drew up subdivision plans and began leasing some of the land to settlers (HCPAD 1985:116). By 1879, the island had already grown by some 80 acres (32 ha) through landfill and dredging operations. In the next few years, a series of major improvements protected the island against further storm damage. For instance, flooded marshlands were reclaimed, a dike was built south of the island to control erosion, and the Western Channel was deepened and moved 1,300 feet (396 m) south, altering the shoreline of the island considerably.

In 1912, a year after the Toronto Harbour Commission was incorporated under an Act of Parliament, Commission planners set out a master plan for waterfront development which called for additional island improvements and an ambitious landfill program. That year, the islands began taking on their present shape, growing to some 563 acres (228 ha).

The water off Toronto was from the beginning shallow, and it was thus perhaps inevitable that when the city began to grow, and land became more expensive private and public developers would yield to the seductive call of the bay and create land by infill. The bay also proved to be a convenient place to dispose of the city's solid wastes, and in those years long before environmental concern, so a problem could be solved to an apparent net benefit for all (Hayes 2008: 120).

Unfortunately, the 1834 Chewett map does not show any great detail of the study area (Figure 16). The following maps (Figure 17–Figure 19) are illustrated to show changes to the study area.

**Figure 16: 1834 Chewett Map of the Study Area**

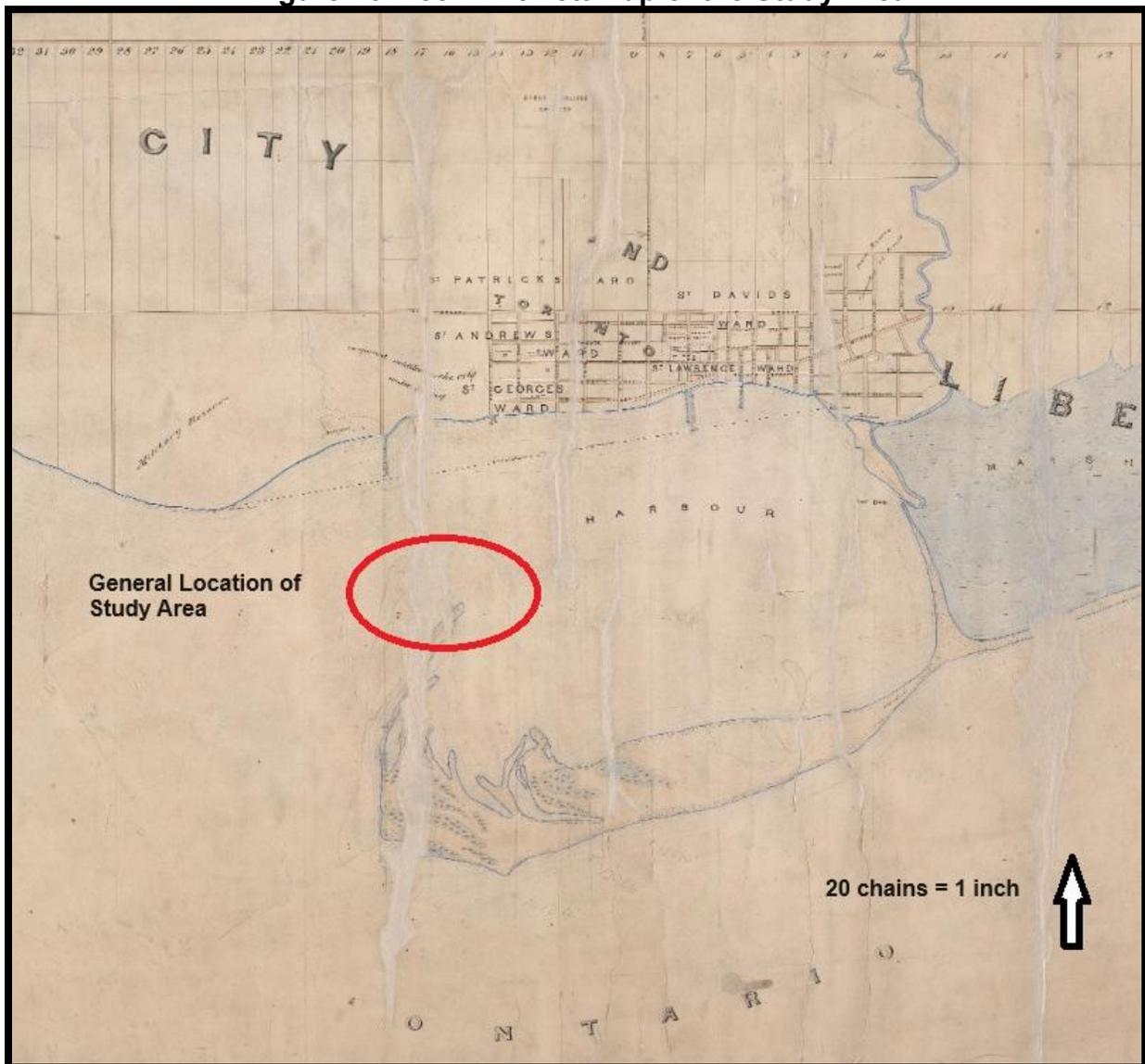


Figure 17: Browne's 1851 Map of the Township of York

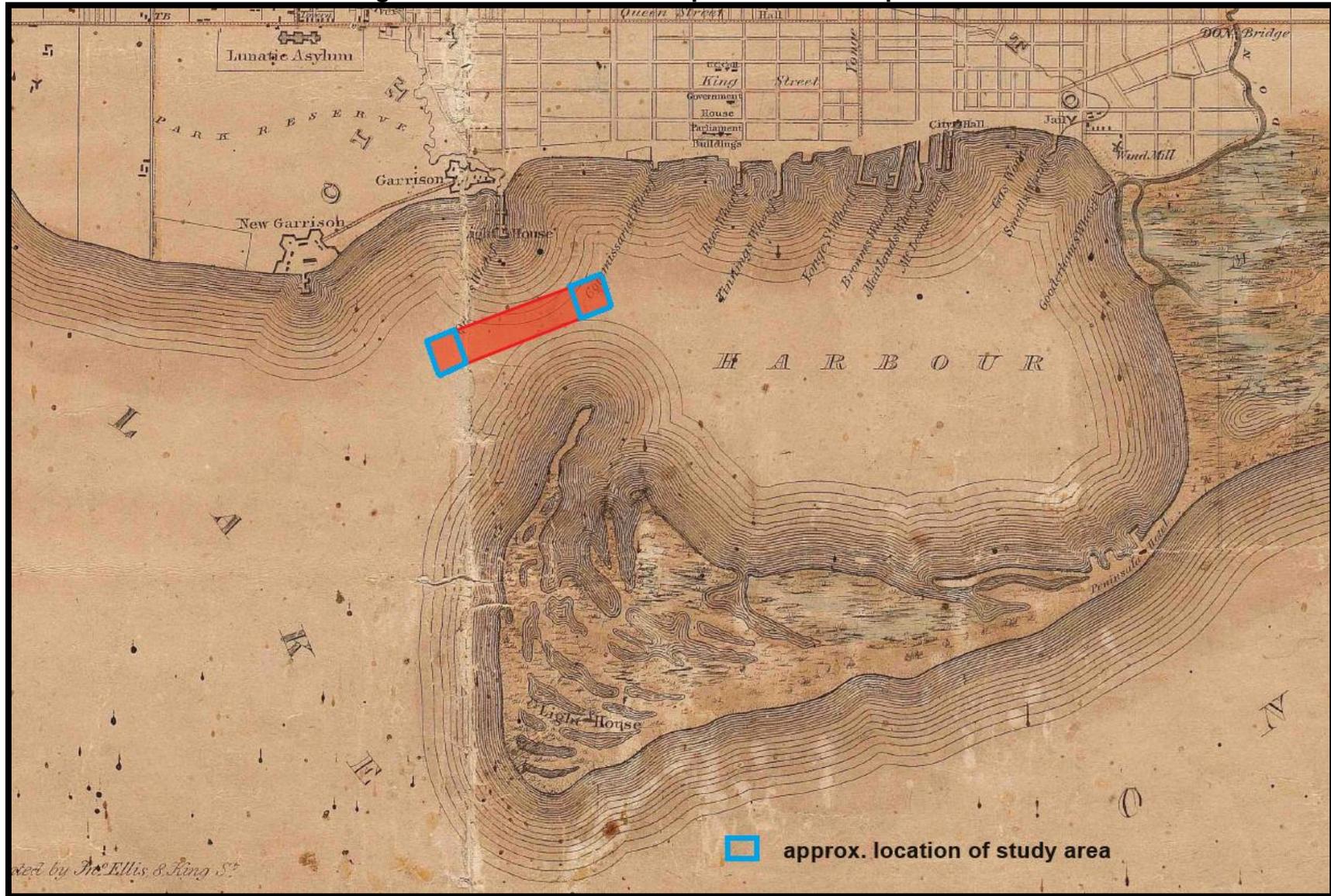


Figure 18: Tremaine's 1860 Map Section of County of York

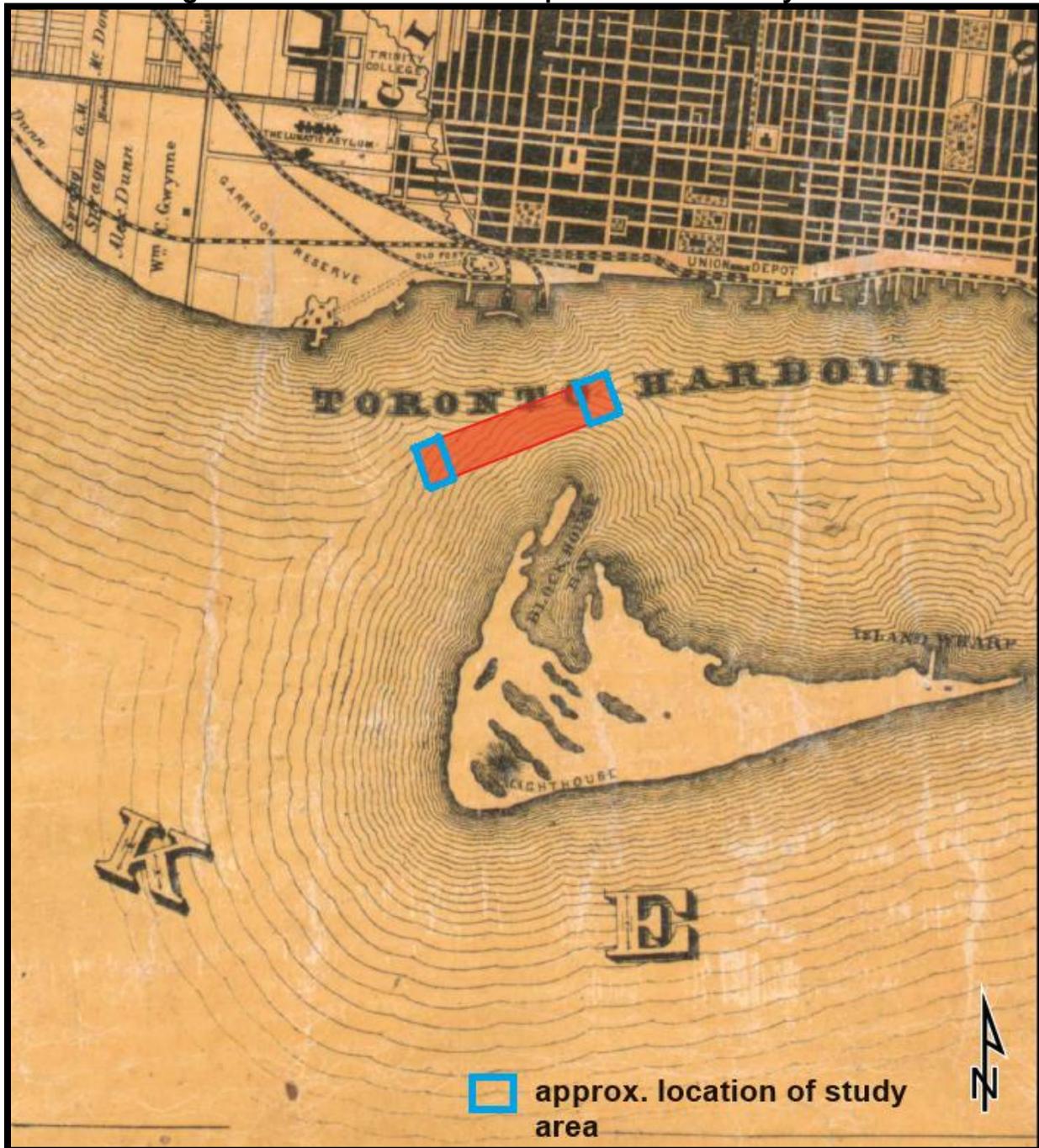


Figure 19: 1877 Map Section from Illustrated Historical Atlas of County of York



The 1899 (Goad 1899) and 1903 (Goad 1903) map produced by the City of Toronto is a composite of two maps, but sadly, the study area is depicted in neither of the maps (Figure 20 and Figure 21).

**Figure 20: 1889 Map of the Study Area (City of Toronto, 2024)**

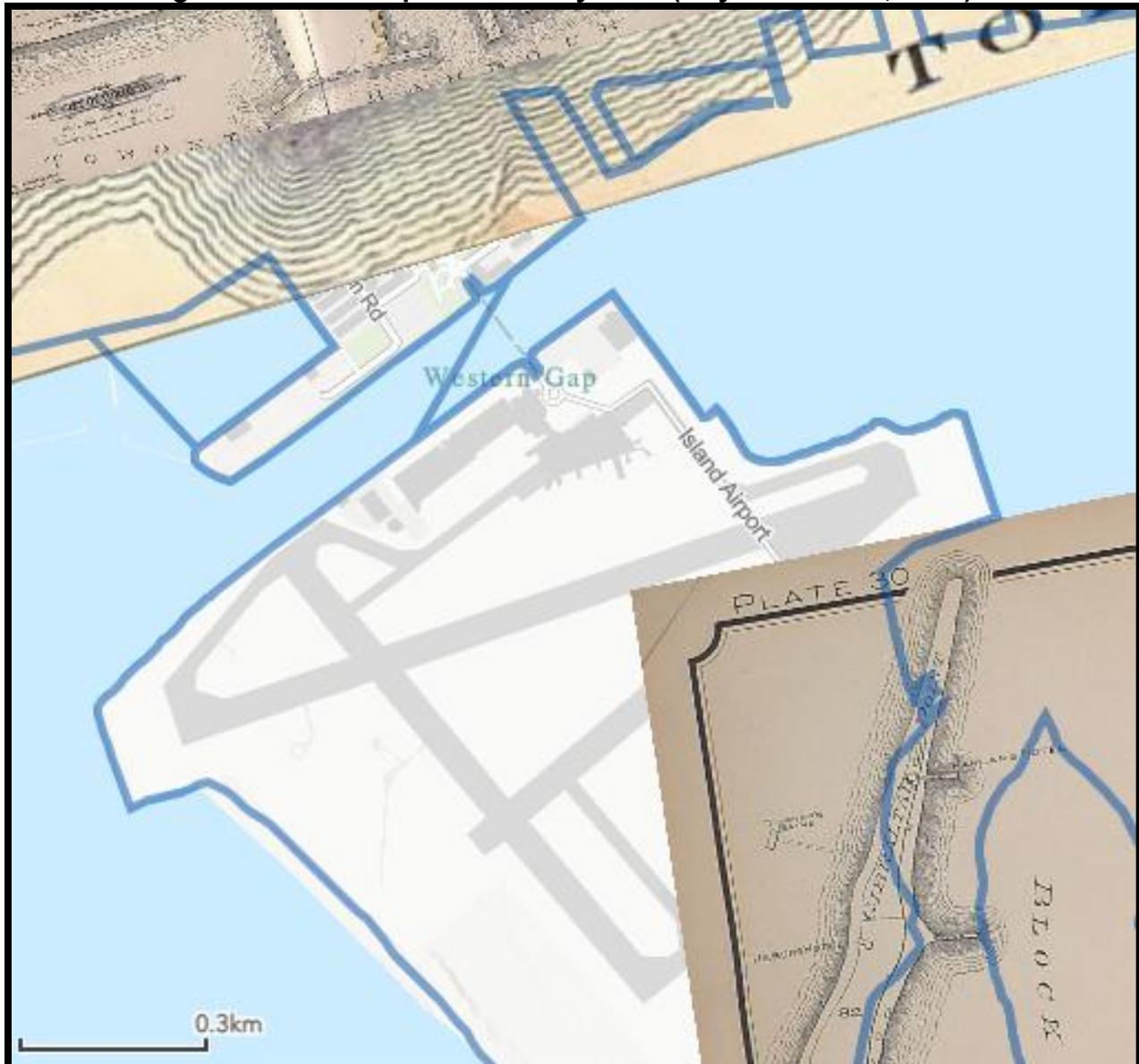
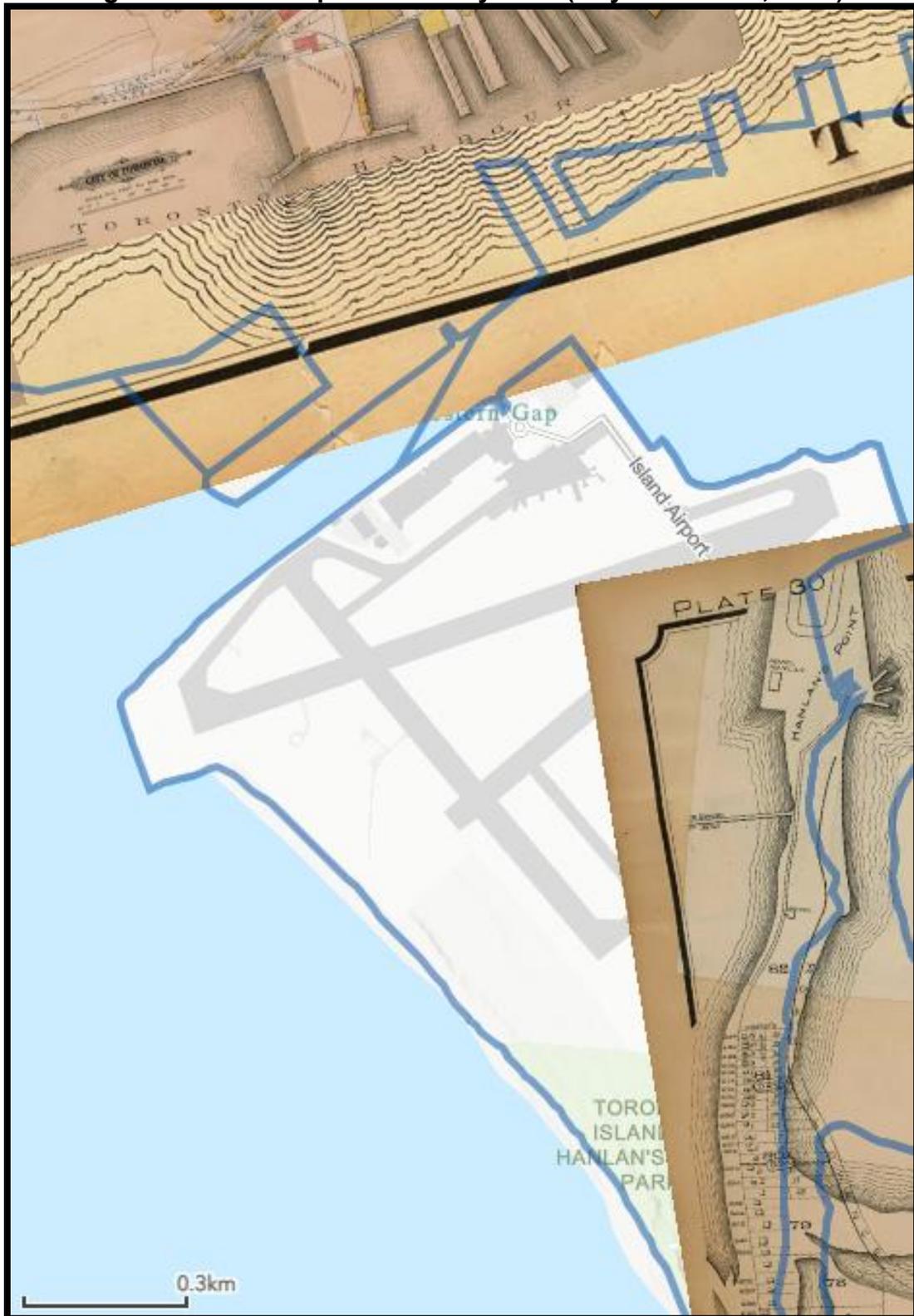
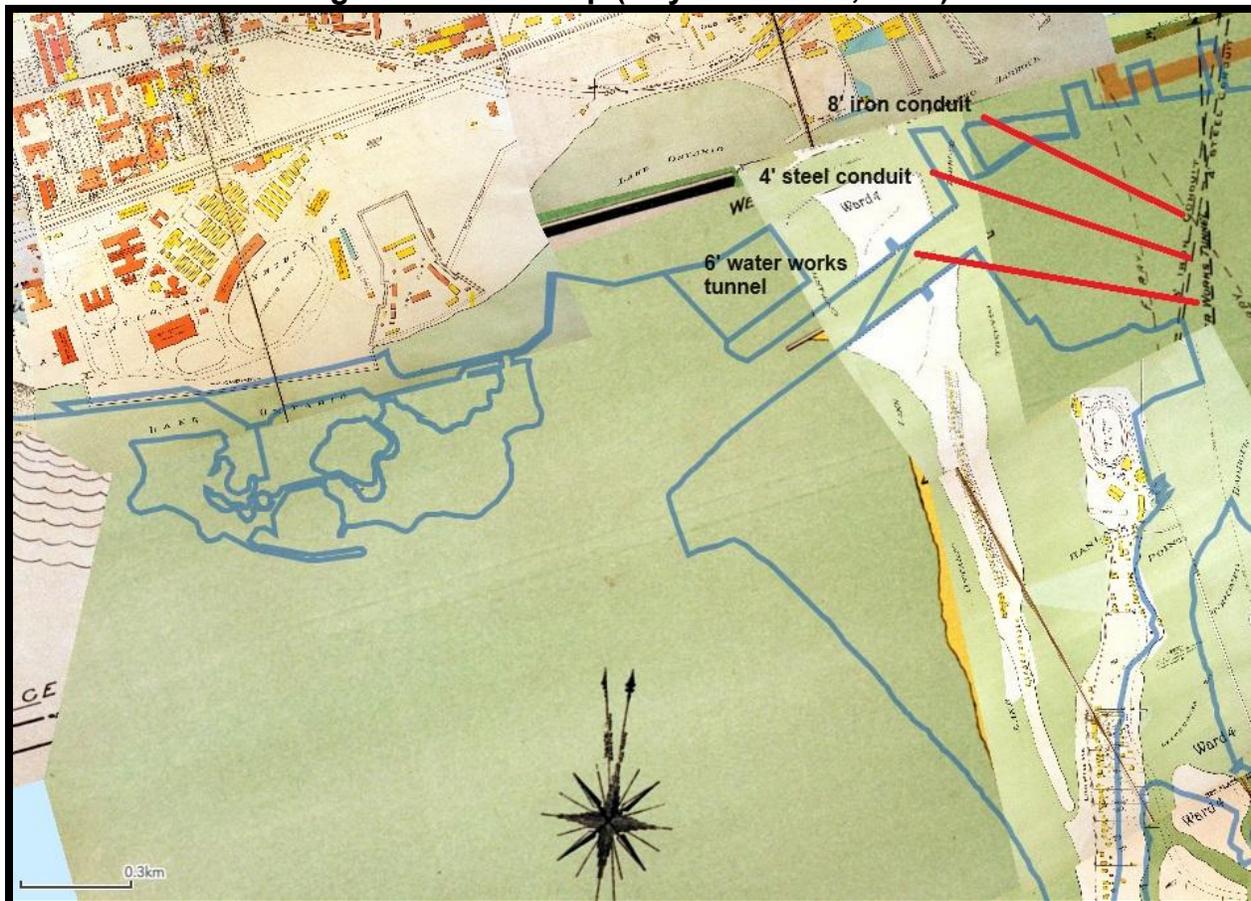


Figure 21: 1903 Map of the Study Area (City of Toronto, 2024)



The 1913 map (Goad 1913) features in Figure 22 have an outline of the current landscape of the City in blue. One can see that the west and east ends of Billy Bishop Toronto City Airport shows the water works tunnel (a six-foot pipe) skirting the east end of the eastern edge of the land base, which is part of the current study area. In addition, there is a four-foot steel conduit and an eight-foot iron conduit. [the small island like item at the east end is simply a label and not part of the natural or man-made landscape]. The two conduits appear to run from the mainland south to under the northern edge of the east end of the existing Billy Bishop Toronto City Airport.

**Figure 22: 1913 Map (City of Toronto, 2024)**



The 1924 map (Figure 23) (Goad Company 1924) is essentially unchanged from the 1913 map.

**Figure 23: 1924 Map (City of Toronto, 2024)**



In none of these other maps did the shipwreck appear that was shown on the 1833 map (Figure 15).

#### 2.1.3.4 The Toronto Island and Billy Bishop Toronto City Airport

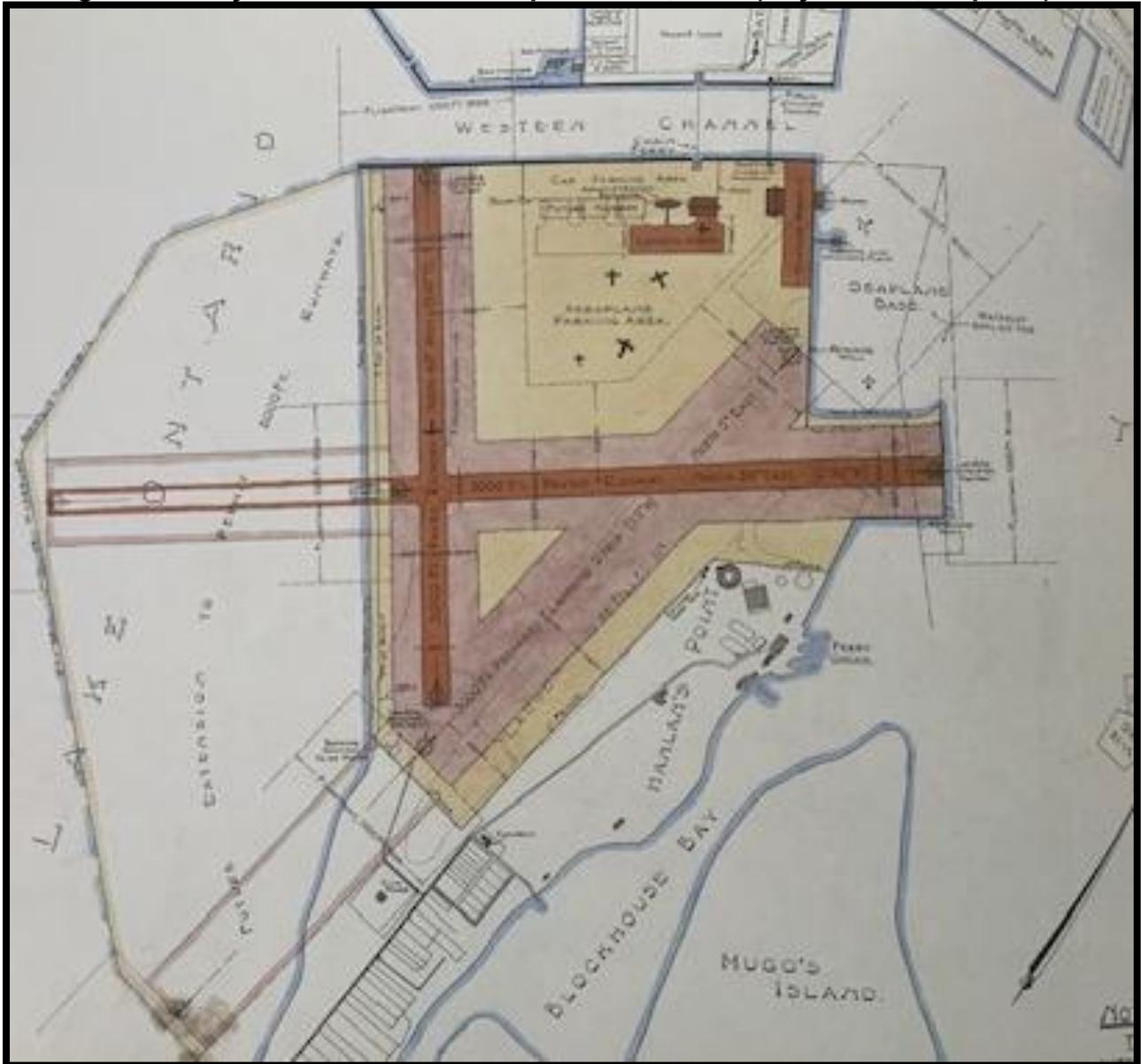
According to Gibson (1984), a lighthouse, constructed in 1809, and a variety of hotels were present on the Island after the 1830s, mostly in the narrows area on the eastern portion of the Island. The lighthouse and the Peninsula Hotel are noted on Browne's historic map from 1851 within the narrows to the east of the Billy Bishop Toronto City Airport study area (Figure 15); however, with the exception of the lighthouse on the southwestern tip of the Island, no other structures are noted in the historic mapping and no landowners are listed. The Peninsula Hotel is no longer visible on the 1877 Miles and Co. Illustrated Historical Atlas of York County and was presumably washed away during the storms of the 1850s which transformed the narrows area into the East Gap, now known as the Eastern Channel (Figure 19).

In the late 19th and early 20th centuries, cottages flourished along Hanlan's Point, in the vicinity of the Billy Bishop Toronto City Airport study area and for some time, the Island became a resort for people with means (Careless 1984). Eventually, plans were made to create public parklands on the Island and breakwaters were constructed to protect the Island from erosion. The addition of fill and alteration to the configuration of Toronto's new island and water channels continued for many years and, perhaps most dramatically, in the 1930s. A large area at Hanlan's Point was selected for the site of a new municipal airport. A considerable amount of fill was added to the northwestern portion of the island in order to provide the necessary land for the development of the airport. The airport was built in 1939 by the Toronto Harbour Commission under the name Port George VI Aerodrome. The Toronto Harbour Commission, created by the Federal Government in 1911, was the predecessor agency of PortsToronto. In 1999, the Toronto Harbour Commission became the Toronto Port Authority through an act of parliament. In 2015, the organization rebranded to PortsToronto to reflect its ownership of both the marine port and the airport. The legal name of the organization remains Toronto Port Authority however the organization does business as PortsToronto.

Figure 24 (dated 1937) illustrates the proposed layout of the airport but does not illustrate reclaimed lands and the extended runway located to the west. The airport achieved some historical significance as it was used to train Norwegian pilots during World War II and was nicknamed "Little Norway". This is not to be confused with another "Little Norway" situated in the Muskoka area. The airport was enlarged in 1961 and the configuration of it changed from that shown in Figure 24. In 1961, it was recognized as the busiest airport in Canada. Although Figure 24 is of the "proposed" airport, it shows the water lots at both the east and west ends of the airport. No marine infrastructure such as wharves, piers or docks appears in this rendition (other than those proposed, such as a ramp and wharf for loading and unloading float planes on the east side. It is not unusual for proposed plans to exclude existing features, so the absence of these on the plan is not necessarily an indicator of the marine landscape at the time. The tunnel depicted on the 1937 map was not actually built connecting the mainland with the island because financial agreements with the Federal Government were cancelled.

On July 9, 1937, the Toronto City Council, advised by the federal Department of Transportation, gave its stamp of approval to use property on the Western Channel of the Toronto Islands developed as a combined airplane and seaplane base. Work began on the site in that same year. Image 1 and Image 2 provide early photographs of the building of the airport.

Figure 24: City of Toronto Island Airport Plans, 1937 (Hayes 2008, Map 235)



**Image 1: Construction of the Airport, 1937 (Billy Bishop Toronto City Airport 2024)**



**Image 2: Construction of the Airport with Retaining Walls, 1937 (Billy Bishop Toronto City Airport 2024)**



The airport administration building, known as Terminal A, was designed and built by the Toronto Harbour Commission (PortsToronto predecessor) in the spring of 1939 (Image 3). Terminal A served as the airport's terminal from 1939 until 2010, when the building was moved to the south side of the airport's runway.

**Image 3: Construction of Terminal A, 1939 (Billy Bishop Toronto City Airport 2024)**



Anticipating a visit by King George VI and Queen Elizabeth in the spring of 1939, the airport officially opened as Port George VI Island Airport. When operations began, however, the moniker Toronto Island Airport became the most commonly used. Image 4 illustrates the new airport with two docks located along the east side, one definitely used for float planes. These docks are no longer there, having been removed or buried under additional man-made land.

The airport's first ferry was built by the Toronto Harbour Commission (now PortsToronto) and could transport up to 48 passengers to the newly completed airport. To travel to and from the airport, the ferry was pulled across the Western Channel by a pair of chain cables. Serving for 25 years, the cable ferry was often called into service in icy conditions to bring Toronto Island residents to and from the mainland. If there are any remnants of these chains in the Western Channel, they might still be found on the lake bottom. The Western Channel is, however, outside the study area.

**Image 4: View of Port George VI Island Airport Facing South (Billy Bishop Toronto City Airport 2024)**



From 1958 to 1962, the airport underwent an improvement and expansion project. Fill from Western Channel dredging operations was deposited on the east and west sides of the airport to permit a runway extension of 4,000 feet (Image 5).

**Image 5: 1962 Improvements to the Airport (Billy Bishop Toronto City Airport 2024)**



In 1990, the Island Airport was renamed the Toronto City Centre Airport. In 1999, the airport operation was turned over to the recently created Toronto Port Authority, which took over the responsibilities of the Toronto Harbour Commission, including the airport and port functions. At its annual meeting on September 3, 2009, the Toronto Port Authority announced that it would rename the airport after William Avery “Billy” Bishop, a Canadian First World War flying ace and Victoria Cross recipient. 2010 marked the beginning of construction on the pedestrian tunnel to Billy Bishop Toronto City Airport. In 2015, the pedestrian tunnel to Billy Bishop Toronto City Airport was officially opened, 10-stores below the Western Channel at the base of Bathurst Street. The latter is outside the study area (Billy Bishop Toronto City Airport 2024).

## 2.2 Archaeological Context

The Marine Archaeological Assessment included an in-water marine archaeological assessment of the two areas using side scan sonar and magnetometer survey and ground truthing of possible cultural targets encountered during the survey and was conducted on the night of September 4<sup>th</sup> into September 5<sup>th</sup>, 2024 under Licence #2024-30.

The archaeological context of any given study area must be informed by a summary of registered or known archaeological sites located within a minimum 1 km radius (Section 2.2.1) and descriptions of previous archaeological fieldwork carried out within the limits of, or immediately adjacent to the property (Section 2.2.2).

### 2.2.1 Registered or Known Archaeological Sites

The Ontario Archaeological Sites Database and the Ontario Public Register of Archaeological Reports were consulted to determine whether any registered or known archaeological resources occur within a 1 km radius of the study area (von Bitter 2024). The search indicated that there is one registered archaeological site located within a one-kilometre radius of the study area.

This site, New Fort, AjGu-32, is located northwest of the study area on the mainland. This is a Euro-Canadian site with many features (the site Borden form has at least eight separate entries) but does not directly have any association with the study area.

While not a registered site, a report in the Toronto Evening Telegram of 1908 presents the possibility of early Indigenous use around the Toronto Islands.

Thirty-seven feet [11.2 metres] down in the blue clay under Toronto Bay they have found human footprints. This find, in the inter-glacial clay deposited from fifty to one hundred thousand years ago, is the most important geological discovery of that period made in America. Charcoal – remains of burnt wood – has been discovered in the Don valley, but nowhere in America have traces of human beings been discovered of such antiquity. On November 13<sup>th</sup>, in the

morning, the concreting gang in Haney & Millar's water works [from Hanlan's Point to mainland] tunnel laid bar, for over thirty feet, a strata of blue clay six feet wide, in which there were over a hundred imprints of human feet encased in moccasins [sic]. At the same level, near the footprints, a piece of inter-glacial wood, some 12 inches [8 cm] long, was also found. These footprints were found 1,000 feet from shaft No. 2, and at a place 70 feet [21.33 m] below the water level of the bay. Some hundred feet [30.48 m] south of the big find at the same level some imperfect footsteps were discovered. All the footprints, excepting a few which went sideways, were pointing towards Toronto. They varied from slight depressions to two inches [5.1 cm] in depth. W. H. Cross, city inspector, and William Axford, Haney & Millar's foreman, telephoned to Engineer Gibson, but as the orders were to rush the work, they broke up the strata and concreted over the place before he arrived on the ground. W. H. Cross of 21 Oak Street, described the find as follows:--

It looked like a trail. There were over a hundred footprints. You could follow one man the whole way. Some footprints were on top of the others, partly obliterating them. There were large footsteps of all sizes, and a single print of a child's foot three and a half inches [8.9 cm] long. All the footsteps toed in. You could see the hollow between the ball and heel in many of them, and they were all made with moccasined [sic] feet. In some places you could see where the toe had been driven in and the clay had shot up underneath the heel. All the footsteps pointed north except where some turned off to the side. We tried to get a piece of the blue clay up, but it was very soft and always broke.... (Toronto Evening Telegram 1908: 5-6).

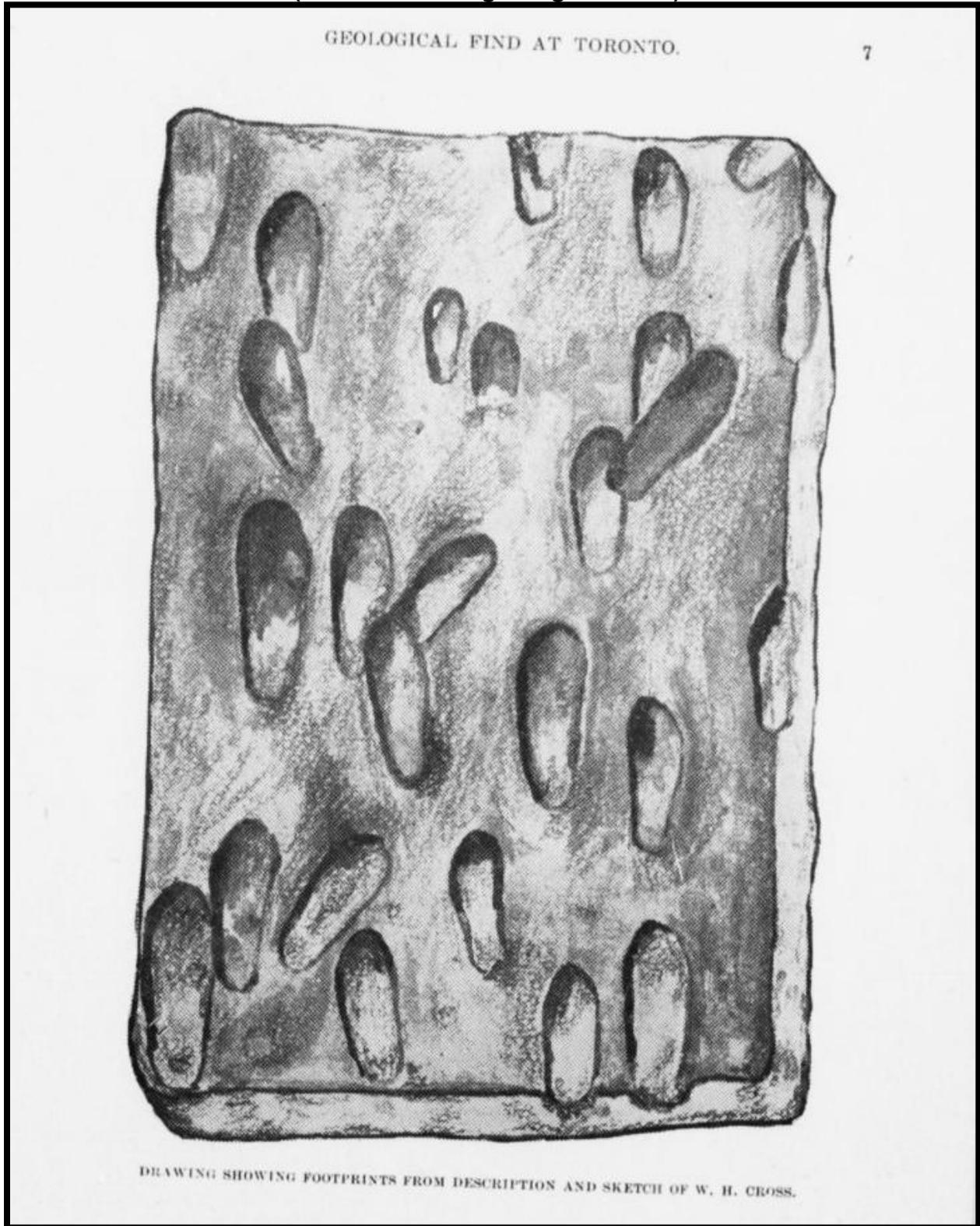
William Axford corroborated Cross's observations.

At the place the find was made the water and mud is 33 feet deep. Between the bottom of the bay and the top of the tunnel there is 30 feet of clay. And between the top of the tunnel and the clay with the footprints was seven feet (Toronto Evening Telegram 1908: 5-6).

W. H. Cross made a sketch showing how the footsteps went and also made footprints in damp sand to show how deep and clear the marks were: (Toronto Evening Telegram 1908: 5-6; Figure 25).

These observations were made by two educated men, so they can be assumed to be accurate. If in fact, these footprints are authentic, this means that buried within the blue clays of Toronto Harbour, there may be more evidence of very early Indigenous activity in and around the Toronto Island. With the building of the tunnel, however, these footprints were destroyed and there is no remaining proof that they existed.

**Figure 25: Pre-contact Footprints in Blue Clay under Toronto Harbour  
(Toronto Evening Telegram 1908)**



### **2.2.2 Previous Archaeological Work**

Reports documenting assessments conducted within the subject lands and assessments that resulted in the discovery of sites within adjacent lands were sought during the research component of the study. In order to ensure that all relevant past work was identified, an investigation was launched to identify reports involving assessments within 50 m of the study area. The previous archaeological assessment relevant to the current marine archaeological study area includes a Stage 1 archaeological assessment conducted by AECOM in 2014 (2015) under Project Information Form #P439-0011-2014; a memorandum to PortsToronto from AECOM (2015) of a cultural heritage review, and a marine archaeological background study conducted in 2015 (AECOM 2017) under Licence #2015-16. The latter has yet to be accepted into the Public Registry of Archaeological Reports.

The recommendations from the terrestrial Stage 1 archaeological report are:

The proposed land mass extensions will impact part of Toronto Island that was created in the 1930s. Additionally, the areas identified as retaining archaeological potential that exist within the study area are currently located under existing airport runways and tarmac and do not retain any archaeological potential. Therefore, the study area lands above water do not retain any potential for archaeological resources and no further archaeological assessment is recommended. The Ministry of Tourism, Culture and Sport [now Ministry of Citizenship and Multiculturalism] is asked to accept this report into the Ontario Public Register of Archaeological Reports thereby concurring with the recommendations presented herein (AECOM 2015a: 17).

Although the marine archaeological report has not yet been accepted into the Public Registry, the recommendations are included here:

The background research of the underwater portion of the Billy Bishop Toronto City Airport study area resulted in the identification of several shipwrecks that have been lost in Toronto Harbour and potentially in the vicinity of the study area. Based on these findings, there is high potential for the recovery of marine archaeological resources. It is possible that these resources may be impacted by the proposed land mass extension and mitigation measures are required.

An additional Stage 1 archaeological assessment to address potential staging areas outside the proposed impact areas is underway and will be addressed in a separate standalone report (AECOM forthcoming).

## **3.0 FIELD ASSESSMENT**

### **3.1 Rationale for Fieldwork Strategy**

A Stage 1 archaeological assessment for adjacent land components was undertaken by AECOM in 2014 under Project Information Form #P428-0011-2014 (AECOM 2015). Background research into the marine archaeological potential of the study area was also completed in the same report under Licence #2015-16. An additional Stage 1 archaeological assessment to address potential staging areas outside the proposed impact areas beyond the limits of the previous Stage 1 study area is underway and will be addressed in a separate standalone report (AECOM forthcoming).

The 2015 marine archaeological assessment recommended only sub-bottom profiling and magnetometer survey. Sub-bottom profiling is deemed premature at this stage of the assessment. Instead, ARA conducted a side scan sonar and magnetometer survey, ground truthing any potential cultural targets and provided additional pertinent information for the background research. If the magnetometer or side scan sonar results indicated any possibility of cultural resources, sub-bottom profiling would be recommended to obtain additional information in those specific areas.

Work was conducted after 11 p.m. to accommodate the schedule of the Billy Bishop Toronto City Airport, and was halted before 6 a.m. As this is a geotechnical survey, there was no need to bring in any additional equipment for either the side scan or magnetometer survey. The remote-operated vehicle (ROV) is equipped with lights to record any photographs of possible cultural artifacts.

Boreholes (not part of the archaeological assessment) were conducted following clearance of the areas to be impacted by any archaeological resources. The borehole data was reviewed to add data to the marine archaeological assessment, especially looking for the presence of a blue clay layer, which might indicate precontact activity evidence. The 1908 report cited in the Toronto Evening Telegram of workers finding moccasin footprints in the blue clay layer is the impetus for suggesting archaeological potential in this clay layer.

### **3.2 Methodology**

An inflatable rib was used as the operational boat equipped with side scan sonar (Imagenex Yellowfin872) with real time acquisition through Shark Marine DiveLog software. It has a frequency of 260 kHz/330 kHz/800 kHz nominal ranges up to 400 metres, and a magnetometer (ProMAG) with a sensitivity of 0.02 nT, accuracy of 0.1 nT, and a gradient tolerance of over 10,00 nT/metre.

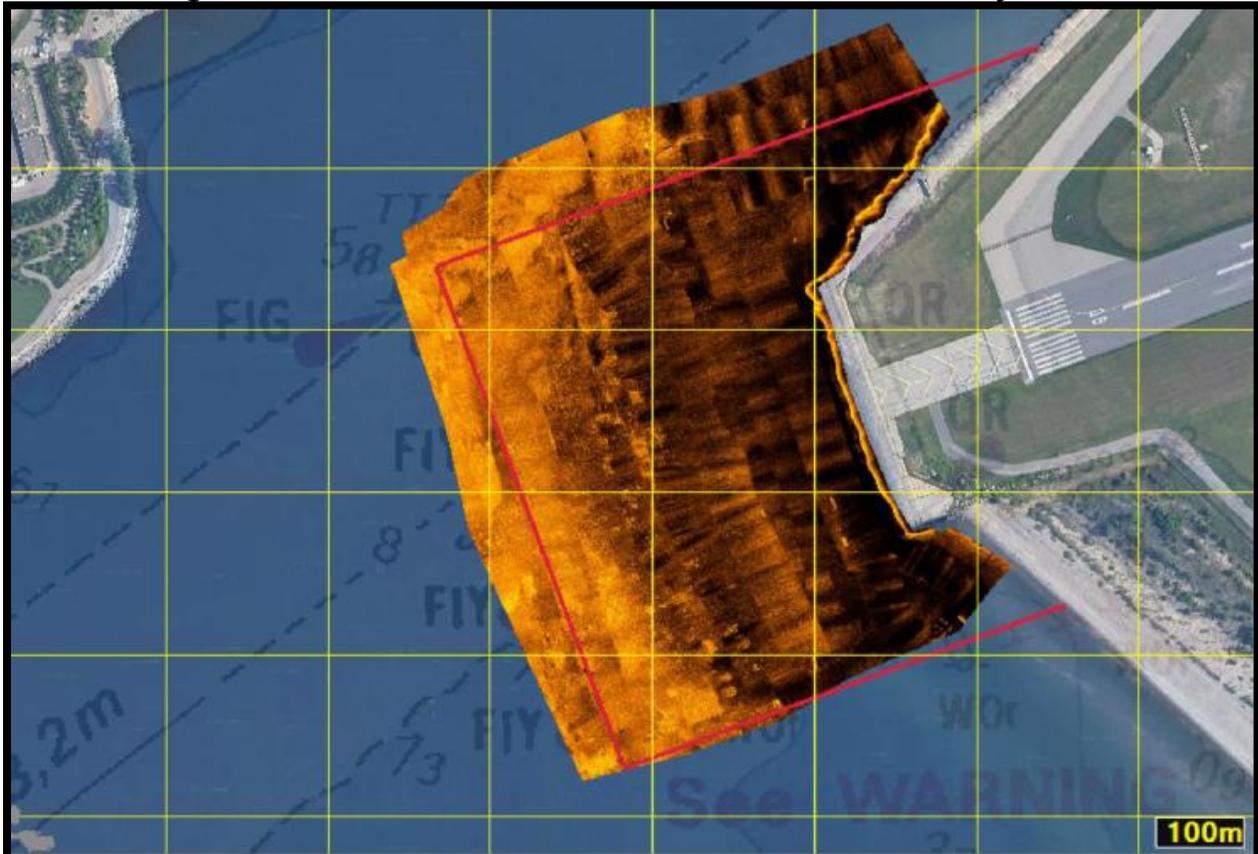
The side scan sonar was towed a short distance behind the survey vessel and run along a predetermined survey grid set to 10-meter line spacing to match the magnetometer. The side scan was set to a 30-meter range (60-meter total swath) providing full overlapping coverage of the survey area

The magnetometer was towed behind the survey vessel at a distance of 5 m to prevent any ferrous components on the vessel from influencing the readings. The magnetometer was towed along a 10-m grid throughout the survey area. All reference to magnetometer readings was made in Nanotesla nT (e.g. 450nT). 1 Nanotesla is equivalent to 1 Gamma.

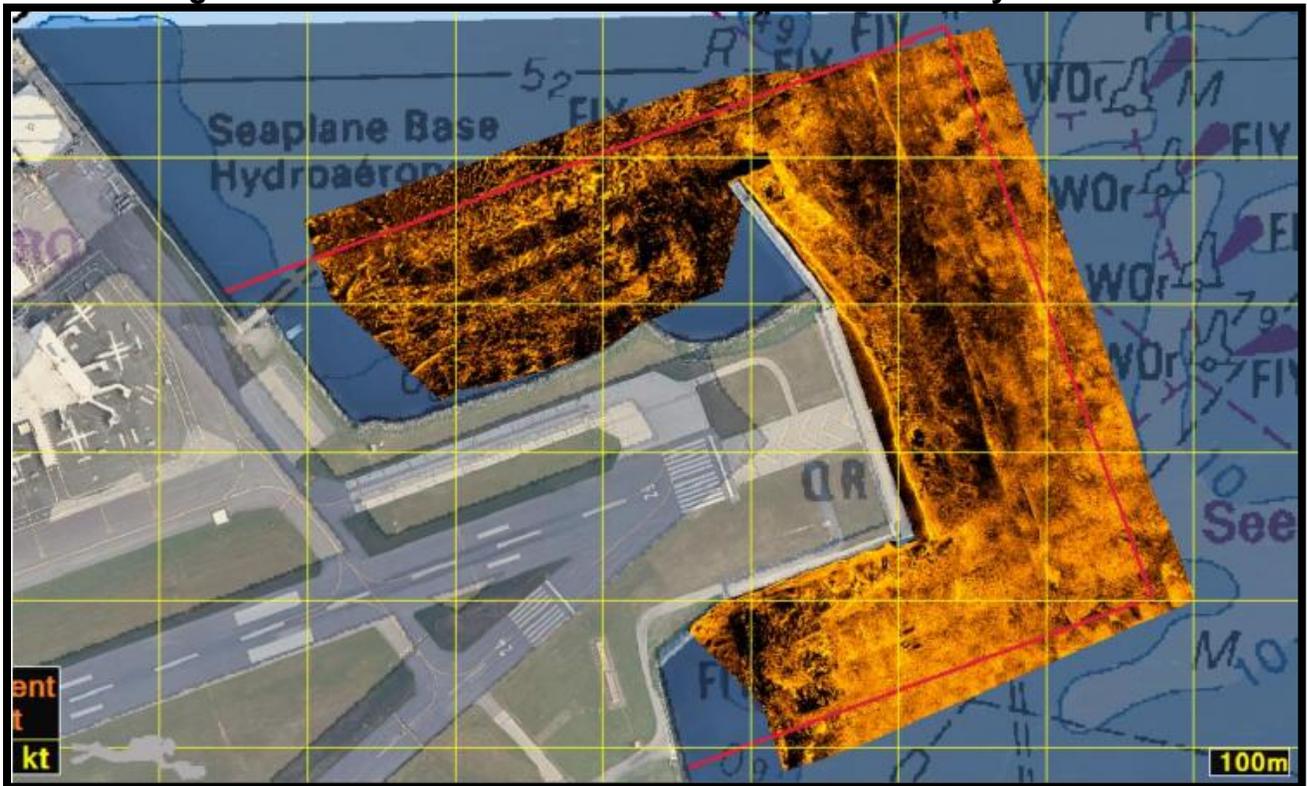
### 3.3 Results

The side scan data collected has been produced into two mosaics, one for the west end and one for the east end. An image of each of these are presented as Figure 26 and Figure 27 as well as high resolution images provided on the accompanying Data Drive.

**Figure 26: Side Scan Sonar Mosaic of West End of Study Area**



**Figure 27: Side Scan Sonar Mosaic of East End of Study Area**



The Magnetometer data collected has been produced into two mosaics, one for the west end and one for the east end (Figure 28–Figure 31), each presented as both gamma and gradient. High-resolution images are provided on the accompanying Data Drive.

Figure 28: Magnetometer Gamma Mosaic West End

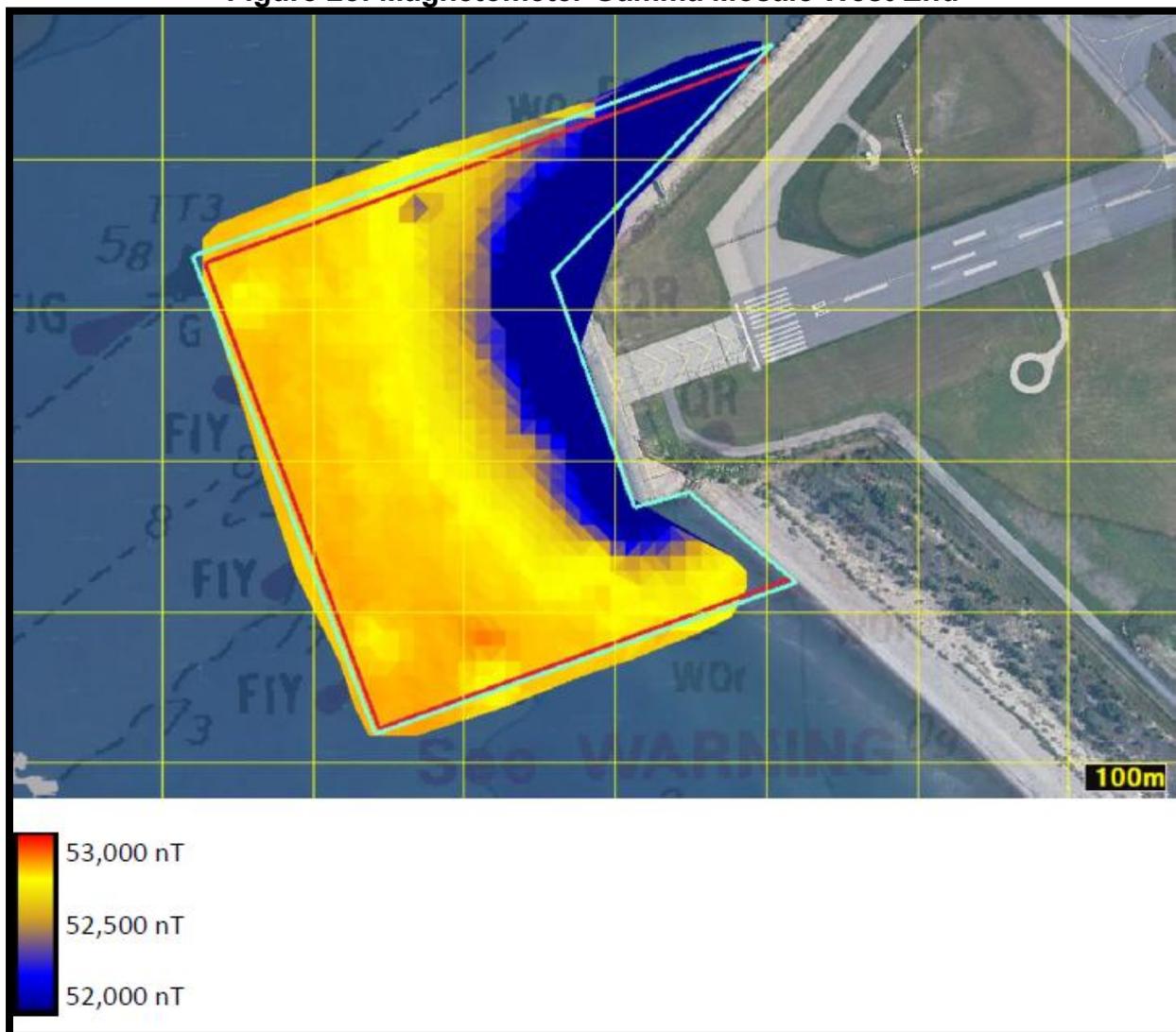


Figure 29: Magnetometer Gradient Mosaic West End

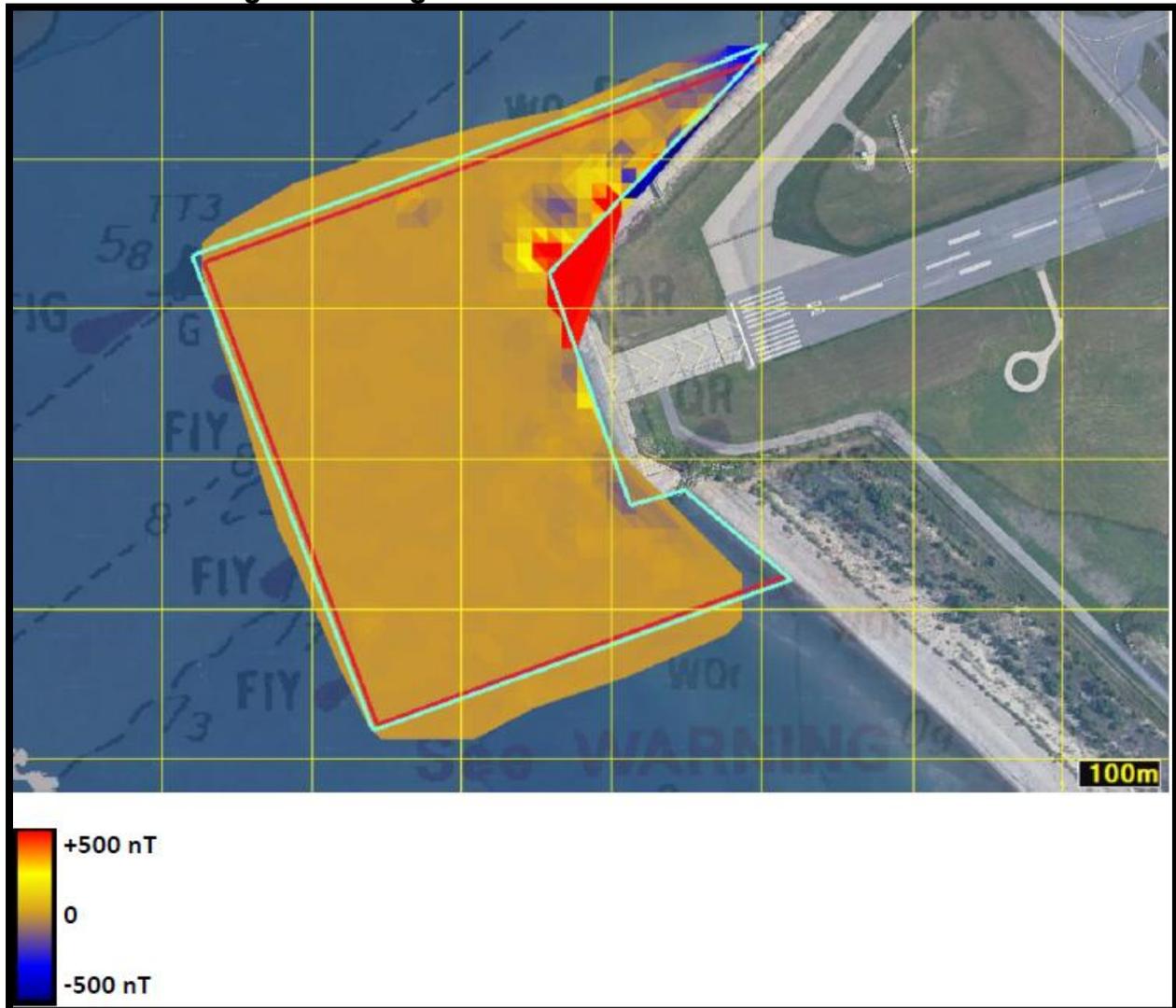


Figure 30: Magnetometer Gamma Mosaic East End

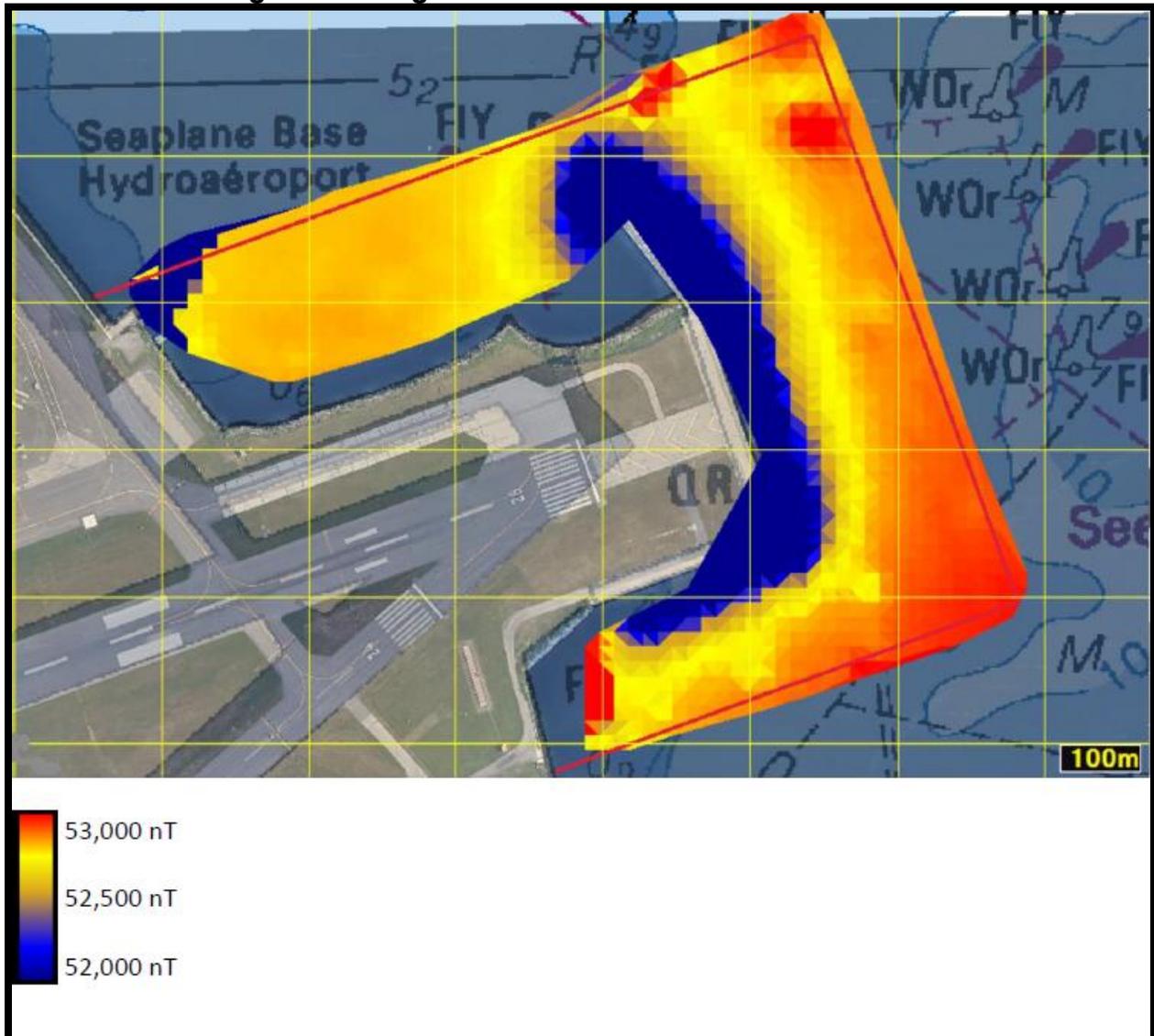
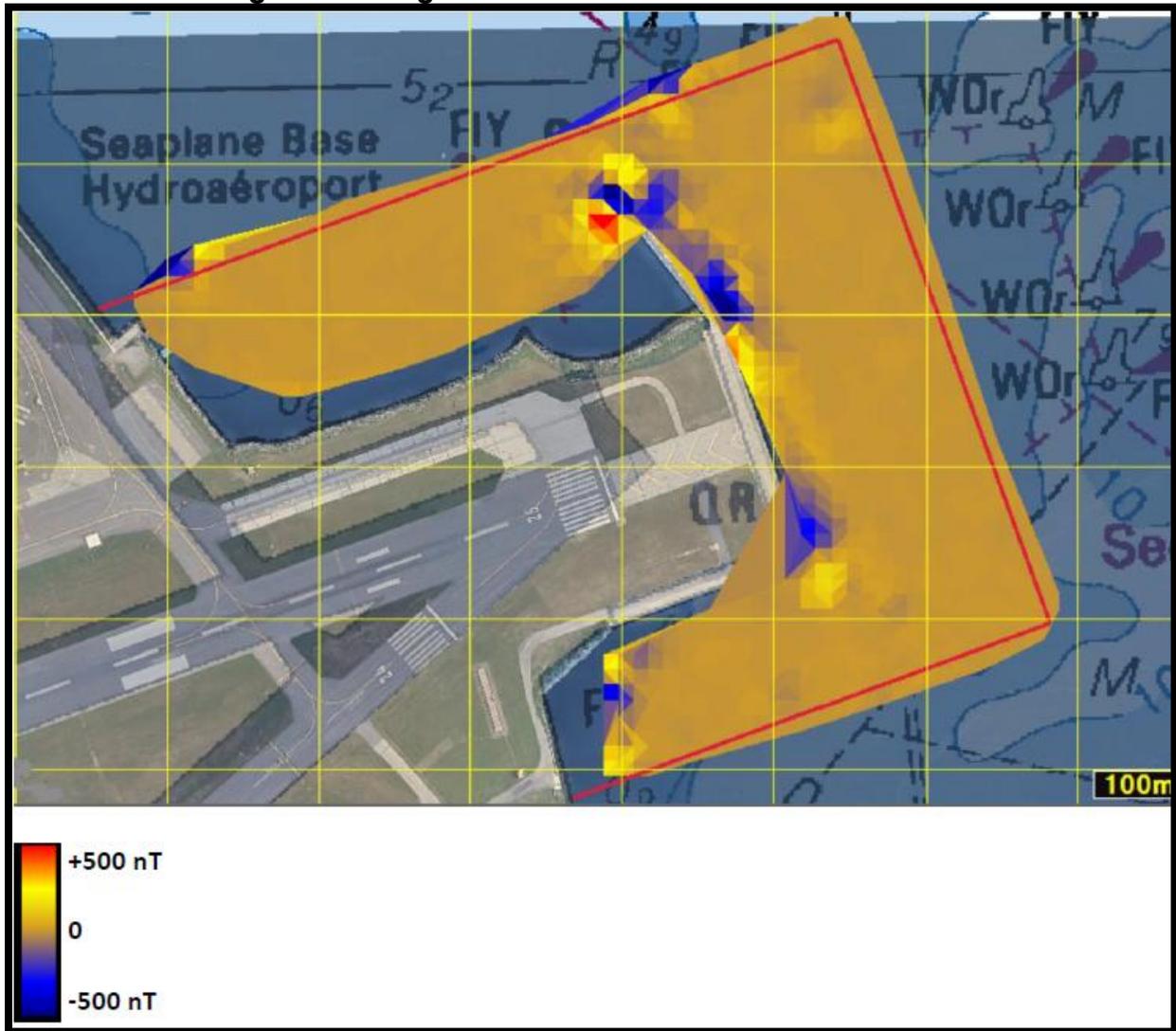


Figure 31: Magnetometer Gradient Mosaic East End



Not surprising are the magnetometer higher nT readings closest to the land base, where undoubtedly building materials included high proportions of metal such as rebar and retaining walls.

Table 4 presents the target data. Group 3 in the table are the numerous buoys that were present in the study area, especially at the west end. These buoys were anchored with heavy metal chain.

**Table 4: Target Data**

Number	Latitude DDMM.MMMM	N/S	Longitude DDMM.MMMM	E/W	Description	Group**
2	4337.6274	N	7924.3143	W	450 nT	4
8	4338.0036	N	7923.2419	W	500 nT	4
11	4337.8324	N	7923.2176	W	450 nT	4
13	4337.5432	N	7924.3837	W	Buoy; 200 nT	3
14	4337.6671	N	7924.4438	W	Buoy; 375 nT	3
15	4337.697	N	7924.3575	W	Buoy; 580 nT	3
16	4337.61	N	7924.3056	W	89 nT	4
17	4337.5725	N	7924.2776	W	112 nT	4
18	4337.7282	N	7924.2752	W	Buoy; 410 nT	3
19	4337.9875	N	7923.2331	W	75 nT	4
20	4337.8121	N	7923.2015	W	Buoy; 203 nT	3
21	4337.9526	N	7923.2811	W	60 nT	4
22	4337.9867	N	7923.3151	W	232 nT	4
23	4337.9164	N	7923.2825	W	330 nT	4
24	4337.8311	N	7923.2421	W	1186 nT	4
25	4337.7633	N	7923.3456	W	545 nT	4
26	4337.784	N	7923.2652	W	Buoy; 438 nT	3
27	4337.7719	N	7923.3132	W	102 nT	8
28	4337.7813	N	7923.3427	W	400 nT	4
29	4337.9283	N	7923.5599	W	Linear; Poss marine Railway. 231 nT	6
30	4337.9178	N	7923.5577	W	230 nT	4
31	4337.9231	N	7923.5300	W	473 nT	4
32	4337.9669	N	7923.3384	W	930 nT	4
33	4337.5464	N	7924.2974	W	Buoy	3
34	4337.5745	N	7924.2542	W	Dots in a row	5
35	4337.5542	N	7924.2085	W	Buoy	3
36	4337.8417	N	7923.1445	W	Buoy	3
37	4338.0011	N	7923.2819	W	Buoy	3

\*\* Group 1 Cultural = 0

Group 3 Buoy = 10

Group 4 Mag only = 15

Group 5 Sidescan only = 1

Group 6 Sidescan and Mag = 2

(Recorded as not to be confused with other targets)

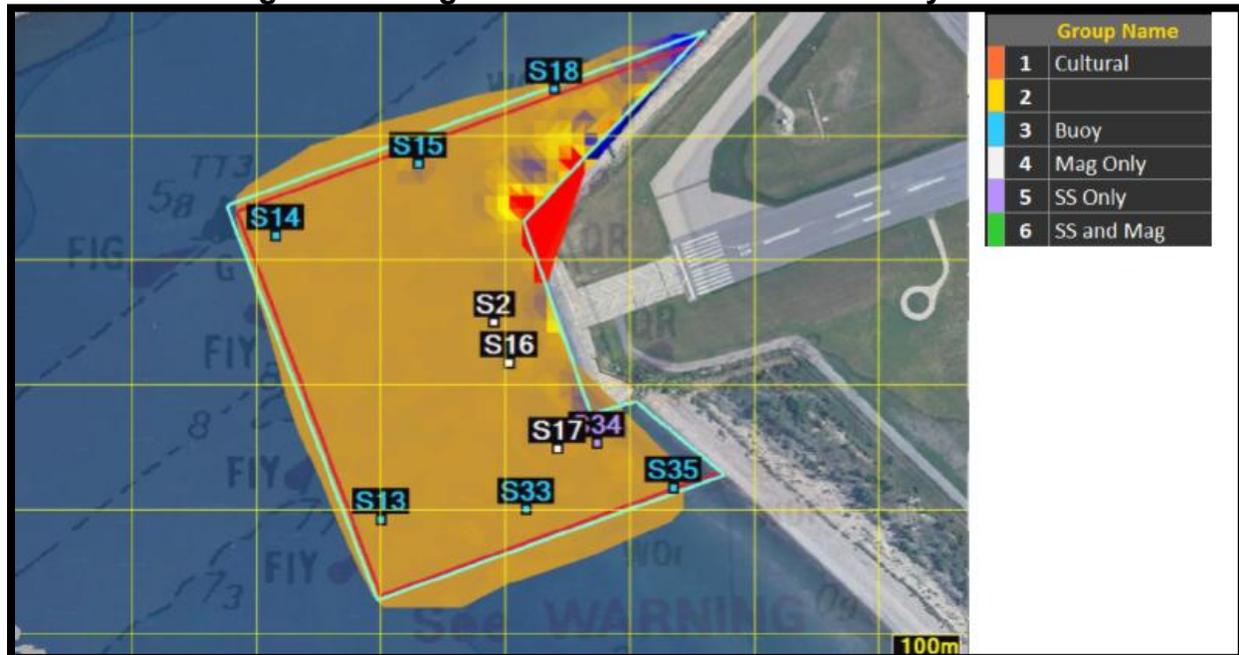
(expected to be buried or not visible on bottom)

(Proud of bottom but not determined as ferrous)

(Proud of bottom and determined as ferrous)

Figure 32 and Figure 33 present an overall image of the locations of the target. Figure 32 shows the high preponderance of non-cultural targets in the form of buoys (S14, S15, S18, S13, S33 and S35). In Figure 33, the buoys are targets S20, S26, S36 and S37. Each of the individual targets is presented below showing both magnetometer and side scan imagery. Each is accompanied by location information (Figure 34–Figure 61).

**Figure 32: Targets at the West End of the Study Area**



**Figure 33: Targets at the East End of the Study Area**



Figure 34: Target S13 – Buoy Chain and Concrete Tie In

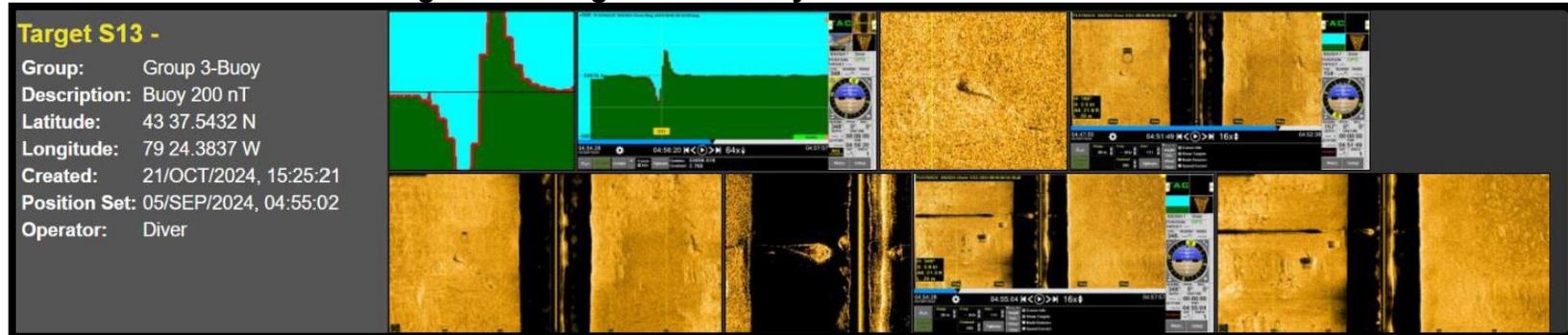


Figure 35: Target S14– Buoy Chain and Concrete Tie In

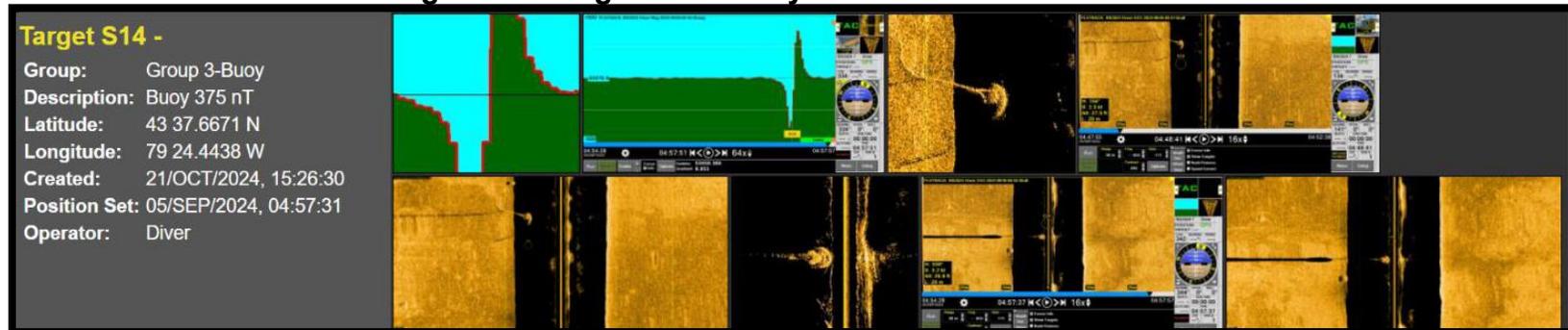


Figure 36: Target S15 – Buoy Chain and Concrete Tie In

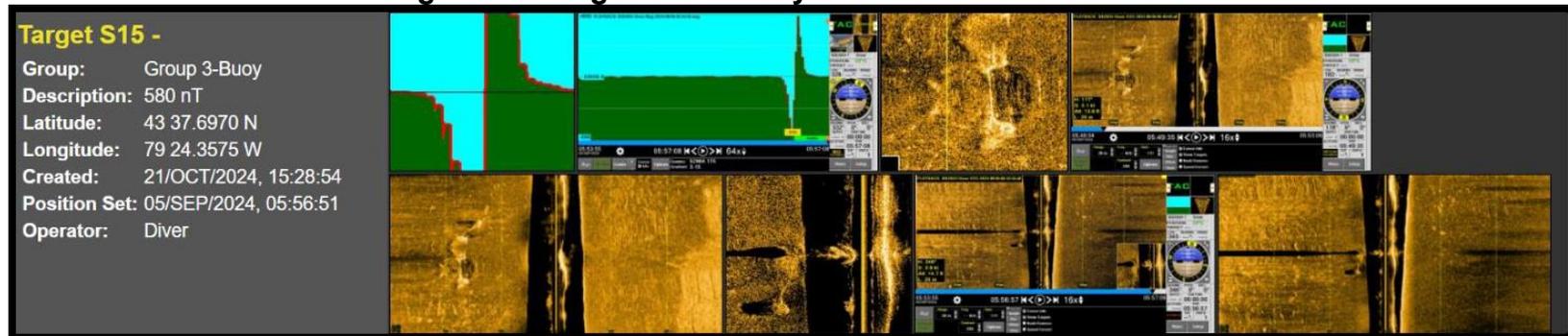


Figure 37: Target S18- Buoy Chain and Concrete Tie In

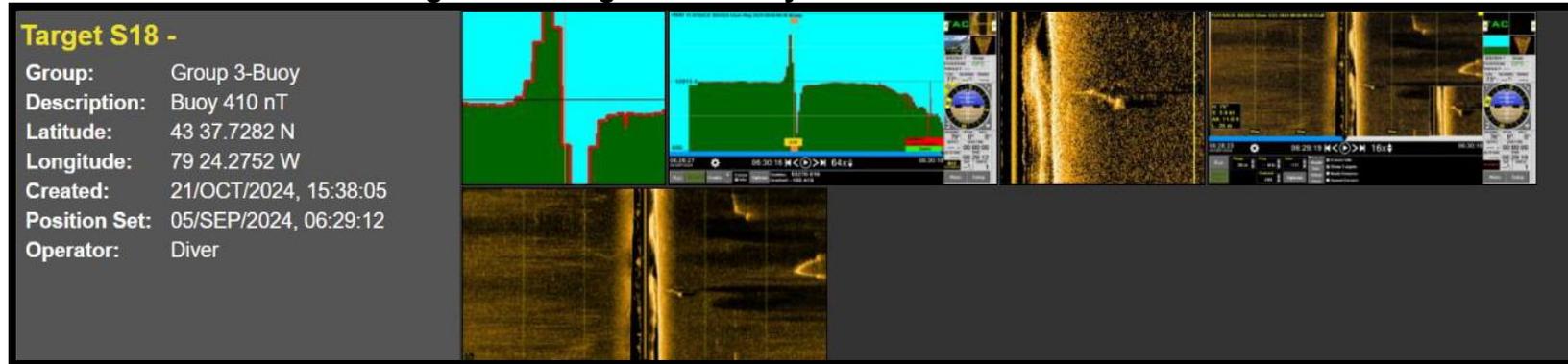


Figure 38: Target S20 – Buoy Chain and Concrete Tie In

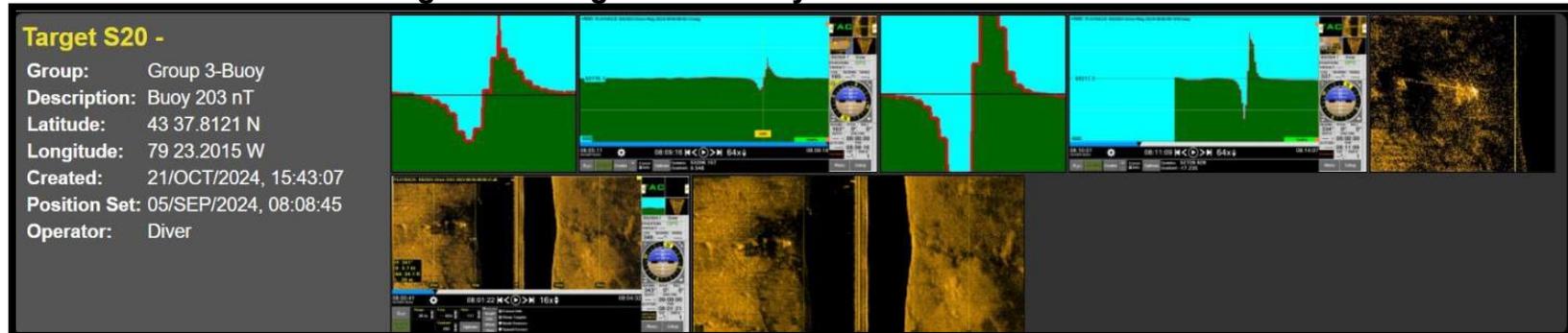


Figure 39: Target S26 – Buoy Chain and Concrete Tie In

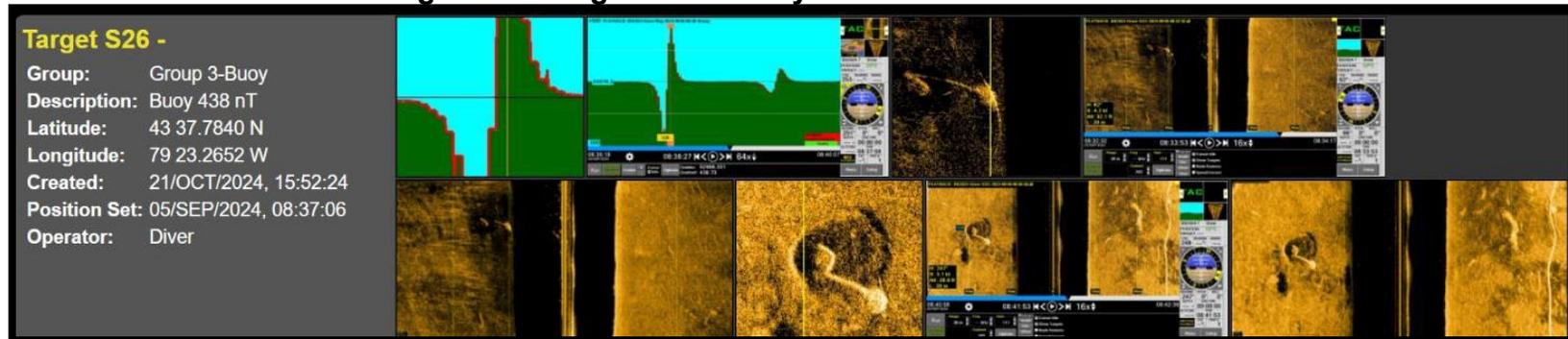


Figure 40: Target S33 – Buoy Chain and Concrete Tie In



Figure 41: Target S35 – Buoy Chain and Anchor Tie In

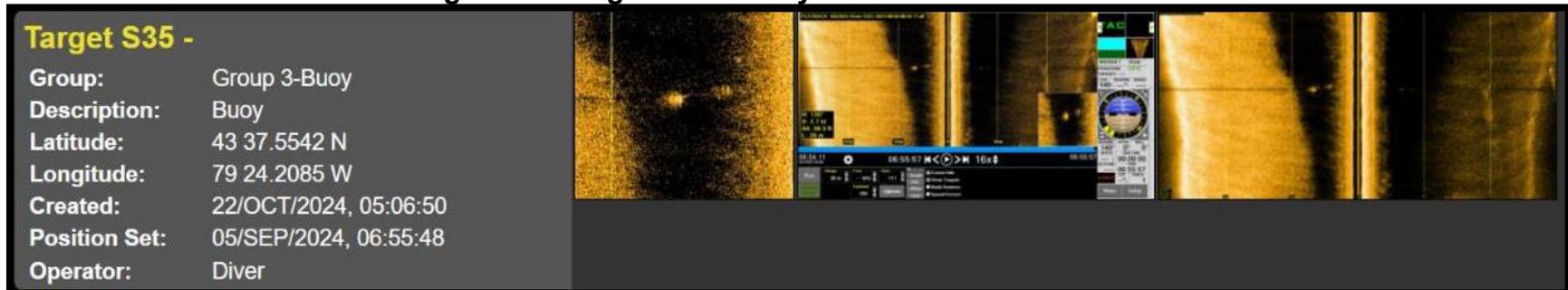


Figure 42: Target S36 – Buoy Chain and Anchor Tie In

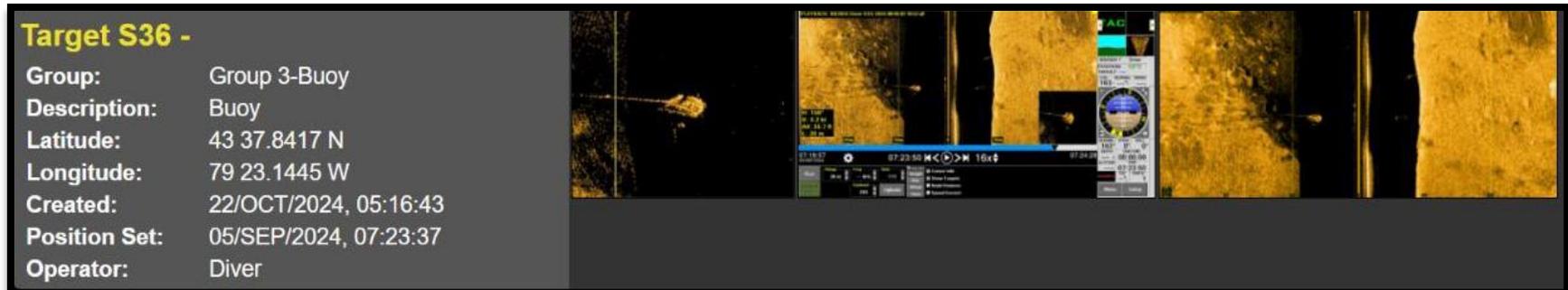


Figure 43: Target S37 – Buoy chain and Anchor Tie In

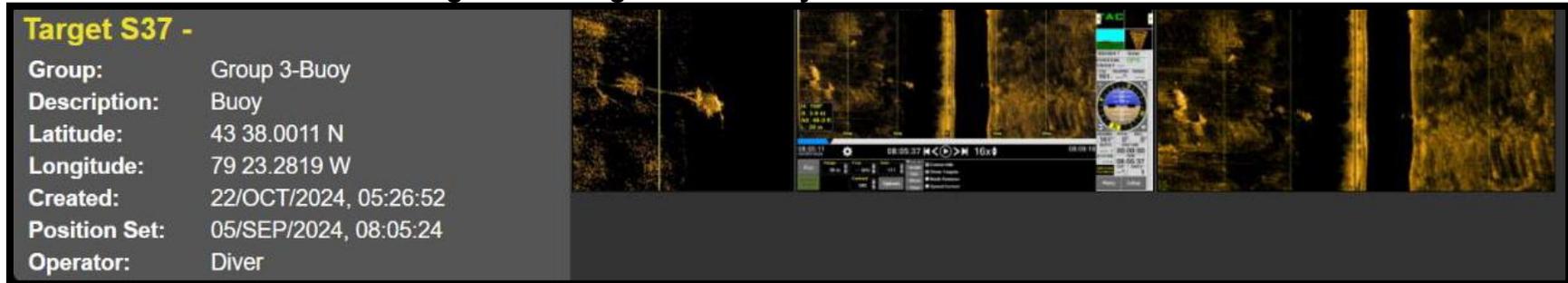


Figure 44: Target S2 – Magnetometer Hit

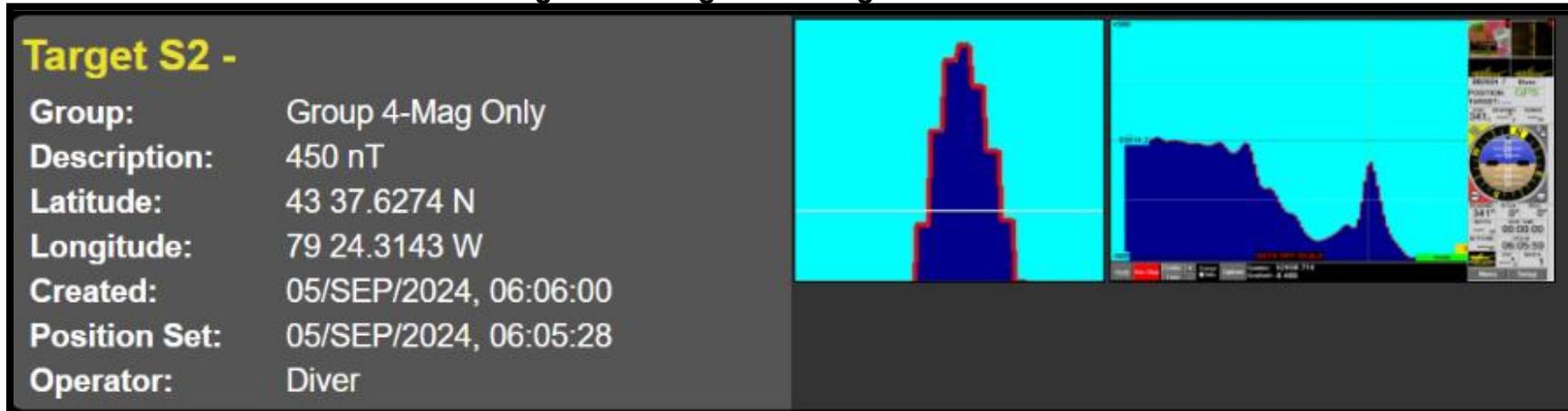


Figure 45: Target S8 – Magnetometer Hit

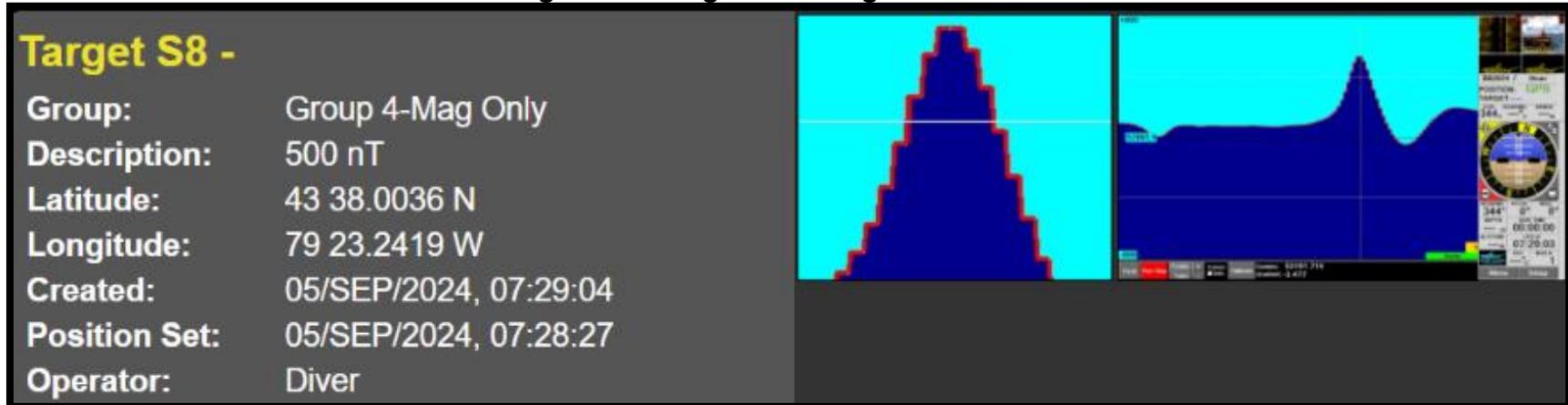


Figure 46: Target S11 – Magnetometer Hit

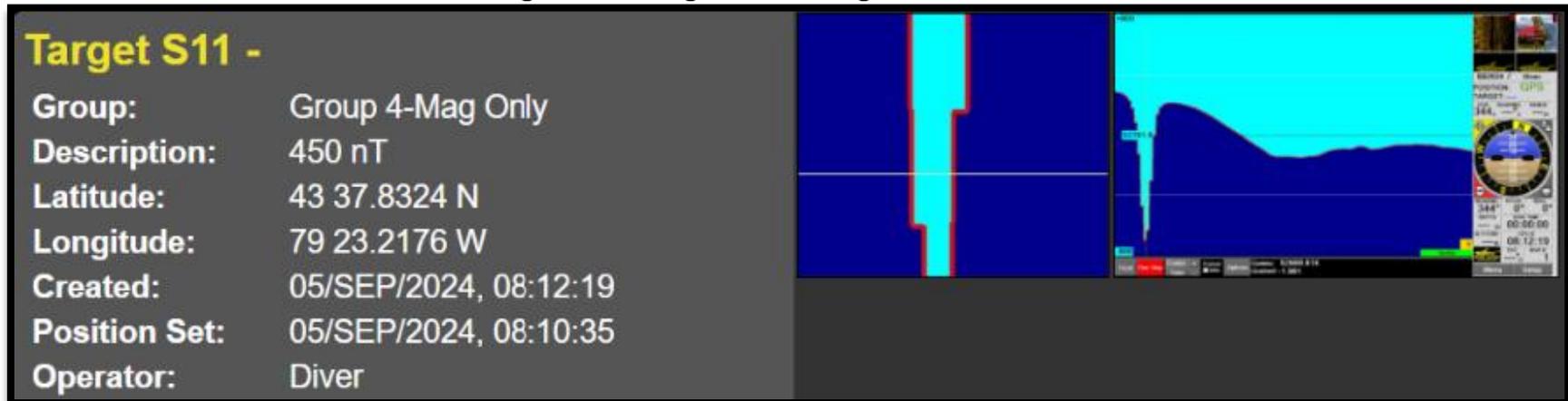


Figure 47: Target S16 – Magnetometer Hit

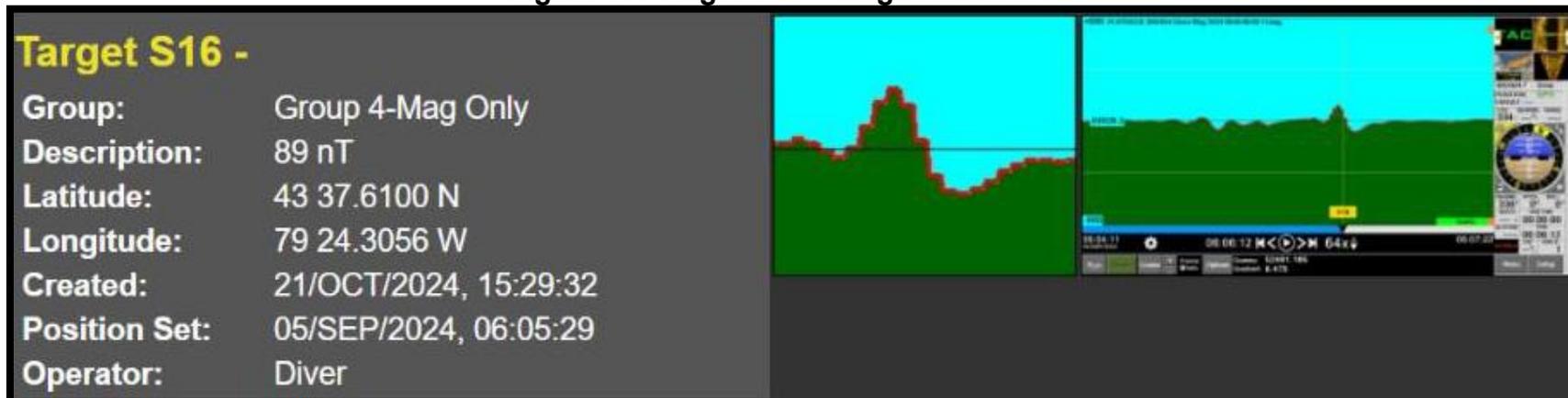


Figure 48: Target S17 – Magnetometer Hit

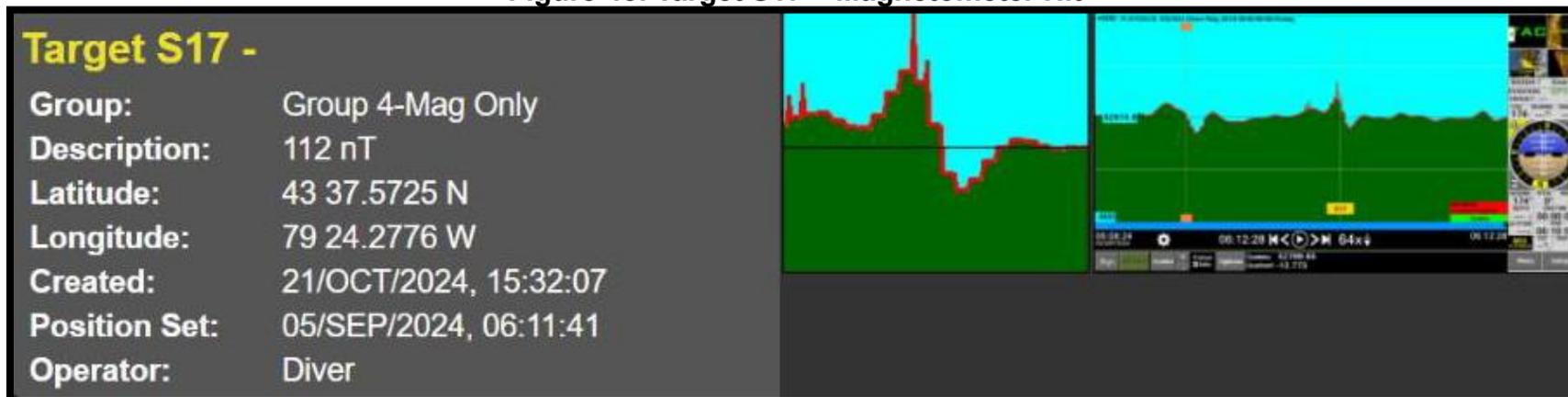


Figure 49: Target S19 – Magnetometer Hit

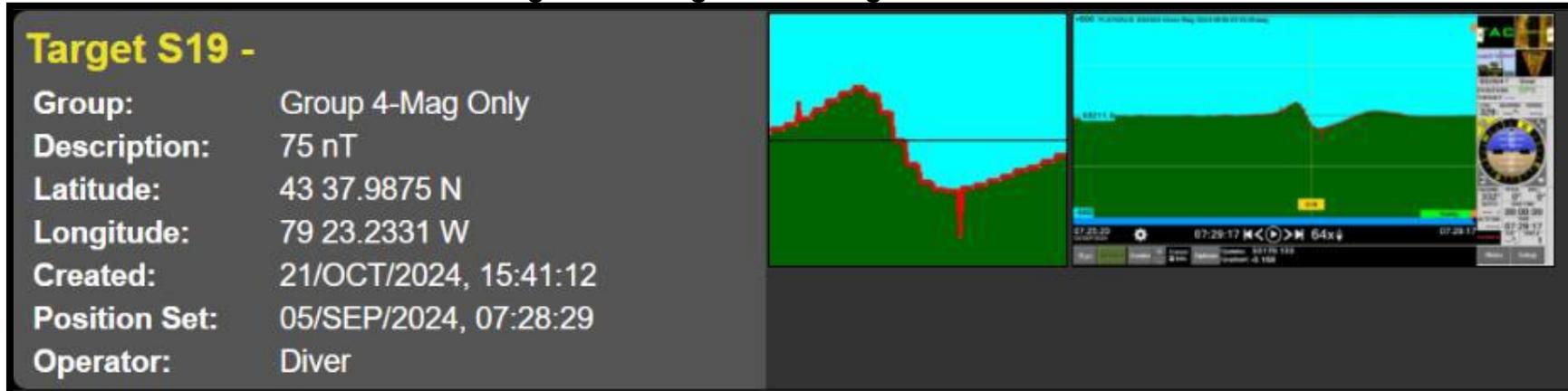


Figure 50: Target S21 – Magnetometer Hit

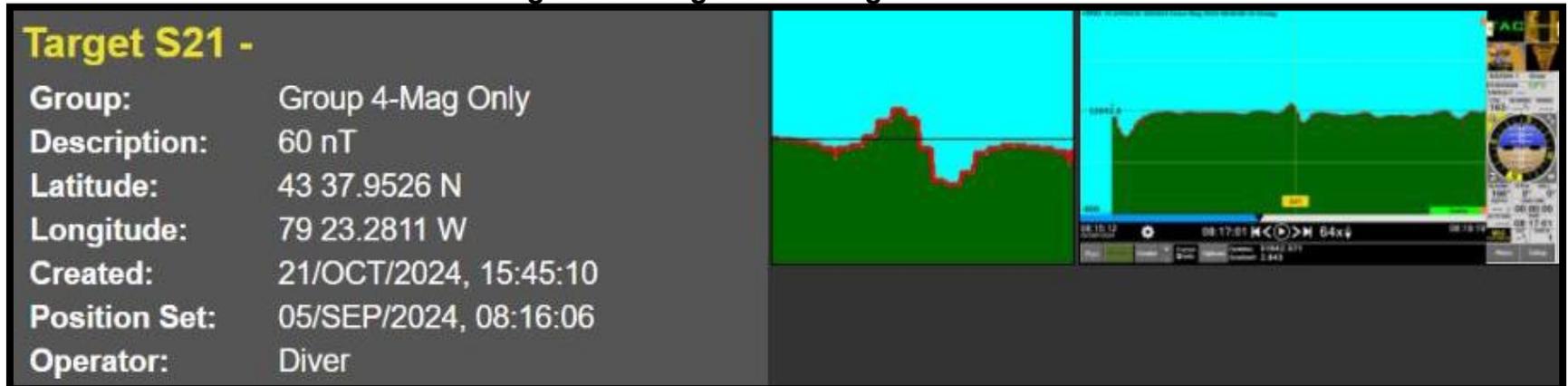


Figure 51: Target S22 – Magnetometer Hit

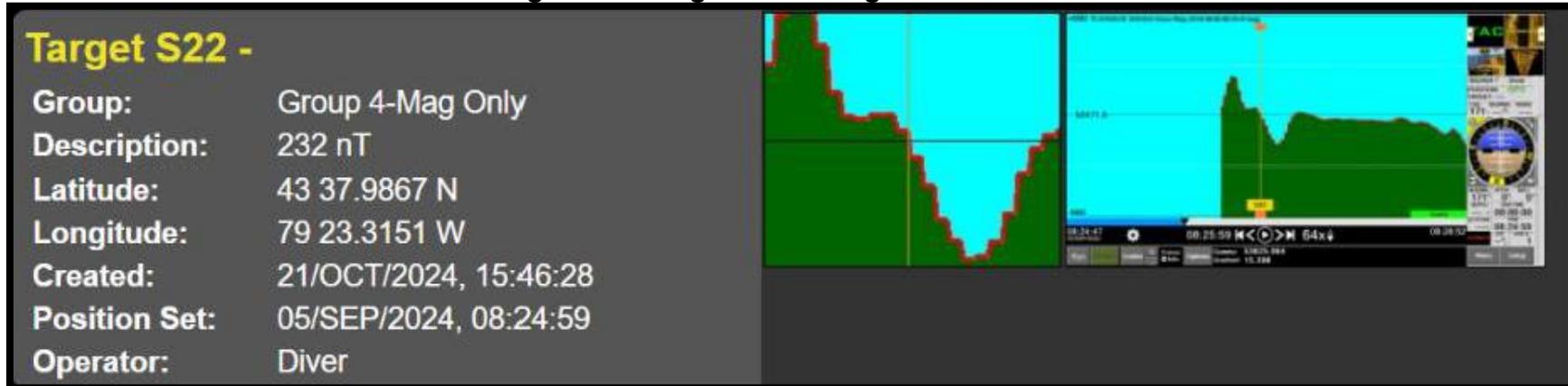


Figure 52: Target S23 – Magnetometer Hit

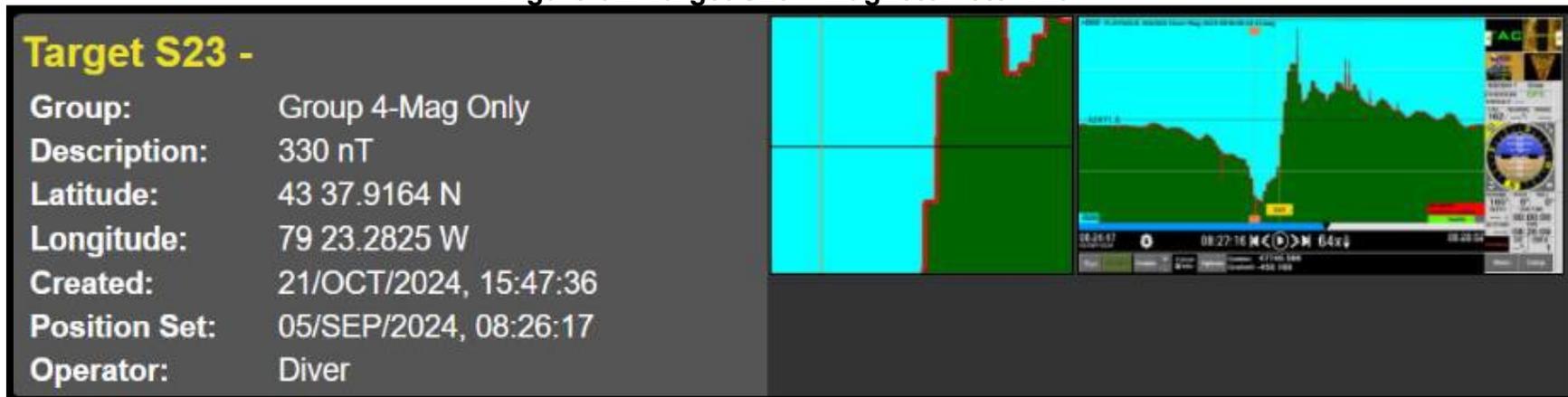


Figure 53: Target S24 – Magnetometer Hit

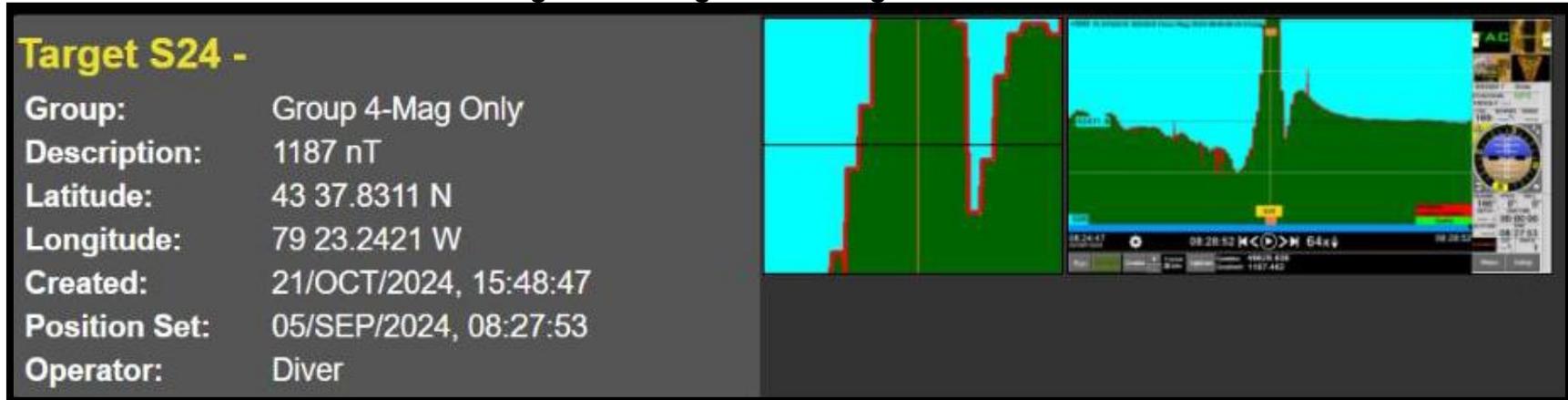


Figure 54: Target S25 – Magnetometer Hit



Figure 55: Target S28 – Magnetometer Hit

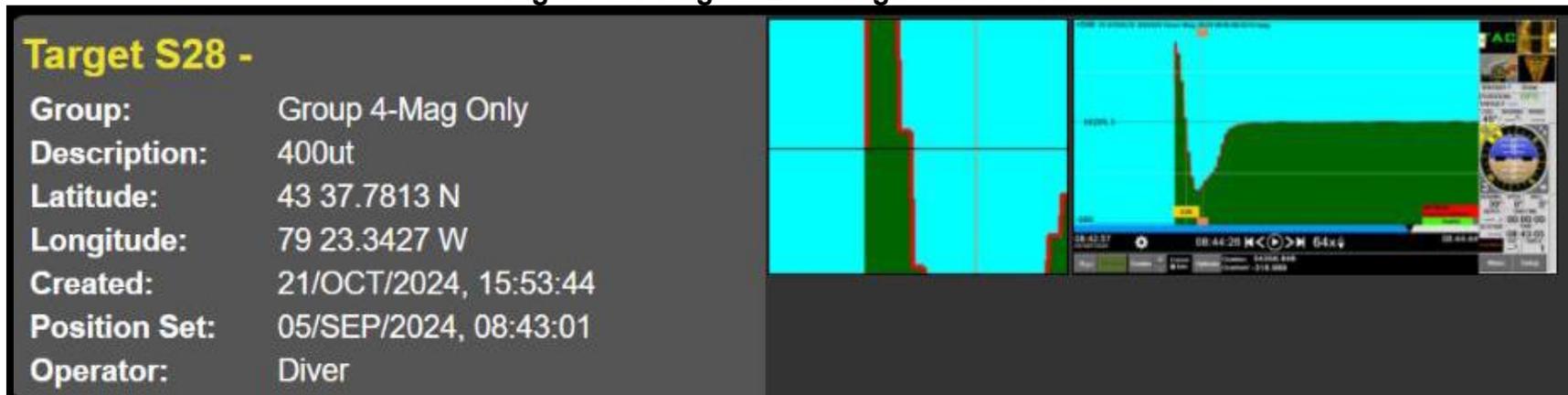


Figure 56: Target S30 – Magnetometer Hit

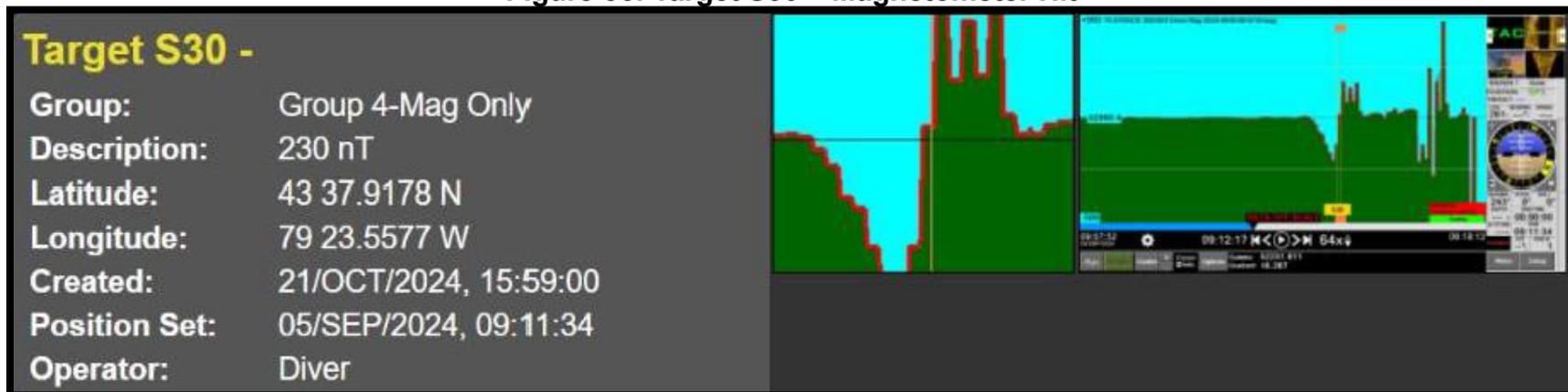


Figure 57: Target S31 – Magnetometer Hit



Figure 58: Target S32 – Magnetometer Hit



Figure 59: Target S32 – Possible Pilings

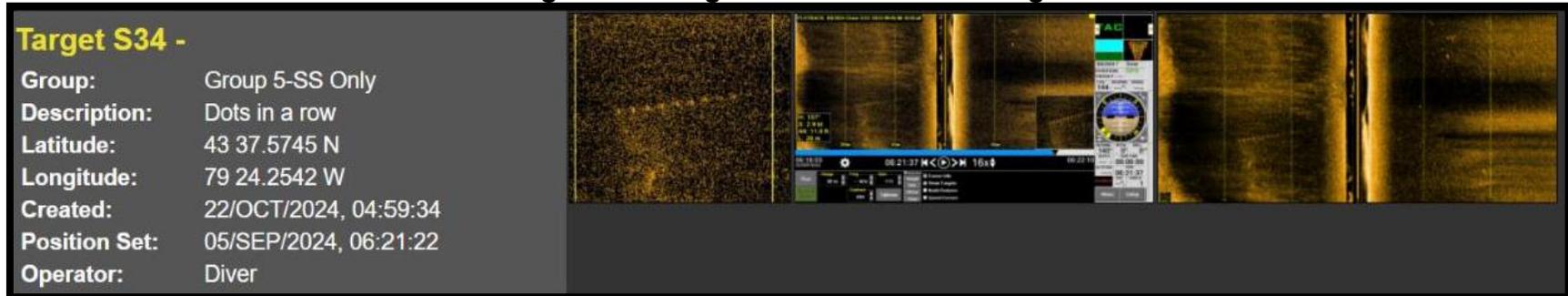


Figure 60: Target S27 – Undefined Ferrous Target

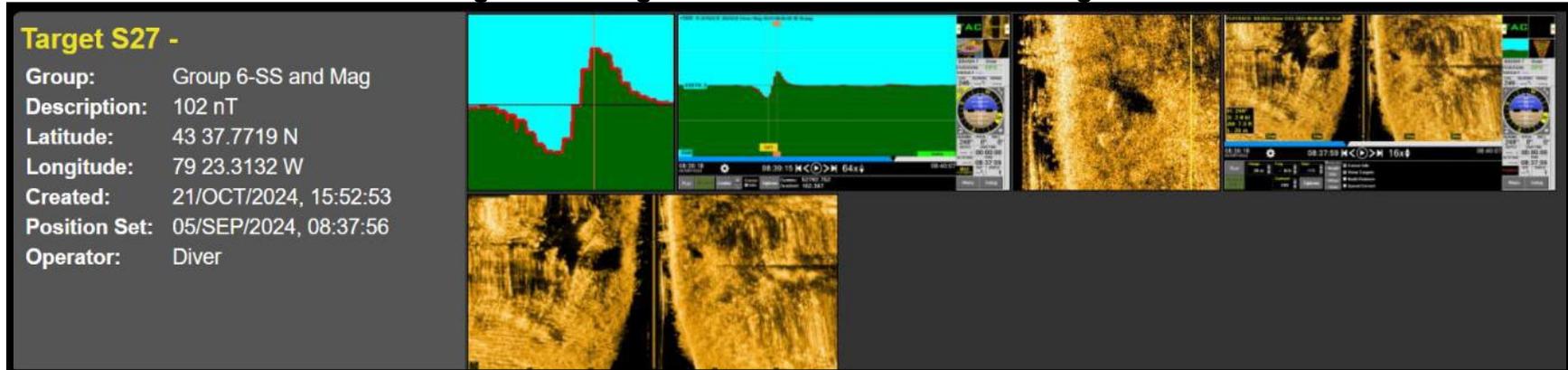
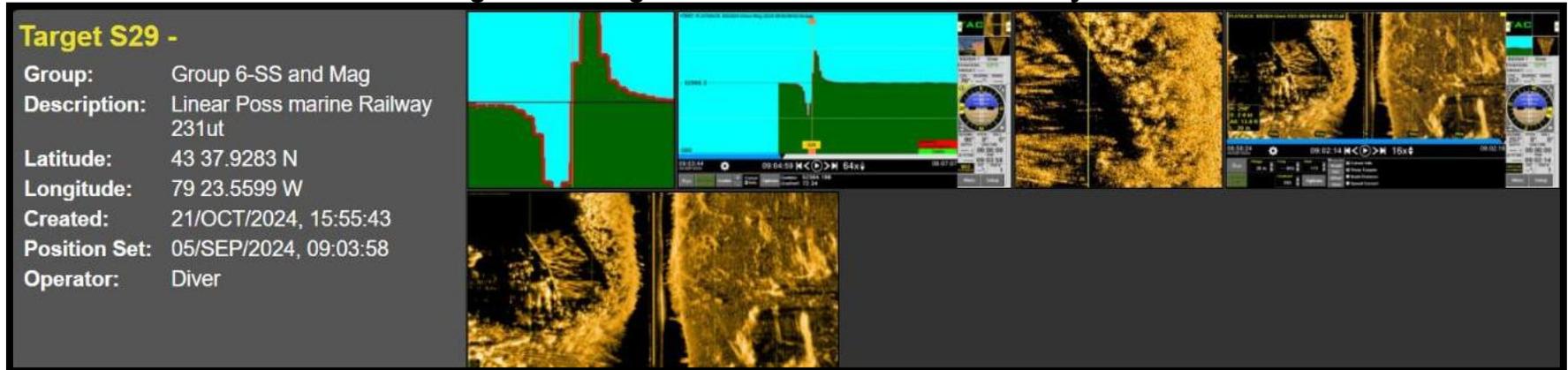


Figure 61: Target S29 – Possible Marine Railway



### 3.4 Analysis and Conclusions

Lake Ontario has served both Indigenous people and Euro-Canadians. Lake Ontario is the direct extension of the St. Lawrence gateway to the Great Lakes area, and the lake was a vital artery for the French and British for well over two centuries (Janusas 2000: 4). Water transportation was the most effective means of moving both people and goods.

The study area was once covered with water (prior to the made land for the airport) and of relatively shallow nature. This would have made it attractive for aquatic plants, fish, birds and possibly mammals, and, in turn, attractive for resource extraction by Indigenous peoples. The area, however, was removed from any nearby shoreline, and there were possibly other areas that may have been more attractive and safer (closer to shorelines) than the study area.

There is also the geologist's report of moccasin footprints which were observed and hand-drawn (Figure 25) in a layer of blue clay some 33 feet below the current surface of the lake bottom. Boreholes conducted in the study area did not detect any blue clay layer. There were several indices of trace organics in 10 of the 11 boreholes, but four of these were in a filling mix and discounted. The trace organics were not identified, so it is not possible to ascertain if they are marine organics or those associated with a possible original floor. Given the variability of their location in the depth below the lakebed, it is likely that these trace organics migrated through the loose silt layers and are not representative of a true original floor.

An 1833 map depicts a shipwreck located on the boundary of shallow to deep water which is located in proximity to the eastern portion of the current study area. No further details of this shipwreck have been located to date but there is always the possibility of an unrecorded shipwreck.

Background research suggests that the man-made land of the airport may have some "spillage" into the study area, but that would show as spoil rather than a cultural feature. The potential for Indigenous artifacts or sites on the lake bottom is low. The recorded "footprints" occur at a much deeper level than the lake level, and reflect an area of blue clay at a depth of 33 feet. The only method of verifying potential blue clay deposits in the study area is through coring. Eleven cores taken from the study area did not report any blue clay layers. Given the shallow nature of the lake during the late 18<sup>th</sup> and early to mid-19<sup>th</sup> centuries, it is unlikely that there would be any ships using the area as their draft. They would not be accommodated. It is therefore unlikely that there are any "buried" shipwrecks in the area, unless they were scuttled and used as landfill. The majority of the landfill operations, however, were contained on the airport-made lands.

The side scan sonar and magnetometer survey produced 28 targets, of which 10 were non-cultural buoy markers (S13, S14, S15, S18, S20, S26, S33, S35, S36 and S37). Another 15 targets were only detectable with the magnetometer implying that they were buried in the lakebed or lying flat on the lakebed (Targets S2, S8, S11, S16, S17, S19, S21, S22, S23, S24, S25, S28, S30, S31, and S32). Side scan sonar of the same areas did not produce any results of objects standing proud off the bottom. The targets were

either buried or lying flat on the bottom, undetectable to the side scan sonar. None of the magnetometer hits were extremely large in magnitude, and some are probably refuse from airplanes (directly off the end of the west runway for Targets S2, S16 and S17). The east end of the airport, especially in areas in close proximity to the made land base, also has magnetometer hits, suggestive again of refuse associated either with airplanes or the construction of the man-made base. In no circumstances did the stand-alone magnetometer hits suggest any object that might be considered of historical significance, given the background history of the development of this land base.

Target S32 presents as a series of linear dots on the bottom. These occur near the breakwater and associated pilings, connected to the breakwater construction. The vintage of the breakwater is post-1930 and is not considered historically significant.

Another notable target presents as a possible marine railway. Target S29 is located at the northwest corner of the east half of the study area. It aligns with an existing concrete (in poor repair) boat ramp. It post-dates the construction of the airport-made lands and is not considered historically significant.

There were no pre-contact artifacts or historically significant artifacts located during the marine archaeological assessment using side scan sonar and magnetometer. Targets were primarily non-cultural (buoy markers), or metal, marine railway and pilings associated with the construction of the made airport lands or debris from airplanes. None of the artifacts from the magnetometer survey were considered significant hits.

## 4.0 RECOMMENDATIONS

The side scan sonar and magnetometer survey produced 28 targets, of which 10 were non-cultural buoy markers (S13, S14, S15, S18, S20, S26, S33, S35, S36 and S37). Another 15 targets were only detectable with the magnetometer implying that they were buried in the lakebed or lying flat on the lakebed (Targets S2, S8, S11, S16, S17, S19, S21, S22, S23, S24, S25, S28, S30, S31, and S32). Side scan sonar of the same areas did not produce any results of objects standing proud off the bottom. The targets were either buried or lying flat on the bottom, undetectable to the side scan sonar. None of the magnetometer hits were extremely large in magnitude, and some are probably refuse from airplanes (directly off the end of the west runway for Targets S2, S16 and S17). The east end of the airport, especially in areas in close proximity to the made land base, also has magnetometer hits, suggestive again of refuse associated either with airplanes or the construction of the man-made base. In no circumstances did the stand-alone magnetometer hits suggest any object that might be considered of historical significance, given the background history of the development of this land base.

Target S32 presents as a series of linear dots on the bottom. These occur near the breakwater and associated pilings, connected to the breakwater construction. The vintage of the breakwater is post-1930 and is not considered historically significant.

Another notable target presents as a possible marine railway. Target S29 is located at the northwest corner of the east half of the study area. It aligns with an existing concrete (in poor repair) boat ramp. It post-dates the construction of the airport-made lands and is not considered historically significant.

Pilings were detected alongside an existing breakwater built post-1930 and are not considered historically significant. A marine railway was located in the east section of the study area adjacent to a concrete boat ramp. This, too, was built post-1930, associated with the made lands, and is not considered historically significant.

Therefore, based on the marine archaeological background research and the field survey, the following is recommended:

- The study areas, as indicated in Figures 1 and 2, are considered free of any marine archaeological resources, and no additional archaeological mitigation is required; however,
- Compliance legislation must be adhered to in the event of the discovery of deeply buried cultural material or features.

## 5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

Section 7.5.9 of the 2011 Standards and Guidelines for Consultant Archaeologists requires that the following information be provided for the benefit of the proponent and approval authority in the land use planning and development process:

- This report is submitted to the Minister of Citizenship and Multiculturalism as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject 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 Section 48 (1) of the *Ontario Heritage Act*.
- Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.
- The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar at the Ministry of Public and Business Service Delivery.

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