PHASE IA ARCHAEOLOGICAL STUDY
For Bay Street Rezoning Project
Block 488, Lot 65
Borough of Staten Island,
New York City, New York

DCP No. 16DCP156R

Prepared For:

New York City Economic Development Corporation
110 William Street
New York, New York 10038

For Submission To:

The New York City Landmarks Preservation Commission
Municipal Building
1 Centre Street, Ninth Floor North
New York, New York 10007

Prepared By:

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LANGAN

May 8, 2017
170289505

MANAGEMENT SUMMARY

SHPO Project Review Number): N/A
Involved State and Federal Agencies: Not Yet Determined
Phase of Survey: Phase IA Archaeological Survey

Location Information
- Location: Block 488, Lot 65
- Minor Civil Division: Borough of Staten Island, City of New York
- County: New York

Survey Area
- Length: North to south approximately 385 feet
- Width: East to west approximately 220 feet
- Number of Acres Surveyed: Approximately 1.75

USGS 7.5-Minute Quadrangle Map: Jersey City, NJ

Archaeological Survey Overview
- Number & Interval of Shovel Tests: N/A
- Number & Size of Units: N/A
- Width of Plowed Strips: N/A
- Surface Survey Transect Interval: N/A

Results of Archaeological Survey
- Number & Name of Pre-Contact Sites Identified: N/A
- Number & Name of Historic Sites Identified: N/A
- Number & Name of Sites Recommended for Phase IB/Avoidance: N/A

Report Authors(s): Michael Audin, RPA and Katherine French, RPA, Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C., 360 West 31st Street, Eighth Floor, New York, NY 10001

Date of Report: April 2017

ABSTRACT

The New York City Economic Development Corporation (NYCEDC) contracted Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) to perform a Phase IA archaeological survey in support of the City Environmental Quality Review (CEQR) for proposed rezoning at Block 488, Lot 65, Borough of Staten Island, New York City, New York. This documentary archaeological survey is required by the New York City Landmarks Preservation Commission (LPC) in their memorandum dated 5 April 2017.

This lot is a part of a larger rezoning project along Bay Street. The New York City Department of City Planning (DCP), together with NYCEDC and the Department of Housing Preservation and Development (HPD), is proposing a series of land use actions to implement recommendations of the Bay Street Corridor @ Downtown Staten Island Neighborhood Planning Initiative. This initiative is the subject of an ongoing community process to create opportunities for housing, including affordable housing, commercial development and improved public spaces and infrastructure within an approximately 16-block area in downtown Staten Island in the Tompkinsville and Stapleton neighborhoods.

Langan conducted research for previous cultural resource surveys on the Cultural Resource Information System (CRIS), the NYC LPC online archaeology reports and historic maps and aerial photographs. The research determined that eight archaeological surveys have been conducted within a one-mile radius of the project site. One known historic archaeological site and five known prehistoric archaeological sites were identified within one mile of the project site.

A review of the historic maps shows that the archaeological-APE is located on the historic shoreline of Staten Island. There is a small sliver of fast land along the western margin of the archaeological-APE. Beginning as early as 1859, a series of dock or pier structures were constructed in the archaeological-APE, extending eastward into the Upper New York Bay. By 1908, the archaeological-APE and its vicinity were filled, and the shoreline was extended eastward to its modern location, approximately 250 feet east of the Staten Island Railroad tracks. No evidence of development within the archaeological-APE was uncovered that would have led to significant subsurface disturbance, such as a building with a basement or large scale underground utility corridors.

Based on the above we conclude that the archaeological-APE has a moderate to high sensitivity for prehistoric resources on the western margin in the limited area of fast land and a moderate to high sensitivity for nineteenth- to early-twentieth-century waterfront features (docks or piers) in the remainder of the southern archaeological-APE. The northern, narrow portion of the archaeological-APE was identified as having no to low sensitivity for shoreline features.

Langan recommends archaeological testing in advance of any future ground disturbing developments within the two areas of archaeological sensitivity to determine the absence or presence of these potential buried resources. Figure 20 shows the location of the two distinct areas recommended for archaeological testing. Langan does not recommend archaeological testing for northern, narrow portion of the archaeological-APE.

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1.0 INTRODUCTION

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) was retained by New York City Economic Development Corporation (NYCEDC) to conduct a Phase IA Archaeological Survey in advance of the Bay Street Rezoning, a part of the Bay Street Corridor @ Downtown Staten Island Neighborhood Planning Initiative. As part of the City Environmental Quality Review (CEQR) process, New York City Landmarks Preservation Commission (LPC) requires a Phase IA archaeological survey of a limited area of the rezoning project, defined as Block 488, Lot 65, Staten Island, New York City, New York. The purpose of this survey is to determine the archaeological sensitivity of the site and, if necessary, provide recommendations for field testing for the project's Area of Potential Effect (archaeological-APE).

The New York City Department of City Planning (DCP), together with NYCEDC and the Department of Housing Preservation and Development (HPD), is proposing a series of land use actions to implement recommendations of the Bay Street Corridor @ Downtown Staten Island Neighborhood Planning Initiative. This lot is a part of a larger proposed rezoning project along Bay Street. A site location map and recent aerial photograph are included as Figures 1 and 2, respectively.

All work for this project was performed in accordance with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation 1983; the amended Procedures for the Protection of Historic and Cultural Properties as set forth in 36 CFR 800; New York State Historic Preservation Act of 1980, Section 14.09; New York State Historic Preservation Office (SHPO) guidelines; SHPO's *Phase I Archaeological Report Format Requirements* (2005); LPC's *Guidelines for Archaeological Work in New York City* (2002) and the *CEQR Technical Manual* (2014). The Langan cultural resource specialists who performed the investigations and prepared the report meet or exceed the criteria outlined in 36 CFR 66.3(b) (2) and 36 CFR 61. Résumés of the key personnel are presented in Appendix A.

1.1 Site and Project Description

The Project Site comprises Tax Block 488, Lot 65 and is bounded by Bay Street to the west, lot 71 to the north, Staten Island Railway (SIR) tracks to the east and lot 55 to the south (Figure 3). Lot 65 consists of a paved parking lot and a one-story commercial building that does not have a basement. The parking lot is at a slightly higher grade than Bay Street. There is an alleyway behind (to the east of) the commercial building. The alleyway is separated from the SIR tracks from a chain-link fence. A large berm separates the project area from the harbor shoreline.

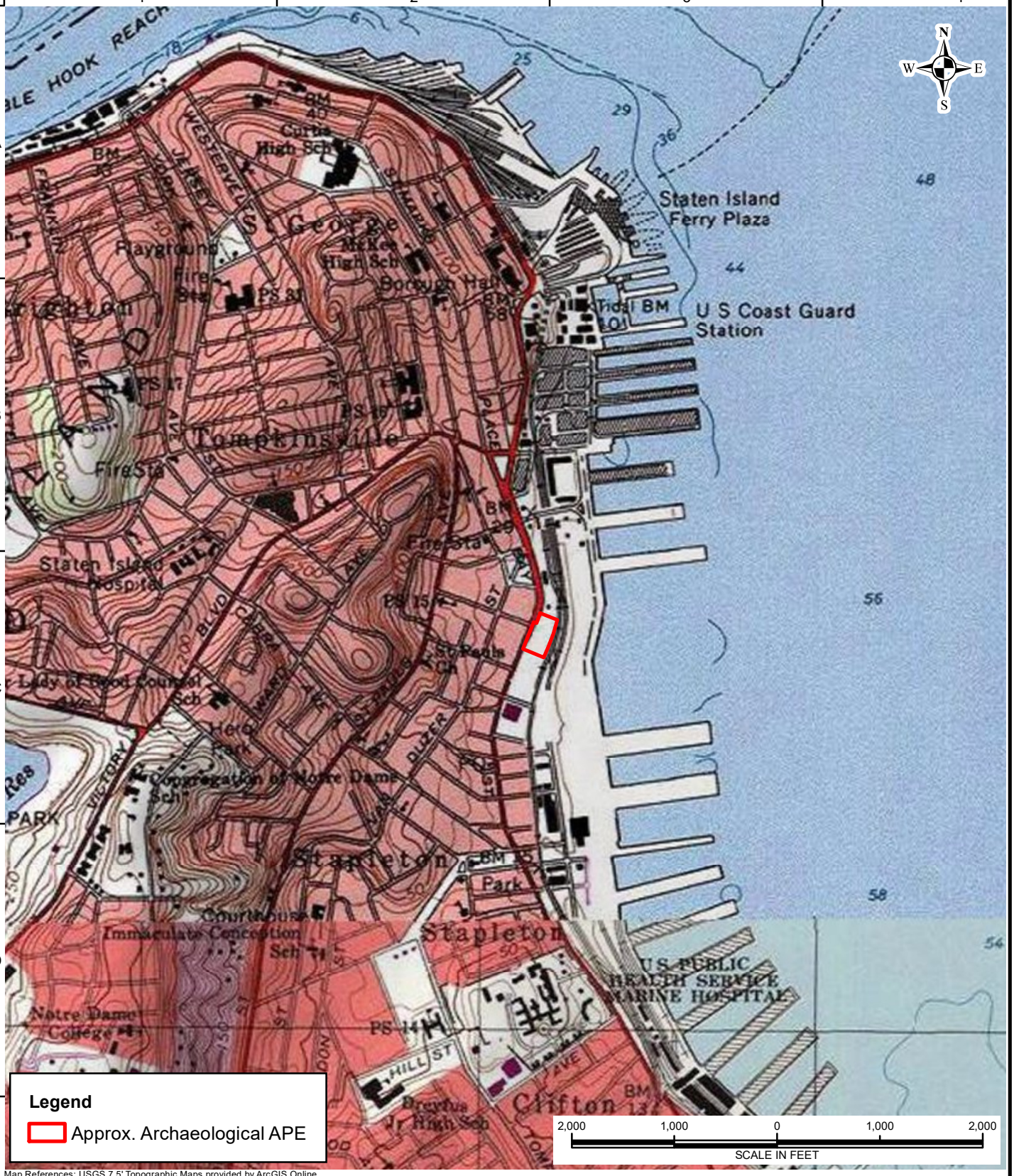
1.2 Area of Potential Effect

The archaeological-APE includes locations of possible archaeological sensitivity that may be potentially impacted by the construction or that may experience effects once construction is completed. Included in the archaeological-APE are all locations where the project may result in ground disturbance, areas where the elements of the project may be visible and where the activity may result in changes to traffic patterns, land use and public access. Project effects on historic resources can include both physical effects and contextual effects. Physical effects could include physical destruction, demolition, damage or alteration of a historic resource. Contextual

effects can include isolation of a property from its surrounding environment, the introduction of visual or audible elements that are out of character with the property or that alter its setting and context or elimination of publicly accessible views to the resource.

The APE is defined in 36 CFR 800.16(d) as: "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." The archaeological-APE delineated for archaeology is described below.

The archaeological-APE is defined as all of Block 488, Lot 65 (Figure 1 to 3).



Map References: USGS 7.5' Topographic Maps provided by ArcGIS Online.

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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
BAY STREET CORRIDOR REZONING
BLOCK NO. 488, LOT NO. 65
STAPLETON
STATEN ISLAND NEW YORK

Drawing Title
USGS SITE LOCATION MAP

Project No.	170289505
Date	4/17/2017
Scale	SEE ABOVE
Drawn By	MA
Figure	1

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Map References: 2012 Aerial Photograph provided by NYCMap at http://maps.nyc.gov/doitt/nycitymap/.

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Project

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BLOCK NO. 488, LOT NO. 65
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Drawing Title

2012 AERIAL PHOTOGRAPH

Project No. 170289505	Figure 2
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Scale SEE ABOVE	
Drawn By MA	

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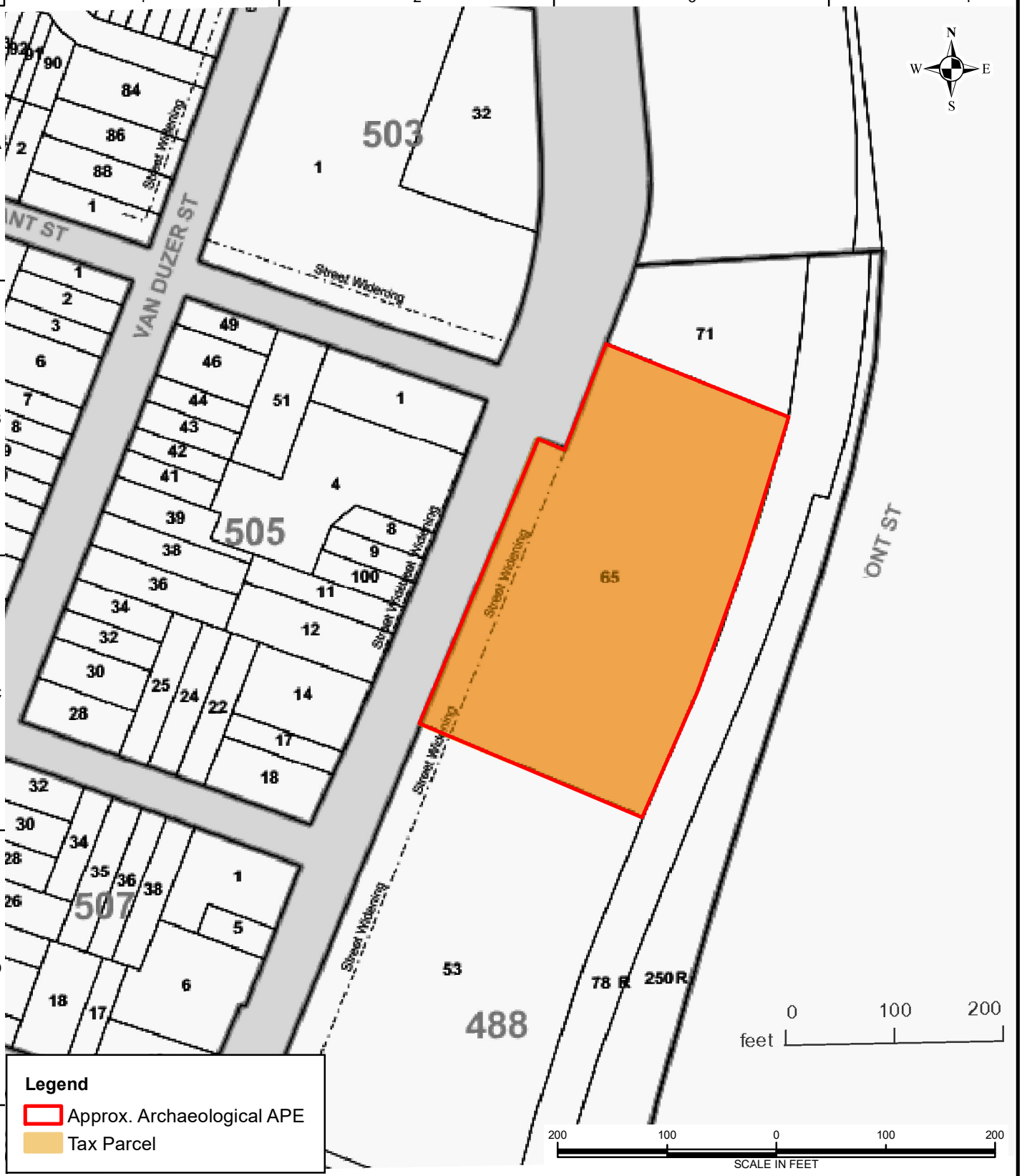

Map References: Staten Island Tax Map provided by NYC Department of Finanace at http://gis.nyc.gov/taxmap/map.htm.

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BAY STREET CORRIDOR REZONING
BLOCK NO. 488, LOT NO. 65
STAPLETON
STATEN ISLAND NEW YORK

Drawing Title
TAX MAP

Project No.	170289505
Date	4/17/2017
Scale	SEE ABOVE
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Figure	3

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2.0 RESEARCH GOALS AND DESIGN

This chapter describes the general research goals and design for the assessment of the significance of archaeological resources in order to determine potential eligibility for nomination to the National Register of Historic Places.

2.1 Archaeology

The preliminary Phase 1A archaeological survey begins with the identification of areas where project activities have the potential to affect archaeological sites through belowground disturbance. This area is referred to as the archaeological-APE and is described in Section 1.2. After defining the archaeological-APE, documentary research is conducted to determine which locations could have been used during prehistoric (Native American) or historic times. The research assists in identifying areas where intact archaeological evidence, foundations, structural remains, Native American artifacts or activity areas might be present. A site visit, or reconnaissance, is then conducted to observe the existing conditions and determine the extent to which the original topography is still present and the effects that landscape alterations may have had on potential archaeological resources. Archaeologically sensitive areas based on topographic features, vegetation and soils are noted, as are any disturbances that would compromise archaeological resources. The purpose of the research and site visit is to determine whether archaeological testing is necessary and, if so, to develop an appropriate testing strategy.

If additional archaeological testing is required, then the project advances to the Phase IB survey level. Phase IB subsurface archaeological testing (Phase I level) is then conducted in archaeologically sensitive locations in the archaeological-APE to identify whether potentially significant archaeological resources are present. The presence of a potentially significant Native American or historic period site requires a subsequent survey (Phase II level) to evaluate the significance or importance of the identified site, unless the site can be avoided.

LPC uses the National Register Criteria to evaluate site significance. These criteria are described in detail in Section 2.3. An archaeological site typically must possess the potential to yield important new information regarding history or prehistory to be considered significant (National Register of Historic Places Criterion D). Evaluations for significance are dependent upon the quality of archaeological data retrieved from the ground, the integrity or intactness of the deposits, prior research activities in the region and the development of historic or prehistoric contexts that identify gaps in archaeological research which further work at the site might address.

2.2 Historic Architecture

An APE for architecture was not delineated a part of this Phase IA assessment.

2.3 National Register of Historic Places Criteria

LPC's determinations of significance are based on the National Register of Historic Places Criteria. Properties listed on or determined eligible for listing on the National Register can be both architectural and archaeological resources. Significant historic properties include districts,

structures, objects or sites that are at least 50 years in age and which meet at least one National Register criterion. Criteria used in the evaluation process are specified in 36 CFR Part 63. To be eligible for inclusion in the National Register of Historic Places, a historic property or properties must possess:

> "The quality of significance in American History, architecture, archaeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
>
> (A) that are associated with events that have made a significant contribution to the broad patterns of our history, or
>
> (B) that are associated with the lives of persons significant in our past, or
>
> (C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components lack individual distinction, or
>
> (D) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)"

There are several criteria considerations. Ordinarily, cemeteries, birthplaces or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

> (A) a religious property deriving primary significance from architectural or artistic distinction or historical importance, or
>
> (B) a building or structure, removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or
>
> (C) a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his/her productive life, or
>
> (D) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

(E) a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

(F) a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historic significance, or

(G) a property achieving significance within the past 50 years if it is of exceptional importance. (36 CFR 60.4)

The physical characteristics and historic significance of the overall property are examined when conducting National Register evaluations. While a property in its entirety may be considered eligible based on Criteria A, B, C and/or D, specific data is also required for individual components therein based on date, function, history, physical characteristics and other information. Resources that do not relate in a significant way to the overall property may contribute if they independently meet the National Register criteria.

A contributing building, site, structure or object adds to the historic architectural qualities, historic associations or archeological values for which a property is significant because a) it was present during the period of significance and possesses historic integrity reflecting its character at that time or is capable of yielding important information about the period, or b) it independently meets the National Register criteria. A noncontributing building, site, structure or object does not add to the historic architectural qualities, historic associations or archeological values for which a property is significant because a) it was not present during the period of significance; b) due to alterations, disturbances, additions or other changes, it no longer possesses historic integrity reflecting its character at that time or is incapable of yielding important information about the period or c) it does not independently meet the National Register criteria.

In addition to meeting one of the four criteria, historic resources must retain two of seven types of historical integrity. The ability of the property to communicate historic significance is how integrity is measured. The categories of integrity include location, design, setting, materials, workmanship, feeling and association. Integrity evaluation is explained in Section VIII of the US DOI NPS bulletin "How to Apply the National Register Criteria for Evaluation" (Shrimpton 1990, Revised 2002).

2.4 Mitigation of Adverse Effects

If significant archaeological resources are identified during these stages of investigation, then a mitigation strategy must be developed if the resource will be impacted by proposed development. The most common mitigation strategies are avoidance through project redesign or data retrieval through comprehensive scientific excavation. The latter strategy also involves the conservation and curation of all artifacts associated with any contributing significant resource. The appropriate mitigation strategy or combination of strategies is determined between the site developer and the consulting archaeologist with the input and ultimate approval of LPC.

3.0 ENVIRONMENTAL SETTINGS

This chapter briefly describes the ecological characteristics of the archaeological-APE, including the physiography, geology, soils, flora and fauna of the area. The project is located in Richmond County on the boundary between the Tompkinsville and Stapleton neighborhoods of the Borough of Staten Island. Richmond County is coextensive with the Borough of Staten Island. The total area of Staten Island is 102.5 square miles, of which approximately 58.5 square miles is land area. The county is the least densely populated county of New York City with less than 500,000 inhabitants. Staten Island is surrounded by Newark Bay and Kill Van Kull to the north, the New York Harbor Upper Bay to the northwest, the Verrazano Narrows to the east, the Harbor Lower Bay to the southeast, the Raritan Bay to the south and Arthur Kill to the west.

3.1 Physiography and Geology

The archaeological-APE is located in the northeast of Staten Island, approximately 500 feet west of the Verrazano Narrows shoreline. Based on the known limits of Pleistocene glaciation to the west, the archaeological-APE has been near or within the furthest extent of continental glacial ice three times over the last 2.4 million years. The most recent glacial advance to reach the area was that of the Late Wisconsinan (Woodfordian Stage), which reached its maximum extent at Perth Amboy, 13.5 miles southwest of the archaeological-APE, between 20,000 and 22,5000 years before present (BP).

Because immense volumes of global water were temporarily contained in world-wide continental ice masses at the last glacial maximum, global eustatic sea level fell by as much as 125 meters (Fairbanks 1989) and the exposed coastal plain in the area of New York City and northern New Jersey extended as much as 60 miles east of the present shoreline. Advancing glacial ice is responsible for overriding and rounding the resistant schists underlying Manhattan and parts of Staten Island.

Recession of the ice margin from the Perth Amboy area commenced at around 20,000 BP (Stanford and Harper 1991). Drainage of impounded meltwater in the lower Hudson Valley finally occurred with the breaching of the terminal moraine, possibly as a result of catastrophic release of meltwater from the Great Lakes basin. The timing of the breakthrough at the moraine is not well established; Donnelly et al. place it at around 13,350 years BP (Donnelly et al. 2005).With release of the Lake Hudson impoundment, the ancestral Hudson River was free to flow in a manner similar to its present configuration.

Throughout eastern Staten Island, the wasting of the Wisconsinan glacial ice left deposits of glacial till and outwash of various thickness (Powell 2003). Urbanization and industrialization have obscured the surface of most of the island, including the archaeological-APE (Cadwell et al. 1989).

3.2 Topography

The archaeological-APE is a graded, relatively flat lot. The majority of the surface is paved and in use as a parking lot. The parking lot is slightly higher than the grade of Bay Street.

3.3 Soils

The archaeological-APE comprises urban land and is classified as *Urban Land, till substratum, 0 to 3 percent slopes* (Figure 4). The soils are classified as very high run-off soils that are not considered to be prime farmland. The parent material consists of asphalt over human-transported material.

3.4 Climate

The climate of Staten Island is classified as humid continental. The temperature varies considerably throughout the year—cold in the winter and hot during the summer. The winters are milder in New York City compared to the rest of the state, with average January low temperatures around 25 degrees Fahrenheit. Summers are sunny and warm with average July high temperatures of 85 degrees Fahrenheit. There are 75.7 days of precipitation, with average snowfall totaling approximately 25.7 inches and average rainfall totaling approximately 48 inches.

3.5 Flora and Fauna

Floral and faunal conditions contribute to the soil formation and its quality and contribute to the overall ecological conditions of the area. Ecological conditions, in turn, stimulate human activity. Vegetation also has an effect on erosion by limiting the runoff rate and increasing the available water capacity. Overall, all these ecological conditions impact the possibility for human adaptations within the ecosystem by limiting or encouraging past and present activities.

Intensive historic development and dense population of Staten Island has irrevocably altered the environment and ecosystem of the archaeological-APE. Staten Island is still considered to be the most fauna friendly of the city's boroughs, with abundant populations of white-tailed deer, raccoons and wild turkeys. However, flora surveys show that nearly half of the native species have been lost on Staten Island in the last century, either due to habitat loss or competition from invasive species (Robinson et al. 1994).

Prehistoric human groups living on Staten Island would have been able to support themselves in the past through hunting, foraging, subsistence farming and exploiting the resources of the New York Harbor system. Prior to development, Staten Island supported a thriving and diverse ecosystem combining fresh and saltwater marshes, beaches and forested areas. Habitat diversity contributed to a diverse food base for prehistoric people. Species that contributed to the diet of the Lenape people who lived in the area at the point of European Contact include jack-in-the-pulpits, hickory, chestnuts, goosefoot, common persimmons, wild berry plants (e.g. strawberry, hackberry, blackberry, blueberry, cranberry), Jerusalem artichokes, cattails and wild grapes. In addition, a number of plant fibers were exploited for craft production or building trades, including Indian hemp, tulip trees, milkweed, elm and American basswood (Sanderson 2009).

Terrestrial mammals contributed to the indigenous subsistence patterns by providing a variety of biologically and economically significant items such as meat, furs, hide, marrow, bones and antler. In this context, information on animal species and their distribution within the ecosystem contribute significantly to comprehensive interpretations of the archaeological record. The Lenape were known to hunt white-tailed deer for meat, hides and antlers; they also utilized black

Map References: 2012 Aerial Photograph provided by NYCMap at http://maps.nyc.gov/doitt/nycitymap/. Soil data provided from NRCS WebSurvey.

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Project

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BLOCK NO. 488, LOT NO. 65
STAPLETON

STATEN ISLAND NEW YORK

Drawing Title

SOILS MAP

Project No. 170289505	Figure 4
Date 4/17/2017	
Scale SEE ABOVE	
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bears as a source of grease for cooking and ointments. The New York Harbor and the proximity of the coast also provided access to both marine and freshwater resources, including various fish species (e.g. shad, herring, cod, weakfish, bluefish, sturgeon), shellfish (e.g. blue mussels, lobsters, crabs), bivalves (e.g. oysters, clams), waterfowl (e.g. ducks, geese), amphibians (e.g. frogs, turtles) and water snakes (Sanderson 2009).

Temperature, sea level changes and industrial development substantially altered the environment of Lower Manhattan during the Holocene. Environmental reconstructions of past conditions support the assumption that human groups could have found favorable ecological and climatic conditions within the site in the past.

4.0 BACKGROUND RESEARCH

Langan performed preliminary research on the New York State Cultural Resource Information System (CRIS) website. Additional background research was conducted using the LPC online database of cultural resource reports to locate previously identified cultural resources. Primary and secondary research, including a review of historic maps and aerial photographs was conducted using evidence from the New York Public Library and the David Rumsey Online Cartography Collection. The results of the background research concerning prior archaeological surveys, historic resources, prehistoric resources and the historic map search are reported below.

4.1 Archaeology

An 18 April 2017 search of the New York State CRIS identified six recorded archaeological sites and eight previous archaeological surveys within a one-mile radius of the archaeological-APE. The archaeological-APE also lies within an identified area of archaeological sensitivity.

Previously Recorded Archaeological Sites

Table 1 summarizes the six archaeological sites identified within a one-mile radius of the archaeological-APE. One historical archaeological site has been determined eligible for the State and National Registers. The exact locations of four of the New York State Museum's recorded archaeological sites are unknown, and these are therefore recorded as archaeological "museum areas" in the CRIS system that encompass a wider area with the potential to contain archaeological material. The archaeological-APE falls within one of these archaeological "museum areas" (NYSM #6956).

Table 1 – Archaeological sites within one mile of the archaeological-APE.

NYS OPRHP or NYSM Site #/Name	S/NR Eligibility	Distance (feet)/Direction from archaeological-APE	Time Period	Site Type
08501.002853/U.S. Quarantine Grounds Marine Hospital and Cemetery	Eligible	3000/North	Historic	Early 19th-century military hospital; human remains
4613/New Brighton – Silver Lake, Harbor Hill, Nannyberry Hill	Unknown	Area Center 5600/Southwest	Prehistoric (Woodland)	Campsite; pottery
4618/Tompkinsville	Unknown	Area Center 2200 /West	Prehistoric (Woodland)	Campsite; lithic projectile points
4629/Stuyvesant Place	Unknown	Area Center 4000/North	Prehistoric	Campsite
6956/Unnamed (Boesch 1994)	Unknown	Area Center 250 /West	Prehistoric	Campsite

8472/Unnamed Boesch (1994)	Unknown	1550/Northwest	Prehistoric	Campsite

Previous Archaeological Surveys

A total of eight archaeological survey projects have been conducted within a one-mile radius of the archaeological-APE. The location and results of these surveys are described below.

The first survey is *Phase IA Literature Review and Archeological Sensitivity Assessment, Cross Harbor Freight Movement Project: Port Ivory Yard, Arlington Yard, Eleven Railroad Crossings and Proposed Tunnel, Staten Island, Richmond County, New York*, which was prepared by Hartgen Archaeological Associates and submitted in April 2002. The eastern portion of this linear survey is located 2500 feet north of the current project's archaeological-APE. The project area was considered to be highly sensitive to Pre-Contact sites, Colonial sites, Revolutionary War encampments and other military sites. Testing was recommended at Arlington Yard, in the northwest of Staten Island. However, no archaeological testing was recommended within one mile of the current project's archaeological-APE.

The second survey is entitled *Stage 1A Archaeological Survey, National Lighthouse Museum, Staten Island, Borough and County of Richmond, New York City* and was prepared by Cragsmoor Consultants in 2004. This survey is located approximately 2900 feet north of the current project's archaeological-APE in advance of proposed utility trenching for the new National Lighthouse Museum. The site is in the area of the Staten Island Quarantine Ground, a National Register eligible property. Documentary and historic map reviews suggested that the eastern portion of the archaeological-APE was previously disturbed, and the likelihood of archaeological deposits was low. However, a nineteenth-century residence was located in the western half of the archaeological-APE, and associated domestic deposits likely remain. Archaeological monitoring was recommended during excavation in all areas of potentially intact historic archaeological deposits located in the western half of the archaeological-APE in the vicinity of the nineteenth-century residence.

The third survey, *Phase IA Archaeological Survey, National Lighthouse Redevelopment Project, Block 1, Portion of Lot 60, Staten Island Borough and County of Richmond, New York City* was prepared by Cragsmoor Consultants in 2007. This survey is located approximately 2900 feet north of the current project's archaeological-APE and consists of a background study conducted in advance of the National Lighthouse Museum Redevelopment Project. This study is much more extensive than the 2004 study summarized above. Archaeological sensitivity was identified in three areas: the northwestern portion of the site in the area of the Inspector's House, the central portion of the site with high potential for cesspool and cistern deposits and the Plaza area with high potential for nineteenth-century wharf structures. The authors recommend machine-assisted subsurface testing in the three portions of the site with high potential for archaeological materials.

The fourth survey, entitled *Phase IB Archaeological Survey, National Lighthouse Redevelopment Project, Block 1, Portion of Lot 60, Staten Island, Borough and County of Richmond, New York City* was prepared by Cragsmoor Consultants in 2008. This survey is located 3000 feet to the north of the current project's archaeological-APE. Manual shovel testing and machine-assisted

test trenching occurred at the site in two of the three areas of concern identified in the Phase IA report. Shovel testing was limited and mainly identified shallow areas of previous disturbance. Brick foundations, identified as "Building 1," were identified in the northwestern portion of the project site. These foundations were not considered significant. A shaft feature was identified in the central portion of the project site. This feature was part of a drainage system or catch basin and, upon further investigation, was not considered significant. Subsurface testing in the Plaza area of the project area was not conducted. No further archaeological testing was recommended in the northwest and central study areas.

The fifth survey is entitled *Phase IA Cultural Resources Investigation for the Staten Island Criminal Court and Family Court Complex, Staten Island, New York* and was prepared and submitted by Historical Perspectives, Inc. (HPI) in 2000. This survey is located approximately 3100 feet north of the current project's archaeological-APE. The project area is located in an area of high sensitivity for prehistoric resources and at the site of the Staten Island Quarantine Grounds (1799–1858). The probable area of the Stuyvesant Place Site (NYSM #4629) is either on or adjacent to the project area. The authors recommend additional research to determine whether these archaeological resources are present within the project area.

The sixth survey is entitled *Phase IA Archaeological Documentary Study, Staten Island Courthouse, Interim Construction Parking Lot, Block 8, Lots 1, 11 and 14, Staten Island, Richmond County, New York* and was prepared by HPI and submitted in 2008. This report describes archaeological work located 3250 feet north-by-northwest of the current project's archaeological-APE. The project reviewed documentary and map evidence for a proposed development site, which was located adjacent to the historic Quarantine Grounds. The authors concluded that there was a low sensitivity for prehistoric archaeological resources or for material associated with the Quarantine Grounds within their archaeological-APE. However, residential dwellings from the mid-nineteenth century were documented within the archaeological-APE. The authors recommended archaeological field testing for shaft features (wells, privies, cisterns) in the vicinity of these dwellings in targeted areas of the archaeological-APE.

The seventh survey is entitled *Remote Sensing Survey in Connection with the New York and New Jersey Harbor Navigation Study* and was prepared by the United States Army Corps of Engineers in 2002. The survey area extends offshore east and north of the archaeological-APE in the Upper New York Bay and Kill van Kull north of Staten Island, but the closest point of the survey is located 4100 feet east of the current project's archaeological-APE. The remote sensing operation identified 28 anomalies and 11 sidescan targets that have the potential to be significant archaeological submerged resources. The authors recommend that these locations be avoided during offshore dredging operations. The report does not contain any recommendations related to terrestrial cultural resources within one mile of the current project's archaeological-APE.

The eighth survey is entitled *Phase IA Memorandum, Proposed Minor League Baseball Stadium, St. George, Staten Island, Richmond County, NY,* and was prepared by Greenhouse Consultants, Inc., in 1999. This survey is located 4250 feet north of the current project's archaeological-APE. This memo presented recommendations for archaeological testing based on evidence from a previous Phase IA conducted at the project site entitled *Phase 1A Historical/Archaeological Sensitivity Evaluation of the St. George Railyard Project, Staten Island, New York* (Greenhouse 1987, revised 1989). Greenhouse concluded that evidence from previous soil borings

demonstrated that the soil profile in the location of proposed development was coil slag fill overlying fill down to natural Serpentine bedrock. No further archaeological testing was recommended for the project.

4.2 Prehistoric Context

The prehistoric context or cultural history for New York City and its vicinity is constantly changing whenever new evidence is discovered. In general, the cultural history of Pre-Contact period Native Americans in New York City is divided into three broad time periods and a period of European Contact: Paleo-Indian 11,500–10,000 years before present (BP), Archaic 10,000–3,700 years BP, Woodland 3,700 years BP–500 BP and Contact 400–250 years BP (Cantwell and Wall 2001). The Archaic and Woodland periods are further divided into three sub-periods: Early, Middle and Late. These time periods have been described in several publications (Ritchie 1980; Chesler 1982; Kraft 1986, 2001; Custer 1996; Cantwell and Wall 2001) and therefore are not repeated in detail in this report. A brief prehistoric background for Staten Island is summarized below.

<u>Prehistory of Staten Island</u>

Staten Island was occupied for at least ten thousand years by ancestors of modern and historically known Algonquian speaking Indians, beginning in the Paleo-Indian period, or approximately 12,000 to 10,000 years Before Present (BP). The fluted projectile point is regarded as representative of Paleo-Indian technology. One of the best-known Paleo-Indian sites on Staten Island is the Port Mobil site, located on a bluff overlooking the Arthur Kill. The site yielded over one hundred stone tools, including several small fluted points, scrapers, drills, knives and cores (Ritchie 1980). Most of the artifacts were found in disturbed contexts during oil tank construction (Kraft 1977). Paleo-Indian artifacts were also found on the ground surface at the Smoking Point site, located on Arthur Kill, less than a kilometer south of the project site.

The Paleo-Indian period ended with the Late Pleistocene and was followed by the Archaic period, which is subdivided into the Early, Middle and Late Archaic. Following the retreat of the Wisconsinan ice sheet, southeast New York became forested and was initially dominated by spruce and later by pine. By about 9,000 BP, during the Early Archaic period, hardwood forests similar to those that characterize the Eastern Woodlands began to develop in the region (Sirkin 1995). The Archaic period is characterized by the gradual development of modern environmental conditions. Humans adapted to the abundant resources provided by interior woodlands, ponds, rivers and coastal estuaries by exploiting a broad range of food (nuts, large and small game, seed-bearing plants, fish, etc.) and industrial products (stone for making tools and weapons, plants for baskets and textiles, bark for house construction, etc.). By 6000 BP the region is thought to have been heavily settled, with populations for the southeastern New York and New Jersey coast and offshore islands possibly numbering in the thousands.

Just as the fluted projectile point is regarded as diagnostic for the Paleo-Indian period, the bifurcated base point is seen as a characteristic of the Early Archaic period. Several sites on Staten Island have yielded Early Archaic bifurcated points. The large multi-component site at Wards Point contained artifacts from the Early Archaic through the Historic period, including 21 bifurcated base points, 16 other projectile points and other stone tools. Charcoal from a hearth feature was radiocarbon dated to 8300±I40 BP (Ritchie and Funk 1971). Similar materials were

recovered from the Hallowell site, the Old Place site and the Richmond Hill site, the latter of which yielded one of the oldest radiocarbon dates from the region (9410± 120 BP) (Ritchie and Funk 1973). The Middle Archaic is the least represented period at Staten Island sites and elsewhere throughout southeast New York, with probable Middle Archaic artifacts at the Old Place and Wards Point sites. During this period (8,000 to 6,000 BP) continued climatic warming resulted in the establishment of an essentially near-modern landscape.

The Late Archaic period (6,000 to 3,000 BP) is well represented in southeast New York, though Ritchie (1980) notes that Archaic period archaeological sites on Staten Island appear more similar to contemporaneous sites in New Jersey than to sites elsewhere in New York State. The main projectile point types believed to be diagnostic of the Late Archaic period consist of stemmed types, such as Bare Island, Lackawaxen, Lamoka, Poplar Island and Rossville (Ritchie 1980). Other stone tool types found in Late Archaic assemblages include ground and chipped axes, choppers, net-sinkers and pestles likely to have been used for woodworking, fishing and processing plant foods, respectively.

The Terminal Archaic, sometimes referred to as the Transitional (3,000 to 2,700 BP), is characterized by the addition of steatite to regional artifact assemblages. Orient fishtail projectile points are also believed to be diagnostic of this relatively short period (Ritchie 1980), while thick, coarse grit-tempered pottery is sometimes found in association with the fishtail points on coastal New York archaeological sites. Orient fishtail points and steatite bowl sherds were found at the Arlington Place site on Staten Island. Other Staten Island sites that yielded fishtail points include the Pottery Farm site and the Smoking Point site (Boesch 1994).

Archaeologically, little behavioral change is observable during the Woodland period (subdivided into the Early, Middle and Late Woodland) in the region (Bernstein 2003). Some artifact forms are altered (e.g. projectile point shape) and pottery seems to be increasingly important over time, but the long-established economic pattern of the exploitation of a broad range of natural resources seemingly continues, although the Early and Middle Woodland periods are not well represented in the region. Marine resources played an important role, as suggested by numerous large shell middens along Staten Island shores. Faunal and floral remains in the Woodland period middens suggest a broad diet breadth for the Woodland period inhabitants of Staten Island, while the artifact assemblage is similarly diverse.

Most lithic tools were produced using chipped stone technology, but ground stone tools are also present. Jasper, chert and quartz Levanna triangle projectile points are commonly found in Late Woodland deposits, along with Madison triangle projectile points, straight-stemmed projectile points, triangular bifacial tools or preforms, bifacial and unifacial scrapers, cores and debitage. Another common projectile point found in Early to Middle Woodland period deposits is the Rossville type, named for the locality on Staten Island (Ritchie 1980). The increased use and refinement of pottery is also characteristic of the Woodland period.

The Contact period (beginning in approximately 500 BP) is represented by Euro-American trade goods (e.g. glass beads, smoking pipes, metal implements and gun flints) found in at least five sites on Staten Island. The Old Place site yielded a wampum bead and whelk columellae, possibly from wampum manufacture (Ceci 1977). At the time of contact, the land around New York was inhabited by Munsee-speaking Delaware Indians, a sub-group of the Eastern Algonquian people

(Goddard 1978). Native American populations in the region were reduced dramatically after 1640, when European-introduced diseases coupled with Dutch aggression resulted in hundreds of Delaware Indian deaths. By the early eighteenth century, most of the remaining Delaware had moved westward to the Ohio River Valley (Goddard 1978).

4.3 Historic Context

European exploration of the New York City area dates to 1524, when Giovanni da Verrazano first sailed into New York Harbor and stopped off on Staten Island. Contact and trade, although sporadic at first, were established between the indigenous inhabitants, a population of the broader Munsee Delaware Indians known today as the Lenape. The Dutch established a settlement on the tip of Lower Manhattan in 1624.

European expansion led to increased violence with the indigenous population, and competition for European goods also increased conflict between Munsee Delaware Indian groups (Cantwell and Wall 2001). The Dutch settled the northwest shore of Staten Island as early as 1638, when David de Vries established a small Dutch colony at Tompkinsville. Violent conflict with the indigenous Raritan tribe of the Munsee Delaware Indians wiped out this settlement by 1640. The first permanent Dutch settlement at Oude Dorp, on the east side of Staten Island dates to 1661, just prior to English conquest of the area. The Dutch ceded control of what became New York in 1664 to the English, and land ownership of Staten Island was confirmed by a deed from the Native Americans in 1670. The late seventeenth-century Euro-American population on the island was approximately 640, with another 70 slaves. By 1776, the island's population neared 3,000 people (Kroessler 2005).

By the late seventeenth century, Staten Island consisted of a mixed population of Dutch, English and French Huguenot settlers. The population in 1698 was 727 people, of whom about 70 were slaves. By 1737, this figure had increased over 250% (Steinmeyer 1950). One of the earliest roads ran from the Watering Place (modern Tompkinsville), named for its fresh water spring that had been utilized by the indigenous Lenape. Most of the island consisted of farm fields broken up by wooded areas.

Richmond County, encompassing all of Staten Island, was one of the ten original counties of New York created in 1683. Four towns were established during the Colonial Period in Richmond County (Bayles 1887). The project site, near the unincorporated localities of Chelsea and Long Neck, was part of the town of Northfield. In 1898, the towns and villages of Staten Island disbanded to form the Borough of Richmond (later Borough of Staten Island), part of New York City (Kroessler 2005).

During the American Revolution, descendants of English settlers tended to be Loyalists, while Dutch and Huguenot families mostly joined the American cause. The British occupied the island at the beginning of the war, quickly outstaying their welcome after raiding area farms and exploiting all locally available resources. A few skirmishes between Colonial and British forces were either fought on or launched from Staten Island. British forces continued to occupy Staten Island until December 1783, over two years after the signing of the armistice at Yorktown (ibid.).

After the Revolutionary War, prominent Staten Island loyalists absconded to Canada. Those who remained rebuilt their farms and mills and continued to live much as they did prior to the British occupation. The U.S. Quarantine Grounds was constructed in 1799 in Tompkinsville after a yellow fever epidemic in Manhattan was blamed on the proximity of the previous quarantine station. All foreign ships were obliged to stop at the U.S. Quarantine Ground, and any potentially sick passenger was held in the Marine Hospital. Most of the complex was burnt down in the 1858 by a mob of angry Staten Islanders who were unhappy with the series of disease outbreaks that seemingly emanated from the quarantined population. The Tompkinsville Quarantine Grounds were no longer used after this point (HPI 2000).

The economy of western Staten Island during the nineteenth century was based largely on agriculture and fishing (especially oystering). As late as 1900 there were nearly three hundred farms on Staten Island, most engaged in producing food for the Manhattan market. In the 1830s, free African-American oystermen from the Chesapeake region established a settlement at Sandy Ground, south of Rossville, which may have also served as a stop on the Underground Railroad. Chelsea, near the project site, was also an oystering community (Bayles 1887). Fishing and shell fishing declined through the late nineteenth century due to overharvesting and pollution. The Arthur Kill shellfish beds were ordered closed in 1917 because of contamination.

Other industries on western Staten Island during the nineteenth century included shipbuilding, dye manufacture and brick making both along the Arthur Kill to the west and south, and the country's first linoleum factory, in operation between 1873 and 1931 at Linoleumville (now Travis). Another industry was milling. In 1697, Richard Merrill petitioned to establish a mill on the north side what is now Sawmill Creek, north of the South Avenue entrance ramp. Originally a gristmill, by the late eighteenth century it was in use as a sawmill. The mill apparently ended operations by the mid-nineteenth century, as the milldam was removed in the 1860s so oystermen could use the creek (McMillen 1949).

Early settlement on western Staten Island was concentrated along the Arthur Kill, with parts of Arthur Kill Road skirting the shoreline by the late seventeenth century. Settlement around the Chelsea area was relatively sparse (see historic maps, below). As mentioned above, milling was conducted on Sawmill Creek, and in 1839 approximately 14 acres of tidal marsh south of the creek were purchased for the county poor farm (Morris 1898).

The Staten Island Railway was incorporated in 1851, although the line from Stapleton to Tottenville was not complete until 1860. The line was extended to Tompkinsville by 1884; this portion of the railroad lies on the eastern boundary of the archaeological-APE (Roess and Sansone 2013). In 1889, the Staten Island Rapid Transit (SIRT) railroad joined with the Baltimore and Ohio Railroad (B&O) to provide passenger and freight service from Staten Island to New Jersey over the Arthur Kill (Morris 1900). Three bridges over the Arthur Kill opened in 1928: the B&O Railroad bridge, the Goethals Bridge and the Outerbridge Crossing. Access to the latter two automobile bridges was improved when the West Shore Expressway (New York State Route 440) was completed in 1976 (Kroessler 2005). The once-rural region is today a busy suburb of the New York City metropolitan area.

4.4 Land Use History of the Archaeological-APE

Langan reviewed historical maps and atlases depicting the archaeological-APE and its surroundings from 1829, 1859, 1872, 1874, 1887, 1898, 1908, 1917 and 1919. In addition, aerial photographs from 1924, 1947, 1954 and 1980 were also reviewed.

The 1829 David Burr *Map of the Counties of New York: Queens, Kings and Richmond* (Figure 5) shows the archaeological-APE on the eastern shoreline of Staten Island. The western boundary of the archaeological-APE is located on the shoreline, but the remainder of the archaeological-APE is shown in the Upper Hudson Bay, in an area known as the Quarantine Grounds. This was the area where foreign ships had to stop so that passengers could be checked for communicable diseases. The Quarantine Hospital was located just north of the archaeological-APE in Tompkinsville. One of the first roads in Staten Island is located just north of the archaeological-APE and extends from the "Watering Hole" area of Tompkinsville to the southwest.

The 1859 H.F. Walling *Map of Staten Island, Richmond County, New York* (Figure 6) depicts the archaeological-APE along the eastern shoreline of Staten Island. A narrow area on the western boundary of the archaeological-APE is located on fast land, but the remainder is located in the Upper Hudson Bay. There are two piers or docks extending east over the Upper Hudson Bay: the north dock is titled "Wave's Dock" and the wider, larger dock to the south is titled "C. Vanderbilt's Dock." The street plan in the vicinity of the archaeological-APE is identical to the modern street plan. Bay Street, Grant Street and Clinton Street are all named on the map. Outside of the archaeological-APE, the western side of Bay Street is lined by a number of farm fields and a coal yard.

The 1872 M. Dripps *Map of Staten Island, Richmond County, New York* is similar to the 1859 Walling Map, but with fewer details (Figure 7). The northern "Wave's Dock" is not depicted. The southern pier remains but is not labeled with any ownership information.

The 1874 F.W. Beers *Atlas of Staten Island, Richmond County, New York* shows the archaeological-APE as still skirting the eastern Staten Island Shoreline, with a narrow strip of land along the western archaeological-APE boundary (Figure 8). The pier extending out from the southern half of the archaeological-APE remains and is labeled S.L. Milford & Co. The eastern extent of the pier has a structure labeled "Saw & Planing Mill." The southwest corner of the pier has a structure labeled "Wood Coal & Trip Yard." Modern Bay Street is labeled "Horse Car R.R." This horse car line predated the SIR whose tracks are currently located just east of the archaeological-APE.

Map References: 1829 David Burr Map of the Counties of New York, Queens, Kings and Richmond provided by the The NY Public Library Digital Collections.

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1829 D. BURR MAP

Project No.	170289505
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Scale	SEE ABOVE
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Figure	5

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Map References: 1859 H.F. Walling Map of Staten Island, Richmond County, New York provided by the The NY Public Library Digital Collections.

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		Date 4/17/2017	
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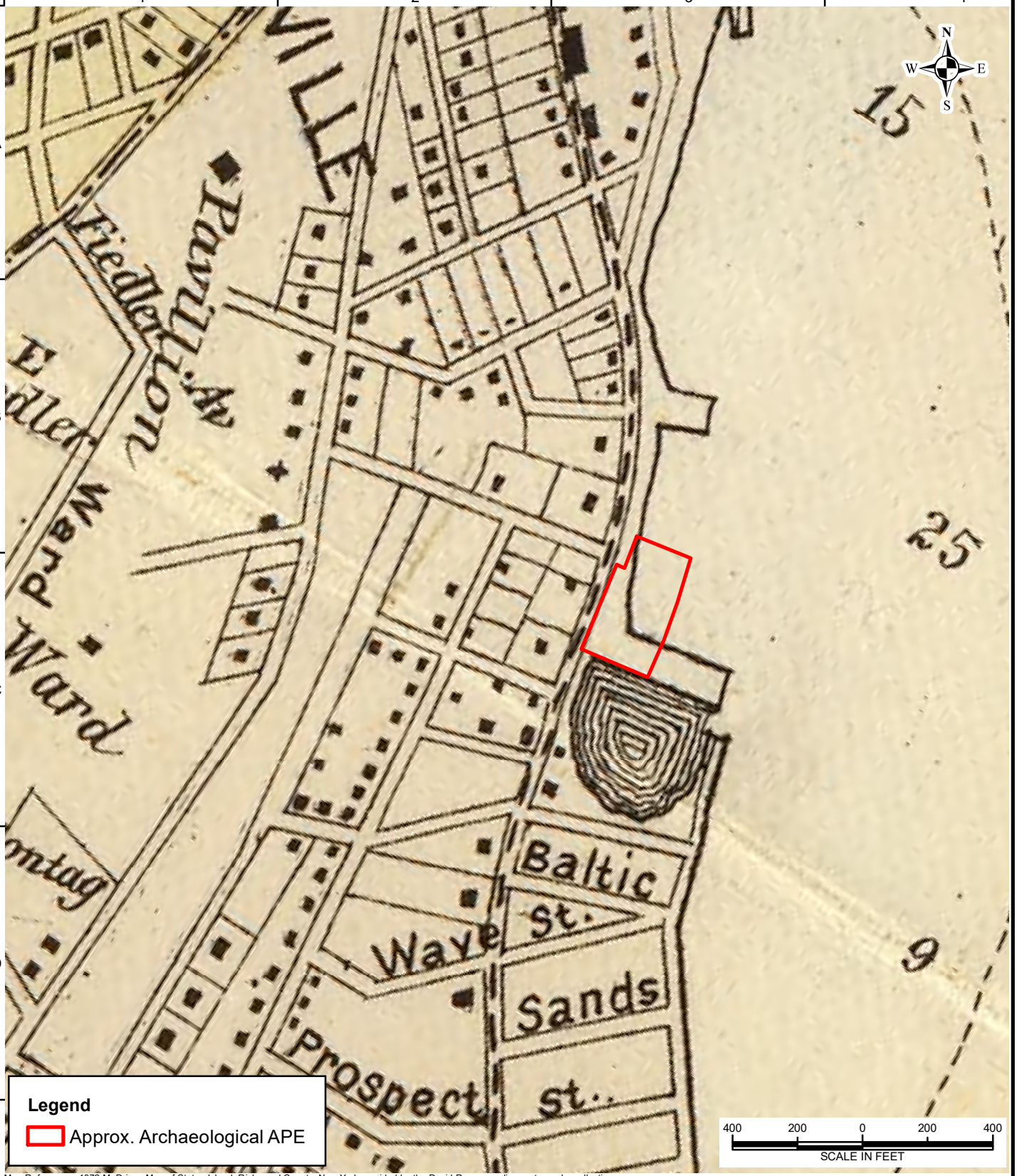

Map References: 1872 M. Dripps Map of Staten Island, Richmond County, New York provided by the David Rumsey online cartography collection.

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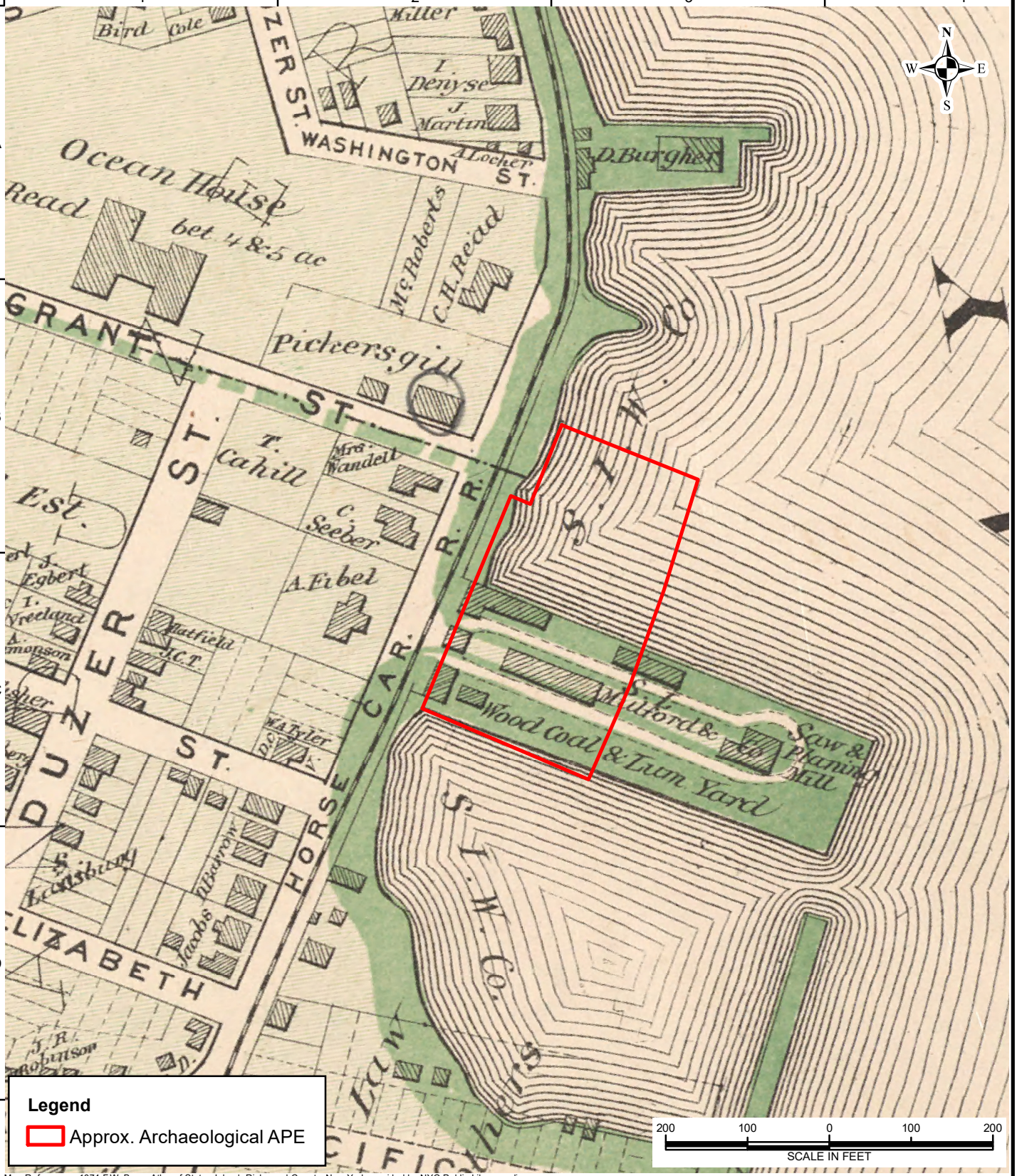

Legend

Approx. Archaeological APE

Map References: 1874 F.W. Beers Atlas of Staten Island, Richmond County, New York provided by NYC Public Library online.

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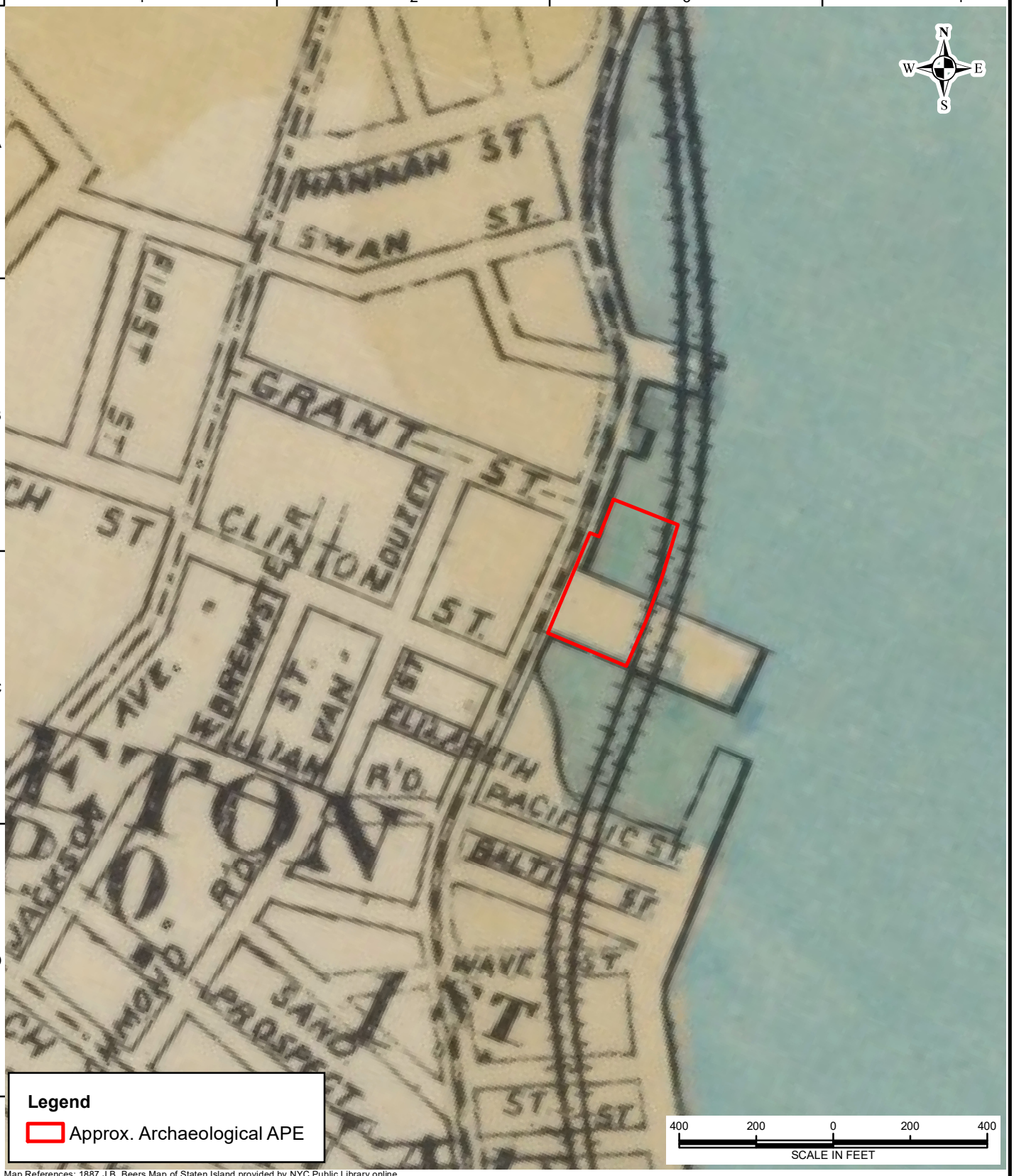
The 1887 J.B. Beers *Map of Staten Island* depicts the archaeological-APE with a similar layout to the 1874 map, but with fewer details (Figure 9). The pier in the southern half of the archaeological-APE extending east into the Upper New York Bay is still depicted. One major addition is the SIR tracks, oriented from north to south. The tracks are mapped in their current location but extending over the water, whereas today they are firmly on filled land. This stretch of track would have been operational by 1887 (Roess and Sansone 2013).

The 1898 *Sanborn Fire Insurance Map* depicts the archaeological-APE as part of a larger pier or newly filled land peninsula utilized as a lumberyard, extending west into the Upper New York Harbor Bay (Figure 10). This pier or peninsula is substantially wider (north to south) than the previously mapped piers and encompasses nearly the entire archeological-APE. The area is labeled "Ichabod T. Williams Lumber Yard Average Amount of Lumber about 4.000.000 Feet." The SIR tracks extended north to south through the center of the lumberyard. A large rectangular structure fronts Bay Street. The southwest corner of the archaeological-APE adjacent to the large rectangular building contains a two-story barn or stable and two smaller one-story structures. Most of the remainder of the pier or peninsula consists of lumber sheds or parallel organized lumber racks. The western side of Bay Street, outside of the archaeological-APE, is lined mostly with two-story dwellings.

The 1908 *Borough of Richmond Topographical Survey* is the earliest map to show substantial filling within and proximate to the archaeological-APE (Figure 11). Development within the archaeological-APE is consistent with the depiction on the 1898 Sanborn map. The large rectangular structure fronting Bay Street is Labeled "I.T. Williams Lumber Shed." The structure located just south of the rectangular building in the southwest corner of the archaeological-APE is labeled "Stable." Structures in the northern extent of the archaeological-APE are listed as open sheds adjacent to a brick pavement. The remainder of the archaeological-APE is identified as a working lumberyard. The SIR tracks are located adjacent to the east of the archaeological-APE. The new shoreline is located approximately 250 feet east of the SIR tracks. Bay Street, located adjacent west of the archaeological-APE, is listed as containing trolley tracks.

The 1917 *Sanborn Fire Insurance Map* depicts the archaeological-APE in a manner similar to that of the 1908 topographical survey (Figure 12). The archaeological-APE and the tax lot to the south, currently occupied by Western Beef supermarket, are labeled "I.T. Williams & Sons Edgewater Saw Mills & Lumber Yard." The rectangular structure fronting Bay Street remains and is labeled "Lumber Shed." A stable or barn remains in the southwest corner of the archaeological-APE next to the rectangular structure. The remainder of the archaeological-APE appears to be lumber stacks.

The 1917 G.W. and W.S. Bromley *Atlas of the City of New York, Borough of Richmond, Staten Island* (Figure 13)*. From Actual Surveys and Official Plans* also depicts the archaeological-APE as entirely occupied by the lumberyard owned by I.T. Williams. The large rectangular building fronting Bay Street is identified as a wood shed and the structure in the southwest of the archaeological-APE is identified as a wood stable. In addition, an elongated rectangular structure near the northern extent of the archaeological-APE is labeled as a wood shed.



Map References: 1887 J.B. Beers Map of Staten Island provided by NYC Public Library online.

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1887 J.B. BEERS MAP OF STATEN ISLAND

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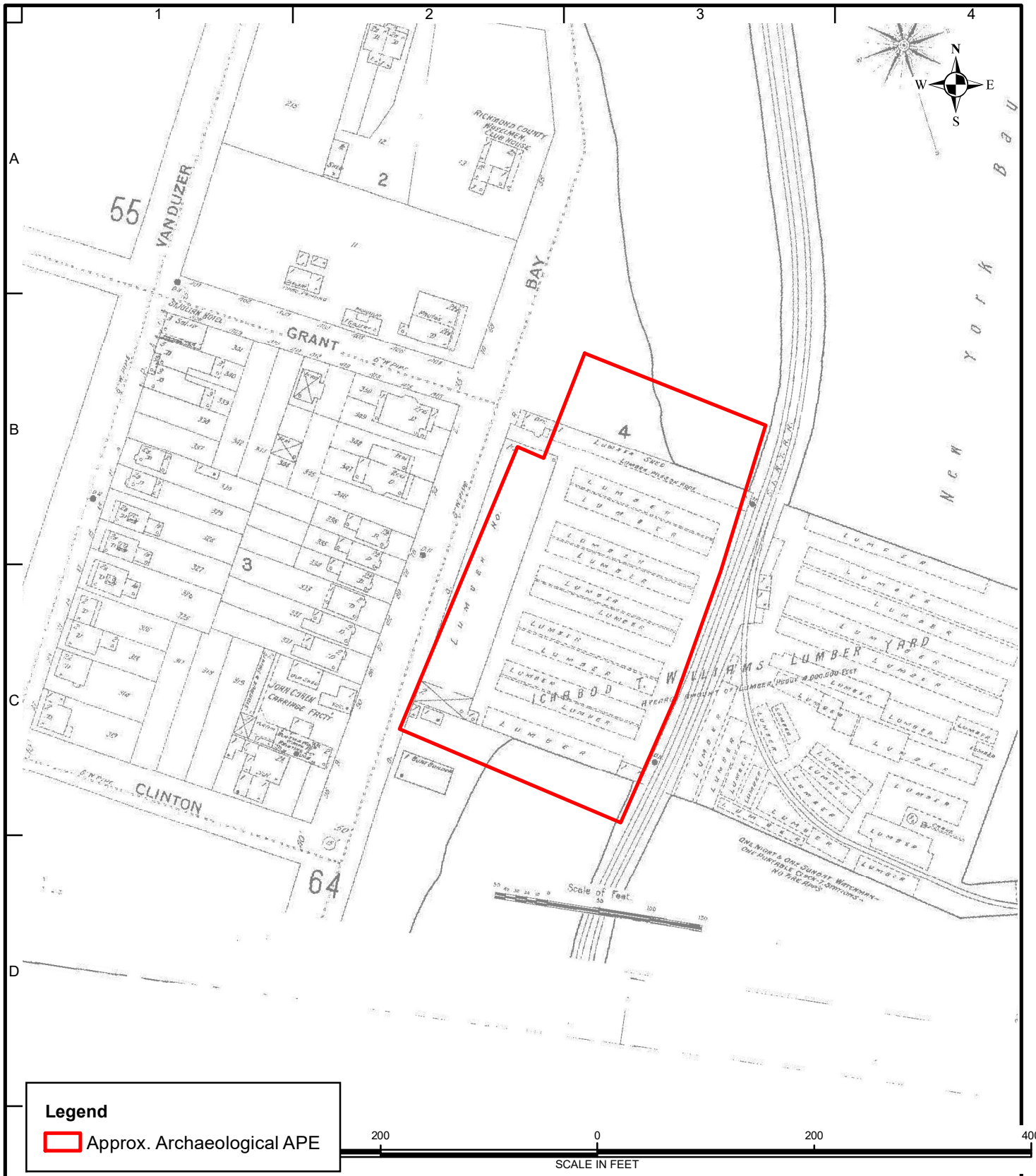

Legend

Approx. Archaeological APE

200 0 200 400

SCALE IN FEET

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1898 SANBORN MAP

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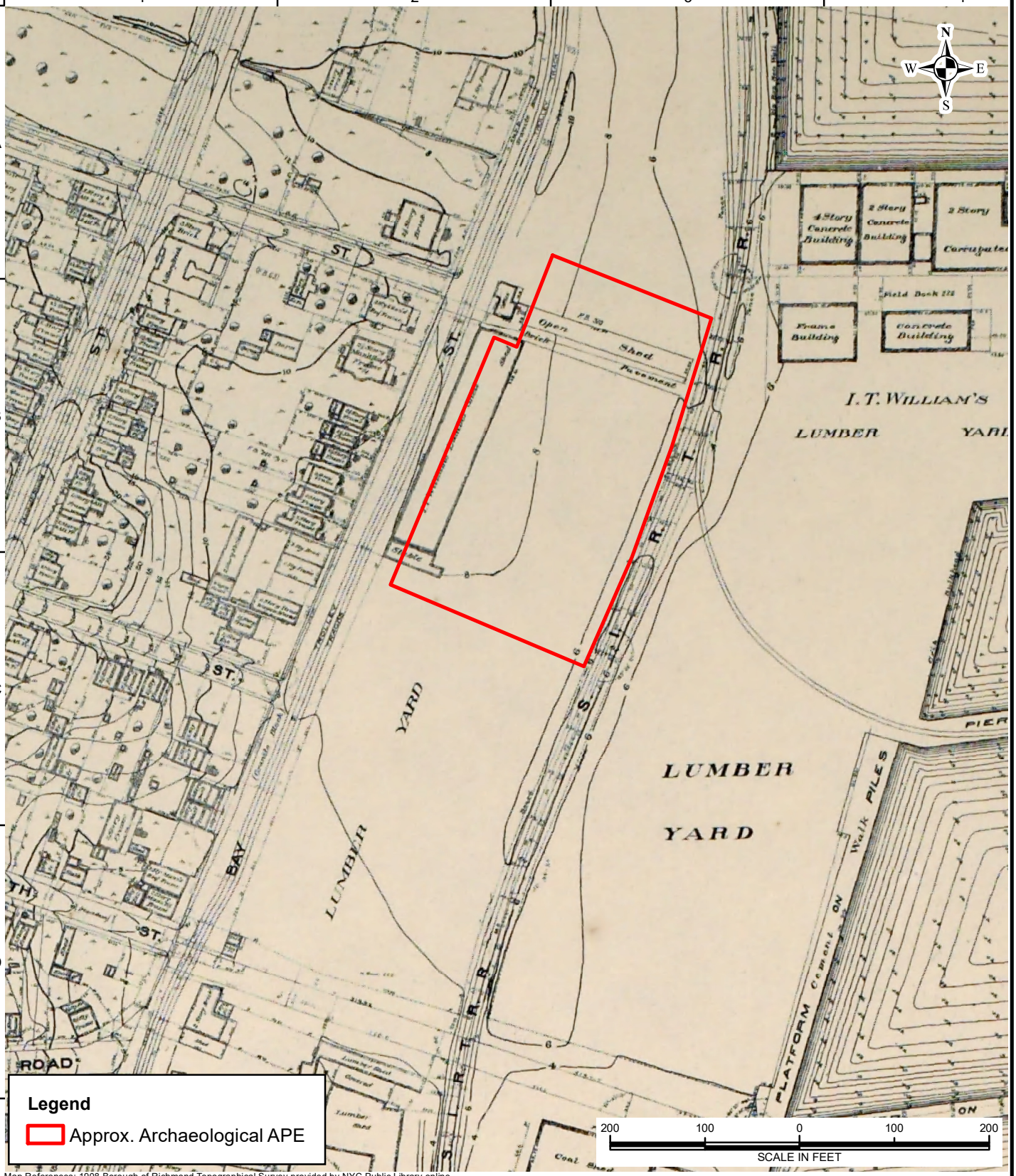

Map References: 1908 Borough of Richmond Topographical Survey provided by NYC Public Library online.

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STATEN ISLAND NEW YORK

Drawing Title
1908 BOROUGH OF RICHMOND TOPO SURVEY

Project No.	170289505
Date	4/17/2017
Scale	SEE ABOVE
Drawn By	MA
Figure	11

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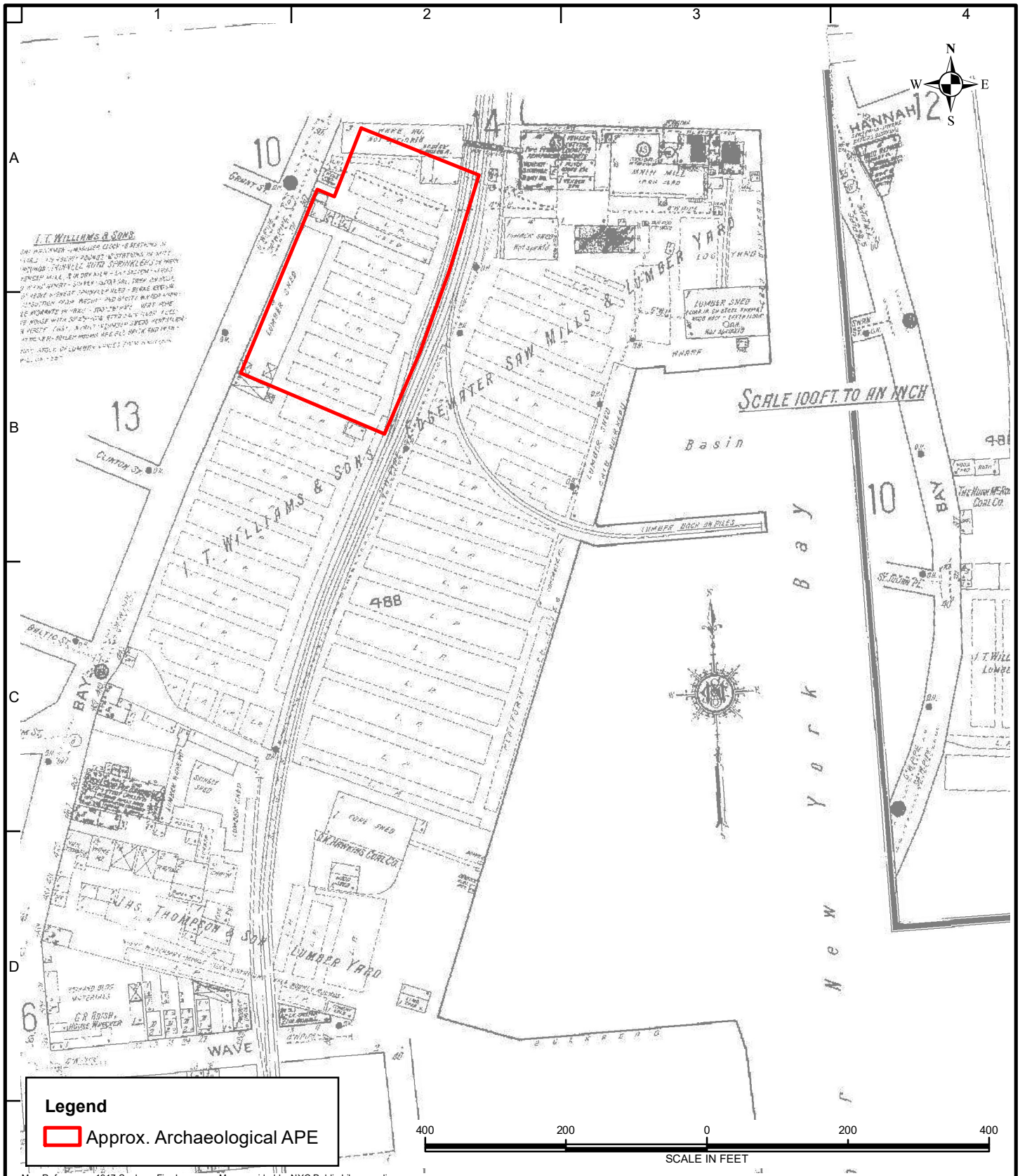

Map References: 1917 Sanborn Fire Insurance Map provided by NYC Public Library online.

LANGAN 300 Kimball Drive Parsippany, NJ 07054 T: 973.560.4900 F: 973.560.4901 www.langan.com Langan Engineering & Environmental Services, Inc. Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan International LLC Collectively known as Langan NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400	Project **BAY STREET CORRIDOR REZONING** BLOCK NO. 488, LOT NO. 65 STAPLETON STATEN ISLAND NEW YORK	Drawing Title **1917 SANBORN MAP**	Project No. 170289505 Date 4/24/2017 Scale SEE ABOVE Drawn By KMF	Figure 12

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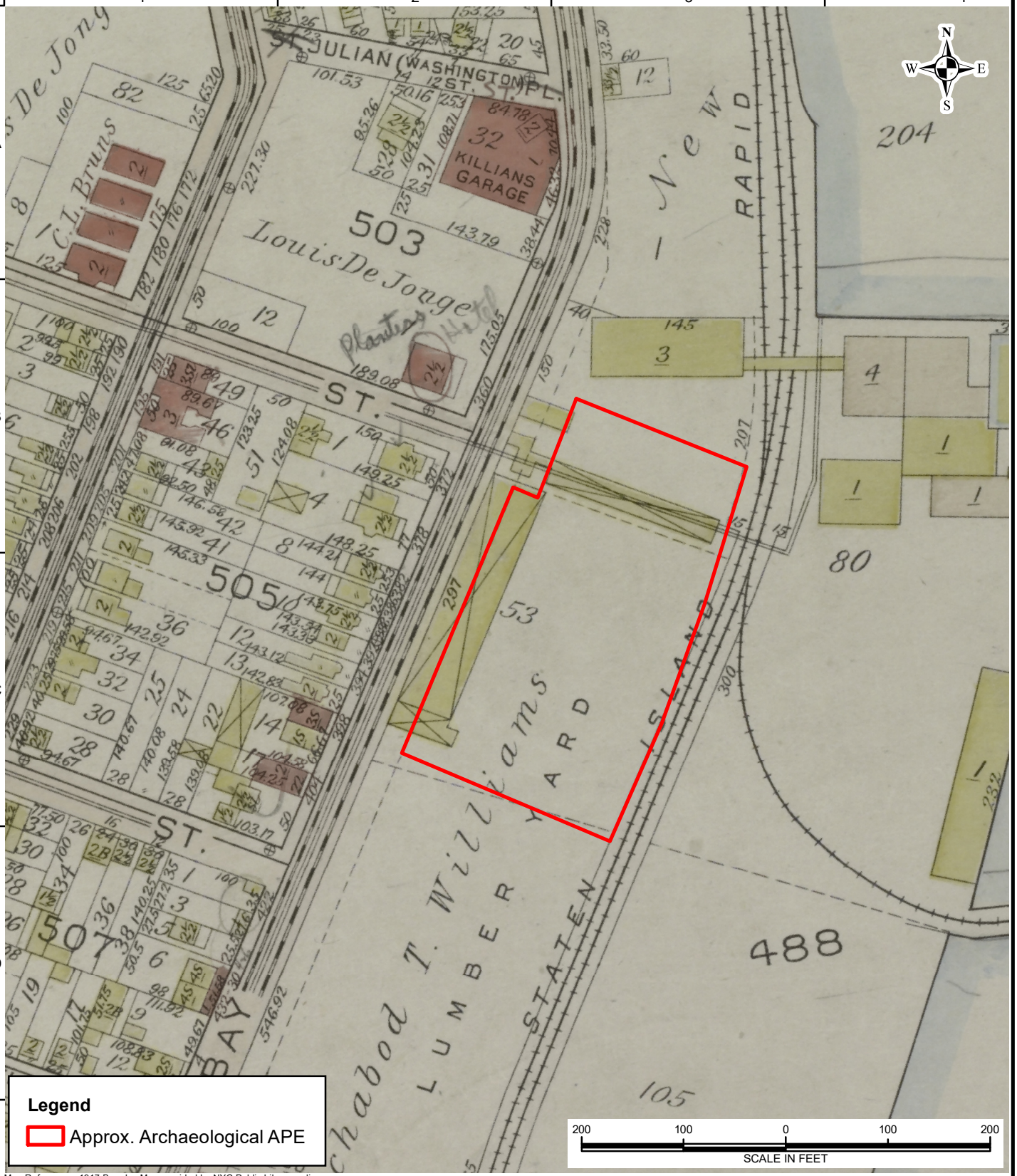

Map References: 1917 Bromley Map provided by NYC Public Library online.

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BLOCK NO. 488, LOT NO. 65
STAPLETON
STATEN ISLAND NEW YORK

Drawing Title
1917 BROMLEY MAP

Project No.	170289505
Date	4/17/2017
Scale	SEE ABOVE
Drawn By	MA
Figure	13

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The 1924 aerial photograph of the archaeological-APE is consistent with the site organization depicted in the 1917 Sanborn and Bromley maps (Figure 14). There is a large, rectangular building fronting Bay Street, consistent with the I.T. Williams lumber shed labeled on multiple historic maps. The remainder of the archaeological-APE appears to be covered by lumber stacks which appear to continue south of the archaeological-APE. The archaeological-APE is flanked by Bay Street and the SIR tracks to the west and east, respectively. The shoreline is approximately 250 feet east of the SIR tracks, and there are a number of constructed piers or docks extending east into the Upper New York Bay.

The 1947 topographical map of Staten Island shows the archaeological-APE located between Bay Street and the SIR tracks, approximately 250 feet west of the shoreline (Figure 15). There are two small structures depicted overlapping the west and northwest boundary of the archaeological-APE. No other development is pictured within the project area.

The 1954 aerial photograph depicts the majority of the archaeological-APE as a vacant lot (Figure 16). All of the structures and racks associated with the lumberyard have been removed. There is some development at the northern extent of the archaeological-APE, although the photo's resolution prevents a clear understanding of nature of development.

The 1980 aerial photograph also shows the archaeological-APE as a vacant lot (Figure 17). There is a structure just northwest, but outside of, the archaeological-APE fronting the SIR tracks. The shoreline remains approximately 250 feet east of the SIR tracks.

The 1995 (Figure 18) and 2012 (Figure 2) aerial photographs show the archaeological-APE much as it exists today. The commercial building currently at the project site has been constructed, and the remainder of the archaeological-APE is a parking lot. Building information available on the NYCityMap website suggests that the building was constructed in 1984.

Legend

Approx. Archaeological APE

0 150 300 600 Feet

Map References: 1924 Aerial Photograph downloaded from NYCityMap

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Drawing Title

1924 AERIAL PHOTOGRAPH

Project No.	170289505
Date	4/24/2017
Scale	SEE ABOVE
Drawn By	KMF
Figure	14

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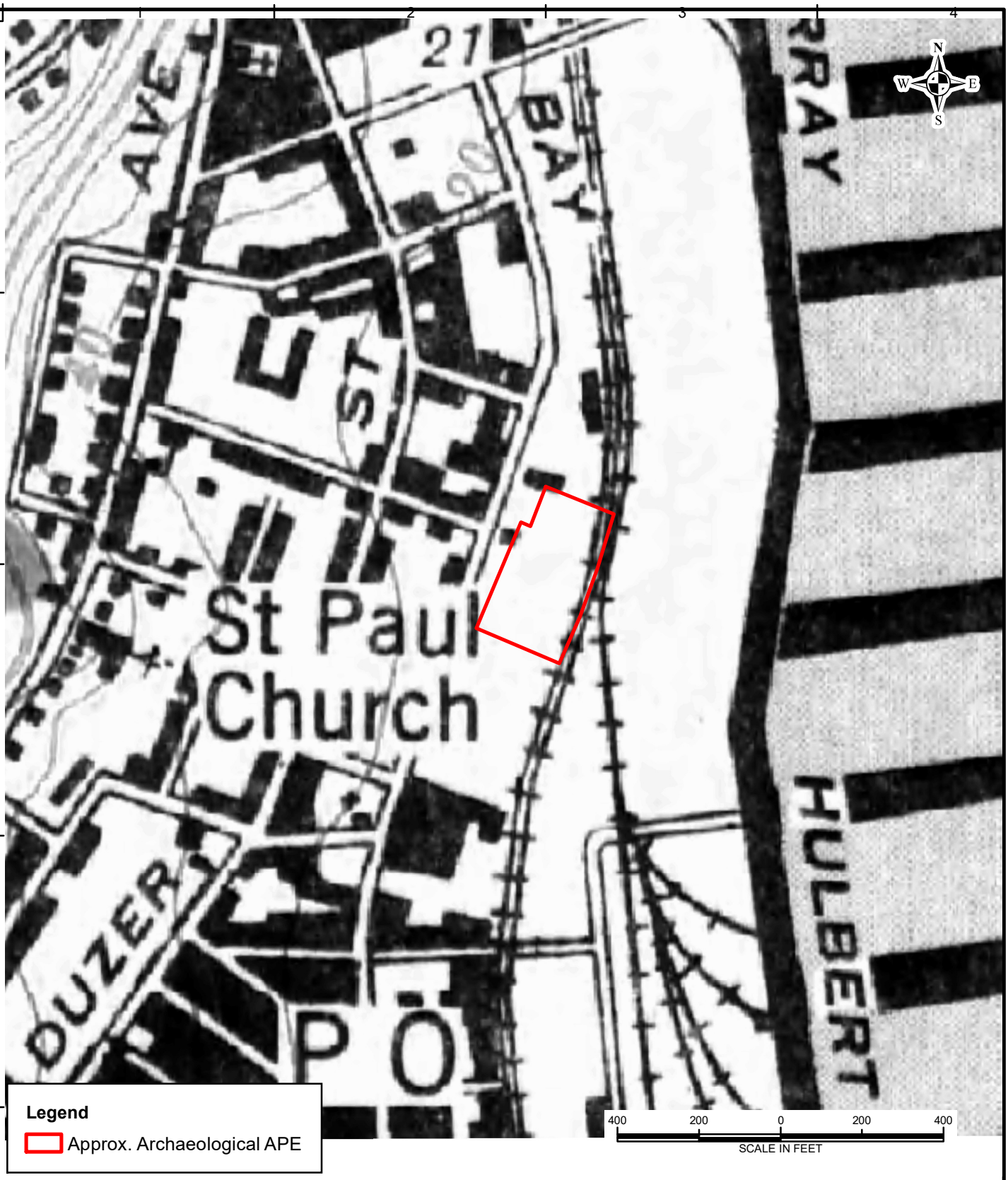

Legend

Approx. Archaeological APE

Map References: 1947 Topographical map

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Drawing Title

1947 TOPOGRAPHICAL MAP

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Date	4/24/2017
Scale	SEE ABOVE
Drawn By	KMF
Figure	15

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Map References: 1954 Aerial Photograph purchased from Historic Aerials online.

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Drawing Title

1954 AERIAL PHOTOGRAPH

Project No.	170289505
Date	4/24/2017
Scale	SEE ABOVE
Drawn By	KMF
Figure	16

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Map References: 1980 Aerial Photograph purchased from Historic Aerials online.

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Drawing Title
1980 AERIAL PHOTOGRAPH

Project No.	170289505
Date	4/24/2017
Scale	SEE ABOVE
Drawn By	KMF
Figure	17

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Map References: 1995 Aerial Photograph provided byNJ DEP online.

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Project

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STATEN ISLAND NEW YORK

Drawing Title

1995 AERIAL PHOTOGRAPH

Project No.	170289505
Date	4/17/2017
Scale	SEE ABOVE
Drawn By	MA
Figure	18

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5.0 ARCHAEOLOGICAL SURVEY

This chapter discusses the methodology and results of the Phase IA survey of the archaeological-APE. The results include an assessment of the archaeological sensitivity of the archaeological-APE based on the documentary review, a summary of the current project site conditions observed during the site visit and recommendations for further archaeological research or testing.

5.1 Methodology

The following information was gathered in order to determine archaeological sensitivity: prior historic and archaeological surveys, historic maps, aerial photographs and a review of the environmental and soil conditions. Archaeological sensitivity was then rated as low, moderate, high or a range of sensitivities.

5.2 Assessment of Archaeological Resource Sensitivity

The assessment of archaeological resource sensitivity is based on:

- The potential for archaeological sites to exist in a given area; and
- The sensitivity of that area to contain intact cultural resources.

In areas where no sites have been documented, the potential presence of prehistoric resources is based primarily on environmental setting such as topography, proximity to water and other resources and soil quality. The potential for historic resources is usually determined through the analysis of historic sources, especially cartographic materials. The presence of roads, canals or railroads documented on historic maps usually increases the potential for historic sites.

<u>Prehistoric Archaeological Sensitivity</u>

The prehistoric archaeological sensitivity for the archaeological-APE is generally determined by evaluating the area for the presence of level areas or slight slopes, proximity to water courses, presence of well-drained soils and proximity to previously identified prehistoric archaeological sites. The record search confirmed that the archaeological-APE is located within the area of NY Museum Site #6956, an unnamed prehistoric campsite. This location of this site was not recorded precisely, but it was identified as lying either on or near the archaeological-APE.

The project site is located on the historic eastern shoreline of Staten Island, but the majority of the site is located on historic fill. Therefore, the fast land along the western margin of the archaeological-APE could have been a suitable location for prehistoric occupation. Langan concludes that there is a moderate to high sensitivity for prehistoric cultural resources just along the western margin of the archaeological-APE.

<u>Historic Archaeological Sensitivity</u>

The potential presence of historic cultural resources within an archaeological-APE must also be weighed against ground-moving activities that may alter or destroy the contextual integrity of the site. As with prehistoric cultural resources, the sensitivity for historic period cultural resources is derived by ascertaining the probable location of a potentially significant historic site and

comparing that with documented ground disturbances. Overall sensitivity to historic sites is a measure of the potential for intact cultural resources to be present within the archaeological-APE.

The historic maps, atlases and aerial photographs revealed that a series of nineteenth-century piers were constructed extending out eastward from the small strip of fast land along the western margin of the archaeological-APE over the Upper New York Bay. Based on historic mapping, Langan concludes that there is a moderate to high sensitivity for nineteenth-century waterfront features, especially dock or pier pilings, across most of the archaeological-APE. The northern, narrow section of the archaeological-APE is not connected to any fast land and, additionally, none of the historic maps reviewed showed dock or pier structures in this area. Therefore, this portion of the archaeological-APE is considered to have no to low sensitivity for shoreline features. No other historic resources are anticipated in the archaeological-APE.

5.3 Site Visit

A Langan archaeologist conducted a site visit on 21 April 2017. The site was photographed to document the current condition of the archaeological- APE. The location and direction of each image is illustrated in Figure 19. There is a one-story commercial building that does not have a basement currently located at the property (Photo 1 and 2). Its street address is 385 Bay Street. The building currently houses three businesses: Northfield Bank, Bay Street Laundromat and a Rite Aid Pharmacy.

The remainder of the archaeological-APE is a paved parking lot with grass islands near the entrance to Bay Street (Photo 3). There is an alleyway behind the commercial building (Photo 4) and another directly behind (to the east of) the building and a chain link fence separating the archaeological-APE from the SIR tracks.

Map References: 2012 Aerial Photograph provided by NYCMap at http://maps.nyc.gov/doitt/nycitymap/.

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Drawing Title
PHOTO LOG

Project No.	170289505
Date	4/17/2017
Scale	SEE ABOVE
Drawn By	MA
Figure	19

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Photograph 1 – View of the south end of the commercial building built in 1984. The building is one story and does not have a basement. Taken facing northeast.

Photograph 2 – View of the north end of the commercial building. Taken facing east.

Photograph 3 – View of the parking lot west of the commercial building. Bay Street is visible in the right side of the photograph. Taken facing south.

Photograph 4 – View of the alleyway between the commercial building and the SIR tracks. Taken facing north.

6.0 CONCLUSIONS AND RECOMMENDATIONS

New York City Economic Development Corporation (NYCEDC) contracted Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) to perform a Phase IA archaeological study in support of the City Environmental Quality Review (CEQR) for proposed rezoning at Block 488, Lot 65, Borough of Staten Island, New York City, New York. This lot is a part of a larger rezoning project along Bay Street in association with the Bay Street Corridor @ Downtown Staten Island Neighborhood Planning Initiative. This documentary archaeological study is required by the New York City Landmarks Preservation Commission (LPC) per a memorandum dated 5 April 2017 (Appendix B).

Langan conducted research for previous cultural resource surveys by consulting the Cultural Resource Information System (CRIS), NYC LPC online archaeology reports, historic maps and aerial photographs. The research determined that eight archaeological surveys have been conducted within a one-mile radius of the project area. One known historic archaeological site and five known prehistoric archaeological sites are located within one mile of the project site. The record search confirmed that the archaeological-APE is located within the area of NY Museum Site #6956, an unnamed prehistoric campsite. This location of this site was not recorded precisely, but it broadly located on or near the archaeological-APE.

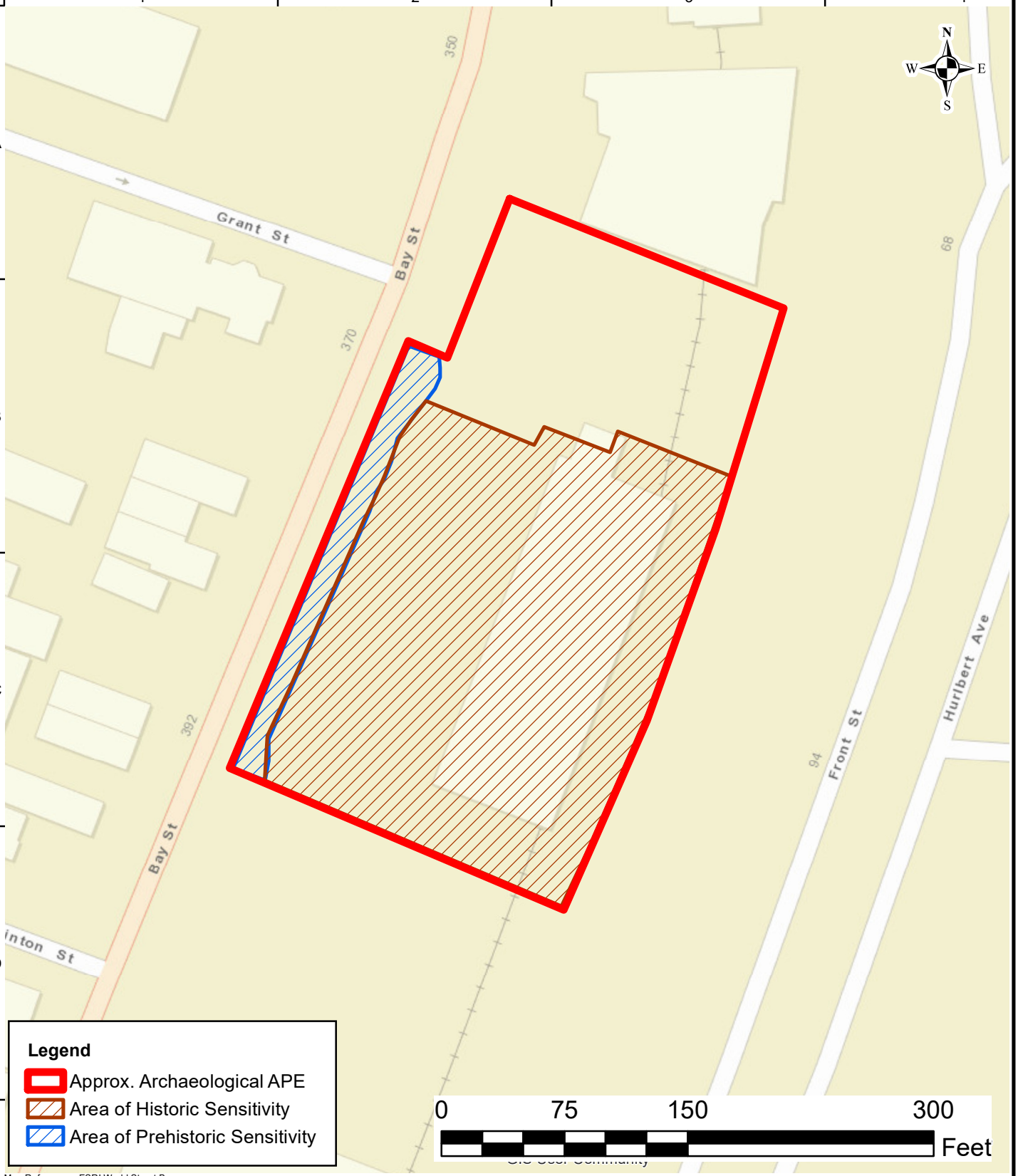
A review of the historic maps shows that the archaeological-APE is located on the historic shoreline of Staten Island. There is a small sliver of fast land along the western margin of the archaeological-APE. Beginning as early as 1859, a series of dock or pier structures was constructed in the archaeological-APE extending eastward into the Upper New York Bay. By 1908, the archaeological-APE and its vicinity were filled, and the shoreline was extended eastward to its modern location approximately 250 feet east of the SIR tracks. There is no evidence of development within the archaeological-APE that would have led to significant subsurface disturbance, such as a building with a basement.

<u>Conclusion</u>

Based on the above we conclude that the archaeological-APE has a moderate to high sensitivity for prehistoric resources on the western margin in the limited area of fast land and a moderate to high sensitivity for nineteenth- to early-twentieth-century waterfront features (docks or piers) in the remainder of the southern archaeological-APE. The northern, narrow portion of the archaeological-APE was identified as having no to low sensitivity for shoreline features.

<u>Recommendation</u>

Langan recommends archaeological testing in advance of any future ground disturbing developments within the two areas of archaeological sensitivity to determine the absence or presence of these potential buried resources. Figure 20 shows the location of the two distinct areas recommended for archaeological testing. Langan does not recommend archaeological testing for northern, narrow portion of the archaeological-APE.



Map References: ESRI World Street Basemap

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Drawing Title
ARCHAEOLOGICAL SENSITIVITY

Project No.	170289505
Date	4/17/2017
Scale	SEE ABOVE
Drawn By	KMF
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7.0 BIBLIOGRAPHY

Bayles, Richard M.
1887 *History of Richmond County, New York from Its Discovery to the Present Time*. L.E. Preston, New York

Boesch, Eugene J.
1994 *Archaeological Evaluation and Sensitivity Assessment of Staten Island, New York.* Prepared for the New York City Landmarks Preservation Commission.

Beers, F.W.
1874 *Atlas of Staten Island, Richmond County, New York.* Available from the New York Public Library Digital Collection.

Beers, J.B.
1887 *Map of Staten Island.* Available from the New York Public Library Digital Collection.

Bromley, G.W and W.S. Bromley
1917 *Atlas of the City of New York, Borough of Richmond, Staten Island. From actual surveys and official plans.* G.W. Bromley and Company, Philadelphia, Pennsylvania.

Burr, David
1829 *Map of the Counties of New York: Queens, Kings and Richmond*. Map available from the New York Public Library Digital Collections.

Cadwell, D.H., G.G. Connally, R.J. Dineen, P.J. Fleisher, M.L. Fuller, Les Sirkin, and G.C. Wiles
1989 Surficial geologic map of New York: Lower Hudson sheet. Map and Chart Series No. 40. New York State Museum – Geologic Survey.

Cantwell, Anne-Marie and Diana diZerega Wall
2001 *Unearthing Gotham: the archaeology of New York City*. New Haven, CT: Yale University Press.

Ceci, Lynn
1977 *The Effect of European Contact and Trade on the Settlement Pattern of Indians in Coastal New York 1524–1665: The Archaeological and Documentary Evidence.* Ph.D. dissertation, City University of New York (CUNY)

Chesler, Olga (editor)
1982 *New Jersey Archaeological Resources from the Paleo-Indian Period to the Present: A Review of Research Problems and Survey Priorities*. On file at Historic Preservation Office, Trenton, New Jersey.

Custer, Jay
1996 Prehistoric Cultures of Eastern Pennsylvania. Pennsylvania Historical and Museum Commission, Anthropological series No. 7, Harrisburg, Pennsylvania.
One Hundred Years of American Commerce 1795–1895. New York: DO Haynes and Co.

Donnelly, J.P., N.W. Driscoll, E. Uchupi, L.D. Keigwin, W.C. Schwab, E.R.Thieler, and S.A. Swift
2005 Catastrophic meltwater discharge down the Hudson Valley: A potential trigger for the Intra-Allerød cold period. *Geology* 33(2): 89.

Dripps, Matthew
1872 *Map of Staten Island, Richmond County, New York.* Available from David Rumsey Online Cartography Collection.

Fairbanks , R.G.
1989 A 17,000 year glacio-eustatic sea level record: influence of glacial melting rates on the Younger Dryas event and deep ocean circulation. *Nature*, (342):637–642.

Goddard, Ives
1978 Delaware. In Northeast, edited by Bruce G. Trigger, pp. 213–239. Handbook of North American Indians, vol. 15, William G. Sturtevant, editor. Smithsonian Institution, Washington, D.C.

Kraft, Herbert C.
1977 The Paleo-Indian Sites at Port Mobile, Staten Island. *In Current Perspectives in Northeastern Archaeology: Essays in Honor of William A. Ritchie,* edited by R.E. Funk and C.F. Hayes, pages 1–19. Researches and Transactions of the New York State Archaeological Association 17, Albany.

1986 The Lenape: Archaeology, History, and Ethnography. New Jersey Historical Society, Newark, New Jersey.

2001 The Lenape-Delaware Indian Heritage: 10,000 BC to AD 2000. Lenape Books.

Kroessler, Jeffrey A.
2005 Staten Island. *In the Encyclopedia of New York State,* edited by Peter Eisenstadt, pages 1455–1458. Syracuse University Press.

McMillen, Loring
1949 Old Mills of Staten Island*. Staten Island Historian* July–September. Staten Island Historical Society.

Morris, Ira K.
1898 *Morris's Memorial History, Volume I.* Memorial Publishing Company, New York.

1900 *Morris's Memorial History, Volume II.* Published by the author, West Brighton, New York.

No author
1908 *Borough of Richmond, Topographical Survey.* Available from New York Public Library Digital Collection.

New York City Soil Survey Staff
2005 New York City Reconnaissance Soil Survey. United States Department of Agriculture, Natural Resources Conservation Service, Staten Island, NY.

Powell, Wayne G.
2003 *Geology of Staten Island.* Brooklyn College CUNY. Available online academic.brooklyn.cuny.edu/geology/powell/613webpage/NYCgeology/staten%20island/staten_island

Ritchie, William A.
1980 *The Archaeology of New York State.* Natural History Press, Garden City, New York.

Ritchie, William A. and Robert E. Funk
1971 Evidence for Early Archaic Occupation on Staten Island. *Pennsylvania Archaeologist* 31(3):45–60.

1973 *Aboriginal Settlement Patterns in the Northeast.* Memoir 20, New York state Museum and Science Service, The University of the State of New York, The State Education Department, Albany, NY.

Robinson, George R., Mary E. Yurlina and Steven N. Handel
1994 A Century of Change in the State Island Flora: ecological correlates of species losses and invasions. *Bulletin of the Torrey Botanical Club* 121(2): 119–129.

Roess, Roger P. and Gene Sansone
2013 *The Wheels that Drove New York: a history of the New York City Transit System.* Heidelberg Springer, Berlin.

Sanborn Map Company
1898 *Fire Insurance Map.* Available from New York Public Library Digital Collection.
1917 *Fire Insurance Map.* Available from New York Public Library Digital Collection.

Sanderson, Eric W.
2009 *Mannahatta: a natural history of New York City.* New York: Abrams.

Shrimpton, Rebecca
1990 How to Apply the National Register Criteria for Evaluation. *National Register Bulletins* 13. Internet Edition Revised 2002.

Sirkin, Les
1995 *Eastern Long Island Geology with Field Trips.* The Book and Tackle Shop, Watch Hill, Rhode Island.

Stanford, S.D. and D.P. Harper
1991 Glacial Lakes of the Lower Passaic, Hackensack, and Lower Hudson Valleys, New Jersey and New York. *Northeastern Geology* (13:4):271–286.

Steinmeyer, Henry G.
1950 *Staten Island, 1524–1898.* Staten Island Historical Society, Staten Island, New York.

Walling, H.F.
1859 *Map of Staten Island, Richmond County, New York.* Available from New York Public Library Digital Collections.

APPENDIX A

QUALIFICATIONS OF PREPARERS

MICHAEL AUDIN, RPA

Archaeologist / Cultural Resource Specialist

Field Crew Management
Phase I, II and III Excavation
Human Remains/Burial Excavation
Site Preparation and Survey
Historic Research
Photographer
Laboratory Analysis
Field Illustration
Report Writing and Editing
Historic American Building Surveys

EDUCATION

Hunter College: M.A. Anthropology
William Paterson University: B.A. Anthropology
Archaeological Field School: Lenape Meadows, Somerset County Parks Commission, New Jersey

YEARS EXPERIENCE: 14

SUMMARY QUALIFICATIONS

Mr. Audin is a Registered Professional Archaeologist (RPA) who meets the Secretary of the Interiors Professional standards as an archaeologist and has been reviewed by several State Historic Preservation Offices as a Principal Investigator. Mr. Audin has over 14 years of professional experience in cultural resource management. Skills include extensive problem solving, management, analytical, evaluating, and creative resolutions. Management experience includes extensive customer relations, employee development, training, scheduling and mentoring staffs up to 115 members in size.

Work experience includes coordination and implementation of environmental and cultural resource assessments include NEPA Documentation, Environmental Assessments, Environmental Impact Statements, Section 106 Assessments, Phase I, II and III Historic and Archaeological Assessments and Historic American Building Survey (HABS) photography and documentation. Created and implemented Archaeological Monitoring Plans, Scopes of Work, Research and Field Testing Plans, Programmatic Agreements, Memorandums of Agreement (MOA) and Memorandums of Understanding (MOU).

RELEVANT EXPERIENCE

Former Front Street Gas Works Site PSE&G Remediation Project, Archaeological Monitoring, city of Newark, NJ
Principal Investigator for historic site investigation for NJDEP Contaminated Site Remediation Project. Conducted research, conducted field monitoring during excavation, writing and preparation of report, edited and produced report for submission. Discovered historic dock feature.

FedEx Distribution Center Project, Phase I Archaeological Survey, Hamilton, NJ
Principal Investigator for prehistoric/historic site investigation for NJDEP Freshwater Wetlands Permit. Conducted research, assessed prehistoric/historic archaeological potential, conducted field testing, artifact analysis, writing and preparation of report, edited and produced report for submission.

FedEx Distribution Center Project, Phase I Archaeological Survey, Montgomery, NY
Principal Investigator for prehistoric/historic site investigation for NY SEQR Review. Conducted research, assessed prehistoric/historic archaeological potential, conducted field testing, artifact analysis, writing and preparation of report, edited and produced report for submission.

Pavilion at Locust Manor, Phase I Archaeological Survey, Jamaica, Queens, NY
Principal Investigator for prehistoric/historic site investigation for city housing development. Conducted research, assessed prehistoric/historic archaeological potential, conducted field testing, writing and preparation of report, edited and produced report for submission.

Interstate Blvd. Development Project, Phase I Archaeological Survey, South Brunswick, NJ
Principal Investigator for prehistoric/historic site investigation for NJDEP Freshwater Wetlands Permit for warehouse development. Conducted research, assessed prehistoric/historic archaeological potential, conducted field testing, artifact analysis, writing and preparation of report, edited and produced report for submission.

Princeton Pike Roadway Project, Phase I & II Archaeological Survey, Lawrence, NJ
Principal Investigator for prehistoric/historic site investigation for NJDEP Freshwater Wetlands Permit. Conducted research, assessed prehistoric/historic archaeological potential, conducted field testing, artifact analysis, writing and preparation of report, edited and produced report for submission.

Prasville Mills Restroom Project, Archaeological Monitoring, New Jersey
Principal Investigator for historic site investigation for NJ State Park improvements. Conducted research, assessed prehistoric/historic archaeological potential, conducted field monitoring, artifact analysis, writing and preparation of report, edited and produced report for submission.

St. Marks AME Church Cemetery Project, Queens, New York
Principal Investigator for former African American cemetery on residential development site. Designed archaeological monitoring plan and scope of work, conducted archaeological monitoring and human remains excavation for mid-19th- to mid-20th-century cemetery in Queens.

Gloucester Premium Outlets, Phase I Cultural Resource Survey, Gloucester Township, NJ
Principal Investigator for prehistoric/historic site investigation for NJDEP Freshwater Wetlands Permit for 65 acre property (36 acres shovel tested). Conducted research, assessed prehistoric/historic archaeological potential, conducted field testing, directed artifact analysis, writing and preparation of report, edited and produced report for submission.

Old St. Patrick's Cathedral Mausoleum Project, Archaeological Monitoring, New York
Principal Investigator for and archeological monitor for human remains during excavation for new mausoleum in southern part of a historic cemetery in New York City. Designed Monitoring plan, conducted monitoring for human remains during backhoe excavation, supervision of two archaeological assistants, determined method of avoidance or removal of human remains encountered and eventual reburial of disinterred remains, report writing and preparation

Washington Crossing Historic Park, Phase IB, Washington Crossing, Pennsylvania
Principal Investigator for prehistoric/historic site investigation for PHMC historic site drainage improvements. Conducted research, subsurface field testing, artifact analysis, writing and preparation of report, edited and produced report for submission.

Hallets Court Senior Housing Project, Phase I Archaeological Investigation, Queens, NY
Principal Investigator for prehistoric/historic site investigation for city housing development. Conducted research, subsurface field testing, writing and preparation of report, edited and produced report for submission.

Johnson Veterans Hospital Parking Garage Project, Phase IB Cultural Resource Investigation, Clarksburg, West Virginia
Principal Investigator for prehistoric/historic site investigation for Section 106 Compliance and NEPA checklist. Conducted field testing of APE for prehistoric/historic archaeological sites, writing and preparation of report, edited and produced report for submission

Gowanus Canal Historic Bulkhead Documentation, Brooklyn, NY
Principal Investigator for documentation of a historic bulkhead at two sites on the Gowanus Canal. Conducted field testing, photographic documentation, measured drawing, writing and preparation of report for submission.

Amtrak, High Speed Rail Improvements Project, Trenton to New Brunswick, NJ
Principal Investigator produced an archaeological sensitivity assessment and monitoring for Section 106 review of rail improvements for 23 mile section of the Northeast Corridor. Conducted research, site visits, writing and preparation of report.

Verizon Wireless Cell Tower Upgrades, Various Sites in NJ
Researcher/site reviewer for Section 106 reviews to upgrade cell tower antennas. Conducted research, site reconnaissance, writing and preparation of report.

Gowanus Canal Bulkhead Stabilization Project, Brooklyn, NY
Principal Investigator for preliminary bulkhead documentation on the Gowanus Canal. Conducted research and monitored for archaeological materials and bulkhead features during a geotechnical investigation in order to design a thorough documentation plan and investigation.

NJ Transit, Phase IA Investigation, Train Station Upgrades, Elizabeth, NJ
Principal Investigator for Phase IA Investigation. Evaluation of handicap and other facility upgrades for NJ TRANIT train station. Conducted research, site reconnaissance, writing and preparation of report, edited and produced letter report for submission NJ SHPO.

NJ Transit, Phase IA Investigation, Train Station Upgrades, Perth Amboy, NJ
Principal Investigator for Phase IA Investigation. Evaluation of handicap and other facility upgrades for NJ TRANIT train station. Conducted research, site reconnaissance, writing and preparation of report, edited and produced letter report for submission NJ SHPO.

St. Marks AME Church Cemetery Project, Queens, New York
Field director for unanticipated discovery of human remains during construction activities in former African American cemetery. Conducted archaeological monitoring and human remains excavation for mid-19th- to mid-20th-century cemetery in Queens..

Old St. Patrick's Cathedral Stabilization Project, Archaeological Monitoring, New York
Principal Investigator for and archeological monitor for Landmarks Preservation Commission permit for brick wall stabilization around the north part of a historic cemetery in New York City. Conducted research, monitoring for human remains during backhoe excavation for new concrete supports, supervision of two archaeological assistants, determined method of avoidance or removal of human remains encountered and eventual reburial of disinterred remains, report writing and preparation.

Johnson Veterans Hospital Parking Garage Project, Phase IA Cultural Resource Investigation, Clarksburg, West Virginia
Principal Investigator for prehistoric/historic site investigation for Section 106 Compliance and NEPA checklist. Conducted research, assessed prehistoric/historic archaeological potential, conducted site visit, writing and preparation of report, edited and produced report for submission.

Standard Chlorine Chemical Company, Archaeological Monitoring, Kearny, New Jersey
Principal Investigator for archaeological monitoring during construction of a 7,000 foot slurry wall as part of the Interim Action Work Plan for NJDEP and USEPA Superfund site. Conducted monitoring during backhoe trenching and screened samples for prehistoric lithic materials, writing and preparation of report, edited and produced report for submission.

Renaissance Plaza Project, Phase I, Egg Harbor City, New Jersey
Principal Investigator for prehistoric/historic site investigation for NJ Pinelands Commission. Conducted research, conducted subsurface field testing for historic features, writing and preparation of report, edited and produced report for submission.

Alpha Water Works Upgrades Project, Phase II, Alpha, New Jersey
Principal Investigator for prehistoric/historic site investigation for NJDEP Environmental Infrastructure Trust funding program. Conducted research, excavation of shovel test pits and units, laboratory analysis of artifacts, writing, preparation, editing and producing report for submission.

State University of New York, Ulster Campus, Phase I, Marbletown, New York
Principal Investigator for prehistoric/historic site investigation for NYS SEQR reviewed project. Conducted research, assessed prehistoric/historic archaeological potential, field testing, writing and preparation of report, edited and produced report for submission.

NJ Transit, Unanticipated Discovery Investigation, Market Street Garage, Paterson, NJ
Principal Investigator for unanticipated historic structure uncovered during excavation for a drainage pipe. Field work consisted of the excavation and documentation of a historic industrial feature partially exposed during excavation work. Recommended preservation in place with appropriate fill materials and submitted a technical memo to NJDEP SHPO.

EZ Automotive Services, Phase IA & IB, Robbinsville, New Jersey
Principal Investigator for prehistoric/historic site investigation for NJDEP. Conducted research, assessed prehistoric/historic archaeological potential, conducted field testing, writing and preparation of reports, edited and produced report for submission.

Old St. Patrick's Cathedral Stabilization Project, Archaeological Monitoring, New York
Principal Investigator for and archeological monitor for Landmarks Preservation Commission permit for brick wall stabilization around the south part of a historic cemetery in New York City. Conducted limited research, monitoring for human remains during backhoe excavation for new concrete supports, supervision of one archaeological assistant, determined method of avoidance or removal of human remains encountered and eventual reburial, report writing and preparation.

Former Koppers Superfund Site, Additional Phase IB, Newport, Delaware
Co-Author of Memorandum of Agreement between all interested parties for the property.

Pennsauken Country Club Water Reuse Project, Phase I, Pennsauken, New Jersey
Principal Investigator for prehistoric/historic site investigation for NJDEP Environmental Infrastructure Trust funding program. Conducted research, preparation of site, excavation of shovel test pits, laboratory analysis of artifacts, writing, preparation, editing and producing report for submission.

NYS Route 440 Pole Relocation Project, Phase IA, Staten Island, New York
Principal Investigator for prehistoric/historic site investigation for Department of Transportation NEPA documentation and Section 106 reviewed project. Conducted research, assessed prehistoric/historic archaeological potential, writing and preparation of report, edited and produced report for submission.

World Trade Center, Phase III, Potential Human Remains Recovery, Staten Island, New York
Field crew for recovery of potential human remains for the New York City Office of the Chief Medical Examiner. Conducted materials screening for human remains and artifacts relating to the 2001 attacks on the World Trade Center.

SCCC, Phase IB Cultural Resource Investigation, Kearny, New Jersey
Principal Investigator for historic investigations for NJDEP and USEPA Superfund site. Conducted additional research too prove the Jersey City Water Works was located outside of the project area and conducted backhoe trenching for historic drainage features related to the Hackensack Meadowlands, writing and preparation of report, edited and produced report for submission.

Lanning Square Elementary School, Level III HABS, Camden, New Jersey
Complier/Photographer for EO215 compliance for NJ Schools Development Authority. Conducted level III Historic American Building Survey (HABS) including photographic documentation of the Broadway Episcopal Methodist Church Parsonage to mitigate the proposed demolition of this building. The HABS was requested by the NJ HPO to satisfy the EO215 review.

Access to Regional Core (ARC), 3-D Laser Scanning, New York, New York
Field crew for documentation of historic and non-historic buildings for Section 106. Conducted 3-D laser scanning of all buildings in the project area. Collected field data of varying resolutions for buildings in project area, historic buildings were recorded at higher resolution.

Jersey City Walkway and DMAVA Park, Phase IA, Jersey City, New Jersey
Principal Investigator for prehistoric/historic site investigation for NJDEP and Section 106. Conducted research, assessed prehistoric/historic archaeological potential, monitored geotechnical sub surface investigation for archaeological remains, writing and preparation of report, edited and produced report for submission.

Route 33 Interchange Improvements, Phase I, Palmer Township, Pennsylvania
Principal Investigator for prehistoric/historic site investigation for Pennsylvania Department of Transportation and Section 106 reviewed project. Conducted research, site excavation of shovel test pits, laboratory analysis of artifacts, writing and preparation of report, and editing report for submission.

USDA, Health-Based Plant Genomics Facility, Phase IB, Cornell University, Ithaca, New York
Co-Principal Investigator for prehistoric/historic site investigation as part of a Section 106 Assessment for the addition to the Plant Genomics Laboratory Building site. Conducted research, excavation of shovel test pits, laboratory analysis of artifacts, writing and preparation of report, edited and produced report for submission.

SCCC, Phase IA Cultural Resource Investigation, Kearny, New Jersey
Principal Investigator for prehistoric/historic site investigation for NJDEP and USEPA Superfund site. Conducted research, assessed prehistoric/historic archaeological potential, writing and preparation of report, edited and produced report for submission.

GAC Adsorption Plant, Phase I, Pennsauken, New Jersey
Principal Investigator for prehistoric/historic site investigation for NJDEP Environmental Infrastructure Trust funding program. Conducted research, preparation of site, excavation of shovel test pits, laboratory analysis of artifacts, writing and preparation of report, edited and produced report for submission.

Penn Regional Business Center III, Phase I, Smithfield, Pennsylvania
Principal Investigator for prehistoric/historic site investigation for Pennsylvania Funding Grant Application. Conducted research, preparation of site, excavation of shovel test pits, laboratory analysis of artifacts, writing and preparation of report, edited and produced report for submission.

Montauk Theater, Level III HABS and Architectural Salvage Plan, Passaic, New Jersey
Principal Investigator for EO215 compliance for NJ Schools Development Authority. Conducted level III Historic American Building Survey (HABS) including photographic documentation and an architectural Salvage Plan of the Montauk Theater to mitigate the proposed demolition of this building. The HABS and Salvage Plan were requested by the NJ HPO to satisfy the EO215 review.

Former Koppers Superfund Site, Additional Phase IB, Newport, Delaware
Crew chief and OSHA Site Safety Officer for prehistoric/historic site investigation for EPA compliance for superfund site during three month phase IB auger testing conducted by 13 archaeologists. Teamed with John Milner and Associates. Work included over 1,700 phase IB augers in a tidal marsh. Additional work included field tech training, and safety oversight.

Dredge Stockpile Site, Phase I, Harmony, New Jersey
Field director, research coordinator, lab director and photographer for prehistoric/historic site investigation for Section 106 review of stockpile site for dredge materials from FEMA. Field duties include preparation of site, excavation of 32 shovel test pits and site survey. Post field work included laboratory analysis of artifacts, writing of sections of report and prepared, edited and produced report for submission.

Lowes, Phase I, Mansfield, Pennsylvania
Field director, research coordinator, lab director and photographer for prehistoric site investigation for review for big box retail store. Field duties include site preparation, excavation 60 shovel test pits of site and survey. Post field work included laboratory analysis of artifacts, writing of sections of report and prepared, edited and produced report for submission.

Former Jacobs Aircraft Engine Factory, HABS, Lower Pottsgrove, Pennsylvania
Principal Investigator/photographer for NPDES permit compliance. Conducted low level Historic American Building Survey (HABS) including photographical documenting of the former Jacobs Aircraft Engine Factory and Administrative Building to mitigate the proposed demolition of these buildings. The photographic documentation was requested by PHMC to satisfy the NPDES permit review.

Queensboro Plaza, Phase I, Long Island City, New York
Field director, research coordinator, lab director and photographer for historic site investigation for cultural resources section 106 for a NEPA assessment and LPC review for bike path in the Queensboro Plaza. Includes an archaeological assessment, field testing and architectural evaluation of the current property. Field work

included site preparation, the excavation of a two meter by two meter test pit and site survey. Post field work included laboratory analysis of artifacts, writing of sections of report and prepared, edited and produced report for submission.

Lowes, Phase IB, Montgomery, New York
Field director, research coordinator, lab director and photographer for prehistoric/historic site investigation for SEQRA review for retail store. Field work included the preparation of site, excavation of 60 shovel test pits and site survey. Post field work included laboratory analysis of artifacts, writing of sections of report, prepared, edited and produced report for submission.

Green Brook Trail, Application for Project Authorization/Preliminary Assessment, Plainfield, Green Brook, and North Plainfield, New Jersey
Principal Investigator for New Jersey Historic Preservation Act and Freshwater Wetland Permit compliance. Completed and submitted an Application for Project Authorization for Green Brook Park and Washington Park Historic District for a multi-use recreational trail. Additionally, completed a preliminary archaeological assessment for the proposed seven-mile trail, including research, analysis, and report writing.

Public School #3, Archaeological Monitoring, West New York, New Jersey
Archaeological Monitor/researcher for NJ Executive Order 215 Compliance for 1 day of archaeological monitoring for human remains and research on school site that found headstone during excavation. Post field activities included report writing for submission to state.

Former Koppers Superfund Site, Phase IB and II, Newport, Delaware
Crew chief and OSHA Site Safety Officer for EPA compliance for superfund site during six month phase IB and II field excavations conducted by 20 archaeologists, teamed with John Milner and Associates. Work included setting of testing grid and field testing of over 3000 phase IB auguring and STP units and over 180 phase II units. Additional work included lab work, field tech training, and safety oversight.

Bronx River Park, Phase IA, Bronx, New York
Research coordinator, researcher and report production for New York City Landmarks Preservation Commission Compliance. Assessed park land for prehistoric and historic archaeological potential.

USDA, Health-Based Plant Genomics Facility, Cornell University, Ithaca, NY.
Research coordinator, researcher and report production for archaeological resources Section 106 Assessment as part of a NEPA Screening on the Plant Genomics Laboratory Building site.

Weeksville Village, Phase IB testing, Brooklyn, New York
Archaeological Monitor for SEQRA review for village cultural center. Performed 1 day of field duties, with Joan Geismar. Work included monitoring of back hoe trenching for foundations and artifact deposits associated with the Huntefly Houses.

Edgewater Colony, Phase II, Edgewater, New Jersey
Field director and lab director for or EIT storm water improvements loan consisting of the preparation of a Phase II prehistoric/historic site investigation. Included the direction of two field technicians excavating a total of 8 standard test units, photographer and the coordination of lab work. Other post-field responsibilities include writing sections, preparation and production of the final report for submittal to New Jersey DEP Municipal Finance and Technical Services.

Portion of the Northeast Business Park, Phase IA, Washington Township, New Jersey
Research coordinator, researcher, and report production for New Jersey Wetlands Permit. Assessed site for prehistoric and historic archaeological sensitivity.

Creighton Farm Bridge Crossing, Phase I, Willistown, Pennsylvania
Field director, research coordinator, lab director, photographer and report preparation for Army Corps of Engineers Permit. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

Camp Laughing Water, Phase I, New Hanover and Upper Fredrick, Pennsylvania
Field director, research coordinator, lab director, photographer and report preparation for Army Corps of Engineers Permit. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

Camp Hidden Falls, Phase I, Delaware and Lehman Townships, Pennsylvania
Field director, research coordinator, lab director, photographer and report preparation for Army Corps of Engineers Permit. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

Select Sires, Phase I, Eaton, Pennsylvania
Field director, research coordinator, lab director, photographer and report preparation for Pennsylvania section 105 Permit. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

Tournament World, Phase IB, Montgomery, New York
Field director, research coordinator, lab director, and photographer for SEQRA review. Field assessment for prehistoric and historic archaeological sites. Post-field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

Former Old First Presbyterian Church Cemetery, Phase III Data Recovery, Newark, New Jersey
Project Manager/Field Director
Responsibilities included:

- Over sight of all field activities for 2.2 acre cemetery excavation
- Preparation and implementation of a comprehensive field plan for the locating human remains and associated artifacts
- Hiring and managing a field staff of 35
- Directing and coordinating sub contractor with field staff of 30
- Directing and coordinating 4 backhoes on site to move overburden and back fill site
- Over sight of cataloging all burials and artifacts
- Laboratory analysis of artifacts
- Writing, coordinating and editing of final report

Circulations Improvement Project, Phase IA and IB, Newark, New Jersey
Field director, research coordinator, photographer and lab director for NJ Executive Order 215 Compliance. Phase I background investigation and Phase IB field testing. Work included coordinating conducting research, conducting photographic pedestrian survey site, and conducting field testing. Post field work included laboratory analysis of artifacts and preparation of the final reports. Report preparation included writing sections of the report, preparation and production of final report for submittal.

Edgewater Colony, Phase IB, Edgewater, New Jersey
Field director, research coordinator, and photographer for Environmental Infrastructure Trust Financing Program (EIT). Preparation of a Phase IB prehistoric/historic site investigation. Included the direction of three field technicians digging a total of 139 standard test pits, project coordination with the principal investigator, photographer and the coordination of lab work. Other post-field responsibilities include assisting with the writing, preparation and production of the final report.

Former Central Railroad Terminal, Archaeological Monitoring, Newark, New Jersey
Crew Chief/Project Coordinator Application for project authorization compliance of 6 week archaeological monitoring during demolition of former railroad terminal for SHPO resolution on application for project authorization. Monitor for human remains associated with the Old First Presbyterian Church cemetery, identifying, excavating, cataloging and turn over to mortician for reburial. Post field work included lab analysis of artifacts.

Regional Biocontainment Laboratory – Newark Center, University of Medicine and Dentistry of New Jersey, Newark, New Jersey – Researcher and report writer for cultural resources section of Environmental Assessment in accordance with the requirements of NEPA for the construction of a new Regional Biocontainment Laboratory under a grant form the National Institutes of Health.

USDA, Health-Based Plant Genomics Facility, Phase IA, Cornell University, Ithaca, New York
Researcher and site inspector for cultural resources section of a Section 106 Assessment as part of a NEPA Screening on the Plant Genomics Laboratory Building site. Includes an archaeological assessment and architectural evaluation of the current facility and property.

Newark Downtown Core Redevelopment and Circulations Improvement Plan, Newark, New Jersey
Responsibilities included:

- Preparing a multi-phased strategy for investigating, testing and mitigating the project area
- Conducting preliminary research regarding various aspects of the project area, including possible intact remains within the former First Presbyterian Church cemetery
- Supervising research
- Conducting field photo reconnaissance and preliminary visual assessment of all properties potentially eligible for listing on the State and National Register of Historic Places that may be impacted by the proposed project
- Contributing to the Application for Project Authorization regarding the proposed demolition of five historic structures located within the Four Corners Historic District

NJSCC School Development Program, New Jersey
Crew Chief, researcher, photographer and report writing and production for NJ Executive Order 215 Compliance and NJSCC Guidelines. Participated in the development and redevelopment of 20 new and existing school sites located throughout New Jersey. Responsibilities included:

- Conducting and overseeing background research at the New Jersey Historic Preservation Office, the New Jersey State Museum and local archives
- Conducting field photo reconnaissance and preliminary visual assessment of all properties potentially eligible for listing on the State and National Register of Historic Places that may be impacted by the proposed project
- Preparation and assistance in writing of the Cultural and Historical Resource Assessment section of Environmental Assessment and Environmental Impact Statement Reports and Phase IA background investigations

- Overseeing report production and preparing maps and figures
- Producing for internal departments/clients memos, letters and other documentation outlining potential issues and possible recommendations.

Pen Del Development, Phase IB and II, Pemberton, New Jersey
Field/Laboratory Technician of a Phase I & II prehistoric site investigation/excavation. Field responsibilities also included photographer and mapping excavation locations using GPS equipment. Laboratory Technician responsibilities included; cleaning, cataloging and photographing all artifacts. Other post-field responsibilities included assisting with the preparation and production of the final cultural resource report for submittal to New Jersey HPO.

Field School, Lenape Meadows, Phase II, Basking Ridge, New Jersey
Field and Laboratory Technician for phase II prehistoric excavation. Field work included daily preparation of site, field excavations, documentation of artifact finds, field crew management and the closing up the site for the winter. Laboratory work included cleaning, identifying, cataloging and photographic documentation of all artifacts.

Lithics Identification Project, William Paterson University, New Jersey
Volunteer. Conducted laboratory analysis, identification and cataloging, of over 5,000 stone fragments from the Wallkill River basin in Northern New Jersey, submitted to Dr. Janet Pollak. Research included identifying and cataloging human produced stone flakes and tools vs. naturally altered stone.

SELECTED PUBLICATIONS

Phase IA Cultural Resource Survey, Standard Chlorine Chemical Company Site, Interim Response Action Workplan, Town of Kearny, Hudson County, New Jersey. Michael Audin, RPA, Principal Investigator, 2009. MS on file at NJSHPO, Trenton, NJ.

Phase I Cultural Resource Investigation GAC Adsorption Plant, Pennsauken, Camden County, New Jersey. Michael Audin, RPA, Principal Investigator, 2009. MS on file at NJSHPO, Trenton, NJ.

Historic American Building Survey for the Montauk Theater, Passaic, Passaic County, New Jersey. Michael Audin, RPA, Principal Investigator, 2009. Submitted to the NJ HPO, Trenton, NJ.

Phase I Archaeological Investigation Montgomery Towne Square, Montgomery, Orange County, New York. Ludomir Lozny Principal Investigator, Michael Audin, and Sarah Hlubik, 2007. MS on file at OPRHP, Pebbles Island, NY.

Phase II Archaeological Investigation of the Edgewater Colony, Edgewater, Bergen County, New Jersey. Ludomir Lozny PI, Michael Audin, and Sarah Hlubik, 2007. MS on file at NJSHPO, Trenton, NJ.

Phase IA Archaeological Investigation Bronx River Park, Bronx, Bronx County, New York. Ludomir Lozny PI, Michael Audin, and Sarah Hlubik, 2007. MS on file NYC LPC, New York, NY.

Phase I Archaeological Survey Camp Hidden Falls, Lehman Township, Pike County, Pennsylvania. Ludomir Lozny PI, Michael Audin, and Erol Kavountzis, 2006. Ms on file at PHMC, Harrisburg, Pa.

Phase I Archaeological Investigation Eaton, Wyoming County, Pennsylvania. Ludomir Lozny PI, Michael Audin, and Erol Kavountzis, 2006. Ms on file at PHMC, Harrisburg, Pa.

Phase III Cemetery Excavation, Old First Presbyterian Church, Newark Downtown Core Redevelopment, Newark, Essex County, New Jersey. Michael Audin, Erol Kavountzis, and Sarah Hlubik, 2005. Manuscript on file at NJSHPO, Trenton NJ.

AWARDS
NJ Historic Preservation Award, Innovative Techniques in Archaeology, May 2013

PRESENTATIONS
2011 "New Jersey's Iron Coffins" presented at the Archaeological Society of New Jersey Meeting.

2009 "The Montauk Theater: Last of the Seven Passaic Theaters" presented to a William Paterson University, Class on Material Culture.

2007 "Excavations at the Old First Presbyterian Cemetery in Newark, NJ" presented to William Paterson University's Anthropology Club.

SUMMARY OF PROFESSIONAL ACTIVITIES
Mr. Audin has conducted field work in New Jersey, New York, Pennsylvania, Connecticut, Delaware and West Virginia. He is the author or co-author of over one hundred ten (110) cultural resource reports in New Jersey, New York, Pennsylvania and West Virginia. Also contributed to over 4 Environmental Impact Statements and 30 Environmental Assessments.

PROFESSIONAL DEVELOPMENT
Historic Preservation Research Course, Drew University, February 2005
OSHA 40 Hour Certified HAZWOPER Training (December, 2005) and refreshers
OSHA Site Supervisor Certified (June, 2007) and refreshers
OSHA 10-Hour Construction Certified for New York City, 2012
NJSHPO Cultural Resources Best Practices Workshop, October 2006
Preservation Planning in the Highlands, Drew University, March 2007
Section 106 Essentials Class with ACHP, July 2007
Pennsylvania Department of Transportation, Cultural Resource Handbook Class, April 2010
Federal Communications Training, Washington D.C. June 2011
Cultural Resource Essentials Series, Pennsylvania Historical & Museum Commission, July 2013

PROFESSIONAL AFFILIATIONS
Archaeological Society of New Jersey
Council for Northeast Historical Archaeology
Eastern States Archaeological Federation
Lambda Alpha National Collegiate Honors Society for Anthropology
Middle Atlantic Archaeological Conference
National Trust for Historic Preservation
New York State Archaeological Association (Lifetime Member)
Register of Professional Archaeologists
Society of American Archaeology
Society for Historical Archaeology
Society for Industrial Archaeology
The Society for Pennsylvania Archaeology

KATHERINE McCULLOUGH FRENCH, PH.D., M.PHIL., M.A., R.P.A.

Zooarchaeology
Human Remains
Burial Excavation
Artifact Analysis
Urban Archaeology
NAGPRA Compliance
Field Crew Management
Report Writing and Editing

SUMMARY OF QUALIFICATIONS

Dr. French is a Secretary of Interior qualified Registered Professional Archaeologist with extensive teaching, field, laboratory, museum, and forensic experience in the United States and across Europe. Work experience includes NHPA Section 106 and 110 compliance; Phase I, II, and III Archaeological Assessments; Environmental Assessments; ASMIS site visits and documentation; faunal, human remains, and artifact analysis. She successfully defended her dissertation November 2016 in the Anthropology Department, New York University and will have her doctoral degree conferred January 2017.

EDUCATION

Ph.D.	2017	New York University Anthropology
M.A.	2014	New York University Anthropology
M.Phil.	2008	University of Oxford, St. Cross College European Archaeology
B.A.	2006	Georgetown University Medieval Studies, Classical Archaeology Minor
Field School		Vale and Ridgeway Project, Marcham/Frilford Project, University of Oxford, UK

RELEVANT EXPERIENCE

Mar 2014-present, Fieldwork Director, Archaeology & Historic Resource Services, New York, NY

Experience in all archaeological project stages for a small cultural resource management firm serving the New York City Area, including site assessments, fieldwork, artifact analysis, mapping support, and report writing. Primary responsibility is to supervise all fieldwork activities and archaeology technicians. Often subcontracted to larger historic preservation and engineering firms, including Langan Engineering & Environmental Services and Arch^2, Inc., a historic preservation firm. Duties also include conducting research at New York City Landmarks Preservation Commission and New Jersey State Historic Preservation Offices as well as NHPA Section 106 compliance report writing in close consultation with the Principal Archeologist. Position requires a strong emphasis on building trusting client relationships and communicating archaeological findings to non-specialists. Projects include:

Gowanus Canal Remediation Project, Brooklyn, NY, Oct 2016 to present
Conducting Phase II archaeological monitoring for debris removal and dredging of the National Register eligible nineteenth century Gowanus Canal. Canal is currently a Superfund site and the remediation is coordinated by the US Environmental Protection Agency.

Nissim Avenue, Bordentown, NJ, Nov 2016 to present
Assisted with Phase I survey of archaeological resources, including analysis of archaeological sensitivity, Phase IB shovel testing in areas of prehistoric sensitivity, and post-excavation laboratory work, in advance of residential development. Project area is included in the Abbott Farm National Historic Landmark.

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KATIE.FRENCH@AHRSERVICES.COM * CELL (845) 541-0043

Riverside Buildings 4 & 5, New York City (with Langan Engineering), Apr 2014 to Jun 2016
Supervised up to seven field technicians responsible for archaeological monitoring, Phase IB shovel testing in areas of prehistoric sensitivity, and post-excavation laboratory work for a multimillion dollar development in Midtown Manhattan. Drafted memoranda and final reports for compliance with the New York City Landmark Preservation Commission's restrictive declaration.

FedEx Distribution Facility, Montgomery, Orange County, NY Supplemental Phase IB (with Langan Engineering), Feb 2016
Monitored exploratory machine excavation of historic, nineteenth century dairy farm complex in Orange County. Sampled and recorded a number of historic features, including fence lines, well, privy, barn foundations, and homestead foundations. Supervised machine operator and assisting field archaeologist and assisted in preparation of report for submission.

Deerpark Substation Phase IB, Orange County, New York, Mar 2016
Supervised fieldwork for supplemental Phase IB. Excavated 15 shovel tests in area of prehistoric sensitivity and assisted in preparation of report for submission.

Lafayette Gardens Excavation Monitoring, Jersey City, NJ (With Arch^2), Jul 2015, Jan 2016
Monitored building foundation trench excavation through location associated with the National Register listed Morris Canal.

Pavilion at Locust Manor Phase IA/IB, Jamaica, Queens, NY, May-Jun 2015
Contracted by the D&F Development Group. Conducted background research including maps and record search to determine prehistoric and historic sensitivity. Supervised mechanical excavation of exploratory trench and hand excavation of test pits to test for prehistoric and historic archaeology. Co-wrote combined Phase IA/IB report, on file with New York City Landmarks Preservation Commission.

Interstate Boulevard Phase IB, South Brunswick Township, NJ (with Langan Engineering), Apr-May 2015
Supervised field crew of up to five field technicians excavating over 300 shovel test pits in an area of prehistoric and historic sensitivity. Co-wrote Phase IB report, on file with New Jersey SHPO.

Princeton Pike Phase IB & Phase II, Lawrence Township, NJ (with Langan Engineering), Sep 2014, Mar 2015
Conducted subsurface testing for prehistoric cultural resources in advance of proposed road widening work alongside Princeton Pike and Lewisville Road. Co-wrote Phase IB and Phase II compliance reports on file with New Jersey SHPO.

Corona Avenue, Queens, NY, Aug-Sep 2014
Supervised testing for human remains in a historic cemetery site. Development is currently in mediation with descendent community after identifying nineteenth century burials.

Amtrak New Jersey High Speed Rail Improvement Project (NJHSRIP), Middlesex and Mercer Counties, NJ (with Arch^2), Apr & Aug 2014, Jul 2015
Monitored mechanical excavation in areas of high prehistoric sensitivity for new catenary pole installation on the Northeast Corridor, the rail line connecting New York City and Trenton, New Jersey.

Prallsville Mill Complex, Stockton, NJ (with Langan Engineering), Aug 2014
Monitored mechanical excavation for sewer, water, and electrical lines for new bathroom facility in Historic District along the Delaware and Raritan Canal.

The Basilica of St. Patrick's Old Cathedral, New York City, Feb 2014
Monitored hand excavation for mausoleum foundation in historic cemetery included on National Register. Identified both human and animal skeletal remains during the course of excavation as well as high density of nineteenth century artifacts.

Jan 2011-Dec 2012, Visiting Researcher, Office of the Chief Medical Examiner, New York, NY
Training and research in histological analysis of human bone, focusing on the preparation of bone thin-section slides and human/non-human osseous tissue differentiation.

Jul 2011, Field Archaeologist, Ecology of Crusading Project, Multiple Sites, Poland
Teutonic Order crusader sites with an international team with particularly attention paid to environmental evidence.

May 2011-Aug 2011, NAGPRA Intern, Denver Museum of Nature and Science, Denver, CO
Conducted archival research and physical analyses of the human skeletal collection with no contextual information.

Jul 2006-Jul 2010, Staff, Vale & Ridgeway Project & Training Excavation, Marcham/Frilford, UK
Trench Supervisor 2010; Assistant Trench Supervisor 2006-2007. Responsible for teaching basic excavation principles to Undergraduate and Continuing Education students from the University of Oxford and other international university programs during the summer field season.

Apr 2010-Jun 2010, Criminalist, Office of the Chief Medical Examiner, New York, NY
Phase III World Trade Center PHR (Potential Human Remains) Recovery Project. Member of sifting team on mobile platform searching sediments excavated from Ground Zero, Lower Manhattan for 9/11 victim remains. Experience working in human remains recovery in HazMat gear with half-face respirator.

Jan 2009-Jun 2010, Project Researcher, University of Nevada – Reno, Multiple Locations
Contracted as an educational partner stationed at multiple National Park properties to survey and report archaeological and cultural resources in prescribed burn units. Coordinated with Tribal Representatives and fire personnel to ensure all resources could be protected or damage mitigated during fire events. Author and co-author of fieldwork reports prepared for the National Park Service (NPS), listed below under Publications and Research Projects. Projects included:

Fieldwork Director, Whiskeytown National Recreation Area. Assumed responsibility for an ongoing, significantly delayed contract. Worked closely with Klamath Network Fire Archaeologist Joe Svinarich to finish fieldwork and to get the project back on an acceptable timeline. Supervised one NPS Intern who assisted with site visits and mapping support. In total, crew pedestrian surveyed over 3600 acres and recorded 18 new historic archaeological sites. Prepared and presented compliance report to the Park's cultural resource specialists and fire management personnel.

Fieldwork Director, Crater Lake National Park. Led field crew consisting of NPS Intern and Tribal Monitor from the Klamath Confederated Tribes. Crew pedestrian surveyed nearly 5000 acres over a two-month field season and recorded ten new archaeological sites, both prehistoric and historic. Prepared and presented compliance report to the Park's cultural resource specialists and fire management personnel.

Sep 2008-Dec 2008, Intern, Fire Archaeology, National Park Service, Whiskeytown, CA
Internship with National Park Service, funded by the National Council for Preservation Education, Cornell University. Duties include surveying in rough terrain, GPS, photography, archiving, and report preparation in Whiskeytown National Recreation Area.

Jul 2005, Student, Oxford University Archaeology Training Excavation, Marcham/Frilford, UK
Participated in a two-week field school excavating a Roman temple complex.

Jul 2004, Student, Bamburgh Research Project and Field School, Bamburgh, UK
Served as a volunteer excavator at an Anglo-Saxon excavation site in Northumbria. Gained experience excavating human remains at a seventh and eighth century cemetery.

JOB RELATED TRAINING

OSHA 40 Hour HAZWOPER Training, completed Jul 2015, refresher Jul 2016

SAA Fundamentals of Budgeting for Archaeology Projects Online Course, completed Mar 2015

OSHA 10 Hour Construction Training, completed Mar 2014

Amtrak Contractor Orientation Safety Course, completed Mar 2014

Trained READ (Federal Inter-Agency Resource Advisor)
In May 2009 completed US Federal Interagency training at Yosemite National Park in Cultural Resource Advising within the Incident Command System during emergency incidents

Comparative Osteology
Expert in fragmentary human skeletal identification, faunal identification, and interpretation of skeletal remains.

Computer Skills
Fluent in Windows and Macintosh Operating systems, Microsoft Office Suite, Adobe Acrobat, Adobe Photoshop, and SPSS statistical analysis software. Coursework and professional experience with Adobe Illustrator, ArcGIS 10, R open source statistical software, Trimble and Garmin GPS units

RESEARCH GRANTS AND FUNDING

Jun 2016-Jul 2016, Global Research Institute Dissertation Writers Fellowship, New York University - Berlin
Funded summer program for final stage dissertation writers at the New York University Global Campus in Berlin, Germany

Sep 2014-May 2015, Lane Cooper Fellow, Graduate School of Arts and Science, New York University
Received $25,000 research fellowship from the Graduate School of Arts and Science for research on a pre-Renaissance doctoral dissertation topic.

Sep 2009-May 2014, MacCracken Fellow, New York University
Five years of full tuition, health insurance, and living stipend by the NYU Graduate School of Arts and Sciences

Jan 2013-May 2013, Global Research Institute Fellowship, New York University – London
One semester of funding for dissertation research while a researcher in residence at New York University – London's Global Research Institute.

Jul 2011, Antonina S. Ranieri International Scholars Fund Grant, New York University
Travel grant in support of summer fieldwork in England to participate in the Ecology of Crusading Project's excavations in Poland

Jul 2010, Goodwin-Salwen Archaeological Fellowship, New York University
Travel grant in support of summer fieldwork in England to participate in the Vale & Ridgeway Project's excavation at Marcham/Frilford

Oct 2006-Jun 2008, Healy Scholar for study at St. Cross College, University of Oxford
Awarded Georgetown University's Healy Fellowship: two years of full tuition with travel and housing

stipend to pursue a master's degree

TEACHING EXPERIENCE

Sept 2010-Present, Adjunct Instructor, Anthropology, New York University

Lead instructor for *Archaeology: early societies and culture* undergraduate course, Summer 2012. Laboratory instructor for *Archaeology: early societies and culture,* four semesters. Course assistant for *Interpreting the Human Skeleton* graduate-level course, one semester. Course assistant for *Faunal Analysis* graduate-level course, three semesters

Jul 2010, Trench Supervisor, Vale and Ridgeway Project and Training Excavation, Marcham, UK

Taught basic excavation principles to Undergraduate and Continuing Education students from the University of Oxford and other international university programs

PROFESSIONAL AFFILIATIONS

Member, British Association for Biological Anthropology and Osteoarchaeology (Since 2014)
Member, International Committee of Archaeozoology (Since 2012)
Member, Medieval Academy (since Feb 2011)
Member, Register of Professional Archaeologists (since Jul 2010)
Member, Society for American Archaeology (since Jan 2010)
Member, Phi Beta Kappa (inducted May 2006)
Member, Alpha Sigma Nu (inducted May 2005)

CONFERENCE PRESENTATIONS

French, K.M. 2016. "A Multiscalar Approach to Medieval Cremains: From bone microstructure to Regional Trends." *81st Annual Meeting for the Society for American Archaeology Apr 6-10, 2016.* Invited Podium Session: North and South: New Directions in Medieval European Archaeology.

French, K.M., V. Dominguz, and S. Mavroudas. 2015. "Prevalence of Drifting Osteons across Mammal Species. *84th Annual Meeting American Association of Physical Anthropologists, Mar 25-28, 2014.* Poster Presentation, Bioarchaeology Session.

French, K.M. 2014. "Graveside Feasting in Anglo-Saxon England: pagan tradition and Christian taboo." *49th International Congress on Medieval Studies May 8-11*, *2014,* Foodways Session I.

French, K.M. 2014. "Interspecies Cremations in the Pagan World: local practice or multiregional trend?" *79th Annual Meeting for the Society for American Archaeology Apr 23-27, 2014*, Bioarchaeology Session.

McCullough, K. 2012. "Theorizing Paganism in the Early Medieval Period." *Theoretical Archaeology Group (TAG) USA*. Buffalo, NY. Theory in Medieval Archaeology Session. Given May 24, 2012

McCullough, K. 2011. "Is there a single Early Anglo-Saxon Culture? Regional Differences in England *c.*450-600 A.D. *The Culture of Early Anglo-Saxon England.* Anglo-Saxon Studies Colloquium*,* New York, NY, New York University. Given Apr 29, 2011.

McCullough K. 2010. "Cattle as Wealth in Anglo-Saxon England. *What is Bettre than Gold?: Economies and Values in the Middle Ages.* Columbia University Medieval Guild, New York, NY, Columbia University. Given Oct 22, 2010.

PUBLICATIONS AND RESEARCH PROJECTS

French, K.M. 2016. *Multispecies Cremations in a Transitional World: evidence from early medieval England.* Unpublished Ph.D Dissertation. New York University.

Adams, Bradley and Pam Crabtree. 2011. *Comparative Skeletal Anatomy: a photographic atlas for medical examiners Second Edition*.

- Photo Editor for online supplement, labeling bone landmarks using graphic editing software. Supplement available: http://booksite.elsevier.com/9780123884374/zoomify.php

Kamesh, Z, Gosden, C. and Lock, G. (with contributions by E. Brophy, R. Coe, R. Glyde, J. Harrison, J. Kinory, P. Levick, K. McCullough, S. Ravin, J. Smallridge, and J. Walford) 2011. *The Vale and Ridgeway Project: Excavations at Marcham/Frilford: 2010 interim report*. Available at <http://www.arch.ox.ac. uk/VRP1.html>.

National Park Service Publications (Internal Publications; Redacted Copies Available through FOIA Requests):

- McCullough, K. 2010. *Cultural Resources Survey of Fuel Treatment Areas at Crater Lake National Park.* Report prepared for Crater Lake National Park.
- McCullough, K. 2009. *Cultural Resources Survey of Fuel Treatment Areas – Whiskeytown National Recreation Area.* Report on file at Whiskeytown N.R.A.
- Ogle, H. and K. McCullough. 2009. *Archeological Inventory of Fuel Treatment Units at Lassen Volcanic National Park.* Report on file at Lassen Volcanic National Park.

McCullough, K. 2008. Food Distribution Systems in Later Anglo-Saxon *Burhs*: the faunal evidence. Unpublished M.Phil Thesis. University of Oxford.

McCullough, K. 2006. The use of stable isotope analysis in studying the impact of the Anglo-Saxon migrations on the population of Post-Roman Britain. Unpublished Bachelor's Honors Thesis. Georgetown University.

APPENDIX B
RELEVANT COMMUNICATIONS WITH LPC

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ARCHAEOLOGY

Project number: DEPARTMENT OF CITY PLANNING / 16DCP156R
Project: BAY ST CORRIDOR PROJECTED SITES
Date received: 4/3/2017

Comments: as indicated below. Properties that are individually LPC designated or in LPC historic districts require permits from the LPC Preservation department. Properties that are S/NR listed or S/NR eligible require consultation with SHPO if there are State or Federal permits or funding required as part of the action.

This document only contains Archaeological review findings. If your request also requires Architecture review, the findings from that review will come in a separate document.

Comments: LPC has reviewed B 487 Lot 100 and no longer recommends that an archaeological documentary study be completed for this lot. However, we still recommend that an archaeological documentary study be completed for B 488 L 65.

The LPC is also in receipt of the Historic and Cultural Resources Chapter dated March 20, 2017. We note that it states that a Phase 1A will be completed for both lots so should be amended to reflect the findings above although we note that Figure 7-1: Archaeological Sensitive Area does not show any sensitive areas.

4/5/2017

SIGNATURE DATE
Amanda Sutphin, Director of Archaeology

File Name: 31672_FSO_ALS_04052017.doc