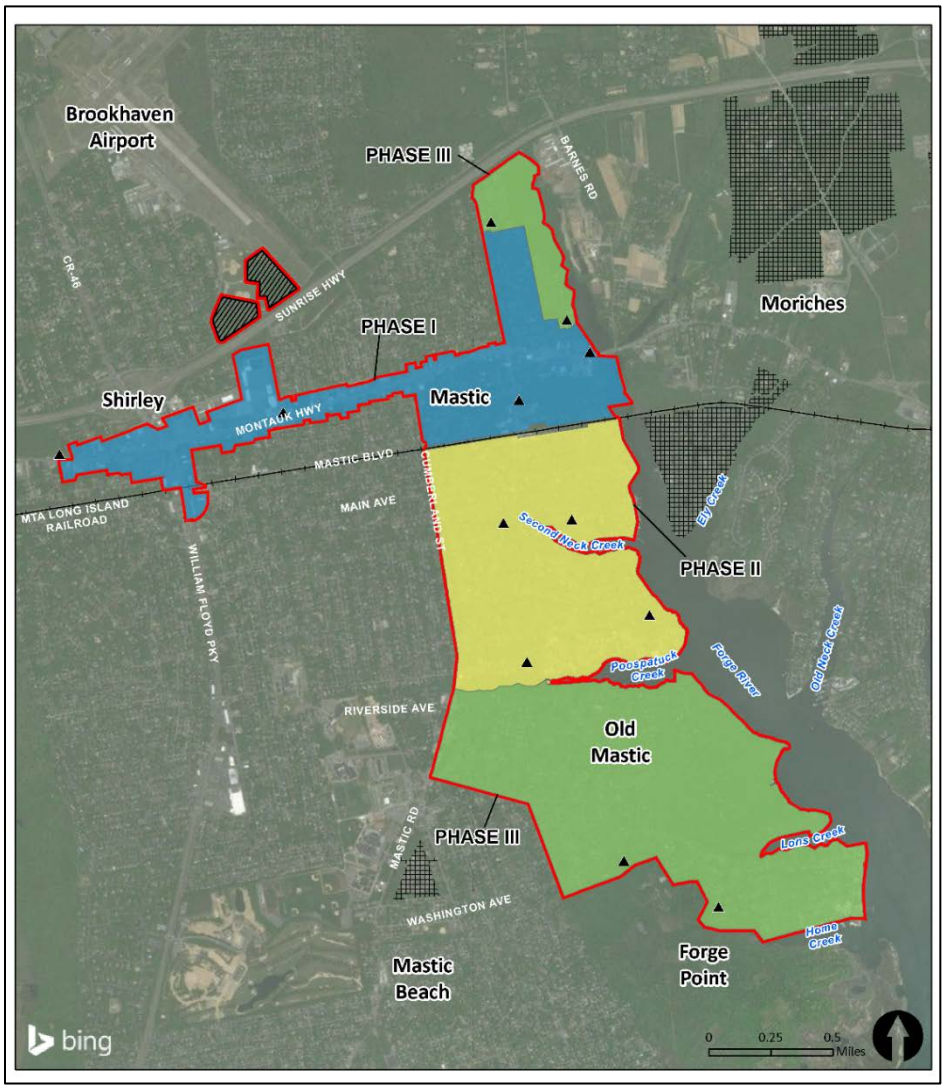

Forge River Watershed Sewer Project
Draft Environmental Impact Statement
Appendix B, Part 2 of 3
Town of Brookhaven, Suffolk County, New York

May 2018

Prepared pursuant to the New York State Environmental Quality Review Act

SEQRA Lead Agency:
NY Governor's Office of Storm Recovery
25 Beaver Street, 5th Floor
New York, NY 10004

This page intentionally left blank.

APPENDIX B.2: CULTURAL RESOURCES SURVEY

This page intentionally left blank.

PHASE IA ARCHITECTURAL RESOURCE ASSESSMENT
FORGE RIVER WATERSHED SEWER PROJECT

Town of Brookhaven, Suffolk County, New York

Prepared for:

Governor's Office of Storm Recovery
99 Washington Avenue, Suite 1224
Albany, New York 12260

Prepared by:

Louis Berger
20 Corporate Woods Blvd.
Albany, New York 12211

Draft Report
June 21, 2016

Management Summary

Involved City, State, and Federal Agencies	U.S. Federal Emergency Management Agency New York State Division of Homeland Security and Emergency Services New York State Governor's Office of Storm Recovery U.S. Department of Housing and Urban Development U.S. Fish and Wildlife Service U.S. Environmental Protection Agency Federal Aviation Administration New York State Office of Parks, Recreation and Historic Preservation New York State Department of Environmental Conservation New York State Department of State Metropolitan Transportation Authority Long Island Rail Road Suffolk County Town of Brookhaven
Project Type and Funding	Forge River Watershed Sewer Project, Town of Brookhaven, Suffolk County, NY (15PR01821), CDBG-DR
Cultural Resource Survey Type	Phase IA Architectural Resource Assessment
Location Information	Project area is located in the Town of Brookhaven, Suffolk County. It consists of 3,662 tax parcels in the Montauk Highway Business Corridor from just west of William Floyd Parkway through Mastic and Shirley east to the Forge River, as well as existing residential areas within the two-year groundwater travel time in the western part of the Forge River watershed. Also included is a new sewage treatment plant located at the Town of Brookhaven's Calabro Airport.
Reconnaissance Survey Area	Approximately 910 hectares (2,250 acres)
USGS 7.5-Minute Quadrangle Map	*Moriches, NY* (USGS 1967)
Architectural Methodology	
Methods Used	Pedestrian reconnaissance survey
Results of Reconnaissance Survey	
No./Name(s) of Architectural Resources Identified	None
Recommendations	Phase IB survey in Moss Lots area if existing contributing landscaping features will be disturbed as a result of the project.
Report Authors	The Louis Berger Group, Inc. – Camilla Deiber and Rebecca Brodeur, RPA
Date of Report	June 21, 2016

Abstract

Louis Berger completed a Phase IA architectural resource assessment for the Forge River Watershed Sewer Project in the Town of Brookhaven, Suffolk County, New York. The New York State Governor's Office of Storm Recovery is proposing to fund the quality improvement of groundwater baseflow to the Forge River as it relates to coastal resiliency and the reduction of nitrogen loading to the water bodies as part of the New York State Sandy Recovery efforts funded through the Community Development Block Grant-Disaster Recovery program.

The proposed quality improvement area (the project area) is composed of 3,662 individual tax lots that encompass approximately 910 hectares (2,250 acres). The project area generally extends along the Montauk Highway Business Corridor from just west of the William Floyd Parkway east to the Forge River, and includes most of the densely developed residential areas within the two-year groundwater travel time to the Forge River. Infrastructure includes a combination of gravity sewers and low-pressure sewers to provide wastewater collection for the proposed Mastic-Shirley Sewer District. Included in the project area are ten drainage areas identified for proposed pump stations and a new sewage treatment plant. Sanitary wastewater from the proposed Mastic-Shirley Sewer District will be conveyed to the new sewage treatment plant located at the Town of Brookhaven's Calabro Airport. The Advanced Wastewater Treatment facility (within the project area) includes 5.2 hectares (12.9 acres) plus an expansion area of 6.9 hectares (17 acres) to the east.

The architectural resource assessment consisted of background research, including a review of previously surveyed architectural resources in the project area, and a pedestrian reconnaissance survey of the project area. The goal was to assess the project area's potential to contain architectural resources eligible for the State/National Register of Historic Places. The pedestrian reconnaissance survey was conducted on April 13, 2016.

No previously surveyed resources had been determined eligible or appear to be eligible for listing in the State/National Registers. The Calabro Airport, which is the site of the proposed sewage treatment plant, was determined not eligible. The background research and reconnaissance survey revealed one potentially eligible dwelling: the Moss Lots Caretaker's Cottage. The area associated with this late nineteenth-century estate, which was not accessible for survey, is likely to contain additional potentially eligible properties. The pedestrian reconnaissance survey found that resources in the rest of the project area were constructed in the mid- to late twentieth century and had been altered, including synthetic siding, replacement windows, and, in some cases, enclosed porches.

The installation of gravity and low pressure sewers in the project area has very little potential to adversely affect historic architectural resources as the sewers will be constructed within the existing right-of-way. None of the proposed pump stations is located in the area historically associated with the Moss Lots estate, so those potentially eligible resources will not be affected by the project. There is a potential for an adverse effect to resources in the Moss Lots area if installation of sewer lines or other project activities in this area disturbs the existing landscape features, such as fences, walls, and other features, that may be contributing to historic resources. Aerial photographs show that some of the residences in this area have formal plantings of trees along driveways, circular driveways, and other features that may be significant.

Table of Contents

Page

Management Summary i
Abstract ii
List of Figures iv
List of Tables iv
List of Photographs v

I. PROJECT INTRODUCTION AND DESCRIPTION 1

II. BACKGROUND RESEARCH 4
A. Previously Surveyed Properties 4
B. Previous Impacts and Current Land Use 5
C. Historic Context 5

III. RECONNAISSANCE SURVEY 11
A. Field Methods 11
B. Results 11
1. Overall Project Area 11
2. Moss Lots 30
C. Summary 30

IV. CONCLUSIONS 31

V. REFERENCES CITED 32

List of Figures

Page

1. Location of the Project Area 2
2. Moss Lots on Dana Estate 7
3. Map of Mastic Park Development, ca. 1940 (Spooner 2016c) 8
4. Moriches Army Service Map, Mastic Park Area, 1944 9
5. Moriches Army Service Map, Moss Lots Area, 1944 10
6a-c. Architectural Resources in the Project Area 12-14

List of Tables

1. Previously Recorded Resources in the Project Area 4

List of Photographs

Page

1. Overview of Oceanview Drive, View Southeast 15
2. Overview of Oceanview Drive, View North 15
3. Overview of Oceanview Drive, View Northeast 16
4. House at 7 Shore Drive, View Northwest 16
5. Overview of Jeanatta Avenue, View East 17
6. Overview of Dover Avenue, View West 17
7. Overview of Cumberland Street, View North 18
8. Overview of Robinwood Street, View North 18
9. Google Street View of 5 Lafayette Avenue, in the Vicinity of an 1873 MDS, View Northeast 19
10. Overview of Clark Street, View East 19
11. Overview of Lafayette Avenue, View North 20
12. Overview of Dana Avenue, View North 20
13. Overview of Montgomery Avenue, View South 21
14. Overview of Montauk Highway, View West 21
15. House at 46 Shore Drive, View Southeast 22
16. Development and Front Yard Spaces on Franklin Avenue, View South 22
17. Overview of Woodmere Drive, View North 23
18. Mastic Beach Showing Shore Drive, View East 23
19. Mayfield Drive and Pineway Avenue, Showing Typical Landscaping, View East 24
20. Overview of Spar Drive, View Northeast 24
21 Typical House on Wavecrest Drive, View Southeast 25
22 Overview of Wavecrest Drive, View East 25
23 Overview of Vista Place, View Northwest 26
24 Overview of Washington Avenue, View Southwest 26
25 Overview of Riverside Avenue, View East 27
26 Overview of Mayfield Drive, View Southwest 27
27 Overview of Pineway Avenue, View Southeast 28
28 Overview of Orchid Drive, View Southwest 28
29. Overview of Pineway Avenue, View Southeast 29
30. Overview of Pineway Avenue Between Claremont and Biltmore Drives, View East 29
31. Moss Lots Caretakers Cottage on Riverside Avenue, View South 30

I. Project Introduction and Description

Louis Berger completed a Phase IA architectural resource assessment for the Forge River Watershed Sewer Project in the Town of Brookhaven, Suffolk County, New York (Figure 1). The New York State Governor's Office of Storm Recovery (GOSR) is proposing to fund quality improvements to groundwater baseflow to the Forge River as it relates to coastal resiliency and the reduction of nitrogen loading to the water bodies as part of the New York State Sandy Recovery efforts funded through the Community Development Block Grant-Disaster Recovery (CDBG) program. The survey included background research and pedestrian reconnaissance (archaeological and architectural). The goal was to assess the project area's potential to contain architectural resources eligible for the State/National Register of Historic Places (SR/NRHP).

The proposed quality improvement area (the project area) is composed of 3,662 individual tax lots that encompass approximately 910 hectares (2,250 acres). The project area generally extends along the Montauk Highway Business Corridor from just west of the William Floyd Parkway east to the Forge River, and includes most of the densely developed residential areas within the two-year groundwater travel time to the Forge River. Infrastructure includes a combination of gravity sewers and low-pressure sewers to provide wastewater collection for the proposed Mastic-Shirley Sewer District. Included in the project area are ten drainage areas identified for proposed pump stations and a new sewage treatment plant. Sanitary wastewater from the proposed Mastic-Shirley Sewer District will be conveyed to the new sewage treatment plant located at the Town of Brookhaven's Calabro Airport. The Advanced Wastewater Treatment facility (within the project area) includes 5.2 hectares (12.9 acres) plus an expansion area of 6.9 hectares (17 acres) to the east.

The low-pressure sewers proposed to survey the Mastic-Shirley Sewer District will consist of approximately 914 meters (3,000 linear feet) of parallel 7.6-centimeter (3-inch) diameter DR-11 HDPE low-pressure mains and approximately 2,134 meters (7,000 linear feet) of singular 7.6-centimeter (3-inch) diameter DR-11 HDPE low-pressure mains. The low-pressure sewer mains will be installed approximately 1.8 meters (6 feet) below grade to provide the required clearances between existing utilities. The proposed gravity sewer collection system will consist of approximately 26,731 meters (87,700 linear feet) of 25-centimeter (10-inch) diameter, 1,951 meters (6,400 linear feet) of 30 centimeter (12-inch) diameter, and 1,036 meters (3,400 linear feet) of 51-centimeter (20-inch) diameter DR-18 PVC gravity sewer piping. Gravity sewers will be installed at depths no less than 1.8 meters (6 feet) below grade to provide the required clearances between the existing utilities and maintain the sufficient slope to facilitate a self-scouring velocity within the pipe.

Flow collected in each drainage zone will drain to its own pump station. Each of these sites will occupy a minimum of 232 square meters (2,500 square feet). Additional space may be required at some locations to facilitate site access and storage of materials and equipment during construction. Force mains will be installed at a depth of 1.2 meters (4 feet) below grade.

The area reserved for the treatment facility and future expansion consists of approximately 12 hectares (29.9 acres) of non-contiguous vacant/undeveloped land generally defined by Victory Avenue to the south, Maple Avenue to the west, Dawn Drive and the Dowling College School of Aviation to the north, and the northwest runway approach of the Calabro Airport to the east. The available land on the airport property has been divided into two components. The western component encompasses 5.2 hectares (12.9 acres) and was selected for the site of the treatment facility, paved parking lot, site access driveway, and subsurface recharge pools for disposing of the treated effluent. The remaining 6.9 hectares (17.0 acres) will be reserved for future expansion and/or additional recharge area.

Louis Berger conducted this Phase IA architectural resource assessment in accordance with guidelines and recommendations established by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP), and the *Cultural Resource Standards Handbook: Guidance for Understanding and Applying the New York State Standards for Cultural Resource Investigations* (New York Archaeological Council 2000). The work was performed in accordance with the National Historic Preservation Act of 1966, as amended; Procedures for the Protection of Historic and Cultural Properties (36 Code of Federal Regulations [CFR] 800); the Procedures for Determining Site Eligibility for the National Register of Historic Places (NRHP) (36 CFR 60 and 63); the New York State Environmental Quality Review Act (SEQRA); and Secretary of the Interior's Standards for Archaeology and Historic Preservation (United States

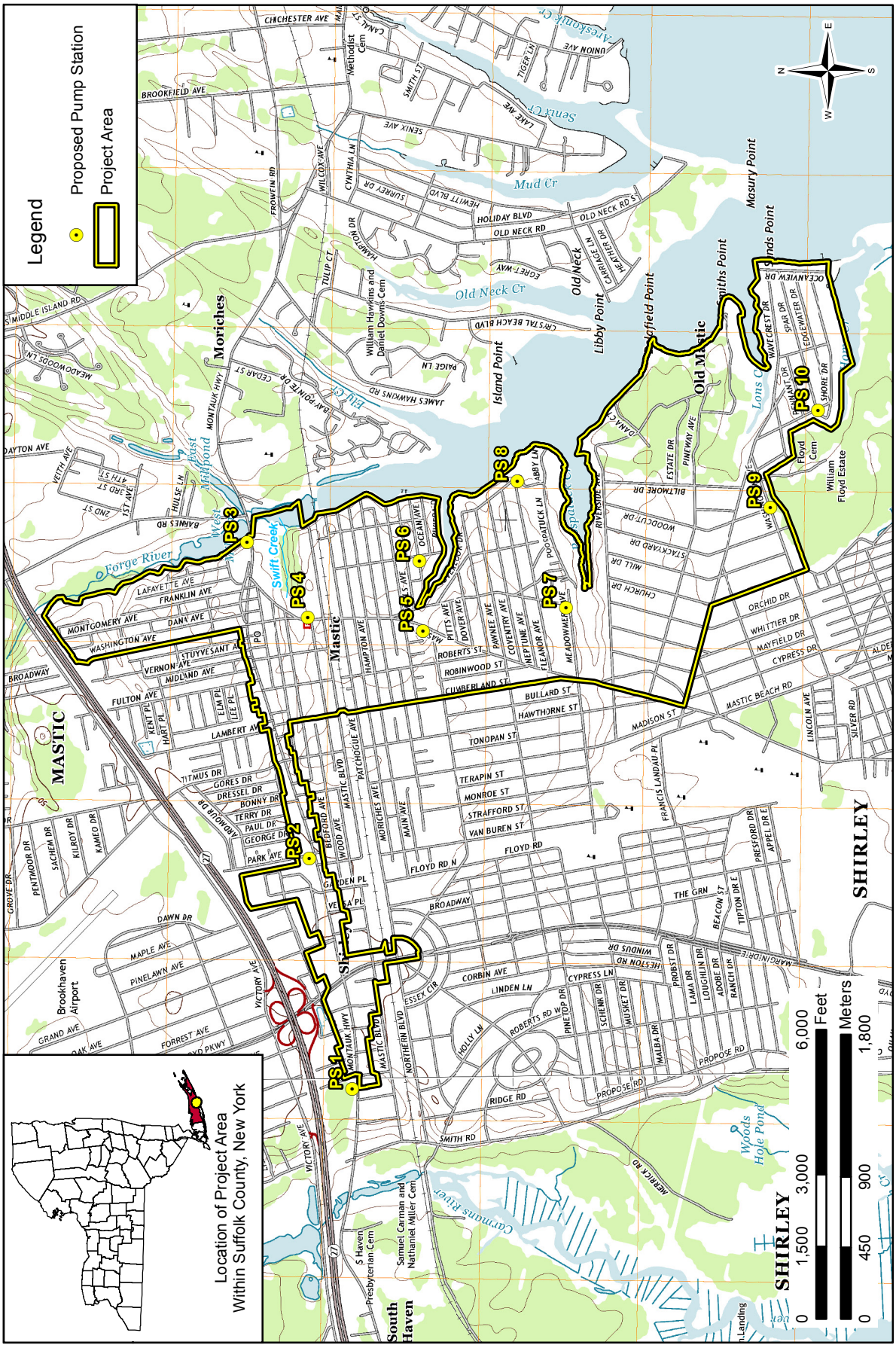

FIGURE 1: Location of the Project Area (USGS Bellport 2013a, Moriches 2013b)

Department of the Interior 1983). All staff who supervised the investigation meet or exceed the standards specified in 36 CFR 66.3(b)(2) and 36 CFR 61.

This report consists of five chapters. Chapter II summarizes the results of the background research conducted for this project. Chapter III presents the results of the pedestrian reconnaissance survey. Chapter IV presents the conclusions and Louis Berger's recommendation regarding future investigations of the project area, and Chapter V contains a list of the references cited.

Louis Berger personnel conducted this survey under the direction of Vice President-Heritage Resources Hope E. Luhman, Ph.D. Louis Berger Field Supervisor Christopher Morine and Archaeologist Rebecca Brodeur, RPA conducted the pedestrian reconnaissance. Louis Berger Architectural Historian Camilla Deiber conducted the background research and historic architectural analysis. Ms. Deiber and Archaeologist Rebecca Brodeur, RPA wrote the report. Principal Editor Anne Moiseev supervised the editing and production of this report, and Principal Draftsperson/GIS Analyst Jacqueline L. Horsford prepared the graphics.

II. Background Research

The Forge River project area encompasses the Montauk Highway corridor from just west of the William Floyd Parkway through Mastic and Shirley east to the Forge River and the residential areas of Mastic on the west side of the Forge River south to Wavecrest and Grassmere drives. The project area contains a mixture of commercial, religious, and residential properties. Commercial properties are concentrated along Montauk Highway, William Floyd Parkway, and Mastic Road. Most of the residential areas appear to date to after World War II with some older areas between Mastic Boulevard and Riviera Drive. The area east of Biltmore Drive has large lots and private roads that contain several buildings associated with late nineteenth-century and early twentieth-century estates.

A. Previously Surveyed Properties

Research was conducted using OPRHP's online Cultural Research Information System (CRIS). Previously recorded architectural resources in the project area are listed in Table 1. Research also included a review of local histories, nineteenth- and twentieth-century maps and plans, and published historical studies. The information helped to develop historic contexts for the project area.

TABLE 1

PREVIOUSLY RECORDED RESOURCES IN THE PROJECT AREA

SITE No.	PROPERTY ADDRESS	DATE	EXISTING DESIGNATION STATUS
10302.002681	172 Somerset Ave	ca. 1960	Not Eligible
10302.003093	25 Abby Lane	1955	Undetermined
10302.003173	104 Mastic Blvd	1970s	Not Eligible
10302.003241	190 Mastic Blvd	ca. 1930	Not Eligible
10302.003254	181A Poospatuck Ln.	ca. 1970	Undetermined
10302.002270	384 Whitter Dr.		Not Eligible
10383.000029	386 Whittier Dr.		Not Eligible
10302.003074	20 Oceanview Dr.	1961	Undetermined
10302.003077	46 Shore Dr.	1958	Not Eligible
10302.003097	31 Oceanview Dr.	1959	Undetermined
10302.003104	67 Edgewater Dr.	1987	Undetermined
10302.003108	53 Oceanview Dr.	1960	Undetermined
10302.003157	42 Shore Dr.	1955	Undetermined
10302.003169	16 Shore Dr.	1937	Undetermined
10302.003192	7 Shore Dr.	1954	Undetermined
10302.003202	22 Wavecrest Dr.	ca. 1920	Undetermined
10302.003206	11 Spar Dr.	1950	Undetermined
10302.003207	21 Shore Dr.	1955	Undetermined
10302.003229	33 Ocean View Dr.	1947	Undetermined
10302.003258	9 Spar Dr.	ca. 1930	Undetermined
10302.003249	Town of Brookhaven Calabro Airport 135 Dawn Drive		Not Eligible

No properties listed in the SR/NRHP are located in the project area. Seven of the 21 previously recorded properties have been recommended as not eligible, including the Calabro Airport that is the site of the proposed sewage treatment plant. The remaining previously recorded properties have not been evaluated with respect to NRHP criteria.

A historic resource that is not included in the CRIS inventory is the Old Mastic Historic District, which encompasses much of what was historically part of the Floyd estate and later the Dana estate. The district was given historic designation by the Town of Brookhaven in 1980. The historic district is currently under the jurisdiction of Mastic Beach, which was incorporated as a village in 2011. The district does not appear to have undergone local review and is not listed in the SR/NRHP.

B. Previous Impacts and Current Land Use

Historical maps indicate little widespread change in the project area until the early to mid-twentieth century. Development was concentrated in a portion of the present-day Montauk Highway between the Forge River and Connecticut (Carmans) River and the southeastern portion of the project area in the vicinity of the Poospatuck Indian Reservation. The remainder of the project area remained forest with a few roads and paths traversing the landscape to large estates located along the coast and shorelines of the Mastic Peninsula. Currently the majority of the project area is suburban residential development with a concentration of commercial properties along the Montauk Highway and William Floyd Parkway.

C. Historic Context

A number of early European explorers surveyed what we now know as Long Island. As early as the sixteenth century, Giovanni Verrazano skirted the south shore of Long Island during an exploratory expedition carried out on behalf of France in 1524 (Bailey 1962). Henry Hudson explored the area in 1609 for the Dutch East India Company. In 1636 the Dutch would establish the first permanent settlement on Long Island when they founded Brooklyn in the western portion of the island, as part of the colony of New Amsterdam (Mazeau 2010:30). In 1639 English settlers established two communities on the east end of the island, Southbold and Southampton. Control of the island by the English and Dutch would remain in dispute for a number of years. For a time, in 1662, the Connecticut colony claimed jurisdiction over the island based on a clause in the charter granting them claim over adjacent islands. In 1664 Richard Nicoll, commissioned Lord Chancellor by the Earl of Clarendon, arrived in the area with 500 soldiers and captured New Amsterdam from the Dutch (Weeks 1955:7). The colony was later renamed New York, and Long Island was brought fully under its jurisdiction.

Early settlers on Long Island subsisted primarily on grains, such as wheat, corn, rye, and oats, and vegetables. Cattle were imported from England in the early 1600s, and sheep were introduced in the area in the mid-seventeenth century. Pork was also considered a staple of the seventeenth century diet (Munsell 1882:44–45). Col. William Smith purchased Mastic from the natives in 1691 and incorporated it under the name St. George's Manor. The territory was divided into a few large farms; the rest of the region remained forest (Bayles 1874).

In the early part of the eighteenth century, transportation on Long Island consisted of travel by boat, or on land via the "Great South Road." This road, commissioned in 1732 and completed in 1735, served as the principal east-west route on Long Island. Smaller local roads, known as "paths," radiated outward from the main road and provided access to waterways, such as the Great South Bay. These roads were also used for driving livestock to clearings near the bay (Munsell 1882:6).

Permanent settlement of what would become Suffolk County did not occur until the mid- to late seventeenth century. At that time central Long Island was occupied by a number of Native American groups, including speakers of the Mohegan-Pequot-Montauk Algonquian language. The area of Brookhaven was occupied by the Patchogue (Pochaug) people (Bernstein and Merwin 2003; Mazeau 2010:30; Salwen 1978). Among the earliest settlements in the Suffolk County area was Setauket, established in 1655 northwest of present-day Mastic and Shirley, on the island's north shore.

Throughout the eighteenth century Suffolk County was inhabited primarily by landowners with large estates, including Richard Woodhull, father of revolutionary patriot Nathaniel Woodhull; William Floyd; and his cousin Richard Floyd II. Nicoll Floyd established his homestead, called Taupeonk, in 1851 on the west bank of Forge River. Besides raising food for subsistence, many landowners in the region operated a variety of enterprises on their farmsteads, such as mills and retail and tool manufacturing businesses. The typical large farms in Suffolk County during the colonial era functioned as "small scale capitalistic enterprises" (Gramly 1977). Slave labor was often used in the operation of the

largest farmsteads (Gramly 1977). Industries were few during the eighteenth century; most farms in the area were nearly self-sufficient.

During the nineteenth century farming continued to dominate the economy of the region. Other than farming, the most important industry to develop was the cordwood industry, followed by the whaling and fishing industries, which led to an increase in the region's settlement. Agricultural activity gradually declined, a trend that continued into the twentieth century. By 1960 only 2 percent of the population worked in agriculture (United States Department of Agriculture 1975:94). This decline included the once thriving cranberry industry, which had disappeared by the 1970s.

The gradual trend toward suburbanization on Long Island began in the early nineteenth century when reliable steam ferry service allowed the more prosperous Wall Street workers to get to homes in Brooklyn Heights. After the Civil War streetcar suburbs sprawled out onto the plains farther to the east. Waves of immigrants spilling over from New York City (mostly Italian-Americans, Irish-Americans and Jewish-Americans) further stimulated urban growth in the eastern sections of Brooklyn. In the 1920s and 1930s, Long Island began a complete transformation from backwoods and farms to become the paradigm of the American suburb. With Long Island Parks Commissioner Robert Moses leading the way, a number of parkways began to span the entire island, along with various state parks. The shoreline of Long Island very quickly became New York City's retreat (Molle 1982).

At the end of the nineteenth century, new estates were established along the coastal areas of the Mastic Peninsula. In 1880 William Buck Dana established a large estate known as "Moss Lots" on land that was formerly part of the Floyd estate. Mr. Dana was a lawyer for the Floyd family and helped divide the immense 4,000-acre estate among the five Floyd children (Mastic Peninsula Historical Society 2016). In 1882 Dana built a sprawling Tudor Revival mansion in what is now known as the Old Mastic area (Figure 2). At the same time Dana constructed a Tudor Revival cottage to provide housing for the caretaker of the estate. The mansion was vacated in 1965 and destroyed by fire around 1970; however, the caretaker's cottage remains, located at the end of Riverside Drive. Numerous guest cottages continued to be constructed into the twentieth century on the Dana estate.

Prominent businessmen, such as author Henry Lanier and publisher J.F. Knapp, began to purchase land from these family estates to establish summer homes along the coastal areas in the 1910s. In 1911 developer Fred J. Quimby purchased land from the Smith estate to develop the sprawling 10,000-acre Tangiers development (Mastic Peninsula Historical Society 2016). By 1915 Quimby had filed for bankruptcy, and the development was never built. In the 1920s Arthur and Warren Smadback constructed the Mastic Park residential development on land purchased from the John Frost, William Dana, and August Floyd estates located from the Montauk Highway to the bay near Shinnecock Avenue (Mastic Peninsula Historical Society 2016; Spooner 2016c) (Figure 3). The Smadback brothers, along with the local newspaper, the *Brooklyn Citizen*, used subscriptions to the paper as a pitch to sell lots of land for $55 each (Spooner 2016a). In 1926 the *Brooklyn Citizen* expanded the development with the purchase of the J.B. Lawrence estate for the Mastic Beach summer resort development along the Montauk Branch of the Long Island Railroad (Mastic Peninsula Historical Society 2016a).

After World War II Long Island's population skyrocketed, stimulated by more and more reliable transportation systems, with development following the establishment of the parkway system, allowing ever increasing numbers of workers in New York City to commute to more affordable and spacious living areas. On the Mastic peninsula Walter Shirley purchased as much land as he could on the west side of the Mastic Beach development for his own housing development, which he named after himself (Spooner 2016a). While the coastline along the Great South Bay was developed, the areas between Mastic Beach and Mastic Park remained undeveloped (Figures 4 and 5). They did not remain undeveloped for very long, as aerial photographs from 1947 show a network of streets and scattered dwellings.

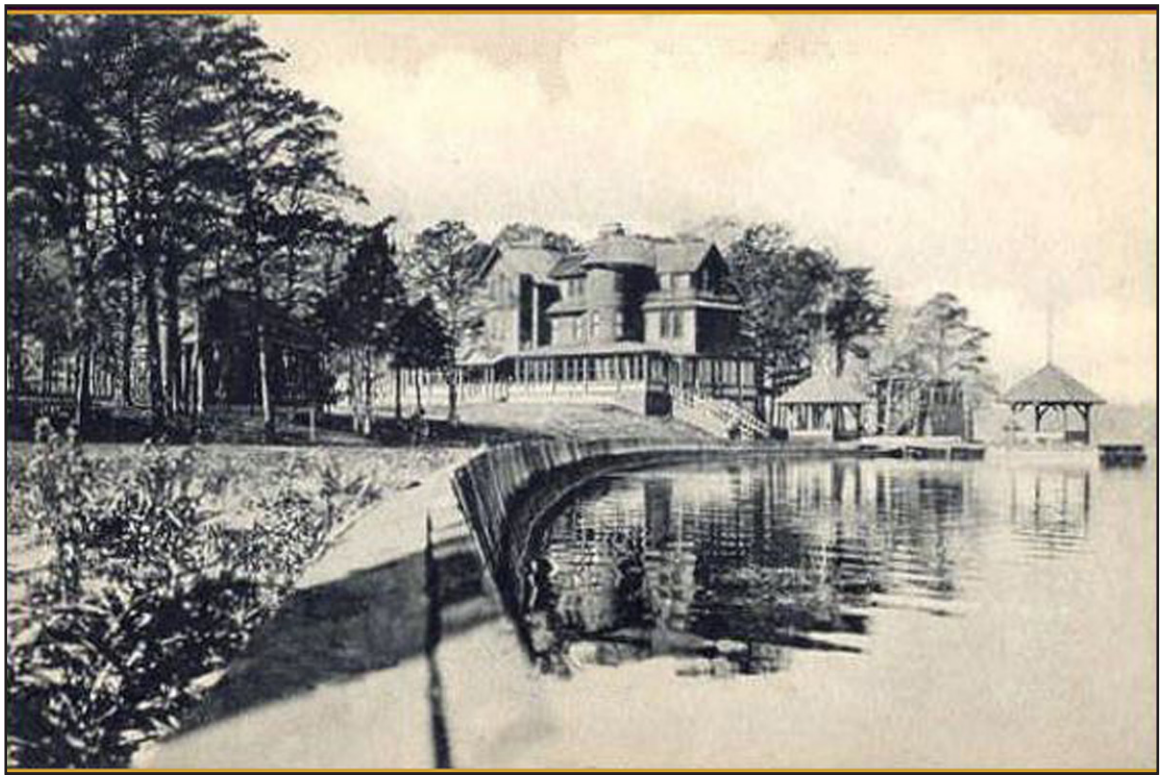

FIGURE 2: Moss Lots on Dana Estate (Spooner 2016d)

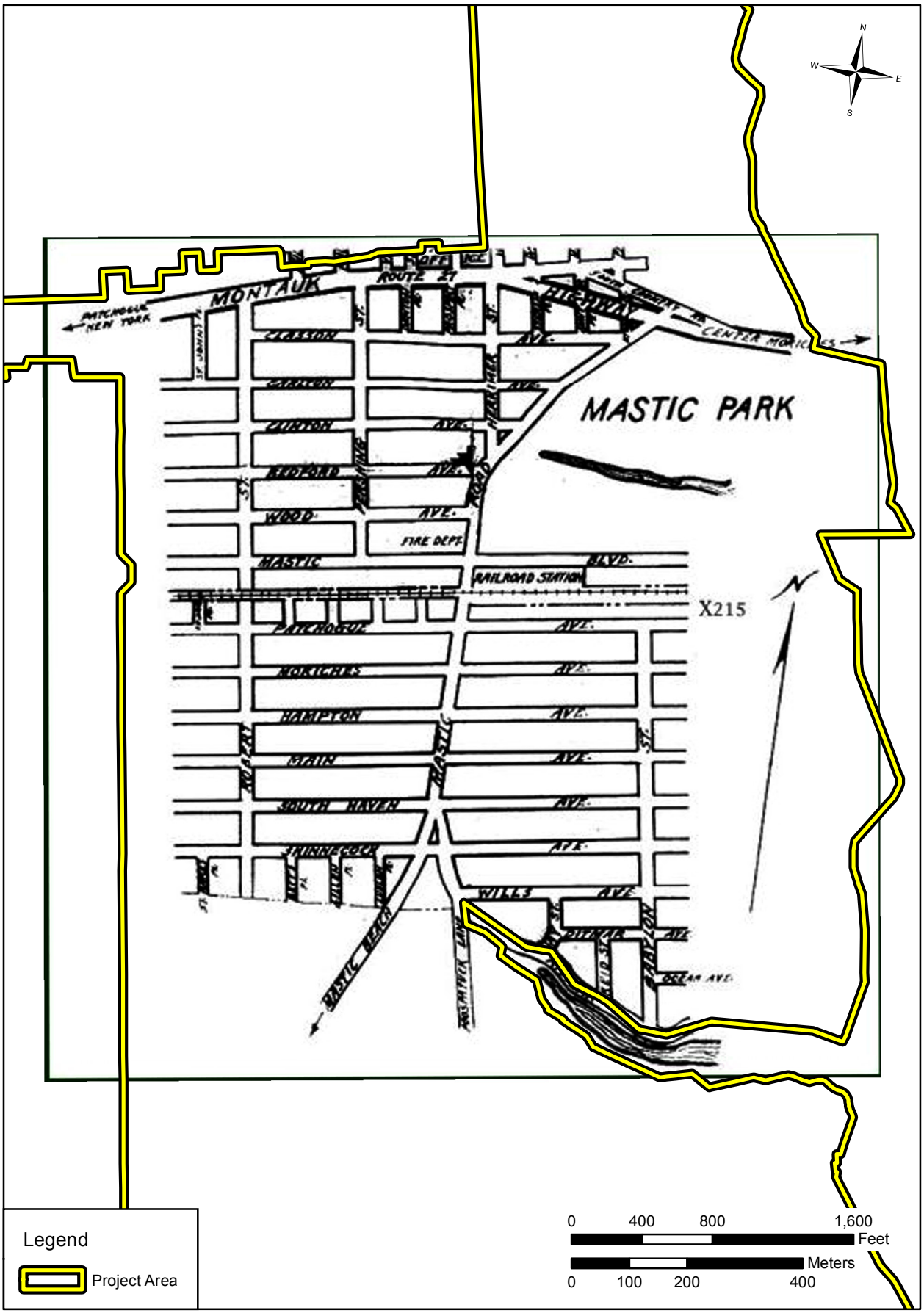

FIGURE Map of Mastic Park Development, ca. 1940 (Spooner 2016c)

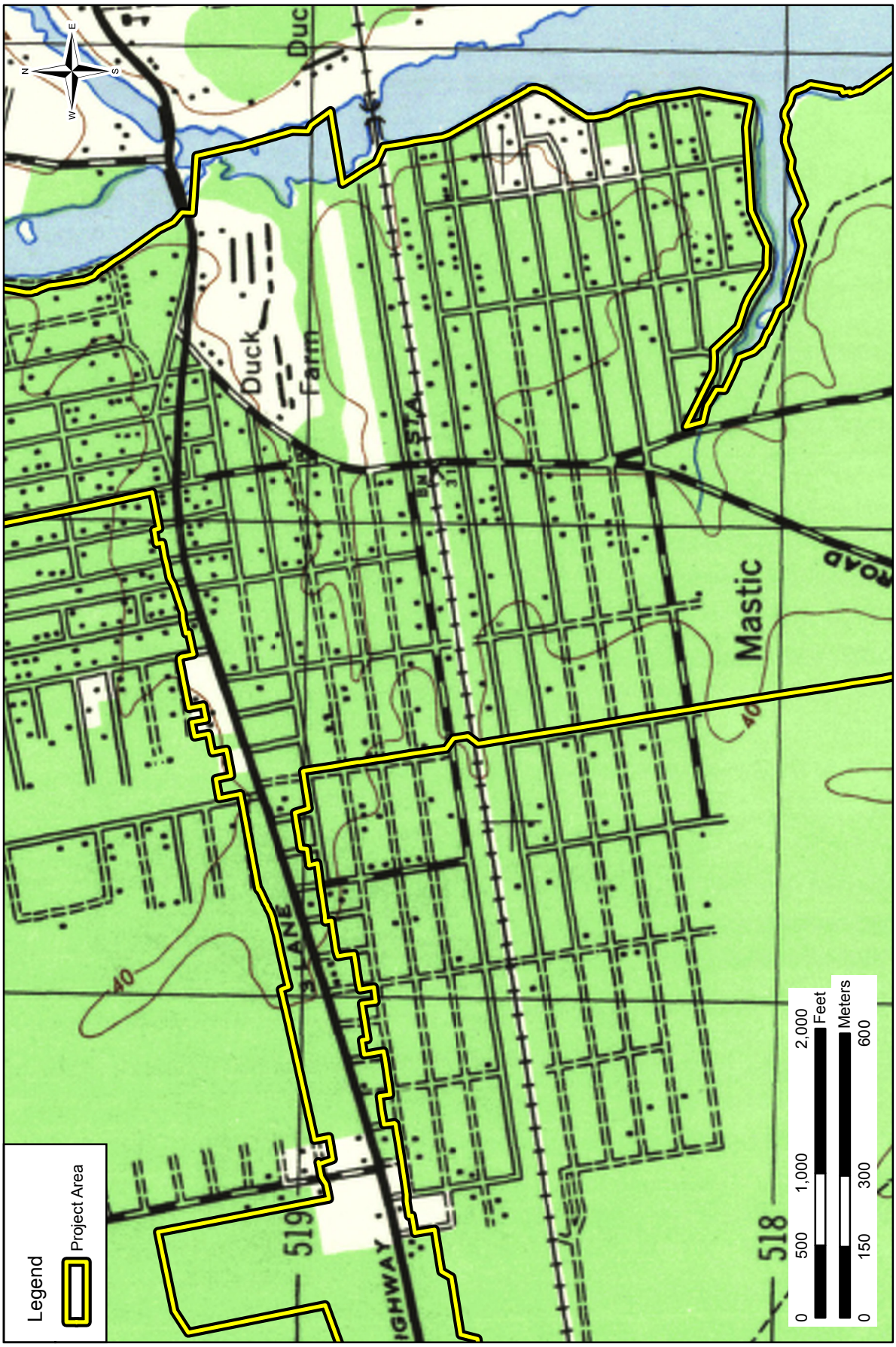

FIGURE 4: Moriches Army Service Map, Mastic Park Area, 1944 (University of Alabama 2016)

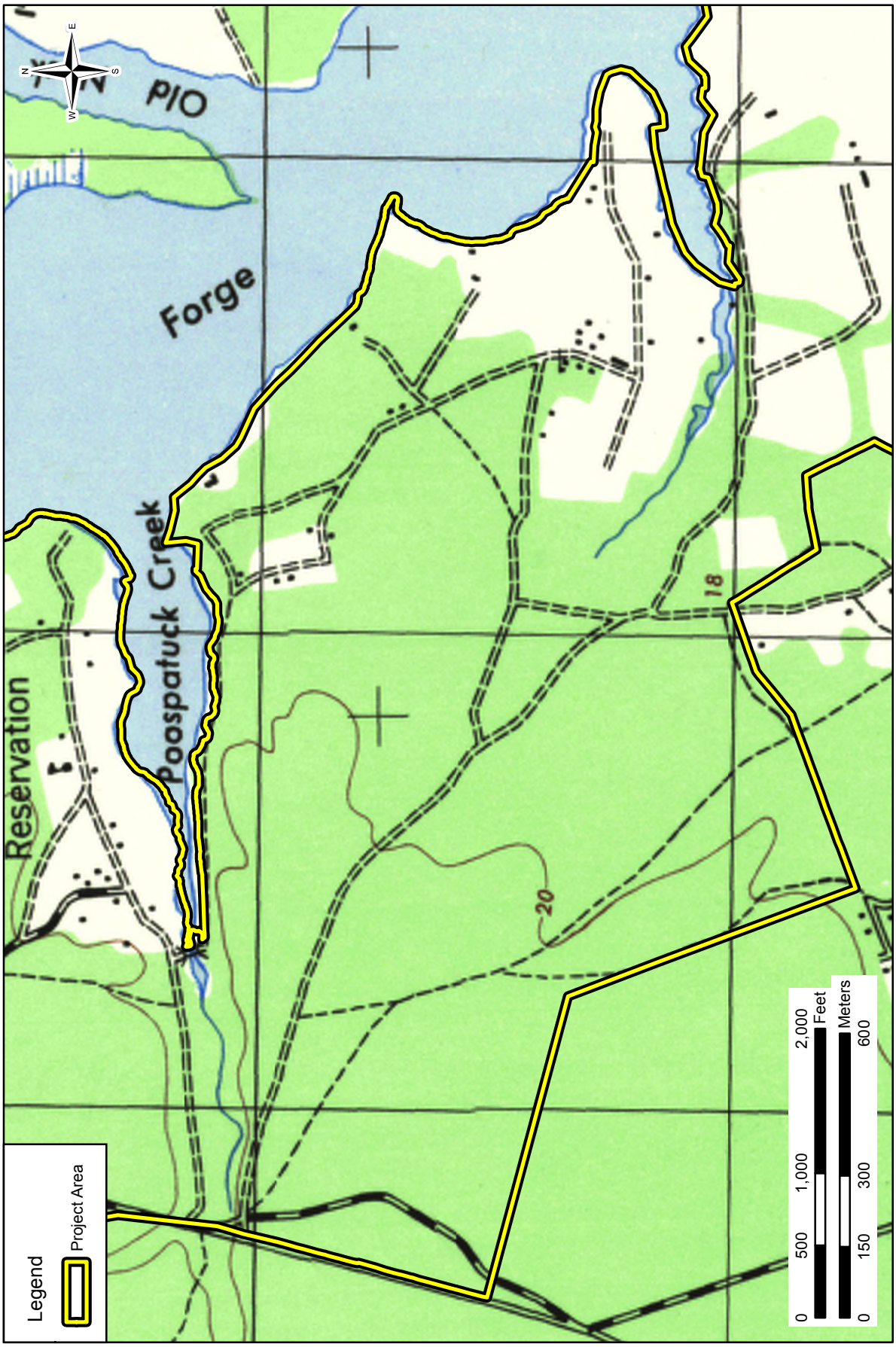

FIGURE 5: Moriches Army Service Map, Moss Lots Area, 1944 (University of Alabama 2016)

III. Reconnaissance Survey

A. Field Methods

Louis Berger staff conducted the architectural reconnaissance survey to ascertain the potential for historic architectural properties in the project area. Final project plans are still being completed and an area of potential effect (APE) has not been established, and therefore Louis Berger staff took a broad approach to assessing the presence of historic properties in the project area. Historic properties are defined as those that are designated as National Historic Landmarks (NHLs) or are listed in, determined eligible for, or are potentially eligible for listing in the SR/NRHP. The project area (3,662 individual tax lots that encompass approximately 910 hectares [2,250 acres]) generally extends along the Montauk Highway Business Corridor from just west of the William Floyd Parkway east to the Forge River, and includes most of the densely developed residential areas within the two-year groundwater travel time to the Forge River.

Louis Berger architectural historians reviewed streetscape views gathered during the archaeological reconnaissance survey as well as Google Maps Street Views to gain a general understanding of the architectural resources in the project area, including the potential for historic-period road surfaces. Resources that appeared to be 50 years or older with a moderate to high degree of integrity were noted. Some properties were not easily visible from the public right-of-way because of vegetation.

B. Results

1. *Overall Project Area*

A 1947 aerial photograph in the Suffolk County GIS Viewer indicates that the area overall was very sparsely populated at that time (Suffolk County Planning Department 2016). The Mastic Park development that began in the early 1920s between Montauk Highway and Shinnecock Avenue grew slowly. The 1947 aerial photograph shows dense woods surrounding the one or two parcels per block that had been built upon by that time. The most densely populated residential areas in 1947 were north of Montauk Highway. Areas south of Mastic Park were less densely populated with only one dwelling per long block. Although a network of streets had been constructed in anticipation of more dense residential development, the old diagonal roads that led to the Floyd estates are still clearly visible. A small orchard and open fields are still evident on the Moss Lots estate.

Aerial photographs from 1962 in the Suffolk County GIS Viewer show that development of the area had increased substantially with houses on eight to 10 lots of a 24-lot block in areas south of Mastic Park (Suffolk County Planning Department 2016). There was much less development in the area west of Moss Lots. Approximately half the lots on Sands Point, located between Lions and Homes creeks, were developed by that time.

The majority of the project area is currently characterized by suburban residential development with a commercial stretch along Montauk Highway and William Floyd Parkway. Most of the residential and commercial development in the project area appears to have occurred during the mid-twentieth century (Figures 6a-c; Photographs 1-30). Large portions of the project area are modern commercial and residential development, particularly in areas west of the Patchogue River. The majority of the project area along Montauk Highway consists of twentieth-century commercial development.

Many residential areas are a mixture of vernacular forms and architectural styles from the early to mid-twentieth century, such as Minimal Traditional, Ranch, and Craftsman. Vernacular forms include a mix of one-story gable-front cottages, one-story Ranches, and larger early twentieth-century houses. Most of the historic-period residential properties have been altered with vinyl siding, replacement windows, and porch enclosures. No historic-period road or paving surfaces were encountered during the reconnaissance survey.

Examination of the project area identified one potentially eligible property, the Moss Lots Caretaker's Cottage, described below. Limited access to the area east of Biltmore Avenue prevented survey of the former Moss Lots estate, but it is likely that other potentially eligible properties are located in that area. As noted in Chapter IIA, seven of the

FIGURE 6a: Architectural Resources in the Project Area (ESRI Bing Maps Aerial 2011)

FIGURE 6b: Architectural Resources in the Project Area (ESRI Bing Maps Aerial 2011)

FIGURE 6c: Architectural Resources in the Project Area (ESRI Bing Maps Aerial 2011)

PHOTOGRAPH 1: Overview of Oceanview Drive, View Southeast

PHOTOGRAPH 2: Overview of Oceanview Drive, View North

PHOTOGRAPH 3: Overview of Oceanview Drive, View Northeast

PHOTOGRAPH 4: House at 7 Shore Drive, View Northwest

PHOTOGRAPH 5: Overview of Jeanatta Avenue, View East

PHOTOGRAPH 6: Overview of Dover Avenue, View West

PHOTOGRAPH 7: Overview of Cumberland Street, View North

PHOTOGRAPH 8: Overview of Robinwood Street, View North

PHOTOGRAPH 9: Google Street View of 5 Lafayette Avenue, in the Vicinity of an 1873 MDS, View Northeast

PHOTOGRAPH 10: Overview of Clark Street, View East

PHOTOGRAPH 11: Overview of Lafayette Avenue, View North

PHOTOGRAPH 12: Overview of Dana Avenue, View North

PHOTOGRAPH 13: Overview of Montgomery Avenue, View South

PHOTOGRAPH 14: Overview of Montauk Highway, View West

PHOTOGRAPH 15: House at 46 Shore Drive, View Southeast

PHOTOGRAPH 16: Development and Front Yard Spaces on Franklin Avenue, View South

PHOTOGRAPH 17: Overview of Woodmere Drive, View North

PHOTOGRAPH 18: Mastic Beach Showing Shore Drive, View East

PHOTOGRAPH 19: Mayfield Drive and Pine way Avenue, Showing Typical Landscaping, View East

PHOTOGRAPH 20: Overview of Spar Drive, View Northeast

PHOTOGRAPH 21: Typical House on Wavecrest Drive, View Southeast

PHOTOGRAPH 22: Overview of Wavecrest Drive, View East

PHOTOGRAPH 23: Overview of Vista Place, View Northwest

PHOTOGRAPH 24: Overview of Washington Avenue, View Southwest

PHOTOGRAPH 25: Overview of Riverside Avenue, View East

PHOTOGRAPH 26: Overview of Mayfield Drive, View Southwest

PHOTOGRAPH 27: Overview of Pineway Avenue, View Southeast

PHOTOGRAPH 28: Overview of Orchid Drive, View Southwest

PHOTOGRAPH 29: Overview of Pineway Avenue, View Southeast

PHOTOGRAPH 30: Overview of Pineway Avenue Between Claremont and Biltmore Drives, View East

previously surveyed properties have been determined not eligible for listing in the SR/NRHP. The remaining previously recorded properties appear to be mid- to late twentieth-century dwellings that lack distinction.

2. *Moss Lots*

The area west of Biltmore Avenue historically associated with Moss Lots was not accessible during the reconnaissance survey because all of the roads leading into the area are private drives. One dwelling was surveyed at the east end of Riverside Avenue: the Caretaker's Cottage, built in the early 1880s (see Figure 5; Photograph 31). The Tudor Revival dwelling retains a high degree of integrity and is potentially eligible under Criterion C in the area of architecture and may be eligible under other criteria. Additional potentially eligible resources are likely to be found along the private drives in the area: Old Mastic Drive, Dana Court, Estate Drive, and an unnamed private road at the end of Pineway Avenue. At least one guest cottage from the Dana estate is known to exist in the area (Spooner 2016d).

C. Summary

Louis Berger staff conducted a reconnaissance survey of the project area for the Forge River Watershed Sewer Project in the Town of Brookhaven. Examination of historical aerial photographs revealed that the majority of the project area consists of mid- to late-twentieth century residential and commercial development that has been significantly modified over the years. One potentially eligible house, the Caretaker's Cottage, was identified in an area east of Biltmore Avenue, which is associated with the late nineteenth-century estate of Moss Lots. The remainder of this area was accessible only by private roads and could not be surveyed; however, potentially eligible resources are likely in this area, which was designated by the Town of Brookhaven as a historic district in 1980.

None of the proposed pump stations is located in the Moss Lots area (see Figure 1). No potentially eligible properties were found in the vicinity of any of the proposed pump station locations.

PHOTOGRAPH 31: Moss Lots Caretakers Cottage on Riverside Avenue, View South

IV. Conclusions

Louis Berger completed a Phase IA architectural resource assessment for the Forge River Watershed Sewer Project in the Town of Brookhaven, Suffolk County, New York (see Figure 1). The New York State GOSR is proposing to fund the quality improvement of groundwater baseflow to the Forge River as it relates to coastal resiliency and the reduction of nitrogen loading to the water bodies as part of the New York State Sandy Recovery efforts funded through the CDBG program.

No previously surveyed resources had been previously determined eligible or appear to be eligible for listing in the SR/NRHP. The Calabro Airport, which is the site of the proposed sewage treatment plant, was determined not eligible. The background research and reconnaissance survey revealed one potentially eligible dwelling: the Moss Lots Caretaker's Cottage. The area associated with this late nineteenth-century estate, which was not accessible for survey, is likely to contain additional potentially eligible properties. The pedestrian reconnaissance survey found that resources in the rest of the project area were constructed in the mid- to late twentieth century. These resources had been altered, including synthetic siding, replacement windows, and, in some cases, enclosed porches.

The installation of gravity and low pressure sewers in the project area has very little potential to adversely affect historic architectural resources as they will be constructed within the existing right-of-way. None of the proposed pump stations is located in the area historically associated with the Moss Lots estate, so those potentially eligible resources will not be affected by the project. There is a potential for an adverse effect to resources in the Moss Lots area if installation of sewer lines or other project activities in this area disturbs the existing landscape features, such as fences, walls, and other features, that may be contributing to historic resources. Aerial photographs show that some of the residences in this area have formal plantings of trees along driveways, circular driveways, and other features that may be significant.

V. References Cited

Bailey, Paul
1962 *Early Long Island, Its Indians, Whaling and Folklore Rhymes*. Long Island Forum, Westhampton Beach, New York.

Bayles, Richard M.
1874 *Historical and Descriptive Sketches of Suffolk County*. Published by the author, Port Jefferson, New York.

Beers, F.W.
1873 *Atlas of Long Island, New York*. F.W. Beers, New York.

Bernstein, David J., and Daria E. Merwin
2003 *Stage I Archaeological Survey for the Patchogue River Maritime Center and Riverwalk, Village of Patchogue, Town of Brookhaven, Suffolk County, New York*. Institute for Long Island Archaeology, Department of Anthropology, SUNY Stony Brook, New York. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Chase, Jay
1858 *Map of Suffolk County, Long Island, New York*. John Douglass, Philadelphia.

Environmental Systems Research Institute, Inc. [ESRI]
2011 Bing Maps Aerial imagery data layer. Worldwide orthographic aerial and satellite imagery. ESRI GIS and Mapping Software, Redlands, California. GIS Basemap imagery accessed June 2016 via ArcMap 10.4 at <http://www.arcgis.com/home/search.html?q=bing&t=content>.

Google Maps Street View
2013 Street View imagery of the Project Area. Google Earth Imagery capture date August 2013. Accessed online January 26, 2016, at <https://www.google.com/maps>.

Gramly, Richard M.
1977 Archaeological Investigations at Pipshave Hollow, Mt. Sinai Harbor, Long Island: a preliminary report. *Anthropology* 1:20–32.

Mastic Peninsular Historical Society
2016 Local History Timeline. Website accessed on May 10 at <http://www.mphistorical.org/Timeline2014-c.html>.

Mazeau, Daniel E.
2010 *Cultural Resources Reconnaissance Survey Report, PIN 0059.08, NYS Route 27 from NYS Route 112 to Wading River Road, Suffolk County, New York*. Cultural Resources Program, New York State Museum, Albany. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Molle, Robert
1982 Remarks of Robert Molle: Republic Airport Commission Meeting, October 28.

Munsell, W.W.
1882 *History of Suffolk County, New York*. George MacNamara, New York.

New York Archaeological Council
2000 *Cultural Resource Standards Handbook: Guidance for Understanding and Applying the New York State Standards for Cultural Resource Investigations*. Available through the New York State Office of Parks, Recreation and Historic Preservation, Historic Preservation Field Services Bureau, Peebles Island, Waterford, New York.

New York Office of Parks, Recreation and Historic Preservation [OPRHP]
2015 Cultural Resource Information System (CRIS) files. Accessed online November 2015 at <https://cris.parks.ny.gov/Login.aspx?ReturnUrl=%2f>.

Salwen, Bert
1978 Indians of Southern New England and Long Island: Early Period. In *Northeast*, edited by Bruce Trigger, pp. 160–178. Handbook of North American Indians, Volume 15, William Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Spooner, Ken
2016a A Brief, Irreverent History of the Mastics and Shirley Long Island, NY. Website accessed May 2, 2016, at <http://www.spoonercentral.com/2011/Talk.htm>.

2016b Map Room. Website accessed May 2, 2016, at <http://spoonercentral.com/2007/MapRoom.html>.

2016c Mastic Park. Website accessed May 2, 2016, at <http://www.spoonercentral.com/Mastics/MP.html>.

2016d Historic Homesteads and Buildings on Mastic Neck. Website accessed May 2, 2016, at <http://www.spoonercentral.com/MasticNeck/MasticNeck.html>.

Suffolk County Planning Department
2016 Suffolk County GIS Map. Accessed online January 2016 at <http://gis3.suffolkcountyny.gov/gisviewer/>.

United States Department of Agriculture [USDA]
1975 *Soil Survey of Suffolk County, New York*. Prepared by John W. Warner, Jr., W.E. Hanna, R.J. Landry, J.P. Wulforst, J.A. Neeley, R.L. Holmes, and C.E. Rice for the United States Department of Agriculture, Soil Conservation Service, Washington, D.C.

United States [U.S.] Department of the Interior
1983 Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register*, Part IV, 48(2):44716-44742. Annotated version showing later technical and officially adopted revisions available from the National Park Service's preservation laws, regulations, and standards webpage at <http://www.cr.nps.gov/local-law/arch_stnds_0.htm>.

United States Geological Survey [USGS]
1904 *Moriches, New York*. 15-Minute Series Topographic Quadrangle. Surveyed 1903, reprinted 1918. United States Geological Survey, Washington, D.C.

1926 *Moriches, New York*. 15-Minute Series Topographic Quadrangle. United States Geological Survey, Reston, Virginia.

1957 *Moriches, New York*. 7.5-Minute Series Topographic Quadrangle. United States Geological Survey, Reston, Virginia.

2013a *Bellport, New York*. 7.5-Minute Series Topographic Quadrangle. United States Geological Survey, Reston, Virginia.

2013b *Moriches, New York*. 7.5-Minute Series Topographic Quadrangle. United States Geological Survey, Reston, Virginia.

University of Alabama
2016 Quadrangles of New York – Army Map Service. Website accessed May 10, 2016, at <http://alabamamaps.ua.edu/historicalmaps/us_states/newyork/topos/armymap.html>.

Weeks, George Lewis
1955 *Some of the Town of Islip's Early History*. Consolidated Press, Bay Shore, New York.

Louis Berger

PHASE IA ARCHAEOLOGICAL SENSITIVITY ASSESSMENT FORGE RIVER WATERSHED SEWER PROJECT

Town of Brookhaven, Suffolk County, New York

Prepared for:

Governor's Office of Storm Recovery
99 Washington Avenue, Suite 1224
Albany, New York 12260

Prepared by:

Louis Berger
20 Corporate Woods Blvd.
Albany, New York 12211

Draft Report
May 5, 2016

Management Summary

Involved City, State, and Federal Agencies	U.S. Federal Emergency Management Agency New York State Division of Homeland Security and Emergency Services New York State Governor's Office of Storm Recovery U.S. Department of Housing and Urban Development U.S. Fish and Wildlife Service U.S. Environmental Protection Agency Federal Aviation Administration New York State Office of Parks, Recreation and Historic Preservation New York State Department of Environmental Conservation New York State Department of State Metropolitan Transportation Authority Long Island Rail Road Suffolk County Town of Brookhaven
Project Type and Funding	Forge River Watershed Sewer Project, Town of Brookhaven, Suffolk County, NY (15PR01821), CDBG-DR
Cultural Resource Survey Type	Phase IA Archaeological Sensitivity Assessment
Location Information	Project area is located in the Town of Brookhaven, Suffolk County. It consists of 3,662 tax parcels in the Montauk Highway Business Corridor from just west of William Floyd Parkway through Mastic and Shirley east to the Forge River, as well as existing residential areas within the two-year groundwater travel time in the western part of the Forge River watershed. Also included is a new sewage treatment plant located at the Town of Brookhaven's Calabro Airport.
Reconnaissance Survey Area	Approximately 910 hectares (2,250 acres)
USGS 7.5-Minute Quadrangle Map	*Moriches, NY* (USGS 1967)
Sensitivity Assessment	Precontact: Moderate to High Historic: Moderate to High
Archaeological Methodology	
Methods Used	Pedestrian reconnaissance survey
Results of Reconnaissance Survey	
No./Name(s) of Precontact Sites Identified	None
No./Name(s) of Historic Sites Identified	None
Recommendations	Phase IB shovel testing in sensitive areas where impacts outside existing sewer right-of-way are to occur.
Report Authors	The Louis Berger Group, Inc. – Christopher Morine and Rebecca Brodeur, RPA
Date of Report	May 5, 2016

Abstract

Louis Berger completed a Phase IA archaeological sensitivity assessment for the Forge River Watershed Sewer Project in the Town of Brookhaven, Suffolk County, New York. The New York State Governor's Office of Storm Recovery is proposing to fund the quality improvement of groundwater baseflow to the Forge River as it relates to coastal resiliency and the reduction of nitrogen loading to the water bodies as part of the New York State Sandy Recovery efforts funded through the Community Development Block Grant-Disaster Recovery program.

The proposed quality improvement area (the project area) is composed of 3,662 individual tax lots that encompass approximately 910 hectares (2,250 acres). The project area generally extends along the Montauk Highway Business Corridor from just west of the William Floyd Parkway east to the Forge River, and includes most of the densely developed residential areas within the two-year groundwater travel time to the Forge River. Infrastructure includes a combination of gravity sewers and low-pressure sewers to provide wastewater collection for the proposed Mastic-Shirley Sewer District. Included in the project area are ten drainage areas identified for proposed pump stations and a new sewage treatment plant. Sanitary wastewater from the proposed Mastic-Shirley Sewer District will be conveyed to the new sewage treatment plant located at the Town of Brookhaven's Calabro Airport. The Advanced Wastewater Treatment facility (within the project area) includes 5.2 hectares (12.9 acres) plus an expansion area of 6.9 hectares (17 acres) to the east.

The archaeological sensitivity assessment consisted of background research, including a review of archaeological site files and cultural resource management projects within 1.6 kilometers (1 miles) of the project area, and a pedestrian reconnaissance survey of the project area. The goal was to assess the potential for archaeological resources in the project area. The pedestrian reconnaissance survey was conducted on January 20, 2016 and April 13, 2016.

The majority of the project area consists of modern residential and commercial development that has significantly modified the area over the years. These areas are not likely to preserve significant historical or precontact archaeological deposits and are not considered archaeologically sensitive.

Portions of the project area that remain undisturbed are sensitive for precontact archaeological resources, based on proximity to marine resources for locations along the Forge River, East and West Millpond, the Poospatuck Creek, and Second Neck Creek; the probability of intact soils in some areas, primarily at the proposed pump stations and advanced wastewater treatment facility; and known precontact activity in the project area vicinity. Background research indicated that map-documented structures were located in portions of the project area, indicating historical sensitivity in undisturbed areas.

If construction activities will disturb these identified sensitive areas, then Phase IB subsurface testing is recommended to determine if preserved archaeological sites are present.

Table of Contents

Page

Management Summary i
Abstract ii
List of Figures iv
List of Tables iv
List of Photographs v

I. PROJECT INTRODUCTION AND DESCRIPTION 1

II. BACKGROUND RESEARCH 4
A. Site File Research 4
B. Environmental Background 5
1. Geology/Physiography/Topography 5
2. Soils 6
3. Previous Impacts and Current Land Use 6
C. Precontact Context 9
1. Paleoindian Period (12,000 to 9500 BP) 9
2. Archaic Period (9500 to 3000 BP) 9
3. Woodland Period (3000 to 500 BP) 10
4. Early Historic Contact (500 to 300 BP) 12
5. Precontact Sensitivity Statement 12
D. Historical Context 12
1. Historical Map Review 14
2. Historical Sensitivity Statement 14

III. RECONNAISSANCE SURVEY 23
A. Field Methods 23
B. Results 23
1. Area West and South of the Second Neck Creek and North of Poospatuck Creek 23
2. Area North of Second Neck Creek and West of Forge River and the Millponds 23
3. Montauk Highway Business Corridor 31
4. Mastic Beach 31
5. Proposed Pump Stations 31
6. Advanced Wastewater Treatment Facility 42
C. Summary 42

IV. CONCLUSIONS 51

V. REFERENCES CITED 52

List of Figures

Page

1. Location of the Project Area 2
2. Aerial Map Showing the Soils in the Project Area 7
3. Project Area in 1797 15
4. Project Area in 1858 16
5. Project Area in 1873 17
6. Project Area in 1904 18
7. Project Area in 1926 19
8. Project Area in 1957 20
9A-C. Archaeologically Sensitive Areas for Precontact Resources 45-47
10A-C. Archaeologically Sensitive Areas for Historical Resources 46-50

List of Tables

1. Recorded Archaeological Sites Within a 1.6-Kilometer (1-Mile) Radius of the Project Area 4
2. Soils in the Project Area 8
3. Historical Map-Documented Structures in the Project Area 21

List of Photographs

Page

1. Poospatuck Historical Site in the Vicinity of an 1873 Map Documented Structure, View North 24
2. Poospatuck Community Cemetery in the Vicinity of a 1904 Map-Documented Cemetery, View South 24
3. Overview of Poospatuck Lane, View East..... 25
4. View of Smoke Shop Business, View South 25
5. Overview of Jeanatta Avenue, View East..... 26
6. Overview of Dover Avenue, View West 26
7. Overview of Cumberland Street, View North..... 27
8. Overview of Robinwood Street, View North..... 27
9. Google Street View of 5 Lafayette Avenue, in the Vicinity of an 1873 MDS, View Northeast..... 28
10. Swift Creek and Surrounding Wetlands, View East 29
11. Slope Down to Swift Creek, View South..... 29
12. Swift Creek and Surrounding Wetlands, View West..... 30
13. Slope Down to Swift Creek, View North..... 30
14. Overview of Montauk Highway, View West..... 32
15. Proposed Pump Station 2 Site, View East 32
16. Development and Front Yard Spaces on Franklin Avenue, View South 33
17. Woodland at End of Lafayette Avenue, View North 33
18. Typical Front Yard Conditions in Mastic Beach Showing Shore Drive, View East..... 34
19. Mayfield Drive and Pineway Avenue, Showing Typical Landscaping, View East 34
20. Proposed Pump Station 1 Site, View North 35
21 Proposed Pump Station 2 Site, View East 37
22 Proposed Pump Station 2 Site, View North (note the older oak trees at the edge of the frame)..... 37
23 Proposed Pump Station 3 Site, View Northeast (note the slope down to the pond) 38
24 Proposed Pump Station 4 Site, View Northeast (note cement slab)..... 38
25 Proposed Pump Station 5 Site, View West 39
26 Proposed Pump Station 6 Site, View South 39
27 Proposed Pump Station 7 Site, View West 40
28 Proposed Pump Station 8 Site, View North 40
29. Proposed Pump Station 9 Site, View South 41
30. Proposed Pump Station 10 Site, View Northeast..... 43
31. Proposed Advance Wastewater Treatment Facility Main Site, View East 43
32. Proposed Advance Wastewater Treatment Facility Main Site, View North..... 44
33. Proposed Advance Wastewater Treatment Facility Expansion Site, View North..... 44

I. Project Introduction and Description

Louis Berger completed a Phase IA archaeological sensitivity assessment for the Forge River Watershed Sewer Project in the Town of Brookhaven, Suffolk County, New York (Figure 1). The New York State Governor's Office of Storm Recovery (GOSR) is proposing to fund quality improvements to groundwater baseflow to the Forge River as it relates to coastal resiliency and the reduction of nitrogen loading to the water bodies as part of the New York State Sandy Recovery efforts funded through the Community Development Block Grant-Disaster Recovery (CDBG) program. The goal of the Phase IA assessment was to determine the potential for cultural resources in the project area. The survey included background research and pedestrian reconnaissance (archaeological and architectural).

The proposed quality improvement area (the project area) is composed of 3,662 individual tax lots that encompass approximately 910 hectares (2,250 acres). The project area generally extends along the Montauk Highway Business Corridor from just west of the William Floyd Parkway east to the Forge River, and includes most of the densely developed residential areas within the two-year groundwater travel time to the Forge River. Infrastructure includes a combination of gravity sewers and low-pressure sewers to provide wastewater collection for the proposed Mastic-Shirley Sewer District. Included in the project area are ten drainage areas identified for proposed pump stations and a new sewage treatment plant. Sanitary wastewater from the proposed Mastic-Shirley Sewer District will be conveyed to the new sewage treatment plant located at the Town of Brookhaven's Calabro Airport. The Advanced Wastewater Treatment facility (within the project area) includes 5.2 hectares (12.9 acres) plus an expansion area of 6.9 hectares (17 acres) to the east.

The low-pressure sewers proposed to survey the Mastic-Shirley Sewer District will consist of approximately 914 meters (3,000 linear feet) of parallel 7.6-centimeter (3-inch) diameter DR-11 HDPE low-pressure mains and approximately 2,134 meters (7,000 linear feet) of singular 7.6-centimeter (3-inch) diameter DR-11 HDPE low-pressure mains. The low-pressure sewer mains will be installed approximately 1.8 meters (6 feet) below grade to provide the required clearances between existing utilities. The proposed gravity sewer collection system will consist of approximately 26,731 meters (87,700 linear feet) of 25-centimeter (10-inch) diameter, 1,951 meters (6,400 linear feet) of 30 centimeter (12-inch) diameter, and 1,036 meters (3,400 linear feet) of 51-centimeter (20-inch) diameter DR-18 PVC gravity sewer piping. Gravity sewers will be installed at depths no less than 1.8 meters (6 feet) below grade to provide the required clearances between the existing utilities and maintain the sufficient slope to facilitate a self-scouring velocity within the pipe.

Flow collected in each drainage zone will drain to its own pump station. Each of these sites will occupy a minimum of 232 square meters (2,500 square feet). Additional space may be required at some locations to facilitate site access and storage of materials and equipment during construction. Force mains will be installed at a depth of 1.2 meters (4 feet) below grade.

The area reserved for the treatment facility and future expansion consists of approximately 12 hectares (29.9 acres) of non-contiguous vacant/undeveloped land generally defined by Victory Avenue to the south, Maple Avenue to the west, Dawn Drive and the Dowling College School of Aviation to the north, and the northwest runway approach of the Calabro Airport to the east. The available land on the airport property has been divided into two components. The western component encompasses 5.2 hectares (12.9 acres) and was selected for the site of the treatment facility, paved parking lot, site access driveway, and subsurface recharge pools for disposing of the treated effluent. The remaining 6.9 hectares (17.0 acres) will be reserved for future expansion and/or additional recharge area.

Louis Berger conducted this Phase IA survey in accordance with guidelines and recommendations established in the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) and the *Cultural Resource Standards Handbook: Guidance for Understanding and Applying the New York State Standards for Cultural Resource Investigations* published by the New York Archaeological Council (2000). The work was performed in accordance with the National Historic Preservation Act of 1966, as amended; Procedures for the Protection of Historic and Cultural Properties (36 Code of Federal Regulations [CFR] 800); the Procedures for Determining Site Eligibility for the National Register of Historic Places (NRHP) (36 CFR 60 and 63); the New York State Environmental Quality Review Act (SEQRA); and Secretary of the Interior's Standards for Archaeology and Historic Preservation (United States Department

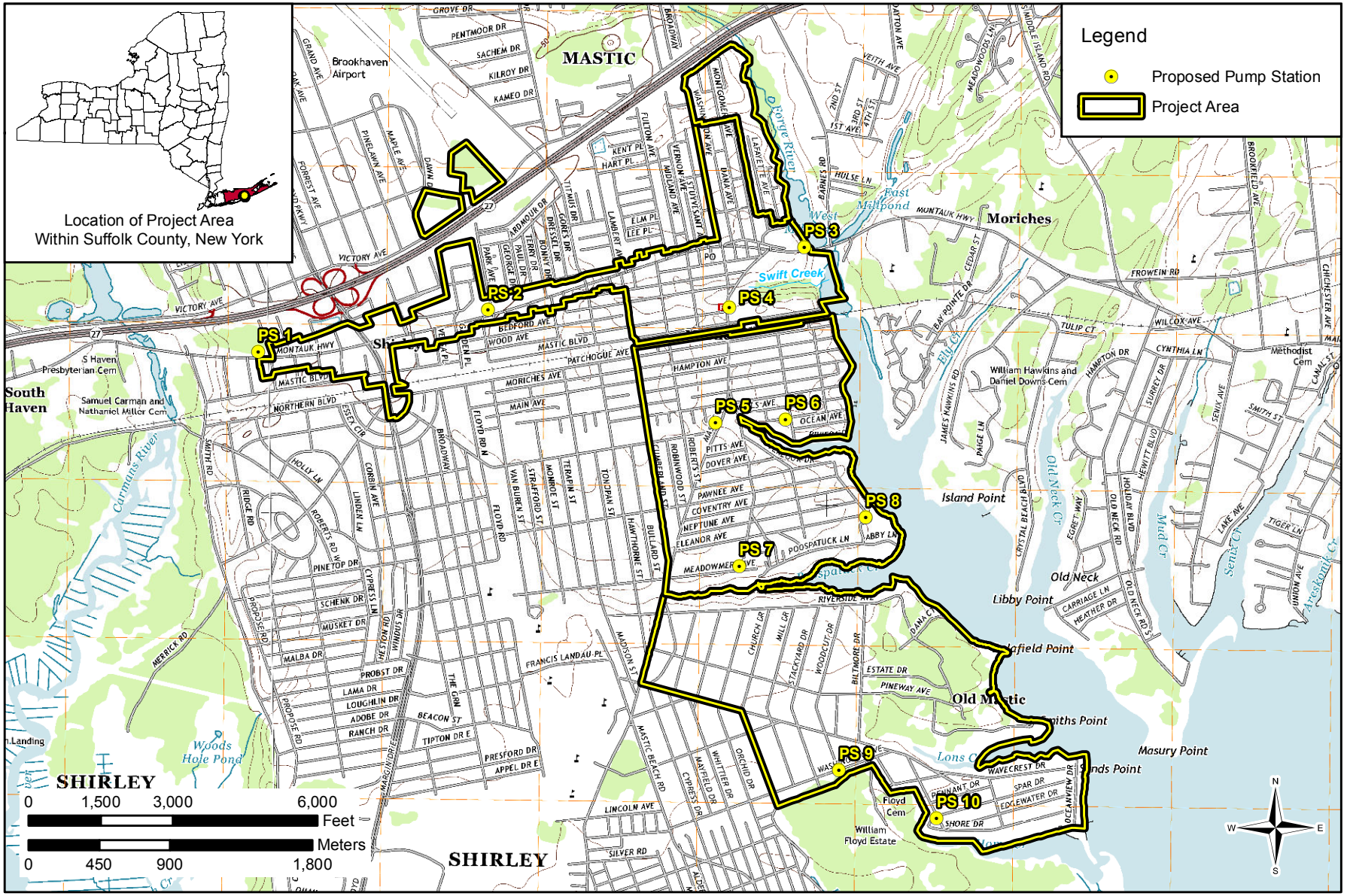

FIGURE 1: Location of the Project Area (USGS Bellport 2013a, Moriches 2013b)

of the Interior 1983). All staff who supervised the investigation meet or exceed the standards specified in 36 CFR 66.3(b)(2) and 36 CFR 61.

This report consists of five chapters. Chapter II summarizes the results of the background research conducted for this project. Chapter III presents the results of the pedestrian reconnaissance survey. Chapter IV presents the conclusions and Louis Berger's recommendation regarding future investigations of the project area, and Chapter V contains a list of the references cited.

Louis Berger personnel conducted this survey under the direction of Vice President-Heritage Resources Hope E. Luhman, Ph.D. Louis Berger Field Supervisor Christopher Morine conducted the background research and pedestrian reconnaissance. Mr. Morine and Archaeologist Rebecca Brodeur, RPA wrote the report. Principal Editor Anne Moiseev supervised the editing and production of this report, and Principal Draftsperson/GIS Analyst Jacqueline L. Horsford prepared the graphics.

II. Background Research

A. Site File Research

Research was conducted using OPRHP's online Cultural Research Information System (CRIS). Previously recorded archaeological sites within a 1.6-kilometer (1-mile) radius of the general project area are listed in Table 1. Research also included a review of local histories, a study of nineteenth- and twentieth-century maps and plans, and a review of published archaeological and historical studies and unpublished cultural resource management reports. The information helped to develop environmental, precontact, and historic contexts for the project area.

TABLE 1

RECORDED ARCHAEOLOGICAL SITES WITHIN A 1.6-KILOMETER (1-MILE) RADIUS OF THE PROJECT AREA

SITE NUMBER/NAME (ADDITIONAL SITE NO.)	DISTANCE FROM APE/ USGS QUADRANGLE	SITE TYPE/TIME PERIOD	ARTIFACTS/FEATURES	REPORTED BY
A10302.001130/ Carmans Mill and Homestead Site	965 meters (3,166 feet)/ Bellport, NY	Historic mill and homestead/ca. 1745	No visible evidence – beneath Sunrise Highway	Town of Brookhaven/ SPLIA 1982
A10302.001133/ Moriches Paper-Grist-Saw Mill Site	161 meters (528 feet)/ Moriches, NY	Historic gristmill and iron forge/late 18th–early 19th century	No visible evidence	Town of Brookhaven/ SPLIA 1982
A10302.001131/ General Nathaniel Woodhull House Site	919 meters (3,015 feet)/ Moriches, NY	Eighteenth-century house site	None noted; research indicates house burned in 1783	Brookhaven Community Development Agency 1982
A10302.001134/ Down's Tavern Site	805 meters (2,641 feet)/ Moriches, NY	Historic tavern ca. 18th century	Site of a tavern, no visible evidence	Town of Brookhaven/ SPLIA 1982
A10302.001587/ South Haven Presbyterian Church Site	805 meters (2,641 feet)/ Bellport, NY	Historic church and cemetery/1828–1961	2 tiered poured concrete front steps; scattered fieldstones	Billadello and Johannemann 1988
A10302.001843/ Hawkins Farm Site	965 meters (3,166 feet)/ Moriches, NY	Historic farm site/ 1940s–1950s	Metal, plastic, glass and ceramics (1920s-1960s); partial collapsed superstructure	Kalin 1997
A10302.002921/ Wertheim Site	805 meters (2,641 feet)/ Bellport, NY	Precontact camp for lithic reduction and/or stone tool maintenance/ Middle and Late Archaic; Middle Woodland; Late Woodland to Contact	Chipping debris, quartz projectile points, scraper, biface, worked cobble tool	Doucette 2010
A10302.002928/ Southhaven Circle Site (NYSM 12301)	805 meters (2,641 feet)/ Bellport, NY	Historic homestead/ late 18th century to early/mid–19th century	Pearlware, ironstone, stoneware, redware, bottle glass, charcoal, clam and oyster shell	Mazeau 2010
A10302.002929/ Oak Site (NYSM 12302)	161 meters (528 feet)/ Moriches	Precontact, possible camp and lithic reduction locus/ unknown time period	Lithic debitage, scraper, quartz debris	Mazeau 2010
A10302.002930/ Dain Site (NYSM 12303)	322 meters (1,056 feet)/ Moriches	Precontact, possible lithic reduction locus and camp/ unknown time period	Lithic debitage	Mazeau 2010
A10302.002931/ Stuyvesant Site (NYSM 12304)	322 meters (1,056 feet)/ Moriches	Precontact, possible lithic reduction locus and camp/ unknown time period	Lithic debitage	Mazeau 2010
A10302.002938/ Red Fox Site	1,609 meters (5,280 feet)/ Bellport, NY	Precontact, lithic reduction and/or stone tool maintenance camp/ Late Archaic and Woodland	Lithic debitage, projectile points, fire-cracked rock, pottery	Doucette 2011

None of the 12 previously recorded archaeological sites (seven historic and five precontact) located within a 1.6-kilometer (1-mile) radius of the project area falls within the project area. The historic sites consist of the eighteenth century residence of General Nathaniel Woodhull, two mills and a tavern site with no remaining visible evidence, a church and associated cemetery, a farm site, and a possible homestead or domestic residence. The historic sites in the vicinity of the project area date from the eighteenth to the mid-twentieth century. The Southhaven Circle Site was identified as part of the NYS Route 27 from NYS Route 112 to Wading River Road Reconnaissance Survey (PIN 0059.08). Intact deposits from the late eighteenth and early nineteenth centuries were recovered but could not be tied to any of the map-documented structures in the near vicinity. Prior to and during the construction of Route 27, many of the structures were destroyed and at least one was moved (Mazeau 2010).

The five precontact sites are lithic reduction locations. Three of these are of unknown time periods. They were identified as part of PIN 0059.08, and the report concluded that Phase I testing was not able to determine if these were intact precontact sites or random artifact scatter from Route 27 construction and landscape modification. The report did state that stratigraphic integrity within each site was maintained and that Phase II survey was recommended for each site (Mazeau 2010).

The Wertheim Site contains lithic evidence from the Middle and Late Archaic, the Middle Woodland, and Late Woodland to Contact periods. This site was identified through an archaeological survey for the Wertheim National Wildlife Refuge and consisted of Phase I and limited Phase II surveys. Low- to moderate-density scatters of lithic debitage, stone tools, and five features were interpreted as a short-term campsite for lithic reduction and/or maintenance. That the artifacts span the Archaic through Woodland periods and into the Contact period is suggestive of repeated use of this site (Doucette 2010). As part of another survey in this vicinity, the Red Fox Site yielded 141 artifacts of precontact cultural material, including 125 pieces of debitage; one schist Narrow-stemmed Wading point and one quartz Narrow-stemmed Lamoka River point, diagnostic of the Late Archaic period (5500 to 3000 years before present [BP]); 11 fragments of fire-cracked rock, and three sherds of grit-tempered, undecorated pottery diagnostic of the Woodland period (3000 to 500 BP). The Red Fox Site is eligible for listing in the National Register of Historic Places (Doucette 2011).

Six additional surveys (Bernstein and Manfra 2005, 2006; Cammisa et al. 2005, 2009; Howson and Bianchi 2012; Mazeau 2010) did not identify a site within a 1.6-kilometer (1-mile) radius of the proposed project area. One of these surveys took place in the project area on the northeast corner of Somerset Avenue and Robert Street. The remaining surveys were for small subdivisions, less than approximately 4 hectares (10 acres) each, and for a 4.3-kilometer (2.7-mile) path along River Road east of the Carman River.

B. Environmental Background

1. Geology/Physiography/Topography

Suffolk County is situated in the central portion of Long Island, New York. Long Island is in the Atlantic Coastal Plain physiographic province, and lies on the terminal moraines and outwash plains of the farthest extent of the Wisconsinan glaciation (Isachsen et al. 2000:169). The project area is situated on the south shore of Long Island on the glacial outwash plain south of the Ronkonkoma Moraine, formed over 18,000 years ago by meltwater as the Wisconsin glacier receded (Bernstein and Manfra 2006; Mazeau 2010; Sirkin 1996). Bedrock underlying the project area consists of unconsolidated and poorly consolidated Cretaceous sediments at depths greater than 122 meters (400 feet) (United States Department of Agriculture [USDA] 1975:98).

Topography in the project area is generally flat to gently sloping, with elevations ranging from sea level to 18 meters (60 feet) above mean sea level (United States Geological Survey [USGS] 1967). The project area is bound to the east by the Forge River the freshwater East Millpond, West Millpond, as well as and Second-Neck Creek. The Forge River flows south and empties into Moriches Bay.

The mature climax forest existing before European colonization would have consisted of white oak, hickory, pitch pine, white aspen, scarlet oak, and post oak. Historically, large-scale cutting for farm clearing, housing stock, and fuel use resulted in a heavily depleted forest cover (USDA 1975:96).

The modern climate of the region is humid and temperate, strongly influenced by Long Island Sound and the Atlantic Ocean (USDA 1975:92). In Suffolk County precipitation averages 109.22 to 116.84 centimeters (43 to 46 inches) per year, with a small area near Lake Ronkonkoma receiving an average of 127 to 132.08 centimeters (50 to 52 inches) per year. The mean average air temperature is about 52 degrees Fahrenheit (USDA 1975:97).

2. Soils

The majority of soils in the project area (63.2 percent) consist of soils from the Riverhead series (Figure 2; Table 2) (USDA-Natural Resources Conservation Service [NRCS] 2013). The Riverhead series dominates those areas not adjacent to creeks and rivers. This series is also found dispersed throughout the project area along the Montauk Highway Business Corridor. Both wastewater treatment facility parcels are also nearly all Riverhead sand. This series is characterized by well-drained soils and is found on outwash plains, valley trains, beaches, and water-sorted moraines. Plymouth sands are found in 12.4 percent of the project area, and areas that contain Plymouth and Carver series soils combined account for 12.6 percent of the project area. These soils are found adjacent to the Forge River, its creeks, and the freshwater ponds, and also dispersed throughout the Montauk Highway Business Corridor. Both the Carver and Plymouth series are characterized as very deep, excessively drained soils formed in glaciofluvial deposits. They are nearly level through steep soils on plains and moraines. The remainder of the project area contains Deerfield sand (1 percent), Wareham loamy sand (0.7 percent), Sudbury sandy loam (0.6 percent), and Swansea muck (0.3 percent). Cut and fill land accounts for 7.4 percent of the project area, urban land accounts for 1.5 percent, and water accounts for 0.7 percent.

3. Previous Impacts and Current Land Use

Historical maps indicate little widespread change in the project area until the early to mid-twentieth century. Development was concentrated in a portion of the present-day Montauk Highway between the Forge River and Connecticut (Carmans) River and the southeastern portion of the project area in the vicinity of the Poospatuck Indian Reservation. The remainder of the project area remained forest with a few roads and paths traversing the landscape. Currently the majority of the project area is suburban residential development with a concentration of commercial properties along the Montauk Highway and William Floyd Parkway. Soils mapped in the project area, however, indicate intact Plymouth, Carver, and Riverhead sands with some minor regions of cut and fill and urban land (see Figure 2 and Table 2).

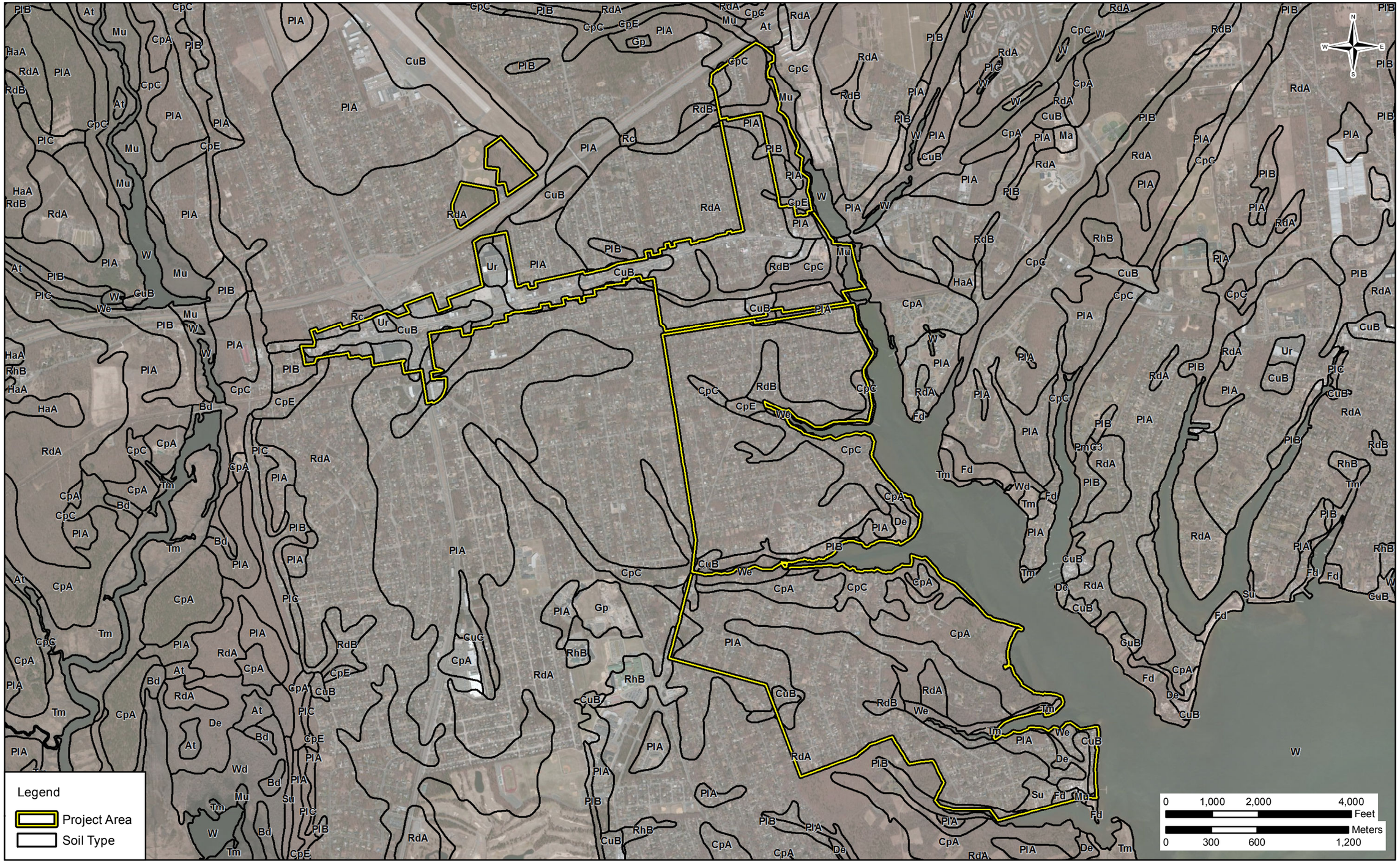

FIGURE 2: Aerial Map Showing the Soils in the Project Area (NYSGIS 2013; ESRI 2011)

TABLE 2

SOILS IN THE PROJECT AREA

SERIES NAME	SOIL HORIZON DEPTH	COLOR	TEXTURE, INCLUSIONS	SLOPE Percent	DRAINAGE	LANDFORM
Riverhead (RdA, RdB)	Ap 0–30 cm (0–12in) Bw 30–69 cm (12–27in) BC1 69–81 cm (27–32in) 2BC2 81–89 cm (32–25in) 2C1 89–102 cm (25–40in) 2C2 102–165 cm (40–65in)	Brn StrBrn YBrn YBrn Brn VPlBrn	SaLo F Rts SaLo Rts LoSa F Grl LoSa Sa C to M Sa Grl	0–50	Well drained	Outwash plains, valley trains, beaches, and water-sorted moraines
Carver (CpA, CpC, CpE)	Oi 0–5 cm (0–2in) Oe 5–8 cm (2–3in) A 8–18 cm (3–7in) E 18–25 cm (7–10in) Bw1 25–38 cm (10–15in) Bw2 38–71 cm (15–28in) BC 71–81 cm (28–32in) C 81–170cm (32–67in)	 VDrkBrn Blk DrkGry StrBrn YBrn BrnY LtYBrn	Needles & Leaves Dec OM C Sa Rts M Sa C Sa C Sa Grl C Sa Grl C Sa Grl	0–45	Excessively drained	Outwash plains and moraines
Plymouth (CpA, CpC, CpE, PlA, PlB)	A 0–10 cm (0–4in) Bw1 10–25 cm (4–10in) Bw2 25–43 cm (10–17in) Bw3 43–69 cm (17–27in) 2C 69 – 178 cm (27–70in)	VDkGBrn YBrn YBrn Brn YBrn	LoSa, F Rts LoSa, F Rts LoSa, F Rts LoSa GrlCSa	0–35	Excessively drained	Plains, hilly moraines
Deerfield (De)	A 0–23 cm (0–9in) Bw1 23–38 cm (9–15in) Bw2 38–48 cm (15–19in) BC 48–69 cm (19–27in) C 69–165 cm (27–65in)	VDkGryBrn YBrn YBrn OlBrn OlGry to DkGry	LoSa, F Rts LoSa, F Rts LoSa, F-M Rts Sa, Fi Rts with Fe Sa to FiSa	0–15	Well drained	Terraces, deltas, and outwash plains
Swansea Muck (Mu)	Oa1 0–13 cm (0–5in) Oa2 13–58 cm (5–23in) Oa3 58–84 cm (23–33in) Oa4 84–167 cm (33–66in) Cg1 167–206 cm (66-81in) Cg2 206–419 cm (81–165in)	DkRBrn Blk Blk Blk LtOlGry LtOlGry	Sp Sp Sp Sp Lo CSa Lo CSa	0-1	Very poorly drained	Depressions found on level areas and outwash plains
Wareham (We)	Oa 0–2.5 cm (0–1in) A 2.5–18 cm (1–7in) Bw 18–43 cm (7–17in) Cg1 43–94 cm (17-37in) Cg2 94–152 cm (37–60in)	Bl VDkGrBr YlBr LtYlBr POl	Sp LoSa LoCSa LoCSa CSa	0-8	Poorly to somewhat poorly drained	Outwash plains, terraces, and deltas
Sudbury Sandy Loam (Su)	Ap 0–33 cm (0–13in) Bw 33–48 cm (13–19in) 2CB 48–66 cm (19–26in) 2C 66–165 cm (26–65in)	VDkGryBrn YBrn YBrn LtOlBrn	LoSa, F Rts LoSa, F Rts LoSa, F-M Rts Sa, Fi Rts with Fe	0-15	Moderately well and sometimes poorly drained	Outwash plains
Cut and Fill land (CuB)	varies	varies	varies	varies	varies	Areas that have been disturbed by grading and then capped by fill material
Urban Land (Ud)	varies	varies	varies	varies	varies	Land altered for development

USDA-NRCS 2013

KEY: *Shade:* Lt – Light, Dk – Dark, V – Very, S – Strong
Color: Brn – Brown, Blk – Black, Gry – Gray, GBrn – Grayish Brown, StrBrn – Strong Brown, RBrn – Reddish Brown, YBrn – Yellowish Brown, OlBrn – Olive Brown, Wh – White, Ol – Olive, PlBrn-Pale Brown, Brn Yl-Brownish Yellow
Soils: Cl – Clay, Lo – Loam, Si – Silt, Sa – Sand. Sp – Sapric
Other: / - Mottled, Grl – Gravel, Cbs – Cobbles, Pbs – Pebbles, Rts – Roots, C – Coarse, Ch - Channery, F – Fine, V-Very, E-Extremely, Dec OM – Decomposed organic matter, M - Medium

C. Precontact Context

Archaeologists have divided the vast expanse of New York cultural history into five general periods: Paleoindian (12,000 to 9500 BP), Archaic (9500 to 3000 BP), Woodland (3000 to 500 BP), Contact (500 to 300 BP), and Historic (300 BP to present). The first three subdivisions (Paleoindian, Archaic, and Woodland) are thought to represent Native American cultural adaptation to changing climatic conditions since the arrival of humans in the New York region around 12,000 years ago—from Pleistocene (Ice Age) to Holocene (modern) norms. The region's natural environment and geomorphology have greatly influenced the nature of Native American settlement, land use, and cultural development. One important factor in the interpretation of the prehistory of New York is the impact of glaciation on the topographic and hydrologic conditions in the area since the end of the Pleistocene.

1. Paleoindian Period (12,000 to 9500 BP)

Humans (the Paleoindians) first entered the region from the south between 12,000 and 9500 BP, following the retreat of the Wisconsin glaciers. At its maximum extent (18,000 and 16,000 BP), the Wisconsin glacier covered all of New York State and extended south into northern New Jersey and Pennsylvania. As the ice sheets receded, open spruce woodland developed in the Northeast, with pine replacing spruce as the dominant arboreal species by about 10,000 BP (Gaudreau 1988).

Few definite habitation sites from the Paleoindian period have been identified in the Northeast. It is more common to encounter isolated finds of artifacts that are diagnostic for the period. Such artifacts include Clovis-type fluted projectile points, assorted scrapers, gravers, and drills. These lithic tools are usually made from cherts that originated in eastern New York and jaspers found in Pennsylvania and New Jersey. The Paleoindian sites that have been located in New York tend to be quarry-related activity areas, small base camps, and isolated kill sites.

Paleoindian period sites in the region appear to be located in three geographic settings: (1) lowlands adjacent to water and near coniferous swamps or larger rivers; (2) upland bluffs with deciduous trees as the predominant arboreal species; and (3) ridgetops with deciduous trees as the predominant arboreal species. The basic model for Paleoindian habitation in the Northeast assumes that Paleoindians coalesced in small, highly mobile bands that traveled and hunted through large territories focusing on post-Pleistocene megafauna. However, it is also possible that Paleoindian populations used a relatively wide range of plant and animal resources that were encountered in more restricted territorial ranges.

Although isolated fluted points have been found on Long Island (Saxon 1973), no Paleoindian habitation sites have been identified. The Port Mobil Site on Staten Island is the nearest excavated Paleoindian site (Eisenberg 1978; Funk 1977). At the time of Paleoindian occupation, large portions of the present continental shelf near coastal New York would have been exposed because of the lower sea levels, and therefore former habitation sites on Long Island may have been submerged or destroyed by rising seas following the last glacial retreat (Edwards and Merrill 1977; Newman 1977).

2. Archaic Period (9500 to 3000 BP)

The Archaic period is characterized by climatic amelioration that eventually resulted in greater biodiversity in the resource base; changes in technology, site size, and site location reflect utilization of a broader spectrum of resources. Researchers usually divide the Archaic into three subperiods: Early (9500 to 7000 BP); Middle (7000 to 5500 BP); and Late (5500 to 3000 BP).

a. Early Archaic Period (9500 to 7000 BP)

The Early Archaic period was initially characterized by fluctuations in climate that eventually stabilized into a warming trend. The warmer conditions enhanced biological diversity in the plant and animal communities developing in the region. The subsistence focus of aboriginal populations shifted from a primary focus on hunting post-Pleistocene megafauna to hunting, fishing, and gathering a diverse range of animal and plant forms. Populations may have increased because of the greater stability of the resource base. Most of the evidence of human occupation during this

period is based on isolated finds of artifacts diagnostic for the period, including bifurcate-base points, which are most often located along major drainages.

On Long Island the instability of the coastal environments during the early Holocene epoch may be one reason that evidence of significant Native American occupation of Long Island prior to Late Archaic times (5500 to 3000 BP) is lacking (Wyatt 1977:400). Remains of Early Archaic (9500 to 7000 BP) occupation are represented by a few scattered points similar to the Kanawha Stemmed and Lecroy Bifurcate Base types (Broyles 1971). Vosburg and Brewerton point types are also known to have come from Long Island but are relatively scarce (Wyatt 1977:400).

b. Middle Archaic Period (7000 to 5500 BP)

During the Middle Archaic the climatic warming trend continued. New varieties of flora and fauna became established in the region. The subsistence and settlement patterns of the human occupants of the region continued to shift toward seasonal transhumance focused on utilization of specialized resources within limited ranges, which may have fostered a greater degree of territoriality (Dincauze and Mulholland 1977). Diagnostic artifacts include Neville and Stark projectile points. The reliance on diverse and specialized resources fostered expansion of the toolkit, which included adzes, axes, drills, mortars and pestles, netsinkers, and hammerstones.

c. Late Archaic Period (5500 to 3000 BP)

Climatic warming continued into the Late Archaic. The rich and diverse biotic resource base enabled increased habitation. Diagnostic artifacts for the subperiod include small stemmed projectile points such as Lamoka, Taconic, Squibnocket, and Brewerton.

By the Terminal Archaic, or Transitional period, people were grinding and polishing soapstone to make bowls and other cultural items. The Terminal Archaic is characterized by three cultural traditions: the Laurentian tradition (Vergennes phase and Vosberg complex); the small stemmed tradition; and the Susquehanna tradition (Snook Hill and Orient phases). Based on a reassessment of the distribution of Terminal Archaic points, Snow suggests that the Susquehanna tradition (Snook Hill, Perkiomen, and Susquehanna Broad points) was dominant in the first half of the Terminal Archaic, and superseded by the Orient complex (Orient fishtail points) in the second half of the period (Snow 1980:237). The exact nature of the cultural differences reflected in the technological and stylistic differences between these traditions has not been conclusively discerned. They may represent differences in settlement systems and technology based on utilization of different resource niches, the migrations of new people into the region, or the spread of distinctive technological ideas.

The rate of sea level rise and isostatic rebound of the continental margins had lessened by Late Archaic times (Edwards and Merrill 1977; Newman 1977; Snow 1980), resulting in the stabilization of marine environments. There is considerable archaeological evidence, in the form of shell middens, to indicate that marine resources were intensively exploited by Late Archaic populations on Long Island, where the shell middens are concentrated near salt marshes (Wyatt 1977). However, the relationship between shell midden sites and Late Archaic sites in interior areas, which are characterized by artifact assemblages that include Wading River points, atlatl weights, and celts (Ritchie 1980:142–145), is poorly understood.

Coastal occupation intensified during the Terminal Archaic (Transitional) period (3300 to 2800 BP), which is represented by artifact assemblages that include broadspear points, Orient Fishtail points, and soapstone vessels. On Long Island the earliest known Native American burials are associated with Terminal Archaic (Transitional) period occupation (Ritchie 1980:164–165).

3. Woodland Period (3000 to 500 BP)

The Woodland period is divided into three subperiods: Early Woodland (3000 to 1700 BP); Middle Woodland (1700 to 1200 BP); and Late Woodland (1200 to 500 BP).

a. Early Woodland Period (3000 to 1700 BP)

In general, Early Woodland occupations in the Eastern Woodlands are characterized by a continuation of Late Archaic lifeways. Throughout the eastern United States it appears that Early Woodland groups were sedentary or semisedentary, with residential sites located in riverine and upland contexts and logistical sites located in a variety of physiographic contexts.

Ritchie and Funk (1973:96) write that "as in the case of the Transitional [Archaic] stage, it [the Early Woodland] is marked by the appearance of certain new traits and by the characteristic expression of other, older traits," but "there is no evidence for significant changes in subsistence or settlement patterns." Substantial residential sites of the Late Archaic are often referred to as base camps, yet similar sites of the Early Woodland become "villages" with the presence of ceramics and possible storage pits at these sites.

Broadspear forms were phased out in the Early Woodland period, and small stemmed and notched forms, as well as lanceolate and teardrop forms, dominate hafted biface assemblages. Ground grooved axes, seen in the Late Archaic, continue into the Early Woodland but are refined, and the repertoire of such implements is expanded. Slate gorgets, pendants, and ground slate pieces have also been recovered from Early Woodland sites.

The mortuary complexity exhibited by some Late Archaic groups continued into the Early Woodland. Meadowood (3000 to 2560 BP) cremations, bundle burials, and flex burials include red ochre, cache blades ("up to 1,500 in one grave"), gorgets, tubular pipes, and copper objects, as well as utilitarian items such as hafted bifaces, other bifacial tools, adzes, celts, bone tools, carbonized nets, and basketry (Ritchie and Funk 1973:96, 348). Early Woodland groups also created burial mounds for their dead, which represent one of the most dramatic manifestations of the social complexity inherent in Adena societies.

The Early Woodland period (Middlesex phase) is characterized by the introduction of ceramic vessels—in this region typed as Vinette 1 undecorated wares, some with steatite temper. Sites of the period are usually found on well-drained knolls next to fresh water (Ritchie 1980:21).

b. Middle Woodland Period (1700 to 1200 BP)

The Middle Woodland period is marked by changes in lithic and ceramic technology. During the Middle Woodland period maize agriculture and other horticultural practices were gradually incorporated into the subsistence adaptations of the occupants of the region, promoting development of semipermanent village settlement. Subsistence practices during the Middle Woodland period were not very different from those of earlier periods, although intensified hunting, gathering, and small-scale agriculture increased use of resources. The climate during this cultural period remained similar to that of the Early Woodland period. Episodic fluctuations in temperature and precipitation did occur, which affected the distribution and composition of biotic communities. Site types identified include small camps (some temporary and some reoccupied over time), semipermanent large camps, cemeteries, burial mounds, and workshop activity areas (Ritchie and Funk 1973:349).

The bow and arrow were introduced in this period. Diagnostic lithic artifacts include Jack's Reef corner-notched and pentagonal projectile points and Fox Creek projectile points. The presence of increased amounts of exotic lithic materials suggests further development of interregional trade networks. Other items of material culture associated with the Middle Woodland include ornamental pendants and pins. Ceramic technology became more sophisticated, as indicated by a decrease in the wall thickness of pots and a rounding of vessel shape. Ceramic decoration, including netmarking and ornamentation of collars and bodies, increased.

c. Late Woodland Period (1200 to 500 BP)

During the Late Woodland period aboriginal populations continued to grow and expand into riverine environmental zones. Agriculture continued to increase in importance as part of aboriginal subsistence systems, and maize became a major component of the precontact diet. By the time of the Late Woodland, the climate was very similar to that of today. More sites, larger sites, and sites with a higher density of cultural material are associated with this period in prehistory than with earlier periods. Sites have been encountered along major drainages in association with rockshelters, in coastal areas, and on islands. Small campsites are also located near swamps and streams. The

settlement-subsistence system for this period appears to be characterized by an annual pattern of seasonal movement between riverine, coastal, and inland sites. The semipermanence of many of the occupations and resource areas may have fostered greater territoriality (Mulholland 1988:163). Diagnostic artifacts include Levanna projectile points and Owasco-related ceramics.

In some areas of New York State, competition for land and resources appears to have resulted in conflicts that caused groups to "nucleate" in larger, defensible settlements. Late precontact occupation of Long Island seems to have been dispersed along the coastline, suggesting that marine and estuarine resources continued to dominate subsistence economies. Caution must nevertheless be used when making assumptions about settlement patterns on Long Island. Earlier studies have been conducted primarily along the coast, or along rivers and streams, and it is therefore not surprising that most sites have been found in those locations. More recently, archaeologists have shown that Native Americans conducted many activities in inland areas of Long Island (e.g., Lightfoot and Moore 1985).

4. Early Historic Contact (500 to 300 BP)

Native American settlement and subsistence adaptations of the Late Woodland continued during the early Contact period, characterized by seasonal hunting and gathering and focusing on streams and major watercourses in the spring and fall for seasonal fish runs. During this period Native Americans also accessed smaller sites in inland and upland areas for hunting and resource procurement. Larger semipermanent village sites, consisting of oval and round houses and large pits, were also located in the interior near planted fields. In the winter smaller bands of people occupied sites in inland and upland settings close to forest game (Cronon 1983:48).

Initial contact between Europeans and Native Americans was made when early explorers entered the area to engage in trade. The introduction of European material goods, the demands of trading relationships, rapid colonial expansion, and the spread of diseases brought by the Europeans had profound effects on the settlement and subsistence adaptations of the native populations. Native groups gradually became dependent on trade with the Europeans. Tribal and clan affiliations were affected, and much of the native population disappeared or was displaced (Brasser 1978). Some estimates suggest that between 60 and 90 percent of the native population was lost to European diseases in the seventeenth century in southern New England and New York (Snow 1980:34).

5. Precontact Sensitivity Statement

A considerable portion of the overall project area appears to be disturbed and significantly modified from modern development. However, five precontact sites have been documented within a 1.6-kilometer (1-mile) radius of the project area (see Table 1). Soil mapping by the USDA-NRCS indicates that some areas of undisturbed soils may remain in the project area, and intact soils in an area of known precontact activity are considered highly sensitive for precontact cultural resources. Those areas adjacent to the Forge River, Second Neck Creek, and West Mill Pond are also highly sensitivity for precontact activity. The area north of the Poospatuck Creek and west of the Forge River is especially sensitive for precontact activity, as this area is the traditional land of the Unkechaug Indian Nation. The Poospatuck Reservation, home of the Unkechaug Nation, falls within the project area.

D. Historic Context

A number of early European explorers surveyed what we now know as Long Island. As early as the sixteenth century, Giovanni Verrazano skirted the south shore of Long Island during an exploratory expedition carried out on behalf of France in 1524 (Bailey 1962). Henry Hudson explored the area in 1609 for the Dutch East India Company. In 1636 the Dutch would establish the first permanent settlement on Long Island when they founded Brooklyn in the western portion of the island, as part of the colony of New Amsterdam (Mazeau 2010:30). In 1639 English settlers established two communities on the east end of the island, Southbold and Southampton. Control of the island by the English and Dutch would remain in dispute for a number of years. For a time, in 1662, the Connecticut colony claimed jurisdiction over the island based on a clause in the charter granting them claim over adjacent islands. In 1664 Richard Nicoll, commissioned Lord Chancellor by the Earl of Clarendon, arrived in the area with 500 soldiers and captured New Amsterdam from the Dutch (Weeks 1955:7). The colony was later renamed New York, and Long Island was brought fully under its jurisdiction.

Early settlers on Long Island subsisted primarily on grains, such as wheat, corn, rye, and oats, and vegetables. Cattle were imported from England in the early 1600s, and sheep were introduced in the area in the mid-seventeenth century. Pork was also considered a staple of the seventeenth century diet (Munsell 1882:44–45). Col. William Smith purchased Mastic from the natives in 1691 and incorporated it under the name St. George's Manor. The territory was divided into a few large farms; the rest of the region remained forest (Bayles 1874).

In the early part of the eighteenth century, transportation on Long Island consisted of travel by boat, or on land via the "Great South Road." This road, commissioned in 1732 and completed in 1735, served as the principal east-west route on Long Island. Smaller local roads, known as "paths," radiated outward from the main road and provided access to waterways, such as the Great South Bay. These roads were also used for driving livestock to clearings near the bay (Munsell 1882:6).

Permanent settlement of what would become Suffolk County did not occur until the mid- to late seventeenth century. At that time central Long Island was occupied by a number of Native American groups, including speakers of the Mohegan-Pequot-Montauk Algonquian language. The area of Brookhaven was occupied by the Patchogue (Pochaug) people (Bernstein and Merwin 2003; Mazeau 2010:30; Salwen 1978). Among the earliest settlements in the Suffolk County area was Setauket, established in 1655 northwest of present-day Mastic and Shirley, on the island's north shore.

Throughout the eighteenth century Suffolk County was inhabited primarily by landowners with large farmsteads. Besides raising food for subsistence, many landowners in the region operated a variety of enterprises on their farmsteads, such as mills and retail and tool manufacturing businesses. The typical large farms in Suffolk County during the colonial era functioned as "small scale capitalistic enterprises" (Gramly 1977). Slave labor was often used in the operation of the largest farmsteads (Gramly 1977). Industries were few during the eighteenth century; most farms in the area were nearly self-sufficient.

During the nineteenth century farming continued to dominate the economy of the region. Other than farming, the most important industry to develop was the cordwood industry, followed by the whaling and fishing industries, which led to an increase in the region's settlement. Agricultural activity gradually declined, a trend that continued into the twentieth century. By 1960 only 2 percent of the population worked in agriculture (USDA 1975:94). This decline included the once thriving cranberry industry, which had disappeared by the 1970s. Coastal areas became resort locations for "weekenders," and a new transportation network was constructed across the island.

The gradual trend toward suburbanization on Long Island began in the early nineteenth century when reliable steam ferry service allowed the more prosperous Wall Street workers to get to homes in Brooklyn Heights. After the Civil War streetcar suburbs sprawled out onto the plains farther to the east. Waves of immigrants spilling over from New York City (mostly Italian-Americans, Irish-Americans and Jewish-Americans) further stimulated urban growth in the eastern sections of Brooklyn. In the 1920s and 1930s, Long Island began a complete transformation from backwoods and farms to become the paradigm of the American suburb. With Long Island Parks Commissioner Robert Moses leading the way, a number of parkways began to span the entire island, along with various state parks. The shoreline of Long Island very quickly became New York City's retreat (Molle 1982).

After World War II Long Island's population skyrocketed, stimulated by more and more reliable transportation systems, with development following the establishment of a parkway system, allowing greater and greater numbers of workers in New York City to commute to more affordable and spacious living areas. The most famous postwar development was Levittown. Positioned along the Wantagh Parkway in the area known as Island Trees, it became the first place to reproduce houses on a grand scale, providing great opportunities for GIs returning home to start families (Dade 1989). The success of Levittown stimulated what would eventually be criticized as "suburban sprawl." Nassau County was the first to become densely populated, but it was just a matter of time before its eastern counterpart, Suffolk County, would experience the same massive and quick growth (Molle 1982). Rapid development further increased with the opening of the Sunrise Highway and the Jericho Turnpike. Post-World War II industrialization would permanently diminish the agricultural life of the area. The landscape was overtaken by a growing emphasis on manufacturing and suburban sprawl, which still exists today.

1. Historical Map Review

The historical map research identified 24 different map-documented structures (MDSs) in the project area from the late eighteenth through mid-twentieth centuries. A 1797 map of the Town of Brookhaven (Hulse 1797) depicts a road, possibly a version of the present-day Montauk Highway, from the Connecticut River (now known as the Carmans River) to the Forge River (Figure 3). One structure is located in the current project area north of the road just west of the river. No other structures are shown in the project area. The Chase (1858) a map of Suffolk County depicts five structures between the Connecticut (Carmans) River and the Forge River along the road in the project area (Figure 4). Three additional structures are adjacent to the west side of the Forge River, two of which are labeled "S. Mill." A portion of land between the present-day Poospatuck Creek and Second Neck Creek is labeled Poospat Indians, and six additional structures are shown here. An additional structure is shown to the southeast, just north of Riverside Avenue. A couple of roads have been extended and more have been added, but the majority of the project area does not show development. The Beers (1873) map of the of the Town of Brookhaven shows the same number of structures along the Montauk Highway, and the portion of land between Poospatuck Creek and Second Neck Creek is labeled Poospattuck Indians (Figure 5). The two sawmills are gone and a new structure labeled "W.R." is north of Second Neck Creek. The project area remains largely undeveloped, further depicted by the multiple illustrations of trees between the Forge and Carmans rivers. Two of the structures along the Montauk Highway are no longer present on the United States Geological Survey (USGS) map of 1904 (Figure 6). A structure with a cross, possibly a church and/or cemetery, is depicted in the area of the Poospatuck Indians. Also within the reservation, two structures do not appear to be present that were depicted on the previous two maps, and one additional structure appears at the east end of Poospatuck Lane. The railroad that was drawn as proposed on the Beers (1873) map has been added, and a structure east of present-day Mastic Road and north of the railroad is labeled "Mastic Sta." Six additional MDSs are located south of Riverside Avenue (Table 3).

The USGS (1926) map is similar to the 1904 map, with the same number of structures and the majority of the project area still undeveloped (Figure 7). The current project area does not begin to take its current form until the early to mid-twentieth century, as depicted on the USGS (1957) map (Figure 8). Today the project area contains mostly residential neighborhoods except for the Montauk Highway Business Corridor, which contains mostly commercial development.

Early maps of the area show some development in the Mastic area primarily concentrated along the Montauk Highway. The Beers (1873) map depicts with some accuracy historical lots, buildings, and associated owners (see Figure 4). A total of 13 MDSs indicated on the Beers (1873) map fall within the bounds of the current project area (Table 3).

The majority of MDSs indicated on the Beers (1873) map are restricted to specific portions of the project area. Of particular note is a section of present-day Montauk Highway between the Forge River and William Floyd Parkway and the southeast portion of the project area west of the Forge River and north of Poospatuck Creek. Most of the residential and commercial development in the project area appears to have occurred during the mid-twentieth century. The majority of the project area appears characteristic of mid- to late twentieth-century suburban residential development with a commercial stretch along the Montauk Highway and William Floyd Parkway.

2. Historical Sensitivity Statement

The majority of the project area is characterized by mid- and late twentieth-century and early twenty-first-century residential development and is overall considered to have low sensitivity for historical archaeological resources. However, portions of the project area where MDSs have been identified are considered to have moderate to high sensitivity for historical archaeological resources. These include portions of the project area along the Montauk Highway Business Corridor, Lafayette Avenue, Main Road (and its associated side streets), and the southeast portion of the project area that lies within the Poospatuck Reservation.

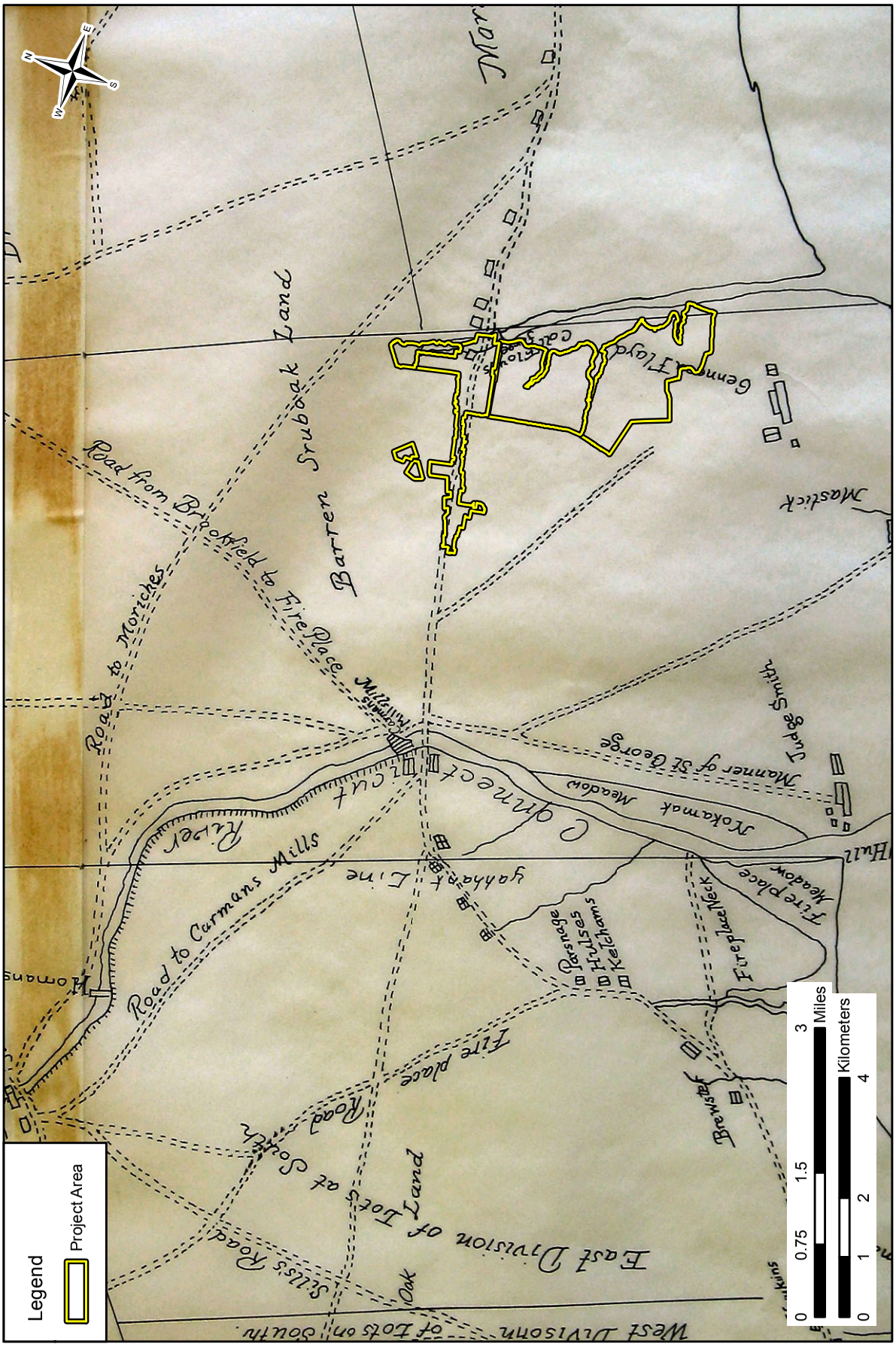

FIGURE 3: Project Area in 1797 (Hulse 1797)

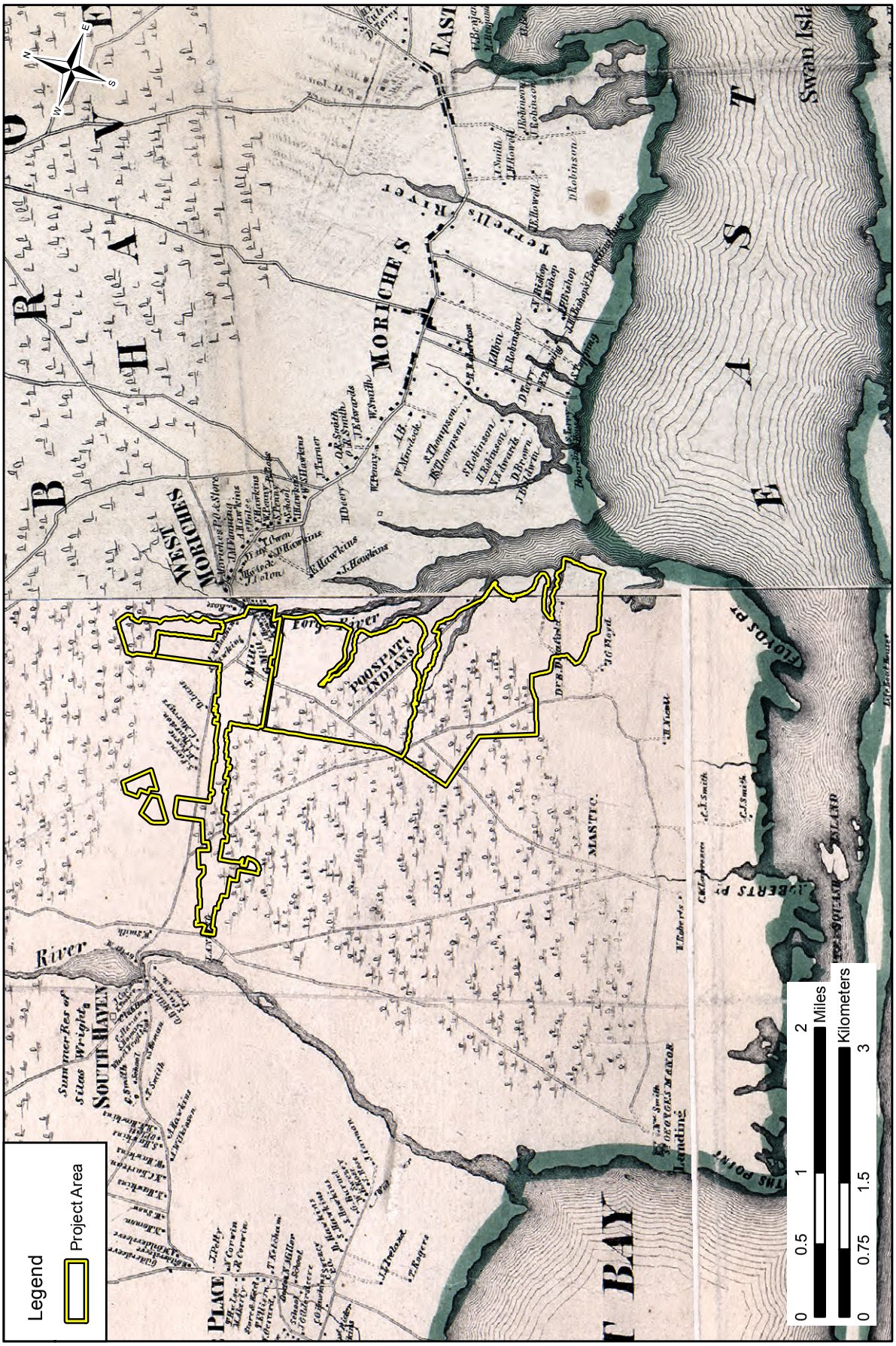

FIGURE 4: Project Area in 1858 (Chace 1858)

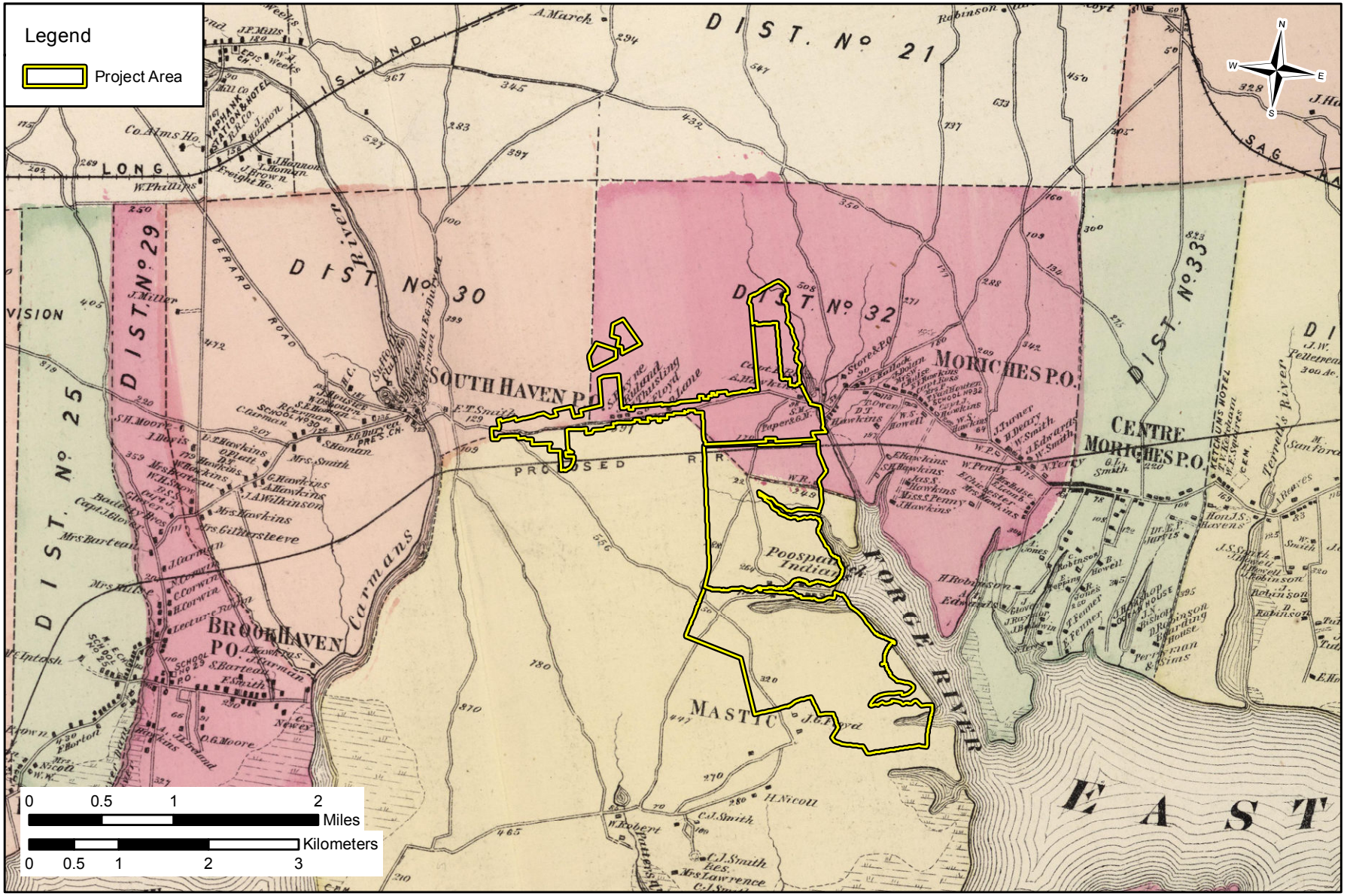

FIGURE 5: Project Area in 1873 (Beers 1873)

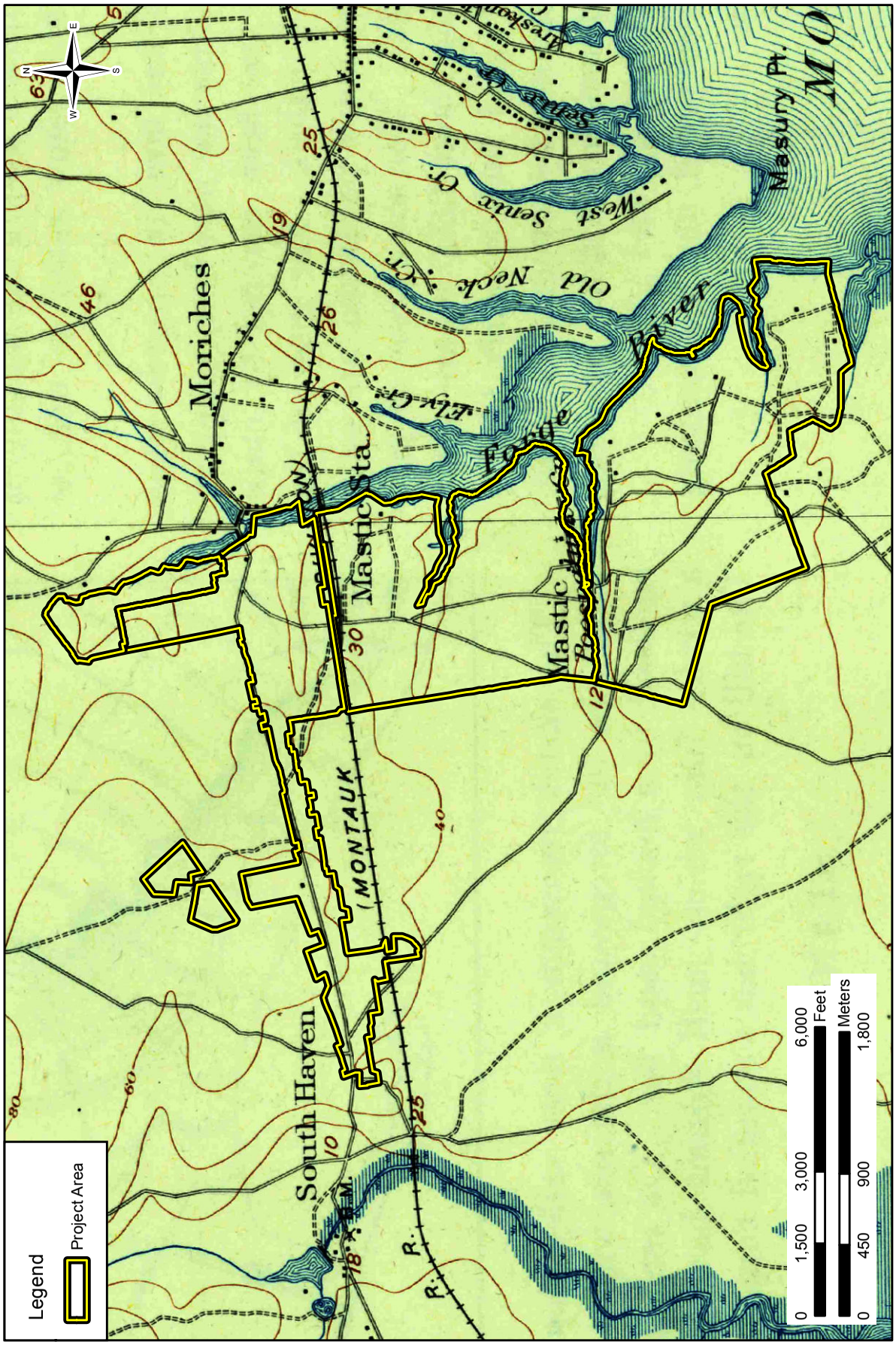

FIGURE 6: Project Area in 1904 (USGS Moriches 1904)

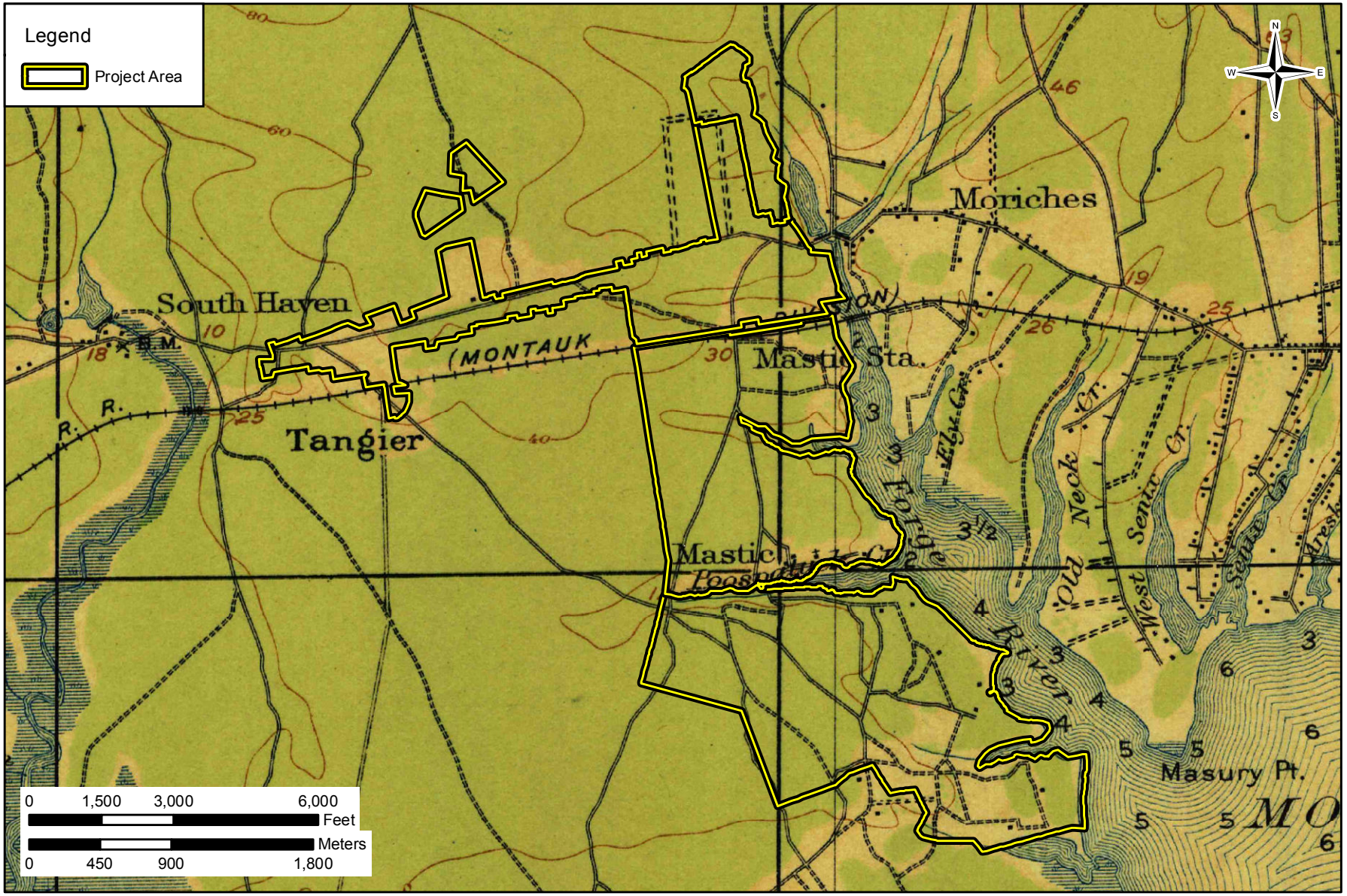

FIGURE 7: Project Area in 1926 (USGS Moriches 1926)

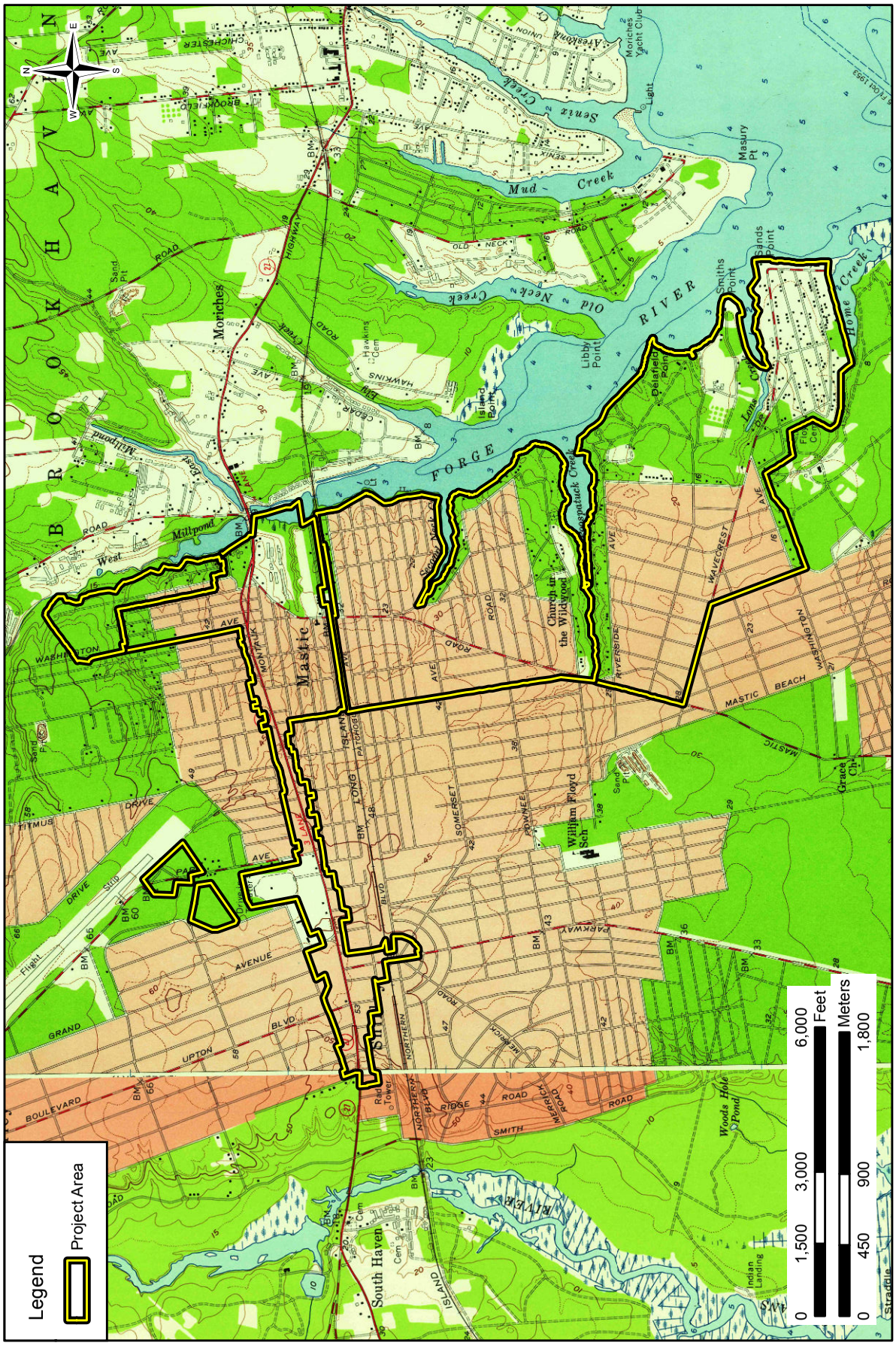

FIGURE 8: Project Area in 1957 (USGS Bellport 1956, Moriches 1957)

TABLE 3

HISTORICAL MAP-DOCUMENTED STRUCTURES IN THE PROJECT AREA

MAP-DOCUMENTED STRUCTURE	APPROXIMATE LOCATION	1797 (Figure 3)	1858 (Figure 4)	1873 (Figure 5)	1904 (Figure 6)	1926 (Figure 7)
1	Montauk Highway, between Lambert Ave and Bonny Dr	-	X	S. Payne	X	X
2	Montauk Highway, between Lambert Ave and Bonny Dr	-	X	J. Ruland	-	-
3	Montauk Highway, between Lambert Ave and Bonny Dr	-	X	J. Thusling	-	-
4	Montauk Highway, between Lambert Ave and Bonny Dr	-	X	J. Floyd	X	X
5	Montauk Highway, between Lambert Ave and Bonny Dr	-	X	D. Lane	X	X
6	Possibly 5 Lafayette Ave	X	X	A. Hawkins	X	X
7	South of Montauk Highway between Mastic Rd and Forge River	-	S. Mill	-	-	-
8	South of Montauk Highway between Mastic Rd and Forge River	-	S. Mill	-	-	-
7	Vicinity of Main Ave, east of Mastic Rd	-	-	W.R.	X	X
8	Between Poospatuck Lane and Meadowmere Avenue (Poospatuck Indian Reservation)	-	X	X	X	X
9	South of Meadowmere Avenue (Poospatuck Indian Reservation)	-	X	X	X	X
10	North of Poospatuck Lane (Poospatuck Indian Reservation)	-	X	X	X	X
11	South of Poospatuck Lane (Poospatuck Indian Reservation)	-	X	X	X	X
12	South of Poospatuck Lane (Poospatuck Indian Reservation)	-	X	X	-	-
13	South of Poospatuck Lane (Poospatuck Indian Reservation)	-	X	X	-	-
14	North of Poospatuck Lane (Poospatuck Indian Reservation)	-	-	-	Structure with cross	Structure with cross
15	East end of Poospatuck Lane (Poospatuck Indian Reservation)	-	-	-	X	X
16	East of Mastic Road, North of Railroad				Mastic Sta.	Mastic Sta.
17	North of Riverside Ave	-	X	-	-	-
18	South of Old Mastic between Woodcut and Biltmore Dr	-	-	-	X	X
19	East Old Mastic Drive	-	-	-	X	X

TABLE 3 (continued)

MAP-DOCUMENTED STRUCTURE	APPROXIMATE LOCATION	1797 (Figure 3)	1858 (Figure 4)	1873 (Figure 5)	1904 (Figure 6)	1926 (Figure 7)
20	East Old Mastic Drive and Dana Ct	-	-	-	X	X
21	East Old Mastic Dr, off private road	-	-	-	X	X
22	North side intersection of Old Mastic and Private Rd	-	-	-	X	X
23	East Side Oceanview Dr	-	-	-	X	X
24	South Side Shore Dr	-	-	-	X	X

X=Unnamed structure

III. Reconnaissance Survey

A. Field Methods

The background research indicated that portions of the project area have a moderate to high probability for precontact and historical archaeological resources. The pedestrian reconnaissance survey was conducted on January 20, 2016 and April 13, 2016. This fieldwork assessed the ground surface and the potential for past ground-disturbing activities that may preclude archaeological sensitivity. Louis Berger staff surveyed the project area and noted areas of both large-scale ground disturbances, and precontact or historical archaeological sensitivity. Specific areas of ground-disturbing impacts from the Forge River Watershed Sewer Project have not been determined, precluding detailed assessments of specific areas of impact. Therefore Louis Berger staff took a broad approach to assessing general project area sensitivity. Although the entire project area, as currently defined, was visually inspected, attention focused on areas with MDSs identified during the background research. The survey focused primarily on assessing conditions of lots fronting the streets.

B. Results

1. Area West and South of Second Neck Creek and North of Poospatuck Creek

This portion of the project contains the Poospatuck Reservation, home of the Unkechaug Indian Nation. According to the USDA-NCRS soil data, most of this area consists of Riverhead sandy loam. Carver and Plymouth sands are more abundant near the water. Six structures are depicted on the Beers (1873) map just north of the Poospatuck Creek (see Figure 5). One structure, north of Poospatuck Lane and east of the fork on the 1873 map, is possibly in the same location as 151 Poospatuck Lane, which is noted as a historical site (Photograph 1). The Poospatuck Community Cemetery (Photograph 2) on the south side of the street across from this structure is noted on the USGS (1904) map (see Figure 6). The remaining portions of the Poospatuck Reservation are a mix of residential and commercial buildings (Photograph 3). The commercial buildings are largely convenience stores, gas stations, and smoke shops that appear to be consistent with mid- to late twentieth-century development (Photograph 4).

Those areas south of Second Neck Creek not within the reservation are primarily suburban residential domestic structures (Photographs 5–8). These appear to be constructed during the mid-twentieth century and are not depicted on maps identified during the historical map review.

Overall, this portion of the project area is considered to have increased sensitivity for archaeological resources because of the proximity to water, the MDSs dating as far back as at least 1873, and the potential presence of resources related to the Unkechaug Indian Nation.

2. Area North of Second Neck Creek and West of Forge River and the Millponds

This portion of the project area was largely undeveloped according to the Beers (1873) map as only two structures are depicted, W.R. and A. Hawkins (see Figure 5). The structure labeled W.R. may be in the vicinity of present-day Main Avenue, but it could not be identified during survey. It is possible that A. Hawkins could be 5 Lafayette Avenue (Photograph 9). There is a parking lot and vacant lot on the southeast corner of Mastic Road and Mastic Boulevard in the vicinity of the structure on the USGS (1904) map labeled Mastic Sta. (see Figure 6). The area along the Montauk Business Corridor are commercial structures, and the remaining portions of the project area are suburban residential buildings that appear to date to the mid- to late twentieth century.

There appears to be some undeveloped land south of the Montauk Highway and west of East Mill Pond that could potentially contain some undisturbed archaeological deposits, although the topography contains some steep slope with undulating terrain, wetlands, and Swift Creek (Photographs 10–13).

PHOTOGRAPH 1: Poospatuck Historical Site in the Vicinity of an 1873 Map Documented Structure, View North

PHOTOGRAPH 2: Poospatuck Community Cemetery in the Vicinity of a 1904 Map-Documented Cemetery, View South

PHOTOGRAPH 3: Overview of Poospatuck Lane, View East

PHOTOGRAPH 4: View of Smoke Shop Business, View South

PHOTOGRAPH 5: Overview of Jeanatta Avenue, View East

PHOTOGRAPH 6: Overview of Dover Avenue, View West

PHOTOGRAPH 7: Overview of Cumberland Street, View North

PHOTOGRAPH 8: Overview of Robinwood Street, View North

PHOTOGRAPH 9: Google Street View of 5 Lafayette Avenue, in the Vicinity of an 1873 MDS, View Northeast (Google Maps Street View 2013)

PHOTOGRAPH 10: Swift Creek and Surrounding Wetlands, View East

PHOTOGRAPH 11: Slope down to Swift Creek, View South

PHOTOGRAPH 12: Swift Creek and Surrounding Wetlands, View West

PHOTOGRAPH 13: Slope Down to Swift Creek, View North

Overall this portion of the project area consists of twentieth-century residential development. Most of the soils mapped in this portion of the project area consist of Carver and Plymouth Sands adjacent the water and Riverhead sandy loam in the majority of the remaining portion. These areas are considered to have an increased sensitivity for precontact archaeological resources. Those areas in the vicinity of possible nineteenth-century MDSs should be classified as sensitive as the front yards of the lots outside the current sewer right-of-way have the potential to possess preserved nineteenth-century deposits related to the historical occupations.

3. Montauk Highway Business Corridor

The majority of the project area along the Montauk Highway consists of twentieth-century commercial development (Photograph 14). Only five structures, other than A. Hawkins, appear on the Beers (1873) map along this road (see Figure 5). They appear clustered together near East and West Millpond and present-day William Floyd Parkway. This situates these structures roughly between present-day Lambert Avenue and Bonny Drive. It is likely that these buildings were either razed or moved sometime after 1873. During survey, a vacant lot was inspected for proposed Pump Station 2. Along the wood line and in the woods perennial plants were observed (Photograph 15). It is possible that these are associated with a former MDS; however, subsurface testing would be needed to confirm the presence of archaeological deposits.

As with other portions of the project area, most of the soils mapped in these portions consist of Riverhead sandy loam and Carvery and Plymouth sands. Urban Land is also located in this section of the project area. Significant development has occurred along this portion of the project area, but portions between the sidewalk and front lots of these parcels may still contain intact soils and deposits, provided there are no buried utilities. The presence of the Oak Site and Stuyvesant Site to the north along Route 27 suggest a sensitivity for precontact sites along the Montauk Highway.

Undeveloped woodlands are located along the west edge of the northern reach of Second-Neck Creek and north of Montauk Highway. The soils mapped immediately adjacent to Second-Neck Creek are Swansea muck coastal lowlands and were not considered sensitive for precontact sites. However, the landform located above the creek is mapped as Carver and Plymouth sands and is considered sensitive for precontact sites based on distance to water resources and presence of well-drained soils and level ground. Generally speaking, the undeveloped level woodlands located behind the extant residential developments have potential to contain intact precontact archaeological deposits. In the developed lots between the creek, Montauk Highway, Route 27, and the west edge of the APE, the front yard spaces generally appear to be artificially smoothed/landscaped (Photographs 16 and 17).

4. Mastic Beach

Similar to the majority of the project area, Mastic Beach is largely developed for residential occupation. The area located between Riverside Avenue, Mastic Road, Washington Avenue, and Biltmore Drive, as well as that located below Wavecrest Drive, consists of small residential house lots. The area located east of Biltmore Drive is largely large house lots and large tracts of undeveloped woodland that are accessible via gated private roads such as Old Mastic Drive, Estate Drive, and Pineway Avenue (see Figure 1). The majority of development in this portion of the project area dates to the mid- to late twentieth century. A review of historical maps indicates very limited early occupation in this area; sparse occupation apparently began around 1900 (see Figures 6 and 7). One mid-nineteenth-century structure is mapped on the north side of Riverside Avenue (see Table 3); however, this area was heavily developed during the twentieth century and was not delineated for historical archaeological sensitivity. Front yard spaces generally appear artificially smoothed/landscaped in residential lots and therefore archaeological sensitivity is not indicated (Photographs 18 and 19). Undeveloped level woodlands with mapped soils suitable for the preservation of archaeological deposits were considered sensitive for precontact archaeological sites (see Section C, below).

5. Proposed Pump Stations

Ten proposed pump stations are located throughout the project area. Each of these sites is on a vacant parcel.

Proposed Pump Station (PS) 1 is situated along the west end of the project area and is on a relatively flat parcel overgrown with vegetation and brush (Photograph 20). The Oak Site is 0.8 kilometer (0.5 mile) northeast of the proposed station, and the Wertheim Site is 0.8-kilometer (0.5-mile) southwest of the proposed station. The Carmans

PHOTOGRAPH 14: Overview of Montauk Highway, View West

PHOTOGRAPH 15: Proposed Pump Station 2 Site, View East

PHOTOGRAPH 16: Development and Front Yard Spaces on Franklin Avenue, View South

PHOTOGRAPH 17: Woodland at End of Lafayette Avenue, View North

PHOTOGRAPH 18: Typical Front Yard Conditions in Mastic Beach Showing Shore Drive, View East

PHOTOGRAPH 19: Mayfield Drive and Pineway Avenue, Showing Typical Landscaping, View East

PHOTOGRAPH 20: Proposed Pump Station 1 Site, View North

River is approximately 0.6 kilometer (0.4 mile) west of proposed Pump Station 1. The first 15 meters (50 feet) north of Montauk Highway consist of cut and fill land from urban development, but the remainder of the parcel contains intact soils of Riverhead sandy loam. The proximity of existing sites, water, and possibly intact soils suggest an increased sensitivity for buried deposits.

Approximately 1.6 kilometers (1 mile) east of proposed PS 1 is proposed PS 2. Similar to proposed PS 1, PS 2 contains relatively flat terrain with overgrown vegetation and brush. Large oak trees line the front of the parcel along the Montauk Highway (Photographs 21 and 22). The Oak Site is approximately 0.9 kilometer (0.56 mile) west of PS 2. The entire parcel consists of Plymouth loamy sand and is presumably intact. The intact soils and the presence of a nearby site suggest precontact archaeological sensitivity. As previously noted, this proposed pump station is in the vicinity of the documented structures in the Beers (1873) map. Perennials were located along the wood line and in the woods of this parcel (see Photograph 15). This suggests a heightened archaeological sensitivity for historical sites.

Proposed PS 3 is situated west of West Mill Pond and north of the Montauk Highway. Although the site is adjacent to water, there is steep slope not conducive to the presence of buried deposits (Photograph 23); the soil data indicates Carver and Plymouth sands on 15 to 35 percent slopes. The final plans and proposed impact were not known at the time of survey, but should PS 3 be placed on the ridgetop above the slope or adjacent the water below the slope, testing may be required.

Situated east of Mastic Road, approximately 50 meters (162 feet) south of Swift Creek is proposed PS 4. Swift Creek empties into East Mill Pond just 560 meters (1,839 feet) to the east. This lot was developed previously, indicated by the surficial foundations (Photograph 24). According to the USDA-NRCS, the north side of the cleared area in the lot contains Carver and Plymouth sands. The south side contains cut and fill land. With the proximity to water, the location has archaeological sensitivity; subsurface testing would be needed to determine the extent of any previous ground-disturbing events.

Located approximately 90 meters (295 feet) west of Second Neck Creek, proposed PS 5 contains slope down the east and north sides of the parcel to a level area (Photograph 25). Soils in the vicinity are Carver and Plymouth sands with 15 to 35 percent slopes. Those areas not on the slope contain archaeological sensitivity for precontact sites.

Proposed PS 6 is situated on relatively flat terrain approximately 135 meters (443 feet) north of Second Neck Creek. The parcel is overgrown with brush (Photograph 26), but soils appear to be intact and consist of Riverhead sandy loam. The location for PS 6 is archaeologically sensitive for precontact sites.

Located approximately 122 meters (401 feet) north of Poospatuck Creek is the site of proposed PS 7. A gentle slope runs down from the road to the interior of the parcel, which sits below road grade. Soils are mostly Plymouth loamy sand with some Riverhead sandy loam. The parcel is highly overgrown with vegetation and brush (Photograph 27). Because of the proximity to water, the location just 107 meters (353 feet) from the current west boundary of the Poospatuck Reservation, and potentially intact soils, this location contains archaeological sensitivity for precontact sites.

Proposed PS 8 is located approximately 94 meters (308 feet) west of the Forge River and adjacent to the north boundary of the Poospatuck Reservation. Soils appear intact and consist of Carver and Plymouth sands. The parcel is overgrown with vegetation and brush (Photograph 28) but appears undisturbed. There is archaeological sensitivity for the location of proposed PS 8.

Proposed PS 9 is located on the south side of Washington Avenue below the intersection of Washington Avenue and Woodcut Drive in Mastic Beach. This PS is approximately 464 meters (1,525 feet) west of Poospatuck Creek. The PS will be installed within an empty lot measuring approximately 1.5 hectares (0.5 acre). The lot is level and wooded with limited visible disturbances (Photograph 29). No evidence of precontact or post-contact artifacts or features was visible at the surface during the survey. The soils in this area are mapped as Riverhead sandy loam. There is archaeological sensitivity for the location of proposed PS 9.

Proposed PS 10 is located approximately 98 meters (324 feet) north of Home Creek and 936 meters (3070 feet) west of Forge River. The PS is planned for a vacant wooded lot bound to the west by Park Place and to the east by Grassmere

PHOTOGRAPH 21: Proposed Pump Station 2 Site, View East

PHOTOGRAPH 22: Proposed Pump Station 2 Site, View North (note the older oak trees at the edge of the frame)

PHOTOGRAPH 23: Proposed Pump Station 3 Site, View Northeast (note the slope down to the pond)

PHOTOGRAPH 24: Proposed Pump Station 4 Site, View Northeast (note cement slab)

PHOTOGRAPH 25: Proposed Pump Station 5 Site, View West

PHOTOGRAPH 26: Proposed Pump Station 6 Site, View South

PHOTOGRAPH 27: Proposed Pump Station 7 Site, View West

PHOTOGRAPH 28: Proposed Pump Station 8 Site, View North

PHOTOGRAPH 29: Proposed Pump Station 9 Site, View South

Drive in Mastic Beach. The lot measures approximately 0.4 hectare (1 acre) and rises slightly in elevation above street level. At the time of the surface survey, the lot was generally overgrown, consisting of young tree cover mixed with low-growing brush (Photograph 30). Brush piles were also evident at the time of the survey along with an access cut from Park Place. Soils are mapped as Riverhead sandy loam. Historical maps suggest that this lot has not been developed. This location would be sensitive for the presence of precontact archaeological resources.

6. Advanced Wastewater Treatment Facility

The Wastewater Treatment Facility location is situated equidistant, approximately 1.77 kilometers (1.1 mile), east of the Carmans River and west of West Mill Pond. The proposed site is 0.3 kilometer (0.2 mile) west of the Dain Site and 0.5 kilometer (0.3 mile) northeast of the Oak Site. The terrain is relatively flat and lightly wooded (Photographs 31-33). Soils are Riverhead sandy loam with 0 to 3 percent slopes and appear intact. The Mastic Fire Department Sub Station No. 1 is located between the two proposed water treatment facilities, and an access road to the northwest runway approach intersects the expansion parcel, but that appears to be the only disturbance within these two parcels. Because of the undisturbed terrain and proximity to known sites, both wastewater treatment parcels have archaeological sensitivity.

C. Summary

Louis Berger staff surveyed the project area for the Forge River Watershed Sewer Project in the Town of Brookhaven by means of pedestrian reconnaissance survey. The majority of the project area consists of modern residential and commercial development that has significantly modified the area over the years. These areas are not likely to preserve significant historical or precontact archaeological deposits and are not considered archaeologically sensitive.

The proximity to marine resources for locations along the Forge River, East and West Millpond, Poospatuck Creek, and Second Neck Creek; the probability of intact soils in some areas, primarily at the proposed pump stations and advanced wastewater treatment facility and undeveloped woodlands; and known precontact activity in the project area vicinity support precontact sensitivity for undisturbed portions of the project area. Background research indicated that MDSs were located in portions of the project area. Areas marked for precontact archaeological sensitivity are shown in Figure 9. Those areas marked for historical archaeological sensitivity are shown in Figure 10.

If construction activities will disturb these identified sensitive areas, then Phase IB subsurface testing is recommended to determine if preserved archaeological sites are present.

PHOTOGRAPH 30: Proposed Pump Station 10 Site, View Northeast

PHOTOGRAPH 31: Proposed Advance Wastewater Treatment Facility Main Site, View East

PHOTOGRAPH 32: Proposed Advance Wastewater Treatment Facility Main Site, View North

PHOTOGRAPH 33: Proposed Advance Wastewater Treatment Facility Expansion Site, View North

FIGURE 9A: Archaeologically Sensitive Areas for Precontact Resources (NYSGIS 2013; ESRI 2011)

FIGURE 9B: Archaeologically Sensitive Areas for Precontact Resources (NYSGIS 2013; ESRI 2011)

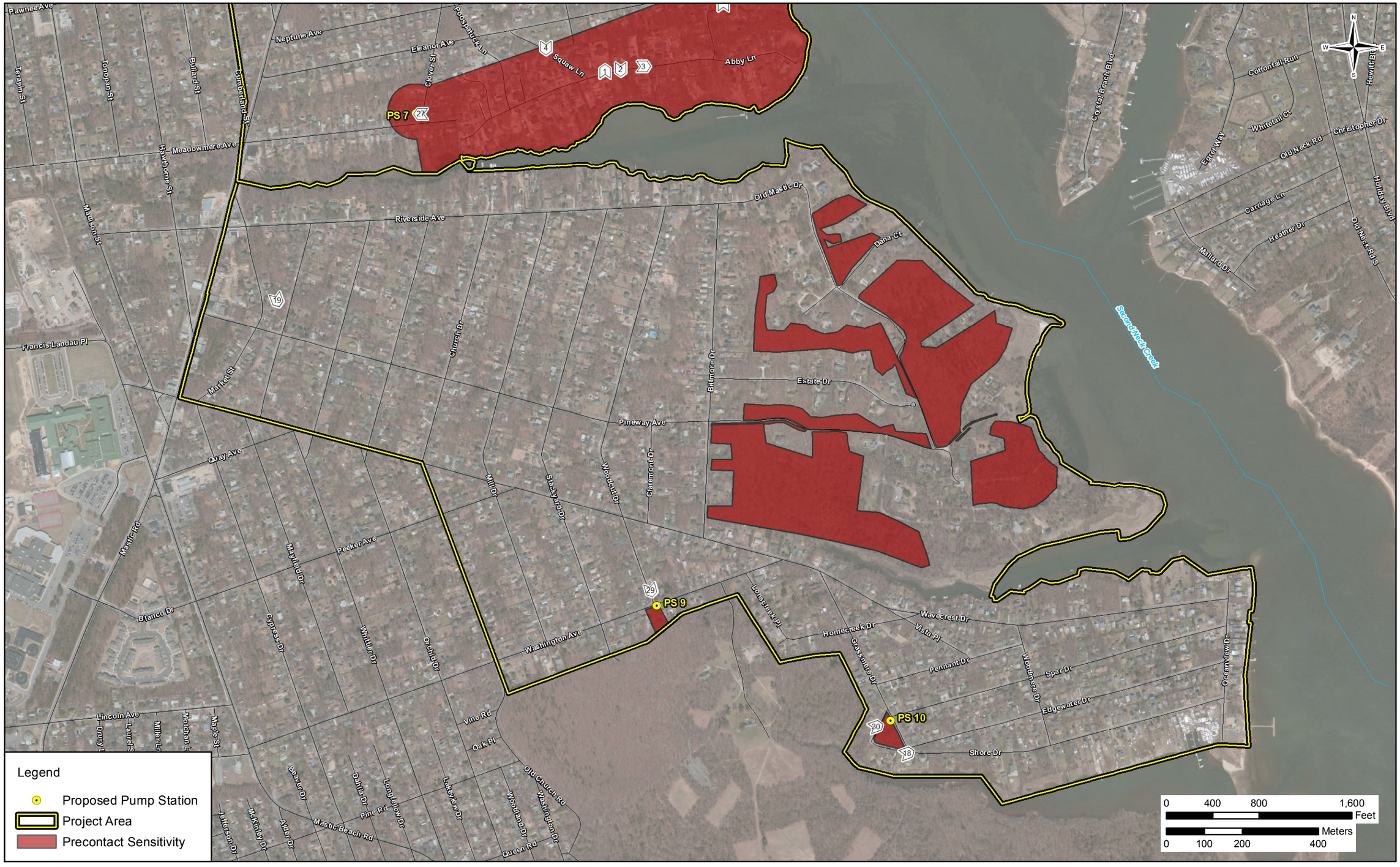

FIGURE 9C: Archaeologically Sensitive Areas for Precontact Resources (NYSGIS 2013; ESRI 2011)

FIGURE 10A: Archaeologically Sensitive Areas for Historical Resources (NYSGIS 2013; ESRI 2011)

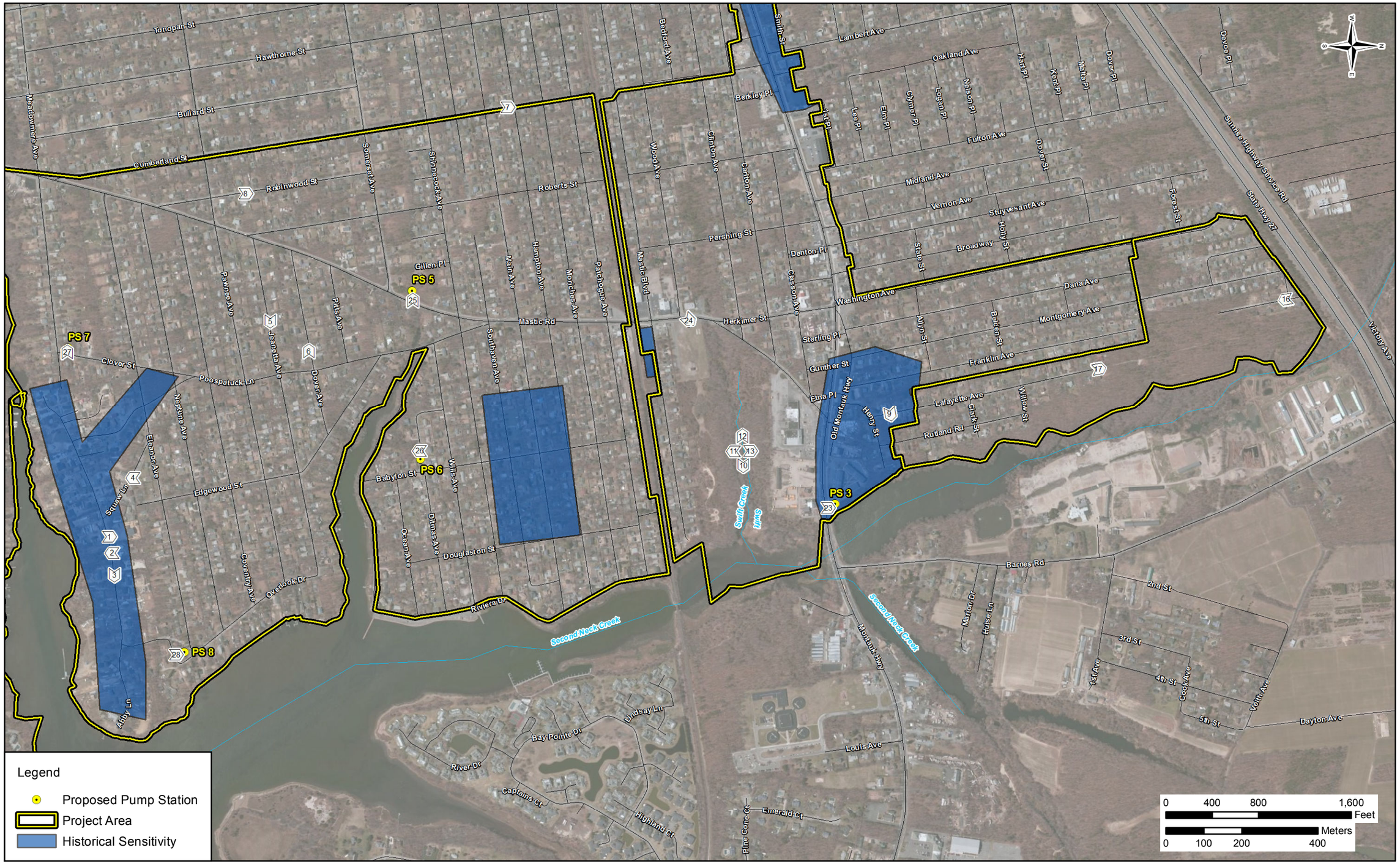

FIGURE 10B: Archaeologically Sensitive Areas for Historical Resources (NYSGIS 2013; ESRI 2011)

FIGURE 10C: Archaeologically Sensitive Areas for Historical Resources (NYSGIS 2013; ESRI 2011)

IV. Conclusions

Louis Berger completed a Phase IA cultural resource reconnaissance survey for the Forge River Watershed Sewer Project in the Town of Brookhaven, Suffolk County, New York (see Figure 1). The New York State GOSR is proposing to fund the quality improvement of groundwater baseflow to the Forge River as it relates to coastal resiliency and the reduction of nitrogen loading to the water bodies as part of the New York State Sandy Recovery efforts funded through the CDBG program.

The proposed quality improvement area (the project area) is composed of 3,662 individual tax lots that encompass approximately 910 hectares (2,250 acres). Infrastructure includes a combination of gravity sewers and low-pressure sewers to provide wastewater collection for the proposed Mastic-Shirley Sewer District. Eight drainage areas are identified for proposed pump stations. Sanitary wastewater from the proposed Mastic-Shirley sewer district will be conveyed to a new sewage treatment plant located on the Town of Brookhaven's Calabro Airport. This Advanced Wastewater Treatment facility includes 5.2 hectares (12.9 acres) plus an expansion area of 6.9 hectares (17 acres) to the east. The area of potential effect for this system will include public rights-of-way where sewer mains are proposed to be constructed, in addition to residential and commercial parcels where lateral sewer connections and on-site grinder stations are proposed. At the time of this cultural resource assessment, project plans were still in the final planning stages and the location of ground-disturbing impacts had not been specifically defined. Therefore Louis Berger took a broader approach to assessing the general project area, focusing attention on identifying particular areas of interest for archaeological sensitivity.

The survey included background research and a pedestrian reconnaissance survey of the project area. The goal of the reconnaissance survey was to assess the potential for cultural resources in the project area and included a review of archaeological site files and cultural resource management projects within 1.6 kilometers (1 mile) of the project area.

The pedestrian reconnaissance survey found that much of the project area has been subjected to degrees of disturbance related to twentieth-century residential and commercial development. However, some portions of the project area that remain undisturbed are sensitive for precontact archaeological resources, based on proximity to marine resources for locations along the Forge River, East and West Millpond, the Poospatuck Creek, and Second Neck Creek; the probability of intact soils in some areas, primarily at the proposed pump stations and advanced wastewater treatment facility and in undeveloped woodland areas; and, known precontact activity in the project area vicinity. Background research indicated that map-documented structures were located in portions of the project area, indicating historical sensitivity in undisturbed areas.

If construction activities will disturb these identified sensitive areas (see Figures 9 and 10), then Phase IB subsurface testing is recommended to determine if preserved archaeological sites are present.

V. References Cited

Bailey, Paul
1962 *Early Long Island, Its Indians, Whaling and Folklore Rhymes*. Long Island Forum, Westhampton Beach, New York.

Bayles, Richard M.
1874 *Historical and Descriptive Sketches of Suffolk County*. Published by the author, Port Jefferson, New York.

Beers, F.W.
1873 *Atlas of Long Island, New York.* F.W. Beers, New York.

Bernstein, David J. and Allison J. Manfra
2005 *A Stage I Archaeological Survey for the proposed Happy Acres Land Division, Shirley, Town of Brookhaven, Suffolk County, New York.* Institute for Long Island Archaeology, Department of Anthropology, SUNY Stony Brook, New York. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

2006 *A Stage I Archaeological Survey for the proposed Davis Homes Land Division, Mastic, Town of Brookhaven, Suffolk County, New York.* Institute for Long Island Archaeology, Department of Anthropology, SUNY Stony Brook, New York. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Bernstein, David J., and Daria E. Merwin
2003 *Stage I Archaeological Survey for the Patchogue River Maritime Center and Riverwalk, Village of Patchogue, Town of Brookhaven, Suffolk County, New York.* Institute for Long Island Archaeology, Department of Anthropology, SUNY Stony Brook, New York. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Brasser, Ted J.
1978 Early Indian-European Contacts. In *Northeast*, edited by Bruce G. Trigger, pp. 78–88. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Broyles, B.J.
1971 *Second Preliminary Report: The St. Albans Site, Kanawha County, West Virginia*. Report of Investigations No. 3. Geologic and Economic Survey, Morgantown, West Virginia.

Cammisa, Alfred G, Felicia B. Cammisa, and Alexander A. Padilla
2005 *Phase I Archaeological Investigation for the proposed Barnes Road Subdivision, Moriches, Town of Brookhaven, Suffolk County, New York.* Tracker Archaeology Services, Monroe, New York. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Chase, Jay
1858 *Map of Suffolk County, Long Island, New York*. John Douglass, Philadelphia.

Cronon, William
1983 *Changes in the Land: Indians, Colonists, and the Ecology of New England*. Hill and Wang, New York.

Dade, George C.
1989 *Picture History of Aviation on Long Island, 1908-1938*. Dover Publications, New York.

Dincauze, Dena, and Michael Mulholland
1977 Early and Middle Archaic Site Distributions and Habitats in Southern New England. In *Amerinds and Their Paleo-environments in Northeastern North America.* Annals of New York Academy of Sciences 288:439–456.

Doucette, Dianna L.
2010 *Archaeological Phase I Survey and Limited Phase II Testing Proposed Headquarters Complex Wertheim National Wildlife Refuge Brookhaven, New York*. Public Archaeology Lab, Pawtucket, Rhode Island. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

2011 *Archaeological Phase I Survey and Limited Phase II Testing Trails and Viewing Platforms, Wertheim National Wildlife Refuge Brookhaven, New York*. Public Archaeology Laboratory, Pawtucket, Rhode Island. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Edwards, R., and A. Merrill
1977 A Reconstruction of the Continental Shelf Areas of Eastern North America for the Times 9,500 BP and 12,500 BP. *Archaeology of Eastern North America* 5:1–42.

Eisenberg, L.
1978 *Paleo-Indian Settlement Patterns in the Hudson and Delaware River Drainages*. Occasional Publications in Northeastern Anthropology 4. Franklin Pierce College, Rindge, New Hampshire.

Funk, Robert
1977 Early Cultures in the Hudson Drainage Basin. In *Amerinds and Their Paleoenvironments in the Northeast*, edited by W. Newman and B. Salwen. Annals of the New York Academy of Sciences 288:316–332.

Gaudreau, Denise C.
1988 The Distribution of Late Quaternary Forest Regions in the Northeast: Pollen Data, Physiography, and the Prehistoric Record. In *Holocene Human Ecology in Northeastern North America*, edited by George P. Nichol, pp. 215–256. Plenum Press, New York.

Google Maps Street View
2013 Street View imagery of the Project Area. Google Earth Imagery capture date August 2013. Accessed online January 26, 2016, at <https://www.google.com/maps>.

Gramly, Richard M.
1977 Archaeological Investigations at Pipshave Hollow, Mt. Sinai Harbor, Long Island: a preliminary report. *Anthropology* 1:20–32.

Hulse, Isaac
1797 *Map of the Town of Brookhaven in the County of Suffolk*. Tracing, undated. Accessed online at <http://brookhavensouthhaven.org/history/maps/1797_map_of_Fire_Place.htm>.

Howson, Jean, and Leonard Bianchi
2012 *River Road Path Phase I Archaeological Survey, Town of Brookhaven, Suffolk County, New York*. The RBA Group, Inc. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Isachsen, Y.W., E. Landing, J.M. Lauber, L.V. Rickard, and W.B. Rogers
2000 *Geology of New York: A simplified Account.* Second edition. New York State Museum Education Leaflet No. 28. University of the State of New York, Albany.

Lightfoot, Kent G., and James Moore
1985 Interior Resources Exploitation: A Woodland Settlement Model for Long Island, New York. *Anthropology* 8:15–40.

Mazeau, Daniel E.
2010 *Cultural Resources Reconnaissance Survey Report, PIN 0059.08, NYS Route 27 from NYS Route 112 to Wading River Road, Suffolk County, New York.* Cultural Resources Program, New York State Museum, Albany. On file, Office of Parks, Recreation and Historic Preservation, Waterford, New York.

Molle, Robert
1982 Remarks of Robert Molle: Republic Airport Commission Meeting, October 28.

Mulholland, Mitchell T.
1988 Territoriality and Horticulture: A Perspective for Prehistoric Southern New England. In *Holocene Human Ecology in Northeastern North America*, edited by George P. Nichols, pp. 137–166. Plenum Press, New York.

Munsell, W.W.
1882 *History of Suffolk County, New York*. George MacNamara, New York.

Newman, W.S.
1977 Late Quaternary Paleoenvironmental Reconstruction: Some Contradictions from Northwestern Long Island, New York. In Amerinds and Their Paleoenvironments in the Northeast, edited by W. Newman and B. Salwen. *Annals of the New York Academy of Sciences* 288:545–570

New York Archaeological Council
1994 *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*. New York Archaeological Council. Available through the New York State Office of Parks, Recreation and Historic Preservation, Historic Preservation Field Services Bureau, Peebles Island, Waterford, New York.

New York State Geographic Information Systems [NYS GIS]
2013 Orthoimagery. New York State Geographic Information Systems Clearinghouse, Albany. Accessed online February 2016 at <http://www.nysgis.state.ny.us/>.

New York State Education Department [NYSED]
2004 *Work Scope Specifications for Cultural Resource Investigations on New York State Department of Transportation Projects*. New York State Education Department Cultural Resources Survey Program. New York State Education Department and New York State Museum, Albany.

Ritchie, William A.
1980 *The Archaeology of New York State*. Revised edition. Harbor Hill Books, Harrison, New York.

Ritchie, William A., and Robert E. Funk
1973 *Aboriginal Settlement Patterns in the Northeast*. Memoir 20. New York State Museum and Science Service, Albany.

Salwen, Bert
1978 Indians of Southern New England and Long Island: Early Period. In *Northeast*, edited by Bruce Trigger, pp. 160–178. Handbook of North American Indians, Volume 15, William Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Saxon, W.
1973 The Paleo-Indian on Long Island. *New York State Archeological Association Bulletin* 57:1–11.

Sirkin, Les
1996 *Western Long Island Geology with Field Trips.* Book and Tackle Shop, Watch Hill, Rhode Island.

Snow, Dean R.
1980 *The Archaeology of New England.* Academic Press, New York.

United States Department of Agriculture [USDA]
1975 *Soil Survey of Suffolk County, New York.* Prepared by John W. Warner, Jr., W.E. Hanna, R.J. Landry, J.P. Wulforst, J.A. Neeley, R.L. Holmes, and C.E. Rice for the United States Department of Agriculture, Soil Conservation Service, Washington, D.C.

United States Department of Agriculture-Natural Resource Conservation Service [USDA-NRCS]
2015 *Suffolk County, New York*. Soil Survey Geographic (SSURGO) Database. United States Department of Agriculture-Natural Resources Conservation Service, Washington, D.C. Accessed online July 2015 at <http://websoilsurvey.sc.egov.usda.gov>.

United States [U.S.] Department of the Interior
1983 Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register*, Part IV, 48(2):44716-44742. Annotated version showing later technical and officially adopted revisions available from the National Park Service's preservation laws, regulations, and standards webpage at <http://www.cr.nps.gov/local-law/arch_stnds_0.htm>.

United States Geological Survey [USGS]
1904 *Moriches, New York*. 15-Minute Series Topographic Quadrangle. Surveyed 1903, reprinted 1918. United States Geological Survey, Washington, D.C.

1926 *Moriches, New York*. 15-Minute Series Topographic Quadrangle. United States Geological Survey, Reston, Virginia.

1957 *Moriches, New York*. 7.5-Minute Series Topographic Quadrangle. United States Geological Survey, Reston, Virginia.

Weeks, George Lewis
1955 *Some of the Town of Islip's Early History*. Consolidated Press, Bay Shore, New York.

Wyatt, R.J.
1977 The Archaic on Long Island. In *Amerinds and Their Paleoenvironments in the Northeast*, edited by W. Newman and B. Salwen. Annals of the New York Academy of Sciences 288:401–409.

Louis Berger