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PHASE 1A CULTURAL RESOURCE DOCUMENTARY STUDY FOR GERRITSEN'S CREEK ECOSYSTEM RESTORATION

BOROUGH OF BROOKLYN, KINGS COUNTY, NEW YORK

FINAL REPORT

CONTRACT NO. DACW51-01-D-0018, DELIVERY ORDER NO. 0001

Prepared for:

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT

Submitted to:

NORTHERN ECOLOGICAL ASSOCIATES, INC.
451 PRESUMPSCOT STREET
PORTLAND, MAINE 04103

Prepared by:

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AUGUST 2002

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Prepared under the supervision of

Richard W. Hunter
Principal Investigator

MANAGEMENT SUMMARY

A Phase 1A Cultural Resource Documentary Study was performed for the New York District of the U.S. Army Corps of Engineers in connection with a planned ecosystem restoration project along Gerritsen's Creek within Marine Park in the Borough of Brooklyn, Kings County, New York. This study involved background research, field inspection and preparation of this report. The purpose of this work was to provide a preliminary assessment of archaeological potential and cultural resource issues that might affect the implementation of the ecosystem restoration scheme.

No previously documented prehistoric or historical archaeological resources were noted within the project site. Based on historical references, and taking into account the extensive land modification that resulted from the creation of Marine Park in the mid-20th century, there is judged to be a slight potential for intact Native American remains surviving along the banks of Gerritsen's Creek and Mill Creek. Limited periodic monitoring during ecosystem restoration-related excavation activity is recommended, with particular attention being given to any shell deposits that may be encountered at the landfilling/salt marsh interface.

The site of the Gerritsen tide mill, a facility that drew water power from Gerritsen's Creek from at least the mid-18th century (and possibly earlier), is located directly across Gerritsen's Creek from the project site, but is outside the limits of the project area. The tide mill stood until 1936 and was a key component within a Dutch-American Gerritsen family colonial farm/mill complex that was focused on the southwest bank of Gerritsen's Creek, directly opposite the project site. It is thought likely that intact remains of the northeastern end of the mill dam will survive within the project site, both on the creek bed and on the creek bank, beneath 20th-century fill deposits. If this section of the project site cannot be excluded from the ecosystem restoration project, it is recommended that comprehensive background (including primary archival) research be conducted for the tide mill, and that archaeological monitoring be performed during project implementation to document any remains of the mill dam. If the project actions should extend on to the southwestern side of Gerritsen's Creek, further archaeological study of the Gerritsen tide mill and related farm complex would likely be necessary.

No other historical archaeological resources of concern exist within the project limits. There are no historic architectural issues relating to this ecosystem restoration project.

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ACKNOWLEDGMENTS

Various individuals contributed to the completion of this cultural resource study. Particular thanks are extended to Christopher Ricciardi, Archaeologist, New York District, U.S. Army Corps of Engineers, for overseeing this work and for supplying numerous items of direct relevance to the research. Mr. Ricciardi kindly gave us the benefit of his extensive knowledge of this section of Brooklyn and accompanied us on one of our field visits. The staffs of the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Preservation Commission, the New York State Museum, and the Brooklyn Public Library also assisted in providing relevant background research and archival materials for this work.

The background research and fieldwork for this study were undertaken by Damon Tvaryanas, James Cox and Richard Hunter. Report graphics were drafted by Frank Dunsmore and Michael Murphy. Editing and report coordination were undertaken by James Lee with assistance from Nadine Sergejeff and James Cox. This report was authored by Richard Hunter.

Richard W. Hunter, Ph.D., R.P.A.
Principal Investigator

PHASE 1A CULTURAL RESOURCE DOCUMENTARY STUDY FOR GERRITSEN'S CREEK ECOSYSTEM RESTORATION BOROUGH OF BROOKLYN, KINGS COUNTY, NEW YORK FINAL REPORT

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1. INTRODUCTION

A. Project Background and Scope-of-Work

This report describes the results of a Phase 1A Cultural Resource Documentary Study performed for a section of Marine Park in the Borough of Brooklyn, Kings County, New York. This study was conducted by Hunter Research, Inc., working as a subconsultant to Northern Ecological Associates, Inc. (NEA), prime consultant to the New York District of the U.S. Army Corps of Engineers (the Corps), in connection with a planned ecosystem restoration project along Gerritsen's Creek. The project site is located within the block bounded by Avenue U on the northwest, Flatbush Avenue on the northeast, the Belt Parkway on the southeast, and Gerritsen Avenue on the southwest (Figures 1 and 2).

As a federal undertaking, the proposed ecosystem restoration scheme must comply with federal laws and regulations that require consideration of the project's effects on historical and archaeological resources that are listed, or eligible for listing, in the National Register of Historic Places. Specifically, the undertaking is required to be in compliance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended, Executive Order 11593, and the Procedures for the Protection of Historic and Cultural Properties as laid out by the Advisory Council on Historic Preservation in 36 CFR Part 800. In this instance, no standing structures are present within or immediately adjacent to the project site and the bulk of the area comprises fill and dredge deposits laid down over tidal marshland in the early and mid-20th century. The principal concern, therefore, is the potential for significant prehistoric or early historic archaeological resources lying beneath the fill deposits.

The work tasks required for this Phase 1A Cultural Resource Documentary Study were as follows: background research (involving review of agency maps and files, historic maps and published secondary sources, and selective interviewing of local informants); field investigation (involving pedestrian survey and site inspection, but no subsurface testing); and production of interim, draft and final reports that present the findings of the study.

B. Project Description

The purpose of the ecosystem restoration project is to reconstruct 30 acres of tidal wetland habitat within Marine Park in an effort to replicate the pre-20th-century salt marsh landscape that formerly dominated Jamaica Bay and other adjoining estuarine back bay settings. Restoration will aim to re-establish pre-disturbance aquatic functions and related physical and biological characteristics.

The 30 acres of restored habitat will comprise 19.5 acres of inter-tidal salt marsh and 10.5 acres of rare coastal grassland, and will be accomplished through a combination of: 1). excavation of dredged material; 2). the placement of this material in a different location within the existing upland fill at Marine Park; and

3). re-contouring of the "cleaned" area to establish high quality salt marsh across a gradually rising transition zone from open water to wetland. The cultural resource documentary study and assessment of archaeological potential have focused on an approximate ten-acre area within the larger 30-acre ecosystem restoration site where extensive ground disturbance and penetration of the fill deposits to pre-20th-century marsh levels may be anticipated. The area of cultural resource study, which occupies the left bank of Gerritsen's Creek just south of Avenue U and the Marine Park Salt Marsh Nature Center, is delineated on Figure 2, on several historic maps, and on the detailed site plan that combines present-day and mid-1930s topography (see below, Figure 16).

C. Previous Research and Principal Sources of Information

The current cultural resource assessment builds directly on an earlier baseline cultural resource study performed for the Jamaica Bay Ecosystem Restoration Project (Panamerican Consultants, Inc. 2000), which provides a valuable broad-based compilation of cultural resource knowledge to date. Other recent archaeological studies of particular relevance to this assessment include: a report on a program of small-scale research excavations conducted in 1979 in the Ryders Pond/Marine Park area to the west of the current project site, where evidence of Late Woodland period shell middens and related occupation was found (Bankoff and Winter 1979); an overview study of the archaeology of Gerritsen's Creek with a particular emphasis on the tide mill (Loorya 1996); a historical and archaeological synthesis of the Canarsee Indians (Ricciardi 1996); and a report on excavations conducted on the site of the Salt Marsh Nature Center prior to the construction of this facility (Bankoff et al. 1998).

Several general sources are available that address the prehistory and history of the Gerritsen's Creek area. Frederick Black's Jamaica Bay: A History (1981) usefully summarizes the 17th and 18th-century culture history in a study carried out for the Gateway National Recreation Area. Among the standard published late 19th and early 20th-century that have been consulted are the works of Reginald P. Bolton on New York City area prehistory (1920, 1922, 1934) and those of Henry R. Stiles on Kings County history (1884). Numerous historic maps of southern Long Island have been examined, the most revealing of which, in terms of the project site, are reproduced here (see below, Figures 4-11). Of extreme site-specific assistance have been various maps and drawings produced by the City of New York's Department of Parks in the mid-1930s (see below (Figures 12-15).

Increasingly, cultural resource research of the type undertaken here involves gathering information on the Internet. Of particular utility has been the web site www.gerritsenmemories.com, which proved to be a good source of historic images and basic historical data. Finally, we acknowledge the considerable assistance received from Christopher Ricciardi, a Brooklyn native who has a detailed knowledge of the history and archaeology of the project area and who kindly provided copies of key source materials and several rare historic images.

2. PREHISTORIC BACKGROUND

The project site is located on the present-day coastal margin of southern Long Island, a few miles south of the terminal moraine that defines the furthest limit of the Wisconsinan ice sheet. The terminal moraine survives today as a linear landform of low irregular hills with two principal ridges (referred to as the Ronkonkoma and Harbor Hill ridges) that runs from southwest to northeast along the spine of Long Island. The moraine was deposited at the limit of the

advancing ice sheet and has subsequently provided the dominant geomorphological structure for Long Island into the modern era (Cressey 1977:43).

At the time of the ice sheet's maximum extent, circa 8,000 to 10,000 B.C., the Atlantic shoreline lay some 50 miles further to the east, thus leaving exposed a vast portion of the Continental shelf. The Gerritsen's Creek vicinity would not have been tidal marshland during this period and most likely would have existed as a wooded coastal plain coursed by meandering rivers and home to migratory herds of *megafauna*, numerous smaller animal species and a rich plant environment. As the ice receded, increased meltwaters caused the sea level to rise and the shoreline gradually moved westward, inundating and foreshortening the coastal plain environment. Roughly 5,000 to 6.000 years ago (circa 3,000 to 4,000 B.C.), the shoreline lay some 25 miles to the east; by around A.D. 500 to 1000, less than 1,500 years ago, the coastline began to roughly resemble that of the present day, and Jamaica Bay and its neighboring drainages will have been largely tidal (Edwards and Merrill 1977; Kraft 1986).

Native American occupation of the Lower Hudson Valley and Long Island is likely to have followed on soon after the retreat of the ice sheet, although clear cut evidence of such activity during the Paleo-Indian (circa 10,000-8,000 B.C) and Archaic (circa 8,000-2,000 B.C.) periods is generally sparse. The nearest documented Paleo-Indian site to Gerritsen's Creek, for example, is located on the terminal moraine at Port Mobil on Staten Island. Apart from the Turkey Swamp site in the New Jersey Outer Coastal Plain, most Paleo-Indian sites in the region are located further inland, up the Hudson, Wallkill and Delaware Valleys. However, the recovery throughout the Middle Atlantic of numerous isolated fluted projectile points, a type of artifact characteristic of the Paleo-Indian period, indicates clearly that hunter-gatherer populations were active throughout the Atlantic coastal plain. Several fluted points have been found in eastern Long Island and in Westchester County, New York; more than 200 have been recovered at various locations in New Jersey. Their absence in the Brooklyn vicinity is likely to be a function of the masking effects of urban and suburban development and should not be viewed as meaning Paleo-Indian hunter-gatherers were not present (Ritchie 1969; Saxon 1973; Booth 1982; Kraft 1986).

Throughout the Paleo-Indian, Archaic, and Early Woodland periods, the Native American life style was predominantly one of hunting, gathering and fishing. The population was organized into mobile bands whose movements in the landscape were strongly influenced by the migratory patterns of game and fish, the seasonal availability of plant resources, and the locations of lithic raw materials. Few sites of these periods are known in southern Long Island, again in part because of the intensity of historic period land use prior to the early 20th century, when notice began to be taken of archaeological resources.

From the Middle Woodland period onwards (circa AD 500), the population base appears to have expanded steadily and become increasingly sedentary. By around AD 1250, incipient agriculture was being practiced and semi-permanent settlements become visible in the archaeological record of the Lower Hudson valley. Coastal areas and back bay environments like Jamaica Bay came to play an important role in the seasonal round as Native American groups followed well worn trails to the shore where shellfish, chiefly clam and oyster, could be harvested (Ceci 1980; Brennan 1977).

Throughout the Late Woodland period, circa AD 1000-1600, camp sites and shell middens were a common feature within the tidal landscape of southern Long Island and evidence of Native American occupation of this period has been recorded all around the periphery of Jamaica Bay and in the Gerritsen's Creek

vicinity (Figure 3). Further inland on Long Island, a few larger sites, probably permanent base camps, have also been identified, including one locus in Flatlands with an Iroquois style longhouse considered to be a ceremonial center and meeting house. Both longhouses and smaller round houses have been noted on Late Woodland period sites on Long Island. The majority of the documented sites were noted in the late 19th and early 20th centuries, in particular as a result of the work of Reginald Bolton (1920, 1922, 1934), with several subsequent studies confirming their existence (e.g., Jaffe 1979).

Towards the end of the Late Woodland period, continuing into the 17th century when contact with Europeans was occurring on a regular basis, the Native American population of Long Island begins to come more clearly into focus as a part of recorded history. The Brooklyn area was inhabited by a people known as the Canarsee, a branch of the Algonquian-speaking Lenape, a series of loose-knit and semi-sedentary tribes spread across much of the area between the Delaware and Lower Hudson Rivers and extending east into Long Island. In the 17th century, the Canarsee participated in a complex of web of trading relationships involving the Lenape, other Native American peoples further to the west and north, the Dutch and eventually the English. The two key commodities traded by the Canarsee for European goods were furs and wampum (polished shell beads used for jewelry and as currency), the latter being of particular importance in view of the abundance of shellfish in and around Jamaica Bay. In the 1630s and 1640s, however, the Canarsee began to lose their hold over land in southern Long Island, ceding property to Dutch farmer-settlers. By century's end, their numbers, probably never more than a few thousand, were severely reduced as a result of disease, conflict (notably Kieft's War of 1643-46) and the general dislocation visited upon them by Europeans. Over the course of the 18th century, the surviving Canarsee moved west and out of the Hudson Valley altogether (Salwen 1978; Black 1981; Becker 1984).

No incontrovertible evidence has been found for the existence of previously documented Native American sites within the limits of the current project site, but Gerritsen's Creek was undoubtedly a stream corridor that saw extensive use by the Canarsee in both the Contact period and immediately preceding Late Woodland period. It is also likely that the rich shellfish, fish, water fowl and plant resources along creek were exploited by aboriginal peoples in earlier prehistoric periods, perhaps most likely during the Middle and early Wodland and Late Archaic periods. There is a strong tradition of traces of Native American occupation in the form of shell middens being visible along the creek banks at low tide in the early 20th century (e.g., Parker 1922:582; Van Wyck 1924; Loorya 1996). Specifically mentioned as the seat of a local wampum industry are White (also known as Barren) Island and the vicinity of the Gerritsen millpond.

Although its precise location remains difficult to pinpoint, one of the principal sites along the Gerritsen's Creek drainage is the Ryders Pond Site located approximately across from the project site on the west bank of the millpond (Figure 3). This site, apparently a camp with shell middens, was first explored in the late 1890s by the local Austin family. Arthur C. Parker, in his gazetteer of archaeological sites, published in the early 1920s, referenced a report on the site in American Archaeologist as follows: "Burial place in South Brooklyn found in 1897 on Avenue U, and near Ryder's pond and Sheepshead Bay. Deep bed of oyster shells had the outer side of the shells uppermost. Pottery was found and over a dozen skeletons. There were a few other shells and fragments of bone" (Parker 1922:582-583). The Ryders Pond collections, of somewhat dubious provenance and compositional integrity, were re-examined and published in the early 1970s by Julius Lopez. The assemblage contained abundant shell, prehistoric lithics and historic materials, but no prehistoric ceramics. While undoubtedly dating from later prehistoric times, it remains unclear if the site was

occupied in the Late Woodland or Contact periods, or both, and the extent to which the deposits yielding cultural materials were contaminated by later historic occupation. The site also reportedly produced evidence of Native American burials (Lopez and Wisniewski 1971, 1972; Bankoff et al. 1998:12).

Additional exploratory excavations were carried out in the Ryders Pond/Marine Park vicinity by Bankoff and Winter in 1979 in conjunction with a Brooklyn College field archaeological training exercise. Three Native American loci with an undisturbed component were found - two were essentially shell middens, while the third was characterized as occupation site producing shell, pottery and beads of the Late Woodland period (Bankoff and Winter 1979).

More recently, another Brooklyn College summer field program investigated the eastern side of Gerritsen's Creek, just south of Avenue U, in the process providing the New York City Department of Parks and Recreation with an archaeological evaluation of the site of the newly opened Salt Marsh Nature Center in Marine Park. These studies, conducted over a three-week period and beset by vandalism, involved the manual excavation of six two-meter square trenches, most of which found evidence of late 19th through mid-20th-century landfilling and no intact strata bearing prehistoric data (Bankoff et al. 1998).

3. HISTORICAL BACKGROUND

Dutch settlement of southern Long Island began in earnest in the 1630s and 1640s. The Brooklyn area was of particular attraction for its potential mix of flat cultivable land, meadow and salt marsh along the Atlantic coastline, with some patches of woodland in the interior, a terrain not that dissimilar from the flat and fertile northwest European plain around the mouth of the Rhine. To the orderly Dutch, with their well developed European notions of property acquisition and ownership, the drainage known today as Gerritsen's Creek formed a natural land division helpful in laying out the initial towns. Known initially as Strom[e] Kill (Storm Creek), this sizeable tidal stream was established as the western limit of the town of Flatlands or Nieuw Amersfoort, a community that dates from 1636. In this year, Andries Huddie (or Huden) and Wolphert Gerretse (Van Kouwenhoven) acquired from the Canarsee an area of woodland, prairie and salt marsh known as Keskateuw that ranged along the northeastern bank of Gerritsen's Creek and included most of the western half of Jamaica Bay.

Euro-American definition of the lands on the southwestern side of the creek followed soon afterward in the mid-1640s. Here, one of the earliest English settlements in Long Island, the community of Gravesend, took root in the midst of Dutch-American New Netherland. The town of Gravesend, formally organized in 1645, was especially notable for having a wealthy aristocratic widow, Lady Deborah Moody, among its leading political figures. Although Gravesend was predominantly English, several Dutch families also settled within its limits. At the eastern end of the town lands, Hugh Garretson had already, prior to 1645, been granted title to property along the southwest bank of Strom[e] Kill, the stream to which he and his descendants soon affixed their name (Stiles 1884:64-66, 156-164; Howard 1893:1137; Ditmas 1909:95; Black 1981:10-12).

The lands bordering Gerritsen's Creek remained as sparsely populated farmland with a strong Dutch-American cultural flavor from the mid-17th century through into the late 19th century. On the northeast side of the creek, the Lotts, a family of French Huguenot extraction, were the dominant landowners throughout this period. The first Lotts to settle in the New World were Engelbart Lott and his two sons, Pieter and Engelbartsen, who arrived in New Amsterdam from Holland in 1652. Lott descendants

soon spread to farms in Flatbush, and shortly after began to populate the Flatlands area of southern Long Island.

In 1719, Johannes Hendrickse Lott (1692-1775), a grandson of Pieter Lott, established a farm that stretched southeast from the edge of the village of Flatlands (near the center of the town lands at the intersection of the Kings Highway and present-day Flatbush Avenue) to the north shore of Jamaica Bay. The nucleus of this farm, marked as "Homestead" on the Beers map of Flatlands in 1873 (see below, Figure 6), was situated about a mile to the northwest of the project site between present-day East 35th and East 36th Streets. In 1800, Johannes Lott's grandson, Hendrick I. Lott (1760-1840), built a new house adjacent to the original homestead, reportedly moving and re-using the kitchen wing from his grandfather's dwelling. Hendrick's son, Johannes H. Lott (1793-1874), inherited the bulk of his father's farm property upon the latter's death in 1840. In the mid-19th century, this property comprised 104 acres of upland, 140 acres of meadow and Barren Island, and would have included within its bounds the current project site (BC-ARC 2002).

Much as the Lotts dominated the land ownership along the northeast side of Gerritsen's Creek, so also did the Gerritsen family maintain control of property along the creek's southwestern bank from the mid-17th century into the late 19th century. The location of the original homestead of Hugh Garritson is uncertain, but it may well have occupied the same site as the later Gerritsen dwellings on the west side of the creek, a short distance upstream from the tide mill. Certainly, judging from the appearance of the Gerritsen house that was still standing here in the early 20th century (Plate 1), this location was the focus of an early 18th-century, if not late 17th-century, farmstead. The exterior form of this one-and-a-half-story dwelling has all the attributes of a Dutch timber-framed dwelling of this period. A newer Gerritsen residence was erected nearby around 1830, a federal-style building that passed into the Polhemus family and then was bought and remodeled by William C. Whitney in 1890. The Whitney mansion, as it became known, flourished briefly as the center of a gentleman's estate with stables and barns, but was demolished in 1936 to make way for Marine Park (Loorya 1996; Gerritsen Memories 2002)

An important feature of the Gerritsen family's agricultural operations was the tidal-powered gristmill that they operated on the creek a short distance to the south of their farmhouse. The origins of this mill are clouded in obscurity and could usefully bear scrutiny with the help of some focused primary archival research. Often claimed as being established in the 17th century, and when it was still standing in the 1930s frequently touted as "New York State's oldest building," there is no clear documentary support for this facility pre-dating the mid-18th century. While the mill seat may indeed be of 17th-century origin, the mill and its hydropower system are likely to have been reconfigured and upgraded as mill engineering technology improved, and it seems unlikely that the structure visible in early 20th-century photographs (Plates 1-4) dates from any earlier than the second half of the 18th century (and could indeed be a 19th-century building). The mill reportedly supplied flour to the Continental Army during the Revolutionary War and, although a rare survivor in the 1920s and 1930s, was one of many 18th- and 19th-century tidal-powered operations scattered around the Long Island coast (Gerritsen Memories 2002; Brooklyn Public Library, vertical files).

Two mid-19th-century maps surveyed by the U.S. Coast Survey are exceedingly useful in providing the first detailed depiction of the tidal marshes along the southern shore of Long Island, and it is likely that the landscape at this time still closely resembled that of the colonial period. The earlier of the two maps, produced in 1835, shows the entire project site as

being tidal marshland (Figure 4). The Gerritsen tide mill is visible at the southwestern end of the mill dam, a structure that retained a sizeable pond extending upstream to the interior margin of the marsh. In addition to the mill, at least two and perhaps three other nearby buildings are shown on the Gravesend side of the creek. Due west of the mill a structure is shown in a location that corresponds to that of the Dutch timber-frame dwelling visible in Plates 1 and 4. Northwest of this structure is a second building, whose location corresponds to that of the Gerritsen/Polhemus house (later the Whitney mansion), while a third building appears to be depicted just to the southwest of the mill at the end of the lane leading down to the creek. The sites of all three structures correspond to those of buildings shown on later 19th-century maps (see below, Figures 7 and 10). A short distance to the north of the upstream end of the mill pond, a lane is shown leading to a structure that, through correlation with later maps (see below, Figure 6), can probably be identified as a Lott farmstead.

The second U.S. Coast Survey map, compiled between 1855 and 1859 (Figure 5), shows the Flatlands side of Gerritsen's Creek in still greater detail. The project site is again overwhelmingly depicted as marshland, but it is noticeable that extensive land reclamation for farming purposes appears to have occurred in the two preceding decades. Both the original Lott homestead (mid-way between the mill pond and the Flatlands village crossroads on the Kings Highway) and the second more southerly Lott farmstead are visible on this map, the latter property evidently being the focus of much of the reclaimed land. Structures on the Gravesend side of Gerritsen's Creek are not depicted on this map, but the mill dam and millpond are both easily seen.

The Beers map of Flatlands in 1873 (Figure 6) supplies a good sense of the cultural landscape toward the end of the 19th century just before the onset of the residential explosion that saw suburban Brooklyn expand over a half century or so to reach the Atlantic shoreline. Johannes Lott, by this time (a year before his death), appears to have been living at the second, more southerly Lott family farmstead nucleus, located roughly midway between the original homestead and the project site. Even at this relatively late date, it is remarkable how few homes are in existence in the block of land extending between Flatbush Avenue and Gerritsen's Creek to the southeast of the Kings Highway. As indicated by the Beers map, the project site in the early 1870s was still primarily tidal marshland and contained no standing buildings.

The corresponding Beers map of Gravesend in 1873 (Figure 7) shows the Gerritsen mill, the mill dam and millpond, as well as three Gerritsen-owned structures, all probably dwellings (a building just southwest of the mill, a residence on the north side of present-day Avenue U, and a third building midway between the two identified by the initials "S.C.G."), all located on the southwest side of Gerritsen's Creek. Two other probable dwellings are shown just upstream of the mill - one owned by "S.S. Herman," the other by "D.C. Polhemus." The location of the Herman structure appears to correspond to that of the Dutch timber-frame dwelling shown in Plates 1 and 4; the site of the Polhemus structure matches that of the circa 1830 Gerritsen residence that later became incorporated into the Whitney mansion. Despite the clustering of houses on the edge of Gerritsen's Creek around the tide mill, the area as a whole is lightly populated and, as on the opposite Flatlands side of the creek, many of the settlement sites (like the Gerritsen property) hug the perimeter of the salt marsh. The tide mill is significantly located at the head of the broader expanse of salt marsh that opens out on to Jamaica Bay, where non-tidal upland terrain lies close to the creek. The mill was likely accessible both by land (along the lane heading south from the road that roughly followed present-day Avenue U) and by water.

Later in the 1870s, the sections of Flatlands and Gravesend lying south of the Kings Highway and bordering Gerritsen's Creek were already becoming the dream of the residential planner. The Dripps Atlas of New Utrecht, Gravesend, Flatbush, Flatlands & New Lots, Kings County, NY, published in 1877, provides the first series of maps showing a street grid overlaid across the area (Figure 8). The street pattern shows little respect for the pre-existing environment or the on-the-ground reality of tidal marshland. A bulkhead was planned just south of proposed Avenue X, behind which massive filling, using manufacturing and household waste and dredge spoil, was no doubt envisaged. While the Lott holdings on the northeast side of the creek were still intact at this time and in the control of the estate of Johannes H. Lott, the Gerritsen farmlands (as suggested by the Beers map of four years earlier) had by this time begun to be carved up. The Herriman (Herman) family now appears to have owned both the nucleus of the earlier Gerritsen farmstead and the mill. The surrounding land was under the control of the estates of A.D. Polhemus and S.G. Gerritsen.

By 1890, as seen in the Robinson maps of Flatlands and Gravesend (Figures 9 and 10), the situation on the ground was little changed, although the process of subdivision had advanced considerably. The Gerritsen and Lott families still owned sizeable tracts, and the Polhemus property was still intact, but several new owners - many of them presumably speculators - are in evidence. On the northeast side of the creek, in the project site vicinity, M. Vanderveer, Mrs. S.L. Clapp and R.V. Whitcomb all owned multiple tracts. The project site itself was mostly in the hands of Simon Lott; it was still entirely undeveloped with no buildings shown.

Interestingly, the Gerritsen's Creek stream corridor is shown differently on the Flatlands and Gravesend maps of 1890. On the former sheet (Figure 9), the tidal marsh within the section of the creek that corresponded with the millpond is shown as a series of lots, while the Gravesend companion sheet (Figure 10) depicts the creek as a water body. The Gravesend map clearly shows the mill dam with its sluiceway and the mill building perched at its southwestern end. A cluster of at least seven buildings is shown just south the mill, two of which may be assumed to correspond with the pair of buildings shown on the Beers map of Gravesend in 1873 (Figure 7). One of these two buildings, the structure with the L-shaped plan just west of the mill, appears to be the Dutch timber-framed dwelling shown in Plates 1 and 4; others may correspond to the buildings seen in the background of Plate 4, beyond the house. The Polhemus house is also depicted on both the Gravesend and Flatlands maps of 1890; on the latter map, outbuildings are also shown to the rear of the house and a boathouse and dock are depicted on the bank of the creek/millpond (Figure 9).

By the 1920s, the suburban development was fast becoming a reality and spreading ever southeastward along either side of Gerritsen's Creek. Over the preceding three decades, sale and subdivision had continued and the bulk of the Lott lands were sold off and carved up into building lots. The homestead, by dint of extraordinary familial resilience, has remained intact on its own three-quarter-acre parcel down to the present day (the original Lott lot, so to speak) and is the subject of ongoing restoration efforts (BC-ARC 2002). However, also by the 1920s, the relentless devouring of the landscape by residential and commercial development was beginning to be rued, and the need for parkland and open space and the inherent environmental value of the salt marsh landscape to both human and non-human species became increasingly appreciated. Just as the creation of bulkheading along Gerritsen's Creek laid the groundwork for more filling and more building, so also was the City of New York taking steps to set aside acreage for parkland and recreational use. In 1917, for example, a substantial portion of what subsequently became

Marine Park - some of the Lott-owned land to the south of Avenue U and northeast of Gerritsen's Creek - was donated to the City for use as parkland and taken out of the potential realm of development.

Both trends - continuing development and open space preservation - are visible in the series of Hyde maps of Brooklyn published in 1920-22 (Figure 11) and an oblique aerial photograph taken in the early 1930s (Plate 5). On the one hand, Gerritsen's Creek is shown as being increasingly channelized and contained by bulkheading, residential subdivision is encroaching upon the salt marsh, and many paper streets still persist; on the other hand, the above-noted expanse of parkland can be seen on the south side of Avenue U. The northern half of the project site comprises part of the public park, while the southern half is coursed by the projected lines of 32nd through 35th Streets and Avenues W and X, streets that ultimately were never constructed in this area. Bulkheading is shown in the creek immediately south of Avenue U, some of which may correspond to the timber cribbing that is visible in the creek bed today. The mill dam is shown on these maps, as is the footprint of the Gerritsen/Polhemus/Whitney residence. A pair of long outbuildings lying to the southwest of the latter residence may be the stables from the Whitney era. The tide mill, although still standing at this time, was abandoned and is only partially visible in the configuration of property lines at the southwest end of the dam. The cluster of buildings immediately south of the mill appears to have been razed by this time, with the exception of one possible small outbuilding.

The tide mill reputedly went out of operation around 1890, perhaps partly in response to the spanning of the creek and millpond by Avenue U, a project that likely affected the water power supply. The mill was bought by the City of New York in 1925, and then refurbished in 1934-35 in a project that included the construction of an addition on its eastern (downstream) side. In conjunction with this project, the City of New York Department of Parks unwittingly performed the community and historians a valuable service in recording the building in some detail, producing a series of measured exterior elevations of what was then being recognized as an extremely rare survival of rural industrial architecture (Figure 12). The value of this recording exercise was increased substantially when the building was destroyed by fire in early September of 1936. Some talk of reconstruction came to naught and the building was soon leveled along with the Whitney mansion and other structures along the southwest side of the creek (Gerritsen Memories 2002; Brooklyn Public Library, vertical files).

In the mid-1930s, just as the tide mill and other historic buildings were being deleted from the local landscape, the City of New York began to bring the plans for Marine Park to final completion. This occurred early in the era of Robert Moses' tenure as a city parks commissioner (1934-60) and was but one of countless park improvement projects, along with numerous new highways and bridges and enhanced beaches, that were wrought upon the city landscape by this energetic public official. The creation of Marine Park developed into an enormous public works project requiring the removal of dredge materials from the Rockaway Inlet that were then barged up Gerritsen's Creek and spread along its banks both above and below Avenue U (Figure 13; Plate 5). The project was also linked in this way to the construction of the Shore (Belt) Parkway, the limited access highway that circled round the northern shore of Jamaica Bay, crossing the mouth of Gerritsen's Creek and several other tidal inlets.

As part of the planning and implementation of the Marine Park project, detailed topographic mapping was prepared in 1936, providing a valuable picture of the landscape at the outset of the undertaking (Figures 14 and 15). Aside from showing the distribution of salt marsh and upland (parts of the latter created through earlier smaller-scale landfilling in the late

19th- and earlier 20th-centuries), these maps show the alignments of bulkheading in the creek and within the project site and several sewer lines. There are handful of small, mid-20th-century structures along a dirt road close to the eastern edge of the project site. These buildings are mostly of corrugated iron or frame construction on concrete slab, and seem to have been mostly used for storage purposes. Otherwise, the area has the appearance of a partially modified, partially filled landscape that is in the process of encroaching on the salt marsh to the southeast and southwest. On the opposite southwest side of the creek, the wheelpit area of the tide mill, the mill dam, the cellar hole of the Gerritsen/Polhemus/Whitney residence, and the point of land where the boat hosue was located are all visible. The center of the mill dam, in the middle of the creek, appears to have been breached, presumably to allow for passage of boats carrying fill and recreational vessels.

Marine Park has continued to serve as open space since its inception and creation in the late 1930s, albeit with a relatively low level of maintenance in the vicinity of the project site. The most substantive change to the landscape in this area has taken place very recently, within the past two years, with the opening of the Salt Marsh Nature Center on the left bank of Gerritsen's Creek, just south of Avenue U. This facility now functions as the principal environmental focus of the 798-acre preserve that constitutes Marine Park today. The park area is an important winter refuge for migratory ducks and geese, and includes 130 acres of aquatic environment and five miles of shoreline. The project site, which lies immediately adjacent to the Nature Center, includes a looping nature trail and a series of wildlife observation points.

4. FIELD INVESTIGATIONS

The field investigation component of this Phase 1A study involved two brief field visits to the project site, one undertaken on April 25, 2002 by Richard Hunter (Principal) and Damon Tvaryanas (Principal Historian/Architectural Historian), and the other on June 4, 2002, by the same two individuals in the company of Christopher Ricciardi, Corps staff archaeologist. On the occasion of the second visit, environmental soil testing was in progress at the site and was observed for approximately an hour. On both days, the project site was observed at times of moderately low tide and under clear, dry weather conditions. Field notes and digital, color and black and white photographs were taken during both visits.

The southwest margin of the project site is defined by Gerritsen's Creek, a tidal stream that flows from northwest to southeast, entering the Rockaway Inlet at the western end of Jamaica Bay approximately a mile further downstream (Figure 16). The creek originally rose a mile or more further upstream, but today is blocked by Avenue U, to the north of which most drainage is carried in culverts below ground. Several segments of timber cribbing are visible in the creek just below Avenue U, most of which relate to early and mid-20th-century landfilling and the development and use of Marine Park (Plate 6). Several of the lines of cribbing also once supported sewer outfalls (Figure 15). The furthest downstream length of cribbing in this area, which projects from the southwest bank of the creek, is in the approximate location of the mill dam (Plate 7). The mill dam, in its final manifestation, was composed mostly of rocks piled up as an embankment that stretched across the creek. It was set at an angle slightly different to that of the timber cribbing structures and is largely invisible today, except presumably at extreme low tide. On the creek bank at the southwestern end of the mill dam, two obliquely set stones projecting upward from the ground surface mark the approximate location of the tide mill's wheel pit, and probably represent part of the penstock.

The project site lies directly to the southeast of the recently constructed Salt Marsh Nature Center and extends along the left bank of Gerritsen Creek for just over 2,000 feet to the channel known as Mill Creek, that separates White Island from the mainland. The left bank of the creek is mostly covered by low tidal salt marsh grasses with patches of taller phragmites. Soils are comprised of tidal muds at least partially formed on fill materials that have been placed along the creek edge (Plate 8). Moving northeastward away from the creek into the central and northeastern portions of the project site, the terrain rises gradually and irregularly. Apart from the recently laid nature trails, the ground surface is covered with a thick spread of upland grasses, broken only by the occasional clump of scrubby deciduous trees (Plate 9). These trees, in some instances, may represent growth on patches of historic "fast land" (firm ground), where the intensity of landfilling has not been so great.

Inspection of the ground surface clearly indicates a preponderance of fill over most of the area, and this condition was confirmed through observation of two separate environmental soil tests that were being excavated in the central portion of the project site (Plate 10). Backhoe excavations encountered deep fill deposits to depth of more than eight to 12 feet over waterlogged salt marsh deposits. The fill contained predominantly dredge spoil interspersed with 1920s and 1930s cultural materials, including glass bottles, ceramic and metal fragments. No earlier historic or prehistoric cultural materials were noted, either in these tests or in exposed soils visible at the ground surface, although it was difficult to discern, without the benefit of mechanical excavation equipment, exactly where the fill/marsh interface existed. Clearly, the central and northeastern portions of the site contain several (eight or more) feet of fill; the thickness of the fill tapers off to the southwest and southeast towards the creek edge.

5. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

A. Prehistoric Resources

No evidence of prehistoric cultural remains was noted during the field inspection. Yet, as late as the mid-1920s, just before Marine Park was created, there are persistent references to shell middens and Native American occupation sites being visible along both banks of Gerritsen's Creek at low tide (see above, Section 3). The precise locations being referenced by these historic observations are not known - they may have applied to the 2,000-foot-long stretch of creek edge lying within the project site, or they may not. The creation of Marine Park, the deposition of landfill materials, the breaching of the mill dam, and the periodic dredging of the Gerritsen's Creek channel, all of which have occurred subsequent to the date of these observations, are likely to have taken their toll on Native American archaeological remains along the creek edge, if indeed they were present here. Related post-1920s alterations of the drainage, both natural and manmade, may also have hastened the demise of such resources through changes in patterns of erosion along the river.

In view of the radical land alteration of the past century and ongoing erosion by tidal action, the potential for prehistoric archaeological deposits surviving intact within the project site is considered relatively slight. The zone of most likely prehistoric archaeological survival is judged to extend back roughly 300 feet from the current creek edge along the main channel of Gerritsen's Creek, downstream from the small inlet behind the Nature Center. At the southeastern end of the project site bordering Mill Creek, the pre-filling drainage pattern is more complex and the zone of sensitivity should be viewed as somewhat broader, although it is perhaps more likely to have been compromised by the creation of the park. The least sensitive portions of the project site from a

prehistoric archaeological standpoint are without doubt the central, northwestern and northeastern sections where substantial cutting, dredging and filling have occurred (compare Figures 13 and 14).

B. Historical Archaeological Resources

With regard to potential archaeological resources from the historic period, the documentary record and the sequence of historic maps show only minimal land use within the project site. Virtually the entire project site was salt marsh and probably subject to tidal inundation. A few small patches of "fast land" may have existed within the marsh, and one such landform may have been used to anchor the Flatlands end of the mill dam for the Gerritsen tide mill. The core of this mill site, including the mill building, raceway and associated dwellings, all lie across Gerritsen's Creek from the project site beyond the limits of the current project area. The site of the Flatlands end of the tide mill dam appears to be the only historic cultural feature lying within the project site that dates from the 19th century or earlier. Since mill dams represent quite substantial engineering works, there is a good possibility that portions of this feature still survive both in the historic creek bed and on the historic creek edge within the project site. Because of the dam's association with a well known and much revered colonial tide mill, the potential for such remains is an important consideration for the ecosystem restoration project. If such remains exist in a reasonably intact form and contain useful information on tide mill dam technology, they are likely to meet Criterion D of the National Register of Historic Places.

Elsewhere within the project site, no buildings appear to have been erected until after 1890, and probably not until the early 20th century. These structures - mostly small corrugated iron or frame storage buildings - are of minimal interest, and their sites present no archaeological or cultural resource constraints on the ecosystem restoration project.

It is appropriate to stress the probable very high prehistoric and historical archaeological sensitivity of the opposite, southwestern bank of Gerritsen's Creek from Avenue U downstream to just below the tide mill site, and extending northeast from Burnett Avenue to creek edge. Not only is this area subject to the same historic period references to shell middens and prehistoric occupation as noted above for the northeastern side of the creek, it closely approximates the location of the Ryder's Pond site, a previously documented prehistoric site that has yielded a wealth of Late Woodland/Contact period cultural materials. Perhaps even more significant, however, in terms of its potential archaeological yield, is the area's role as the seat of an early (possibly the original mid-17th century) Gerritsen family farmstead with an attached tide mill complex. By the second half of the 19th century, when historic map coverage provides some detail of the local landscape, it is apparent that several houses were in existence, in addition to the mill. There is an exceptional opportunity here, within a 500 by 1500-foot area, for tracing thoroughly the evolution of a coastal Dutch-American plantation and mill through combined archaeological and archival study, an opportunity probably unparalleled elsewhere in Long Island.

6. SUMMARY AND RECOMMENDATIONS

There is a slight, somewhat amorphous and ill-defined potential for Native American resources existing within the project site, but not to the point where specific locations can be recommended for further investigation at the Phase 1B or Phase 2 level. It is recommended that a program of limited periodic archaeological monitoring be conducted by professional archaeologists within the more sensitive portions of the project site along the banks of Gerritsen's Creek and Mill Creek while ecosystem restoration-related excavation activity is taking place. The restoration contractor should be advised that, if

lenses or concentrations of shell deposits are encountered at or below the landfilling/salt marsh interface, on-site inspection by the archaeological monitor[s] is to be sought.

The site of the Gerritsen tide mill, a facility that drew water power from Gerritsen's Creek from at least the mid-18th century (and possibly earlier), is located directly across Gerritsen's Creek from the project site, but is outside the limits of the project area. The site of the northeastern (Flatlands) end of the mill dam appears to lie within the project site. While this feature - assuming it survives in some form below ground - is potentially significant and worth documenting, the level and type of information likely to be retrieved, does not, in our professional opinion, merit the mounting of Phase 1B survey to prove the dam's existence, nor a Phase 2 study to evaluate its importance, nor indeed a formal, independent excavation to recover significant data. In each of these instances, implementing the necessary fieldwork would be logistically complex and extremely expensive, most likely requiring coffer dams, dewatering devices and mechanical excavation equipment. In our view, perhaps the first matter for consideration is whether or not the portion of the mill dam footprint that lies within the project site (perhaps an area measuring 100 by 100 feet in plan) cannot be preserved in place and excluded from the ecosystem restoration work. If avoidance and preservation in place prove infeasible, the responsible manner in which to approach this resource is through comprehensive background (including primary archival) research and a carefully targeted program of archaeological monitoring during the ecosystem restoration work. Monitoring should aim to document the mode of construction of the mill dam through measurements, in-field scale drawing, and digital, color slide and large format black-and-white print photography. If timber remains are present and believed to relate to a dam structure of the 18th-century or earlier, samples should be retained for dendrochronological study.

Except for the Flatlands end of the mill dam of the Gerritsen tide mill, no other potential historical archaeological resources of concern have been pinpointed within the project site through this Phase 1A study. It can be assumed with reasonable confidence that, aside from the mill dam, no other historical archaeological resources of concern exist within the project limits. There are no historic architectural issues relating to this ecosystem restoration project.

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APPENDIX A

FIGURES

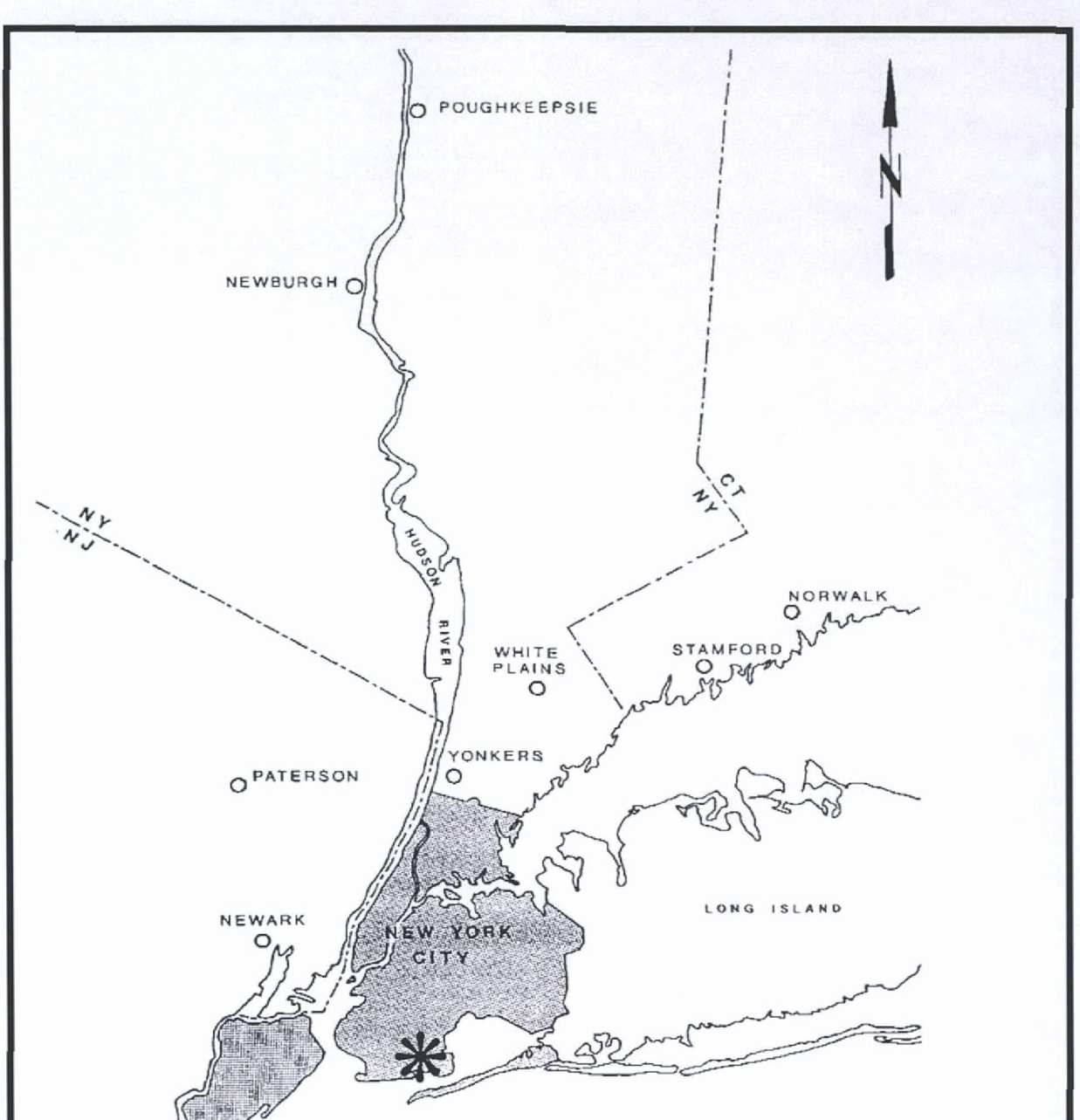

Figure 1. Regional Location of Project Site (marked with asterisk).

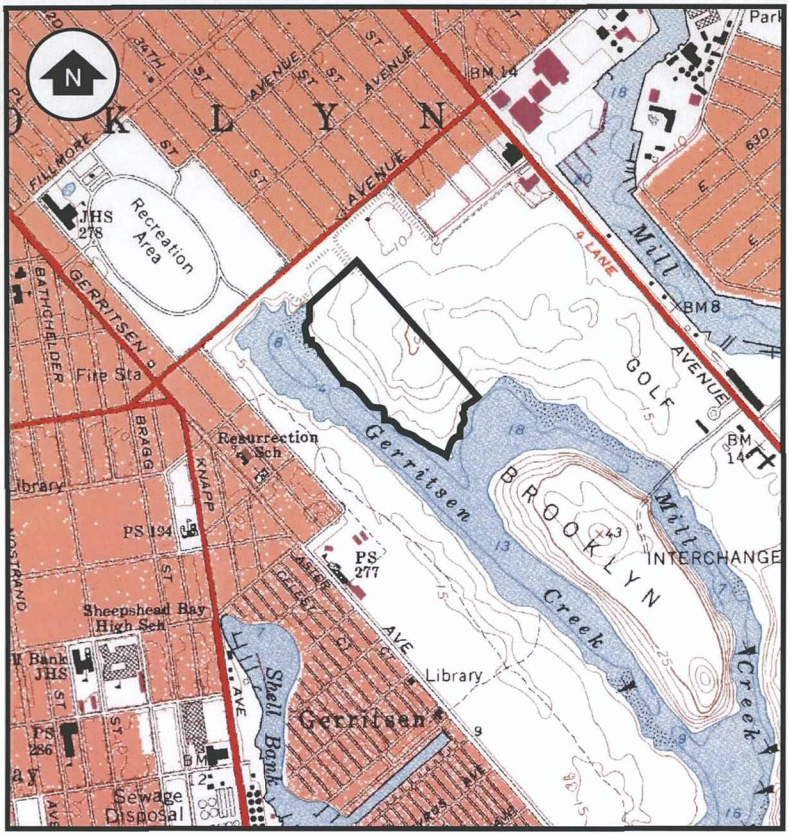

Figure 2. Detailed Location of Project Site (outlined). Scale 1 inch: 1300 feet. Source: USGS 7.5' Topographic Series, Coney Island Quadrangle (1966 [photorevised 1979]).

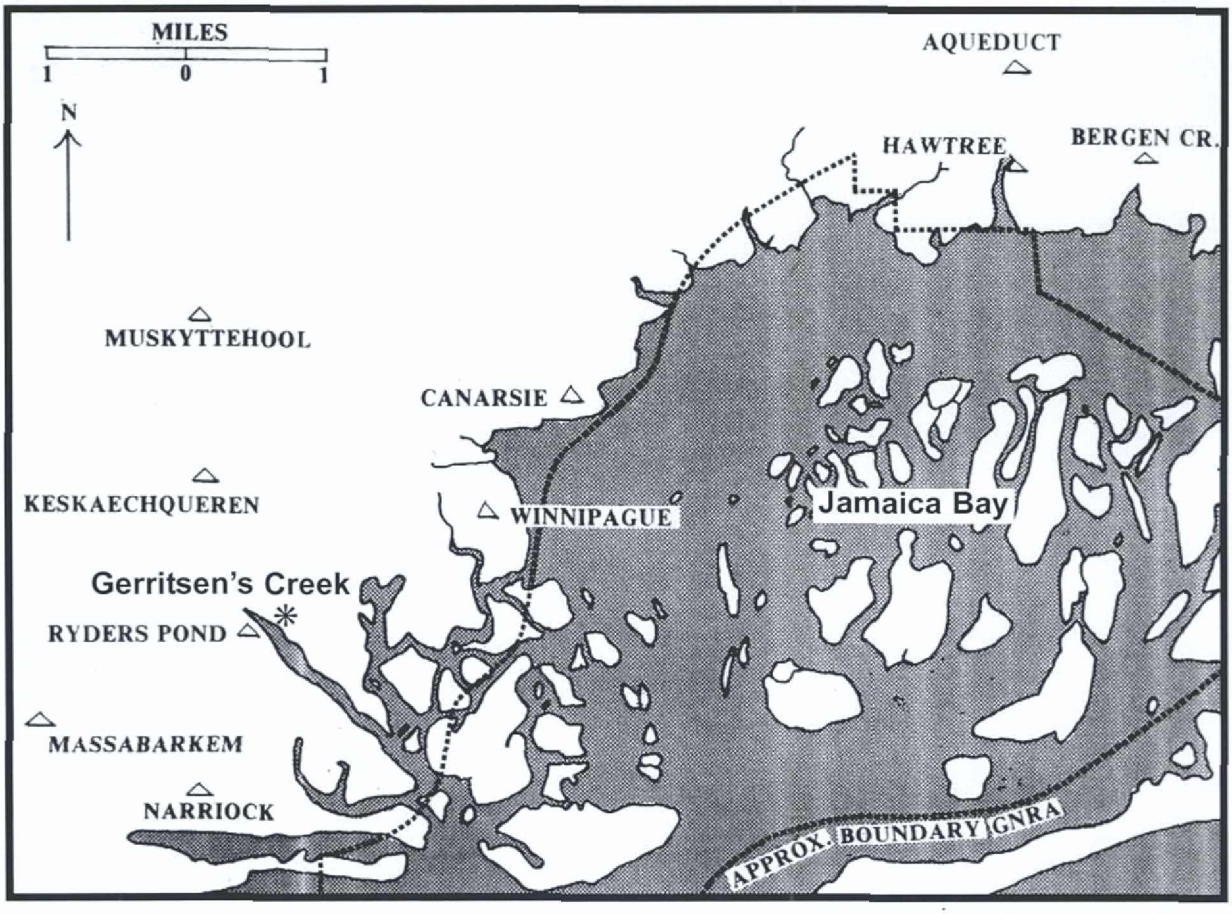

Figure 3. Principal Prehistoric Sites in the Project Vicinity (project site marked with àsterisk). Source: Black 1981 [after Bolton 1934:144-151].

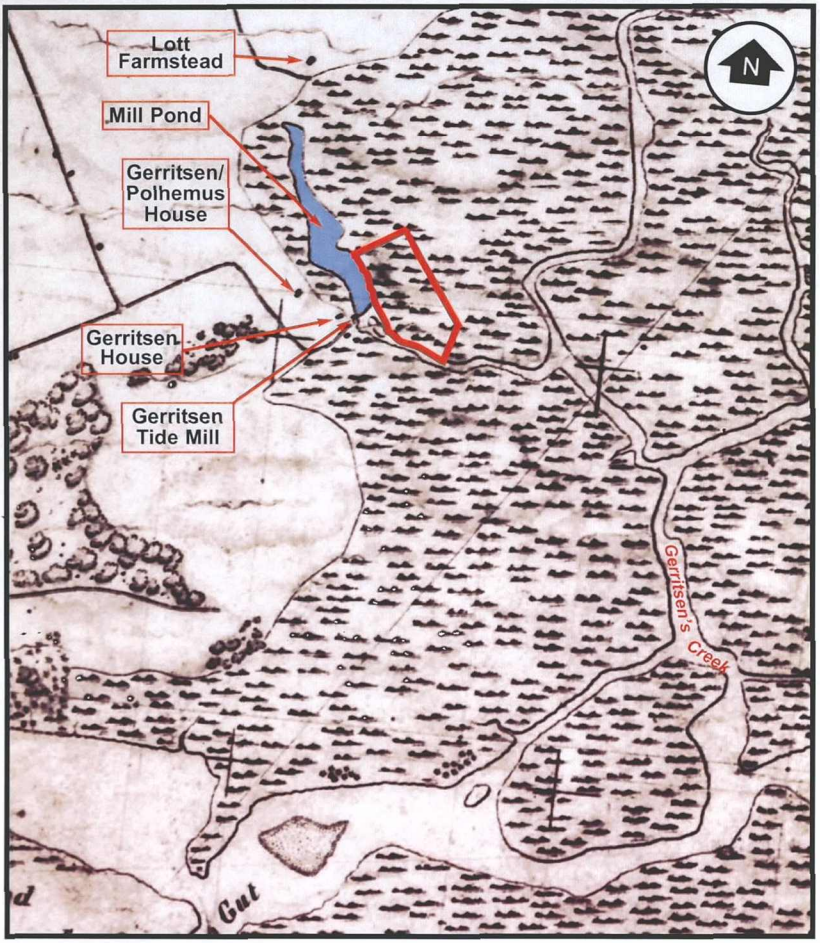

Figure 4. U.S. Coast Survey. *Map of the South Coast of Long Island between the Pavilion of Rockaway and the Plum-gut.* 1835. Scale 1 inch: 1500 (approximately). Project site outlined.

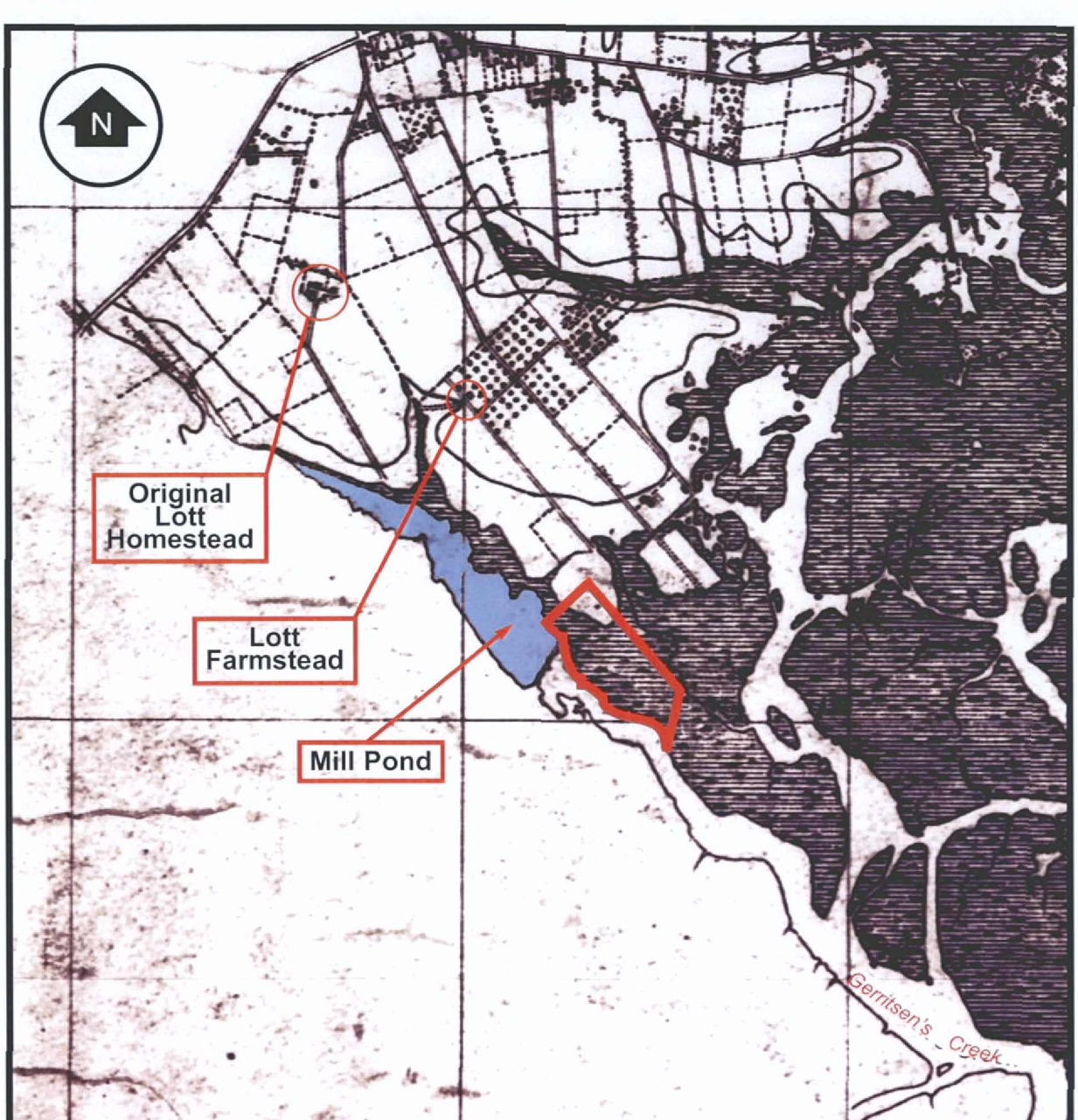

Figure 5. U.S. Coast Survey. *Rockaway Inlet and Jamaica Bay, Long Island, New York.* 1855-59. Scale 1 inch: 1875 (approximately). Project site outlined.

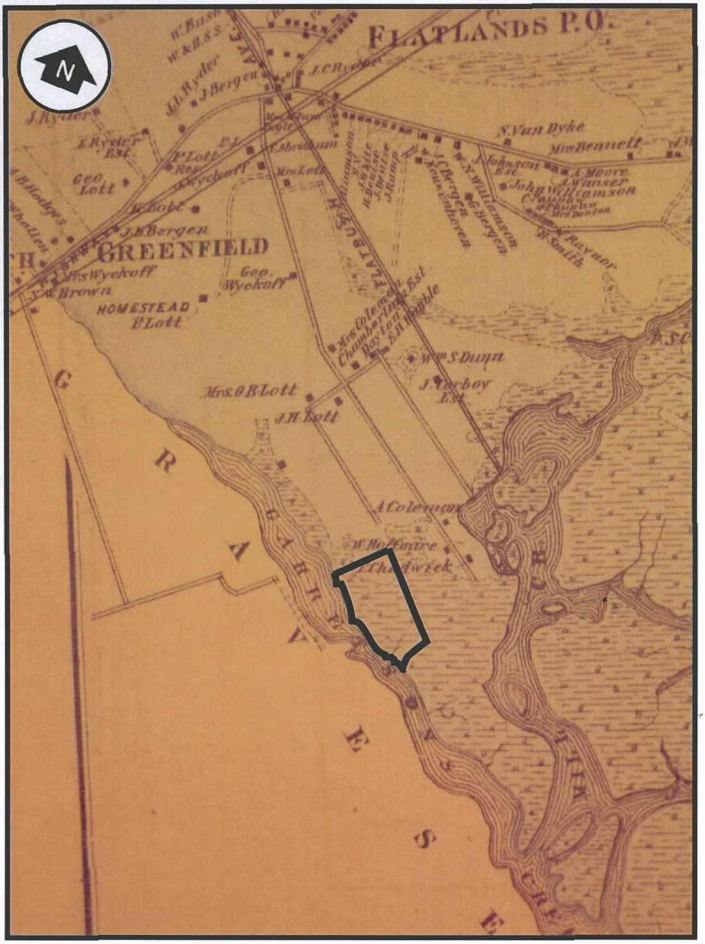

Figure 6. Beers, F.W. Flatlands. *Atlas of Long Island, New York.* 1873. Scale 1 inch: 1500 feet. Project site outlined.

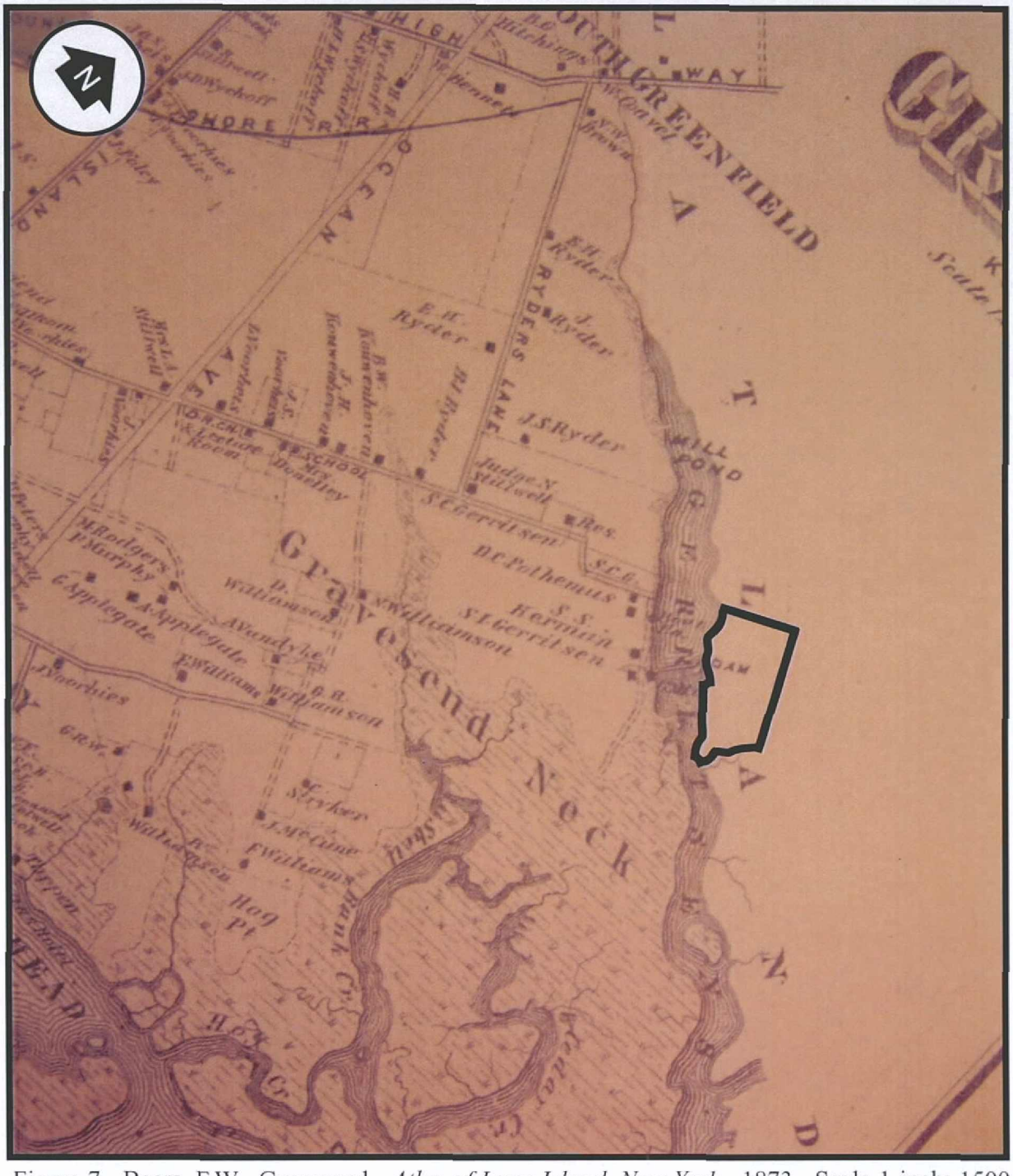

Figure 7. Beers, F.W. Gravesend. *Atlas of Long Island, New York.* 1873. Scale 1 inch: 1500 feet. Project site outlined.

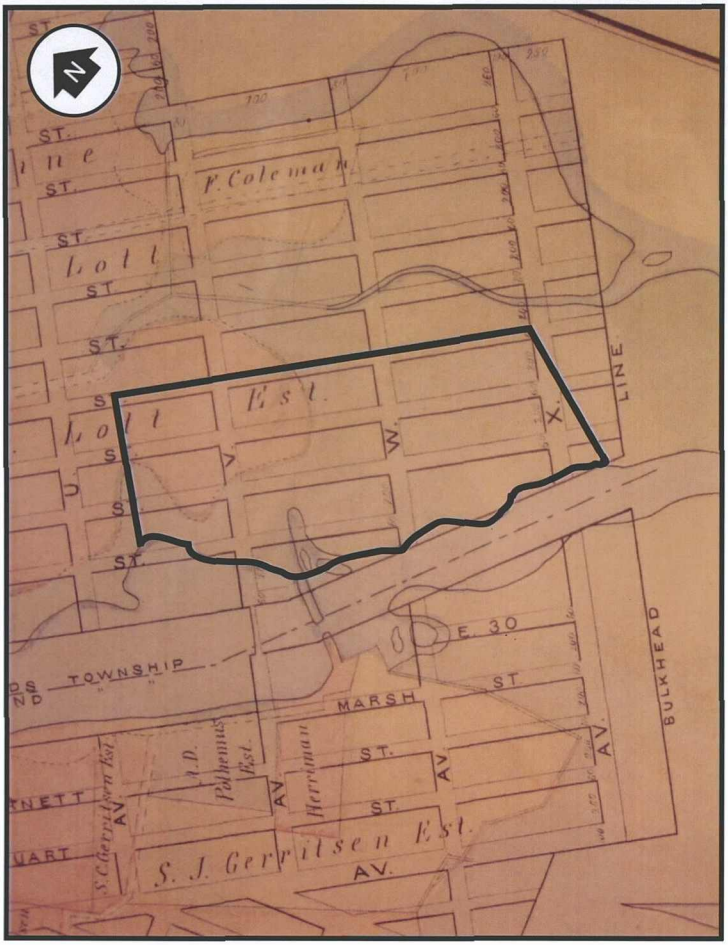

Figure 8. Dripps, M. Gerritsen's Creek Area. *Atlas of New Utrecht, Gravesend, Flatbush, Flatlands & New Lots, Kings County, NY.* 1877. Scale 1 inch: 625 feet. Project site outlined. Note: all streets shown within the project site, and many of those in the immediately surrounding area, are "paper streets," and while proposed, were never built.

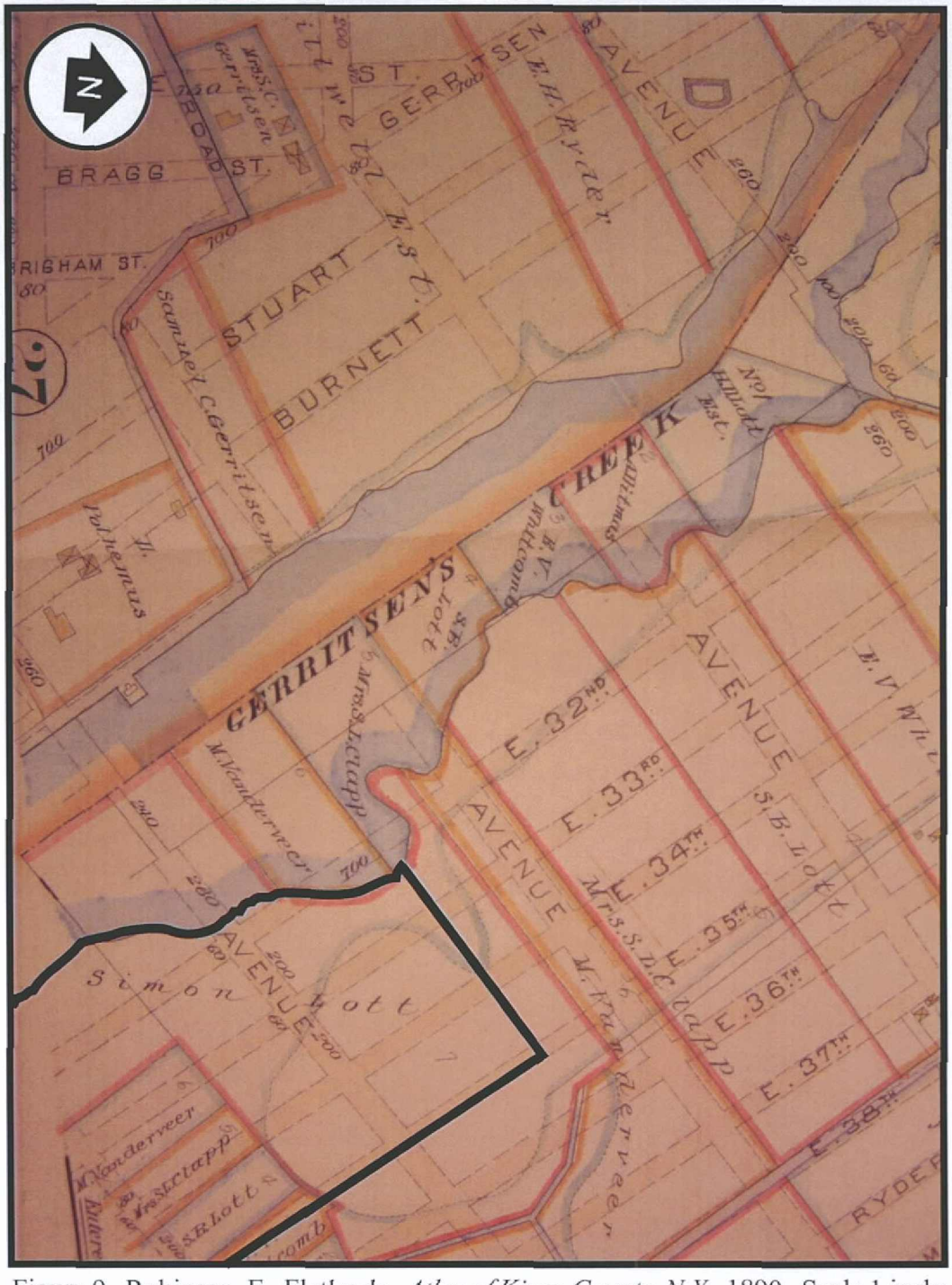

Figure 9. Robinson, E. Flatlands. *Atlas of Kings County, N.Y.* 1890. Scale 1 inch: 535 feet. Project site outlined. Note: all streets shown within the project site, and many of those in the immediately surrounding area, are "paper streets," and while proposed, were never built.

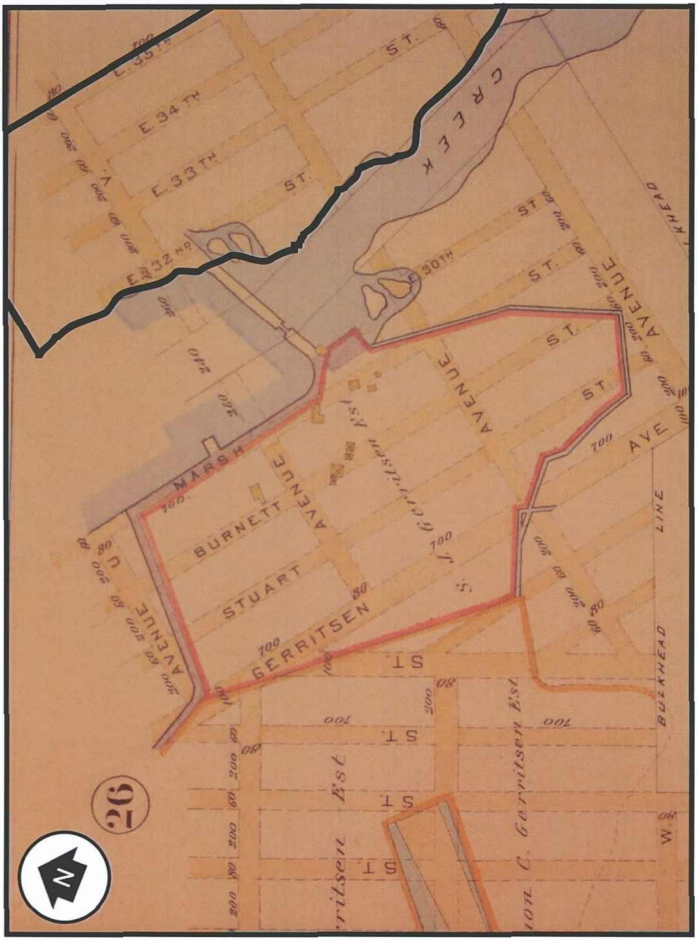

Figure 10. Robinson, E. Gravesend. *Atlas of Kings County, N.Y.* 1890. Scale 1 inch: 535 feet. Project site outlined. Note: all streets shown within the project site, and many of those in the immediately surrounding area, are "paper streets," and while proposed, were never built.

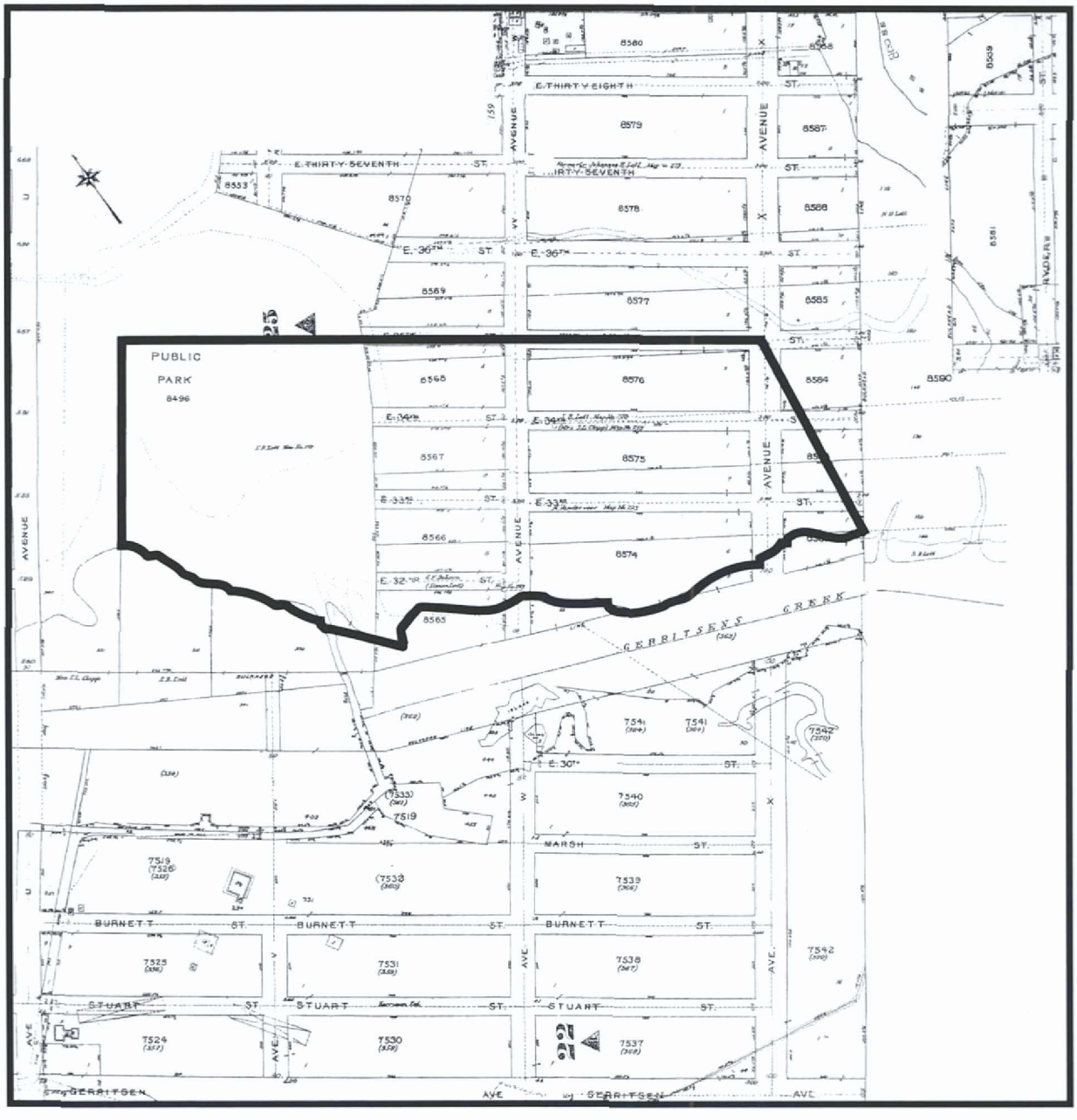

Figure 11. Hyde, E.B. Composite Map of Gerritsen's Creek, Avenue U to Avenue X. *Desk Atlas of Borough of Brooklyn, City of New York*. 1920-22. Scale 1 inch: 575 feet. Project site outlined. Note: all streets shown within the project site, and many of those in the immediately surrounding area, are "paper streets," and while proposed, were never built.

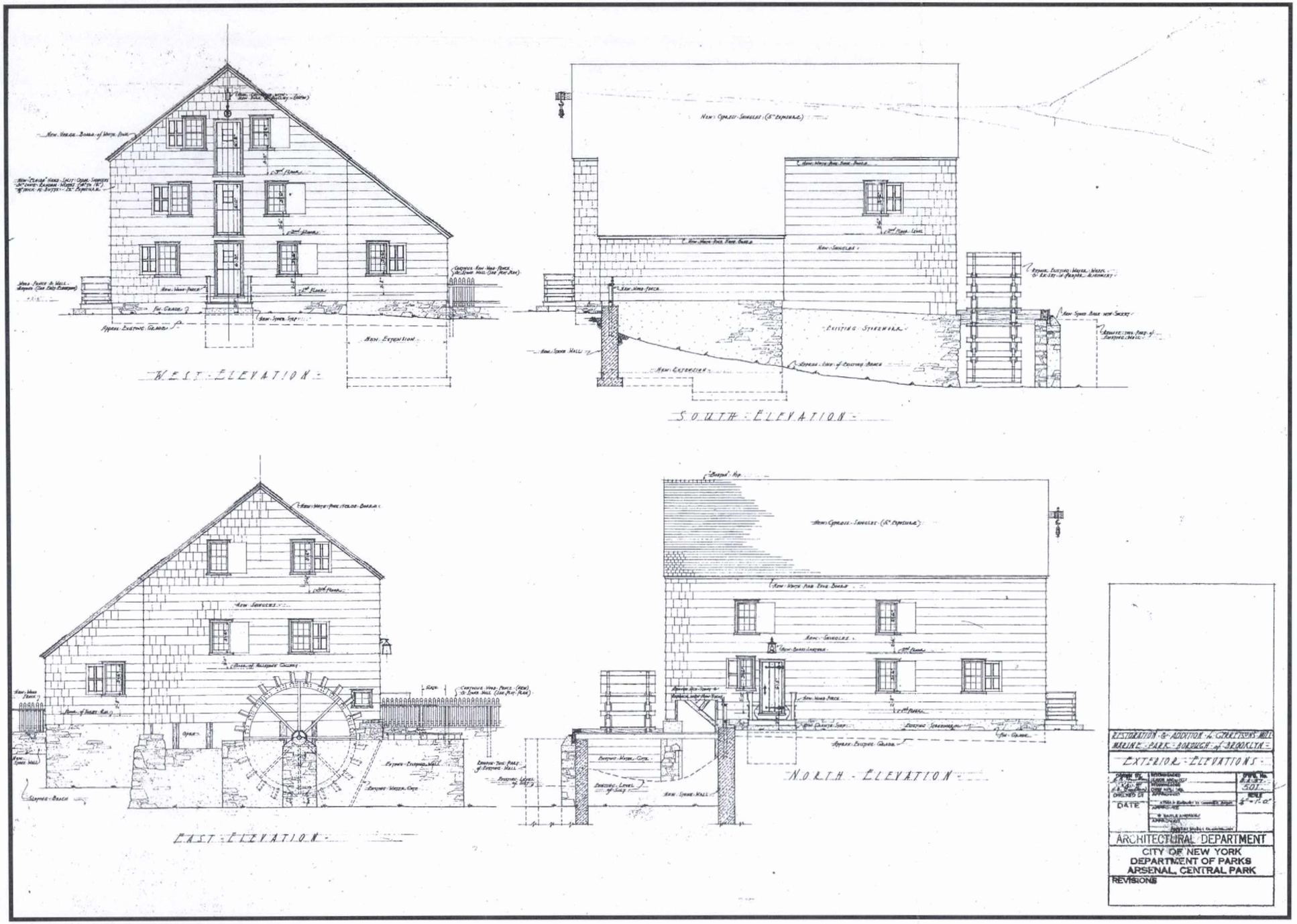

Figure 12. Department of Parks, City of New York. *Exterior Elevations of the Gerritsen Tide Mill.* 1934.

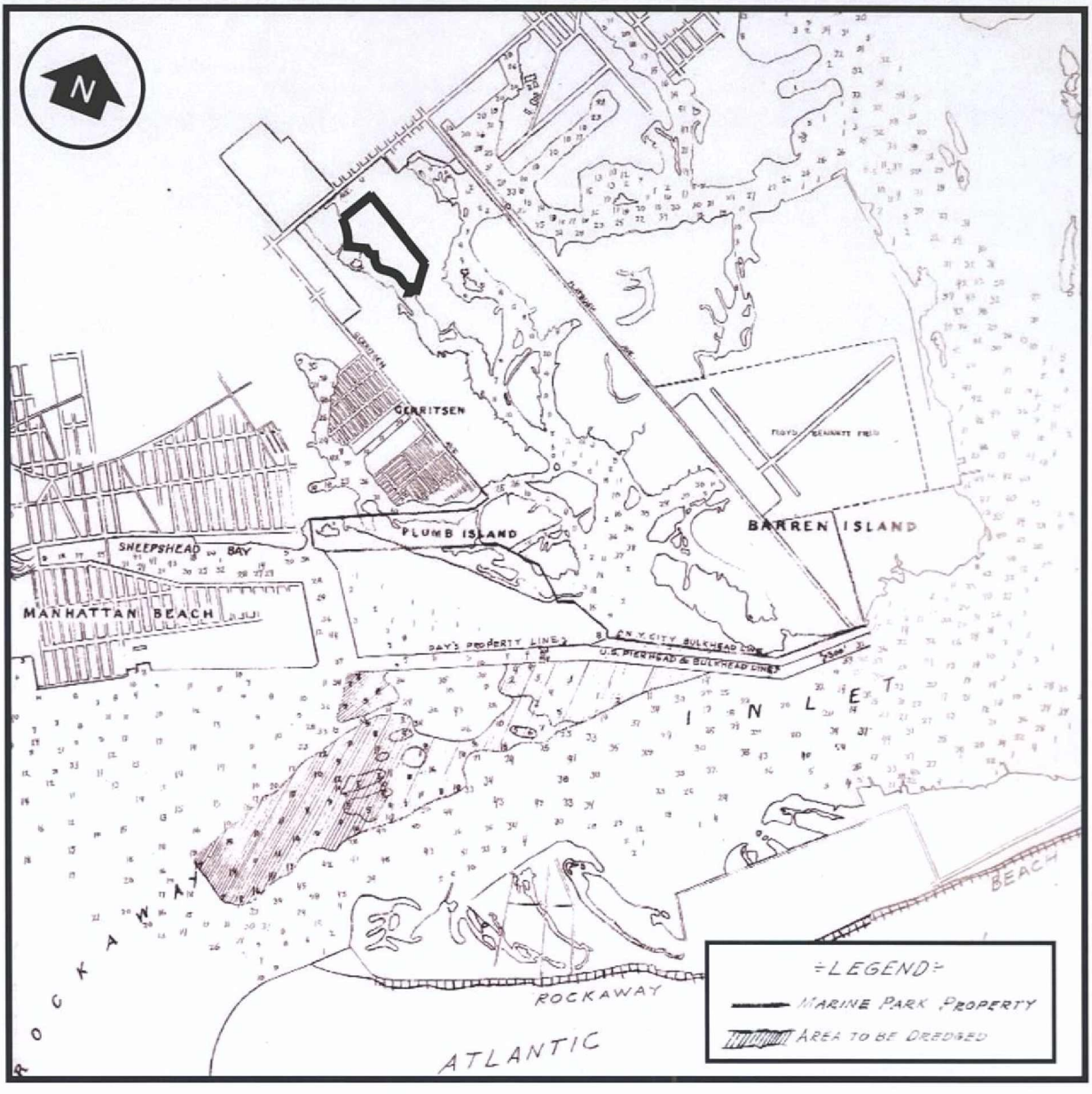

Figure 13. Department of Parks, City of New York. *Map Showing Dredging Areas to Provide Fill for Marine Park.* 1934. Scale 1 inch: 2150 feet. Project site outlined.

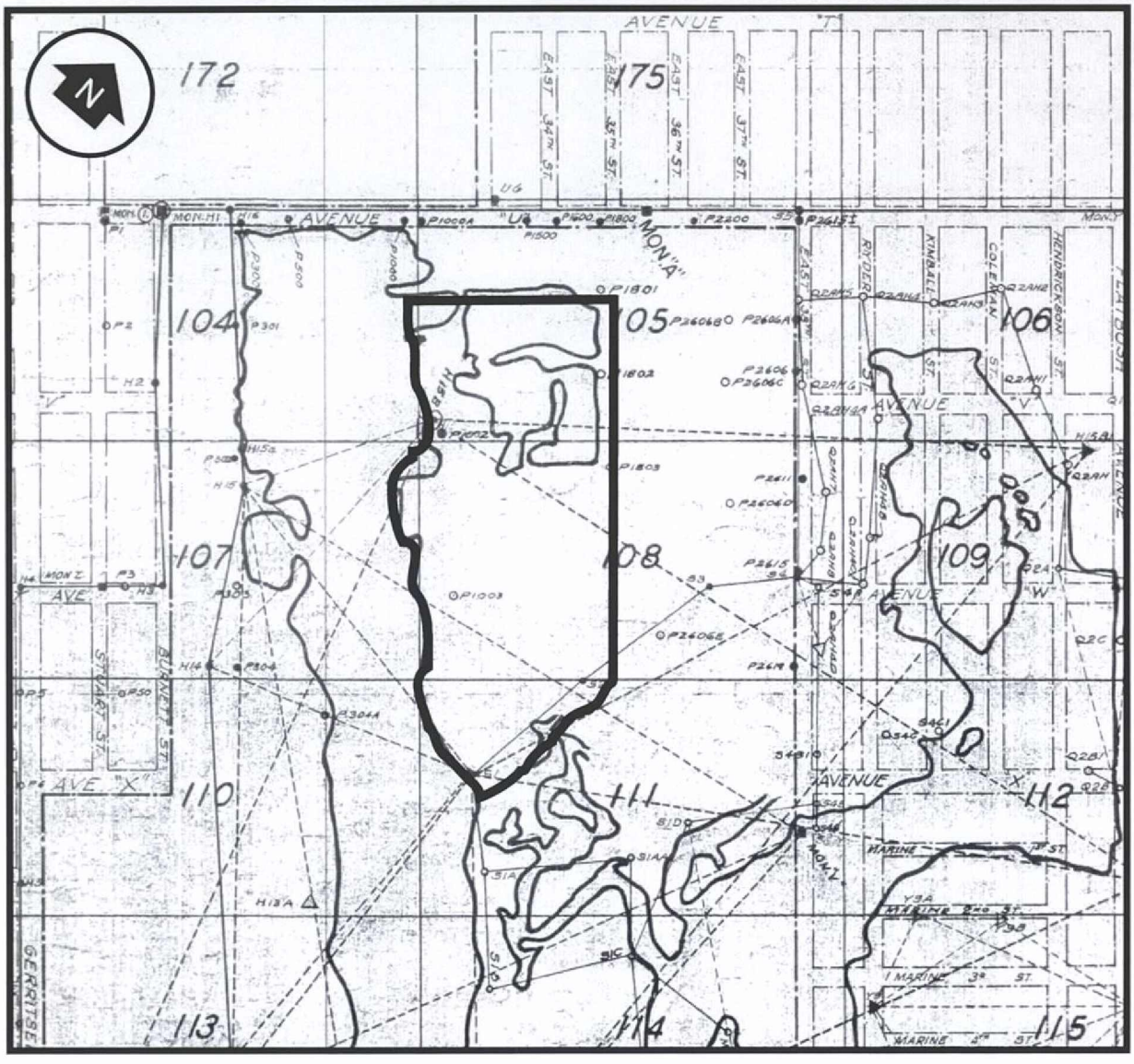

Figure 14. Department of Parks, City of New York. *Key Plan for Topographical Survey of Marine Park, Borough of Brooklyn*. 1936. Scale 1 inch: 625 feet. Project site outlined.

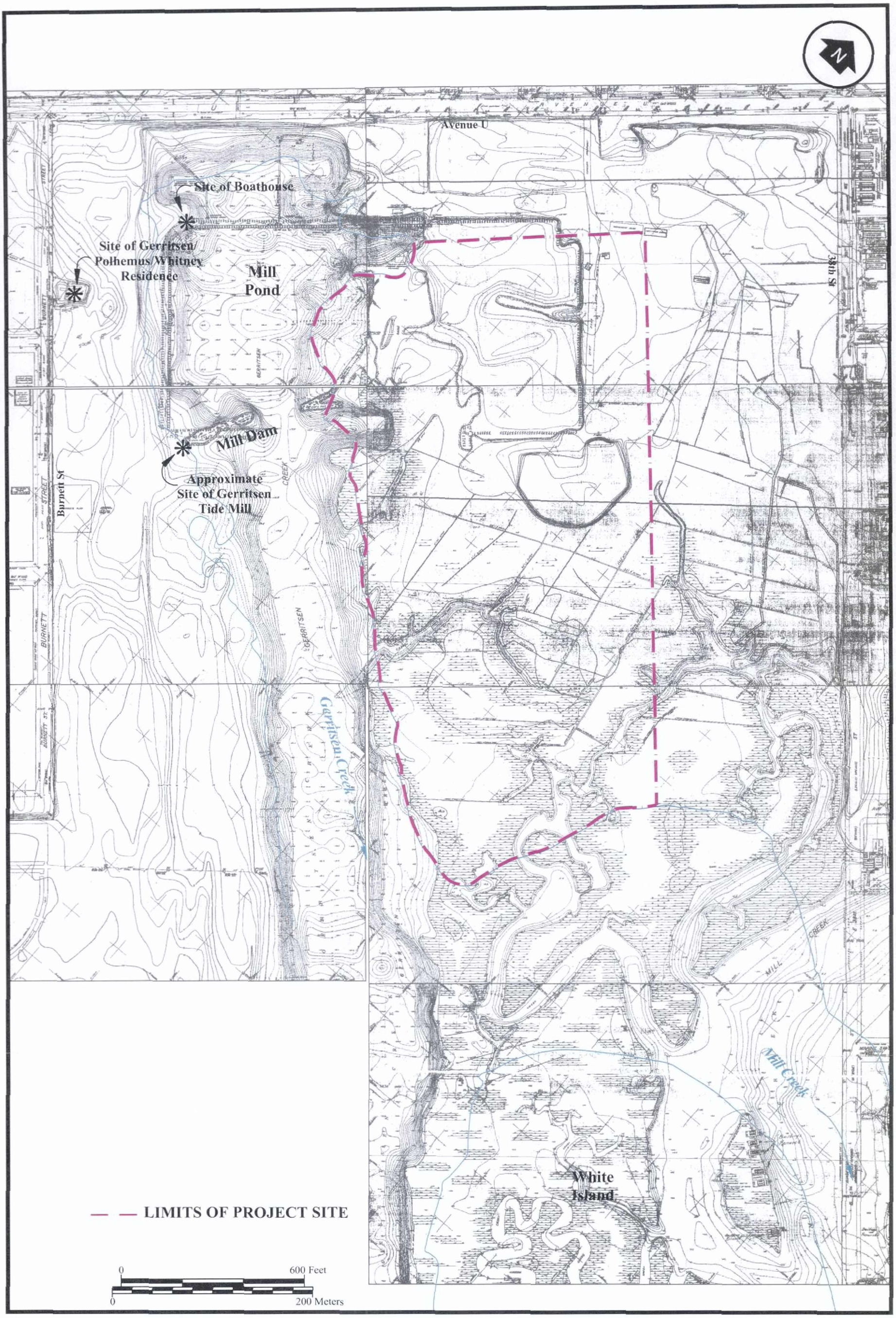

Figure 15. Department of Parks, City of New York (Topographical Division). Topographical Survey for Portion of Marine Park, Borough of Brooklyn (Composite of Sheets 104, 105, 107, 108, 110 and 111). 1936. Project site outlined.

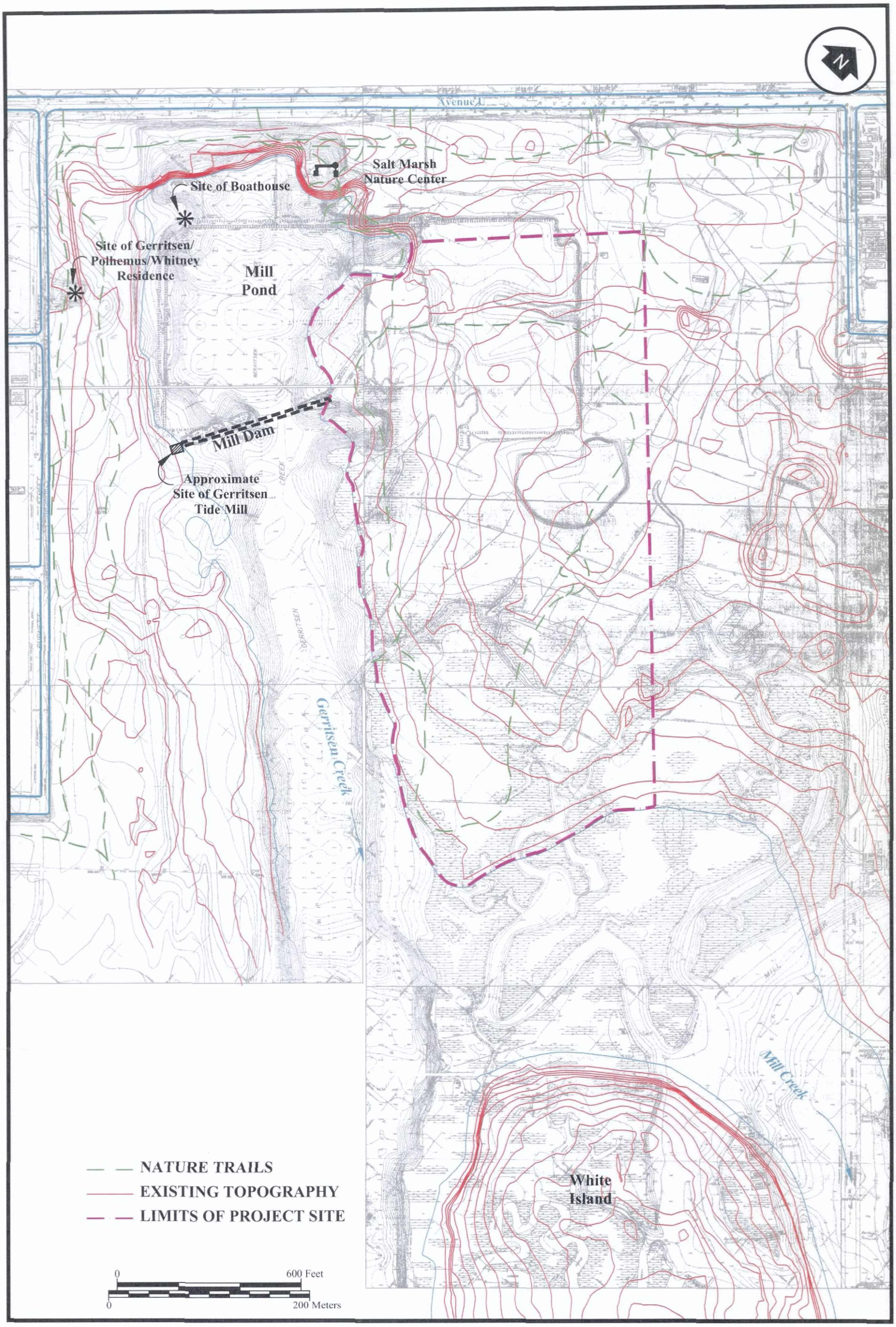

Figure 16. Site Plan Showing Present-day Topography (2002) Superimposed in Color over Topography of 1936. Project site outlined.

APPENDIX B

PLATES

Plate 1. Early 20th-century view of the Gerritsen House and Tide Mill, looking northeast; millpond visible in background (Source: Ricciardi 2002).

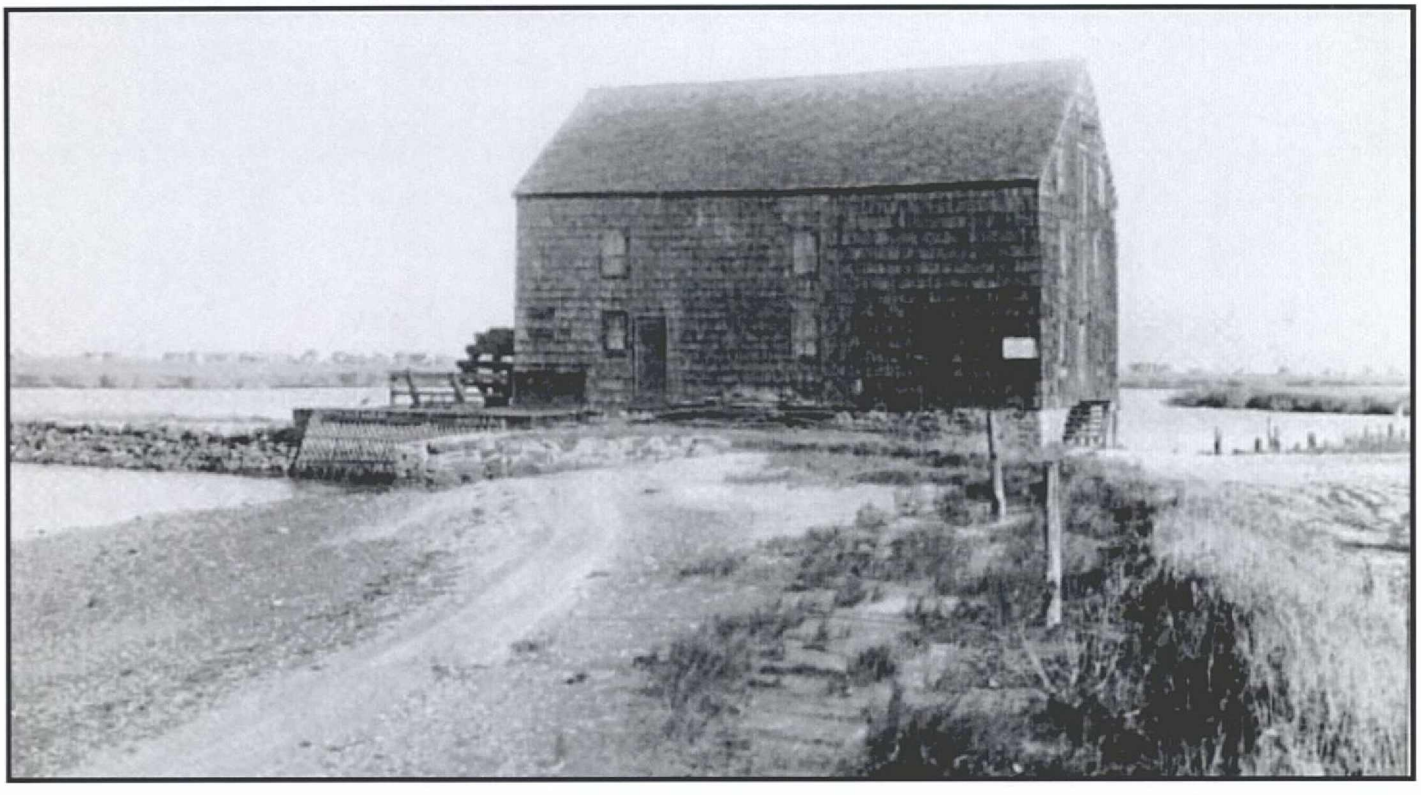

Plate 2. Early 20th-century view of the Gerritsen Tide Mill, looking east; milldam at left (Source: Ricciardi 2002).

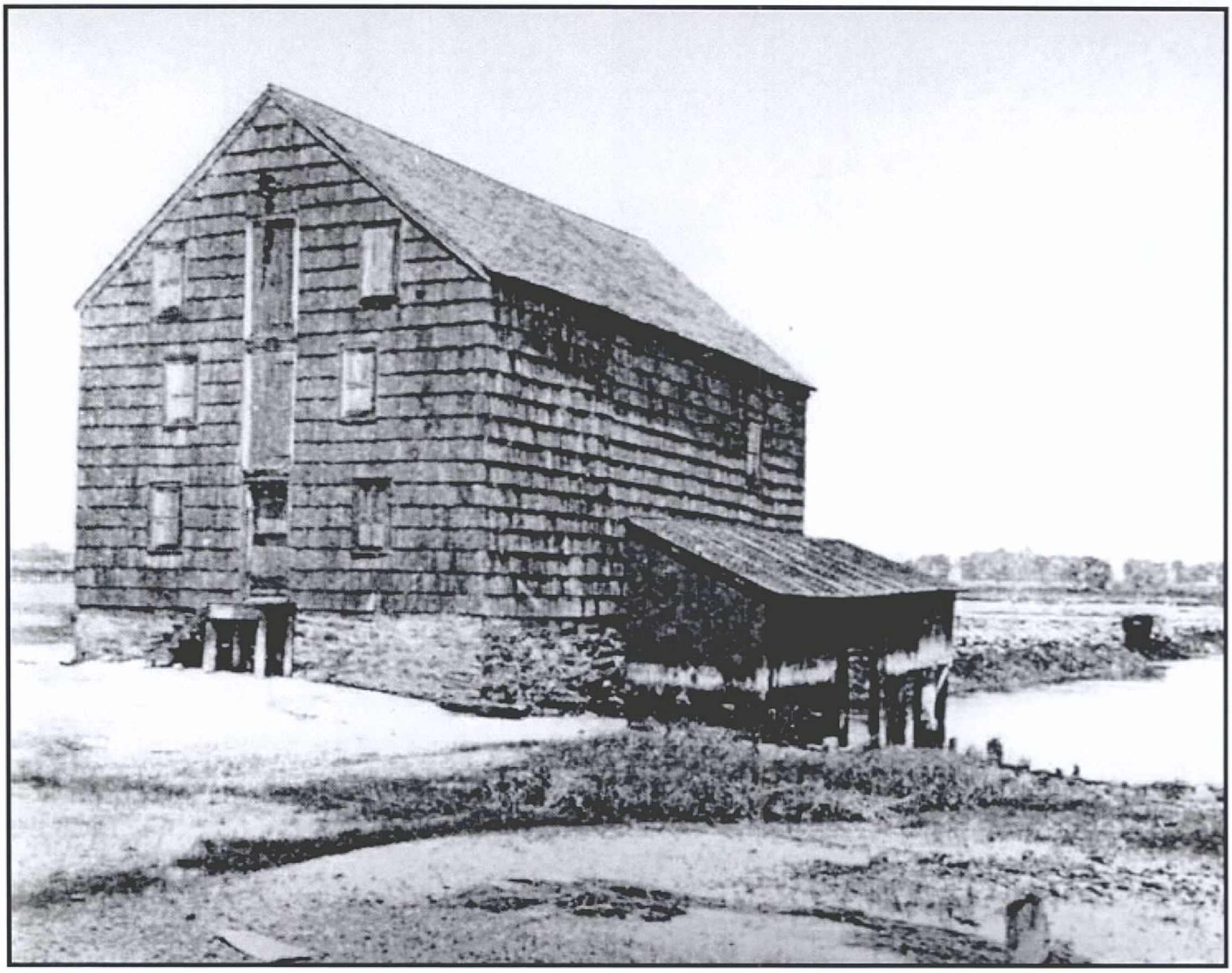

Plate 3. Early 20th-century view of the Gerritsen Tide Mill, looking north; milldam with sluiceway at right; project site beyond (Source: Ricciardi 2002).

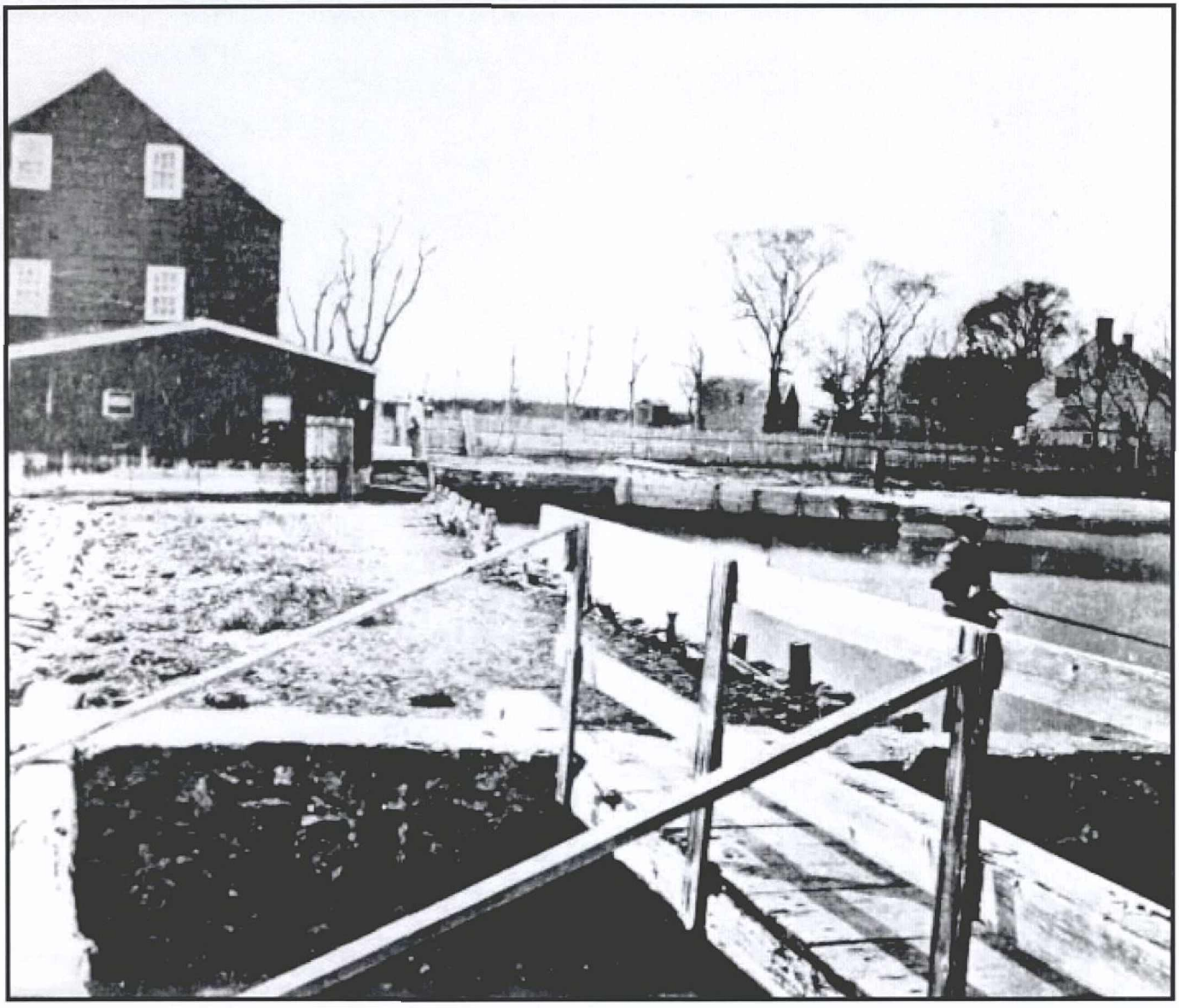

Plate 4. Early 20th-century view of the Gerritsen Tide Mill, Dam and House, looking west; sluiceway in dam in foreground; tide mill at left; house at right beyond millpond (Source: Ricciardi 2002).

Plate 5. Oblique aerial view of Marine Park, *circa* 1930, looking northwest; project site outlined (Source: Ricciardi 2002).

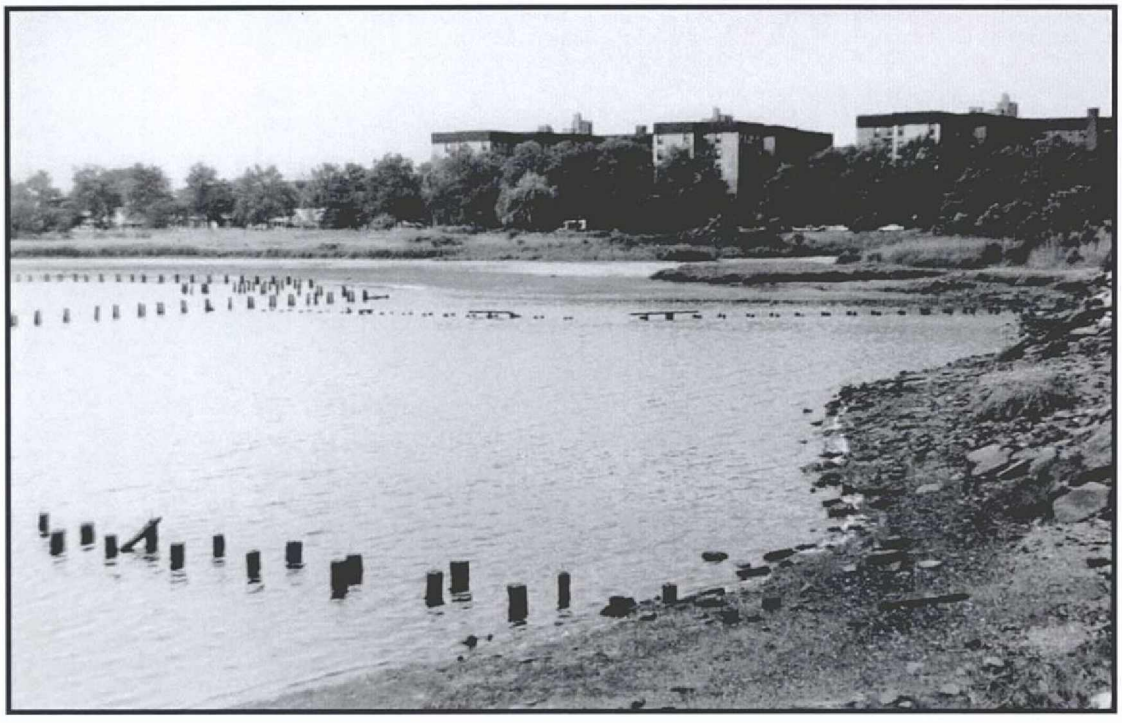

Plate 6. View looking south across Gerritsen's Creek from the Salt Marsh Nature Center at Marine Park; timber cribbing in the foreground is not related to the tide mill, but part of the early 20th-century bulkheading installed for the public park (Photographer: Damon Tvaryanas, May 2002) [HRI neg. # 02026/1:04).

Plate 7. View looking northeast across Gerritsen's Creek from the site of the Gerritsen Tide Mill; the projecting stone in the foreground is probably part of the mill's penstock that controlled water entering the wheel pit; the timber cribbing beyond approximately follows the line of the milldam (Photographer: Damon Tvaryanas, May 2002) [HRI neg. # 02026/1:36A).

Plate 8. View looking southeast along the western edge of the project site showing tidal salt marsh along the left bank of Gerritsen's Creek (Photographer: Damon Tvaryanas, May 2002) [HRI neg. # 02026/1:13).

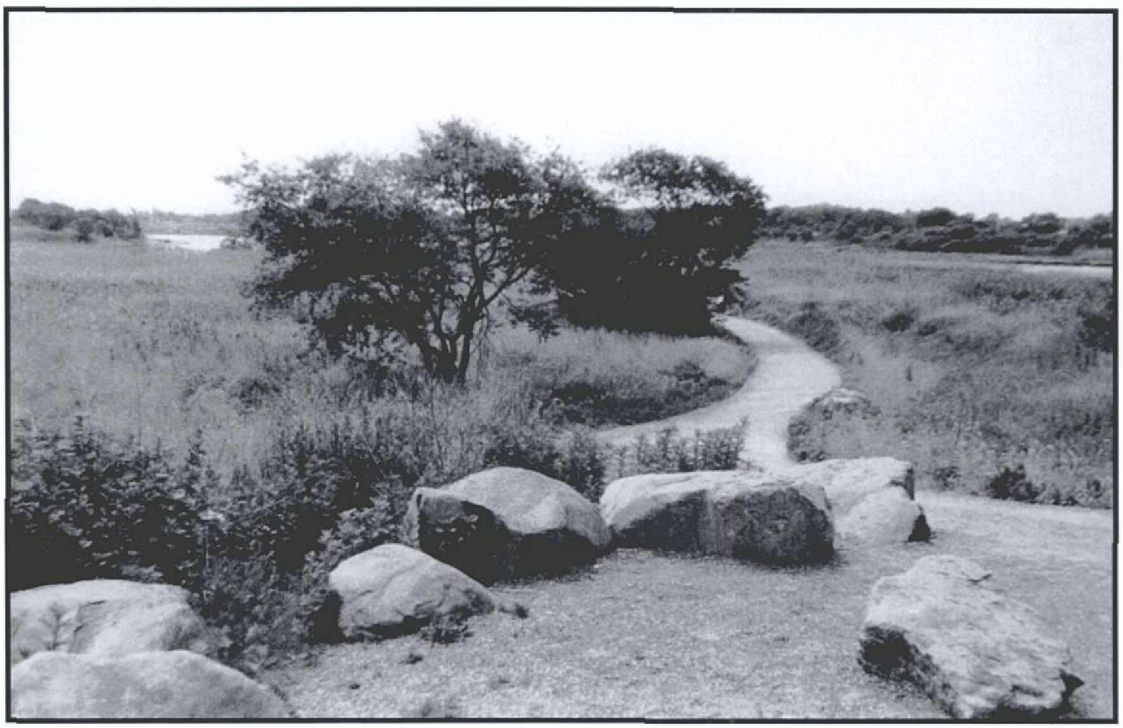

Plate 9. View looking southeast across the central portion of the project site from the highest point within the site; Gerritsen's Creek visible in the distance; the few clumps of trees may represent patches of fast land in the tidal marsh (Photographer: Damon Tvaryanas, May 2002) [HRI neg. # 02026/1:23).

Plate 10. View of environmental soil testing being undertaken in the central portion of the project site; fill and dredge spoil from the 1930s extended to depths of eight to 12 feet in this section of the site (Photographer: Damon Tvaryanas, May 2002) [HRI neg. # 02026/1:26).

APPENDIX C

RESUMES

RICHARD W. HUNTER
President/Principal Archaeologist, Ph.D., RPA

EDUCATION

Ph.D., Geography, Rutgers University, New Brunswick, New Jersey, 1999.
Dissertation Title: *Patterns of Mill Siting and Materials Processing: A Historical Geography of Water-Powered Industry in Central New Jersey*

M.A., Archaeological Science, University of Bradford, England, 1975

B.A., Archaeology and Geography, University of Birmingham, England, 1973

EXPERIENCE

1986-present — President/Principal Archaeologist
Hunter Research, Inc., Trenton, NJ

Founder and principal stockholder of firm providing archaeological and historical research, survey, excavation, evaluation, and report preparation services in the Northeastern United States. Specific expertise in historical and industrial archaeology (mills, iron and steel manufacture, pottery manufacture), historical geography, historic landscape analysis. Participation in:

- Project management, budgeting and scheduling
- Proposal preparation and client negotiation
- Hiring and supervision of personnel
- Supervision of research, fieldwork, analysis and report preparation

1999-present — Faculty Member, Certificate in Historic Preservation
Office of Continuing Education, Drew University, Madison, NJ

Courses: The Role of Archaeology in Preservation;
25 Years of Public Archaeology in New Jersey

1983-1986 — Vice-President/Archaeologist
Heritage Studies, Inc., Princeton, NJ

Principal in charge of archaeological projects. Responsibilities included:

- Survey, excavation, analysis, and reports
- Client solicitation, negotiation, and liaison
- Project planning, budgeting, and scheduling
- Recruitment and supervision of personnel

1981-1983 — Principal Archaeologist
Cultural Resource Group, Louis Berger & Associates, Inc., East Orange, NJ

Directed historical and industrial archaeological work on major cultural resource surveys and mitigation projects in the Mid-Atlantic region. Primary responsibility for report preparation and editing.

1979-1981 — Archaeological Consultant, Hopewell, NJ

1978-1981 — Adjunct Assistant Professor, Department of Classics and Archaeology, Douglass College, Rutgers University, NJ

1978-1979 Research Editor
Arete Publishing Company, Princeton, NJ

Prepared and edited archaeological, anthropological, and geographical encyclopedia entries (*Academic American Encyclopedia*, 1980).

1974-1977 Archaeological Field Officer
Northampton Development Corporation, Northampton, England

Supervised archaeological salvage projects executed prior to development of the medieval town of Northampton (pop. 230,000). Experience included:

- Monitoring of construction activity
- Supervision of large scale urban excavations
- Processing of stratigraphic data and artifacts
- Preparation of publication materials

1969-1970 Research Assistant
Department of Planning and Transportation, Greater London Council

SPECIAL SKILLS AND INTERESTS

- water powered mill sites
- iron and steel manufacture before the Industrial Revolution
- historic cartography
- scientific methods in archaeology
- historic research interpretation and public outreach

PUBLICATIONS

"Eighteenth-Century Stoneware Kiln of William Richards Found on the Lamberton Waterfront, Trenton, New Jersey." In: *Ceramics in America*, edited by Robert Hunter, pp. 239-243. University Press of New England [2001]

"Trenton Re-Makes: Reviving the City by the Falls of the Delaware." *Preservation Perspective* XVIII (2): 1, 3-5 [1999]

"Mitigating Effects on an Industrial Pottery." *CRM* 21(9):25-26 [1998] (with Patricia Madrigal)

From Teacups to Toilets: A Century of Industrial Pottery in Trenton, Circa 1850 to 1940, Teachers Guide sponsored by the New Jersey Department of Transportation, 1997 (with Patricia Madrigal and Wilson Creative Marketing)

"Pretty Village to Urban Place: 18th Century Trenton and Its Archaeology." *New Jersey History*, Volume 114, Numbers 3-4, 32-52 [Fall/Winter 1996] (with Ian Burrow)

Hopewell: A Historical Geography. Township of Hopewell [1991] (with Richard L. Porter)

"Contracting Archaeology? Cultural Resource Management in New Jersey, U.S.A." *The Field Archaeologist* (Journal of the Institute of Field Archaeologists) 12, 194-200 [March 1990] (with Ian Burrow)

"American Steel in the Colonial Period: Trenton's Role in a 'Neglected' Industry." In *Canal History and Technology Proceedings* IX, 83-118 [1990] (with Richard L. Porter)

"The Demise of Traditional Pottery Manufacture on Sourland Mountain, New Jersey, during the Industrial Revolution." Ch. 13 in *Domestic Potters of the Northeastern United States, 1625-1850.* Studies in Historical Archaeology, Academic Press [1985]

PROFESSIONAL AFFILIATIONS

Registry of Professional Archeologists (RPA) [formerly Society of Professional Archeologists] (accredited 1979; certification in field research, collections research, theoretical or archival research)
Preservation New Jersey (Board Member, 1994 - Present)
New Jersey State Historic Sites Review Board (Member, 1983 -1993)
Professional Archaeologists of New York City (PANYC)
Society for Historical Archaeology
Society for Industrial Archaeology
Society for Post-Medieval Archaeology
Council for Northeast Historical Archaeology
Archaeological Society of New Jersey (Life Member)
Mount Hope Historical Conservancy (Board Member, 1995 - 2000)

OTHER AFFILIATIONS

Trenton Downtown Association (Board Member, 1998 - Present)
Hopewell Township Historic Preservation Commission (Member, 1998-present)

DAMON TVARYANAS
Architectural Historian/Historian, M.S.

EDUCATION

M.S. Historic Preservation, University of Pennsylvania, 1993

B.A. Fine Arts, New York University, 1991

EXPERIENCE

1996- Architectural Historian/Historian
Hunter Research, Inc., Trenton, NJ

Technical and managerial responsibilities for survey, evaluation and recording of selected Historic Architectural projects. Participation in:

- Historic structures survey and evaluation
- Overall site direction and day-to-day management
- Oversight of historical and archival research for all company projects
- Report and proposal preparation

1992-1996 Historic Preservation Consultant
Brandywine Conservancy, Chadd's Ford, PA and Eagle's Mere, PA Historic Committee

Assisted the Conservancy and Historic Committee in numerous preservation activities. Participation in:

- Historic structures survey and evaluation
- Preparation of National Register of Historic Places Nomination
- Historic research, boundary delineation and mapping
- Preparation of state application for determinations of eligibility
- Public outreach

1991-1992 Museum Assistant
Carpenter's Hall, Philadelphia, PA

Assisted curator develop and implement systems for the recording and conservation of museum's artifact, furnishing, art and tool collections.

1992 Intern
Architectural History Foundation, New York, NY

Prepared comprehensive, annotate bibliography of nonserial publications pertaining to the subject of pre-1865 American architectural history.

1991 Intern
Allaire State Park, Allaire, NJ

Performed interpretive duties at the working blacksmith and carpenter shops of a 19th-century iron furnace complex interpreted as a living history museum. Developed guided tour of the park to introduce basic architectural concepts to school and youth groups.

PROFESSIONAL AFFILIATIONS

Historical Society of Pennsylvania
New Jersey Historical Society
National Trust for Historical Preservation
Preservation New Jersey
Archaeological Society of New Jersey
Burlington County Historical Society
Camden County Historical Society
Gloucester County Historical Society
Salem County Historical Society
Cumberland County Historical Society