Design Through Archaeology:

An Archaeological Assessment

of Fifteen City-Owned Cultural Institutions

Prepared by:
The New York City
Landmarks Preservation Commission

Prepared for:
The New York City
Department of Cultural Affairs

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EXECUTIVE SUMMARY

The New York City Department of Cultural Affairs (DCA) and the New York City Landmarks Preservation Commission (LPC) received a grant from the National Endowment for the Arts to develop an archaeological planning model. Called Design Through Archaeology, this model provides a mechanism for including archaeological concerns within a municipality's capital construction plan. The goal was to design the planning model and to demonstrate its application.

This report describes the archaeological potential and sensitivity of fifteen City-owned cultural institution properties under the jurisdiction of the Department of Cultural Affairs in the City of New York. Each archaeological assessment is based upon preliminary documentary research and an intensive pedestrian reconnaissance of each institutional property conducted in the period between 1987 and 1990. The Design Through Archaeology model can be used by other New York City Agencies, architecture and landscape design departments in cities throughout the United States, and the historic preservation organizations nationwide.

Four cultural institution properties have high archaeological potential; that is, they are likely to contain below-ground prehistoric and/or historic resources that require documentary research and field investigation prior to the start of any construction activity. These institutions are the New York Botanical Garden, The Bronx Zoo, Richmondtown Restoration, and Snug Harbor Cultural Center. Three cultural institutions, Wave Hill, The Metropolitain Museum of Art, and the Staten Island Zoo, have medium archaeological potential and require field testing or monitoring.

Eight cultural institution properties have low archaeological potential because of previous extensive landscape disturbance and a lack of human occupation or use. These institutions are the Brooklyn Botanic Garden, The Brooklyn Museum, The American Museum of Natural History, The Museum of the City of New York, The New York Hall of Science, The Queens Botanical Garden, The Queens Museum, and the Theater in the Park. No further archaeological investigation is necessary within these properties.

CHAPTER ONE: INTRODUCTION

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CHAPTER ONE: INTRODUCTION

Background

The New York City Department of Cultural Affairs (DCA) and the New York City Landmarks Preservation Commission (LPC) received a grant from the National Endowment for the Arts to develop an archaeological planning model. This model, called Design Through Archaeology, provides a mechanism for including archaeological concerns in the process of capital construction planning. The usefulness of the model is demonstrated in this report. DCA evaluated all of the capital construction projects on City-owned cultural institutions proposed in their five year plan for design and construction. From the large list of proposed work only fifteen institutions had projects which would affect the grounds of the institutions, and thus have a potential impact on archaeological sites. Those fifteen institutions are the subject of this study (see Figure 1:1). The institutions are:

Bronx
- Bronx Zoo
- New York Botanical Garden
- Wave Hill

Brooklyn
- Brooklyn Botanic Garden[1]
- Brooklyn Museum

Manhattan
- American Museum of Natural History
- Metropolitan Museum of Art
- Museum of the City of New York

Queens
- New York Hall of Science
- Queens Botanical Garden
- Queens Museum
- Theater in the Park

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[1] The Brooklyn Botanic Garden, unlike the other New York City opts to use the word "botanic" rather "botanical" in its title.

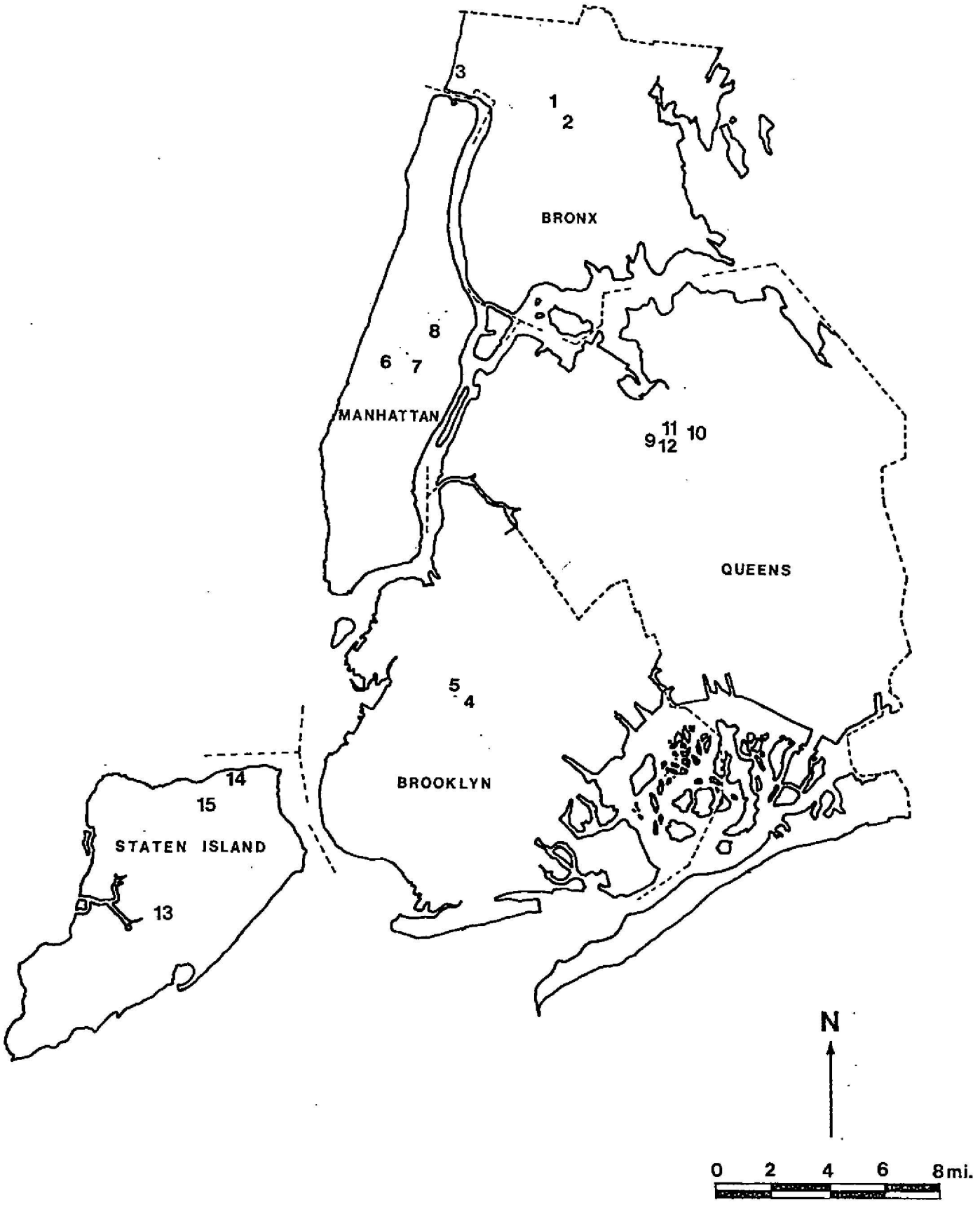

Figure 1:1 Base Map of Project Area

Staten Island
Richmondtown Restoration
Snug Harbor Cultural Center
Staten Island Zoo

In 1984 DCA identified a shortcoming in the City's capital construction process. Archaeological sites were being encountered and destroyed by contractors during the construction phase of capital projects, a point in time well beyond the planning process, thus precluding any effective evaluation and excavation of the sites. Staff from the Facilities Services Unit at DCA consulted with the City Archaeologists at LPC on how this problem could be addressed. It was determined that LPC would provide archaeological services to DCA in a prototype planning project involving Sailors' Snug Harbor on Staten Island.

An archaeological planning model for Snug Harbor was developed in anticipation of a series of capital projects scheduled as part of a master plan to develop the site as a cultural center. LPC was funded by DCA to prepare an archaeological predictive model of the property. A report was prepared describing the types of archaeological resources, e.g., a Native American site, a colonial site, nineteenth century structures and feature, that were present within the property (Baugher et al. 1985a). Subsequently, field testing was conducted in those areas where new utility lines were planned for installation in order to test the predictive model (Baugher et al. 1985b). The field testing uncovered an archaeological site of historic importance near the Matron's Cottage which had been identified in the predictive model report. This site was excavated by LPC prior to its destruction for the installation of utility lines (Baugher and Baragli 1987).

The Snug Harbor project demonstrated to DCA that including the City Archaeology Program in the planning process of capital improvements at a

cultural institution was cost effective and time efficient since investigation occurred prior to the start of construction. DCA, encouraged by this example of inter-agency cooperation with LPC, decided that it would be of interest to other local governments with similar sites and capital planning processes, sought and received support from the National Endowment for the Arts, Design Arts Program to develop a National Model for the Design Through Archaeology concept.

By integrating archaeology into the design phase of capital projects in a fashion similar to topographic surveys and soil borings DCA will save money resulting from potential cost over-runs caused by delays when cultural features and artifacts are discovered during construction. A study by NYS DOT showed that the State of New York saved as much as 30% on projects where archaeology was done in-house by a State agency rather than contracted out to a private consultant (see Pagano 1986). The end result is an efficient use of financial resources to preserve the history of the City of New York.

Purpose and Goals

The purpose of the Design Through Archaeology Project is to develop a mechanism for including preservation of the archaeological heritage of the City of New York in the City's capital construction planning.

DCA, in collaboration with LPC, has designed and implemented a model program that integrates the discipline of archaeology into architecture, landscape planning and design of capital construction projects for cultural institutions owned and operated by the City of New York. This report and LPC's archaeological planning models will be provided to the design teams working on future capital projects for the selected fifteen cultural institutions.

Chapter Two presents the methodology used in this study. Chapter Three presents detailed information on each of the fifteen cultural institutions.

The project areas are located in all five boroughs (see Figure 1:2; 1:3; 1:4; 1:5; and 1:6). The section on each institution contains the following information: 1) project boundaries; 2) history of the cultural institution; 3) environmental setting; 4) Native American resources; 5) historic resources; 6) field survey results; and
7) summary and recommendations.

The final chapter summarizes our findings. Sensitivity ratings are presented based on a thorough analysis of all data compiled in this study. These ratings are high, medium, and low sensitivity with respect to the presence of archaeological resources. The detailed definitions of each rating level including the level(s) of further investgations are explained in Chapter Four. Four cultural institution properties, The New York Botanical Garden, the Bronx Zoo, Richmondtown Restoration, and Sailors' Snug Harbor Cultural Center, have high archaeological potential, that is, they are likely to contain below-ground prehistoric and/or historic resources that should be investigated and assessed prior to the start of any construction activity. Also, three institutions, Wave Hill, The Metropolitan Museum of Art, and the Staten Island Zoo, have medium archaeological potential and require field investigations.

Eight cultural institution properties have low archaeological potential because of previous extensive landscape disturbance and a lack of human occupation or use. These institutions are The Brooklyn Botanic Garden, The Brooklyn Museum, The American Museum of Natural History, The Museum of the City of New York, The New York Hall of Science, The Queens

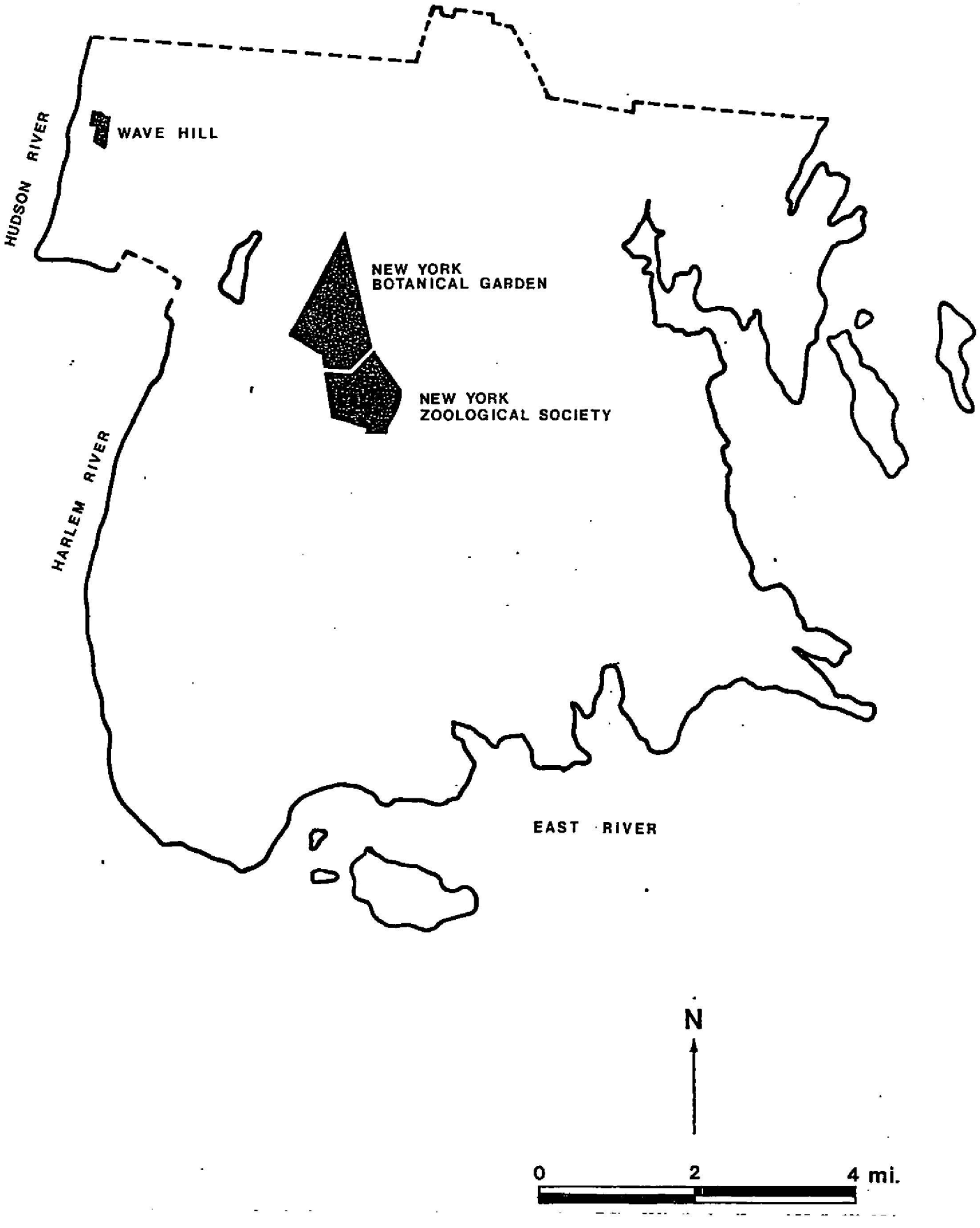

Figure 1:2 Site Location Map of Cultural Institutions in the Bronx

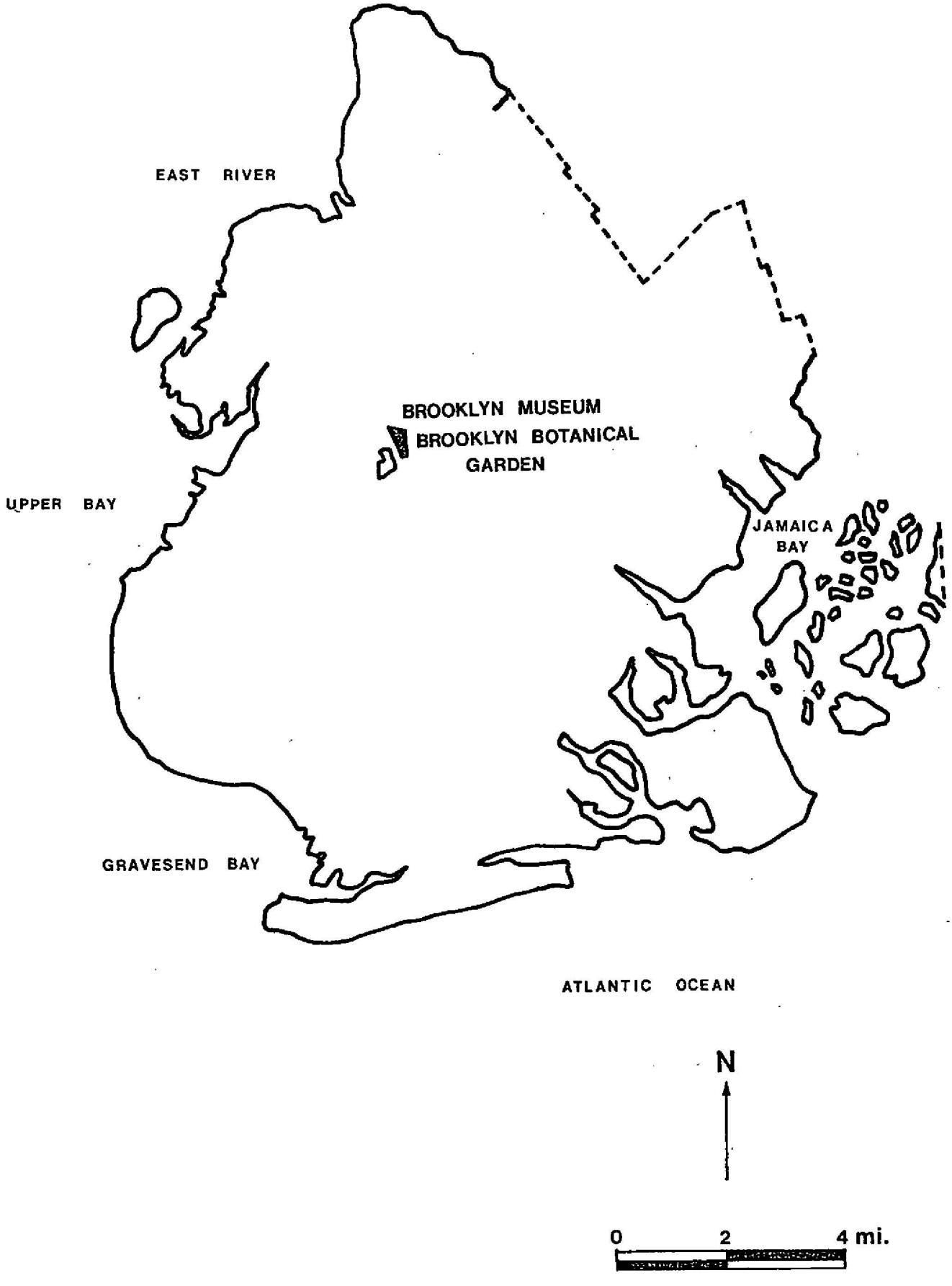

Figure 1:3 Site Location Map of Cultural Institutions in Brooklyn

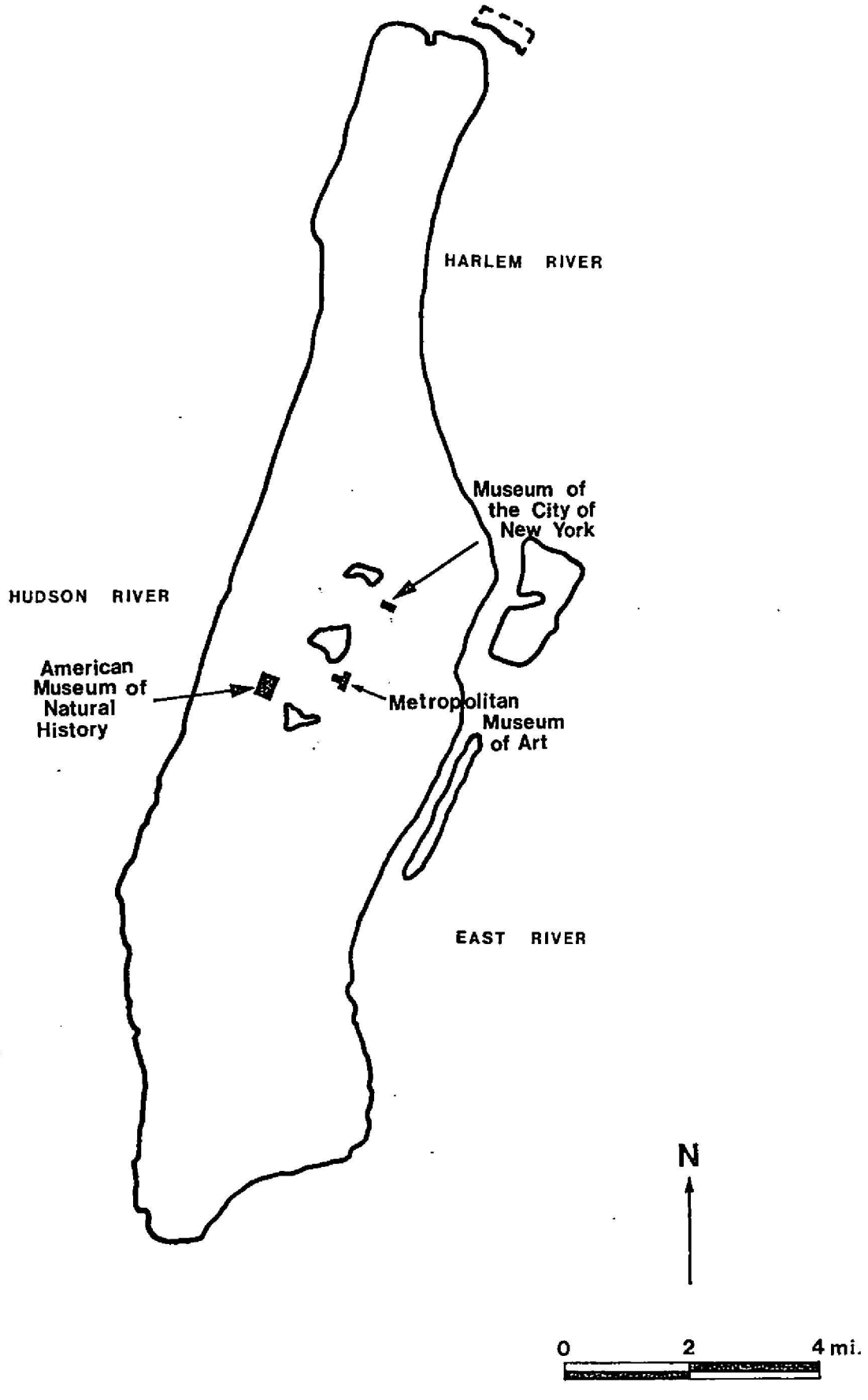

Figure 1:4 Site Location Map of Cultural Institutions in Manhattan

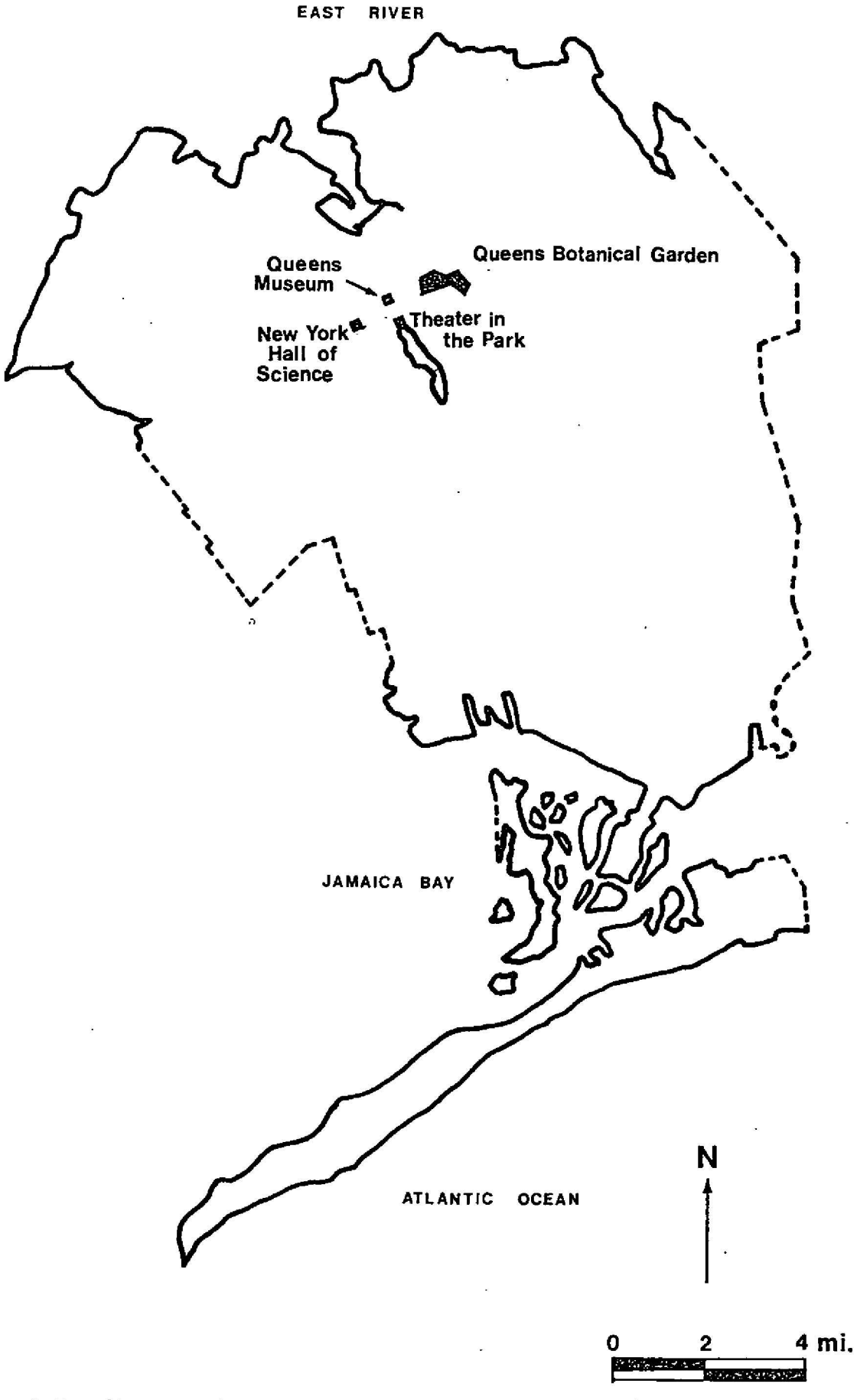

Figure 1:5 Site Location Map of Cultural Institutions in Queens

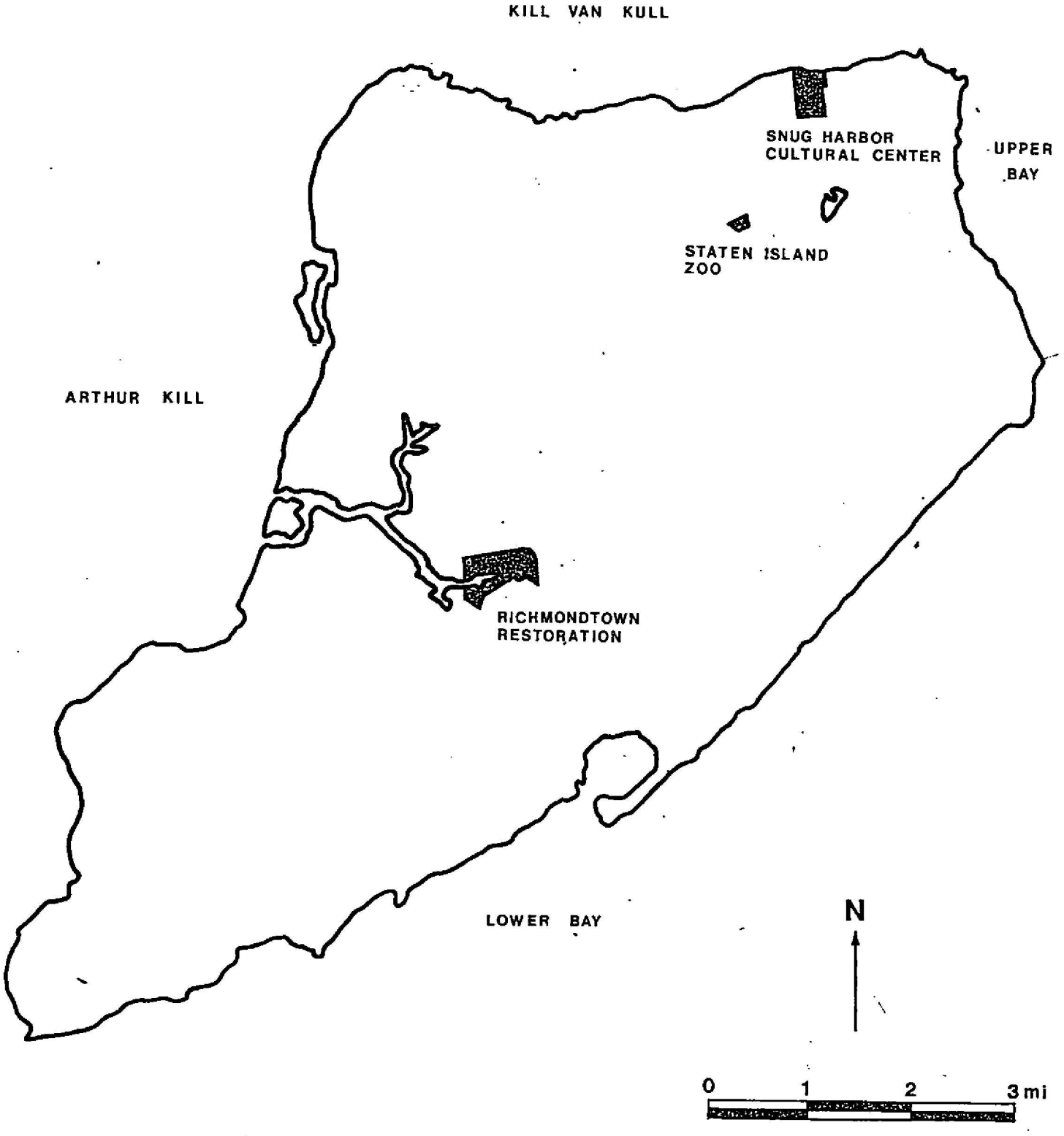

Figure 1:6 Site Location Map of Cultural Institutions in Staten Island

Botanical Garden, The Queens Museum, and the Queens Theater in the Park. No further archaeological investigation is necessary within these properties.

The Design Through Archaeology model can be used by other New York City agencies, architecture and landscape design departments in cities throughout the United States, and historic preservation organizations nationwide.

CHAPTER TWO: METHODOLOGY

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CHAPTER TWO: RESEARCH METHODS

The primary goal of this research project was to gather historical and archaeological data necessary for an evaluation of below ground cultural resources on the property of fifteen cultural institutions and to provide recommendations regarding the archaeological sensitivity of these properties. Four basic methods were employed in producing this archaeological predictive or planning model, namely documentary research, informant interviews, environmental analysis, and field reconnaissance.

Background Research and Informant Interviews

A documentary study was undertaken to identify known or potential archaeological resources. A search of the literature pertaining to each institution was carried out at the archives of each institution, the New York Public Library, and the New-York Historical Society. The primary sources examined were institutional records and historic maps. Secondary sources regarding the history of these institutions and their locations were consulted as well. Evaluations of the changes in land use and disturbance were made.

Contacts were made with individuals knowledgeable in the history and prehistory of the area. Interviews were conducted with local historians, naturalists, and avocational archaeologists/collectors (Name of informants are listed in the references under Primary Sources). Primary data was sought from all of the sources consulted.

Environmental Analysis

The prediction of American Indian site locations involves the use of various kinds of information including environmental, archaeologial, historic, and ethnohistoric data. The former environmental and

geomorphological conditions are important criteria for developing a hypothesis regarding the likely presence or absence of American Indian cultural material on the properties studied. In making this determination, the following environmental factors were considered:

1) Topography: Variables within this category include landform, location of the project area within the landform, and elevation. This information was derived from Borough Topographic Survey maps, and our own field reconnaissance in the area. Such data is a useful tool in the development of a predictive model of site selectivity and occupation by human groups.

2) Geology and Soils: The factors considered here are type and areal extent of bedrock formations and soils. In particular, we considered such factors as the permeability of the soil for drainage, and the soil's relationship to plant life in the area. These are important in judging an area's potential in providing food and raw material resources to human groups.

3) Water: Under this category are variables concerning the nature and location of the potable water supply. The proximity to a fresh water source would have been an important determinant in site location for Native American peoples.

4) Floral and Faunal Resources: The availability and utilization of the natural resources within the study area would have been of crucial importance to human groups. People's search for subsistence resources was continual; they naturally chose those areas in which food resources appeared in great abundance. Thus, considered in this category are terrestrial plant habitats that may have been present in the area, types of vegetation, and faunal species.

5) Raw Materials: The availability of the raw materials needed to fashion tools and other items is an important consideration in the assessment of an area for the likelihood of Indian occupation.

6) Historic and Current Land Use: Known land alterations must be considered in order to assess the potential disturbance to any cultural remains that may have been deposited over thousands of years by Native American peoples. Land modifications could equally affect the cultural deposits of the more recent historic populations as well. This environmental assessment included an evaluation of building, road and utilities construction, natural resource exploitation, alteration of water courses, landfill, demolition, and other landscape changes.

Field Reconnaissance

An extensive walkover survey was conducted of each cultural institution's property. This involved a careful and systematic observation of the landscape. A search was made for evidence of cultural features, artifacts, and landscape disturbance. In some areas, the survey was hampered by difficult field conditions including forest, wetland, and salt water marsh environments in Bronx, Queens, and Staten Island and disturbances from construction, demolition, excavation, and landfill. Nevertheless, all project areas were examined closely during the course of this study.

CHAPTER THREE: ASSESSMENT OF INDIVIDUAL INSTITUTIONS

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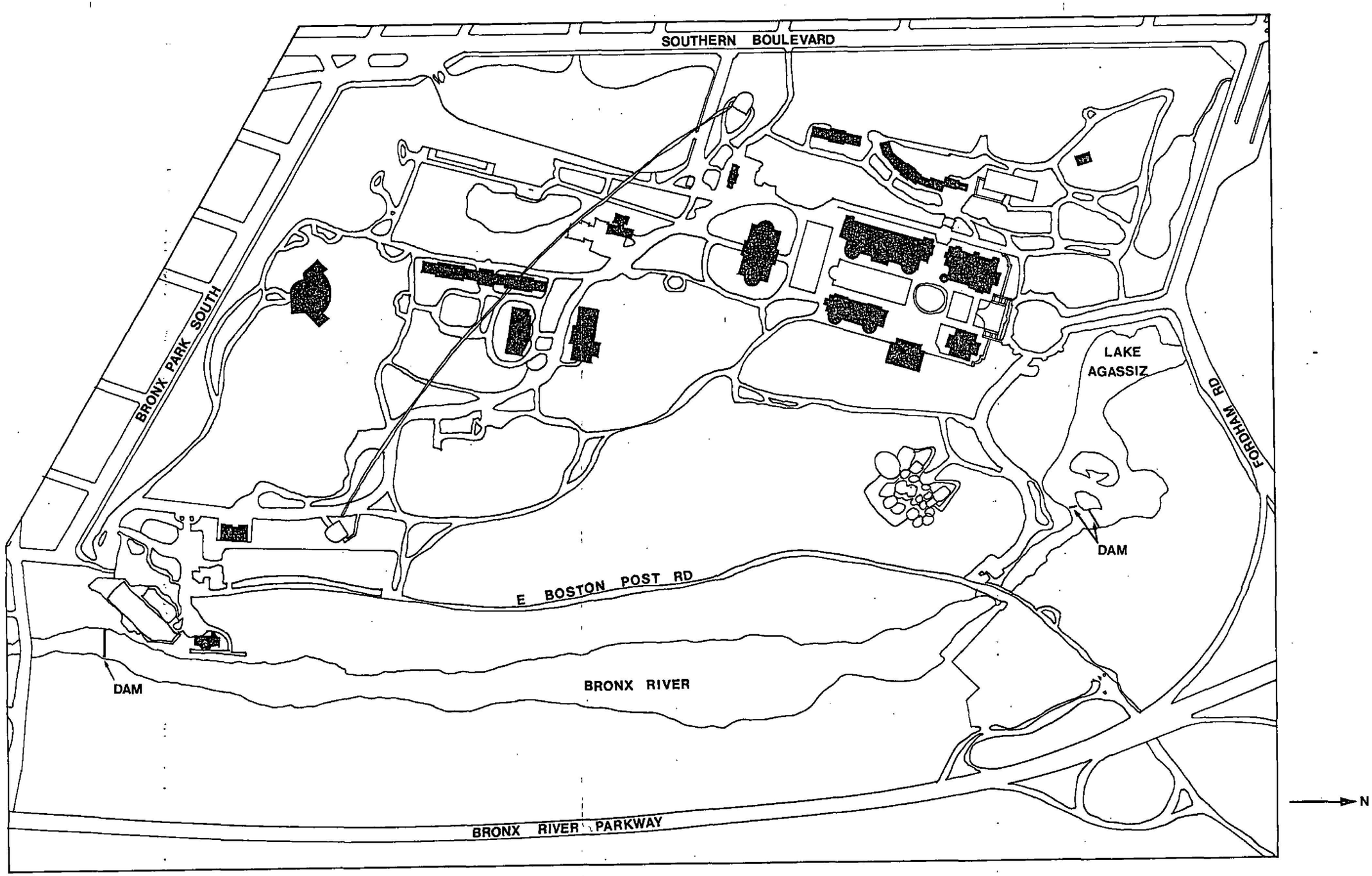
CHAPTER 3.1: THE BRONX ZOO, New York Zoological Society

Project Boundaries

The New York Zoological Society, the Bronx Zoo, is the largest urban zoo in the United States. Over four thousand wild animals, representing over 650 species, share the Zoo's 265 acres. The animals live in natural surroundings, which imitate their native habitats; Jungle World, Wild Asia, and the Himalayan Highlands are just a few of the exhibits that enable visitors to view animals in their indigenous environments. The Zoo is bordered on the north by Fordham Road, on the east by Bronx River Parkway, on the south by East 180th Street and Bronx Park South, and on the west by Southern Boulevard in the Bronx (see Figure 3.1:1).

History of the Cultural Institution

Founded in 1895, the New York Zoological Society is the oldest zoological society in existence. The Society's objectives were to establish a free zoological park to serve the general public, to encourage interest in zoology, and to preserve native North American animals and to discourage their needless destruction. The initial idea of creating a zoo was conceived by members of the Boone and Crockett Club--an organization devoted to hunting, exploration, conservation, and scientific study of wild animals. They were also responsible for obtaining the Zoo's charter from the State legislature. In May of 1896, the Society applied to the Commissioners of the Sinking Fund of the City of New York for land to be used as a zoological park. The Society chose their site from land that had been designated as parkland by New York State in 1884. The 250 acre South Bronx Park was selected by William T. Hornaday, the Park's first director. The scale of the zoological park was revolutionary in comparison to the



no scale

Figure 3.1:1 Base Map of the Bronx Zoo

typically small European zoos. Hornaday chose the site not only for its size, but because of its accessibility to transportation, forestry conditions, natural drainage, water supply, and even temperature.

South Bronx Park was part of the original patent of West Farms, which was bought by Edward Jessup and John Richardson in 1663. In 1680, the town of Westchester gave them the priviledge of locating a saw mill and a grist mill on the banks of the Bronx River. This right was eventually conveyed to Stephen Delancey, who built a mansion on the property in the beginning of the eighteenth century. David Lydig bought the estate in 1825 as a summer residence. He, like his predecessors, preserved the natural environment that was later to attract Hornaday and the Zoological Society. In 1845, a fire destroyed the mills and the mansion. Both were rebuilt the following year. The new mills were located further upstream from the originals and were torn down in 1885 when the State purchased the land and designated it as South Bronx Park.

On July 1, 1898, the Zoological Society took control of South Bronx Park, and, on November 8, 1899, the Zoo opened to the public. The City and the Society jointly assumed the cost of building construction, but the Society was solely responsible for the Zoo's management. A final plan, drawn up by Hornaday, was drafted in 1896, and three years later the architectural firm of Heins & LaFarge designed a master plan for the buildings. Most of the construction took place between 1899 and 1911. The main buildings are symmetrically arranged around a mall previously known as Baird Court (now Astor Court). The most prominent of these structures is the domed Elephant House (1908). Other buildings are placed randomly to take advantage of the natural contours of the park. The architectural styles of the buildings vary from the Beaux-Arts Baroque Lion House to the Neo-Grec Primate House. The Zoo also boasts two designated New York City

landmarks: the Rockefeller Fountain and the Rainey Memorial Gates. The Rainey Memorial Gates are also listed on the state and National Registers of Historical Places. The Rockefeller Fountain is an early eighteenth century Italian work (its sculptor is unknown). The marble fountain from Como, Italy was a gift from William Rockefeller. The bronze Rainey Memorial Gates were designed with plant and animal motifs by Paul Manship. The gates, dedicated in 1934, were donated to the Zoo by Mrs. Grace Rainey Rogers as a memorial to her brother Paul Rainey. The Zoo is most famous for its vast expanses of open space that have always distinguished it from other urban zoos.

Environmental Setting

Geologically, the Bronx Zoo is considered a part of the New England Upland Physiographic Province, which includes the Manhattan Prong (Schuberth 1968: 10). The rocks in the Bronx Zoo were originally sedimentary but they have been metamorphosed, that is transformed by heat and pressure some 365 to 440 million years ago. All of the bedrock in the Zoo is Manhattan schist, a metamorphic rock formed under high pressure and temperature (Stewart et al. n.d.).

Continental glaciation affected the surficial geology of the Bronx as the glacier advanced and receded over the area at least three times during the last million years. The area was covered with glacial till and outwash consisting of sand, gravel, and boulders that were deposited by the melting ice sheet. The evidence of glacial scouring and deposition can be readily seen within the Zoo property. The glacier polished the bedrock as it moved over the surface, and it carried away the soil in some areas leaving behind small barren hills. Also, several glacial erratics or boulders are present throughout the property the most notable of which is known as the "Rocking

Stone."

The Bronx River flows from north to south through the eastern half of the Bronx Zoo property. The river originates in the hills of North Castle, Westchester County and flows about thirty miles until it empties into the East River. At the northern end of the Zoo, the Bronx River flows over a waterfall-dam and into the Bronx Lake, which was formed by a second dam at the southern end of the property.

The topography of the Bronx Zoo generally consists of low rolling hils, ridges or bedrock outcrop, and some steep slopes along both sides of the Bronx River. The highest elevations occur in the eastern half of the Zoo where they average about fifty feet above mean sea level, while slightly lower elevations occur on the western border. The site is highly developed with numerous buildings, roads, fences, paths, and other structural features. The site does contain wooded areas principally along both sides of the Bronx River.

Native American Resources

A search of the literature pertaining to the study area indicates that numerous prehistoric sites, dating from the Early Archaic through Woodland Periods (c. 8000 B.C.-1600 A.D.) were once located to the northwest, east, and south. These documented sites, however, are directly outside, and a considerable distance from, the Bronx Zoo property. One historic source indicates that one such site, an "Indian Settlement," was once located near the juncture of Fordham Road (Pelham Parkway) and the Bronx River (Hermalyn n.d.:3). Unfortunately, the nature of this site is not described nor the source of information given.

Additional information on the prehistory of the Bronx Zoo was sought through personal contact with local informants who have knowledge of the

study area. This effort was not successful. Nevertheless, in our field survey, we attempted to evaluate the probable attractiveness of the study area for Indian groups and the areas where they were likely to have lived and worked.

Historical Resources

The Bronx has a rich and varied historical past that has been documented extensively elsewhere (Comfort 1906; Jenkins 1912; Cook 1913). The following brief history of the study area has been abstracted primarily from these sources.

In the early eighteenth century, a saw mill and three grist mills were in operation along the Bronx River in an area known as West Farms. On March 4, 1735, Stephen DeLancey conveyed to his son Peter, "...all my mills, mill-house, mill-boat, farm and land...situate and being in the county of Westchester, upon Bronck's (sic) river" (Jenkins 1912: 104). As a result of this inheritance, Peter DeLancey became known as "Peter of the Mills" and the locality as DeLancey's Mills as well as West Farms. The area is located immediately south of the Bronx Zoo property.

During the Revolutionary War, the Bronx River was the scene of several skirmishes and troops movements. In the winter of 1779, Colonel Aaron Burr led patriot tropps in an attack on a British blockhouse in West Farms overlooking DeLancey's Mills on the Bronx River. This blockhouse stood on what is today 179th Street, and was destroyed by Burr and his troops.

The DeLancey Mansion, which was probably built in the early eighteenth century, stood on the east bank of the Bronx River on a small plateau overlooking the river and the mills (Jenkins 1912: 305). DeLancey's Mills are described as being under one building and consisting

of a saw and grist mill which were operated by "overhead" water power (Comfort 1906: 45). Comfort further states that the mills stood opposite the foot of the present 181st Street, and were destroyed by fire about 1845. Both Comfort and Jenkins record that an immense pine tree known as "DeLancey Pine" was standing near the site of the mansion in the early twentieth century.

About 1825, David Lydig purchased the DeLancey property and used the mansion (on the east side of the river) as a summer residence (Jenkins 1912: 398). Following its destruction by fire in 1845 Lydig replaced it with another mansion on the west side of the river. About a year later Lydig constructed mills on the west side of the Bronx River further from the dam (Comfort 1906: 45). A raceway brought water to three overshot waterwheels, which were later replaced by turbines. Comfort adds that when this property was acquired for Bronx Park, the mills were torn down.

In the early nineteenth century, James Bolton purchased land on both sides of the Bronx River in the vicinity of the Boston Post Road Bridge. Bolton built a dam and a mill which became known as the Bronx Bleach Works and Cloth Tape Factory (Hermalyn n.d.: 8). Shortly thereafter, cottages, stores, hotels, saloons, a school, and a church were built in the area, forming a village called Bronxdale. In 1887, the City of New York acquired the property for park use and shortly thereafter the bleachery closed and moved to West Farms. The James Bolton Homestead, a thirty room stone house which was located just south of Pelham Parkway, was demolished around 1904 (Comfort 1906: 46).

Field Survey Results

An intensive pedestrian survey was conducted in the entire Bronx Zoo in an attempt to locate prehistoric or historic sites and to evaluate the

archaeological potential of the property. The results and analysis of this field work are presented below and the data has been plotted on the Project Base Map. The lettering system for the following archaeological sites and zones of sensitivity corresponds to the location of these sites on the Archaeological Sensitivity Map (see Figure 3.1:2).

a) Site of Bolton's Bleachery Factory

A portion of the Bleachery Factory foundation is extant on the west side of the Bronx River immediately below the dam of Lake Agassiz. the remains of cut stone walls, bricks and mortar are present along the edge of the bank, and a cut stone wall is visible on the island to the east opposite the site. Two maps of the area by F.W. Beers (1868a, 1868b) show the location of the factory on the west side of the river below the dam. A raceway is also shown in the area on an 1869 map of the zoo (Hornaday 1869).

The area around the bleachery ruins represents a zone of high archaeological sensitivity and has the potential to yield significant data pertaining to this nineteenth century industry. Any planned development or construction work in this area should be preceded by a data recovery program consisting of documentary research and archaeological excavations.

b) Bronxdale Village Site

The Village of Bronxdale was once located near the junction of Pelham Parkway and the Bronx River Parkway. A portion of this former village is located within the zoo property that is bounded by Fordham Road on the north, the Bronx River Parkway on the east, the Boston Post Road on the south and Lake Agassiz-Bronx River on the west. According to historical maps (Beers 1868a; United States 1891) several structures were once located along the east bank of the river as well as a short distance to the north

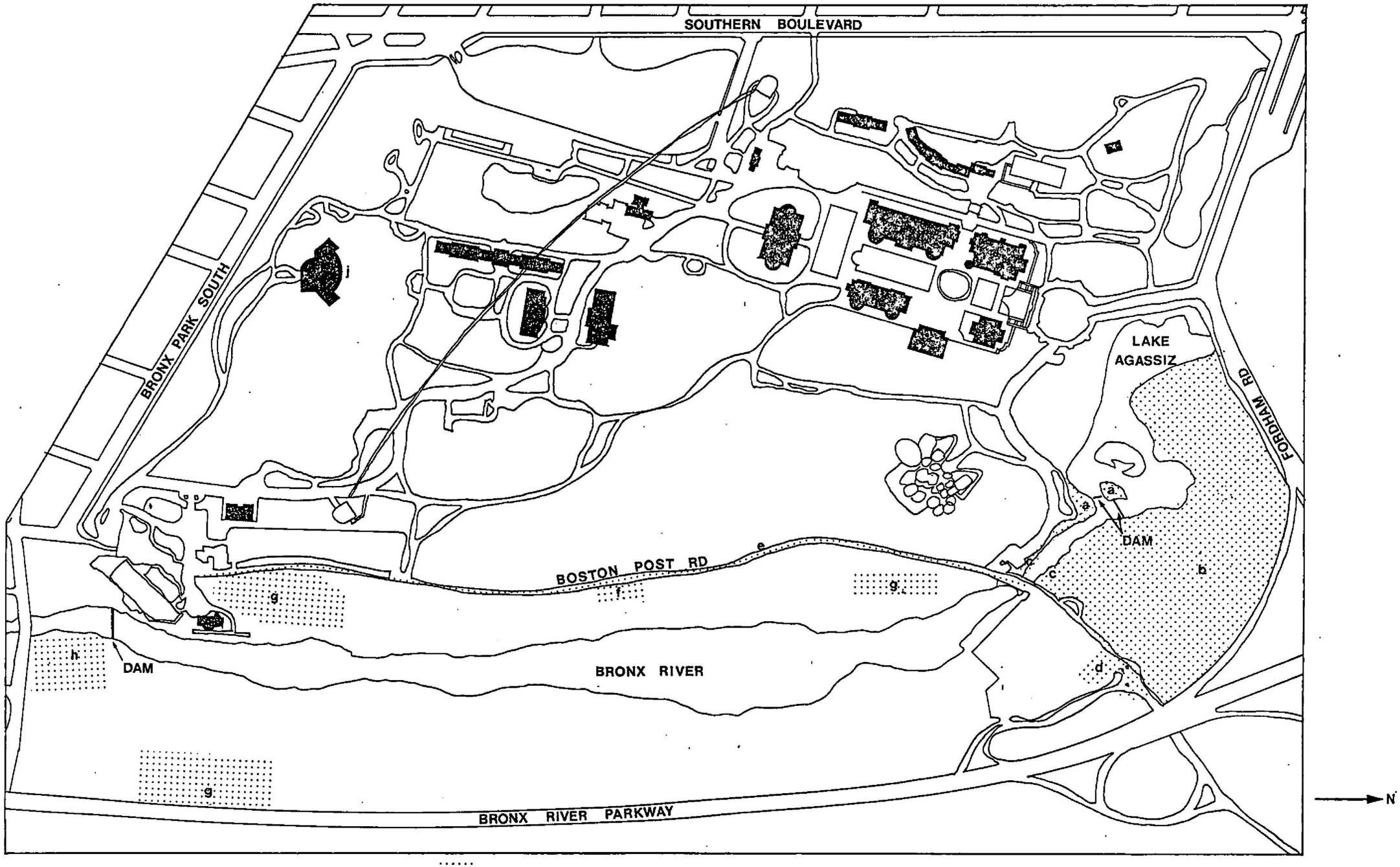


Figure 3.1:2 Archaeological Sensitivity Map of the Bronx Zoo

and west. By 1897 however, only one structure is shown on this site (Norstrand 1897) with all others apparently removed or destroyed.

In our field survey within this area, we located the remains of a stone foundation wall along the east side of Lake Agassiz. Coal, ash, and glass fragments were found on various trails through the area as well as a former stone/cement fence wall running north from the Boston Post Road Bridge. There is also an abandoned segment of a macadam road running along the fence near the Bronxdale Gate entrance. This road was built in the 1930's by the Zoo's staff and is referred to as "Gold Street" (Driscoll 1987, personal communication). Although this zone is partially used as a parking area, it remains generally undisturbed.

We consider this zone to be archaeologically sensitive. Any planned construction or development work in this area should be preceded by documentary research and archaeological investigations.

c) Bridge Abutments

Stone abutments of the old Boston Post Road Bridge are extant on both sides of the Bronx River approximately twenty-five feet north of the present bridge. These former bridge abutments consist of large cut and dressed stone blocks. A refreshment-food service structure is presently located on top of the bridge abutment on the west side of the river.

These structural features are not historically significant.

d) Site of a Nineteenth Century House

According to Charles Driscoll (1987, personal communication), a nineteenth century house formerly stood on the south side of the Boston Post Road near the Bronxdale Gate entrance to the Zoo. Driscoll referred to this structure as Bolton House and presumably it was once part of the Bronxdale Village. The house was destroyed and the site is presently beneath the Bronxdale parking lot. We believe that there is potential for

the presence of intact cultural remains at this site and that the site is historically significant.

e) Boston Post Road

A section of the old Boston Post Road is extant within the Bronx Zoo property. The road runs north-south through the center of the Zoo parallel to the west side of the Bronx River. Near the northern end of the park the road turns to the northeast, crosses the Bronx River, and exits the Zoo at the Bronxdale Gate.

The Boston Post Road was one of the first roads in Colonial America. It was completed in 1672 and connected New York City with Boston. The road was an important transportation route that linked people and communities in the region and influenced commerce, industry, and settlement patterns.

Unfortunately, the archaeology of historic roads and streets has been neglected in the northeast with the exception of Philadelphia (Parrington 1983) and the Old Post Road Site in Greenwich, Conneticut (Kirkorian and Zeranski 1981). We believe that the Bronx Zoo road segment is a transportation artifact that has potential for yeilding important information about road construction and technological development over time, as well as for gathering information on historic transportation, communications and settlement. Archaeological monitoring and data recording should be part of any construction work planned within the road bed.

f) Survey Monument

An old survey monument, made from marble, was located along the east side of the Boston Post Road nearly opposite but slightly north of the entrance to the Zoo maintenance yard dump. This marble monument is on elevated ground some twenty-four feet to the east of the road bed. The

monument is seven inches square in plan view and is flush with the ground surface. There is a small conical hole in the top center of the stone. On the north surface, the following Roman numerals have been carved into the stone: "LXIV." On the south face of the monument the number "13" has been carved into the stone."

It has been suggested that this stone is a former milepost or marker on the Boston Post Road (Driscoll 1987, personal communication). However, its placement on elevated ground twenty-four feet from the road and flush with the ground surface argues against this interpretation. We believe the stone is a nineteenth century survey marker, perhaps of a former political boundary or property line. For example, Jenkins (1912: 305) has noted that the patent and manor lines of the Fordham, West Farms, and Westchester form a corner in the middle of the nearby Bronx Lake.

This historic artifact should be preserved in situ.

g) The Bronx River Prehistoric Zones

Several sections along the Bronx River have been identified as potential areas of prehistoric occupation. All other land areas are considered to have zero to minimal sensitivity.

A macadam footpath runs along the top of the steep bank on the west side of the Bronx River. At a point approximately 400 feet south of the Boston Post Road Bridge, there is a small, relatively flat and wooded area to the west of the foot path which we judge to be a zone of sensitivity for prehistoric occupation. This zone is an elevated terrace that is undisturbed, well drained, and has easy access to potable water and other food and material resources.

A second potential prehistoric zone is located on an elevated terrace immediately north of the Jungle World building on the west side of the river. The zone is small, flat, and undisturbed. No prehistoric artifacts

were found but we noted the presence of nineteenth century stoneware and bottle glass in the area.

A third potentially sensitive zone is located along the east side of the Bronx River within the Wild Asia enclosure. This zone is a narrow strip of land that is also elevated, generally flat, well-drained, and is relatively undisturbed

h) Site of Cistern/DeLancey Property

Charles Driscoll (1987, personal communication) reported the existence of a cistern with a stone cap near the southeast end of the Zoo property, bordering East 180th Street. Neither we nor Driscoll himself could find evidence of this cistern during our field reconnaissance. Driscoll also reported that a millstone was found in this general area many years ago and was donated to the Museum of the American Indian, Bronx Annex.

This area is part of the former DeLancey mansion and mill site as indicated on a map of the Bronx during the American Revolution, and is, therefore, considered to have archaeological potential for yielding information pertaining to these two structures.

i) Site of Boat House and Dock

A boat house and dock formerly stood on the west side of Bronx Lake just south of the Jungle World building. The boat house was torn down following World War II (Hermalyn n.d.: 14) and the new cogeneration plant is being constructed on the site. Except for a section of retaining wall along the lake and iron fence posts, little remains of these former recreational features. Construction of the cogeneration plant on this site is likely to have destroyed any sub-surface archaeological deposits associated with the use of this site as a boat house.

i) Site of Lydig Mansion

The Lydig Mansion and a nearby outbuilding were formerly located within the Zoo property just to the north of the former Kingbridge Road (Beers 1868) which is now known as Bronx Park South. The Carter Giraffe Building is presently standing on the site of the mansion house. The land surrounding the giraffe building has been extensively disturbed and altered for animal exhibits and enclosures. No evidence of the Lydig estate structures was found. Due to the extensive land alterations that have taken place, this area is considered to be culturally non-sensitive.

5. Summary and Conclusions

The documentary research and field reconnaissance of the Bronx Zoo has identified several cultural resources and potential archaeological sites within the study area (see Figure 3.1:2). Our conclusions and recommendations with respect to these cultural resources area as follows:

Sites/Features	Sensitivity Rating	Additional Archaeological Work Required
Bolton's Bleachery Factory	High	Documentary research; archaeological testing
Bronxdale Village	High	Documentary research; archaeological testing
Bridge Abutments	Low	None
19th Century House Site	Medium	Archaeological monitoring
Boston Post Road	Medium	Archaeological monitoring
Survey Monument	Low	None
Bronx River Prehistoric Zones (3)	High	Archaeological testing
Cistern Site/DeLancey Prop.	High	Documentary research; archaeological testing
Boat House-Dock Site	Low	None
Site of Lydig Mansion	Low	None

CHAPTER 3.2: THE NEW YORK BOTANICAL GARDEN

Project Boundaries

The New York Botanical Garden, internationally renowned for its horticultural exhibitions, publications, education programs, and plant research, consists of 250 acres of land. It is bordered on the north by Mosholu Parkway, on the east by Bronx River Parkway, on the south by Fordham Road, and on the west by Southern/Kazimiroff Boulevard in the Bronx (see Figure 3.2:1). The outdoor gardens include the Peggy Rockefeller Rose Garden, which contains over fifty varieties of roses, and the forty acre New York Botanical Garden Forest, a virgin forest. The Enid A. Haupt Conservatory displays a variety of plant life under two acres of glass with ninety foot palm trees occupying a central dome known as the Palm Court. The Botanical Garden contains the largest herbarium and botanical library in the United States.

History of the Cultural Institution

The New York Botanical Garden was founded in 1891 for the "advancement of botanical science" and "the preservation and exhibition of ornamental and decorative horticulture and gardening, and for the entertainment, recreation, and instruction of the people." In 1886, during a lecture given by Professor and Mrs. Nathaniel Lord Britton to the Torrey Botanical Club on the subject of the Royal Botanic Gardens at Kew in England, the Brittons proposed that a similar botanic garden be established in New York. Members of the Torrey Botanical Club generated support for the establishment of a botanic garden, and three years after the Britton's lecture their first goal was realized. In 1896, Professor Britton became the Garden's first director.

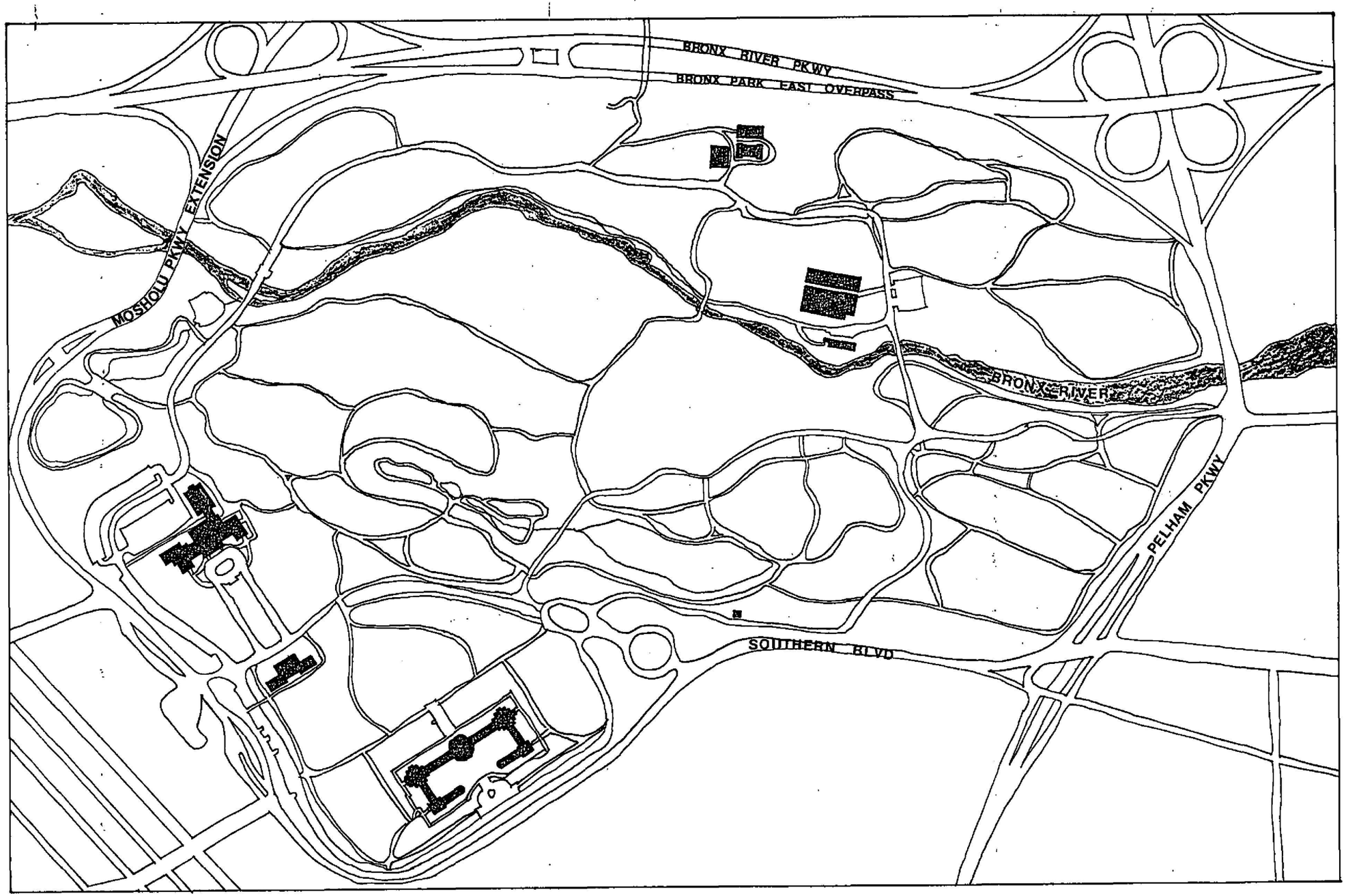


Figure 3.2:1 Base Map of New York Botanical Garden

The Garden received 250 acres of land in Bronx Park from the New York City Department of Parks in 1891. The site, which was chosen by Calvert Vaux and Samuel Parson, Jr., had formerly been part of the Lorillard estate.

A little more than a decade after the New York Botanical Garden was founded and acquired its 250 acre site, the Conservatory and the Museum Building were opened to the public. The Enid A. Haupt Conservatory was designed by William R. Cobb and erected by Lord & Burnham Co. between 1899 and 1902. The Victorian structure, which is composed of eleven glass pavilions, is the Garden's main attraction. Designated a New York City Landmark in 1973, it was restored during the 1970s and reopened in 1978. The Museum Building was designed by Robert W. Gibson in the late 1890s. Its French influenced classical design serves as a backdrop for Carl Tefft's "Fountain of Life," which was designed in 1905. In 1956, a third structure--the Harding Laboratory--was erected across the mall from the Museum Building and completed the Garden's Museum Center.

Environmental Setting

The surface of the Bronx consists of several interesting landforms. Each land feature originated through the action of some past geological process which led to the development of a variety of flora and fauna. In turn, these factors have had a tremendous impact on prehistoric and historic peoples and their settlement and subsistence patterns in this area. However, the historic period land use, particularly in the twentieth century, has drastically altered the original features of the landscape of the Bronx. The following narrative is a synopsis of the major natural environmental characteristics that served to shape the development of the Bronx Park area.

Geologically, the New York Botanical Garden is considered a part of the New England Upland Physiographic Province, which includes the Manhattan Prong (Schuberth 1968:10). The bedrock in the area is Fordham gneiss, a well foliated rock that exhibits a distinct dark gray to black banded appearance.

Continental glaciation affected the surficial geology of the Bronx as the glacier advanced and receded over the area at least three times during the last million years. The area was covered with glacial till and outwash consisting of sand, gravel, and boulders that were deposited by the melting ice sheet. An early geological study of the Bronx noted that "morainal heaps and alluvial coverings hide or bury the gneissic contours" (Gratacap 1099:169). These deposits are present throughout the area where rivers and streams carried debris from the receding glacier.

The Bronx River flows from north to south through the center of the Botanical Garden. This river originates to the north in Westchester county from where it meanders slowly southward until it enters a narrow gorge within the Botanical Garden. In the gorge, the Bronx River roars over a waterfall and contiues its gentle, meandering jopurney southward to the East River. To the Indians, the Bronx River was known as the Aquahung, or "a place of high bluffs or banks" (Kazimiroff 1954:250).

The topography of the New York Botanical Garden generally consists of low rolling hils, ridges or bedrock outcrop, and steep slopes along both sides of the Bronx River. The highest elevations occur to the west of The Bronx River where they reach a height of 180 feet above mean sea level. The lowest elevations occur along the banks of the river where they are about twenty feet above mean sea level. The site contains both wooded areas, the most notable of which is a forty acre hemlock forest, and open

levels areas. An 1895 map of the garden describes several topographic features that were present at that time, namely "steep, broken, rocky bank" on the west side of the Bronx River, the "Hemlock Grove" and "broken country to the east" (Anonymous 1895).

Fluhr (1960), in his study of the gemorphology of the west Bronx, describes the many physical changes in the landscape that have taken place since the days of early historic settlement, but notes no physical changes within the Botanical Garden/Bronx River area itself. In fact, Fluhr (1960:8) observes that "here (Bronx Park), preserved for our appreciation is the river winding among a woodland which contrasts markedly with its built up surroundings."

Native American Resources

The prehistory of the Bronx has been researched to some extent and the available data provides excellent background material with which to assess the New York Botanical Garden property. A search of the literature on the Garden indicates that numerous prehistoric sites, dating from the Early Archaic through Woodland Periods (c. 8000 B.C. - 1600 A.D.), were once located to the northwest, east, and to the south. However these documented sites are directly outside the Botanical Garden property. Within the Garden, our documentary research revealed the existence of an Indian "cave" or rockshelter on the west side of the Bronx River near the Magnolia Road Bridge. This rockshelter was excavated many years ago by Theodore Kazimiroff many years ago who reported finding "bits of pottery and arrowheads within the site" (Kazimiroff 1959:2). Additional information on the prehistory of the Garden was secured through personal contact with local informants who have knowledge of the study area. This effort revealed the possible existence of Native American rock carvings or

petroglyphs within the New York Botanical Garden property; a "fish" petroglyph (Bernstein 1982; Gilbert 1987) and a "turtle" petroglyph (Solecki 1986). In our subsequent field survey and analysis we attempted to locate, record, and evaluate these reported Native American sites, as well as to evaluate the probable attractiveness of the study area for Indian groups and the areas where they were likely to have lived and worked.

Historical Resources

In 1792, Pierre II and George Lorillard, sons of tobacco entrepreneur Pierre Lorillard, purchased a grist mill, dam, water rights, and some fifty acres of the Bronx River for the purpose of manufacturing tobacco snuff (Anonymous 1976: Item 8, p.2). Within a year, the Lorillards had adapted the old mill to snuff manufacturing. About 1800, they purchased additional land in the area and replaced the old frame mill with a new one constructed of native fieldstone. About 1840, a new mill was constructed "on or near the site of the two previous Lorillard snuff mills" (Anonymous 1976: Item 7, p. 1). In 1856, Pierre Lorillard III built a forty-five room mansion on the property overlooking the Bronx River Gorge along with a nearby gatehouse and stable.

In 1884, the City of New York acquired 661 acres of the Lorillard estate in the Bronx including the snuff mill, mansion and outbuildings (Sircom, n.d.:2). For a short time, the mansion served as the 41st Precinct Police Station, while the snuff mill was used as a carpentry shop for Bronx Park. The mill's machinery apparently remained intact in the structure until about 1900. In 1915, the New York City Parks Department granted the former Lorillard land and buildings to the New York Botanical Garden. Public use of the Lorillard mansion continued until 1923, when on

March 26 a fire destroyed the structure (Sircom, n.d.:2). Following the fire, the ruined mansion was razed and some of the stone and brick was used to build other structures in the Garden. The New York Botanical Garden continued to use the smuff mill, when in the early 1950s the mill was restored and opened to the public as a restaurant and meeting place.

The New York Botanical Garden was established in 1896. Shortly thereafter, two major structures, a museum building and conservatory, were built on the property and were opened to the public around 1900 (Anonymous n.d.: Item 8, p. 1). This early development work was followed by other construction projects which resulted in significant changes in the landscape. In addition to garden construction, grading, the installation of trails, walks, parking areas, and roads, other structures and changes were made on the property in the twentieth century. A powerhouse was built in 1908, seating was built overlooking the rock garden in the 1930s, a lake and gazebo were built, an enclosing fence constructed in the 1930s, a hill in front of the museum was removed in 1912, the old road which ran between the Twin Lakes was removed c. 1974, the Harding Laboratory was built in 1956, and the Watson Science and Education Building was constructed (Bremm 1987, personal communication).

In 1966, the Lorillard Snuff Mill was designated a New York City Landmark by the Landmarks Preservation Commission and in 1976 it was placed on the Stae and National Register of Historic Places and remains as an important example of early factory architecture. In 1973, the Conservatory, including the Palm House and wings, was also designated a New York City Landmark.

Field Survey Results

An intensive pedestrian survey was conducted of the entire Garden in an attempt to locate prehistoric or historic sites and to evaluate the archaeological potential of the property. The analysis and results of this field work are presented below and the data has been plotted on the Project Base Map . The numbering system for the following archaeological sites and zones of sensitivity corresponds to the location of these sites on the Archaeological Sensitivity Map (see Figure 3.2:2).

(1) Indian Rockshelter

The Indian Rockshelter, previously reported by Kazimiroff (1959), was located near the Magnolia Road-Bronx River Bridge Crossing. This rockshelter is on the west side of the Hemlock Forest trail, a short distance from Magnolia Road. The shelter consists of a large slab of fallen rock that is leaning against the bedrock ledge and forms a small enclosed area. The rockshelter was undoubtedly used as a temporary shelter by Native American peoples with water and food resources being readily available nearby. Although this site has reportedly been excavated, it does not appear to be disturbed. We believe that it may be a significant site and that it has the potential for yielding information on the prehistory of the area.

(2) Survey Marks

The alleged "fish" petroglyph previously reported by Bernstein (1982) and others was located on the east side of the Bronx River, approximately 100 feet south of Snuff Mill Road and bridge. This petroglyph consists of incised lines that form a two inch square, with 2-1/4 inch line and 1-1/2 inch line extending beyond the square from one corner. The design is cut into the bedrock (gneiss) and is about ten feet from the edge of the cliff, and about forty feet above the level of the Bronx River. In our opinion,

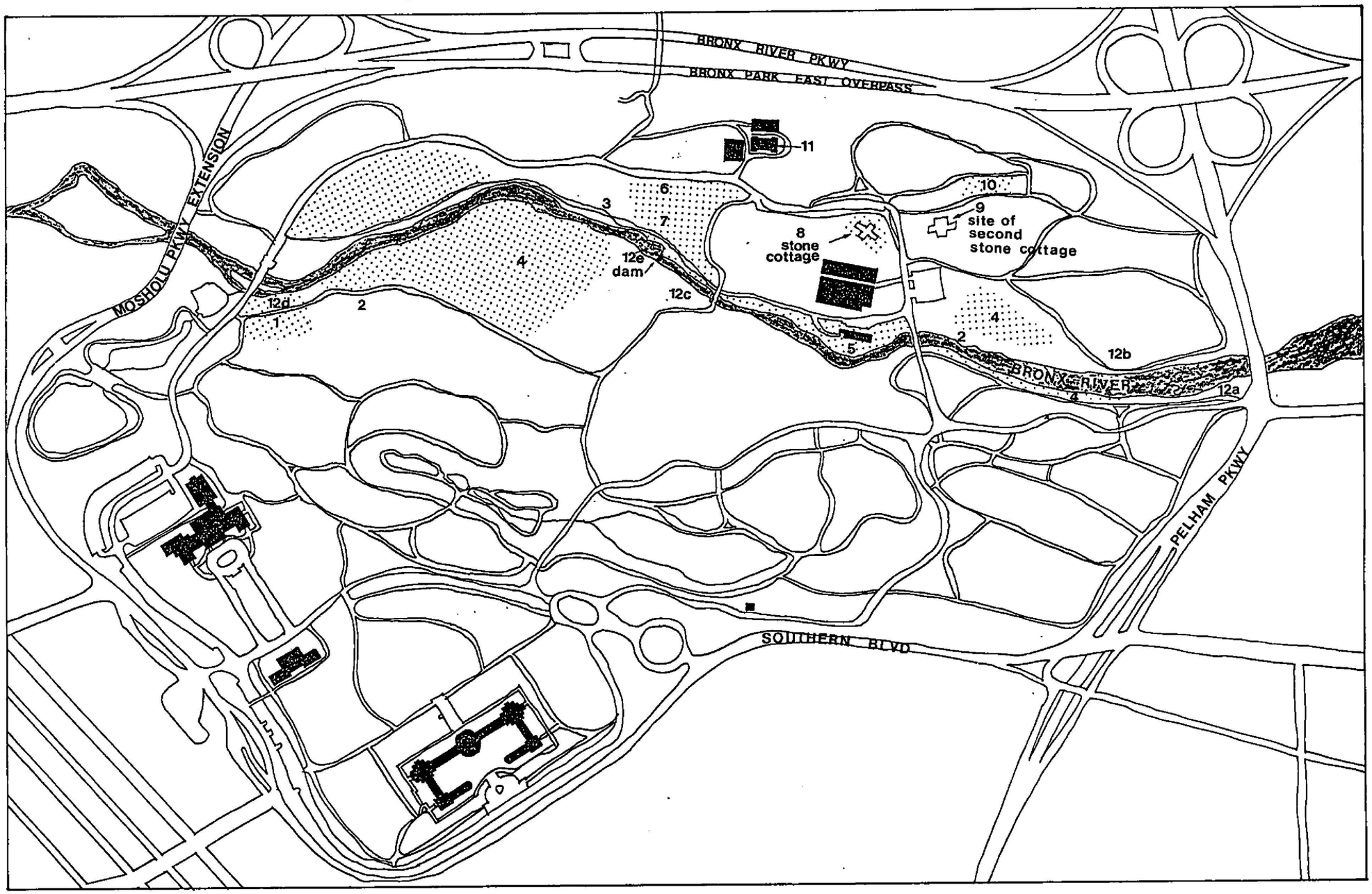


Figure 3.2:2 Archaeological Sensitivity Map of New York Botanical Garden

this symbol is not a Native American rock carving. The well-formed lines, lack of weathering and patina suggests that the symbol is of recent date and was probably cut with metal tools. We believe the carvings represent a land survey marker. A second identical carving was located approximately 100 feet west of "Lincoln Rock," a high promontory along the Hemlock Forest trail.

(3) Turtle Petroglyph

The turtle petroglyph, previously reported by Solecki (1986), was located along the trail which runs along the east side of the Bronx River. The turtle design is incised or carved into the top of a small granite boulder that lies in the middle of the trail some twenty feet above and thirty-six feet to the east of the river, and about 386 feet north of the waterfall. This boulder is a glacial erratic that was dropped here by the retreating ice sheet about 13,000 years ago. It appears to be in its original position, although considerable erosion has recently taken place along the trail which has exposed approximately one-third of the bottom of the boulder.

The carved design on top of the granite boulder clearly represents a turtle. The design is well executed and is about 5-1/4 inches in length by 3 inches in width. The head of the turtle is oriented to the north while the face is turned to the west or toward the river. The incised design is shallow in depth and patinated. The entire stone including the carving is covered with modern grafitti.

In our opinion, this turtle petroglyph is a Native American rock carving. Although its meaning or purpose is not clear, the turtle design probably represents a clan symbol of the Lenape or Delaware Indians who once occupied this area during proto-historic times. The turtle

petroglyph/boulder has been moved to the Watson Education building in order to protect and preserve this significant cultural artifact.

(4) The Bronx River Prehistoric Zones

Several sections along the Bronx River have been identified as potential areas of prehistoric occupation. All other land areas are considered to have zero or minimal sensitivity.

The west side of the Bronx River, between Lincoln rock on the north and the waterfall on the south, is judged to be an area of sensitivity for prehistoric occupation. This zone is an elevated terrace that is generally flat, well-drained, and has easy access to potable water and other food and material resources. Except for the walking trails, this zone is largely undisturbed and is within the Hemlock Forest which is an uncut woodland in New York City.

A second potentially sensitive zone is located along the east side of the Bronx River between Snuff Mill Road on the north and the edge of the Montgomery Conifer Collection on the south. This zone is a narrow strip of land that is elevated, generally flat, well-drained and undisturbed.

A third potential zone of prehistoric occupation is located along the west side of the Bronx River to the south of Snuff Mill Road. This zone is also a narrow strip of land that lies between a paved path and the river and has physical characteristics similar to zones described above.

(5) The Lorillard Snuff Mill

The area immediately around the Snuff Mill represents a zone of high archaeological sensitivity. The land on the north and west sides of the Snuff Mill undoubtedly contains the buried remains of the raceway, wheel pit, and foundations that were once part of the mill. During the restoration of the mill, which took place in the early 1950's, two millstones were found by a construction contractor at a depth of fifteen

feet at the base of the north corner of the west wall (Kazimiroff 1954:26). Kazimiroff also reports that the raceway that conveyed the water to the mill wheel was filled in about fifty years ago and is used as a roadway. An early photograph reproduced on the cover of The Garden Journal, Volume 2, No. 4, July-August 1952, shows a two-story addition located on the west side of the mill.

In summary, the area around the Lorillard Snuff Mill is one of high archaeological sensitivity and has the potential to yield significant data pertaining to the early grist mill which may have stood on this site as well as the subsequent Lorillard Mills. Any planned development or construction work in this area should be preceded by a data recovery program consisting of documentary reserch and archaeological excavations.

(6) The Lorillard Mansion Site

The site of the former Lorillard Mansion (c. 1856) is located within the present children's garden area. During the recent construction of this facility, the foundations of the house were encountered and covered over (Bremm 1987, personal communication); they survive largely intact, buried beneath the garden. This site is archaeologically sensitive and has potential for yielding important information associated with the Lorillard family.

(7) The Lorillard Dump

The Lorillard trash-dump is located along the hillside to the west of the Mansion Site. In our field reconnaissance of the area, we observed the presence of coal, ash, bottle glass fragments, cut and dressed stone and other artifacts scattered along the hillside. This site has been previously excavated (Gilbert 1987, personal communication) but the results of this work are not known. Despite this previous archaeological work, and

the activities of bottle collectors, the site has some remaining archaeological potential.

(8) Stone Cottage

Once part of the Lorillard estate, the Stone Cottage was constructed at some time between 1856 when the mansion was built, and 1868. The Cottage, with its cross-shaped ground plan, appears on the 1868 Map of Bronxdale by F.W. Beers. It is often referred to as a gatehouse and is presently used as a private residence. The Stone Cottage and its immediate environs are considered to be a zone of archaeological sensitivty.

(9) Site of Second Stone Cottage

The 1868 Beers Map of Bronxdale shows a second structure located due south and across the road from the Stone Cottage. The Beers Map indicates that this structure is identical in plan view to the one on the north side of the road. In the course of our field reconnaissance of this area, we located the buried foundation of this structure on a flat elevated area some 185 feet south of the extant Stone Cottage. The foundation of this second structure is visible on the present ground surface.

The site of the second stone cottage has the potential for yielding information pertaining to the nature and function of the building. Therefore, this area is an archaeologically sensitive zone.

(10) Site of the "Lodge"

The 1868 Beers Map of Bronxdale also shows a structure located approximately 350 feet south of the stone cottage foundation and along the east side of a road. The map identifies this structure as a "Lodge" on the Lorillard estate. In our field reconnaissance of this area, we found a flat, slightly depressed area, and what appeaars to be the remains of a driveway located between the present paved road and the edge of the bank to the east. This area is probably the site of the Lodge and is considered

archaeologically sensitive as well.

(11) The Carriage House or Stable

This structure is located southeast of the Lorillard Mansion Site and is presently used as a maintenance building. It is not known when this structure was built as it does not appear on any nineteenth century map. However, it is reasonable to assume that it was built at the same time as the mansion (1856) since such buildings are often used first as a construction staging area, and then as a carriage house. The Carriage House/Stable/Maintenance Building and its immediate environs are a zone of archaeological sensitivity.

(12) Miscellaneous Remains

In the course of our field survey, several other structures, features and artifacts were found throughout the Botanical Garden; most are probably remnants of the nineteenth century development and activity on the Lorillard estate. Although these sites are not considered to be significant, they are enumerated here as a matter of record:

a. A stone retaining wall along the east side of the Bronx River a short distance from Pelham Parkway.

b. A modern landfill along the east side of the Bronx River at a point approximately halfway between Snuff Mill Road and Pelham Parkway.

c. A stone retaining wall on the west side of the Bronx River immediately adjacent to High Bridge. This wall contains a marble rectangular block that has an incised number "29."

d. The remains of the "boulder bridge" immediately to the south of the present Magnolia Road-Bronx River Bridge.

e. Possible wooden beams in the river immediately above the water fall or dam.

f. It was reported that a former twentieth century dump, i.e., an auto graveyard and landfill, is located in the Cherry Valley area. However, this feature could not be documented or verified at this time.

Summary and Conclusions

The documentary research and field reconnaissance of the New York Botanical Garden has identified several cultural resource and potential archaeological sites within the study area. Our conclusions and recommendations with respect to these sites are as follows:

Sites/Features	Sensitivity Rating	Additional Archaeological Work Required
Indian Rockshelter	High	Documentary and collections research; archaeological testing
Survey Marks	Low	None
Turtle Petroglyph	High	None: Restoration & relocation completed
Bronx River Prehistoric Zones (3)	High	Archaeological testing
The Lorillard Snuff Mill	High	Documentary research; test excavations
Lorillard Mansion Site	High	Documentary research; archaeological excavations
Lorillard Dump	Medium	Archaeological testing
Stone Cottage	High	Documentary research; archaeological testing
Second Stone Cottage	High	Documentary research; archaeological testing
Site of Lodge	High	Documentary research; archaeological testing
Carriage House/Stable	High	Documentary research; archaeological testing
Miscellaneous Remains	Low	None

CHAPTER 3.3: WAVE HILL

Project Boundaries

Wave Hill is a twenty-eight acre nineteenth century estate in the Riverdale section of the Bronx which now serves as a public garden and environmental and cultural center. The estate includes two houses, one underground building, a garage, and greenhouses. Approximately eighteen acres surrounding the building are landscaped and are actively cultivated. It is bordered on the north by West 252nd Street and private property, on the east by Independence Avenue, on the south by private lands and on the west by Riverdale Park in the Bronx (see Figure 3.3:1).

History of the Cultural Institution

Wave Hill Inc. was established as a New York City cultural institution in 1965 for the purpose of conducting forestry and educational programs in Riverdale Park. From 1960 to 1965 the Wave Hill grounds were operated by the New York City Parks Department and is now under the jurisdiction of DCA. The Wave Hill House was designated a New York City Landmark in 1966.

The original central portion of the Wave Hill House, in Federal style, was constructed in 1843 for William Lewis Morris. In 1866, the property was purchased by William Appleton. The twentieth century additions include a Georgian Style entrance and the Gothic north wing, designed for a museum collection. In 1965, the Parks Department incorporated the estate as a "Cultural and Scientific Center to be known as 'Perkins Gardens'." A second house on the estate called "Glyndor" was to be converted into a center for nature studies. In 1893, George W. Perkins, a successful financier and prominent conservationist, moved to Riverdale and created the Wave Hill estate. His daughter and her husband, Edward

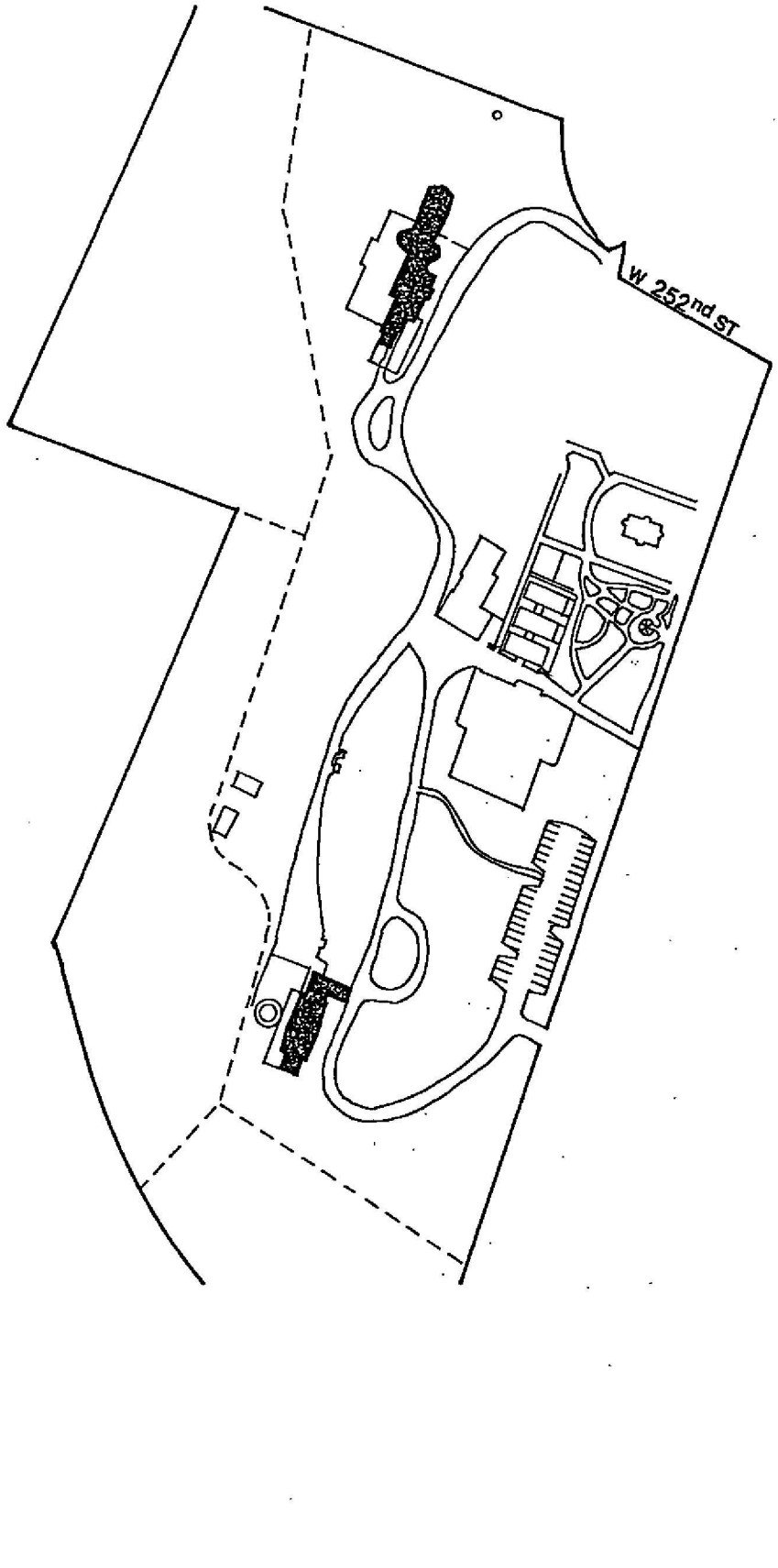


Figure 3.3:1 Base Map of Wave Hill (no scale)

Freeman were the last owners of the estate before it was donated to the City in 1960.

Environmental Setting

Geologically, Wave Hill is considered part of the New England Upland Physiographic Province, which includes the Manhattan Prong (Schuberth 1968:10).

Wave Hill rests on the Palisades overlooking the Hudson River to the West. All of the bedrock in Wave Hill is Manhattan schist, a metamorphic rock formed under high pressure and temperature (Stewart et al., n.d.). The bedrock is overlain with a thin layer of glacial soil approximately eight to fifteen feet in depth.

The topography of Wave Hill generally consists of a Palisade ridge that steeply slopes to the west towards the Hudson River. The highest elevations occur in the eastern half of Wave Hill where they average about 100 feet above mean sea level, while lower elevations occur on the western border at the base of the Palisades. The site is highly developed with buildings, roads, fences, paths, and other structural features. The site contains wooded areas principally along the southern and western most portions.

Native American Resources

A search of the literature pertaining to the study area indicates that no prehistoric sites have been identified on the grounds of Wave Hill. Such sites, however, dating from the late Archaic through Woodland Periods (c. 4000 B.C. - 1600 A.D.), have been identified to the south in Riverside Park (DeCarlo 1987, personal communication). In assessing the potential for American Indian remains, historic and current land use was considered

along with topography, geology, and archaeological information from the Riverdale Park Archaeological Project.

Historic Resources

Historically, Wave Hill was the property of several prominent, wealthy residents. The oldest building, Wave Hill House, dates to 1843 when it was constructed by Morris. The configuration of the estate has changed with each successive owner. The last owners, the Perkins family, donated the present day acreage to the City of New York in 1960.

"The History of Wave Hill" by Regina Kellerman and Ellen DeNooyer (1978) is the only historical research conducted to date on Wave Hill. That report, a 1936 map of the estate, a current map, and photographs in the Wave Hill archives served as the basis for the assessment of the historical resources. In addition, several Wave Hill staff members were interviewed for potential information about additional resources.

A review of the research material for the archaeological project in adjacent Riverdale Park, conducted by the Wave Hill archaeologist, revealed no historic structures or deposits other than those discussed in the Kellerman/DeNooyer report or indicated on their map.

The unique feature of Wave Hill as an historic property is that there are no buried historic structures; all that remain are still standing and are in use, with the exception of two wells at the north end of the property indicated on the map. The wells are circular brick structures partially filled with soil and debris. No inspection of the contents of the wells has been made and there is no information on date of construction, length of use, or reason for abandonment. It is also unclear whether or not the wells served as trash receptacles (after they were abandoned) and therefore contain estate fill.

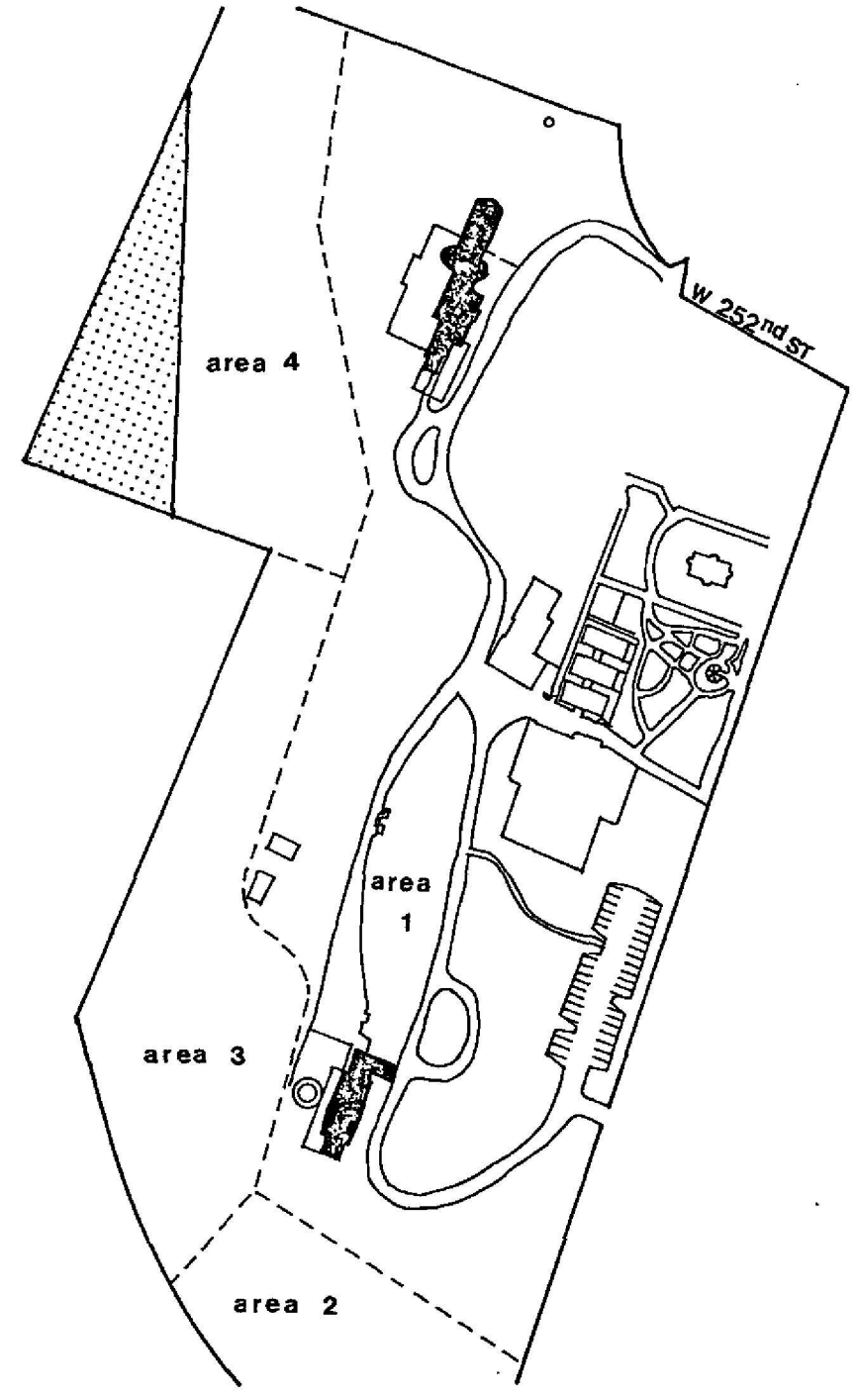
Field Survey Results

In assessing the potential for prehistoric resources, historic and current land use was considered along with topography, geology, and archaeological information from the Riverdale Park Archaeological Project. The property was divided into distinct areas for discussing resources potential (see Figure 3.3:2).

Area 1, the largest section, includes the part of the estate that is currently used as garden and outdoor exhibit space. The buildings and wells are included in this area. In addition to the land that has been built upon or gardened, the lawns are the product of grading and/or filling to sculpt the land into formal gardens past and present. There is also a large rock outcrop in the north lawn, from which the stone to construct Wave Hill House was reportedly quarried. This not only attests to the great disturbance of the land in this area but also to the possible shallowness of the overlying soil. Based on the geology and land use of this area, there appears to be no potential for prehistoric resources.

The remaining areas, 2, 3, and 4, are located in the Wave Hill woods, approximately ten acres of managed woodlands with a system of trails for the public. The potential for prehistoric resources in these areas is either nonexistent or extremely low based on topography and historic land use. The slope is so steep in most of this ten acre area that it is highly unlikely that prehistoric remains surivive.

Area 2 is a section at the southernmost end of the property and was once the site of an orchard. It is surrounded on the south by stone walls that serve to shore up the land above Spaulding Lane. The gentle slope may be the result of grading, in keeping with the lawns and other gardened spaces. No prehistoric sites are likely to be located here.



Denotes Potential for Prehistoric Resources

N

Figure 3.3:2 Archaeological Sensitivity Map of Wave Hill (no scale)

The steep slope, the outcrop, and maze of past and present trails in Area 3 contribute to the conclusion that there are no prehistoric sites within this section.

Area 4 was under cultivation by Mrs. Perkins in the 1930s, as seen in photographs in the Wave Hill archives. It features a relatively steep slope that ends at a very flat and level platform in Riverdale Park above the shores of the Hudson River. A small section of this platform falls within the Wave Hill grounds (shaded area, Figure 3.3:2). This is the only place where there is potential for prehistoric resources at Wave Hill because of its proximity to a prehistoric site located in Riverdale Park. Shovel testing was conducted in the section between the prehistoric site and Wave Hill, but no prehistoric remains were recovered. The prehistoric site in Riverdale Park seems to be confined to a twenty-five foot radius of the initial test that located the site. The area within Wave Hill is deeply buried, approximately one foot below the surface. Therefore, the potential for prehistoric resources should be considered when undertaking work that would impact the ground any deeper than one foot below the surface.

Summary

There is no indication that Wave Hill contains historic archaeological features in addition to those that comprise the present estate. The assessment of the potential for prehistoric resources indicates only one small and confined area that would require consideration if construction work were to impact the ground below a depth of one foot (see Figure 3.3:2). Therefore, this area has medium potential and test excavations (i.e., shovel testing) should be conducted to determine the presence or absence of prehistoric cultural materials.

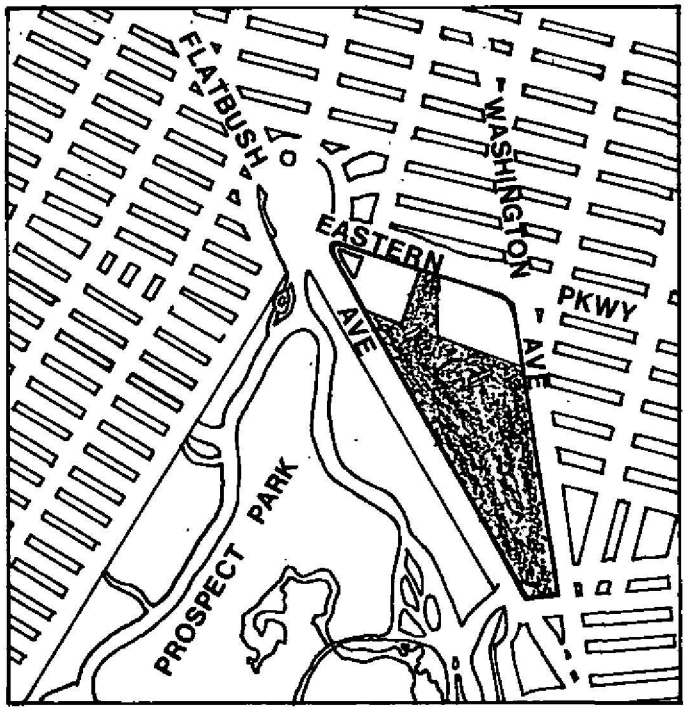
CHAPTER 3.4: BROOKLYN BOTANIC GARDEN

Project Boundaries

The Brooklyn Botanic Garden, which consists of fifty-one acres of gardens, is renowned for its horticultural exhibitions, publications, and educational programs. It is bordered on the north by Eastern Parkway, on the east by Washington Avenue, on the south by Empire Boulevard (once the line dividing the former City of Brooklyn from the former town of Flatbush), and on the west by Flatbush Avenue, excepting only such lands as have been reserved for the Prospect Hill Reservoir (See Figure 3.4:1).

History of the Cultural Institution

The Brooklyn Botanic Garden opened to the public on May 13, 1911. The initial idea for a botanic garden was proposed in 1892 by the Director of the Brooklyn Institute for Arts and Sciences. The Brooklyn Botanic Garden was attached to the Institute until 1977 when the Garden was incorporated. In 1909, the City of New York agreed to provide land and buildings for the Brooklyn Botanic Garden, in addition to thirty-seven acres from the Institute known as Institute Park. The Park had been graded, and border mounds had been built and planted with trees and shrubs, between 1902 and 1903. In 1910, the first Director of the Brooklyn Botanic Garden, Dr. Gager, was appointed. Under his direction, a topographical survey was prepared by D. Bartano, and the firm of Olmsted Brothers designed the plan for the grounds, which included roadways, paths, and an esplanade. The architectural firm of McKim, Mead & White was commissioned to design the Administration Building and the Conservatory complex, which were completed in 1917. The central Rotunda displays the Renaissance classicism that was the hallmark of the firm's work.



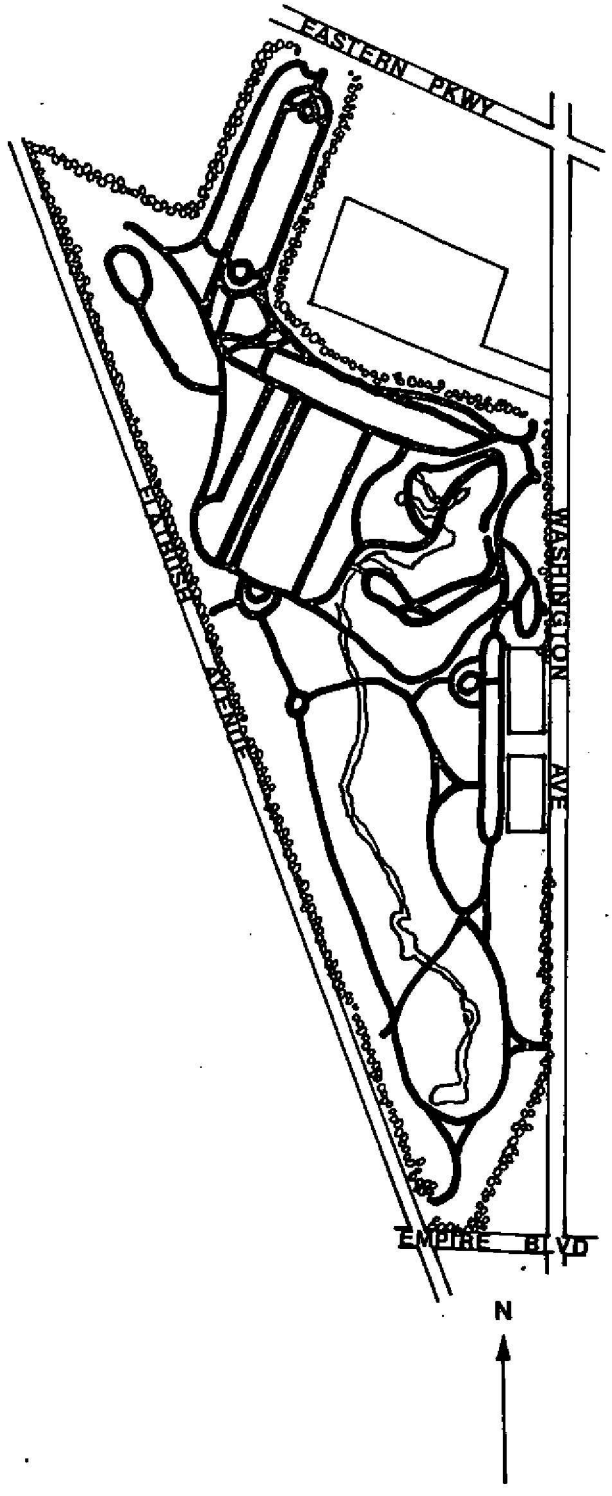


Figure 3.4:1 Base Map of Brooklyn Botanic Garden (no scale)

Throughout the Brooklyn Botanic Garden's seventy-nine year history it has expanded its acreage as well as its collection. The systematic collection was first planted in 1913, and by 1914 construction had begun on the renowned Japanese Hill-and-Pond Garden designed by the landscape architect Takeo Shiota. Since 1914, the Brooklyn Botanic Garden has increased its original thirty-seven acres to fifty-one. The Rock Garden (1916); the Shakespearean Garden (1925), devoted entirely to the flora mentioned by the author in his works; the Rose Garden (1927), third largest in the United States; the Herb Garden (1937); and the Fragrance Garden for the Blind (1955) illustrate the Garden's consistent commitment to expand and diversify its holdings. In addition to these and numerous other gardens, the Brooklyn Botanic Garden boasts the finest Bonsai collection in the United States.

In 1984, a new conservatory complex was planned in order to provide the Garden with indoor spaces comparable to the spacious outdoor gardens. Completed in 1988, the new complex includes three separate pavilions — Desert, Tropical, and Temperate — that house plant life according to different climatic requirements. The six original greenhouses were replaced by the Education Building and the structure housing the gift shop and work area. The facades of the new buildings are identical to those of the original greenhouses, and thus maintain the integrity of the original design. The Palm House has been restored and converted into a reception and special events center.

Environmental Setting

In the evaluation of the cultural resource potential of the Brooklyn Botanic Garden, we have examined and attempted to reconstruct the pre-urban topography and physiography of the area. A 1666 map titled A Platt of ye

Situation of the Towns and Places on ye western end of Long Island to Hempstead by Hubbard is among the earliest topographic surveys of western Long Island. This Hubbard map shows a line of hills running through Brooklyn with the following notation: "These hills run from one end of ye island to ye other." This topographic feature represents the glacial terminal moraine. A later 1694 map by Aug Graham showing Dutch territory on Long Island also depicts a line of hills, i.e., the terminal moraine, extending from east to west. The site of the Brooklyn Botanic Garden lies within this glacial-era feature.

Native American Resources

Several documented prehistoric sites are located along the bays and tidal streams throughout Brooklyn. They are generally multicomponent habitation sites that were part of a seasonal round of hunting and gathering from the Paleo-Indian through Woodland cultural periods (12,000 B.C. to 1600 A.D.). The bay and marsh environments would have provided abundant food resources for prehistoric peoples over thousands of years. There are, however, no recorded prehistoric sites within or adjacent to the Brooklyn Botanic Garden property.

Bolton (1934: 144) and Grumet (1981: 68-70) indicate that several Indian paths formerly crossed Kings County; none of these, however, passed through the Brooklyn Botanic Garden study area.

Historic Resources

No previous archaeological surveys of the Brooklyn Botanic Garden property have been conducted. A search of the literature, including maps from the eighteenth, nineteenth, and twentieth centuries no evidence of prehistoric or historic sites within the museum grounds. Furthermore, none

of the sites recorded in the New York State Museum's archaeological site records files or on the NYC Landmarks Preservation Commission planning maps is on the property of the Botanic Garden. The remains of the Brooklyn water distribution system are located nearby. A pumping station, reservoir, and high water tower were constructed at Mount Prospect "on the hilly spine of the glacial moraine" in the period c. 1856-62 (Church and Rutsch 1987: 105). Those Mount Prospect features were demolished between 1930 and 1938, and the reservoir site has been incorporated into the Brooklyn Museum.

According to the Brooklyn Botanic Garden Chronological History (Moulin 1987), the "East Side Lands," which later became the Brooklyn Botanic Garden, were set aside by the New York State Legislature in 1897. Shortly thereafter, these lands, consisting of some thirty-seven acres, were graded, border mounds were constructed and trees and shrubs were planted. In 1910, the Olmsted Brothers prepared a thirty-nine acre landscape plan of the site which included roadways, paths, and the esplanade. On May 13, 1911, the Brooklyn Botanic Garden was formally opened.

According to the Brooklyn Botanic Garden Chronological History (Moulin 1987), many large scale landscape changes and much development work have occured on the property since 1897. Besides the continuing grading, garden construction, and planting, several structures were built, including the administration building and conservatory complex (1911-1917), the Jenkins Fountain (1930), steps constructed and installed in various locations (1931-1935), a limestone ledge (1938), the Tuch Gate (1946) and other features. Our review of the Brooklyn Botanic Garden's photographic collection confirms the landscape changes listed in Moulin's (1987) chronological history.

Field Survey Results

A pedestrian survey of the Brooklyn Botanic Garden grounds revealed that the landscape has been extensively developed and disturbed. It is highly unlikely that any undisturbed archaeological deposits are present within the site.

Summary and Conclusion

The documentary research and field reconnaissance of the Brooklyn Botanic Garden property have failed to identify any prehistoric or historic cultural resources within the study area. We believe that the potential for the presence of cultural remains is extremely low due to the extensive land alterations that have taken place at the site since 1897. No further archaeological work is recommended.

CHAPTER 3.5: THE BROOKLYN MUSEUM

Project Boundaries

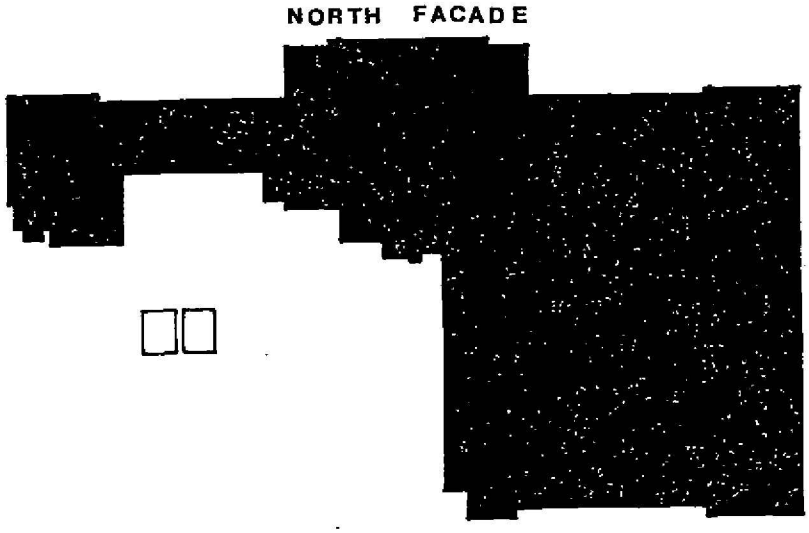
The Brooklyn Museum has seven curatorial departments which oversee approximately two million art objects on display, in storage, and on loan to institutions around the world. The Museum grounds are bordered on the north by Eastern Parkway, on the east by Washington Avenue, on the south by a line one hundred feet south of old President Street, and on the west by the easterly boundary of land reserved for the Prospect Hill reservoir (see Figure 3.5:1). It contains eleven and nine-tenths acres of land.

History of the Cultural Institution

The Brooklyn Museum traces its origin to the Brooklyn Apprentices' Library Association, which was founded in 1823. The Apprentices' Library was conceived as an educational institution. The collection continued to grow and public demand for broader educational programs resulted in a reorganization of the Library into the Brooklyn Institute in 1843.

By 1890, when the Institute was renamed the Brooklyn Institute of Arts and Sciences, it had expanded to include numerous departments ranging from archaeology to zoology. The varied and expanded program and growing collections necessitated a new facility. In 1893, the Institute Board of Directors prepared a plan for an architectural competition for a new building. The successful competitor was the firm of McKim, Mead & White. The building program for the ten acre plot called for an immense square which was to be divided into quadrants composed of galleries surrounding four courtyards (only one courtyard was actually built). The total plan was for a million and half square feet.

By 1897 the first section of the Museum was opened. The central



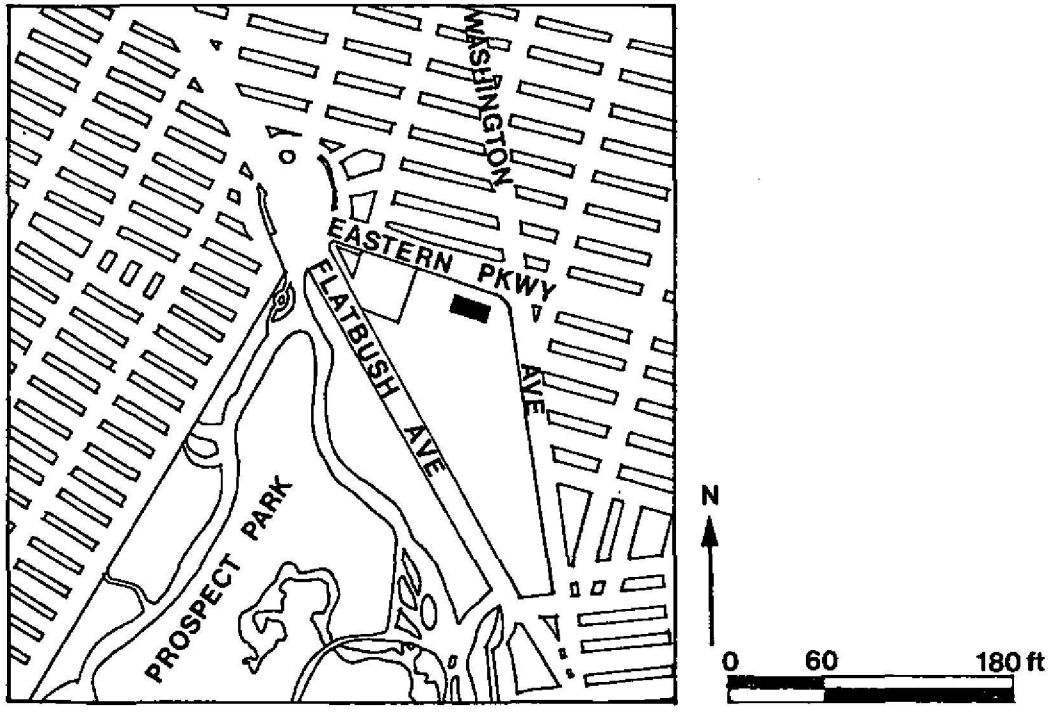


Figure 3.5:1 Base Map of Brooklyn Museum

portion of the facade was added in 1904 and two years later the east wing and the grand staircase were completed. In 1909, thirty statues, designed under the direction of Daniel Chester French, were mounted on the exterior facade. The next sections, F and G, were not completed until 1927. These sections were the last parts of the building to be constructed according to the McKim, Mead & White plans.

In 1934, the staircase facing Eastern Parkway was removed. The destruction of this great facade in Eclectic Roman style was then considered an improved modernization. In 1964, Daniel Chester French's allegorical figures of Brooklyn and Manhattan were removed from the Manhattan Bridge and placed in front of The Brooklyn Museum. Despite the removal of the entrance steps, the museum was designated a New York City landmark in 1966. It is also listed on the State and National Registers of Historic Places.

After the removal of the steps, McKim, Mead & White canceled the contract, never completing the grand scheme. Extensive alterations were conducted by the Civil Work Service and piecemeal modifications since then have changed McKim, Mead & White's original design. In the 1930s William Lescaze, of the firm of Howe and Lescaze, proposed several modifications of which only the 1933-34 design for the Wilbur Library of Egyptology and the existing lobby were built. The latest addition is a service wing, H, completed in 1980 to the designs of Prentiss, Chan, Ohlhausen. This service extension was intended to provide much needed educational facilities, including an auditorium which was never completed. It also provides the mechanical space necessary to introduce climate control throughout the existing structure. Another competition for a new master plan was awarded to James Stewart Polshek and partners with Arata Isocak in 1988. Phase 1A of this plan is presently in construction.

Environmental Setting

A 1666 map titled A Platt of ye Situation of the Towns and Places on ye western end of Long Island to Hempstead by Hubbard is among the early topographic surveys of western Long Island. This Hubbard map shows a line of hills running through Brooklyn with the following notation: "These hills run from one end of ye island to ye other." This topographic feature represents the glacial terminal moraine. A later 1694 map by Aug Graham showing Dutch territory on Long Island also depicts a line of hills, i.e., the terminal moraine, extending east to west. The site of the Brooklyn Museum lies within this glacial-era feature and is adjacent to the Brooklyn Botanic Garden.

Native American Resources

Several documented prehistoric sites are located along the bays and tidal streams throughout Brooklyn. They are generally multicomponent habitation sites that were part of a seasonal round of hunting and gathering from the Paleo-Indian through Woodland cultural periods. The bay and marsh environments would have provided abundant food resources for prehistoric peoples over thousands of years. There are, however, no recorded prehistoric sites within or adjacent to the Brooklyn Museum property.

Bolton (1934: 144) and Grumet (1981: 68-70) indicate that several Indian paths formerly crossed Kings County; none of these, however, passed through the Brooklyn Museum study area.

Historical Resources

No previous archaeological surveys of the Brooklyn Museum property have been conducted. A search of the literature, including maps from the eighteenth, nineteenth, and twentieth centuries found no evidence of

prehistoric or historic sites within the museum grounds. Furthermore, none of the sites recorded in the New York State Museum's archaeological site records files or on the New York City Landmarks Preservation Commission's planning maps is on the Museum Grounds (Baugher, Janowitz, Morgan et al. 1983). The remains of the Brooklyn water distribution system are located nearby. A pumping station, reservoir, and high water tower were constructed at Mount Prospect "on the hilly spine of the glacial moraine" in the period c. 1856-62 (Church and Rutsch 1987: 105). Those Mount Prospect features were demolished between 1930 and 1938, and the reservoir site has been incorporated into the Brooklyn Botanic Garden which is located adjacent to and south of the museum.

Construction of the Brooklyn Museum began in 1895. Our examination of historic photographs which show construction scenes in 1896, 1934, and 1935 indicates that massive landscape alterations have taken place at the site including excavation, soil removal, and grading.

There is a Museum tradition that plaster casts of sculptures and art objects were often broken and discarded in a landfill behind the museum. This landfill area is presently underneath the museum sculpture garden and parking lot which was constructed in 1965. However, the story could not be documented.

Field Survey Results

A pedestrian survey of the Brooklyn Museum grounds revealed that the landscape has been extensively developed and disturbed. It is highly unlikely that any undisturbed archaeological deposits are present within the site.

Summary and Conclusion

The documentary research and field reconnaissance of the Brooklyn Museum property identified no evidence of prehistoric or historic cultural resources within the study area. We believe that the potential for the presence of cultural remains is extremely low due to the extensive land disturbance which has taken place in the past. No further archaeological work is recommended.

CHAPTER 3.6: THE AMERICAN MUSEUM OF NATURAL HISTORY

Project Boundaries

The American Museum of Natural History comprises nineteen interconnected buildings on a twenty-three acre parcel of land, officially called Roosevelt Square, which is bordered on the north by West 81st Street, on the east by Central Park West, on the south by West 77th Street, and on the west by Columbus Avenue in Manhattan (see Figure 3.6:1).

History of the Cultural Institution

The American Museum of Natural History is the largest museum in the world and contains thirty-eight exhibition halls and thirty-six million artifacts and specimens. The museum building is a designated New York City Landmark; the entire site falls within the boundaries of the Upper West Side/Central Park West Histroical District. It is also listed on the State and National Registers of Historic Places. The museum was founded on April 9, 1869 and its first home was the Arsenal in Central Park at Fifth Avenue and 64th Street. The first of its present buildings, a red brick and stone Victorian Gothic structure, was designed by Calvert Vaux and Jacob Wrey Mould and was built between 1874 and 1877. By 1900, the central building and its east and west wings and two corner pavilions, all on West 77th Street, were completed. These buildings were designed in Romanesque Revival style by Cady, Berg & See. In 1908, a Romanesque Revival style building designed by Charles Volz was built fronting Columbus Avenue. The main building on Central Park West, designed in Academic Classical style by John Russell Pope and Trowbridge & Livingston, was erected during the depression by the WPA and in 1936 was dedicated as the New York State Memorial to Theodore Roosevelt. The north and south wings of the main

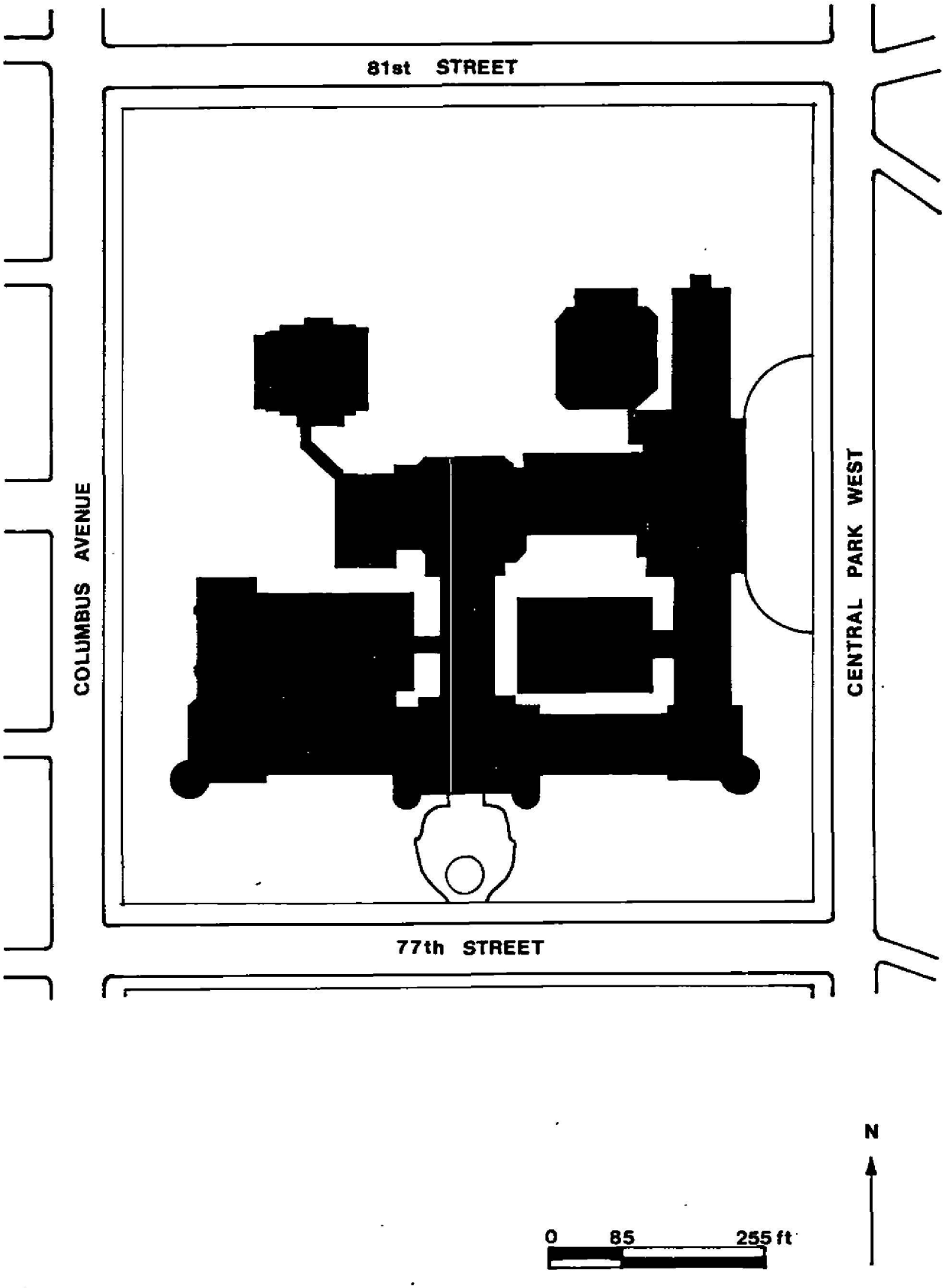


Figure 3.6:1 Base Map of American Museum of Natural History

building also were designed in Academic Classical style by Trowbridge & Livingston. The Memorial Hall in the Theodore Roosevelt Memorial Building, a designated New York City Interior Landmark, contains murals by William Andrew Mackay which depict important events in Theodore Roosevelt's life. The Hayden Planetarium, designed in Moderne style by Trowbridge & Livingston, was completed in 1934.

Environmental Setting

Manhattan is situated entirely within the Manhattan Prong of the New England Upland physiographic province. In general, the landscape characteristics include a rolling terrain created in part by the extensively folded and faulted bedrock. Beneath the study area, as well as most of Manhattan, is Manhattan schist, highly foliated mica schist bedrock with outcrops at several locations throughout the borough. Exposure of this intensively folded and faulted bedrock occurred during the regional orogenic processes which formed the hilly terrain of much of the New England physiographic province.

Continental glaciation affected the surficial geology of Manhattan as the glacier advanced and receded over the area at least three times during the last million years. The area was covered with glacial till and outwash consisting of sand, gravel, and boulders that were deposited by the melting ice sheet. The evidence of glacial scouring and deposition can be readily seen within nearby Central Park. The glacier polished the bedrock as it moved over the surface, and it carried away the soil in some areas leaving behind small barren hills. The pre-urban topography was flat, and a stream and marsh were located within the north-central section of the museum block.

Native American Resources

Metropolitan New York was inhabited by Native American peoples at least as early as the retreat of the last glacier approximately 14,000 years ago. In the early twentieth century, archaeologist Alanson B. Skinner of the American Museum of Natural History located several Indian sites in the northern section of Manhattan Island (Skinner 1915:50-52). More recently, four sites were located in lower Manhattan as a result of archaeological mitigation projects conducted during the 1980s (see Lenik 1990). Sites in the central portion of Manhattan, however, await discovery and documentation.

The 1815 Randel map shows a stream and adjacent marsh within the study area. The stream is shown on subsequent maps (Colton 1841, Bromley 1879) flowing in a southeasterly direction through the museum park property. It is possible that Native American occupation may have taken place near this fresh water stream. However, no prehistoric sites have been recorded within the study area. An early survey by Parker (1920: 627) noted the presence of scattered Indian relics on the north side of the Central Park Reservoir to the northeast of the museum.

Historical Resources

The documentary research indicates that during the eighteenth century the property on which the museum now stands was a farmstead, near the settlement of Bloomingdale, which was owned by Stephen Delancey and later by Oliver Delancey. The early nineteenth century maps of the area including Bridges 1811, Randel 1815, Colton 1841, and Dripps 1867 show no evidence of habitation sites or structures within the study area. In the nineteenth century the site was also a farm which was owned by David Wagstaff. The first known structure on the site was the first wing of the

museum, built in 1877, and is extant.

Field Survey Results

A pedestrian survey of the museum grounds revealed that the landscape has been extensively developed and disturbed. It is highly unlikely that any undisturbed archaeological deposits are present within the site.

Summary and Conclusion

No prehistoric or historic cultural resources have been identified within the study area. We believe the presence of cultural remains is extremely low due to the extensive construction work and land disturbance that has taken place at the site. No further archaeological work is recommended.

CHAPTER 3.7: METROPOLITAN MUSEUM OF ART

Project Boundaries

The Museum is bordered on the north by a continuation of 85th Street, on the east by Fifth Avenue, on the south by a continuation of 80th Street, and on the west by the East Drive of Central Park in Manhattan (see Figure 3.7:1).

History of the Cultural Institution

The Metropolitan Museum of Art was chartered in 1870. For the next decade, the Museum was housed in two temporary sites, the Dodworth House in 1871 and the Douglas Mansion from 1873 to 1879. In 1878, the City of New York agreed to lease land and buildings in Central Park to the Metropolitan Museum of Art. The agreement gave great impetus to the Museum's building program. The construction history of the Museum reveals a series of master plans which were designed, partially implemented, then supplanted by others.

Calvert Vaux, a member of the Central Park design team, was the first to submit a master plan for the Museum. Vaux's plan called for long galleries terminating in octagonal rooms creating square, open courtyards. The Museum's entrance faced south, into Central Park. By 1880, only one wing of Vaux's plan had been realized, a Gothic Revival style structure.

After Vaux's attempt, the responsibility for design fell to Museum Trustee Theodore Weston and his colleague A. L. Tuckerman. Two Italian villa-style wings were added to the original buildings in 1888 and 1894. The entrance was re-oriented to the west on Central Park. Though the buildings were well received, Museum trustees hired the celebrated Richard Morris Hunt in 1885 to develop another master plan. Hunt created a plan

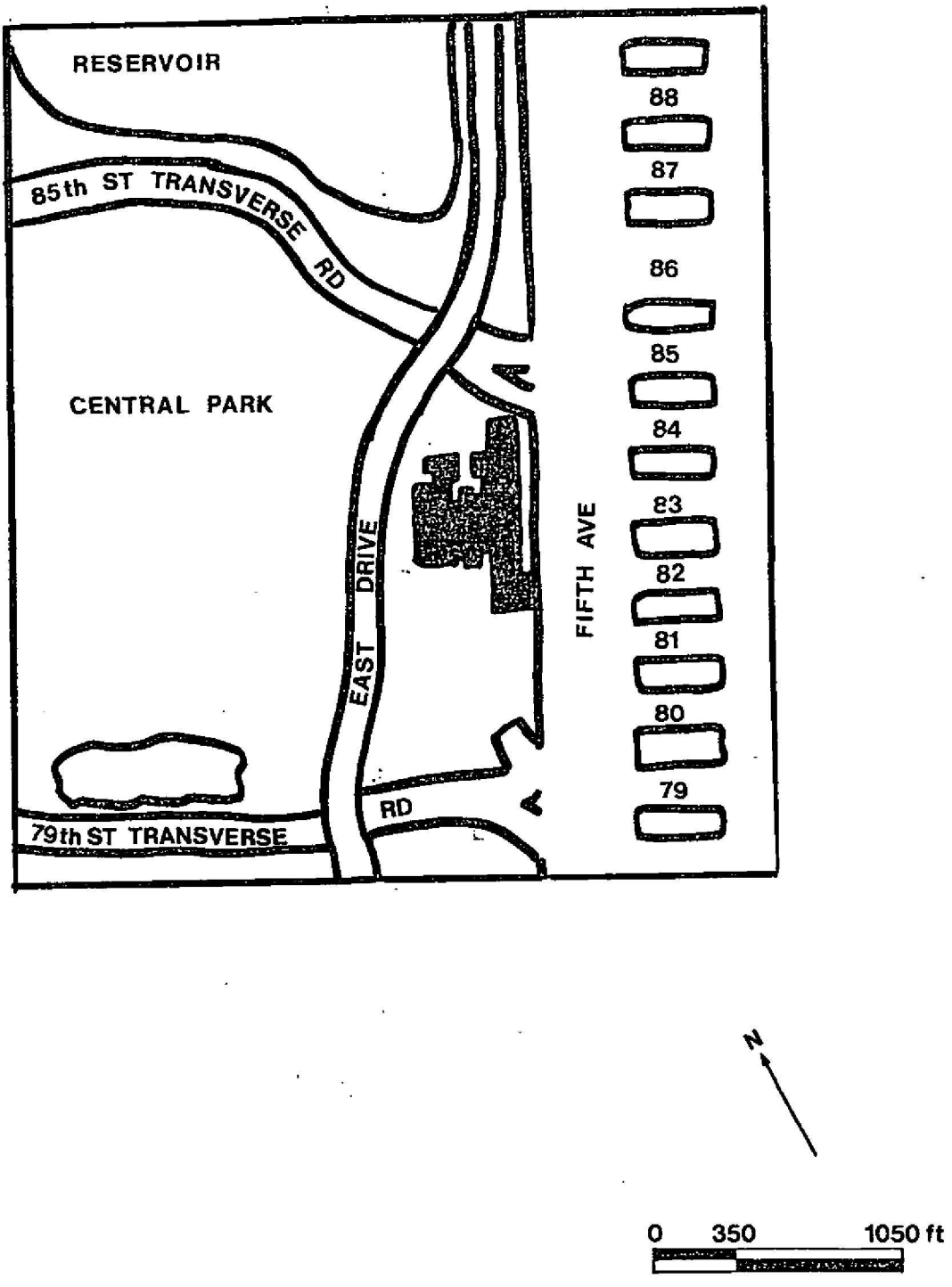


Figure 3.7:1 Base Map of Metropolitan Museum of Art

that changed both the Museum's architectural style and its fundamental relationship with Central Park. Hunt returned to Vaux's scheme of large, open courtyards, but the architectural style was Monumental Neoclassic and the new entrance was on Fifth Avenue. Hunt died before his Great Hall was realized, but his son Richard Howland Hunt completed the building with the aid of architect George B. Post.

Following the completion of the Great Hall was completed in 1902, McKim, Mead & White prepared a plan similar to Hunt's symmetrical rectangular plan, but more modest in scale. Buildings in a Roman-Italian Renaissance style, complementary with the Museum's Neoclassical facade, were completed in 1910, 1911, 1913, 1916, and 1926. The additions were well received by the public and the press.

The American Wing, designed by Grosvenor Atterbury and completed in 1924, included the re-erected facade of the old Assay Building (located on Wall Street from 1824 to 1912), a marble Federal style structure designed by Martin E. Thompson. The Van Renssalaer wing was added in 1931. In 1940, Museum Director Francis Taylor called for another master plan to focus on the Museum's organization rather than on monumental architecture. Architects Robert B. O'Connor and Aymar Embury II prepared a plan that was highly organized but considered dull in appearance. Because of the dearth of post-war funds, and the decision to build the Whitney as a separate museum rather than a wing of the Metropolitan as the plan proposed, very little of the O'Connor-Embury plan was implemented.

For the next three decades the Museum operated without a master plan. The Museum's building plan did not keep up with the the Museum's growth or public demand. In 1970, the architectural firm of Kevin Roche, John Dinkeloo and Associates presented a comprehensive plan to re-organize gallery space, construct new wings to house important permanent

collections, and integrate the exterior of the Museum with its environs.

The plan provided for the construction of new wings to house the Temple of Dendur, the Michael G. Rockefeller Collection, the Robert Lehman Collection, the American and European Decorative Arts Collections, and the Twentieth Century collection. Attention was given to the difference between the streetside treatment and the parkside treatment of the Museum. The addition of a bricked plaza and fountain on Fifth Avenue appeared to elongate the distance from the street to the Museum while providing a gathering space for visitors. The long-neglected parkside facades were finished and the construction of a glass wall on the west side of the Museum created the sympathetic relationship with Central Park desired by Calvert Vaux. The intent of the Roche-Dinekloo plan was to meet the specific construction needs of the Museum while unifying the Museum as a singular architectural unit. The Metropolitan Museum of Art including the old Assay office facade was designated as New York City Landmark in 1967. The interior of the museum — including the main floor, the halls and balconies of the second floor which encircle the Great Hall and the Grand Staircase and all the vaults, domes, and balconies above them -- was designated an Interior Landmark in 1977.

Environmental Setting

Manhattan is situated entirely within the Manhattan Prong of the New England Upland physiographic province. In general, the landscape characteristics include a rolling terrain created in part by the extensively folded and faulted bedrock. Beneath the study area, as well as most of Manhattan, is Manhattan schist, a highly foliated mica schist bedrock with outcrops at several locations throughout the borough. Exposure of this intensively folded and faulted bedrock occurred during the

regional orogenic processes which formed the hilly terrain of much of the New England physiographic province.

Continental glaciation affected the surficial geology of Manhattan as the glacier advanced and receded over the area at least three times during the last million years. The area was covered with glacial till and outwash consisting of sand, gravel, and boulders that were deposited by the melting ice sheet. The evidence of glacial scouring and deposition can be readily seen within nearby Central Park. The glacier polished the bedrock as it moved over the surface, and it carried away the soil in some areas leaving behind small barren hills.

An 1835 topographic map indicates that there was a stream that flowed in a southeasterly direction from 86th Street and crossed 5th Avenue between 84th and 83rd Streets (Colton 1836). An 1854 map of the area shows the same stream but extends its course further southward along the easterly side of 5th Avenue to 79th Street (Dripps 1854).

In 1856, the topography of the site between 5th Avenue on the east, the Central Park Receiving Reservoir on the west, 86th Street on the north, and 77th Street on the south consisted of low rolling hills and farmland (Viele 1856). A more detailed survey of this same area done in 1859 shows the same undulating landscape, several rock outcrops, and the terrain sloping from west to east (Grant 1859). This 1859 map shows elevations of 115 feet on the westerly side of the Museum site, and eighty feet along the easterly side near 5th Avenue.

Native American Resources

Metropolitan New York was inhabited by Native American peoples at least as early as the retreat of the last glacier approximately 14,000 years ago. In the early twentieth century, archaeologist Alanson B.

Skinner of the American Museum of Natural History located several Indian sites in the northern section of Manhattan Island (Skinner 1915:50-52). More recently, four sites were located in lower Manhattan as a result of archaeological mitigation projects conducted during the 1980s (see Lenik 1990). Sites in the central portion of Manhattan , however, await discovery and documentation.

No prehistoric sites are known to have existed in the study area. While it is possible that Native American peoples may have traveled through the site, it is not likely that they would have camped here. The sloping uneven terrain would not have been a desirable location for human occupation in prehistoric times.

Historical Resources

Historic map research has revealed that several structures were present on the site prior to the construction of Central Park and the Metropolitan Museum of Art. In 1815, there was a house on the west side of 5th Avenue between 79th and 80th Streets, and another was located between 5th and 6th Avenues and 83rd and 84th Streets (Randel 1815). This property was apparently owned by David Wagstaff. These same two structures are also shown on the 1836 Colton map. By 1853 the tract of land comprising the study area had been subdivided, and seven structures are shown on the site between 80th and 84th Streets (Common Council 1853, plate nos. 22, 24, 27, 28).

In 1878, the City of New York leased the site to the Metropolitan Museum of Art. The first museum building, Wing A, was opened to the public in 1880. Since that time there has been a continuing program of construction and development at the site.

Research and Field Survey Results

The documentary research indicates no recorded prehistoric sites within the study area. Furthermore, our analysis of the former geomorphological conditions in the area indicates that the study area would not have been particularly desirable for human occupation in prehistoric times. Finally, the site has been extensively disturbed by nineteenth and twentieth century construction and other activities, and the likelihood of finding in situ evidence of Native American occupation or its use is highly remote.

Summary and Conclusion

The results of this survey indicate that seven structures (including outbuildings) once stood on the property prior to the construction of the museum. Despite the large scale construction and disturbance that has taken place, we believe there is a possibility that historic nineteenth century archaeological deposits may be present within the study area (see Figure 3.7:2). Therefore, this property has medium archaeological sensitivity and archaeological monitoring is recommended during any future construction work.

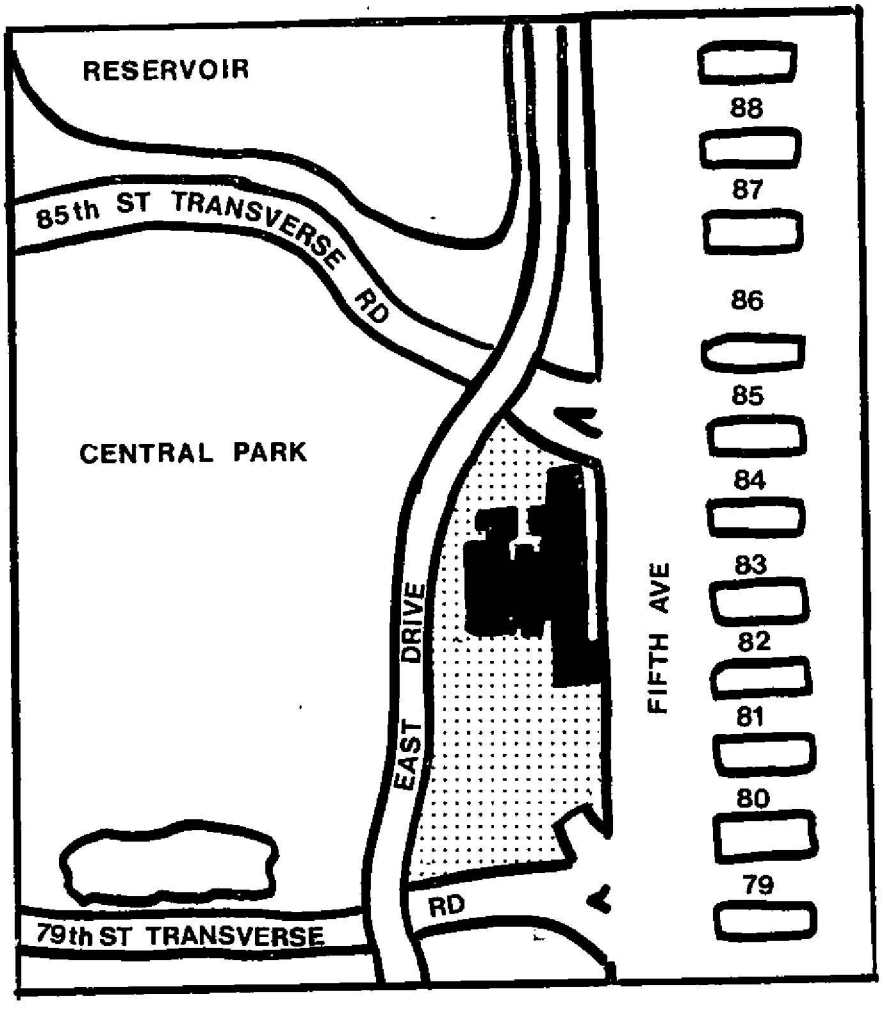


Figure 3.7:2 Archaeological Sensitivity Map of Metropolitan Museum of Art

CHAPTER 3.8: MUSEUM OF THE CITY OF NEW YORK

Project Boundaries

The Museum is bordered on the north by East 105th Street, on the east by Patrick Henry High School, on the south by East 103rd Street, and on the west by Fifth Avenue (see Figure 3.8:1).

History of the Cultural Institution

The Museum of the City of New York was organized in 1923 as a museum for New York's history. The first home for this institution was Gracie Mansion, a late eighteenth century house which was taken over by the City in 1891. By 1926, however, plans had been developed to enlarge the museum, and a five-story red brick structure of neo-Georgian style was designed by Joseph M. Freelander to house its collections. Construction for the building at Fifth Avenue and 103rd Street began in 1929 and was completed in 1932. The museum formally opened at its new location in January 1932. In 1967, the museum building was designated a New York City Landmark. In 1989, the architectural firm of James Stewart Polshek and Partners developed a master plan which is in the design phase.

Environmental Setting

Manhattan is situated entirely within the Manhattan Prong of the New England Upland physiographic province. In general, the landscape characteristics include a rolling terrain created in part by the extensively folded and faulted bedrock. Beneath the study area, as well as most of Manhattan, is Manhattan schist, a highly foliated mica schist bedrock with outcrops at several locations throughout the borough. Exposure of this intensively folded and faulted bedrock occurred during the regional orogenic processes which formed the hilly terrain of much of the

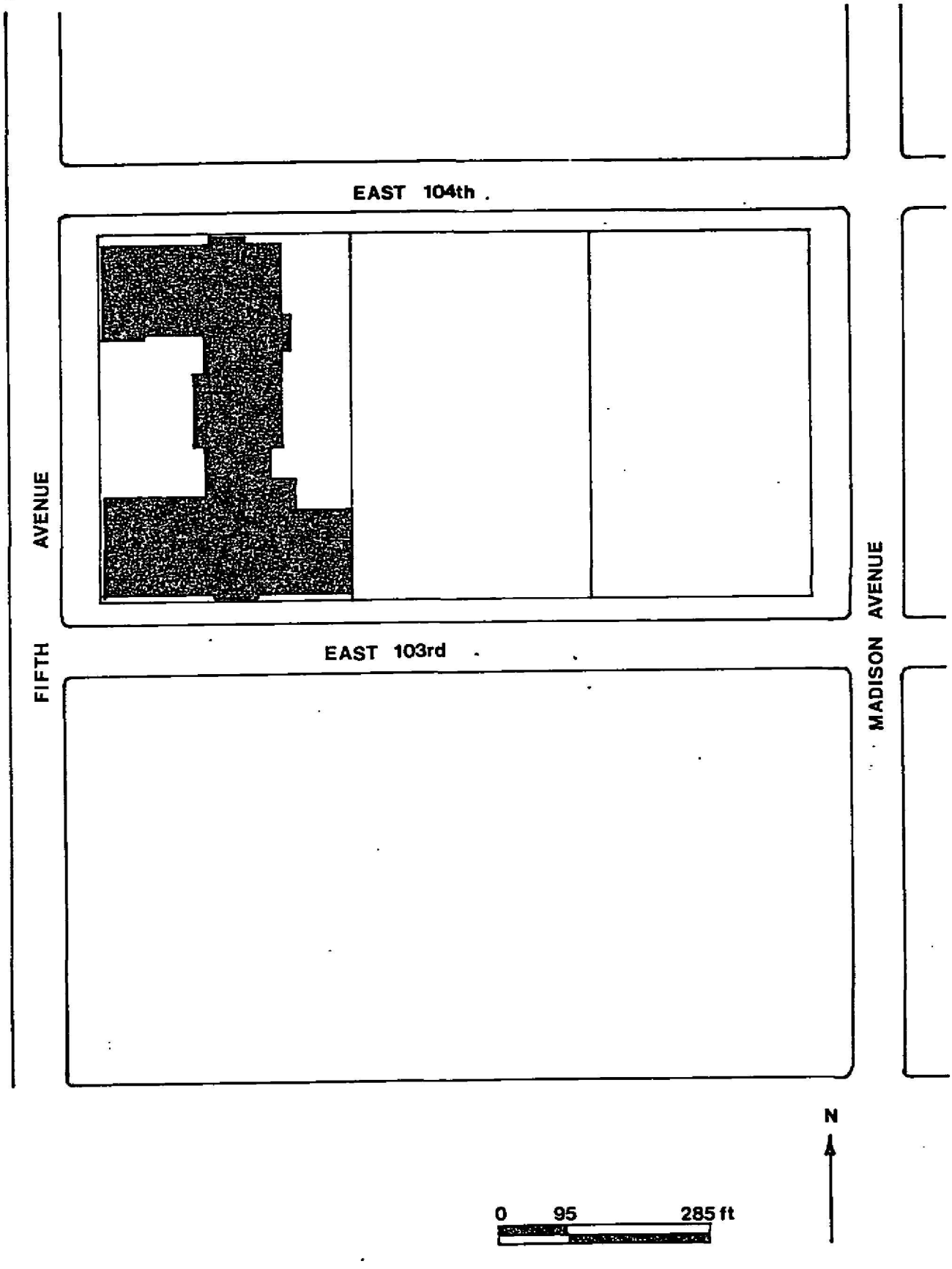


Figure 3.8:1 Base Map of Museum of the City of New York

New England physiographic province. Continental glaciation affected the surficial geology of Manhattan as the glacier advanced and receded over the area at least three times during the last million years. The area was covered with glacial till and outwash consisting of sand, gravel, and boulders that were deposited by the melting ice sheet. The evidence of glacial scouring and deposition can be readily seen within nearby Central Park. The glacier polished the bedrock as it moved over the surface, and it carried away the soil in some areas leaving behind small barren hills.

Three nineteenth century maps (Randel 1815, Bromley 1879, 1898) show a stream running through the Museum site from the northwest corner to the south-central part of the block. The 1815 Randall map depicts the area as flat land with wetlands located to the northwest of the study area.

Native American Resources

Metropolitan New York was inhabited by Native American peoples at least as early as the retreat of the last glacier approximately 14,000 years ago. In the early twentieth century, archaeologist Alanson B. Skinner of the American Museum of Natural History located several Indian sites in the northern section of Manhattan Island (Skinner 1915:50-52). More recently, four sites were located in lower Manhattan as a result of archaeological mitigation projects conducted during the 1980s (see Lenik 1990). Sites in the central portion of Manhattan, however, await discovery and documentation.

It is possible that Native American occupation may have taken place near the fresh water stream that was formerly located within the property. Our research indicates that a major Indian settlement, "Konaande Kongh," may have been located two blocks south of the museum site at 101st to 97th Streets between Madison and Lexington Avenues (Bolton 1934 b). Also, an

early survey by Parker (1920: 627) noted the presence of scattered Indian relics on the north side of the nearby Central Park Reservoir. No prehistoric, however, sites have been recorded within the museum property.

Historical Resources

Documentary research, including maps of the eighteenth, nineteenth, and early twentieth centuries indicate no historic sites or structures on the property prior to the construction of the museum in 1929. The construction of a five-story Georgian style building began in 1929, and the museum opened to the public in 1932. In 1967, the museum was designated as a landmark of the City of New York by the Landmarks Preservation Commission. A new wing was constructed in 1973, and two years later the rear terrace was repaved.

Research Field Survey Results

A pedestrian survey of the Museum property revealed that the landscape has been extensively developed and disturbed. It is highly unlikely that any undisturbed archaeological deposits are present within the site.

Summary and Conclusions

Our research found no evidence of prehistoric or historic cultural resources within the study area. No historic components were present on the site prior to 1929, and the likelihood of finding any *in situ* evidence of Indian occupation or use is remote due to the large scale construction that has taken place at the site. Therefore, no further archaeological investigation is recommended.

CHAPTER 3.9A: FLUSHING MEADOWS-CORONA PARK AND KISSENA CORRIDOR PARK

Flushing Meadows-Corona Park and Kissena Corridor Park contain four New York City-funded cultural institutions: the New York Hall of Science, the Queens Botanical Garden, the Queens Museum, and the Queens Theatre in the Park (see Figure 3.9A:1). Because the four institutions are in close proximity to one another, they share the same environmental setting; prior to the construction of the World's Fair site in the 1930s, the properties (not institutions) shared the same history. For the sake of brevity, the shared descriptions on environmental setting, Native American resources, and historic resources will be discussed in this section. Project boundaries, history of the institutions, field survey results, and summary and conclusions, will be presented in the seperate institutional sections.

Environmental Setting

Geologically, Long Island is considered a part of the Coastal Plain physiographic province. The underlying bedrock of the island consists of metamorphic rocks that are over 450 million years old and triassic beds that are 200 million years old. Sands, silts, and clays were deposited on the bedrock formations some 70 million years ago. Long Island is the top of a Coastal Plain Ridge formation that is covered with glacial drift.

Continental glaciation profoundly affected the topography of Long Island. During the Pleistocene or Ice Age, as it is commonly known, the advancing and retreating ice sheet and the lowered sea levels caused the cutting and erosion of the sediments of the coastal plain. The glacier altered the landscape as it passed over Long Island; it carried forward tons of soil and stone which carved and planed the land surface. At the edge of the ice sheet massive accumulations of glacial debris were

Figure 3.9A:1 Base Map of Flushing Meadow-Corona Park and Kissena Corridor Park (no scale)

deposited, forming a series of low hills or terminal moraines (Broughton, Fisher, and Isachen 1966: 5).

At some time between 17,000 years ago and 15,000 years ago, the glacial ice began to recede (Sirkin 1967: 206). As the Wisconsin ice sheet retreated, large blocks of ice broke off the face of the glacier. These blocks of ice dropped onto the land surface of Long Island and were buried in outwash coming from the Harbor Hill moraine which marks the position of the stationary ice front west of Lake Success. As the ice blocks melted, the outwash collapsed, leaving depressions in the land called kettle holes which often filled with water. As the glacier continued its retreat, its meltwaters carried sand and silt which formed broad outwash plains.

The north shore of Long Island was formerly characterized by wave-cut cliffs and rolling, wooded hills while the interior of the island consisted of level grassy plains and scrub oak forests (Smith 1950: 101). Flushing Meadows-Corona Park is located in central Queens to the north of the Harbor Hill glacial moraine. The park is situated in a natural basin that is drained by the Flushing River which empties into Flushing Bay. Prior to modern urbanization, the Flushing River was a tidal waterway surrounded by extensive meadows of salt hay, which were in turn flanked by tree-covered hills (outside the present parkland).

Native American Resources

A search of the literature on the study area has identified several prehistoric sites near to Flushing Meadows-Corona Park. In the early twentieth century, Beauchamp (1900: 137) and Parker (1920: 672) surveyed and located three sites in the area: The first was a burial site located in the "Linnaean Garden" in Flushing in which eleven skeletons were reportedly found in 1841. The second site was also a burial ground,

located on the Thomas P. Duryea farm one mile east of Flushing. Stone relics were found on this site in 1880. The third site was described as a large settlement of the Matinicock tribe at Flushing. Parker (1920, plate 208) also notes the presence of a camp site and other "traces of occupation" along both sides of Flushing Creek outside of the present park.

Archaeological investigations in Queens were conducted in the 1930s by Ralph Solecki of Columbia University. Solecki (1941), on his Map of Prehistoric Sites In Queens, N.Y., shows a campsite on the east bank of Flushing Creek and one on the west bank of the creek as well as numerous sites along the north shore.

Historic Resources

Documentary research including maps of the seventeenth, eighteenth, nineteenth, and early twentieth centuries indicates no historic sites or structures along the Flushing Creek (River) within the area of the present park. Shiel (1964: 14), however, states that the "Ireland Mill" was once located on what later became the grounds of the World's Fair. This mill was once owned by the Bowne Brothers of Flushing during the early twentieth century and was operated as a hay and feed business. Shiel further notes that no grain was ground at this mill after the turn of the century. Shiel reports that the mill was torn down in 1939 when the World's Fair Grounds were built.

Shiel (1964: 20), in describing the study area as it appeared in the early 1900s, notes the presence of two additional historic components at the site. An "ancient building," which once belonged to the Leverich Family and was later sold to the Elliott family in the 1850s, was located "at the Fair Grounds at about 111th Street." In the early 1900s this structure was known as Eliott Manor and it burned down in the 1920s.

Finally, Shiel (1964: 20) states that the Shady Lake Farm which was owned by the Smith family, once occupied a part of the west side of the Fair Grounds.

Apparently, Flushing Meadows remained relatively unspoiled until the early 1900s. However, in 1907 a large section of the meadow was purchased by Fishhooks McCarthy of the Brooklyn Ash Removal Comapany, and landfilling operations were begun (Stanton, n.d.). For the next thirty years, tons of ash and garbage were piled, compacted, and spread throughout the area. It has been reported that one ash mountain was actually ninety feet in height and was known as Mount Corona (Peterson and Seyfried 1983: 19).

In the early 1930s, New York City embarked upon a major program of highway development and bridge construction. In 1932, the Grand Central Parkway was completed, cutting through the huge piles of ash and trash. At the south end of the Meadow, near Kew Gardens, the Grand Central and Interborough Parkways were linked together in a traffic complex known as the "pretzel." The Flushing Meadows-Corona Park area remained undeveloped, however, until 1934, when the site was chosen as the location for the 1939-40 World's Fair. The actual construction of the New York World's Fair facility on 1216 acres of park began in 1936. This work invloved massive landfilling, development, and construction at the site. As later described by Robert Moses (1949: n.d.):

> "It began with leveling of the great ash dump, filling of a considerable part of the meadow, creation of two lakes north of the filled land, building of new approachess, boundary and intersecting traffic arteries; ...building of permanent utilities for the park and temporary utilities for the Fair throughout the entire area; manufacture of topsoil ...planting of large trees and shrubs ...and an endless number of other basic improvements ...such as the City Building ..., the State Amphitheatre, and other structures"

A dam was also built on Flushing Creek (River) which altered the waterway

from salt to fresh water and brought an end to navigation (Shiel 1964:22).

In the years following the closing of the Fair, many of the structures were torn down and the land returned to parkland and recreation use. For example, in the area west of the Grand Central Parkway, where transportation exhibits, called the Courts of Railways and Wheels were located, the land was turned into neighborhood recreation facilities (Moses 1949).

Flushing Meadow Park became the site of a second New York World's Fair in 1964-65. Over two hundred new pavilions were constructed for the 1964-65 Fair on the original 1939-40 Worl's Fair layout. Transportation systems were further expanded to include the Van Wyck Expressway and the widening of the Grand Central parkway. At the close of the Fair the land was once again returned to park use. Several of the World's Fair structured were later adapted for other uses.

Since the mid 1960s, other park development projects have been completed within Flushing Meadows-Corona Parkway, including the Queens Zoo, sports fields, and the Queens Botanical Gardens (Anonymous, n.d.: 18). The World's Fair Singer Bowl was converted into the Louis Armstrong Memorial Stadium in 1973, and became the United States Tennis Association in 1978. The 1964-65 World's Fair Federal Pavilion was demolished in 1976, and Willow Lake was designated as a protected freshwater wetland by the New York State Department of Environmental Conservation.

CHAPTER 3.9: NEW YORK HALL OF SCIENCE

Project Boundaries

The New York Hall of Science is located on approximately twenty-three acres of land within Flushing Meadows-Corona Park in Queens, New York (see Figure 3.9:1). The land is owned by the City of New York, but exact boundaries are not available.

History of the Cultural Institution

The Hall of Science exhibit hall was designed by Harrison and Abramovitz and opened on June 15, 1964 in conjunction with the New York World's Fair. At the conclusion of the Fair in 1966, twenty-one acres of parkland were licensed for future expansion to the Hall of Science trustees by the City of New York. The Hall of Science was reopened to the public on September 21, 1966 with exhibits provided by government agencies and industry.

In 1967, construction began on an addition to the Hall of Science. However, as a result of the City's fiscal crisis, that addition was never completed.

The Hall of Science is a non-profit educational institution. The museum is the only one in New York City that focuses solely on science and technology.

Field Survey Results

A pedestrian survey of the Hall of Science grounds revealed that the landscape has been extensively developed and disturbed. It is highly unlikely that any undisturbed archaeological deposits are present within the site.

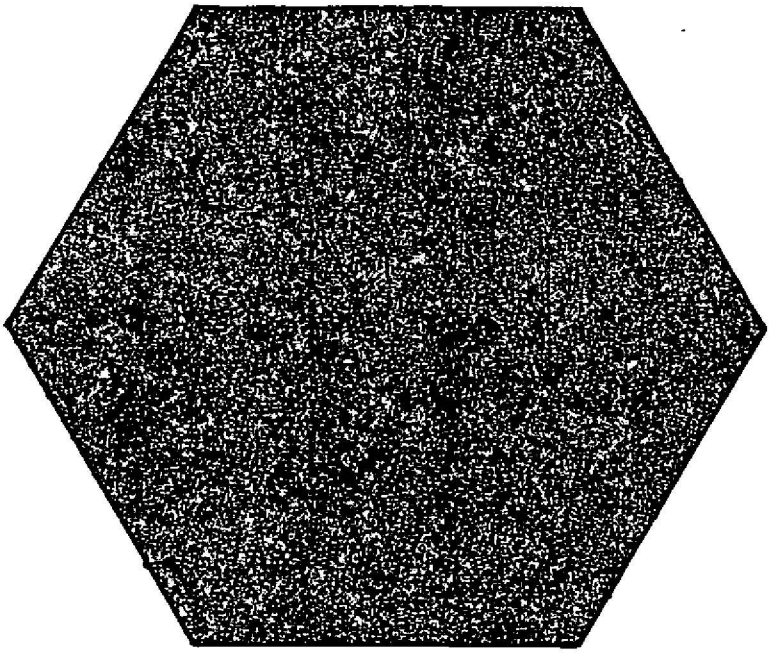


Figure 3.9:1 Base Map of New York Hall of Science (no scale)

Summary and Conclusions

The documentary research and field reconnaissance of Flushing Meadows - Corona Park indicates that extensive landscape alteration and development work has taken place at the site since the early twentieth century. No prehistoric or historic period, i.e., pre-1936, cultural resources were found within the study area. We believe that the potential for the presence of cultural remains is extremely low due to massive landfill and construction that have taken place at the site. No further archaeological work is recommended.

CHAPTER 3.10: QUEENS BOTANICAL GARDEN

Project Boundaries

The Queens Botanical Garden is located on land within Kissena Corridor Park. It is bordered on the north by Blossom and Crommelin Streets and Dahlia Avenue, on the east by Main Street, on the south by Peck and Elder Avenues, and on the west by College Point Boulevard in Queens (see Figure 3.10:1).

History of the Cultural Institution

The Queens Botanical Garden, presently under the jurisdiction of DCA, is dedicated to the establishment and maintainence of a botanic garden and arboretum in the Borough of Queens for the collection, culture and scientific study of plants and flowers, and to provide educational services. The Queens Botanical Garden began as a five acre exhibit known as "Gardens on Parade" at the 1939-40 World's Fair. At the close of the World's Fair, the Parks Department took over its maintenance. In 1946, the Queens Botanical Garden Society was organized for the purpose of making the Garden a horticultural showplace. A permit was obtained from the New York City Parks Department to operate the former "Gardens on Parade" and they were formally opened to the public in June 1948. With the coming of the New York World's Fair in 1964, however, the site was needed for industrial exhibits, so the Queens Botanical Garden was relocated to its present thirty-nine acre site in Kissena Corridor Park. The administration building was donated to the Garden by the World's Fair Corporation at the close of the fair in 1965. The Kissena Corridor, including the site of the Garden, was once a swampy valley leading from Flushing Meadow Park to Cunningham Park (Moses 1949). A large storm water trunk sewer was

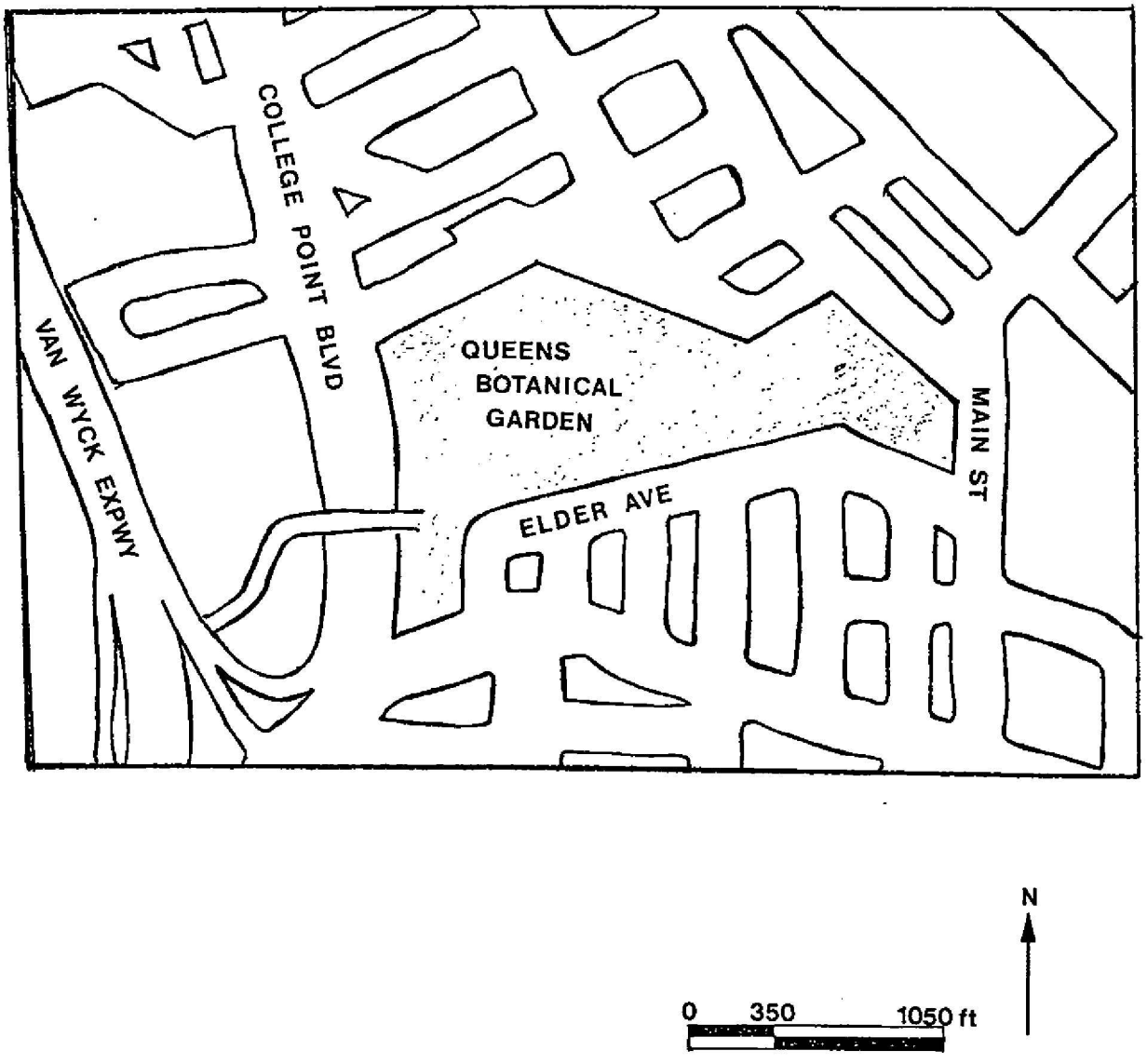


Figure 3.10:1 Base Map of Queens Botanical Garden

constructed through the entire corridor and sanitation material was used for fill.

Field Survey Results

Our field survey in the Garden and surrounding park area confirmed the presence of landfill materials, e.g., coal and ash, and the storm sewer. In addition to ongoing grading, garden construction, and planting, several structures have been built on the site as well.

Summary and Conclusion

The documentary research and field reconnaissance of the Queens Botanical Garden property identified no prehistoric or historic cultural resources within the study area. We believe that the potenial for the presence of cultural remains is extremely low due to the extensive land alterations that have taken place at the site. No further archaeological work is recommeded.

CHAPTER 3.11: QUEENS MUSEUM

Project Boundaries

The Queens Museum is located on land within Flushing Meadows-Corona Park in Queens, New York. The land is owned by the City of New York. The Museum measures 216 feet from east to west, and 416 feet from north to south (see Figure 3.11:1).

History of the Cultural Institution

The New York City Building, which houses The Queens Museum, has undergone many changes in its twenty-five year history. It was originally designed by Aymar Embury II as the New York City Exhibition Hall for the 1939 New York World's Fair.

From 1946-50, The New York City Building was renovated to serve as the New York Headquarters for the United Nations. After the United Nations moved to its new home in Manhattan, the building reverted to office space under the jurisdiction of the City of New York. It was renovated again in 1963 in preparation for the 1964 New York World's Fair. Its facades were altered to a design by David Chait, and The Panorama, commissioned by Robert Moses, was fabricated and installed by Lester Associates of Nyack, New York. The Panorama was viewed by fairgoers via an eight-minute "helicopter ride" which included a narration read by Lowell Thomas.

After the conclusion of the Fair, the site was known as Flushing Meadows-Corona Park. The building was reopened in 1967 and was operated by the Triborough Bridge and Tunnel Authority.

In 1972, The Queens Museum was established in the northern half of the New York City Building. The southern half houses public ice skating rink. The gallery space was enlarged in 1981. Presently a reconstruction project designed by Rafael Vinoly Architects will renovate the building

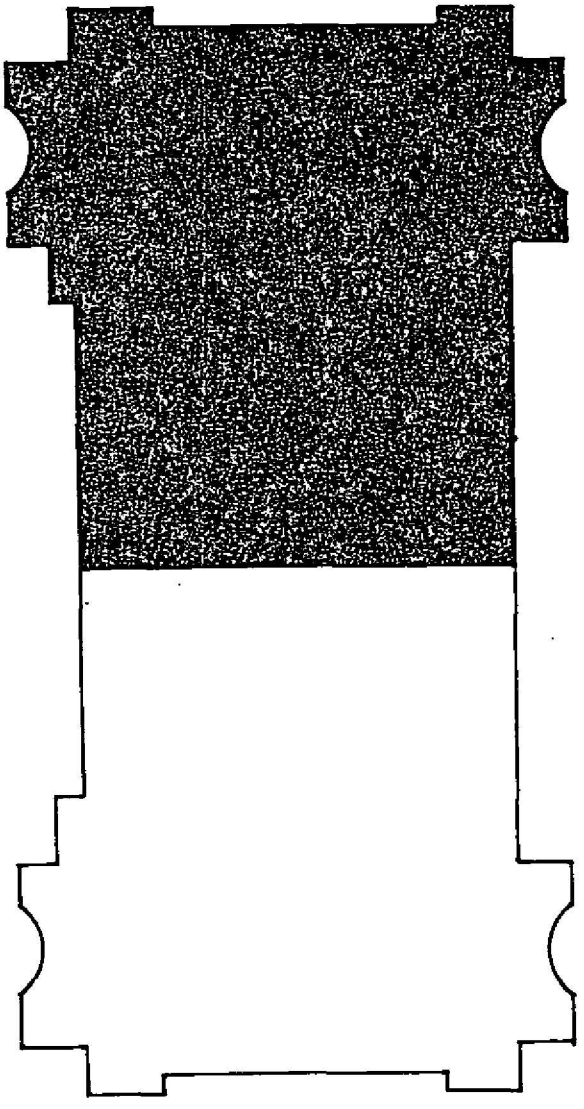


Figure 3.11:1 Base Map of Queens Museum (no scale)

exterior and reorganize the gallery, panorama, and administrative space over the next few years.

Field Survey Results

A pedestrian survey of the Queens Museum grounds revealed that the landscape has been extensively developed and disturbed. It is highly unlikely that any undisturbed archaeological deposits are present within the site.

Summary and Conclusions

The documentary research and field reconnaissance of Flushing Meadow -Corona Park indicates that the landfill and development work has taken place at the site since the early twentieth century thus obliterating cultural remains around the institution. No prehistoric or historic period, i.e., pre-1936, cultural resources were found within the study area. We believe that the potential for the presence of cultural remains is extremely low due to the extensive land alterations that have taken place at the site. No further archaeological work is recommended.

CHAPTER 3.12: THEATRE IN THE PARK

Project Boundaries

The Queens Theatre in the Park is located on land within Flushing Meadows - Corona Park in Queens, New York. The land is owned by the City of New York, but exact boundaries are not available (see Figure 3.12:1).

History of the Institution

The Theatre in the Park was designed and built as "Theaterama," a 360- degree motion picture facility for the 1964 World's Fair New York State Pavilion. Since 1973 when the theatre was renovated to house a 500 seat auditorium and spacious performing stage, the theatre has presented plays, musicals, dance, and music events for the Borough of Queens. Shuttered in mid-1985, the theatre presently operates (effective October, 1988) under the auspices of the Queens Council on the Arts, and following a major facility renovation the theatre is projected to recommence operations in this building in 1991. An additional 100-seat theatre will be included in the upgraded facility.

Queens Theatre in the Park, designed by internationally prominent architect Philip Johnson for the 1964 World's Fair, served a threefold purpose. Besides presenting a 360-degree motion picture extolling the virtues of New York State, the lower portion of the building served, along with the adjacent Pavilion, as a hospitality area. The exterior of the theatre displayed nine gigantic "pop art" works of the era, including pieces by Roy Lichtenstein, Robert Indiana, Ellsworth Kelly, Robert Rauschenberg, and Andy Warhol. Following the closing of the Fair, the building sat dormant until it was reopened in 1973 as The Queens Playhouse, later the Queens Festival Theatre, and finally as Queens Theatre in the Park, operating under the auspices of the now defunct Queens Cultural

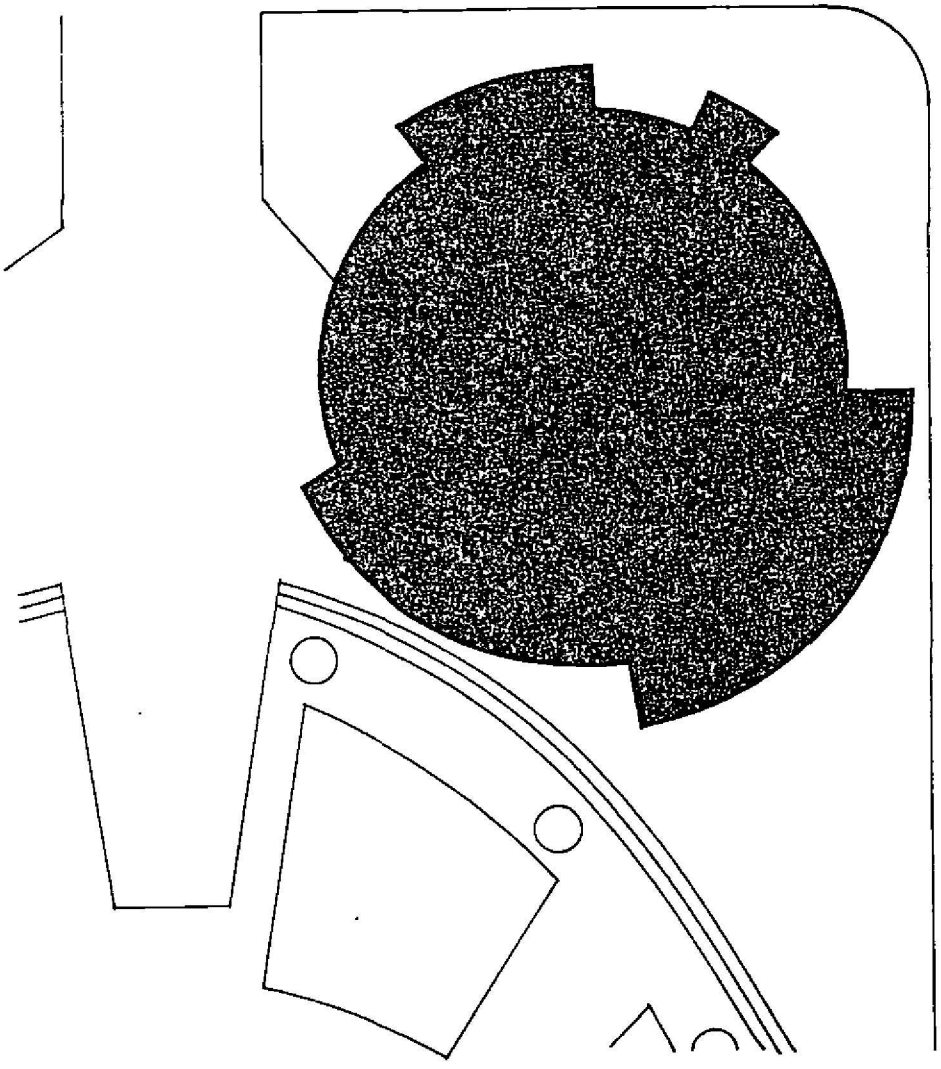


Figure 3.12:1 Base Map of Theatre in the Park (no scale)

Association.

Field Survey Results

A pedestrian survey of the Queens Theatre in the Park grounds revealed extensive development and disturbance of the landscape. It is highly unlikely that any undisturbed archaeological deposits are present within the site.

Summary and Conclusions

The documentary research and field reconnaissance of Flushing Meadows - Corona Park indicates that extensive landscape alteration and development work has taken place at the site since the early twentieth century. No prehistoric or historic period, i.e., pre-1936, cultural resources were found within the study area. The potential for the presence of cultural remains is extremely low due to the extensive land alterations that have taken place at the site. No further archaeological work is recommended.

CHAPTER 3.13: RICHMONDTOWN RESTORATION

An archaeological planning model has been completed for Richmondtown Restoration (Baugher et al. 1989) as part of this NEA grant. The study evaluates the twenty-five acre core and the seventy-five acre outer area.

Project Boundaries

Richmondtown Restoration is located in the Richmondtown section of central Staten Island. The study area is a one hundred acre parcel of land with approximately twenty-five acres in the core of the village. The village is bounded by Latourette Park on the north, a residential community Richmondtown on the east, the United Hebrew Cemetery on the south, and City-owned property within the Fresh Kills wetlands on the west (see Figure 3.13:1).

History of the Cultural Institution

The Staten Island Historical Society, chartered in 1856, began collecting artifacts, and library and documentary materials. It established a museum building in 1933 in the former County Clerk's and Surrogate's office in Richmondtown, the former county seat. In the 1950s the Richmondtown Restoration became a joint endeavor of the Staten Island Historical Society, an independent non-profit cultural organization, and the City of New York, which owns the land and buildings and supports part of its operation with public funds provided through the Department of Cultural Affairs. The Restoration (known earlier as Richmondtown), including the municipal center of Staten Island's former county seat, a section of the adjoining salt marsh, and the sites of former agricultural areas and mills. The study area has been continuously occupied and developed since the late seventeenth century. The property contains

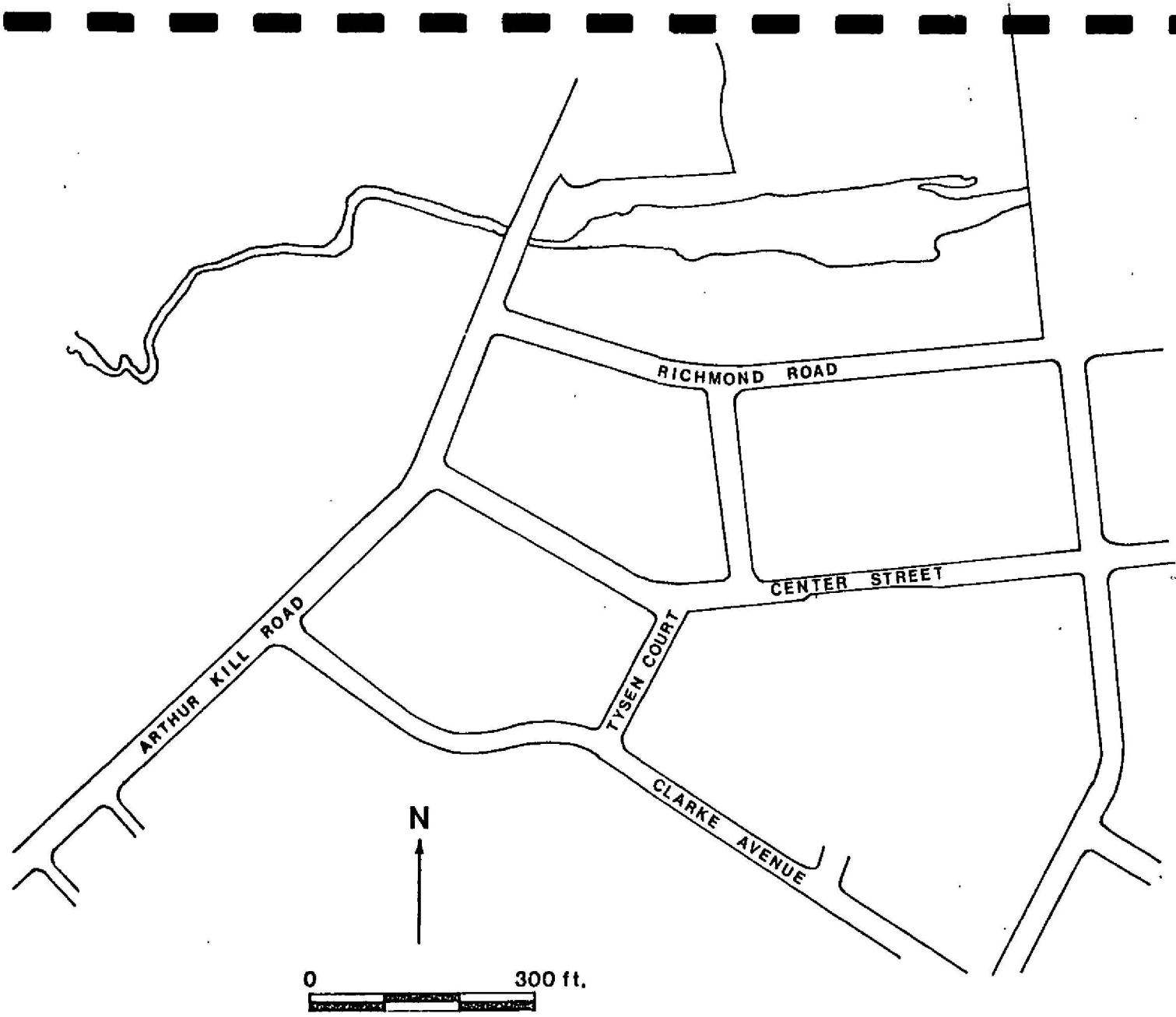


Figure 3.13:1 Base Map of Richmondtown Restoration (core area)

geomorphological and environmental features that suggest the probability of earlier Native American utilization as well. Richmondtown Restoration encompasses major portions of the unincorporated village of Richmond (known earlier as Richmondtown), including the municipal center of Staten Island's former county seat, a section of the adjoining salt marsh, and the sites of former agricultural areas and mills. The study area has been continuously occupied and developed since the late seventeenth century. The property contains geomorphological and environmental features that suggest the probability of earlier Native American utilization as well. Twenty-seven extant buildings, fourteen of which are designated New York City Landmarks, are visible reminders of the site's active life as a village. Of these fourteen buildings, six are on their original sites and eight have been moved from other locations on Staten Island. One historic site, the Rezeau-Van Pelt family burial ground, is a designated City Landmark. The Voorlezer House is listed on the State and National Registers of Historic Places.

Environmental Setting

Geologically speaking, the Richmondtown Restoration area is a part of the Coastal Plain physiographic province. The bedrock geology in the region consists of Serpentine and Stockton Sandstone of the Triassic Period 150 to 180 million years old (Gratacap 1909:171-186; Distrigas of New York Corp. 1973:2-13, Figure 16). The Village of Richmondtown lies at the foot of the serpentine hills which are located to the north of the village. Several exposures of weathered serpentinite are visible along the crest of Richmond Hill and are typically yellowish-green, olive-green, or apple green in color (Schuberth 1968:250).

Continental glaciation affected the surficial geology of Staten Island as the glacier advanced and receded at least three times during the last million years. During the Pleistocene, or Ice Age as it is commonly called, the advancing and retreating ice sheet plus the action of lowered sea levels caused the cutting and erosion of sediments of the coastal plain. As the ice melted and finally retreated, the meltwater created the streams and rivers that are present in the project area today. These rivers and streams in turn helped to form the local deposits of sands, silts, and gravels. It is clear therefore, that the region's surface features and deposits are mainly of relatively recent post-glacial origin. That is, they began forming approximately 14,000 years ago (Kraft and Chacko 1978:41). The glacial material in the form of outwash sediments is locally overlain by beach, dune, marsh, swamp, estuary deposits, and modern artificial landfill.

The present topography of the Richmondtown Restoration can be characterized as low and flat. The elevations within the core of the village range from 4 to 40 feet above the mean sea level, while those along the crest of the Richmond Hills to the north range from 100 to 200 feet. The south side of Richmond Hill is steep. In this area, the slopes are ten percent or more and create dramatic relief (Sadowsky 1983:28). Richmond Creek is located near the northern boundary of the project area and flows from a northeast to southwesterly direction and ultimately into the main channel of Fresh Creek. The westerly portion of Richmond Creek is tidal, and the ebb and flow of the tides reaches nearly to Richmondtown Restoration. Richmond Creek and its tributaries carry surface water runoff from the higher elevations and provide a natural drainage system for the area. The stream's flow is sluggish and provides the necessary environment for several unique plant communities that are found along its banks

(Sadowsky 1983:30).

The existing environmental features at Richmondtown Restoration include three types of vegetative associations: 1) plants of the freshwater wetlands which are found along Richmond Creek in the area of the village and extending generally in an easterly direction; 2) plants of the saltwater marshes along Richmond Creek, to the west of the village; and 3) plants of the woodland communities. Some of the trees and plants present in the area are White Ash, Tree of Heaven, American Beech, Chestnut Oak, American Elm, Red Maple, Sugar Maple, Red Oak, White Oak, Black Oak, Sweetgum, Black Tupelo, and Grey Birch (Sadowsky 1983:73-74). Also present in the area are Phragmites or Reed Grass, Hackberry, Bayberry, Honeysuckle, and Witch Hazel (Anonymous 1962:13; Shapiro 1972:39). The zones of vegetation are clearly visible from the top of Richmond Hill, i.e., the presence of Phragmites or Reed Grass along Richmond Creek followed by Salt Grass near Fresh Kills.

The faunal species present in the area today include rabbits, opossum, raccoon, muskrat, gray squirrels, frogs, toads, salamanders, milk and black snakes, and shellfish (Johnson 1988, personal communication). Fish, such as bass, perch, catfish, and eels are also present within the waters of Richmond Creek. Trout was present in the past but is now absent. Carp, which was introduced in the nineteenth century, can also be found in the creek.

Many types of migratory birds and waterfowl such as grouse, geese, woodcock and pheasant--all species known to have been exploited by human groups--are also present in the project area. In fact, some fifty-one species of breeding birds have been observed within the surrounding region (Sadowsky 1983: 76-78).

Native American Resources

In prehistoric times, Staten Island was intensely occupied and used by Native American peoples. In the early twentieth century archaeologist Alanson B. Skinner of the American Museum of Natural History surveyed and located twenty-four prehistoric sites on Staten Island. Skinner (1909) shows two sites in close proximity to the Richmondtown Restoration, namely Number 11, called "Green Ridge, near Richmond Plank Road," presently called Richmond Avenue, and Number 22, called "Richmond." Skinner (1909:10) describes the Green Ridge site as a camp site located between "Journey Avenue and Annadale Road" which contains "early relics." The Richmond Site, however, is described in considerably more detail. Skinner (1909:16) notes that the Richmond Site was a "large camp" that was located near Ketchum's Mill Pond on Simonson's Brook. Grooved axes and other relics were reportedly found on this site.

In the late 1960s two prehistoric sites were discovered and excavated by Albert J. Anderson and his associates adjacent to the southern foot of Richmond Hill (Ritchie and Funk 1971:53). These sites are located approximately three-fourths of a mile west of Richmondtown Restoration and may very well be the same or part of the Richmond site previously reported by Alanson Skinner. The artifacts and data recovered from one of these sites, referred to as the Richmond Hill site, date to the Early Archaic Period. They were found adjacent to a hearth that contained charcoal fragments from which a radiocarbon date of 7410 B.C. plus or minus 120 years was obtained (Ritchie and Funk 1971:53).

Albert J. Anderson (1976:66) also reported finding "spearheads, arrowheads, scrapers, and chippage" near the former site of Ketchum's Mill. In addition, Anderson reported exploring a knoll to the north of Ketchum's Mill ruin on which he found evidence of prehistoric occupation including a

bifurcated projectile point, and a hearth containing charcoal which was radiocarbon dated to 3555 B.C. plus or minus 105 years.

A collection of Native American artifacts from "Richmondtown" is presently housed at the Staten Island Institute of Arts and Sciences. This collection consists of three stemmed projectile points, a grooved axe, scrapers, a bi-pitted stone, a fragment of incised pottery, and several chert and quartz flakes. In broad terms, some of these specimens date to the Archaic (c. 8000 B.C. to 1000 B.C.) and Woodland (c. 1000 B.C. to 1600 A.D.) cultural periods.

Finally, a broken stone axe was reportedly found by Donald Sainz behind the "parsons" house of St. Andrews Church (Anderson 1988, personal communication). A fresh water spring was located near the find, and the recovery of this axe suggests a Native American presence in this area.

Documentary research has revealed that several prehistoric sites were once located in close proximity to the Richmondtown Restoration. However, no prehistoric sites have been reported within the core area of the village itself.

An intensive pedestrian survey or field reconnaissance was conducted in the entire project area in an attempt to locate additional prehistoric sites and to evaluate the archaeological potential of the area. The search for evidence of prehistoric occupation within Richmondtown Restoration also included consultation with local residents and informants, particularly those individuals who had participated in archaeological excavations within the village in the past. The result of these discussions was completely negative.

Field reconnaissance has revealed meager evidence of prehistoric occupation within the project area. One black chert flake was found on the

southwest side of the hill which is located immediately north of the village mill pond. In addition, two green chert cores and one black chert core which show evidence of use were observed on the surface along the crest of the hill overlooking the Church of St. Andrew. Finally, one black chert flake was found on the dirt road located near the Richmond Hill Site at the Burial Hill.

In summary, documentary research indicates that several prehistoric sites are located within the seventy-five acre undeveloped section of Richmondtown Restoration. In addition, field survey results and environmental analysis suggests that several other areas have potential for containing evidence of prehistoric occupation.

Historical Resources

This section will provide a brief history of Richmondtown Restoration's property development from 1680 to 1988 and will serve as a sequel to the American Indian resources section. The focus is on the twenty-five acre core of Richmondtown Restoration, with only an occasional comment on the property development of the outer seventy-five acres. This material provides the background to discuss the kinds of historic sites with archaeologically significant material which may be found within the limits of Richmondtown Restoration.

For the first half of the seventeenth century, all of Staten Island remained as it had been for centuries: Indian land, where Indians coupled their traditional combination of agriculture, hunting, and fishing with the new opportunities found in trade with the Dutch. Richmondtown was settled by Europeans in the last two decades of the seventeenth century.

Some of the land which later became Richmondtown was included in two 1680 patents by Governor Edmund Andros, one to Robert Rider and the other

to James Hubbard. By 1700, in addition to a small number of American Indian families, four ethnic groups were now clearly established on Staten Island: Dutch, English, French, and African.

The large Rider and Hubbard patents of 1680 had been subdivided by 1700 through sales and transfers by the original owners and their heirs. Yet this property transfer still took place within an agricultural and rural economic framework, for drastic changes in property use would not occur until the industrial nineteenth century.

Between 1700 and 1710, the core area of Richmondtown Restoration developed from a crossroads into a small hamlet. Richmondtown was located in the center of Staten Island and at its crossroads.

In 1728, Richmondtown became the county seat. That year, the First County Court House was built at the intersection of Richmond Road and Arthur Kill Road (H. McMillen 1961a: 4). In the same year, Richmond Road was laid out (Early Town Records, p. 74). By 1730, these various changes had transformed the core of Richmondtown Restoration into a small village. Nevertheless, even with the presence of the county buildings, most of the core of Richmondtown Restoration remained as either farmland or was undeveloped.

By 1770, the village had expanded along with the colonial economy. It contained three government buildings: a courthouse (1728), a new jail (by 1741), and a jailer's house (by 1759) along Richmond Road. Richard Cole operated the first clearly documented tavern, and owned a house and a barn on the one-acre lot which is in the bed of Center Street (New York Gazette, February 7, 1765). There were five or six houses within the village. In 1769, Jacob Rezeau, a successful farmer and Elder of the Presbyterian Church, donated to the Dutch Reformed and Presbyterian Church a small plot of land (65' x 55') on the northwest corner of the block bounded by Center

Street and Arthur Kill Road. The Presbyterian and Dutch Reformed Churches had agreed to unite their congregations and to worship together in the new church on the land donated by Rezeau (Vosburgh 1923:33).

Expansion beyond the core began with the erection of two grist mills, the Bedell Mill (c. 1750) and the John and Joseph Wood tidemill (c. 1760), which were located on the streams just west of the village on Richmondtown Restoration's outer seventy-five acres. These mills may have been built to provide flour for a rapidly expanding New York City as well as for local settlers.

The Revolutionary War caused a halt in the sale of Richmondtown property, but the occupying British army provided farmers with a large and profitable market for their goods. On July 2, 1776, the British Army landed on Staten Island and established its headquarters on the North Shore. Troops were quartered and camped strategically throughout the Island, especially in and near the county seat. By the summer of 1777, three earthen redoubts were erected on the hill above Richmondtown, overlooking the salt meadows and Fresh Kills (outside the property boundary of Richmondtown Restoration).

During the years of the Revolutionary War, 1776-1783, the center of Richmondtown not only failed to grow and develop, two of the buildings, the Court House and the Dutch Reformed and Presbyterian Church, were burned.

After the war, growth was slow in Richmondtown. Part of the economic revival of the town depended upon its trade links through the nearby coastal water routes, a fact reflected by the announcement that the town dock, which was at Wood's mill, could accommodate vessels "of forty tons burden," according to a 1793 newspaper ad (New York Journal-Patriotic

Register, February 2, 1793).

There were four taverns in the village between 1783 and 1800; they were all located in the area between Center Street and Richmond Road. Loring McMillen (1978b) notes that the Cole tavern on the one-acre lot was the only tavern in the village prior to, during, and immediately after the Revolutionary War. The Cole tavern passed through several owners but continued to operate as an inn/tavern until the 1820s.

During the 1790s, growth in the village continued. Around 1797, John Dunn built a gristmill on Richmond Creek, for a total of three gristmills in the area surrounding Richmondtown.

The period from 1800-1830 brought various changes to Richmondtown. In 1808, a new Dutch Reformed Church was built on the site of the former church, which had been destroyed during the Revolutionary War. With the end of the war in 1815, however, there was a surge of growth in New York. Water transportation networks were improved with steamboats and then with the building of canals; the Erie, Delaware, Hudson, Morris, and Champlain canals opened up inland areas as markets and producers of goods which passed through New York (Albion 1939: 1-37 and 76-94). Staten Island too was affected by the post-war prosperity. Businessmen in Richmondtown, anticipating its effects, built two hotels and two stores. The post-war period saw the demise of the inn, the end to taverns run within residential buildings and the rise of hotels. The Union Hotel on Richmond Road opened its doors in 1820; it was joined in 1829 by the Richmond County Hall (Leng and Davis 1933, vol. 2: 943). By 1830, the last two inns in Richmondtown had closed. In addition, a stage line provided transportation from Richmondtown to the ferry at the Quarantine on the North Shore of Staten Island (Reed 1965). In 1830, the buildings still centered along Richmond Road and Arthur Kill Road and most of the core remained farmland or were

undeveloped.

In May 1836, Henry I. Seaman, a New York merchant, bought ninety acres of land in Richmondtown (Liber of Deeds Z: 198). After subdividing the property into 25' x 110' lots, he donated land for the site of the new court house, which was completed in the summer of 1837, and for two new streets, Center Street and Court Place. After the financial panic of 1837, there were no new buyers for the property in Richmondtown. In May 1838 the Richmond County Mirror noted the failure of Seaman's development.

After ten years, during which there was virtually no new construction, the County Clerk's and Surrogate's Office was built in 1848. A one-story brick building, it was located on the corner of Center Street and Court Place. The only other changes in the area between 1838 and 1850 were the addition of a blacksmith shop, a carpenter shop, and three residences. Of the eleven dwellings, only 18% were rentals. This percentage of rentals would increase throughout the decade, and by the end of the nineteenth century 53% would be rentals.

Even though the Depression of 1837 subsided in the early 1840s (Morris 1982: 213 and 747), Richmondtown underwent little change for another fifteen years. Then the village entered into a new period of growth. Richmondtown survived the nation's economic Panic of 1857, which ended the following year (Morris 1982: 741, 748, 265).

The Civil War brought another halt to Richmondtown's growth in construction -- though again, war may have brought prosperity to nearby farmers helping to feed the huge Union armies.

As transportation on Staten Island improved, local newspapers commented on the fact that it was difficult to get to the county seat in Richmondtown. In 1860, the new Staten Island Railroad opened, connecting

the North Shore to the central part of Staten Island; the Court House Station was only a mile from Richmondtown. Passengers could travel from Richmondtown to the train station by stagecoach or foot.

Even in 1895, the Staten Islander (May 18, 1895, p. 3) reported that in order to go to Richmondtown from the train station one had to travel on "one of the prehistoric stages..." In spite of the difficulties in getting to Richmondtown, the county seat continued to function and after the Civil War it began to grow again.

In the 1870s, New York experienced an influx of Irish immigrants and a corresponding increase in Irish families working and living in Richmondtown. The Census Records of 1870 and 1875 show Irish immigrants as boarders, factory workers, laborers, farm laborers, and domestics.

By the end of the 1870s other changes were evident. During this time, the major source of employment in town was the Marsh Carriage Factory. Even though Richmondtown was the county seat, very few inhabitants worked for the county. Some residents worked for the hotel, the two saloons, or the local store.

There were no new buildings constructed in the 1890s. The number of owner-occupied residences had steadily decreased by the Civil War; by the 1890s only 46% of the homes were owner-occupied. There was a growing number of tradesmen, laborers and service people (shop clerks, saloon keepers, hotel workers, etc.). The owner-occupants had small parcels of land. The area was becoming more of a working-class rather than middle-class community.

An erosion of Richmondtown's political position, and hence its property values, took place between 1898--the date of the consolidation of the five boroughs into New York City--and 1920. During the early 1900s, the Richmond County Board of Supervisors moved its offices to St.

George, beginning the process that would strip Richmondtown of its status as the county seat. Even so, during the period prior to World War I there was some significant if temporary growth in Richmondtown. From 1880 to 1910, Richmondtown as well as Staten Island as a whole had an influx of German families. Many of the Germans settled on the North Shore of Staten Island.

World War I brought a halt to development in Richmondtown. After the war a new court house was constructed next to the new Borough Hall in Saint George on the north shore of Staten Island; the court house in Richmondtown had been closed in 1919. The County Clerk's Office was moved to Saint George in 1920 and the former building in Richmondtown was closed. With the exodus of the County seat, the composition of Richmondtown changed. The Dobler Hotel, which had serviced people on County business, closed in 1923. The Schaeffer Hotel managed to function until 1932. With the advent of Prohibition, saloons and bar/restaurants were converted to restaurants; the area had four restaurant/lunch counters by the mid-1920s. The Marsh/Schwiebert Carriage Factory was converted into an autobody shop, and a second autobody shop was located on another block. The residents of the village primarily worked for with the businesses within the village. The ethnic composition of the area also changed after the First World War. Italian Americans began to buy property and manage stores in Richmondtown; some may have been first generation immigrants, part of the major wave of immigration from Italy that occurred between 1880 and 1920 (Thernstrom 1980: 547). Families of German descent continued to reside in the village.

The Depression affected Richmondtown severely. A number of businesses closed, including the autobody shop, the auto garage, the Schaeffer Hotel, two stores, and one restaurant. The City of New York renovated the vacant

Court House and used it as a dental clinic and local library. The vacant County Clerk's building was converted to a museum building by the Staten Island Historical Society.

World War II brought an end to the Depression but not to the economic decline of Richmondtown. No new businesses opened and no new construction took place. After the war, American soldiers were able to purchase property on the G.I. Bill; in Richmondtown, however, the number of owner-occupied houses steadily declined. By the late 1940s only 34% of the homes were owner-occupied. The only businesses left in this area were two small stores, a lunch counter, and a small restaurant with a store.

In 1953, New York City acquired title to eight blocks within the core of Richmondtown. In the 1960s the Staten Island Historical Society restored the historically significant structures, while demolishing a number of non-historic structures. To this core, historically significant but endangered buildings from other parts of Staten Island were added.

Research and Field Survey Results

I. The Archaeological Sensitivity and Significance of the Seventy-Five Acres Outside of the Core Area

Nine archaeological sites have been identified in this survey within the seventy-five acres that are outside the Richmondtown Restoration core area (see Figure 3.13:2). The historic period components, namely the Bedell-Ketchum Mill Site, the Wood's et al. Mill Site, and the twentieth century Whitlock Company's concrete foundation from their sand washing building are undisturbed, or minimally disturbed, and have the potential for yielding information that is important for our understanding of the area. In particular, the Bedell-Ketchum Mill Site contains extensive structural remains including building foundations, a wheel pit, raceway, millpond and dam. The Wood's et al. Mill Site also contains extant

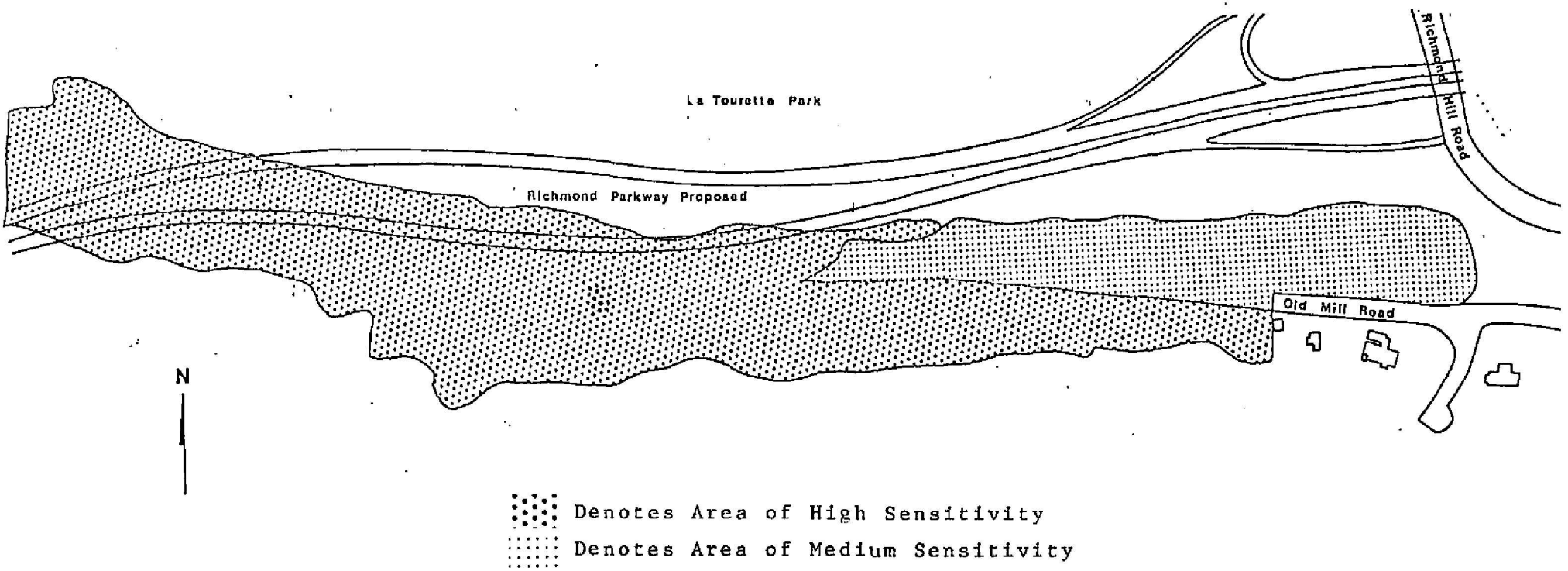


Figure 3.13:2 Archaeological Sensitivity Map of Outer Seventy-Five Acres of Richmondtown Restoration

structural elements such as a building foundation, dock remains, and dam. It is likely that the remains of outbuildings, historical features, and other intact archaeological deposits are present below the surface of the ground at these mill sites.

These historical sites are significant because they are likely to contribute important data to the understanding of the Richmondtown Restoration area and the Staten Island - New York region in general. In summary, the combination of undisturbed archaeological deposits, extant structural ruins, and the documented presence of buried historic artifacts indicates that valuable data can be obtained from these sites. Therefore, we conclude that this area has high sensitivity and recommend that any future development work at these sites be preceded by archaeological investigations.

The site of Public School No. 28 located on the east side of Richmond Road is judged to have medium archaeological potential. No structural ruins were found in this area. The site is somewhat disturbed, but may contain information pertaining to this educational institution.

Documentary research and field reconnaissance have identified three prehistoric sites within the study area. Two of these sites, known as Richmond Hill, are extensively disturbed and were excavated by Albert J. Anderson and his associates in the 1960s. The third site, a possible camp in La Tourette Park along the crest of the hill which overlooks St. Andrew's Church, has been extensively disturbed by park and golf course construction activity. Thus we conclude that these sites have low potential for yielding additional evidence of prehistoric occupation.

Finally, field reconnaissance and analysis of the environmental and geomorphological conditions in the seventy-five acre study area outside the

core suggests that several other locations may have been suitable for prehistoric occupation during all cultural periods. Prehistoric sites may still exist in undisturbed areas such as along the edge of the salt marsh of Richmond Creek, and on several elevated flat knolls or plateaus in the area. There are several flat elevated areas with well-drained soils and southerly or southwesterly exposures. The higher flat elevations, in particular, would have been excellent campsites and would have enabled Native American peoples to live above the level of intense infestation of salt marsh mosquitoes. Once again, the surrounding region would have provided ample aquatic, faunal, floral, and lithic resources. Several fresh water springs existed in the area, the most notable of which is currently known as the "Revolutionary Spring," and would have provided a good source of potable water. This fresh water spring was utilized by the British Army during their encampment on Old Fort Hill and is still flowing today.

The documentary research has identified several prehistoric sites within the entire study area. Furthermore, field reconnaissance and analysis of the environmental and geomorphological conditions in the area confirms that several locations would have been suitable for prehistoric occupation. Some extensive landscape modifications have taken place in this area in the past; for example, sand and gravel quarrying, agricultural activities including mill operations on Richmond Creek, the construction of a fort during the Revolutionary War and landfilling. Nevertheless, in our opinion, this area has medium potential for containing evidence of Native American occupation. Prehistoric sites may still exist in undisturbed areas, particularly along the edge of the salt marsh and Richmond Creek. This general area was probably higher and drier at the time of glacial retreat but has become inundated since then as a result of rising sea

levels.

The study of Native American occupation near marsh land habitats is critical to the understanding of the past lifeways of these people. Therefore, we recommend that any future development work in the area with medium archaeological potential be preceded by archaeological investigations.

II. The Archaeological Sensitivity and Significance of the Twenty-Five Acre Core Area of Richmondtown Restoration

Historic sites with high archaeological potential have been identified within each of the six blocks and two street areas of the historic village (see Figure 3.13:3). The archaeological planning model for Richmondtown provides detailed information on these blocks (Baugher et. al. 1989). Listed below are summaries from that report.

Block 4463

Bounded on the north by Center Street, the east by Tysen Court, the south by Clarke Avenue, and the west by Arthur Kill Road, Block 4463 was located on the southern edge of the colonial village of Richmondtown. Most of the block has a medium potential for yielding significant archaeological material pertaining to the nineteenth century history of Richmondtown. One lot on this block has high potential for yielding archaeological material and several areas have low archaeological potential.

Block 4442

Bounded on the north by Center Street, the east by St. Patrick's Place, the south by Clarke Avenue, and the west by Tysen Court, Block 4442 was located on the eastern outskirts of the colonial village of Richmondtown. Most of the block has medium potential for yielding

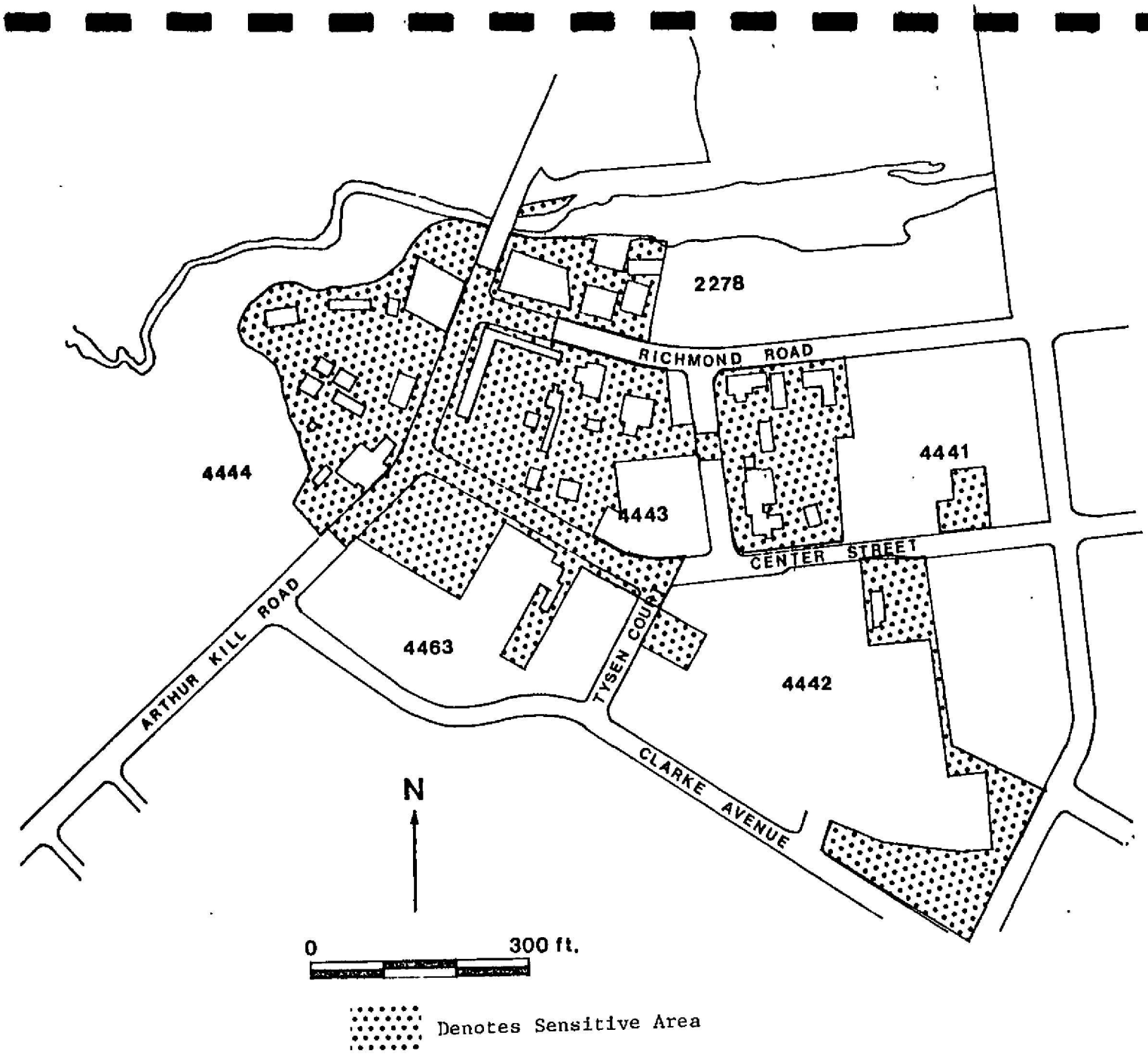


Figure 3.13:3 Archaeological Sensitivity Map of Twenty-Five Acre Core of the Village of Richmondtown

significant archaeological material pertaining to the nineteenth century history of Richmondtown. Two lots on this block have high potential for yielding archaeological material and several areas have low archaeological potential.

Block 4443

Bounded on the north by Richmond Road, the east by Court Place, the south by Center Street, and the west by Arthur Kill Road, Block 4443 was located in the heart of the colonial village of Richmondtown. Most of the block has high potential for yielding significant archaeological material pertaining to the eighteenth and early nineteenth century history of Richmondtown. Part of this block has medium potential for yielding archaeological material and a few areas have low archaeological potential.

Block 4441

Bounded on the north by Richmond Road, the east by St. Patrick's Place, the South by Center Street, and the west by Court Place, Block 4441 was located on the eastern outskirts of the colonial village of Richmondtown. Most of the block has high potential for yielding significant archaeological material pertaining to the nineteenth century history of Richmondtown. One lot on this block has low to medium potential for yielding archaeological material, while several areas have medium archaeological potential.

Block 2278

Block 2278 is a combination of three former blocks, numbers 2293, 2294, and 2295. The property is bounded on the north by Latourette Park, the east by a paper street known as Picadilly Street, the south by Richmond Road, and the west by Richmond Hill Road. The block was located at the

northern edge of the colonial village of Richmondtown. Part of the southwestern portion of the block has high potential for yielding significant archaeological deposits pertaining to the eighteenth and early nineteenth century history of Richmondtown. Another part of this block has medium potential for yielding archaeological deposits and a few areas have low archaeological potential.

Southern Portion of Block 4444, the New Parking Field

The southern portion of Block 4444, the new parking field, is bounded on the northwest by the proposed Richmond Town Road, the south fork of Richmond Creek and the Salt Meadows; on the east by Arthur Kill Road; and on the south by Block 4447. The block was located at the southern edge of the colonial village of Richmondtown. Most of this ten acre parcel is marshland and has low potential for yielding significant archaeological material. One lot on the block has medium potential for yielding significant archaeological deposits.

Northern Portion of Block 4444

Bounded on the north by Richmond Creek, he east by Arthur Kill Road, the south by Lot 35 in the southern portion of Block 4444, and the west by the Fresh Kills, Block 4444 was located in the heart of the colonial village of Richmondtown. Most of the block has a high potential for yielding significant archaeological material pertaining to the seventeenth, eighteenth, and early nineteenth century history of Richmondtown. Part of this block has medium potential for yielding archaeological material and a few areas have low archaeological potential. The following section will discuss the archaeological significance of Block 4444 on a lot by lot basis. The portions of this block that are marsh land are considered to have low archaeological potential.

The One Acre Lot of Block 4444

The one acre lot was bounded on the north by Block 4443 and part of Arthur Kill Road, the east by Block 4442, the south by Block 4463 and part of Arthur Kill Road, and the west by another part of Block 4444. All of this parcel has high potential for yielding significant archaeological material pertaining to the eighteenth and early nineteenth century history of Richmondtown. The lot now forms the bed of Center Street between Arthur Kill Road and Tysen Court. This land has high potential for containing eighteenth and early nineteenth century archaeological deposits. A tavern that operated between c. 1754 and c. 1821 was located here and there may have been a stable (c. 1765) and a house (c. 1765) nearby. This area requires intensive archaeological investigation prior to any in-ground construction activity.

The Streets in the Core Area of Block 4444

The streets in the core area have either high, medium, or low archaeological potential. Water and gas lines with an average depth of four feet have been installed near the curb line of the streets. Over the last eighty years, the routes of the utility lines have been disturbed on numerous occasions and have low archaeological potential. The area in the center of the streets has medium archaeological potential for containing the remains of earlier roadbeds and other features; and in-ground construction in the streets should be monitored.

There are four areas that have high archaeological potential for containing the foundations of eighteenth century structures and associated deposits: 1) Center Street between Arthur Kill Road and Tysen Street, which may contain a tavern, house, and barn c. 1765; 2) the southeastern corner of Richmond Road and Arthur Kill Road, which may contain part of the

Skinner House c. 1759; 3) the northeastern corner of Richmond Road and Arthur Kill Road, which may contain part of the foundation of the first County Court House, 1729, and 4) the middle of Court Place, which may contain the foundation of Swaim's barn built by 1809 and possibly as early as the late eighteenth century.

The Core Area of Block 4444

The land bounded by the southern slope of Richmond Hill on the north, St. Patrick's Place on the east, Clarke Avenue on the south, and the edge of the meadows on the west side of Arthur Kill Road is generally flat, well drained, and elevated above the floor plain of Richmond Creek. In prehistoric times, a creek in this location would have been a good source of potable water. In addition, at least one flowing spring is known to have existed in this area; it was formerly located on the north side of Richmond Creek, approximately 185 feet to the east of Richmond Hill Road (Borough of Richmond Topographic Map, 1911). The surrounding area would have provided ample aquatic faunal, floral, and lithic resources for Native American inhabitants, and the southern portion of the site would have made it a desirable habitation area.

Today, Richmondtown Restoration contains twenty-six historic buildings and many other important historic locations. This twenty-five acre core area contains the original village center and is utilized as a public exhibition and activity area. In our opinion, the potential for finding intact Native American cultural remains is low due to the extensive development, construction and other landscape modifications that have taken place within the village over the past 300 years. This conclusion is supported by our survey results which indicate that despite years of archaeological excavations in several locations, no prehistoric resources

have been found. Finally, as noted earlier, our own field reconnaissance resulted in the recovery of one chert flake from the severely eroding hillside on the north side of the mill pond.

Summary and Conclusions

Documentary research and field reconnaissance of the 100 acre Richmondtown Restoration property has identified numerous cultural resources and potential archaeological sites. Any future development or construction work in these archaeologically sensitive areas should be preceded by a program of data recovery which may include documentary research and field investigations.

CHAPTER 3.14: SNUG HARBOR CULTURAL CENTER

Two archaeological predictive models have previously been completed for Snug Harbor Cultural Center. One study evaluates the main eighty acres of the site (Baugher, Baragli, De Cesare, and Venables 1985), and the other evaluates the five acres of the Snug Harbor shoreline (Baugher and Lenik 1990).

Project Boundaries

Snug Harbor Cultural Center contains two parcels of land separated by a road, Richmond Terrace (see Figure 3.14:1). The main parcel contains eighty acres and is bounded by Richmond Terrace on the north, Tysen Street on the east, Henderson Avenue on the south, and Snug Harbor Road and Kissel Avenue on the west. The shoreline property is a five acre parcel of land with approximately 2,225 linear feet of frontage on Richmond Terrace. It is bounded by the Kill Van Kull on the north, Tyson Street on the east, Richmond Terrace on the south, and the western end of Snug Harbor Road on the west.

History of The Cultural Institution

Snug Harbor Cultural Center is a multi-use cultural resource center on Staten Island owned by the City of New York. The property is listed on the State and National Registers of Historic Places. The buildings and the grounds are being adapted for use as museum space, galleries, a performing arts center, and a botanical garden. Completed projects include the Children's Museum, the conversion of the Chapel into performance space, and the restoration of the Great Hall.

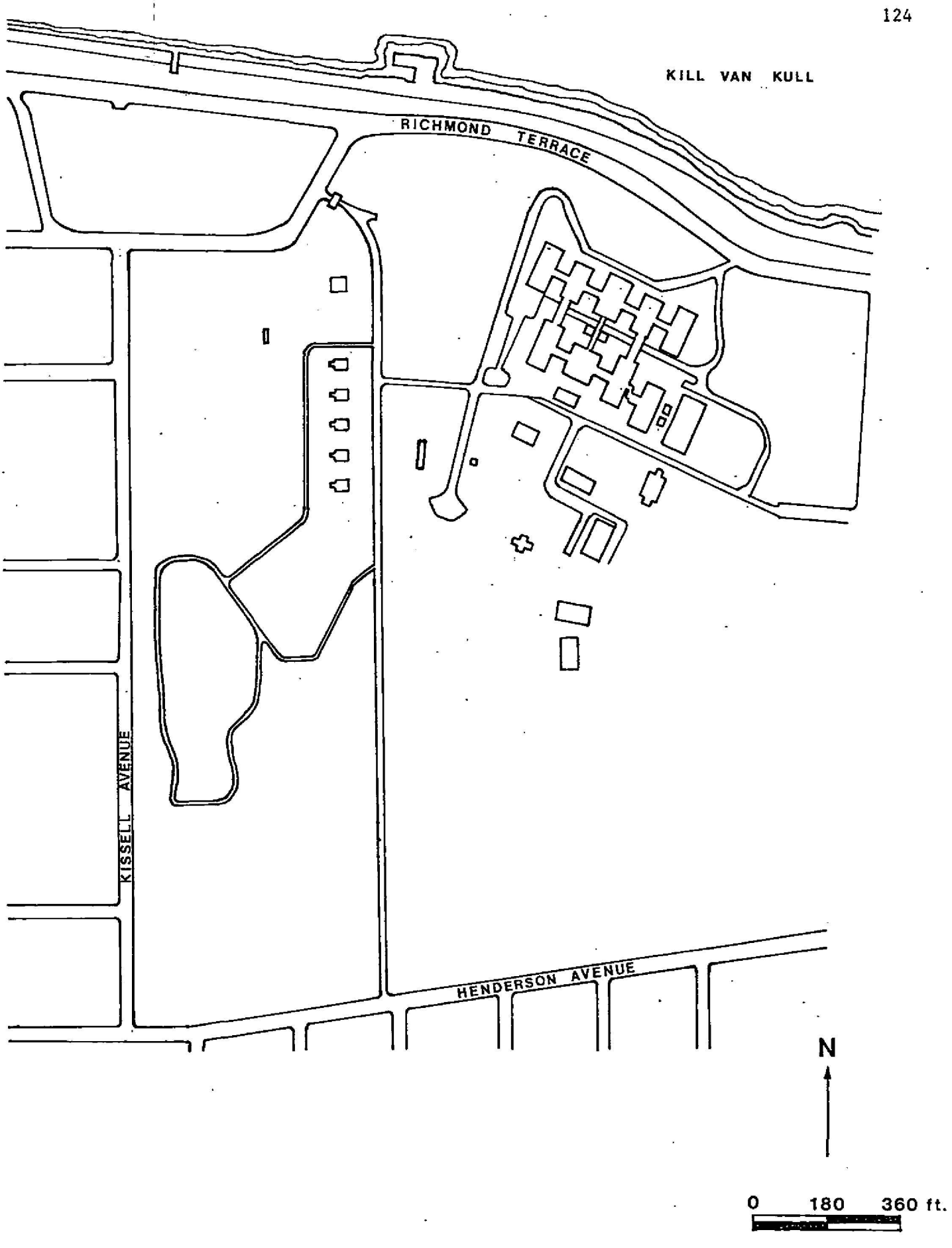


Figure 3.14:1 Base Map of Snug Harbor Cultural Center

Environmental Setting

Geologically, Snug Harbor is considered a part of the Coastal Plain physiographic province. The bedrock geology is archean serpentine which is covered with Pleistocene glacial sediments and marine alluvium. The study area ranges in elevation from sixty feet at the highest point on the property to zero near the creek on the west side and the Kill Van Kull on the north. In general, the site is low and flat with gently sloping terrain from south to north. There are, however, some steep gradients along the west side of the property, bordering on the flood plain of the stream. A small freshwater creek and a marshy area form the western border of the property. In prehistoric and early historic times, the region undoubtedly contained an abundant supply of resources including trees, plants, animals, migratory birds and waterfowl, fish, shellfish, and lithic materials.

Native American Resources

Prior to the seventeenth century, the area along the north shore of Staten Island was apparently one of intense occupation and use. In the early twentieth century, archaeologist Alanson B. Skinner of the American Museum of Natural History surveyed Staten Island and located eleven American Indians sites in the northern section of the island (Skinner 1909:4-16). All of these sites are well outside of the Sailors Snug Harbor property and have a broad time span from c. 6000 B.C. to 1600 A.D.

Archaeological investigations in 1982 and 1985 on the Snug Harbor property resulted in the recovery of a few artifacts of prehistoric origin, namely chert and jasper flakes and a biface (Cotz 1984: 49 and 64; Baugher, DeCesare, and Baragli 1985: 11). Although these specimens were found in disturbed contexts, they do indicate the presence of prehistoric people on

the site. These investigations show that, in general, the Snug Harbor site would have been an excellent location for prehistoric occupation. The site contains flat elevated terraces, overlooking New York Harbor and the Kill Van Kull, that would have been well drained and in close proximity to fresh water and aquatic food resources. A small stream forming the western border of the Snug Harbor property would have provided water, as would two springs, "The Watering Place" in Tompkinsville and the "Hessian Spring" on Jersey Street in New Brighton, both approximately on and one-half miles away (Leng and Davis 1930, vol. 1:9). In conclusion, these data suggest that Native Americans were present on the Snug Harbor property, as portions of the site would have been highly desirable for human occupaation.

Historical Resources

Snug Harbor has had a rich and varied historical past that has been documented extensively elsewhere (Shepherd 1979; Baugher, Baragli, DeCesare, and Venables 1985). The following brief history of the site has been abstracted from these sources. In 1677, Governor Andros of New York granted a patent for land including the Snug Harbor site to Clause Arent, but there is no indication that Arent ever lived on the land. In the mid-eighteeenth century, the properety was owned by John Veghte. In 1786 it was acquired by Richard Houseman who lived in a farmhouse which may have been built by Veghte.

In 1801, Robert Randall, a New York merchant and farmer, endowed Sailors' Snug Harbor in his will to serve aged and injured seamen. However, Randall's will was not probated until 1830, at which time the trustees of Snug Harbor purchased the 130 acre Isaac Houseman farm. the construction of Snug Harbor began in 1831 and the first building was opened in 1833. From 1833 to 1916, the property was extensively developed with

the construction of many new buildings and support facilities. This institution remained in operation until 1972-73 when the buildings and proerty were acquired by the City of New York.

Research and Field Survey Results

An archaeological predictive model of the Snug Harbor Cultural Center was developed in 1985 and 1990 by the New York City Landmarks Preservation Commission (Baugher, Baragli, DeCesare, and Venables 1985; Baugher and Lenik 1990). In addition, archaeological field testing was completed in 1985 in the northwest section, the northeast section, the area of the Chaplain's house, and the area of the Matron's Cottage (Baugher, Baragli, DeCesare 1985; Baugher and Baragli 1986). The reports explain in detail why certain sections of Snug Harbor have low or no archaeological potential, including the shoreline property, the laundry, and the western side of the eighty acre parcel. This report contains a summary of archaeological recommendations (from the above-mentioned reports) for those sites with high archaeological potential. The following sites can be located on the sensitivity map (see Figure 3:14:2).

1. The Northwest Section: This area of Snug Harbor probably contains the buried foundation of a colonial farmhouse. Wells, cisterns, and privies that are associated with this structure are probably within this area as well. In addition, Sailors' Snug Harbor's most colorful controversial governor, Governor Melville, lived at the site and material descarded by the governor and his family may still be buried here.

2. The Main Complex: The courtyards between the buildings have a high probability of containing material discarded by the "Snugs," or residents of the institution. The area also contains nineteenth century cisterns

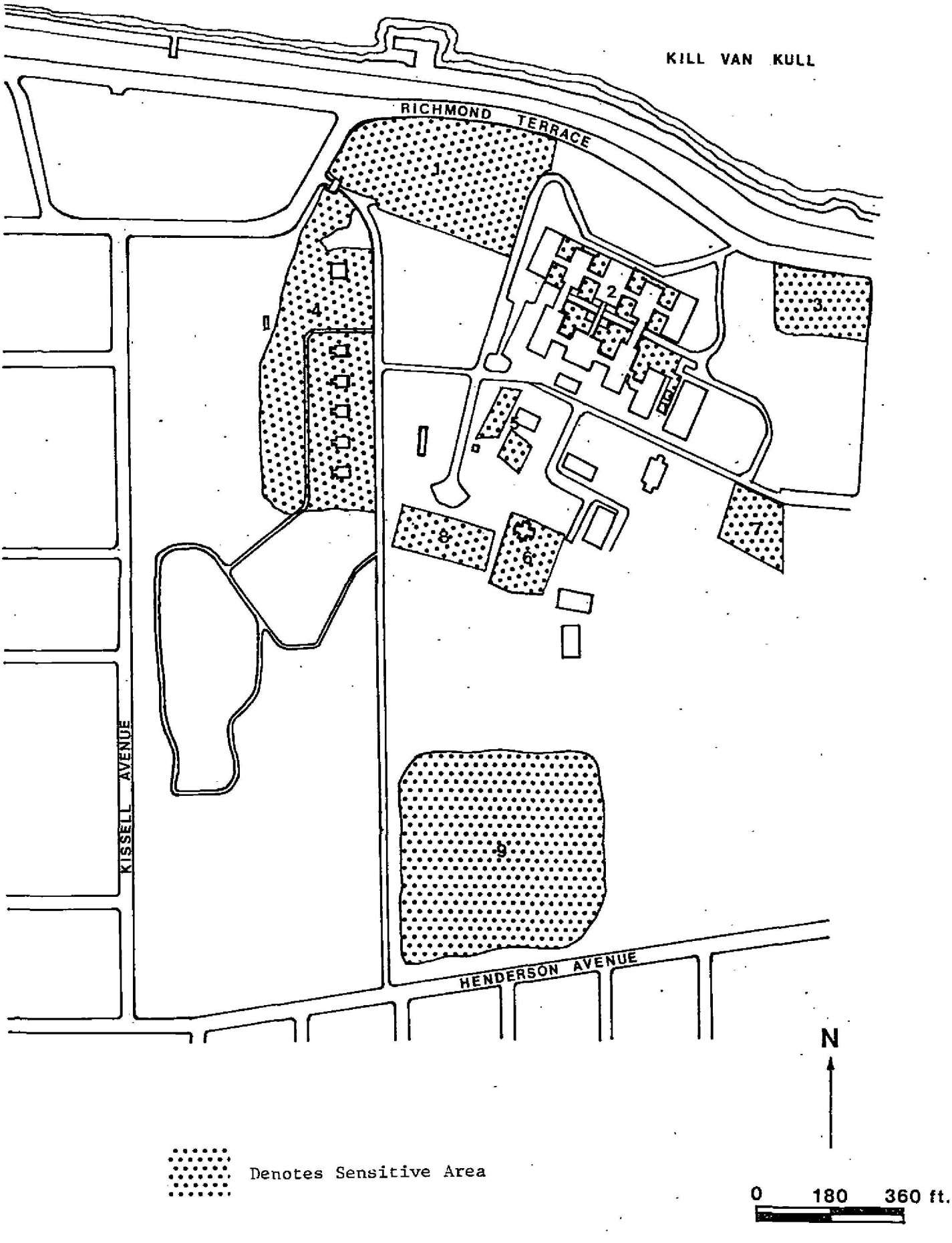


Figure 3.14:2 Archaeological Sensitivity Map of Snug Harbor Cultural Center

which were located by the Department of General Services in their 1984 survey of the site.

3. The Northeast Section: This area probably contains the foundations of the Physician's House and the Tysen House. Wells, privies, and cisterns associated with these two buildings are probably buried in this area as well. the Physician was the second highest ranking individual at the Harbor. The Tysen family was a middle class family who lived outside the original boundary of Snug Harbor during the period 1835-1885.

4. The Cottages: The area behind the cottages has a high potential for containing evidence of Indian occupation and use. The zone is lightly wooded, flat, well-drained land, and is undisturbed. In addition, the land around the cottages may also contain the wells, cisterns, and privies associated with these buildings. These cottages were the homes of the middle-ranking employees at the Harbor.

5. The Western Service Complex: The Matron's Cottage is the only archaeologically significant site in this area. Wells, privies and cisterns associated with the buildings may still be on this site. This site had two distinct periods of occupation: 1) from 1845-1879, the Steward (the accountant and the Assistant Governor) and his wife, who was the Matron, had an apartment in the building as their private residence with the other portion of the building being used as living quarters for the female staff; and 2) from 1879-1900+ the building was used as dormitory space for the Matron (who was no longer the wife of the Steward) and the female employees.

6. The Central Service Complex: Only the area south of the Morgue is archaeolgically significant. This zone probably conatains the buried foundation of a nineteenth cnetury hospital as well as associated privies, cistern, and wells.

7. The Chapel and the Chaplain's House: The northern section of this site contains the buried foundation of the Chaplain's residence. Field testing, however, indicated that the demolition debris associated with the house had been carted away, and that the foundation contained relativiely clean fill. In addition, the yard area was fairly clean. The chaplain's house site is consequently no longer considered significant. The southern-most part of this parcel, however, contains a ridge made by humans which should be tested to ascertain its nature and function.

8. The Hospital Complex: The land surrounding Hosiptal One and Hospital Two is considered archaeologically significant. This site may contain information about the nineteenth century hospital and the employees who worked in it.

9. South End of the Property: This area has a high potential for containing evidence of Indian occupation and use. This area is well-drained, somewhat sheltered, in close proximity to a strean, and undisturbed.

Summary and Conclusion

The two previous studies by the Landmarks Preservation Commission have identified several high potential archaeological zones within the study area (see Figure 3.14:2). Any future development or construction work in these areas should be preceded by a program of cultural resource investigation including documentary research and archaeological fieldwork.

CHAPTER 3.15: STATEN ISLAND ZOOLOGICAL SOCIETY

Project Boundaries

The Staten Island Zoo is located in north-central Staten Island. It is bordered on the north by private lands, on the east by Broadway, on the south by Glenwood Avenue, and on the west by Clove Road (see Figure 3.15:1).

History of the Cultural Institution

The Staten Island Zoo was opened to the public on June 10, 1936. Prior to that time, this eight acre tract was the estate of Mrs. Edward E. Hardin who willed the property to the City of New York. The Hardin Mansion was converted to a natural history museum and a zoological building was constructed to house live exhibits.

The Zoo is operated by the Staten Island Zoological Society. It functions as an institute for the study of natural history. Its collection include mammals, birds, reptiles, and fish. The Society offers formal education programs on the beauty and wonders of nature, life, and environments.

Environmental Setting

In geological terms, the site of the Staten Island Zoo is considered a part of the Coastal Plain physiographic province. The bedrock geology is archean serpentine which is covered with Pleistocene glacial sediments and marine alluvium (Leng and Davis 1930: 14).

The present topography of the area can be characterized as elevated and flat; the elevation of the site is approximately 150 feet above mean sea level. At one time, a stream flowed northward from a spring at Clove Road and Victory Boulevard, past the Zoological Park to the east, and into

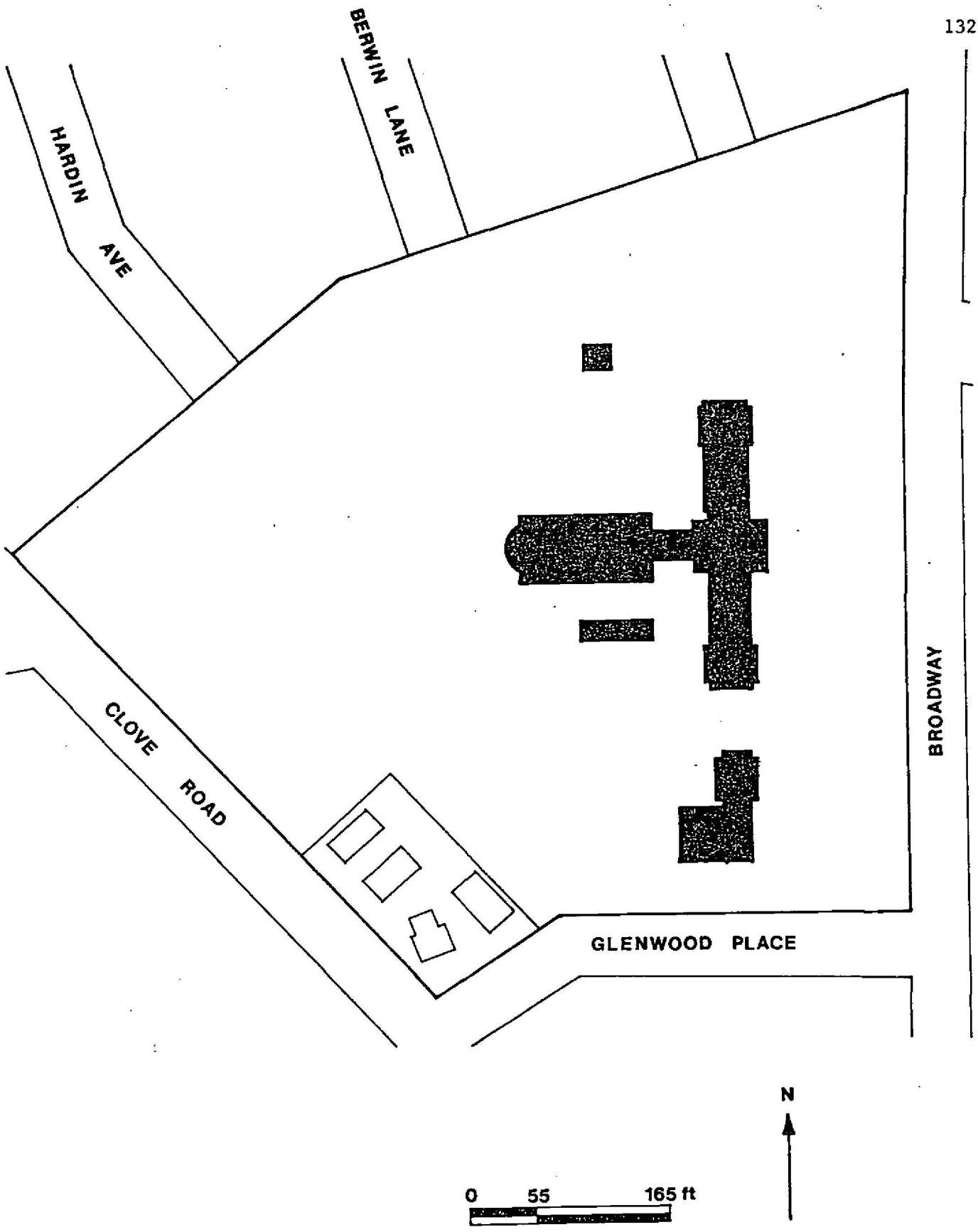


Figure 3.15:1 Base Map of Staten Island Zoological Society

the Kill Van Kull (Beers 1887). In the nineteenth century this stream was damned to form several lakes or ponds which are now part of Clove Lakes Park (Beers 1874).

Native American Resources

In prehistoric times, the northern portion of Staten Island was intensely occupied and used by Native American peoples. In the early twentieth century, archaeologist Alanson B. Skinner of the American Museum of Natural History surveyed and located twenty-four prehistoric sites on Staten Island, eleven of which are located in the northern section of the Island. Skinner (1909: 4-16) shows sites located in close proximity to the Zoological Park, namely Numbers 1 and 2 at West New Brighton, and Numbers 18, 19, 20, and 21 in various locations of New Brighton. Parker (1920: 685), in his archaeological survey of Staten Island, recorded the existence of a camp site near the junction of Bard Avenue and Clove Road. No prehistoric sites were recorded within the Staten Island Zoo study area.

Historical Resources

Documentary research, particularly a study of early maps, has revealed that several historic period structures were once located on the site. During the nineteenth century and into the early twentieth century the study area was part of the estates of Jose Manzanado, and later Major Clarence T. Barrett (Beers 1874, 1887; Lefevre 1897; Robinson and Pigeon 1907; Sanborn 1917). Each of these estates had a manor house and two to three associated structures. The Manzanado estate first appears on the 1874 Beers map, but by 1907 it is no longer shown on the insurance maps of the area. The Barrett estate first appears on the 1887 Beers map and was occupied by the family until 1917 when ownership passed to Colonel E.E.

Hardin (Sanborn 1917). In 1936, construction began on the Zoological Society buildings (Sanborn 1937). Numerous and large scale building projects have been completed since that time.

Research and Field Survey Results

An intensive pedestrian survey was conducted in the entire Zoological Park in an attempt to locate prehistoric or historic remains and to evaluate the archaeological potential of the property. No historic sites were found. The southwest portion of the site, however, bordering on Clove Road, appears to have potential for containing prehistoric remains (see Figure 3.15:2). The geomorphological characteristics of this area suggest that the site would have been suitable for prehistoric occupation. It is a flat elevated terrace, well drained, and apparently relatively undisturbed, with a nearby potable water supply, i.e., the stream to the west, and floral, faunal, and lithic sources. The balance of the site has been greatly disturbed by nineteenth and twentieth century construction activity and therefore the potential for finding in situ prehistoric remains is low.

Summary and Conclusion

The potential for finding historic period cultural remains is low due to the excessive construction work and land alterations that have taken place at the site. However, the southwest section of the park appears to have some potential for containing evidence of Indian occupation (see Figure 3.15:2). Therefore, this section of the property has medium archaeological sensitivity, and archaeological testing should be conducted to determine the presence or absence of prehistoric cultrual remains prior to any proposed construction activity.

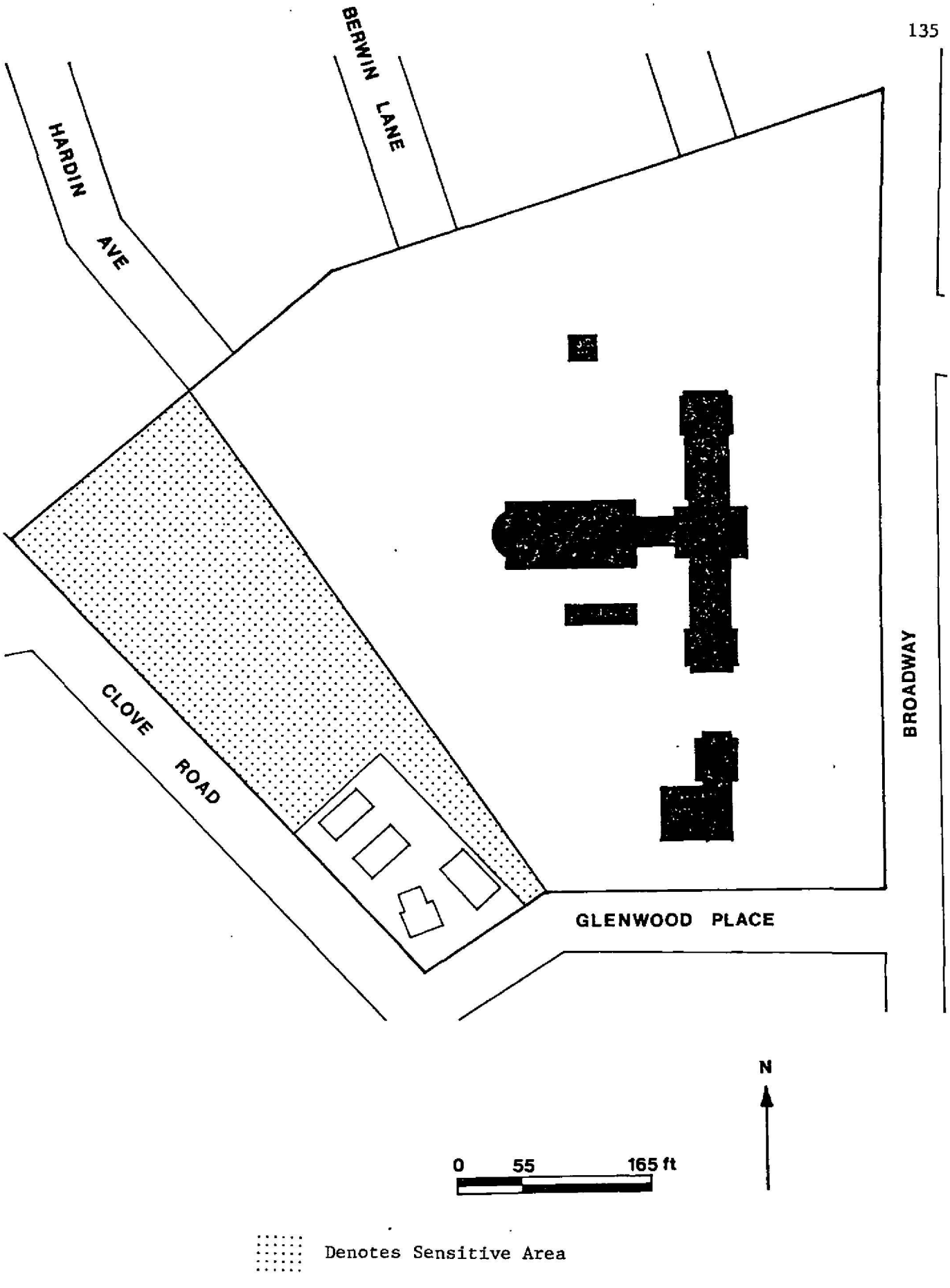


Figure 3.15:2 Archaeological Sensitivity Map of Staten Island Zoological Society

CHAPTER FOUR: ARCHAEOLOGICAL RECOMMENDATIONS

Sherene Baugher
Edward J. Lenik

CHAPTER FOUR: RECOMMENDATIONS FOR THE FIFTEEN CULTURAL INSTITUTIONS

Introduction

This chapter summarizes the archaeological potential and sensitivity of the fifteen cultural institutions selected for this study and illustrates the various zones of sensitivity for each institution. Eight of the institutions studied of have low archaeological potential because of prior disturbance of the landscape primarily due to construction or landfill (see Table 4:1). In some cases, documentary research and field reconnaissance found no evidence of prehistoric or historic archaeological resources. The seven other institutions do have archaeological potential (see Table 4:2). These institutions were evaluated in terms of degree of sensitivity (high, medium, or low). Sensitivity ratings are assigned to the various sites along with the level of investigation recommended prior to or during any construction activity at these sites. Four cultural institutions, The New York Botanical Garden, the Bronx Zoo, Richmondtown Restoration, and Snug Harbor Cultural Center, have high archaeological potential. Wave Hill, the Metropolitan Museum of Art and the Staten Island Zoo have medium archaeological potential. Archaeological reports, which are the product of any level of investigation, should follow the Secretary of the Interior's Standards as defined in the Federal Register, Volume 4, Number 140 dated September 24, 1983.

Site Sensitivity Criteria

The sensitivity ratings presented in this report are based on a thorough analysis of all the data compiled in this study. The projects boundaries of each institution are subdivided into sections of high, medium, and low sensitivity with respect to the presence of archaeological

resources. These sensitivity ratings are defined as follows:

1. HIGH SENSITIVITY: This rating is assigned to undisturbed land containing known or documented historic structures, ruins, features, or prehistoric (American Indian) materials considered to be culturally significant. These sites require intensive archaeological investigations prior to any in-ground construction. An in-depth archaeological documentary study should be undertaken to determine the precise location of sites that require field testing. In some cases, the study may uncover data not evaluated in the preliminary study (due to the time and financial constraints and the goals of the preliminary study) documenting disturbance to the site. If a major disturbance is identified by the archaeologist, then the site will not require any further work. However, if the site is undisturbed, archaeological fieldwork will be required. Fieldwork may include data recovery excavations or intensive testing. If archaeological testing is inconclusive, then construction activity should be monitored.

Ratings of high sensitivity for unknown prehistoric (Native American) sites are based on several environmental and geomorphological conditions that favor prehistoric occupation, such as level land with well-drained soil, a readily available potable water source, a plentiful food supply as indicated by the presence of lakes, rivers, streams, swamps, wetlands and other prime hunting and gathering loci, and in some instances, the availability of lithic and other raw material resources.

Ratings of high sensitivity for historic sites reflect their potential for yielding significant cultural information relating to specific archaeological research questions of a local, regional, or national concern.

2. MEDIUM SENSITIVITY: This rating is assigned to somewhat disturbed land containing known or documented historic structures, ruins,

features, or prehistoric materials. Historic sites require archaeological monitoring during any in-ground construction. Possible prehistoric sites require archaeological testing to determine the presence or absence of cultural remains.

Prehistoric zones characterized as having medium sensitivity are areas that contain food and water resources but lack ideal landscape conditions, e.g., a gentle slope, or an area with less than optimum drainage.

Historic sites that meet the criteria of high sensitivity but are located in areas of some disturbance are considered to have medium potential for containing intact archaeological deposits. In addition, historic sites in undisturbed areas that have limited documented use or occupation, or late nineteenth century sites that have good documentation but indicate frequent turnover in use or occupation which may result in the mixing of archaeological deposits, are considered to have medium archaeological potential.

3. LOW SENSITIVITY: This rating is assigned to heavily disturbed sections, or those areas containing minimal conditions necessary for human occupation and little to no documentary evidence of historic occupation or use of the land. These areas require no further archaeological investigation.

This sensitivity rating also includes those areas that are considered unsuitable for human occupation because of physical conditions such as steep slopes, extremely stony conditions, or natural wetlands, or the archaeological integrity of such areas has been destroyed by such activities as quarrying, road building, excavation, construction, etc. These areas require no further archaeological investigation.

Archaeological Documentary Study

In order to identify known or potential archaeological resources an intensive literature search should be carried out in libraries and archives. The primary sources to be examined should include: deeds, mortgages, wills, letters of administration, tax records, road records, census records, City directories, and historic maps. In order to determine site disturbance, records with the following City Agencies should be evaluated: Buildings Department, Bureau of Water Supply, and the Department of Parks and Recreation. Local historical society and local museum archives should be checked to determine if they contain records of archaeological reports from the nineteenth and twenthieth centuries documenting fieldwork on or near the site in question. Interviews should be conducted with historians, enviromentalists, and avocational archaeologists/collectors to elicit information about the location and the nature of American Indian and historic sites, and to determine the land use within the project area. Primary data (if available) should be sought from all of the people interviewed including archaeological site reports, site maps, and photographs.

Archaeological Testing

This level of archaeological investigation consists of excavation for the purpose of locating buried features and artifacts. The test units should be excavated in those areas judged to have high archaeological sensitivity. These archaeological tests can take the following form:

1. One foot by one foot shovel tests excavated to culturally sterile depths, or

2. Large size test units, e.g., 2′ x 2′, 3′ x 3′, or 5′ x 5′, in order to examine and assess the potential of any cultural features

uncovered.

The artifacts recovered in testing should be washed, identified, catalogued, and analyzed by the LPC archaeology staff, and documented in an archaeological field testing report. The field report should indicate if any further investigation is required and the level of additional research. The next level of field investigation may result in mitigation (data recovery) excavation or in monitoring.

Mitigation or Data Recovery Excavations

Data recovery excavations should be undertaken when land use or construction programs will adversely affect important archaeological resources and preservation in place is not possible. These excavations are intensive in nature and designed to recover maximum data relevant to important research questions or museum requirements. The data recovery excavations should be conducted within an appropriate interdisciplinary framework and field strategies selected to ensure the collection of data needed to address the research questions. The cultural material recovered from such excavations should be cleaned, catalogued, identified, and analyzed. A complete and illustrated excavation report should be produced.

Archaeological Monitoring

This level of archaeological investigation consists of the observation of below-ground construction activity for the purpose of locating, recording, and recovering data pertaining to prehistoric or historic features and artifacts. During the excavation phase of any development activity, an archaeologist from LPC will be present at the site to observe the soils as they are being excavated and removed. The archaeologist will examine and record the soil profiles, or stratigraphy, in the area of excavation where appropriate. The archaeologist will search

for evidence of cultural features such as foundations, privies, prehistoric post molds, pits, and hearths. The archaeologist will examine the soil as it is being removed for the presence of prehistoric or historic artifacts. If a prehistoric or historic feature is uncovered by the construction work, the archaeologist shall halt the construction activity, determine the potential significance of the find, and recommend the appropriate work. The archaeologist will provide the Department of Cultural Affairs with an estimate of time and cost necessary to complete such recovery. After receiving approval from DCA, the LPC archaeological staff will undertake appropriate field investigation and recording. At the conclusion of such measures, the construction work and archaeological monitoring will resume until the completion of the project.

The artifacts recovered in monitoring work will be washed, identified, catalogued, and analyzed by the LPC archaeology staff. An archaeological monitoring report will be produced.

Table 4:1 Summary of Archaeological Potential of the Fifteen Cultural Institutions

Archaeological Institution	Sensitivity Rating	Additonal Work Required
Bronx:		
New York Botanical Garden	High	Yes
New York Zoological Society/Bronx Zoo	High	Yes
Wave Hill	Medium	Yes
Brooklyn:		
Brooklyn Botanic Garden	Low	No
Brooklyn Museum	Low	No
Manhattan:		
American Museum of Natural History	Low	No
Metropolitan Museum of Art	Medium	Yes
Museum of the City of New York	Low	No
Queens:		
New York Hall of Science	Low	No
Queens Botanical Garden	Low	No
Queens Museum	Low	No
Theater in the Park	Low	No
Staten Island:		
Richmondtown Restoration	High	Yes
Snug Harbor Cultural Center	High	Yes
Staten Island Zoo	Medium	Yes

Table 4:2 Summary of the Resources at the Seven Institutions with Archaeological Potential

Institution	Potential Native American Site	Historic Site
Bronx:		
New York Botanical Garden	Yes	Yes
New York Zoological Society/Bronx Zoo	Yes	Yes
Wave Hill	Yes	Yes
Manhattan:		
Metropolitan Museum of Art	No	Yes
Staten Island:		
Richmondtown Restoration	Yes	Yes
Snug Harbor Cultural Center	Yes	Yes
Staten Island Zoo	Yes	No

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