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2003 USACE
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Contract No. DACW51-01-D-0018
Work Order No. 0009

U.S. Army Corps
of Engineers
New York District

PHASE IA CULTURAL RESOURCES INVESTIGATION OF
THE HUDSON-RARITAN ESTUARY ECOSYSTEM
RESTORATION PROJECT, SHERMAN CREEK,
NEW YORK CITY, NEW YORK

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FINAL REPORT

July 2003

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2390 Clinton Street
Buffalo, New York 14227

PREPARED FOR:

Northern Ecological Associates, Inc.
451 Presumpscot Street
Portland, Maine 04103

UNDER CONTRACT TO:

Environmental Analysis Branch
Environmental Assessment Section
U.S. Department of the Army
New York District, Corps of Engineers
26 Federal Plaza
New York, NY 10278-0090

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July 2003

Management Summary

Project Name. Phase IA Cultural Resources Investigation for the Hudson-Raritan Estuary Ecosystem Restoration Project, Sherman Creek, New York County, New York.

Project Background. Panamerican Consultants, Inc. (PCI) was contracted by Northern Ecological Associates, Inc. to conduct a reconnaissance level survey for the Sherman Creek project area located at the north end of Manhattan Island in New York County, New York, for the U.S. Army Corps of Engineers, New York District (USACE). As part of the Hudson-Raritan Estuary Ecosystem Restoration Project, the USACE is examining Sherman Creek as one of thirteen areas for possible restoration from a degraded environment.

Project Location and Environmental Setting. The Sherman Creek Area of Potential Effect (APE) is bounded by Tenth Avenue on the west, Academy Street on the north, Harlem River on the east, and Marginal Street on the south. This area is within an urban setting characterized by industrial, commercial, and residential properties. The APE is comprised of aquatic, wetland, and made upland habitats that have been affected by fill deposition, dredging, and pollution. Elevations in the project area do not exceed 4.5 m (15 ft) above mean sea level.

Purpose and Goals. The proposed restoration includes the enhancement and creation of aquatic, wetland, and associated upland habitats (USACE 2002:1). The Phase IA cultural resource investigation was conducted to assess the potential for encountering cultural resources (i.e., archaeological sensitivity) within the APE.

Regulatory Basis. The U.S. Army Corps of Engineers (USACE), as a federal agency, has management responsibilities concerning the protection and preservation of cultural resources on land it controls or uses. Federal statutes require USACE to identify and evaluate significant cultural resources on these properties, and include National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et. seq.*) through 1992 (which includes Section 106 compliance); the Advisory Council on Historic Preservation Guidelines for the Protection of Cultural and Historic Properties (36 CFR Part 800); as well as Army Regulation (AR) 200-4 "Cultural Resources Management."

Cultural Resources Survey Work Completed. Background research and field inspection were conducted for the project area as part of the Phase IA investigation. Background research included a review of historic documents, previous research reports, a site file check, and historic map analysis. Repositories visited include the New York Public Library, General Research, Local History and Genealogy, and Map Divisions; New York City Landmarks Preservation Commission; New York State Office of Parks, Recreation and Historic Preservation, Field Service Bureau; and the U.S. Army Corps of Engineers New York District. Field investigations included walkover reconnaissance and photographic documentation.

Survey Results. Background research results show this location to be very sensitive for cultural resources, barring soil disturbances. Several prehistoric sites were identified in northern Manhattan in the nineteenth and early twentieth centuries and the APE was the site of a battle during the Revolutionary War. Remains associated with the Revolutionary War's "Holland Ferry" camp were found during excavations in the late nineteenth and early twentieth centuries.

Maps examined dating from 1815 through 1885 did not depict structures within the project area. Piers and boat houses were shown within the location of the APE on maps through the twentieth century. Boat wrecks are apparent on aerial maps as recent as 1998. However, older historic maps did not identify wrecks in the Sherman Creek project area.

Field investigation of the APE was conducted at low tide. The central portion of the APE was exposed open tidal mud flat with modern garbage and abandoned boat remains scattered across it. A small channel connects the Harlem River to a storm drain opening in a bulkhead that runs along the north edge of the APE. The bulkhead is a corrugated metal barrier parallel and adjacent to the former Academy Street and Con Ed generating plant (currently a fenced parking area). Brick pavement, presumably remnants of Academy Street, are also present along the northern boundary of the APE. The dilapidated remains of a docking area are present along the north shore of Sherman Creek at the Harlem River.

The western edge of the APE is a fenced lot that contains a former gas station and asphalt lot currently used by the New York City Parks Department. The southern edge of the APE, between Marginal Street and the Sherman Creek tidal mud flat, is mostly sloped and has been created by the deposition of large amounts of fill. It is overgrown with mature deciduous trees, brush, and vines (e.g., wild grape, poison ivy). The top of the slope has makeshift bank stabilization elements including cut stone slabs and horizontally placed steel street light polls. *Phragmites* are located on the fringe of the mud flat at the base of the slope.

Cultural features were present within the Sherman Creek APE that appear to be remnants of twentieth century marina activities including: wooden pier/mooring piles; boat launch remains (e.g., metal rails, wooden piles and dilapidated steel and wood staircase); a poured concrete platform/base; and the remains of abandoned boats scattered across the tidal mud flat.

Conclusions and Recommendations. The archaeological sensitivity for prehistoric and historic cultural resources within the APE is very low due to substantial historic and modern landscape modifications. The majority of the APE (approximately two thirds [4-acres] is tidal mud flat that has been historically inundated and has been dredged and utilized throughout the twentieth century. Remains found across the tidal mud flat do not appear to be cultural resources, but are badly damaged remnants of twentieth-century marina activities

The south and west sides of the APE are made land consisting of large amounts of fill dumped into the Sherman Creek embayment. These areas were historically low and wet as part of a larger embayment and a more extensive creek. Therefore, the likelihood for the presence of cultural resources is low. The northern edge of the APE (adjacent to former Academy Street) has been altered by construction of the former Consolidated Edison (Con Ed) power generating plant with an associated bulkhead and boat docking area. This portion of the APE is sensitive for cultural resources associated with the Revolutionary War Holland's Ferry camp. Few objects have previously been found on the north shore of Sherman's Bay and the construction of the Con Ed facility most likely destroyed any formerly intact archaeological deposits. Based on these results, further investigation of the Sherman Creek project area is not recommended.

Copies of this report are on file at the U.S. Army Corps of Engineers, New York District office (USACE) and the State Historic Preservation Office (SHPO) of the New York State Office of Parks, Recreation, and Historic Preservation (NYS OPRHP). Project materials will be kept at PCI's Buffalo laboratory until the final report is accepted and then submitted to USACE.

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1.0 Introduction

Panamerican Consultants, Inc. (PCI) was contracted by Northern Ecological Associates, Inc. to conduct a cultural resources documentary study of the Sherman Creek estuary for the U.S. Army Corps of Engineers, New York District (USACE). Located at the north end of Manhattan Island in New York County, New York, the Sherman Creek estuary is among thirteen areas considered as part of the Hudson-Raritan Estuary Ecosystem Restoration Project. USACE is assessing this location to identify and inventory water resources and sediment quality problems related to the enhancement and creation of aquatic, wetland, and adjacent upland habitats (USACE 2002:1). The Area of Potential Effect (APE) is bounded by Tenth Avenue on the west, Academy Street on the north, the Harlem River on the east, and Marginal Street on the south (Figure 1.1).

The purpose of this Phase IA cultural resources investigation is to assess the potential for encountering cultural resources (i.e., archaeological sensitivity) within the APE. This investigation includes documentary and background research, historic map analysis, a site file check, and walkover reconnaissance. The field investigation was conducted during the week of December 8, 2002. Dr. Michael A. Cinquino served as Project Director. Mr. Robert J. Hanley, M.A., served as Principal Investigator and Project Archeologist. Ms. Kelly Nolte, M.A., served as Historian. Mr. Daniel M. Cadzow served as Field Director. Mr. Arnold Pickman served as Research Historian. Ms. Lynn Rakos, USACE Project Archaeologist, was the technical point of contact between PCI and USACE.

The Phase IA cultural resource survey was conducted in compliance with the National Historic Preservation Act as amended through 1992, the National Environmental Policy Act of 1969, Archeological Resources Protection Act of 1979 (18 CFR 1312, 32 CFR 229, 36 CFR 296, and 43 CFR 7), Archaeological and Historic Preservation Act of 1974 (Public Law 93-291; 16USC 469-469c), Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601), Curation of Federally-Owned and Administered Collections, September 12, 1990 (36 CFR 79) and the Advisory Council Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800) as well as Army Regulation (AR) 200-4 "Cultural Resources Management." The survey also complied with the New York State Historic Preservation Office (NYSHPO) guidelines for preparing cultural resource reports.

Project materials (e.g., photograph negatives, field notes) will be held at PCI's Buffalo Office until completion of the project and submitted to USACE upon acceptance of the final report.



Figure 1.1. Location of the Sherman Creek project area within the City of New York, New York County, New York (USGS 7.5' Quadrangles, Central Park, NY, 1975 [1966]; Yonkers, NY, 1990 [1966]).

2.0 Research Design

2.1 OBJECTIVES

The Phase IA cultural resources investigation is designed to determine the presence or absence of cultural resources within the Area of Potential Effect (APE) by conducting field inspection and historic, architectural and map research. Impacts on cultural resources that could result from the proposed ecosystem restoration are also assessed as part of this investigation. Cultural remains, if present, are considered a cultural resource when they exhibit the appropriate qualities required for National Register of Historic Places (NRHP) eligibility. The Criteria of Evaluation (36 CFR 60) as outlined in the National Park Service Publication, "Guidelines for Local Surveys: A Basis for Preservation Planning" (National Register Bulletin 15), include:

Criterion A: (Event) Properties that are associated with events that have made a significant contribution to the broad patterns of our history; or

Criterion B: (Person) Properties that are associated with the lives of persons significant in our past; or

Criterion C: (Design/Construction) Properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

Criterion D: (Information Potential) Properties that have yielded, or may be likely to yield, information important in prehistory or history (NPS Bulletin 15, referencing 36 CFR Part 60).

For a cultural resource to be considered eligible for listing in the National Register it must be evaluated within its historic context and shown to be significant for one or more of the four criteria listed above. The cultural property (e.g., archaeological site, historic structure or landscape) must also retain the historic integrity of those features necessary to convey its significance. The information likely to be recovered from the cultural resource must confirm, refute, or supplement, in an important way, existing information. A property is not eligible if it cannot be related to a particular time period or cultural group and thereby lacks any historic context to evaluate the importance of the information to be collected (NPS Bulletin 15, pp. 3, 22).

Integrity is defined as *the ability of a property to convey its significance* (NPS Bulletin 15, p. 44). To merit eligibility, a property must be significant and must also have integrity. Seven aspects of integrity recognized by the National Register are location, design, setting, materials, workmanship, feeling, and association. (For a more detailed description of each aspect see NPS Bulletin 15, pp. 44-45).

2.2 PROPERTIES INVESTIGATED AND RECORDED

The Sherman Creek project area is an approximately 6½-acre (2.6-hectare) embayment of the Harlem River that is bounded by 10th Avenue on the west, a former Consolidated-Edison (Con Ed) power-plant facility on the north (Academy Street), Harlem River on the east, and

Marginal Street on the south (see Figure 1.1). Approximately 4 acres (1.6 hectares) of the APE is a tidal mud flat that includes the remains of Sherman Creek. The remaining 2½ acres (1 hectare) are sloped fill upland located primarily along the south and west sides of the APE. This investigation focused on the APE, but review of site files and previous research also includes the surrounding area.

2.3 METHODS TO ADDRESS THE RESEARCH OBJECTIVES

2.3.1 Background Research. Review of historic documents provides information on former and present environmental conditions and setting. This information is critical for the proper assessment of archaeological sensitivity, particularly for judging the likelihood of prehistoric archaeological remains. Background research included a review of historic documents, environmental studies, and previous reports appropriate for the project area. Repositories visited include the New York Public Library, General Research, Local History and Genealogy, and Map Divisions; New York City Landmarks Preservation Commission; New York State Office of Parks, Recreation and Historic Preservation, Field Service Bureau (OPRHP); and the U.S. Army Corps of Engineers, New York District.

The review of previous investigations such as cultural resource management reports is also an important part of the background research. Information from such sources includes various methodological approaches, interpretations, and recommendations regarding properties in or adjacent to the Sherman Creek project area.

2.3.2 Field Methods. Walkover reconnaissance was conducted to identify any exposed cultural resources. The degree of soil disturbance (e.g., fill deposition, soil stripping, bank enhancement, development) is also assessed during reconnaissance. Greater impacts reduce the likelihood of intact cultural deposits thus reducing the archaeological sensitivity at disturbed locations. Archaeological sensitivity is also assessed by comparing background results with field observations. Map documented landscapes are compared with field observations to help determine the degree of modifications (i.e., potential disturbance).

Photographs were taken to document the APE including pertinent views of cultural features, environmental setting and disturbances affecting archaeological sensitivity. Black and white print film and color slide film were used for photographic documentation per the the Scope of Work (USACE 2002:8).

2.3.3 Problems or Biases Encountered. No serious problems or biases were encountered during the investigation. Although snow was present during the field investigation, it did not greatly impede visual reconnaissance or accessibility.

3.0 Background Research

3.1 PHYSICAL SETTING

Sherman Creek is a small embayment along the west side of the Harlem River at the northern end of Manhattan Island, New York County, New York. It is located within an urban setting characterized by industrial, commercial, municipal, and residential properties. Fenced asphalt lots used for vehicle parking are located north of the APE on the site of a former Con Edison power generating plant (Figure 3.1). Dyckman Houses public housing complex (Figure 3.2) and Public School #5 (Figure 3.3) are respectively located west and south of the APE. At the end of Marginal Street is a wetlands education center and a private boat club marina (Figures 3.4 and 3.5). Sherman Creek was a tidal creek with tidal wetland habitats prior to urbanization in the early twentieth century (USACE 2002:2). Elevations in the project area range from sea level to approximately 4.5 m (15 ft) amsl. The north bank is a mix of corrugated steel bulkhead with storm sewer outlets, concrete, and rip rap shore reinforcement (see Figure 3.1). The southern and western edges have been filled and graded to facilitate the construction of roadways and various nearby structures.

3.1.1 Physiology and Geology. The Sherman Creek APE comprises tidal flats and made land. It is situated within the Manhattan Prong Geological Subprovince of Southeastern New York State. The Manhattan Prong, encompassing most of Westchester County, a corner of Putnam County, Manhattan, and the Bronx, is principally comprised of metamorphic rocks. The Hudson River lies in a band of Weak Inwood Marble which formed during the Cambrian-Ordovician period of the Paleozoic Era approximately 450 to 550 million years ago (Van Diver 1985:60-3& 79).

3.1.2 Hydrology and Soil Characteristics. The APE is the mouth of a former tidal creek (Sherman Creek). Massive urban development has covered the former creek leaving only an embayment on the west side of the Harlem River. This tidal mud flat of the embayment has a small meandering channel connecting a storm sewer outlet and the river that is exposed at low tide. This location is approximately 6.4 km (4 mi) north of its confluence with the East River.

The U.S. Department of Agriculture (USDA) Soil Conservation Service has not produced a Soil Survey Report of New York County. According to the General Soil Map of New York State (Cline and Marshall 1976), the project area is within an unclassified soil area which is described as urban land.

3.2 PALEOENVIRONMENT

The deglaciation of North America began about 18,000 years ago (Pielou 1991). Although models of the deglaciation differ, and do not always accommodate the radiocarbon chronology derived from floral remains and Pleistocene fauna, radiocarbon dates indicate the likelihood that the glacial ice had disappeared between 13,000 and 16,000 years ago (Funk 1993:43-44; Marshall 1982:17). A mix of tundra and coniferous and deciduous forest persisted in the vicinity of the project area until about 14,000 years ago. This biome provided important habitats for large mammals and other game significant to human subsistence. Pleistocene megafauna roamed the northeastern United States, and included such species as mammoth, mastodon, great



Figure 3.1. Fenced lots north of the APE at the location of the former Con Ed power generating plant (background) and boat remains in the mud flat (foreground), facing northeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 3.2. The Sherman Creek mud flat (foreground) in the APE and the Dyckman Houses public housing complex (background) west of the APE, facing northwest. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 3.3. Property south of the APE including Marginal Street and Public School No. 5, facing south. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 3.4. Wood shingle boathouse associated with the marina east of the APE (background) and wood piles of former piers or docks in the mud flat within the APE (foreground), facing southeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 3.5. Fenced parking area associated with marina east of the APE, facing southeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).

beaver, fossil bear, and moose-elk. Other northeastern varieties of these species adapted to the new environment and included fossil peccary, fox, seal, white-tailed deer, wolf, caribou, moose, elk, and bison (Marshall 1982:17-18; Funk 1972:11, 1976: 208-210; Ritchie 1980:10-11; Salwen 1975). With deglaciation, the megafauna declined in population to be replaced by more temperate species that migrated into the area.

Following the Pleistocene era, environmental conditions ameliorated leading to the reforestation of the northeast and the gradual emergence of relatively modern types of forest about 10,000 years ago. By 8,500 years ago the world's temperature had warmed sufficiently for a variety of deciduous tree species to become abundant (Funk 1976:209-210; Marshall 1982: 21; Kraft and Mounier 1982:60).

3.3 CULTURAL BACKGROUND

3.3.1 Prehistoric Overview. The prehistory of northeastern North America is marked by three major periods spanning about 12,500 years. The earliest of these periods is the Paleo-Indian which lasted from 11,000 to 8000 BC. Paleo-Indians lived in seasonal camps near fresh water sources and at lithic workshops. They subsisted by hunting and gathering. The Paleo-Indian was followed by the Archaic period which lasted from 8000 to 1000 BC and was characterized by seasonally occupied campsites and later by seasonal villages. The Archaic subsistence system was hunting and gathering and possibly incipient horticulture toward the end of the period. After 1000 BC, Native Americans of the Woodland period lived in seasonally occupied villages and campsites and subsisted by hunting, gathering, and by AD 1000, horticulture. It was during this period that ceramics were first made in northeastern North America. These periods are described in more detail below.

Paleo-Indian Period. Paleo-Indian cultures were adapted to a late-Pleistocene tundra or park tundra environment. Paleo-Indians were highly mobile people whose search for food took them over long distances. The emergence of oak stands and resultant increase in resource availability allowed greater human population density toward the end of the period. Pleistocene megafauna including mammoth, mastodon, great beaver, fossil bear, and northern species like fox, seal, moose and caribou roamed the northeast. A variety of other species like fossil peccary, white tailed deer, elk, bison and horse had also adapted to the northeast.

In addition to hunting, Paleo-Indians had fish and plant foods available to them. Pollen analysis of samples from the Shawnee-Minisink site near the Delaware Water Gap has revealed the presence of many edible plants. Carbonized seeds were recovered by flotation. Some of the plants identified by these means included Goose foot (*Chenopodium* sp.), ground cherry, black berry, hawthorn plum, pokeweed, pigweed (*Amaranthus* sp.), smart weed (*Polygonum* sp.), wild lettuce, grape, hackberry, and meadow grass (Kraft 1986:41).

Early Paleo-Indian chipped stone artifacts include fluted points which are thin, lanceolate-shaped bifacial implements fluted down the center for hafting, unifacial end and side scrapers, utilized flakes, and waste flakes (Marshall 1982:13). Fluted points gradually decreased in size as larger game animals moved north or became extinct (Kraft 1986:47). Fluted points were eventually replaced in the late Paleo-Indian period (8000-6000 BC) with unfluted triangular points, stemmed points and Plano points. The last are lanceolate-shaped points without flutes.

Archaic Period. According to Kraft (1986), the transition from Paleo-Indian to Early Archaic is not clearly indicated in the Middle Atlantic region. The Archaic period developed out of the late Paleo-Indian period, probably as a product of changes in the environment. For the northeast, this period is divided into Early Archaic, Middle Archaic, Late Archaic, and Terminal Archaic (Kraft and Mounier 1982).

The Early Archaic began around 8000 BC and continued until 6000 BC, when the modern temperate environments began to develop. During the Early Archaic, the hills and mountains were overgrown with pine, hemlock and oak while forests in the coastal areas were chestnut and oak (Kraft and Mounier 1982:59). The retreating glacier caused a rise in sea levels forcing people to move inland. People lived in small territorial bands that hunted, fished, and gathered plant foods. With the exception of the dog, they had no domestic animals (Kraft 1986:51). Lifeways were similar to those of the Paleo-Indian Period; but, there were modifications in technology related to gradual environmental changes (Kraft 1986:51). The people of the Early Archaic period subsisted on elk, deer, bear, beaver, turkey, migratory waterfowl, fish, shellfish, turtles, frogs (Kraft and Mounier 1982:65), as well as berries, roots, tubers, eggs, and nuts (Kraft 1986:51). They probably moved when food supplies dwindled. The small encampments close to rivers or ponds that are typical of Early Archaic sites reflect this mobility (Kraft and Mounier 1982:76). The Early Archaic tool kit consisted of stemmed and notched projectile points, bifurcate-base points, knives, scrapers, choppers, as well as wood and bone-working tools such as hammerstones and drills (Kraft and Mounier 1982:65). During this period, settlements in the vicinity of the project area were riverine/coastal encampments of small, highly mobile bands. In these areas, Archaic peoples exploited the local floral and faunal resources, including shellfish, deer, and small animals. The location of sites is directly related to resource availability.

The Middle Archaic period lasted from 6000 to 4000 BC. The environment was changing from the glacial environment to the modern temperate climate. By 5000 BC, the climate was warm and moist; as water levels continued to rise, groups moved further inland. Oak, chestnut, beech, and elm dominated the landscape causing animal populations to increase because of the abundance of mast foods in the forests. People of the Middle Archaic subsisted on chestnuts, acorns, and fish, as well as game. Heavy woodworking tools, along with net sinkers, and fish remains found on archaeological sites suggest a riverine adaptation. There are more and larger sites for this period, which signifies increased sedentism. Quarry sites are also found. Artifacts made of argillite, shale, and quartzite suggest an expansion of communication, transportation, and exchange. Territories were controlled by the bands and sites were located within these territories, and occupied seasonally (Kraft and Mounier 1982:71-83; Kraft 1986:73).

People began to develop woodworking tools during the Middle Archaic using coarse-grained stones and river cobbles as raw materials. These were commonly available in large sizes and allowed tool makers to reserve high quality lithic materials for finely flaked tools. In order to work these coarse-grained rocks, new shaping techniques had to be developed. The primary technique was pecking and grinding which shaped axes, adzes, gouges, choppers and other woodworking or rough-stone tools. These heavy woodworking tools may have been used for canoe building (Kraft and Mounier 1982:71-83; Kraft 1986:73). The Middle Archaic tool kit also included anvil stones, choppers, net sinkers, and an array of projectile points.

During the Late Archaic (4000-1000 BC) hunting, fishing, and gathering were still the principal daily activities. The temperate environment had developed by 5000 BC, and was a deciduous forest biome, with oak, chestnut, and hickory. Deer and turkey would have been

available as meat resources, but, during the Late Archaic, there was a greater emphasis placed on lower links in the food chain, including small game, shellfish, nuts and wild cereal grains like *Chenopodium*. This shift in subsistence strategies, related to the emerging temperate environment, made higher population densities possible (Kraft and Mounier 1982:71-83; Kraft 1986:73).

As population increased, camps became larger and more numerous. Principal settlements were located near major rivers. People lived in bands, with well-defined territories (Kraft and Mounier 1982:71-83; Kraft 1986:73). By about 2500 BC, there was a center-based wandering system of subsistence and settlement, with a riverine focus. The exploitation of resources included a wide range of habitats. They moved seasonally to acquire particular resources in a new area or when resources dwindled. Groups probably congregated occasionally for exchange and socialization. Houses of this period may have been circular and oval measuring 11 to 20 m (36 to 66 feet) in diameter with overlapping entranceways. One such house pattern was found at the Wapanucket #6 site in Massachusetts.

Heavy grinding implements like mullers, mortars and pestles provided new means of preparing food from seeds, nuts, dried berries and meat (Kraft and Mounier 1982:71-83; Kraft 1986:73). These tools were made of sedimentary and metamorphic rocks like sandstone and argillite. Other implements used were bifacial, chipped stone knives, semilunar knives which were often made of slate, the atlatl or spear thrower, bolas, and plummets. Long, narrow stemmed or narrow, weakly notched projectile points like Poplar Island, Bare Island, Lackawaxen stemmed, and Normanskill were characteristic of the Piedmont Tradition (also known as the Small Stemmed Tradition) which originated in the Southeast (Kraft 1986:73). These projectile points were seldom reworked into scrapers, drills and gravers because of their size and shape. Another innovation was steatite or soapstone pots which made cooking and food preparation easier.

Nut-bearing trees like oak, hickory, chestnut, and beech dominated the eastern forests during the Terminal Archaic (2000-1000 BC). Sea levels continued to rise, causing increased salinity in estuaries, including the lower Hudson river (Kraft 1986; Snow 1980). People subsisted on deer, black bears, small mammals, wild turkeys, pigeons, shellfish, fruits, roots, nuts, and fish.

The Susquehanna Tradition emerged in the Late Archaic around 2500 BC and is typified by broad stemmed and notched points, and "fish-tail" points (Kraft 1986:84). This tradition may have diffused from Georgia, northward along the Atlantic coast, into southern New Jersey, and north to Maine. It lasted until 1000 BC. Projectile points include the Brewerton, Vosburg, and Beekman Triangle types (Kraft and Mounier 1982:69).

Woodland Period. The Woodland period is marked by the presence of pottery. Pottery is significant because it improves the efficiency of food preparation and storage (Curtin 1992:6). In addition to the manufacture of pottery, the Woodland period also had agriculture, more elaborate rituals, and increased sedentism. This period is normally divided into early, middle, and late subperiods, dating between 1000 BC to AD 1650 (Williams and Thomas 1982:107).

In the Middle Atlantic Region, the transition from the Archaic period to the Woodland period was gradual. Characteristics of the Early/Middle Woodland period, from 1000 BC to AD 1000, include a wandering, central-based settlement system. Base camps were large and occupied intensively. There were also seasonal and transient procurement campsites. The economic

base emphasized natural resources, such as fish, shellfish, nuts, and deer. On a seasonal basis, coastal people would congregate at the inland parts of estuaries, to harvest anadromous fish. There was also small scale agriculture. Mortuary practices were elaborated upon and included grave furnishings. Technological changes included ceramics, lithic objects made of exotic materials, and shell ornaments. The exotic materials and the complex socio-religious system signify exchange between distant groups (Williams and Thomas 1982:121). Settlement along the coast most likely occurred in estuaries such as the Sherman Creek project area. Subsistence emphasized shellfish, crabs, and ocean fish.

During the Late Woodland period, the subsistence system shifted emphasis from gathering wild foods to growing domesticated plants. "The earliest documented cultigen in the Upper Delaware Valley is *Cucurbita* at AD 1060 +60" (Fischler and French 1991:160). Corn horticulture developed sometime between AD 500 and 1000, made possible by the use of Northern Flint corn, which is a cold-resistant strain. Northern Flint Corn diffused broadly after its first appearance, probably in the Midwest (Fritz 1990).

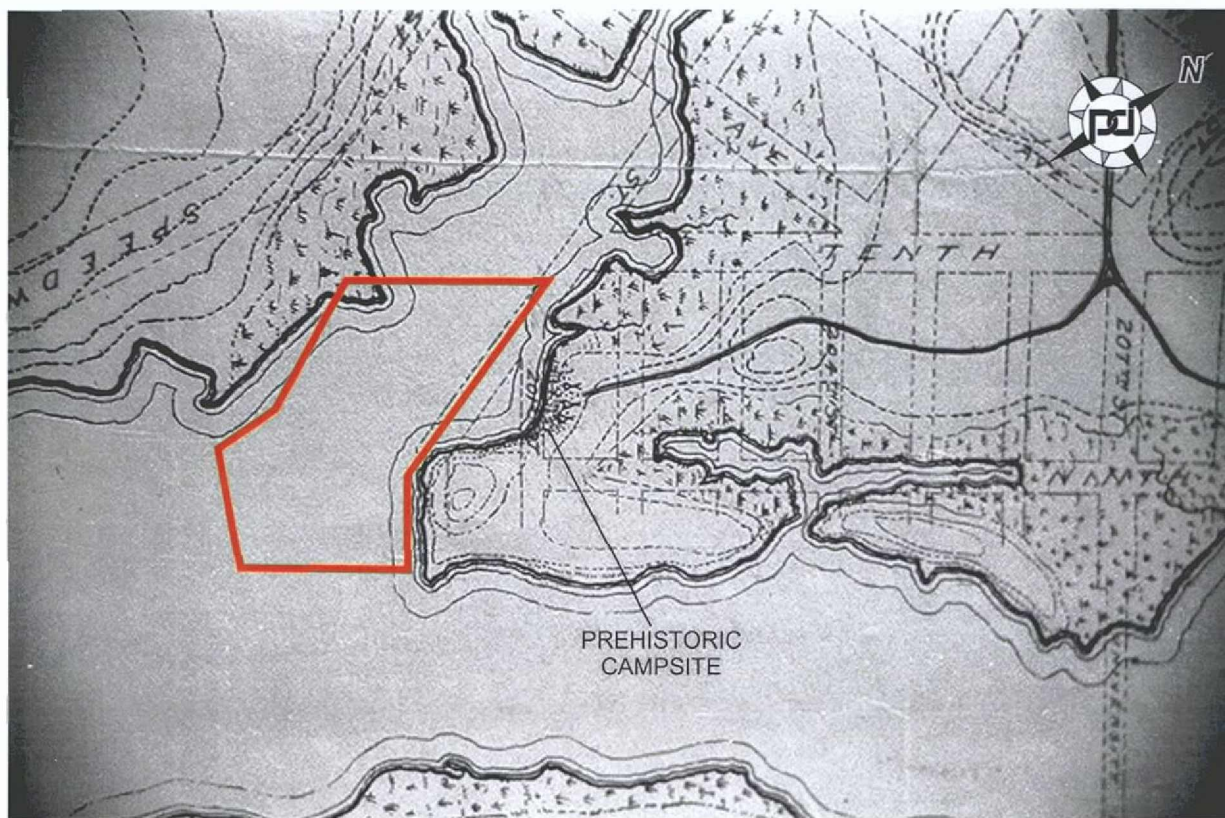
Along with corn horticulture came settled village life, population growth, an enriched religious and ceremonial life, and warfare among some cultures, such as the Iroquois in New York. Unlike earlier Woodland cultures, there were no separate cemeteries and cremation was no longer practiced. People of the Late Woodland buried their dead flexed in bark-lined graves.

Dwellings of this period were most often round-ended long houses with the doorway on one side (Kraft and Mounier 1982b:146). Deep storage pits are found at the ends. The houses ranged from 5.5 to 18.3 m (18 to 60 ft) long and up to 6.1 m (20 ft) wide. Levanna points are found in high frequencies on Late Woodland Pahaquarra sites. Other stone tools include cobble flakes that could be used for a variety of purposes, flake knives, and hammer and anvil stones (Kraft and Mounier 1982b:148).

In addition to hunting, gathering and gardening, Pahaquarra people spent a lot of time fishing and gathering shellfish which were then smoked in hearths or dried on stone platforms (Kraft and Mounier 1982b:151). Around AD 1350-1650, ceramics having well-defined collars with incised linear geometric designs identify the Minisink phase of the Proto-Munsee people (Kraft 1986:120). Minisink longhouses were virtually the same as those of the Pahaquarra/Owasco culture. A wide variety of implements have been found on these later Woodland sites. These include tools for hunting, butchering, hide preparation, fishing, plant processing, cooking, woodworking, and domestic activities (Kraft and Mounier 1982b:154-155).

Contact Period. The area was home to a group of Native Americans known as the Wickquaesgeck Indians, who derived a sufficient livelihood from the fertile land, as well as fishing and oystering in the river and mud flats along the Harlem shoreline (Rubinson & Winter 1988). In 1922, local historian Reginald Bolton created a map of the area charting Native American activity based upon an examination of artifacts recovered from early archeological excavations (Figure 3.6). A single campsite is depicted outside the APE on the northern shoreline of Sherman Creek, just northwest of the protruding landform known historically as the "Hook" (Bolton 1922).

3.3.2. Historic Overview. European settlement on Manhattan began with the explorations of Henry Hudson in 1609, which recorded the first European contact with the island. The Dutch West Indies Company moved quickly to establish a trading post on Manhattan's southern tip,



— = APPROXIMATE LIMITS OF THE PROJECT AREA

Figure 3.6. The project area as shown on Reginald Bolton's 1922 map of American Indian sites and paths in upper Manhattan. Sherman Creek Ecosystem Restoration Project, New York County, New York (Bolton 1922).

eager to connect via New York Harbor with the profitable mainland fur trade. The northern parts of the island, especially the Washington Heights area, developed much more slowly, perhaps because the Native American presence in this location demonstrated a much greater resistance to displacement by white settlement (Rubinson & Winter 1988). According to Bolton, the Wickquaesgeck Indians co-existed with the few Dutch settlers in the area for approximately 40 years in the mid-seventeenth century. While some conflict arose due to the Indians' unfamiliarity with the European concept of absolute property transfer, for the most part, relations remained relatively peaceful. Native American ownership of at least parts of upper Manhattan were recognized by the Dutch settlers as late as 1715 (Bolton 1924).

The deep indentation in the Harlem River known as "Sherman's Creek" became an important landmark for early settlers in upper Manhattan. To the Dutch, the creek was known as the "Half Kill," a name that distinguished it from the "Great Kill" or Harlem River to the east. Two brooks fed into the creek from the west—the "Run," which originated from Fort Washington to the northwest, and a second brook that meandered through the marshlands to the southwest. Sherman Creek represented an important natural feature on the undeveloped landscape and proved indispensable for the measurement of boundaries. The area surrounding Sherman Creek was known as the Great Meadows. The commanding height of the area was a hill to the southwest of the creek called by the Dutch "Ronde-vly-berg" or Hill of the Round Meadow, which became the British Fort George during the American Revolution. West of the creek, a thoroughfare known as the King's Way (now Broadway) traveled north-south through the entire length of Manhattan (Bolton 1924).

Throughout most of the seventeenth century, much of upper Manhattan remained largely unsettled. The first land grant in the vicinity of Sherman Creek was made by Director-General William Kieft in 1647 to Pieter Jansen and Huyck Aertsen. The grant established Jansen and Aertsen's joint ownership of a tract of land north of Sherman Creek, extending between the Hook and the North River. Unfortunately, Aertsen died less than two years later, leaving Jansen with sole title to the property (Riker 1904; Bolton 1924). When questions arose following Jansen's death as to the validity of the title, the land passed to the town of new Haerlem, established in 1656, for a sum of 300 guilders (Riker 1904).

One of the most prominent landholders in the early days of European settlement was a Westphalian immigrant named Jan Dyckman. Dyckman began his farming career in the early 1660s on a small parcel of land located between present-day 100th and 120th Streets. Subsequent land purchases resulted in his ownership of hundreds of acres on Manhattan, including Sherman Creek. He was included in a grant issued in October 1667 by William Kieft, along with Jan Nagle and 21 other Dutch settlers. Dyckman and Nagle became partners, acquiring the land north of present-day 211th Street, which they leased to their fellow settlers on generous terms for the next twelve years. Eager to assist in the productive development of the region, Dyckman offered other local farmers free advice, fruit trees, and livestock for their bouweries (Bolton 1924).

Dyckman's Farm eventually came to comprise all the area surrounding Sherman's Creek between the Hudson and the Harlem Rivers. In 1691, when the common lands of New Haerlem were divided among the local patentees, Dyckman received the former Aertsen and Jansen property. This land was located immediately south of his 1667 grant and took in "the rolling meadow and marshlands between Inwood Hill and the Harlem River, extending north from Sherman Creek to 211th Street" (Bolton 1924; HCI 1988). Dyckman also acquired an additional

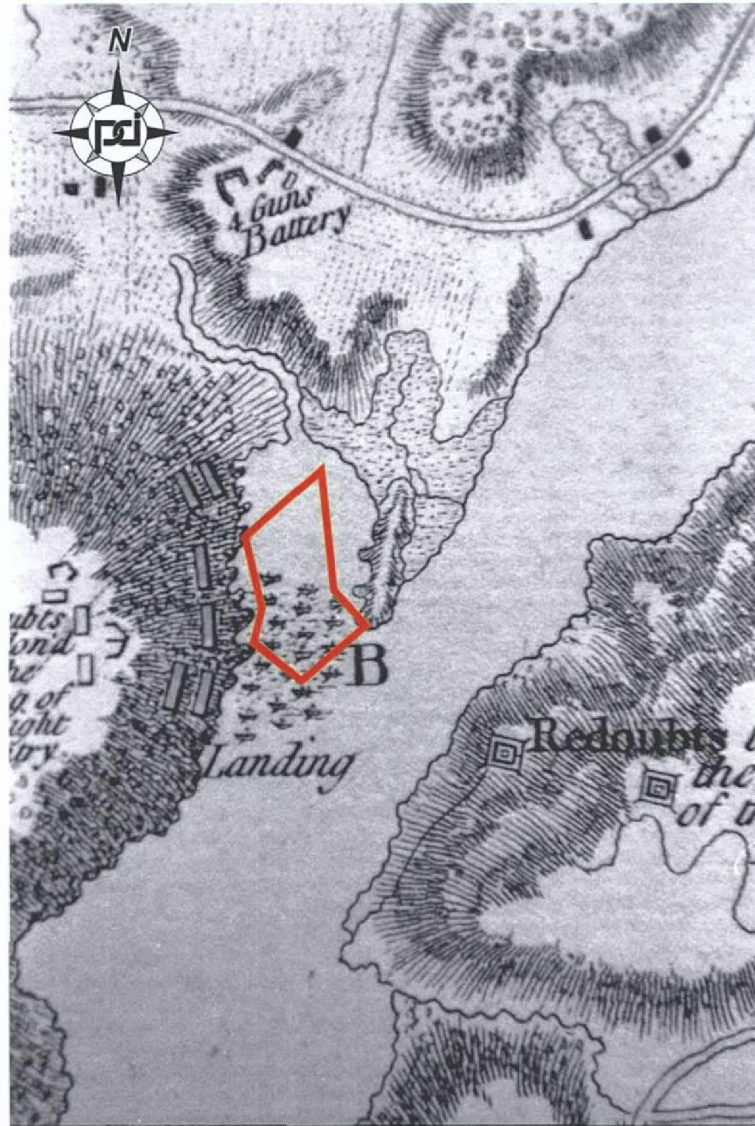
130 acres to the west and south of Sherman Creek that extended as far north as Dyckman Street, as far south as present-day Sickles Street, and took in all of Round Meadow Hill to the Harlem River (Bolton 1924).

The Great Meadows took on tremendous significance during the American Revolution, as the attack and defense of New York City centered largely around the Washington Heights area. The military value of Round Meadow Hill, known also as Laurel Hill for its abundant growth of mountain laurel, was quickly recognized by the American army. In 1776, a small redoubt was constructed on the hill, taking advantage of the hill's steepness as well as the surrounding marshland for security. American troops built a wooden barrier, possibly of abattis form, between there and Fort Tryon, an outpost of Fort Washington to the west. Unfortunately, such defenses proved an inadequate impediment to the advancing British army (Bolton 1924, Robinson & Winter 1988).

British and Hessian forces moved against American positions at Round Meadow Hill on November 16, 1776. Claude Sauthier's map of the battle depicts a flotilla of the British Light Infantry entering Sherman Creek in preparation for the attack (Figure 3.7). The Americans were quickly overwhelmed by the 2000-man British force and abandoned their redoubts almost as soon as the men landed on Manhattan soil (Sauthier 1776). The Light Infantry amassed with other British and Hessian troops on the flank of the hillside and charged the hill with little resistance from the four Pennsylvania detachments charged with defending it. As Bolton records, British General Matthews' men soon "found themselves in possession of the commanding hilltop, on which the guns of Fort Washington opened, across the wooded defile down which the Post Road made its hidden way" (Bolton 1924).

The British lost little time strengthening their position at Round Meadow Hill through the construction of an elaborate system of fortifications. They first constructed a large earthwork, followed in 1781 by a hilltop fort which they named Fort George. Around this central fort was constructed a line of earthworks extending east from the approximate location of present-day 190th Street. South of Fort George, a barricade known as the "Line Barrier" was placed across the King's Road consisting of a gate guarded by fortified redoubts on either side. The Hook served as a landing for Holland's Ferry, a rope-drawn ferry that provided passage across the Harlem River between Sherman Creek and Fordham on the other side. A military camp consisting of four buildings surrounded by an enclosure was constructed on the Hook to guard the camp. This camp, along with a second camp on the south shore of Sherman Creek, is shown on a 1782 British Headquarters map of the area (Figure 3.8). Americans invaded the camp and cut the ferry cord in 1781, but otherwise did little to loosen the British army's secure hold on Manhattan (Bolton 1924; Robinson & Winter 1988).

After the war, according to Bolton (1924), Round Meadow Hill and the surrounding area quickly lapsed back into its original wild state. Into the first part of the nineteenth century, the town of New Harlem continued to be made up largely of scattered farmsteads. To the east of the King's Way in particular, the marshy conditions surrounding Sherman Creek deterred development. In 1811, the New York City Commissioners released their now-famous street grid plan for Manhattan. However, the grid did not extend beyond 155th Street, indicating that the Commissioners did not expect the dense urban development of the metropolitan area to reach upper Manhattan anytime soon. Instead, the 1811 Commissioners' Map of the New Haerlem area confirmed the unsettled, rural nature of the region (Figure 3.9). Interestingly, this map shows open water only at the mouth of Sherman Creek while the upper part is shown as marsh



— = APPROXIMATE LIMITS OF THE PROJECT AREA

Figure 3.7. The project area as shown on Claude Sauthier's map of Manhattan during the attack on Round Meadow Hill. Sherman Creek Ecosystem Restoration Project, New York County, New York (Sauthier 1776).

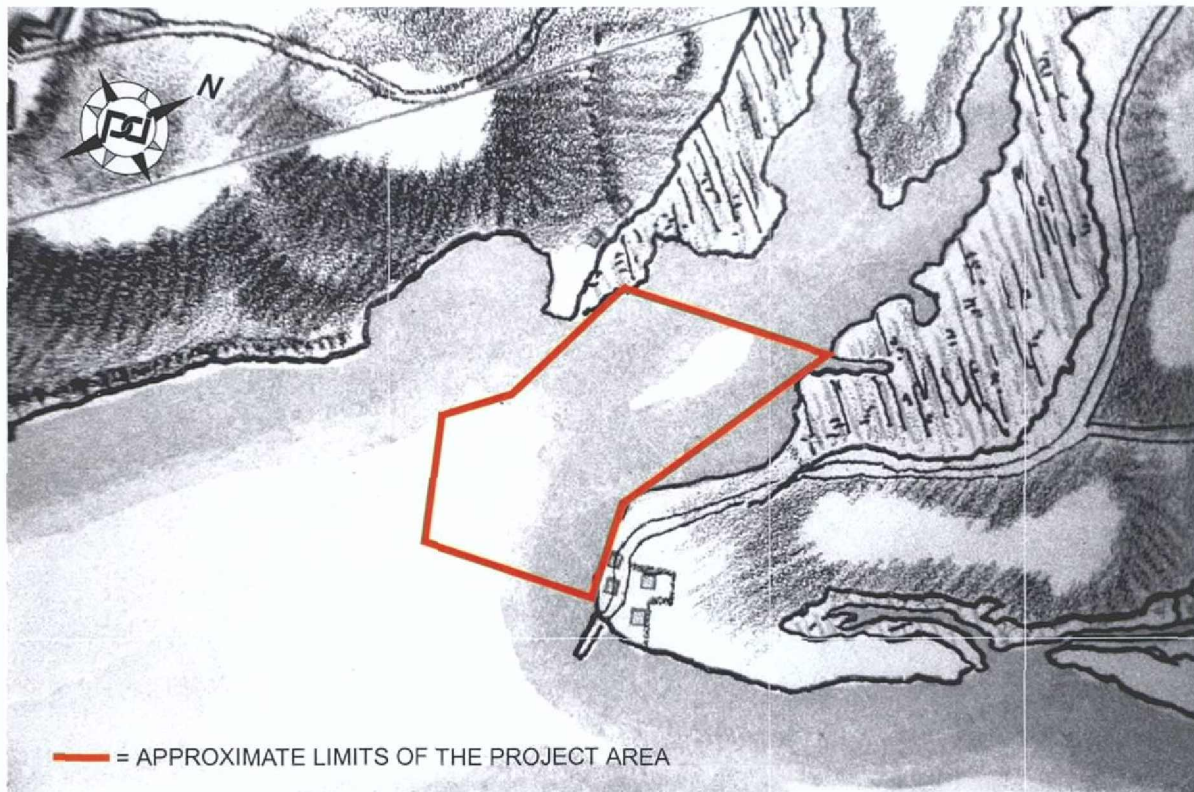


Figure 3.8. The Sherman Creek area showing Holland's Ferry and the British camps following the construction of Fort George. Sherman Creek Ecosystem Restoration Project, New York County, New York (*British Headquarters 1872*).

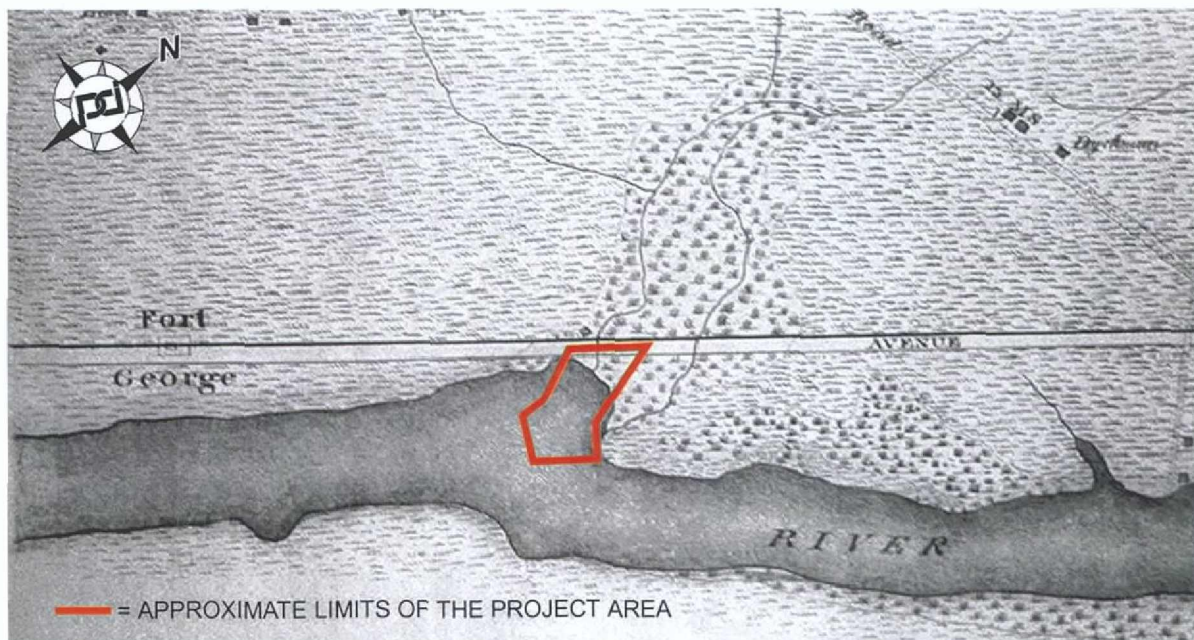


Figure 3.9. The project area and surroundings as shown on an 1811 Commissioners map of Manhattan. Sherman Creek Ecosystem Restoration Project, New York County, New York (*Bridges 1811*).

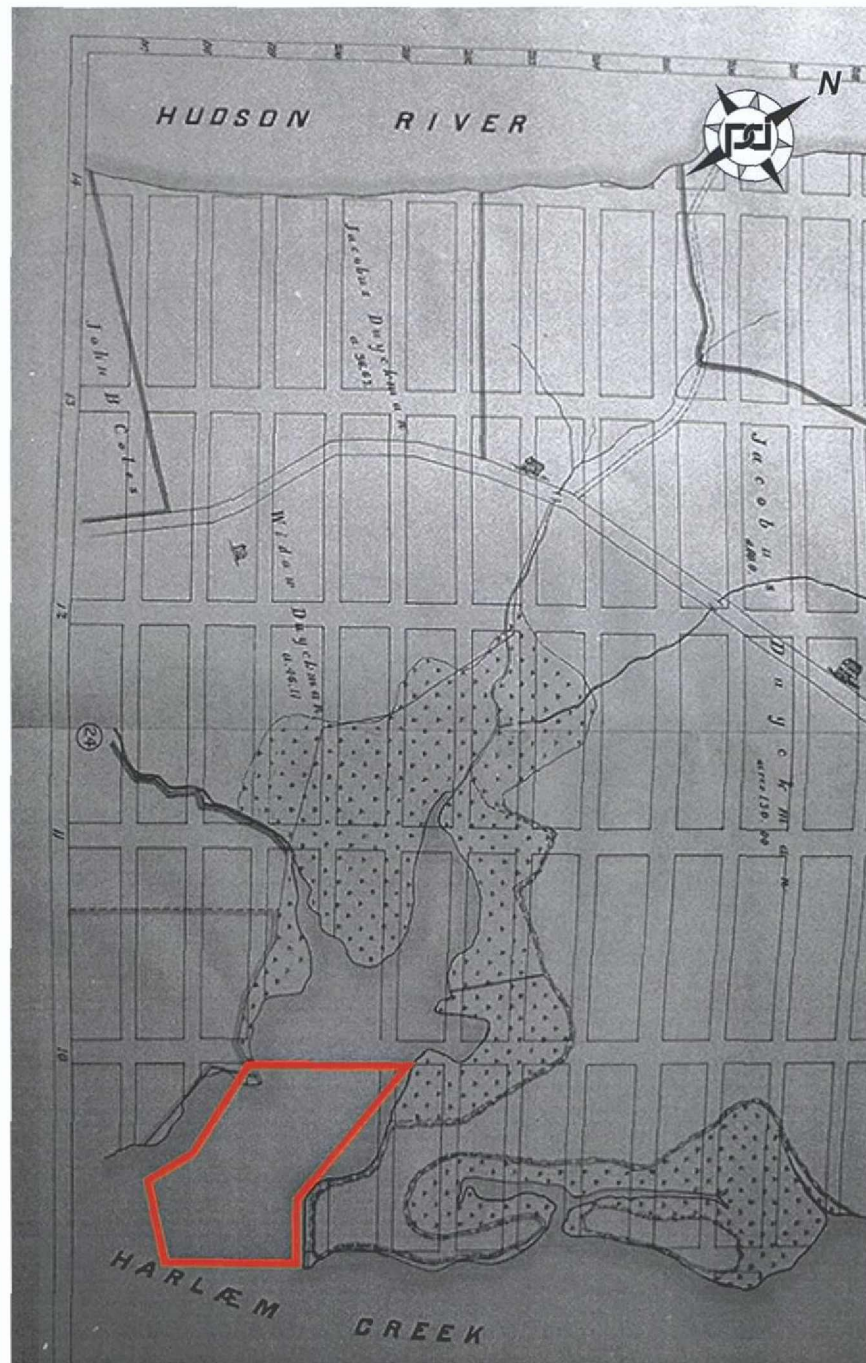
land. Apart from Fort George, the only structure shown is a small building on the south side of the creek. The structure (possibly the residence of the Sherman family for whom the creek is believed to have been named) is shown to the west of the planned Fort George Avenue, later Tenth Avenue. As actually constructed, Tenth Avenue ran just west of where it is shown on the map, placing the building approximately at the mouth of the creek adjacent to the project area (Bridges 1811). The structure is not shown on a map copied by Otto Sackersdorff from an 1815 map of farms (Figure 3.10). This map does show, however, that the APE and its vicinity remained in the hands of the Dyckman family at the beginning of the nineteenth century (Sackersdorff 1868).

By the mid-1800s, dense urban development had begun to cover much of Manhattan. Washington Heights was the last portion of the island to succumb to urbanization, boasting only a handful of residences by 1850 (Bolton 1924; Robinson & Winter 1988). The first residence was that of J. Van Namee and was located east of present-day Amsterdam Avenue between 185th and 186th Streets. Conrad Schwackhammer lived between Kingsbridge Road (formerly the King's Way) and Fort George Hill. With the exception of a small row of cottages along 184th Street, Namee and Schwackhammer's houses represented the only development in the immediate vicinity of the APE.

By the late nineteenth century, however, the area was in the midst of an unmistakable transition from a rural area to an extension of urban downtown and midtown Manhattan. In the 1870s, maps of upper Manhattan began to shift from an emphasis on topographical landforms to commercial real estate (Robinson & Winter 1988). Egbert Viele's 1874 map of the area depicts an early street plan around Sherman Creek, which is further revised and developed in Robinson's 1885 Atlas of the City of New York (Figures 3.11 and 3.12). On both plans, the streets surrounding the project appear to remain merely contemplated rather than actual, as the western end of Sherman Creek continues to meander through a number of the streets and lots. Academy Street does not appear at all on the later map and Tenth Avenue is shown as a proposed street running north-south across Sherman Creek between Naegle Avenue and Dyckman Street. There are no structures shown within or adjacent to the project area.

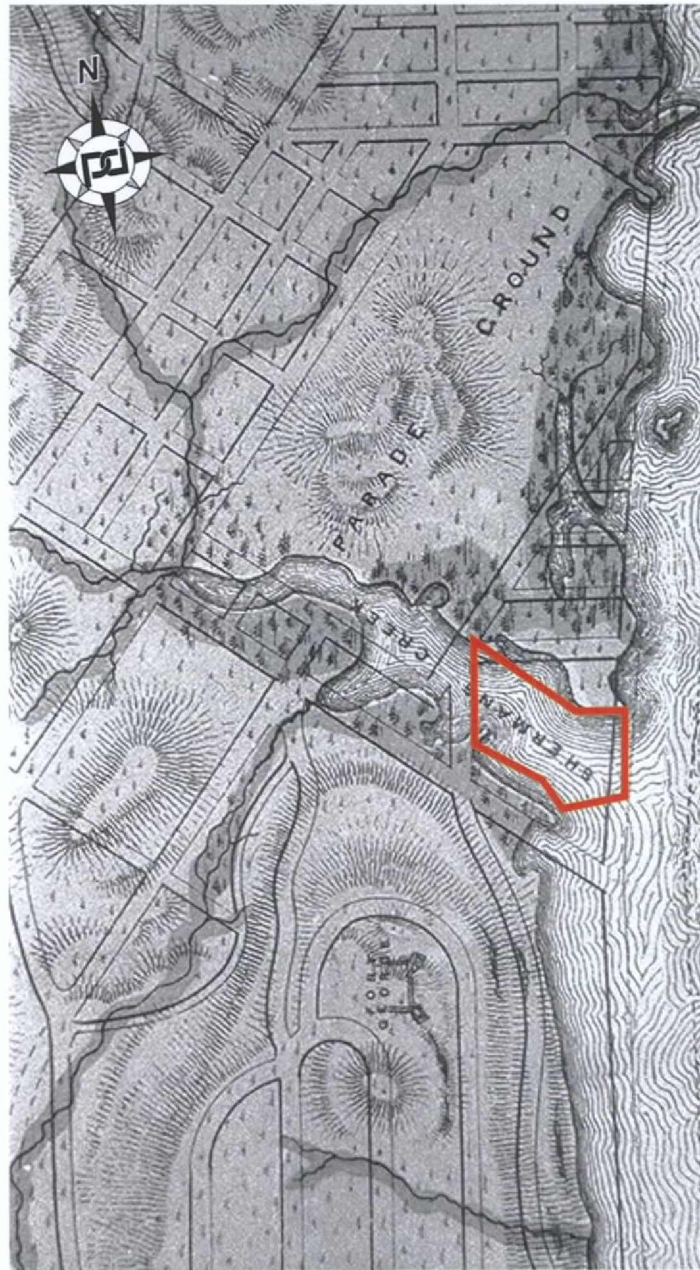
A series of Sanborn Fire Insurance Maps depicts the development of the APE and surrounding area immediately before and after the turn of the nineteenth century. The 1893 map depicts the existing street configuration, which appears to have taken a slightly different turn from the mostly uniform city blocks anticipated earlier by the city planners (Figure 3.13). Only three structures are shown in the vicinity of the project area, two north of the intersection of Tenth Avenue and Dyckman Street and one within the Dyckman Street right-of-way. The structure closest to Sherman Creek is in the approximate location of a structure known as Durando's Hotel that appears on later maps. The other two structures remain unidentified but appear to be one-story rectangular frame structures. This map appears to anticipate the future filling of at least part of Sherman Creek, as proposed roadways are shown crossing the waterway. These include 10th Avenue, which forms the western boundary of the APE.

By 1900, Academy Street has been constructed along the eastern boundary of the APE (Figure 3.14). Sherman Creek appears to have been partially filled. The banks have been squared off and the waterway is shown on the map as a "basin." A street running south from Academy Street is proposed at the basin's western end, as well as another street in the approximate location of present-day Marginal Street. Durando's Hotel is shown on the north side of Dyckman Street. It remains the only structure within the vicinity of the project area. Several



— = APPROXIMATE LIMITS OF THE PROJECT AREA

Figure 3.10. The project area as shown on Otto Sackersdorff's 1868 map, copied from an 1815 "Map of Farms Commonly Called the Blue Book." Sherman Creek Ecosystem Restoration Project, New York County, New York (Sackersdorff 1868).



— = APPROXIMATE LIMITS OF THE PROJECT AREA

Figure 3.11. Egbert Viele's *Topographical Atlas of the City of New York, NY* showing the project area in 1874. Sherman Creek Ecosystem Restoration Project, New York County, New York (Viele 1874).

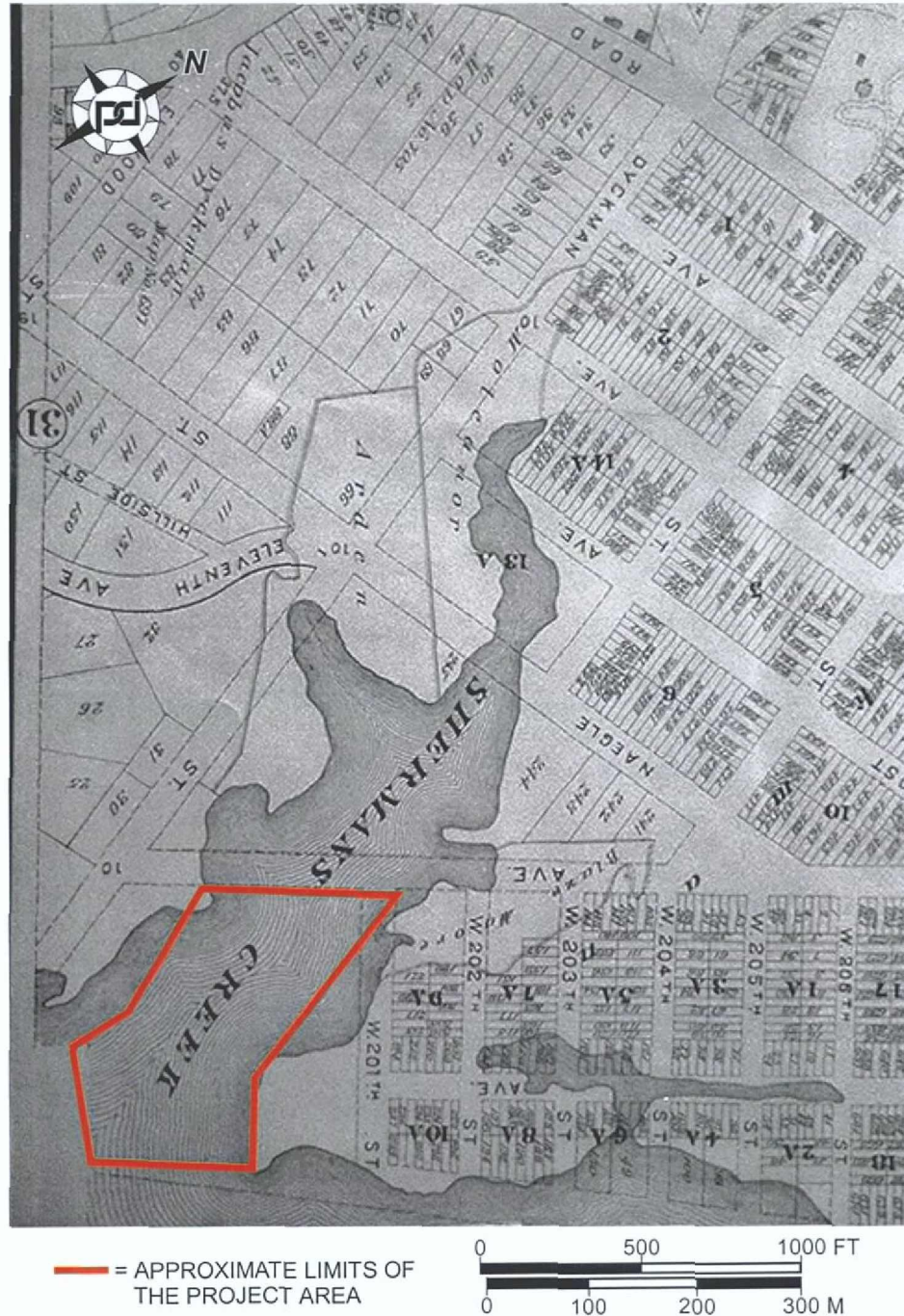


Figure 3.12. Robinson's *Atlas of the City of New York* showing the project area in 1885. Sherman Creek Ecosystem Restoration Project, New York County, New York (Robinson 1885).



Figure 3.13. Sanborn Fire Insurance Map showing the project area in 1893. Sherman Creek Ecosystem Restoration Project, New York County, New York. Sherman Creek Ecosystem Restoration Project, New York County, New York (Sanborn Map Co. 1893).

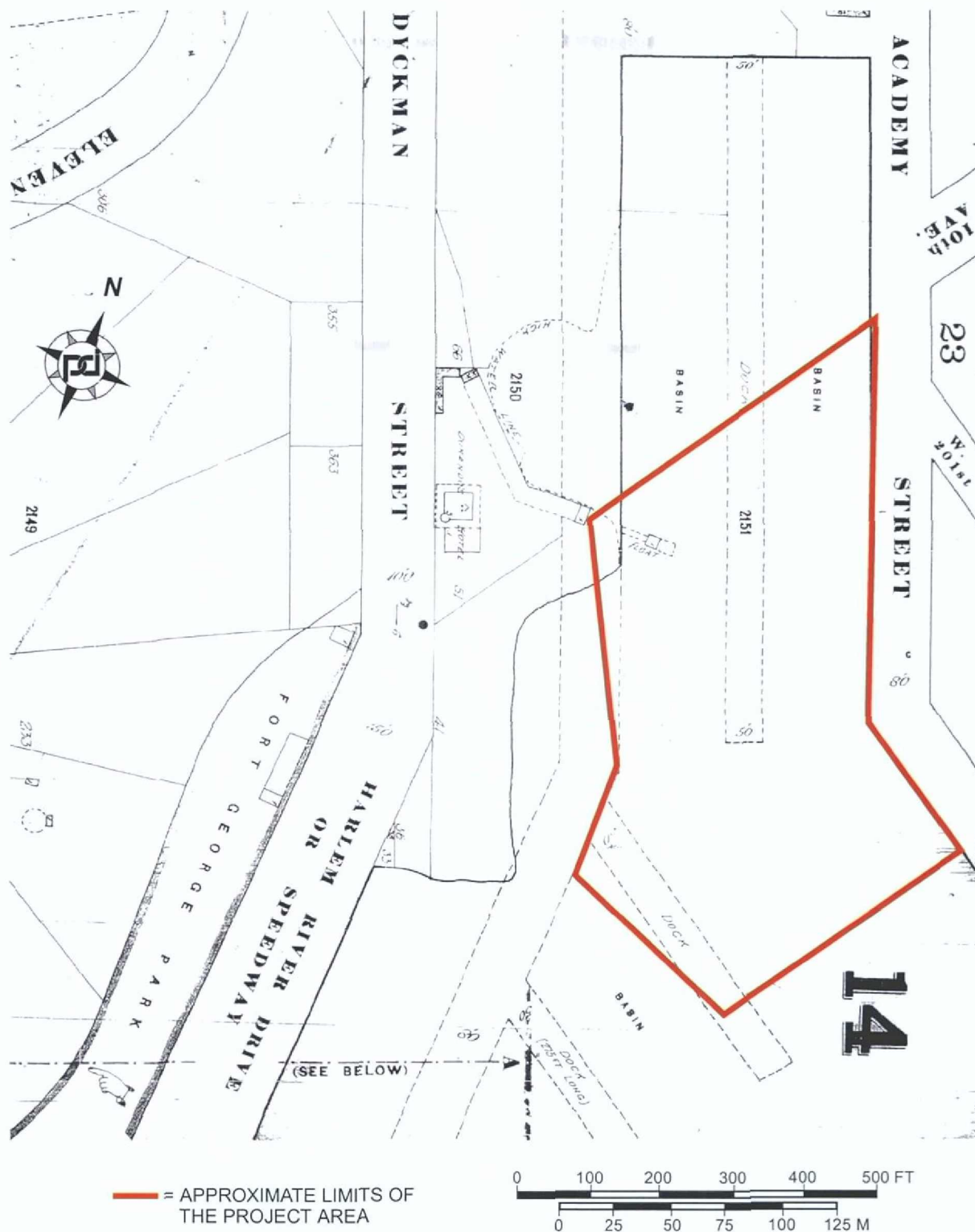


Figure 3.14. Sanborn Fire Insurance Map showing the project area in 1900. Sherman Creek Ecosystem Restoration Project, New York County, New York (Sanborn Map Co. 1900).

docks are contemplated for the interior of the basin. South of the project area, Dyckman Street curves to the southeast as it turns into Harlem River Drive, also known as the Speedway.

By 1911, the Interborough Rapid Transit (IRT) subway line reached the Inwood-Washington Heights section of Manhattan, *finally bringing* about full urbanization of the area. The station was located at the corner of Dyckman Street and Nagle Avenue, thus encouraging development in the vicinity of Sherman Creek (Rubinson & Winter 1988). This development in and around the APE is shown on the 1913 Sanborn map (Figure 3.15). The United Electric and Power Company, constructed in 1904, is shown on the Hook, between West 201st and Academy Streets. Durando's Café and Restaurant remains in the same location on the north side of Dyckman Street, although it has been considerably expanded to include an equine boarding house and several wagon sheds. A number of piers or boathouses, including one for the Hiawatha Canoe Club, are also shown as either existing or contemplated on the south shore of the creek near the Durando's property.

A 1924 aerial photograph of the area confirms increasingly dense development in the area as the century progresses (Figure 3.16). By this time the creek had only been filled as far east as Nagle Avenue and the number of piers and boats in the creek indicates relatively heavy use of the waterway, both for recreational vessels and for activity related to the adjacent power plant (Fairchild 1924).

Numerous piers associated with boat clubs such as the Lone Star Boat Club, Union Boat Club, and Val Ray Boat Club lined the southern shore of Sherman Creek by the mid-twentieth century, as indicated on Bromley's 1955 and 1974 atlases of New York City (Figures 3.17 and 3.18). By 1955, Tenth Avenue has been extended across the Creek, forming the western boundary of the APE. Durando's Restaurant, part of which had been situated in the Tenth Avenue right-of-way, appears to be gone. To the west of Tenth Avenue, several long buildings associated with the Dyckman Houses public housing project are situated parallel to Dyckman Street. On the 1974 map, the Hook, previously the site of the United Electric and Power Company, appears to be empty. The Marginal Street Wharf or Pier has been constructed east of Tenth Avenue and contains a single rectangular structure.

A 1998 aerial photograph shows the project area much as it appears today (Figure 3.19). West of Tenth Avenue, the Dyckman Houses still stand. Figure 3.20 is an illustrated version of the aerial photograph with labeled features. The power plant on the Hook, closed in the mid-nineteenth century, has been razed, leaving the area as largely undeveloped open space (Aerographics 1998). On the Marginal Street Wharf, the rectangular structure has been identified as a gas station. Below Marginal Street, south of the APE, a new public elementary school, P.S. No. 5, has been constructed. To the east of the school, at the end of Marginal Street, is a wetlands education center and a private boat club established by Swindler Cove Park (Robert Washington Architects 2000:5).

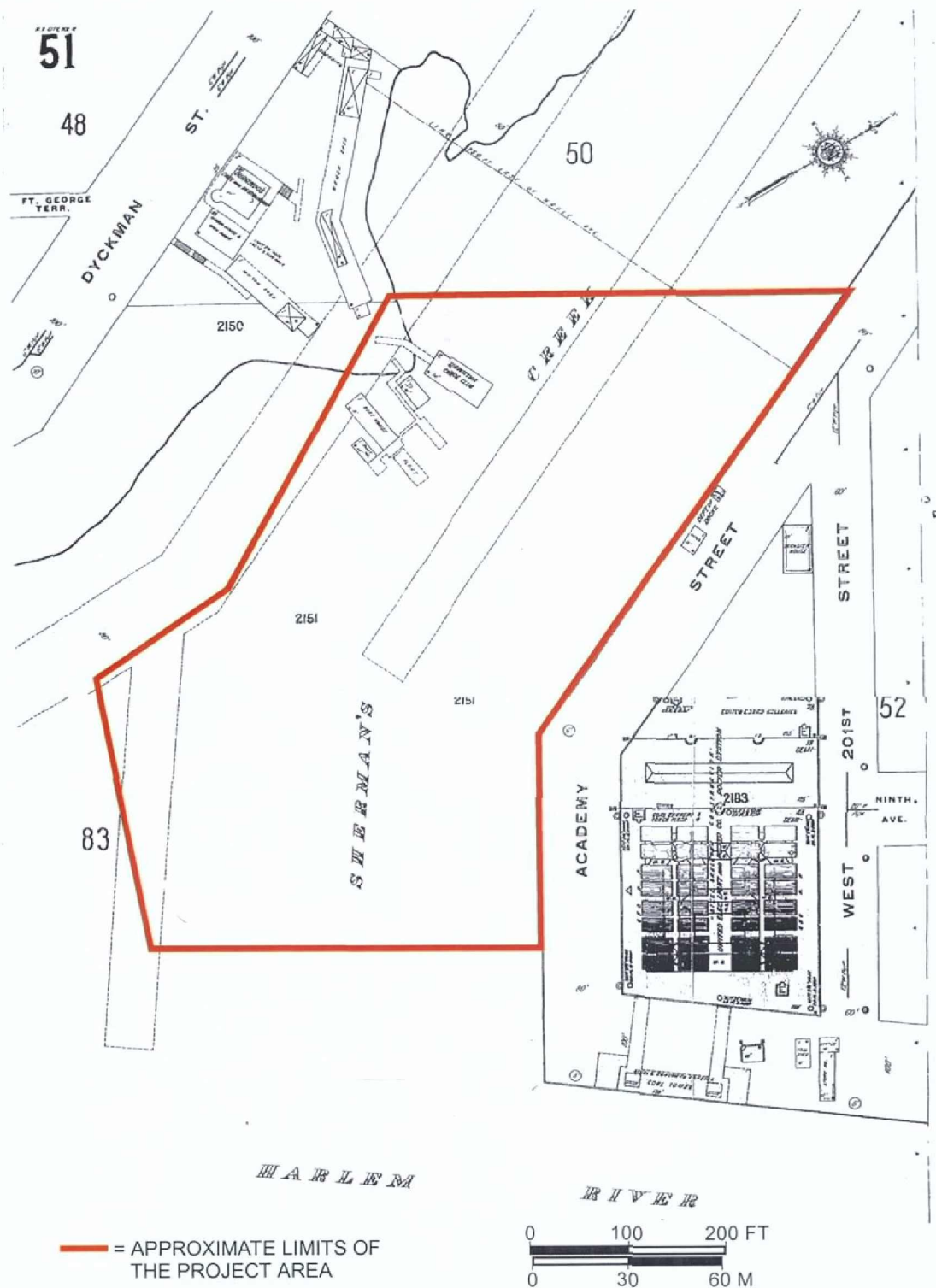


Figure 3.15. Sanborn fire insurance map showing the project area in 1913. Sherman Creek Ecosystem Restoration Project, New York County, New York (Sanborn Map Co. 1913).

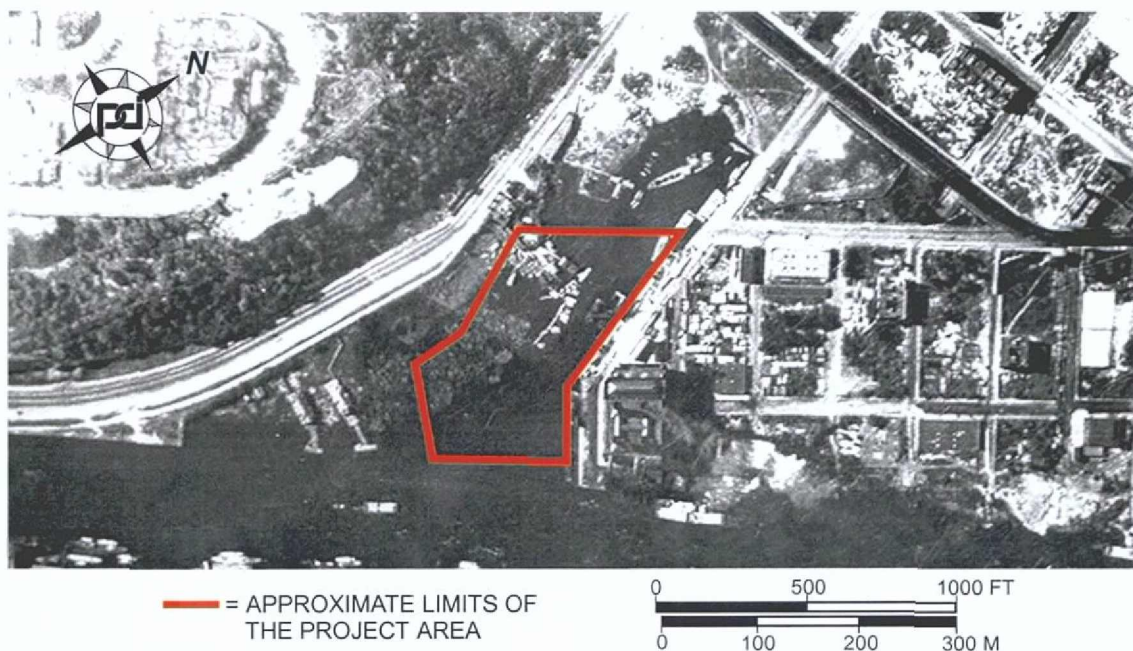


Figure 3.16. Aerial photograph showing the APE and surrounding area in 1924. Sherman Creek Ecosystem Restoration Project, New York County, New York (Fairchild 1924).

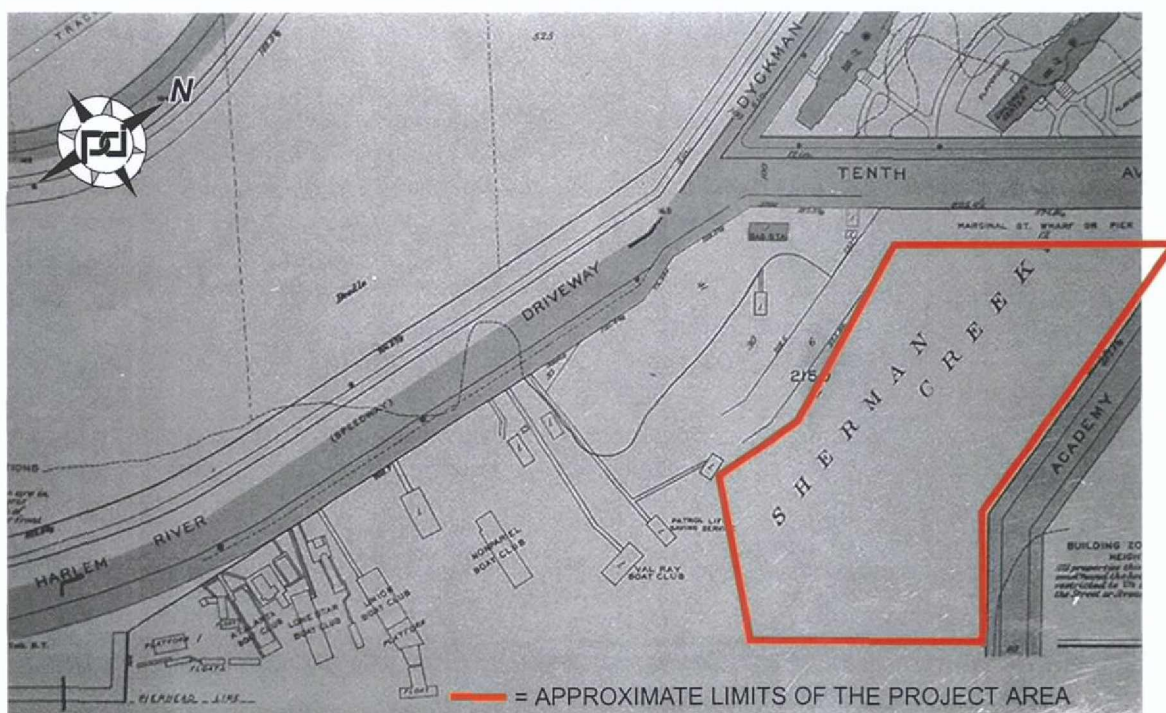


Figure 3.17. Southern shoreline of Sherman Creek as shown on Bromley's 1955 Atlas of the City of New York, Borough of Manhattan. Sherman Creek Ecosystem Restoration Project, New York County, New York (Bromley 1955).

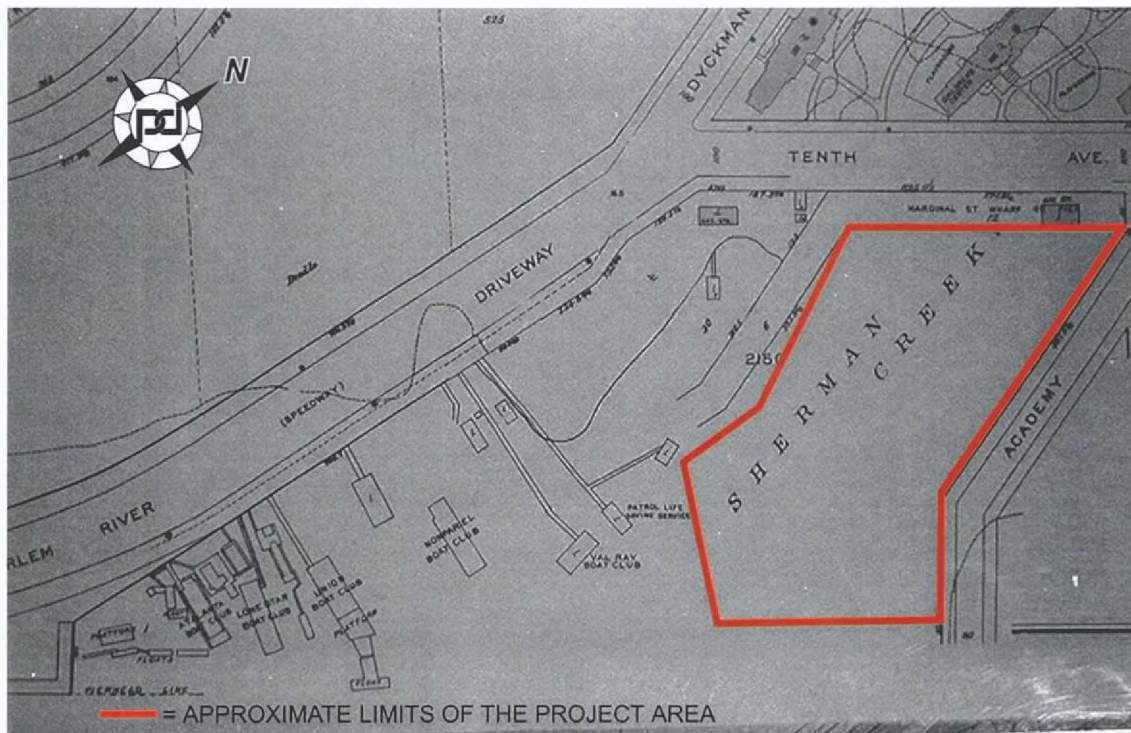


Figure 3.18. Southern shoreline of Sherman Creek as shown on Bromley's 1974 *Atlas of the City of New York, Borough of Manhattan*. Sherman Creek Ecosystem Restoration Project, New York County, New York (Bromley 1974).

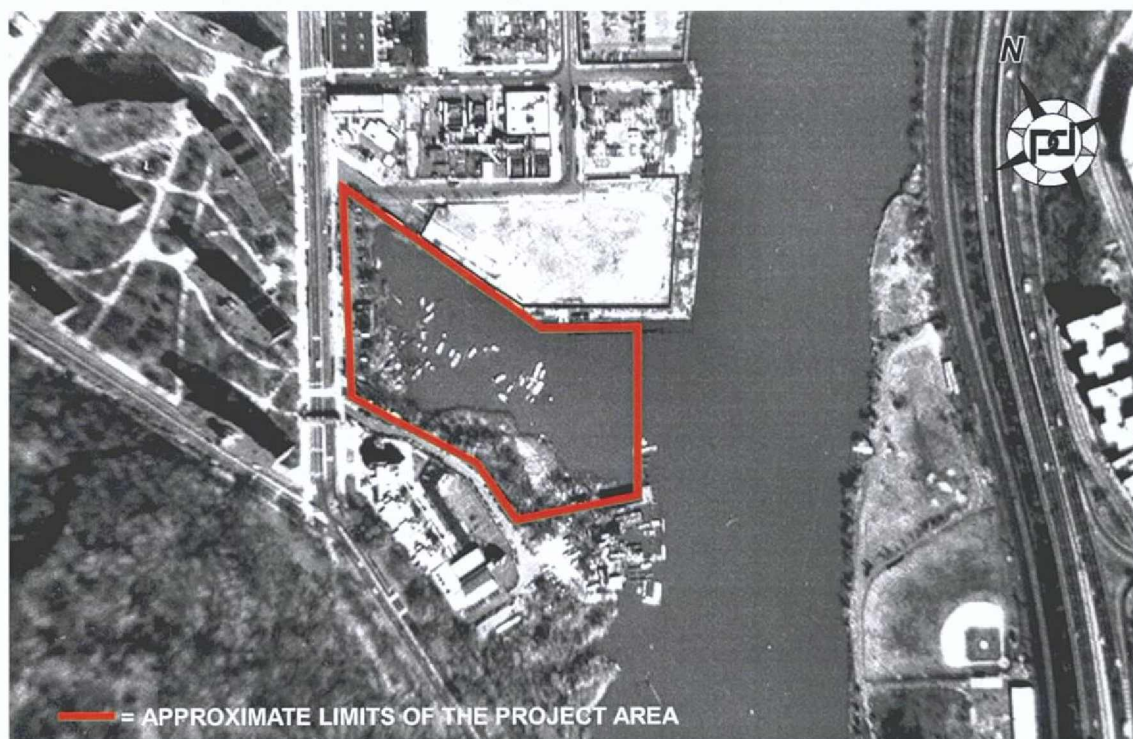


Figure 3.19. Aerial photograph of the APE and surrounding area. Sherman Creek Ecosystem Restoration Project, New York County, New York (Aerographics 1998).

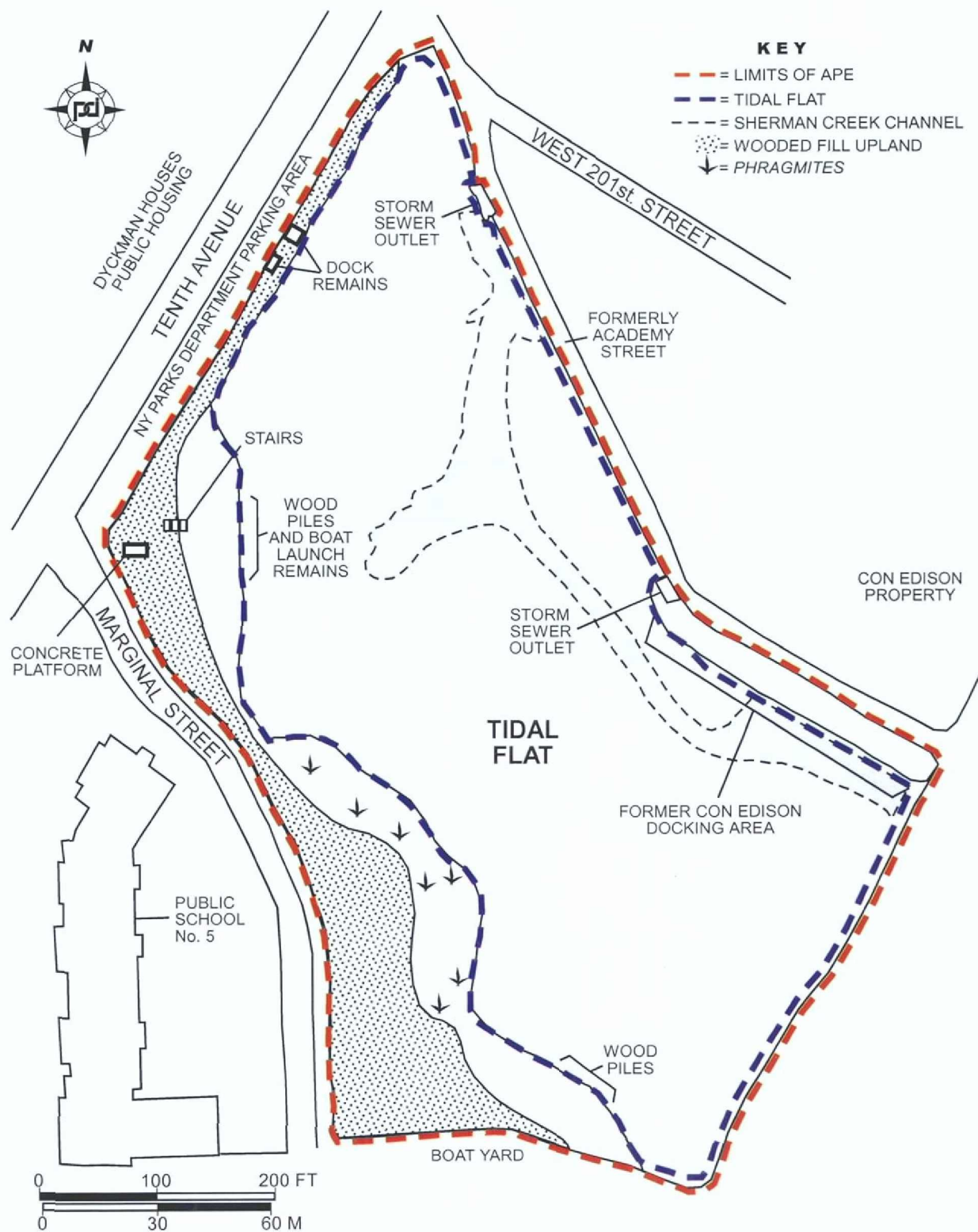


Figure 3.20. Illustrated plan view of the Sherman Creek project area. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2003).

3.4 REVIEW OF KNOWN SITES AND PREVIOUS RESEARCH

A review of known prehistoric sites within the vicinity of the Sherman Creek project area as recorded by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) and the New York City Landmarks Preservation Commission was conducted by Arnold Pickman. Previous archaeological research, such as Bolton (1916, 1918, 1922, 1924, 1934), Skinner (1961), and Parker (1922) also were reviewed in order to identify any cultural resources within or near the APE. No site was identified within the APE, although prehistoric sites are located along the shoreline of Sherman Creek and at the northern end of Manhattan Island.

Bolton (1934) discusses four of the major sites in upper Manhattan (see also Skinner 1961; Parker 1922:626-630). Muscoota (Bolton's site number 84) is a large area extending north of Sherman Creek in which several sites were noted, including a ceremonial site between Tenth Avenue and Broadway. This site includes burials of turtle, snake or dog with oyster shells (Bolton 1922:12). Marble Hill (Bolton's site number 85), located at the northern tip of the island consists a scatter of artifacts and shells. Shorakappok (Bolton's site number 16), in the vicinity of what is now Inwood Hill Park, includes a village site, and rockshelters and a cave which had been occupied in prehistoric times. The Dyckman Street at Hudson River site (Bolton's site number 103) is interpreted by Bolton to be a very early site. Artifacts were recovered from below a deep deposit of shells and ash, and include stone implements, elk horns, and bear bones. Bolton (1922) also describes a footpath worn into the ground winding around the hills of northern Manhattan, and southward through the middle of the island to its southern tip (following the approximate location of Broadway, today). A branch of the main trail extended to the northern bank of Sherman Creek, and a site was located at this juncture. Oyster shells and other refuse materials were found during excavation of a Revolutionary War site on the north side of the creek, near its mouth (Bolton 1916).

Previous Surveys. No previous survey has been conducted for the Sherman Creek project area as listed at the New York State OPRHP and the New York City Landmarks Preservation Commission. Four previous surveys have been conducted for the northern end of Manhattan Island in the vicinity of Sherman Creek, listed below.

Geismar, Joan

1984 An Evaluation of the Archaeological Potential of the Community Hospital Site, New York, N.Y.
Report on File at New York City Landmarks Preservation Commission (CEQR No. 88-194-M0).

Historical Perspectives, Inc.

1988 Archaeological Assessment Report for the Board of Education Project: Broadway and Academy Site. Report on File at New York City Landmarks Preservation Commission (CEQR No. 88-126-M0).

Rubinson, Karen S. And Frederick A. Winter

1988 State 1A, Block 2172, Lot 64, 60 Nagle Avenue, Inwood Manhattan. Key Perspectives. Report on File at New York City Landmarks Preservation Commission (CEQR No. 88-194-M).

Winter, Frederick A., and Karen S. Rubinson

1985 Report of Test Excavations, Block 2172, Lots 68 and 72, Inwood, Manhattan. Key Perspective. Report on File at New York City Landmarks Preservation Commission.

Rubinson and Winter (1988; Winter and Rubinson 1985) conducted cultural resource surveys for portions of a block bounded by Nagle Avenue, Elwood Street, Broadway and W. 196th Street, located about 2,400 feet west of the Sherman Creek project area. Rubinson and Winter's reports include the Phase IA investigation of Lot 64 and the IB investigation for Lots 68 and 72 for this block. The other surveys conducted within the vicinity of the Sherman Creek project area include Historical Perspectives' (1988) documentary study of a block at the intersection of Broadway and Academy Streets, about 2,400 feet northwest of the Sherman Creek Project Area; and Geismar's (1984) sensitivity assessment of a project area west of Broadway on the Harlem River, about one mile north of the project area.

In addition, Roberta Washington, Architects P.C. (2000) conducted a feasibility study as part of a Phase I Environmental Assessment of the property immediately north of Sherman Creek and east of Tenth Avenue. This study includes an examination of Sanborn maps dating between 1893 and 1996 and aerial photographs dating between 1940 and 1991, but was not a cultural resources investigation.

4.0 Investigation Results

4.1 ARCHEOLOGICAL SENSITIVITY ASSESSMENT

Background research results show the Sherman Creek area to be very sensitive for cultural resources, barring disturbances. Several prehistoric sites were identified in northern Manhattan in the nineteenth century and early twentieth century (Bolton 1924, 1934; Skinner 1961; Geismar 1984). During the Revolutionary War, the British landed troops on the south shore of Sherman Creek within the APE. They consequently established Fort George atop Laurel Hill (just south of the APE) and a rope-drawn ferry (Holland's Ferry) and camp on the hook adjacent to the north shore of Sherman Creek (north of the APE) (Bolton 1924:170, 1916:185-186). The British Headquarters map of 1782 also showed another camp (two buildings) on the south side of the creek below Fort George and immediately adjacent to the Sherman Creek marshes adjacent to the APE. Surface indications of the Holland Ferry camp were observed and a brick floor and a human skeleton were uncovered during excavations in the late nineteenth and early twentieth centuries (Bolton 1916:186-195, 1924:170).

Historic maps examined dating from 1815 through 1885 do not depict structures within the project area. Maps (Dripps 1867; Sanborn 1893; Bromley and Bromley 1897) show a building west of the APE, on the south bank of the creek immediately west of Tenth Avenue. This is also the approximate location of a structure identified as "Durando's Hotel" on the 1900 and 1913 Sanborn maps. Piers and boat houses are shown within the location of the APE on maps through the twentieth century. Boat remains are apparent on aerial maps as recent as 1998. However, older historic maps (e.g., USCGS 1902, 1908) did not identify wrecks in the Sherman Creek project area.

4.2 FIELD RECONNAISSANCE

Field investigation of the Sherman Creek project area was conducted near low tide (see Figure 3.2). The central portion of the APE was partially submerged mud flat with modern garbage and abandoned boat remains scattered across it (Figure 4.1, also see Figure 3.1). A small channel connects the Harlem River to a storm drain opening in a bulkhead that runs along the north edge of the APE (Figure 4.2). The bulkhead comprises sections of corrugated metal, rip rap, and wood timber (see Figures 3.1 and 4.2) that are parallel and adjacent to the former Academy Street and Con Ed generating plant (currently a fenced parking area). Brick pavement, presumably remnants of Academy Street, are also present (Figure 4.3). The dilapidated remains of a docking area are present along the north shore of Sherman Creek at the Harlem River (Figure 4.4).

The northwestern edge of the APE is a fenced lot that contains a former gas station and asphalt lot adjacent to, and level with, Tenth Street. The lot is currently used by the New York City Parks Department. Marginal Street, the southwestern project area boundary, is essentially a driveway and parking area for School No. 5. The southern edge of the APE, between Marginal Street and the Sherman Creek tidal mud flat, is mostly sloped and has been created by the deposition of large amounts of fill. It is overgrown with mature deciduous trees, brush, and vines (e.g., wild grape, poison ivy) (Figure 4.5). The top of the slope has some bank stabilization elements including cut stone slabs and horizontally placed steel street light poles (Figure 4.6). *Phragmites* abound on the fringe of the mud flat at the base of the slope.



Figure 4.1. Boat keel remains (wood fastened with wire nails) and possible boat launch remains (steel rails and wooden piles at the bottom of the photo) in the mud flat, facing southeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.2. Storm drain outlet in the bulkhead along the north edge of the APE, facing northeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.3. Brick pavement of former Academy Street, north of the APE, facing southeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.4. The dilapidated remains of a docking area along the north shore of Sherman Creek at the Harlem River, facing west. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.5. The southern portion of the APE between Marginal Street and the mud flat comprised of made land overgrown with mature deciduous trees, brush, and vines, facing northwest. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.6. Street light poles placed horizontally for bank stabilization (foreground) and a severely damaged metal and wood staircase (background), facing east-northeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).

Cultural features are present within the Sherman Creek APE that appear to be remnants of twentieth century marina activities (see Figure 3.20).

- The remains of two small makeshift boat docks or piers were observed along the shore east of the lot (Figure 4.7). They are constructed of metal poles and wood planks and are no longer functional due to severe disrepair.
- Wooden pier or mooring piles that protrude from the mud flat along the southeast and southwest sections of the shore (Figure 4.8).
- Metal rails, presumably used as a boat launch and wood piles are located in the mud flat in the southwest corner of the APE (see Figure 4.1). A dilapidated steel and wood staircase connects this location to the high ground (see Figure 4.6). Also, a partially buried 10-x-17-ft poured concrete base is located on the high ground above the stairs (Figure 4.9).
- The remains of abandoned boats are scattered across the tidal mud flat (see Figures 3.1 and 4.6). The City of New York recently removed debris down to the water line and abandoned vessels were cut to the mud line (USACE 2002:2-3).
- The former Con Edison docking area is located along the northeast edge of the APE. The remains of a 61-m (200-ft) long dock include wood piles and beams as well as corrugated metal walls (see Figures 4.4 and 4.8). A concrete bulkhead with iron mooring posts is located along Harlem River north of, and contiguous to, the APE (Figure 4.10).



Figure 4.7. Remains of two makeshift docks or piers along the west shore of the APE, facing northeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.8. Wooden piles in the mud flat (foreground) and the former Con Edison docking area (background), facing northeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.9. Concrete base near the intersection of Marginal Street and Tenth Avenue, facing north. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).



Figure 4.10. Concrete bulkhead docking area with iron mooring posts north of the APE, facing northeast. Sherman Creek Ecosystem Restoration Project, New York County, New York (PCI 2002).

5.0 Conclusions and Recommendations

The archaeological sensitivity for prehistoric and historic cultural resources within the Sherman Creek APE is very low due to substantial historic and modern landscape modifications. The majority of the APE (approximately two thirds [4-acres]) is tidal mud flat that has been historically inundated and has been dredged and utilized throughout the twentieth century. Remains found across the mud flat do not appear to be cultural resources. They are badly damaged remnants of twentieth-century marina activities and include wooden mooring piles, boat launch remains, and pieces of abandoned boats. Modern garbage also has been dumped across this area.

The rest of the APE (approximately 2½ acres) is sloped upland created by fill deposition. The south and west sides of the APE consist of large amounts of fill dumped into the Sherman Creek embayment. These areas were historically low and wet as part of a larger embayment and a more extensive creek. Therefore, the likelihood for the presence of cultural resources in this portion of the APE is low. Also, proposed ecosystem restoration between the tidal mud flat and Marginal Street will involve creation of additional upland (Bob Will, personal communication 2002). This reduces the threat of impacting deeply buried cultural resources, if at all present.

The northern edge of the APE (adjacent to former Academy Street) has been altered by construction of the former Con Ed power generating plant with an associated bulkhead and boat docking area. Two large storm sewer (presumably) outlets also drain into the Sherman Creek embayment along the bulkhead. Proposed ecosystem restoration in this area involves the removal of the bulkhead to cut back the creek edge and create slope (Bob Will, personal communication 2002). This portion of the APE is sensitive for cultural resources associated with the Revolutionary War Holland's Ferry camp. Remains were uncovered by street grading for the construction of 201st Street and 9th Avenue in 1894, and when the power plant on the north side of Academy Street was constructed, circa 1904 (Bolton 1924:170, 1916:187). However, Bolton noted that most of the camp refuse was found on the Harlem River shore and "very few objects were found on the north shore of Sherman's Bay" (1916:188).

Construction of the Con Ed facility most likely destroyed any formerly intact archaeological deposits. It is possible, but unlikely, that the construction could have also sealed deposits beneath added fill. It is uncertain how far the planned cutting back of the creek bank in this area would extend past the bulkhead. It is possible, but not likely, that this work will impact any surviving deposits.

Cultural features identified within the Sherman Creek APE include the remains of two small makeshift boat docks or piers, wooden pier or mooring piles, a boat launch with associated stairs and concrete platform, abandoned boat remains, and a former Con Edison docking area. They are the remains of the twentieth century marina and Con Edison plant. None of the features meet NRHP criteria and all are in very poor condition. In summary, the proposed ecosystem restoration of Sherman Creek will not impact cultural resources. No additional investigations, protection, or avoidance are recommended.

6.0 References

Aerographics Corp.

1998 Aerial Photographs of New York City. Bohemia, New York. Collection of the New York Public Library.

Bolton, Reginald Pelham

1916 *Relics of the Revolution*. Privately printed, New York.

1918 \$5,000,000 Speedway a Useless Driveway. Pamphlet in the collection of the New York Public Library [dated ca. 1918 by the Library].

1922 "Indian Paths in the Great Metropolis." *Indian Notes and Monographs*. Misc. No. 23. Museum of the American Indian, Heye Foundation, New York.

1924 *Washington Heights: Its Eventful Past*. New York: Dyckman Institute.

1934 *Indian Life of Long Ago in the City of New York*. Joseph Graham, New York.

Bridges, William

1811 *Map of The City of New York and Island of Manhattan as laid out by the Commissioners appointed by the Legislature April 3d, 1807*. [New York].

British Headquarters Map

1782 *Facsimile of the Unpublished British Head Quarters Map of New York & Environs. Reproduced from the Original Drawing in the War Office*. B.F. Stevens, London [1900].

Bromley, George Washington and Walter S.

1897 *Atlas of the City of New York, Manhattan Island*. New York.

1902 *Atlas of the City of New York, Borough of Manhattan*. G.W. Bromley & Co., Philadelphia.

1916 *Atlas of the City of New York Borough of Manhattan*. Plates 180 and 185. G.W. Bromley & Co., Philadelphia.

1930 *Atlas of the City of New York, Borough of Manhattan*. G.W. Bromley & Co., Philadelphia.

1934 *Atlas of the City of New York, Borough of Manhattan*. G.W. Bromley & Co., n.p.

1955 *Atlas of the City of New York, Borough of Manhattan*. G.W. Bromley & Co., New York

1974 *Atlas of the City of New York, Borough of Manhattan*. G.W. Bromley & Co., New York.

Brouwer, Norman

1977 *Survey of Cultural Resources in the Form of Derelict Ships and Boats, Priority Area 3 of Liberty State Park, New York Harbor Collection and Removal of Drift Project*. Report on File U.S. Army Corps of Engineers, New York District.

Cline, M.G., and R.L. Marshall

1976 *General Soil Map of New York State*. Cornell University Agriculture Experiment Station, Soil Conservation Service, U.S. Department of Agriculture.

Dripps, M.

1867 *Plan of New York City, from the Battery to Spuyten Duyvill*. M. Dripps, New York.

1879 *Map of Jersey City and Hoboken, Hudson County, N.J.*

Fairchild Aerial Camera Company

1924 *Aerial Photographs of New York City*. New York City, Board of Estimate and Apportionment.

Fischler, B.R., and J.W. French

1991 The Middle Woodland to Late Woodland Transition in the Upper Delaware Valley: New Information from the Smithfield Beach Site. In *The People of Minisink: Papers from the 1989 Delaware Water Gap Symposium*, edited by D.G. Orr and D.V. Campana, pp. 145-174. National Park Service, Mid-Atlantic Region, Philadelphia.

Fritz, Gayle

1990 Multiple Pathways to Farming in Precontact Eastern North America. *Journal of World Prehistory* 4:387-435.

Funk, Robert E.

1972 Early Man in the Northeast and the Late Glacial Environment. *Man in the Northeast* 4:7-42.

1976 *Recent Contributions to Hudson Valley Prehistory*. New York State Museum Memoir 22, Albany.

1993 *Archaeological Investigations in the Upper Susquehanna Valley, New York State, Volume 1*. Persimmon Press, Buffalo.

Geismar, Joan

1984 *An Evaluation of the Archaeological Potential of the Community Hospital Site, New York, N.Y.* Report on File at New York City Landmarks Preservation Commission (CEQR No. 88-194-M0).

Historical Perspectives, Inc.

1988 *Archaeological Assessment Report for the Board of Education Project: Broadway and Academy Site*. Report on File at New York City Landmarks Preservation Commission (CEQR No. 88-126-M0).

Kraft, Herbert

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

Kraft, Herbert C., and Ronald A. Mounier

1982a The Archaic Period in New Jersey (ca. 8000 BC-1000 BC). In *New Jersey's Archaeological Resources from the Paleo-Indian Period to the Present: A Review of Research Problems and Survey Priorities*, edited by Olga Chesler, pp. 52-102. Office of Cultural and Environmental Services, Department of Environmental Protection, Trenton.

1982b The Late Woodland Period in New Jersey (ca. AD 1000 -1600). In *New Jersey's Archaeological Resources from the Paleo-Indian Period to the Present: A Review of Research Problems and Survey Priorities*, edited by Olga Chesler, pp. 139-184. Office of Cultural and Environmental Services, Department of Environmental Protection, Trenton.

National Park Service

1985 *Guidelines for Local Surveys: A Basis for Preservation Planning*. National Register Bulletin 24. U.S. Dept. of the Interior, Washington, DC

New York City Open Accessible Space Information System Cooperative

1996 Aerial Photographs of New York City. Online at <http://www.oasisnyc.net/>

New York Department of Docks and Ferries.

1911 Map of a Portion of the Borough of Manhattan and the Adjacent New Jersey Shore with Railroad Lines and Terminals. In *Annual Report 1911*.

Parker, Arthur C.

1922 *The Archaeological History of New York*. New York State Museum Bulletin Nos. 235-238. Albany.

Pielou, E. C.

1991 *After the Ice Age: The Return of Life to Glaciated North America*. The University of Chicago Press, Chicago.

Riker, James

1904 *Revised History of Harlem*. Facsimile Reprint 2001. Heritage Books, Inc., Bowie, MD.

Ritchie, William, A.

1980 *The Archaeology of New York State*. Revised Edition. Harbor Hill Books: Harrison, NY.

Roberta Washington Architects

2000 *Sherman Creek Development Project*. Prepared by The Economic Development Department, The Port Authority of NY & NJ for the Office of the Manhattan Borough President, C. Virginia Fields, President.

Robinson, Elisha

1885 *Atlas of the City of New York*. E. Robinson, New York.

- Rubinson, Karen S., and Frederick A. Winter
1988 *State 1A, Block 2172, Lot 64, 60 Nagle Avenue, Inwood Manhattan. Key Perspectives.* Report on File at New York City Landmarks Preservation Commission (CEQR No. 88-194-M).
- Sackersdorff, Otto
1868 *Maps of Farms Commonly Called the Blue Book*, [1815]. Drawn from the Original on file in the Street Commissioner's Office. E. Robinson, New York.
- Salwen, Bert
1975 *Post Glacial Environments and Cultural Change in the Hudson River Basin. Man in the Northeast* 10:43-70.
- Sanborn Map Company
1885 *Insurance Maps of the City of New York.*

1900 *Insurance Maps of the City of New York.* Vol. 12. Sanborn-Perris Map Company, New York.

1911 *Insurance Maps of Hudson County, New Jersey.* Vol. 6.

1913 *Insurance Maps of the City of New York*

1922 *Pier Map of New York Harbor.*
- Sauthier, Claude Joseph
1776 *A Topographical Map of the North Part of New York Island.* In *The North American Atlas.* Wm. Faden, London.
- Sidney, J.C.
1849 *Sidney's Map of 12 Miles Around New York.*
- Skinner, Alanson
1961 *The Indians of Manhattan Island and Vicinity.* Ira J Freidman, Inc., Port Washington [Reprint - Originally Published 1909].
- Snow, Dean R.
1980 *The Archaeology of New England.* Academic Press, New York.
- Stokes, I.N. Phelps
1922 *The Iconography of Manhattan Island, 1498-1909.* Vol. IV, 1922. New York: Robert H. Dodd.
- U.S. Army Corps of Engineers, New York District (USACE)
2002 *Scope of Work and Request for Cost Proposal, Cultural Resources Documentary Study of Two Priority Sites for the Hudson-Raritan Estuary Ecosystem Restoration Project, Liberty State Park, Jersey City , Hudson County, New Jersey, and Sherman Creek, New York County, New York.*

United States Coast Survey

1845 New York Bay and Harbor and the Environs.

United States Coast and Geodetic Survey

1896 *Hudson and East Rivers.*

1902 *Hudson River, New York to Haverstraw.*

1908 *Harlem River, New York.*

1934 *United States - East Coast, New York, Harlem River.* July 1934.

1944 *United States - East Coast, New York and New Jersey, Hudson and East Rivers from West 67th Street to Blackwells Island.* Chart #745. March 1944

United States Geological Survey

1975 *7.5 Minute Quadrangles: Central Park, NY and Yonkers, NY.*

Van Diver, Bradford B.

1985 *Roadside Geology of New York.* Mountain Press Publishing Company, Missoula, Montana

Viele, Egbert

1874 *Topographical Atlas of the City of New York.* Julius Bien, NY.

Will, Bob

2002 Personal Communication, U.S. Army Corps Engineers, New York District

Williams, Lorraine E., and Ronald A. Thomas

1982 The Early/Middle Woodland Period in New Jersey: ca. 1000 B.C.-A.D. 1000. In *New Jersey's Archaeological Resources from the Paleo-Indian Period to the Present: A Review of Research Problems and Survey Priorities*, edited by Olga Chesler, pp.103-138. Office of New Jersey Heritage, New Jersey Department of Environmental Protection, Trenton.

Winter, Frederick A., and Karen S. Robinson

1985 *Report of Test Excavations, Block 2172, Lots 68 and 72, Inwood, Manhattan. Key Perspective.* Report on File at New York City Landmarks Preservation Commission.

Appendix A
INTERIM REPORT

PCI BUFFALO • TUSCALOOSA • MEMPHIS • TAMPA

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January 9, 2003

Ms. Lynn Rakos
Environmental Analysis Branch
U.S. Army Corps of Engineers, New York District
26 Federal Plaza
New York, New York 10278-0090

SUBJECT: Phase IA Cultural Resource Surveys of Two Priority Sites for the Hudson-Raritan Estuary Ecosystem Restoration Project: Liberty State Park, Jersey City, Hudson County, New Jersey; and Sherman Creek, New York County, New York (Contract #DACW51-01-D-0018, Work Order #0009)

Dear Ms. Rakos:

Panamerican Consultants, Inc. (Panamerican) is pleased to submit this interim report for the above referenced project on behalf of Northern Ecological Associates (NEA), Portland, Maine. The New York District, U.S. Army Corps of Engineers (USACE), is conducting a study to identify and inventory water resources and sediment quality-related problems and needs in the Hudson-Raritan Estuary (USACE 2002). As part of the project, USACE is presently looking at two locations for creating and or enhancing aquatic, wetland and adjacent upland habitats. These locations include 251 acres in Liberty State Park, Jersey City, Hudson County, New Jersey; and a small embayment of the Harlem River at Sherman Creek in northern Manhattan, New York County, New York (Figures 1 and 2). Panamerican conducted Phase IA background research and field reconnaissance at both of these locations to determine the potential for encountering cultural resources. The preliminary investigation results for both locations are presented in this interim report. Separate draft and final reports will be prepared for each location to facilitate review by separate state agencies (e.g., New Jersey Historic Preservation Office and New York State Office of Parks, Recreation and Historic Preservation).

The Panamerican investigative team consisted of: Project Director Dr. Michael A. Cinquino, RPA; Principal Investigator Mr. Robert J. Hanley, M.A., RPA; Field Director Mr. Daniel M. Cadzow; and Project Historians Ms. Stacy L. Weber, M.A., and Mr. Arnold Pickman, M.A., RPA. Documentary and background research was conducted at the: New York Public Library, General Research, Local History and Genealogy, and Map Divisions; New Jersey State Historic Preservation Office, Trenton; New York City Landmarks Preservation Commission; New York State Office of Parks, Recreation and Historic Preservation, Field Service Bureau, Albany; and, the U.S. Army Corps of Engineers New York District.

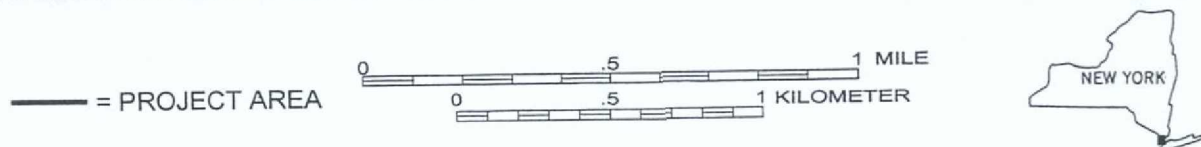
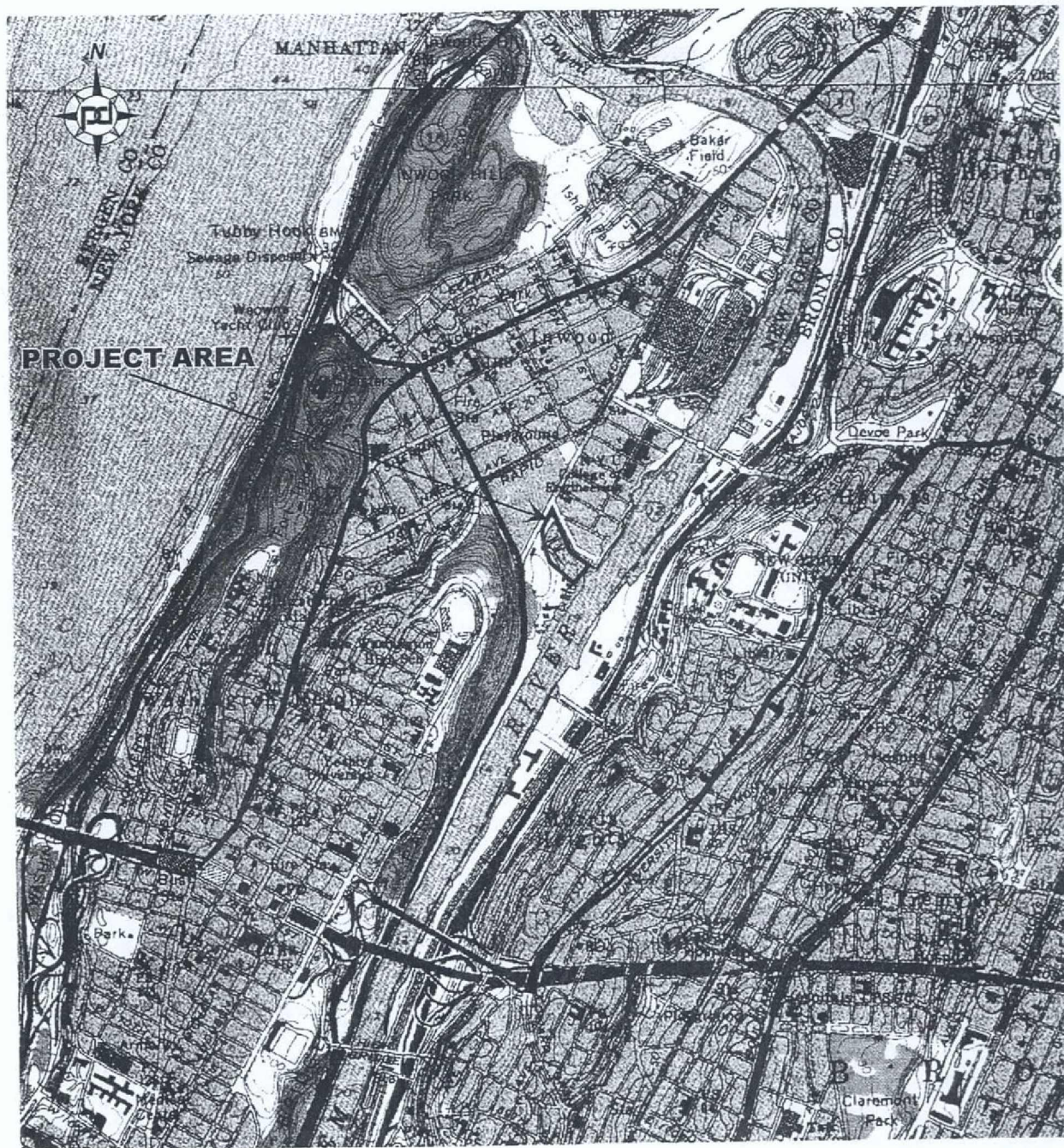


Figure 2. Location of the Sherman Creek project area within the City of New York, New York County, New York (USGS 7.5' Quadrangles, Central Park, NY, 1975 [1966]; Yonkers, NY, 1990 [1966]).

The field investigation was conducted between December 9 and 13, 2002. Investigation at each location included pedestrian/walkover reconnaissance, photographic documentation, and satellite positioning (GPS). The pedestrian survey was conducted to identify cultural features and environmental conditions (e.g., surface visibility, slope, vegetation, soil disturbance, standing water) at each location. A Garmin® GPS unit was used to record the UTM (North American Datum [NAD] 83) coordinates of photograph locations and cultural features.

Results

Liberty State Park. The Area of Potential Effect (APE) in Liberty State Park included 251 acres of former rail yard in the center of the park. This area is encompassed by Phillip Street, Thomas McGovern Drive, Freedom Way and Audrey Zapp Drive. Historic maps and literary sources show the entire APE to be made land for use by the Central Railroad of New Jersey (Jersey Central). Originally, the project area was tidal marsh, but it was filled between the 1860s and 1919. Maps dating to the 1870s (Beers 1873; Dripps 1879) revealed the shoreline at Philip Street, which forms the western boundary of the APE. Therefore, the archaeological sensitivity for prehistoric cultural resources within the APE is limited to submerged Late Pleistocene/Early Holocene deposits. These would be located beneath the landfill and also beneath underlying organic bay silts and peat that accumulated after inundation of the area by rising sea levels.

With the exception of the Phillip Street vicinity, few structures other than railroad tracks formerly existed within the project area. The most prominent structures were perhaps the *Central Union stockyards*, located below Pier 15 in approximately the center of the project area (Sanborn Map Company 1911). The stock yards consisted of a series of structures situated on a long, narrow open platform. The structures appear to have been mostly one-story, rectangular-frame buildings and included sheep and hog sheds, cattle pens, and a hay barn. A row of receiving pens lined the stockyards along the south side of the platform. The map also showed Jersey Central's Marine Repair Yard near the northern end of the APE. This small complex of buildings consisted of a small shops for blacksmiths and carpenters.

Most of the APE is now enclosed by a chain-link fence and is overgrown with a mix of deciduous and coniferous trees, sparse and dense brush, open grassland, and low wet areas with stands of *Phragmites*. Piles of railroad ties are scattered across the north, central and west portions of the APE. Modern debris has been dumped across the APE, and included building materials (e.g., chimney blocks, cement), garbage (e.g., ceramic sink, television, car tires), a metal trailer, and push-piles of rubble (e.g., concrete, asphalt). Two approximately 410-foot (125-meter) long parallel berms are present in the south-central portion of the APE. Water-filled borrow pits are adjacent to the berms. Dirty fill (e.g., slag, brick, coal, glass, mortar) was visible at some exposed locations (e.g., the base of some tree falls). Approximately 24 acres in the southwest corner of the APE is covered by a landfill surrounded by a chain-link fence. The 1955 U.S. Geological Survey (USGS) map indicated that a sewage disposal plant was located in this general area. A partially

paved trail nearly bisects the project area in a northwest/southeast orientation. It may be the remains of road shown on the 1955 USGS map.

Cultural features were present within the Liberty State Park APE that appear to be remnants of the former rail yard. These include:

- Two 3-by-5-ft concrete drain openings with iron rims are located in the west central portion of the APE. Both were partially filled with water. An arched drain conduit was partially exposed in the westernmost opening.
- The burned remains of a wood structure are present in the north-central part of the APE. It appears to have been a one-story structure approximately 12-by-18 ft in size. Wire nails, tongue-in-groove siding, tin stove pipe, tar-covered roll roofing, and metal-encased electrical conduits were found among the burnt wood debris. No subsurface foundation was visible.
- The base of a former tower was identified in the northwest part of the APE. It consists of four concrete footings spaced 10 ft apart. Each footing is 2-by-2 ft and has the partial remains of steel super structure attached on top.
- Two cast concrete booths were found in the west-central part of the APE. An *in situ* utility pole base located next to one of the booths indicates that the booths were used to house communications equipment (i.e., telephone booths). Both booths are empty and lying on their sides.
- *In situ* railroad ties were found at two locations in the APE. In the west-central part of the APE, the track bed has a northeast/southwest orientation. The track bed has a northwest/southeast orientation in the south-central part of the APE.

Sherman Creek. The Sherman Creek project area is approximately 6½ acres bounded by 10th Avenue to the west, a former Consolidated-Edison power-plant facility the north (Academy Street), Harlem River to the east, and Marginal Street to the south. Approximately 4 acres of the APE is a tidal mud flat that includes the remains of Sherman Creek. The remaining 2½ acres are sloped fill upland located primarily along the south and west sides of the APE.

Background research results show this location to be very sensitive for cultural resources, barring soil disturbances. Several prehistoric sites were identified in northern Manhattan in nineteenth century and early twentieth century (Bolton 1924, 1934; Skinner 1961; Geismar 1984). During the Revolutionary War, the British landed troops on the south shore of Sherman Creek within the APE. They consequently established Fort George atop Laurel Hill (just south of the APE) and a rope-drawn ferry (Holland's Ferry) and camp on the hook adjacent to the north shore of Sherman Creek (north of the APE) (Bolton 1914:170, 1916:185-186). The British Headquarters map of 1782 also showed another camp (two buildings) on the south side of the creek below Fort George and

immediately adjacent to the Sherman Creek marshes adjacent to the APE. Surface indications of the Holland Ferry camp were observed and a brick floor and a human skeleton were uncovered during excavations in the late nineteenth and early twentieth centuries (Bolton 1916:186-195, 1924:170).

Maps examined dating from 1815 through 1885 did not depict structures within the project area. Historic maps (Dripps 1867; Sanborn Map Company 1893; Bromley and Bromley 1897) showed a building west of the APE, on the south bank of the creek immediately west of 10th Avenue. This was also the approximate location of a structure identified as "Durando's Hotel" on the 1900 and 1913 Sanborn maps. Piers and boat houses were shown within the location of the APE on maps through the twentieth century. Boat wrecks are apparent on aerial maps as recent as 1998. However, older historic maps (e.g., USCGS 1902, 1908) did not identify wrecks in the Sherman Creek project area.

Field investigation of the Sherman Creek project area was conducted at low tide. The central portion of the APE was exposed open tidal mud flat with modern garbage and abandoned boat remains scattered across it. A small channel connects the Harlem River to a storm drain opening in a bulkhead that runs along the north edge of the APE. The bulkhead is a corrugated metal barrier parallel and adjacent to the former Academy Street and Con Ed generating plant (currently a fenced parking area). Brick pavement, presumably remnants of Academy Street, are also present. The dilapidated remains of a docking area are present along the north shore of Sherman Creek at the Harlem River.

The western edge of the APE is a fenced lot that contains a former gas station and asphalt lot adjacent to, and level with, 10th Street. The lot is currently used by the New York City Parks Department. Marginal Street, the southern project area boundary, is essentially a driveway and parking area for Public School No. 5. The southern edge of the APE, between Marginal Street and the Sherman Creek tidal mud flat, is mostly sloped and has been created by the deposition of large amounts of fill. It is overgrown with mature deciduous trees, brush, and vines (e.g., wild grape, poison ivy). The top of the slope has some bank stabilization elements including cut stone slabs and horizontally placed steel street light polls. *Phragmites* are located on the fringe of the mud flat at the base of the slope.

Cultural features were present within the Sherman Creek APE that appear to be remnants of twentieth century marina activities. These include:

- Wooden pier or mooring piles that protrude from the mud flat along the southeast and southwest sections of the shore.
- Metal rails, presumably used as a boat launch and wood piles are located in the mud flat in the southwest corner of the APE. A dilapidated steel and wood staircase connects this location to the high ground. A partially obscured 10-by-17-ft poured concrete base is located on the high ground above the stairs.

- The remains of abandoned boats are scattered across the tidal mud flat. The City of New York recently removed debris down to the water line and abandoned vessels were cut to the mud line (USACE 2002:2-3).

Preliminary Conclusions and Recommendations

Liberty State Park. The archaeological sensitivity for prehistoric cultural resources within the APE is very low. Documentary and field research results show the APE to be made land. Therefore, the sensitivity for prehistoric remains in the APE is limited to submerged Late Pleistocene/Early Holocene deposits located beneath the landfill and underlying natural sediment. A previous investigation (Rutsch and Leo 1979) of more sensitive locations just west of the APE did not find evidence of any shell midden or other prehistoric deposits. Further investigation will not likely yield prehistoric cultural resources.

Landfill in the northern portion of the APE could contain artifacts from mid-nineteenth-century landfill deposits, as well as landfill-retaining structures such as wooden cribbing. Landfill in the southwestern portion of the APE could contain later artifacts (see Rutsch and Leo 1979) as well as early twentieth-century landfill-retaining cribbing. However, artifacts found in the landfill will likely not be considered cultural resources due to the lack of context and ambiguous point of origin. The cribbing used to retain the fill also has limited research importance. Canal boats, deliberately sunk as part of the landfilling process, may be present beneath the fill. However, Rutsch (1977:332) depicts the canal boats sunk east of Freedom Way (i.e., east of the project area).

Remains associated with the former rail yard were identified during field reconnaissance. They include:

- A burned wood structure in the north-central part of the APE appears to be the remains of a small rail yard outbuilding of twentieth century (i.e., building materials) origin. No structures were shown at this location on historic maps, only railroad tracks. The only structures shown in the APE on historic maps were wood-frame cattle pens and sheds documented over 1,000 ft to the south of the structural ruins. Inspection of the map-documented location of the pens and sheds found no evidence of remains. Further investigation of the structure ruins or at the map-documented structure locations will likely not provide information required for assessing historic significance.
- The two concrete drain openings and two cast concrete "phone" booths in the west-central part of the APE were most likely ancillary components of the former rail yard. These elements are not cultural resources. Further investigation will likely not provide information involving the history of the project area.

- The base of a former tower located in the northwest part of the APE is in all likelihood associated with the former rail yard. Only footings remain and further investigation will likely not yield historic information.
- The railroad ties found *in situ* at two locations in the APE are unremarkable remnant elements of the former rail yard. They are incomplete (i.e., have no rails, only small sections are present) and are not considered a cultural resource.

The proposed ecosystem restoration project will have no impact on cultural resources as none were identified during this Phase IA cultural resource investigation. No further investigations are recommended at the Liberty State Park project area.

Sherman Creek. The archaeological sensitivity for prehistoric and historic cultural resources within the APE is very low due to substantial historic and modern landscape modifications. The majority of the APE (approximately two thirds [4-acres]) is tidal mud flat that has been historically inundated and has been dredged and utilized throughout the twentieth century. Remains found across the tidal mud flat do not appear to be cultural resources. They are badly damaged remnants of twentieth-century marina activities and include: wooden mooring piles, boat launch remains, and pieces of abandoned boats. Modern garbage also has been dumped across this area.

The rest of the APE (approximately 2½ acres) is sloped upland created by fill deposition. The south and west sides of the APE consist of large amounts of fill dumped into the Sherman Creek embayment. These portions of the APE were historically low and wet as part of a larger embayment and a more extensive creek. Therefore, the likelihood for the presence of cultural resources is low. Also, proposed ecosystem restoration between the tidal mud flat and Marginal Street will involve creation of additional upland (USACE personal communication). This reduces the threat of impacting deeply buried cultural resources, if at all present.

The northern edge of the APE (adjacent to former Academy Street) has been altered by construction of the former Con Ed power generating plant with an associated bulkhead and boat docking area. Two large storm sewer (presumably) outlets also drain into the Sherman Creek embayment along the bulkhead. Proposed ecosystem restoration in this area involves the removal of the bulkhead to cut back the creek edge and create slope (USACE personal communication). This portion of the APE is sensitive for cultural resources associated with the Revolutionary War Holland's Ferry camp. Remains were uncovered by street grading for the construction of 201st Street and 9th Avenue in 1894, and when the power plant on the north side of Academy Street was constructed circa 1904 (Bolton 1924:170, 1916:187). However, Bolton noted that most of the camp refuse was found on the Harlem River shore and "very few objects were found on the north shore of Sherman's Bay" (1916:188).

Construction of the Con Ed facility most likely destroyed any formerly intact archaeological deposits. It is possible, but unlikely, that the construction could have also

sealed deposits beneath added fill. It is uncertain how far the planned cutting back of the creek bank in this area would extend past the bulkhead. It is possible, but not likely, that this work will impact any surviving deposits. Based on preliminary investigation results, further investigation of the Sherman Creek project area is not recommended.

If you have any questions or require additional information, please do not hesitate to contact me or Dr. Michael Cinquino at your earliest convenience.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert J. Hanley", followed by a small flourish or checkmark.

Robert J. Hanley, M.A., RPA
Senior Archaeologist
Panamerican Consultants, Inc.

References Cited

Beers

1873 *Atlas of Hudson County, New Jersey.*

Bolton, Reginald Pelham

1916 *Relics of the Revolution.* Self-published, New York.

1924 *Washington Heights: Its Eventful Past.* Dyckman Institute, New York.

1934 *Indian Life of Long Ago in the City of New York.* Joseph Graham, New York.

Bromley, George Washington, and Walter Scott Bromley

1897 *Atlas of the City of New York, Manhattan Island.* G.W. Bromley and Co., New York.

Dripps, Matthew

1867 *Plan of New York City, from the Battery to Spuyten Duyvill.* M. Dripps, New York.

1879 *Map of Jersey City and Hoboken, Hudson County, N.J.* M. Dripps, New York.

Geismar, Joan

1984 *An Evaluation of the Archaeological Potential of the Community Hospital Site, New York, NY.* Report on File at New York City Landmarks Preservation Commission (CEQR No. 88-194-M0).

Rutsch, Edward S., and Ralph J. Leo, Jr.

1979 *Stage IB Cultural Resource Survey for the Hudson County Sewerage Authority, 201 Wastewater Facility Plan—District I, Jersey City, North Bergen, Secaucus, and Kearny, Hudson County.* Historic Conservation and Interpretation, Inc., Newton, NJ. Report on File New Jersey Historic Preservation Office, Trenton.

Rutsch, Edward S., Susan Kardas, Edward Larrabee, Ralph Leo, Brian Morrell, James Lally, Barbara Kalata, and Herb Githens

1977 *Cultural Resources Reconnaissance Liberty State Park.* Historic Conservation and Interpretation, Inc., Paterson, NJ.

Sanborn

1893 *Insurance Maps of the City of New York.*

1900 *Insurance Maps of the City of New York.* Vol. 12. Sanborn-Perris Map Company, New York.

1911 *Insurance Maps of Hudson County, New Jersey.* Vol. 6. Sanborn Map Company, New York.

1913 Insurance Maps of the City of New York.

Skinner, Alanson

1961 *The Indians of Manhattan Island and Vicinity*. Ira J Freidman, Inc., Port Washington, NY. [Reprint - Originally Published 1909].

United States Coast and Geodetic Survey (USCGS)

1902 *Hudson River, New York to Haverstraw*. U.S. Coast and Geodetic Survey, Washington, D.C.

1908 *Harlem River, New York*. U.S. Coast and Geodetic Survey, Washington, D.C.

United States Geological Survey

1955 *Central Park, New York Quadrangle*. 7.5 Minute series. U.S. Geological Survey, Washington, D.C.

1955 *Jersey City, New Jersey Quadrangle*. 7.5 Minute series. U.S. Geological Survey, Washington, D.C.

USACE

2002 *Scope of Work and Request for Cost Proposal Cultural Resources Documentary Study of Two Priority Sites for the Hudson-Raritan Estuary Ecosystem Restoration Project, Liberty State Park, Jersey City, Hudson County, New Jersey [and] Sherman Creek, New York County, New York*. U.S. Army Corps of Engineers, New York District, New York.

Will, Bob

2002 Personal Communication, U.S. Army Corps Engineers, New York District

Appendix B

SCOPE OF WORK

Section C - Descriptions and Specifications

STATEMENT OF WORK

**Scope of Work and Request for Cost Proposal
Cultural Resources Documentary Study of
Two Priority Sites for the
Hudson-Raritan Estuary Ecosystem Restoration Project
Liberty State Park, Jersey City, Hudson County, New Jersey
Sherman Creek, New York County, New York**

I. INTRODUCTION

The U.S. Army Corps of Engineers, New York District (Corps) is conducting a study to identify and inventory water resources and sediment quality related problems and needs in the Hudson-Raritan Estuary. Environmental restoration, including the creation and enhancement of aquatic, wetland, and adjacent upland habitats were the specific areas of interest identified in the resolution. Thirteen locations have been identified as possible sites for restoration. Two of those thirteen sites are presently being looked at in detail. These sites are Liberty State Park in Jersey City, New Jersey and Sherman Creek in northern Manhattan, New York (Attachments 1 and 2). The potential for encountering cultural resources in these locations will be examined under this scope of work. Conceptual plans have been developed for the restoration of the degraded environment (Attachments 2 and 3). The shaded areas indicated locations that might be disturbed by project actions.

As an agency of the Federal Government, the Corps has certain responsibilities concerning the protection and preservation of cultural resources within the project area. The federal statutes regarding these responsibilities include Section 106 of the National Historic Preservation Act of 1966, as amended, Executive Order 11593, and the Advisory Council on Historic Preservation Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800).

This cultural resource study will consist of a Phase 1A survey of the locations proposed for restoration activities. Work will include an examination of existing cultural resources studies, historic sites surveys and other data held by the New Jersey State Historic Preservation Office (NJHPO), the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), the New York City Landmarks Preservation Commission (NYCLPC) and other relevant agencies and repositories. Historic maps of the project areas will also be collected for use in determining the potential for historic resources. If available, documentation on areas and depths of ground disturbance shall also be documented. Some data on disturbance and episodes of fill will be available from the Corps. Fieldwork will consist of a pedestrian survey of the property as feasible considering the wet nature of some of the areas under study. This cultural resource investigation will result in a reconnaissance level study and will entail background research, fieldwork and report preparation. Recommendations for further study, if required, will be included in the report. The tasks are detailed in Section IV, below.

The Corps requests that the Contractor submit a cost proposal to the Corps' Environmental Analysis (EA) Branch. This cost proposal should detail the level of effort, in terms of number of hours, individuals, etc., that will be required to complete the tasks described in Section IV below.

II. PROJECT DESCRIPTION

Liberty State Park, located in Jersey City, New Jersey is situated in the Upper Bay of New York Harbor in the vicinity of Ellis Island and the Statue of Liberty. The park is comprised of 598 upland acres and 523 tidal acres. The entire area was once a coastal marshland that had been filled with construction debris and refuse during the latter half of the 19th century to create a large urban rail yard. The rail yard and adjoining properties have been converted to an urban waterfront park with facilities that include 25 structures, 5.3 miles of roads, and ferry service to Ellis Island and the Statue of Liberty. The park currently receives 4.3 million visitors annually.

There are currently 251 acres of former rail yard in the center of the park that remain undeveloped. Restoration opportunities for the 251 acres and adjacent areas include restoration of tidal wetlands, enhancement of existing freshwater wetlands, development and enhancement of coastal upland grasslands and woodlands, and preservation of the unique "moss mat community" that has developed in the vicinity of existing fresh water wetlands. The NJDEP, Division of Parks and Forestry plans to integrate the restored and preserved ecosystems into the educational and recreational services provided by the park through the development of controlled access, interpretive programs, and supporting landscape designs.

Sherman Creek, located in Manhattan Island, New York City, New York is a small embayment of the Harlem River on the east side of northern Manhattan at approximately 200th (Dyckman) Street. The Sherman Creek study area is bounded by the former Con Edison power plant facility (Academy St.) to the north, by 10th Avenue to the west, by Marginal Street to the south, and by the Harlem River to the east. Prior to development in the early 1900's, Sherman Creek was a tidal creek that supported tidal wetland habitats. Tidal wetlands on both banks of the creek were filled in for development and the creek itself was filled in west of what is now 10th Avenue. The remaining reach of the creek was dredged to facilitate coal barge deliveries and slag removal at the adjacent power plant. The western and southern shorelines were used as a boat basin and marina from the early 1900's until the 1980's when the marina was abandoned. Since that time, the area has come under the jurisdiction of the New York City Parks Department.

Outflow from the power plant apparently maintained a small channel into the boat basin. Since the closing of the power plant in the 1970's the boat basin gradually filled in with sediments from the Harlem River. Currently, Sherman Creek is an unvegetated mud flat that is exposed at Mean Low Tide. The sediment is heavily littered with debris from the former marina and boat basin. Recently, the New York City Parks Department removed debris from Sherman Creek down to the waterline. The banks of the embayment consist of hardened bulkhead along the northern shore and steeply sloped unconsolidated fill material to the west and south. A

wetland restoration/park construction project is currently being constructed by the Parks Department on property just to the south of Sherman Creek. Restoration opportunities in Sherman Creek include sediment rehabilitation to enhance benthic habitat; tidal wetland restoration along the western and southern banks or possibly throughout the entire area; and development of a riparian habitat buffer zone.

III. PREVIOUS WORK

A cultural resources study was conducted as part of park planning for the creation of Liberty State Park. This study included shoreline resources that were evaluated for the Corps' Collection and Removal of Drift Project. The resulting reports are listed below and are available for review at the Corps office in Manhattan. It is not known if cultural resource studies have been conducted in the Sherman Creek area. A report prepared by the Economic Development Department The Port Authority of NY & NJ contains a limited discussion on the historic development of Sherman Creek (Attachment 5). A number of vessels were abandoned in Sherman Creek and were recently cut to the mud line by the City of New York.

IV. CONTRACTOR SERVICES AND REQUIRED INVESTIGATIONS

A. The general services to be provided under this portion of the contract are those required to conduct research and fieldwork to determine the potential for presence or absence of cultural resources within the project areas. Should any resources be encountered, a preliminary assessment of their potential eligibility for the National Register of Historic Places shall be evaluated. The report shall include recommendations on the need for further cultural resource work.

The work must be conducted in the timetable, area and manner described below. The Contractor must furnish one interim report as well as draft and final professional quality reports of the investigations. Failure to fully meet the fieldwork and reporting requirements of this scope of work may be cause for termination of work for default of contract, or for an evaluation of unsatisfactory upon completion of the contract.

B. The scope of work requires the completion of the following tasks:

Task 1: Background Research

Documentary research should include an examination of the site maps and files held by the New Jersey Historic Preservation Office, the New York State Office of Parks, Recreation and Historic Preservation, New York City Landmarks Preservation Commission. Additional data may be available at the library at Liberty State Park. Copies of historic maps of each project area will be obtained and will likely be the only primary documents consulted at this stage of the study. Secondary materials such as local histories should be reviewed and used for background and reference materials. If possible, local informants should be consulted. Reports, as listed below,

are available for review at the Corps office in Manhattan.

Task 2: Field Investigations

Fieldwork shall be limited to a pedestrian survey to identify any standing structures, potential archaeological resources, and to document ground disturbance. Particular attention should be paid in locations where historic documents suggest historic resources might be located or where environmental indicators suggest sensitivity for prehistoric resources.

Task 3: Data Analysis

This analysis should be aimed at developing an historic context for all potential resources identified. An evaluation of the potential for significant resources should be made based on background research and the pedestrian survey. Recommendations for further work, if required, shall be developed. The results of the analysis should be presented in a draft cultural resources report.

Task 4: Report Preparation

The Contractor shall prepare interim, draft and final reports. The final report will incorporate all comments received from the Corps and other reviewing agencies.

The reports produced by a cultural resource investigation is of potential value not only for its specific recommendations but also as a reference document. To this end, the report must be a scholarly statement that can be used as a basis for any future cultural resources work. It must meet both the requirements for cultural resource protection and scientific standards of current research as defined in 36 CFR Part 800 and the Council's Handbook.

One copy of each interim report will be submitted to the Corps, according to the time schedule established in Section VI "Project Schedule", below. The interim report will provide a brief summary of the work conducted to date and the work yet to be completed. It shall present any preliminary results of the research and field effort.

2. Four (4) copies of the draft report will be prepared and submitted to the Contracting Office according to the schedule established in Section VI "Project Schedule", below. The draft report will be reviewed by the Corps, NJHPO, NYSOPRHP and NYCLPC. All comments of the reviewing agencies and will be transmitted to the Contractor prior to the submission of the final report.

3. Eight (8) copies of the final report shall be submitted to the Contracting Office according to the schedule established below in Section VI "Project Schedule". The final report shall address all comments made on the draft report.

Task 5: Project Management

Project management will ensure that all requirements of this Scope are fulfilled and that there is timely submission of all deliverables. The Project Manager and the Principal Investigator shall consult with the Corps archaeologist, as required. As directed by the Corps, the consultant will coordinate with personnel at Lawler, Matusky and Skelly Engineering, the prime consultant on the overall Hudson-Raritan Estuary Project.

V. Cultural Resources Report Format and Content

A. The draft and final reports shall have the following characteristics:

1. The draft and final copies of the cultural resources report shall reflect and report on the work outlined in Section IV (Required Investigations) above. They shall be suitable for publication and be prepared in a format reflecting contemporary organizational and illustrative standards of professional archaeological journals. The draft report will be revised to address all review comments.

2. The report produced by a cultural resources investigation is of potential value not only for its specific recommendations, but also as a reference document. To this end, the report must be a scholarly statement that can be used as a basis for any future cultural resources evaluation. It must meet both job requirements for cultural resources protection and scientific standards as defined in 36 CFR Part 800 and in the "The Treatment of Archeological Properties: A Handbook" (1980) published by the Advisory Council on Historic Preservation.

3. All interim, draft and final copies of the report shall reflect and report on the work required by this scope.

B. PAGE SIZE AND FORMAT. Each report shall be produced on 8 1/2" x 11" archivally stable paper, single spaced with double spacing between paragraphs. The printing of the text should be letter quality. Most figures should not exceed 11 inches in height or 17 inches in length under most circumstances, unless plan sheets are being submitted. All text pages, including figures, tables, plates and appendices must be consecutively numbered.

C. Final copies of the report shall be submitted in a hard-covered binder suitable for shelving.

D. The **TITLE PAGE** of the report shall include municipalities, counties, states, the author(s) including any contributor(s). The Principal Investigator should be identified and is required to sign the original copies of the report. If the report has been written by someone other than the contract Principal Investigator, then the cover of the publishable report must bear the inscription "*Prepared Under the Supervision of (NAME), Principal Investigator*". The Principal Investigator in this case must also sign the original copies of the report.

E. A **MANAGEMENT SUMMARY** or **ABSTRACT** shall appear before the **TABLE OF CONTENTS** and **LIST OF FIGURES**. It should include a brief project description including the location and size of the project area, the methods of data collection, the results of the study, evaluations and identification of impacts and recommendations. It should also include the location of where copies of the report are on file and, if applicable, the location of the curation facility.

F. The **TABLE OF CONTENTS** will include a list of all figures, plates and tables presented in the report.

G. The **INTRODUCTION** will state the project's purpose and goals as defined by the scope of work and will include the applicable regulations for conducting this work and will contain a general statement of the work conducted and the recommendations proposed.

H. The **BACKGROUND RESEARCH** must be sufficient to enable the evaluation of National Register eligibility by providing historic contexts for identified sites. For historic sites, the background research should be sufficient to identify associations with significant people and events. This section should include a summary of the existence of sites and a description of previous work conducted in the area. The following information should be presented and discussed briefly:

1. the **ENVIRONMENTAL SETTING**, including topography, soils, hydrology and geology.
2. the **SUMMARY** of paleoenvironment, present climate and current vegetation.
3. **PAST AND PRESENT LAND USES** and current conditions.
4. an **OVERVIEW** of prehistoric and historic culture history of project locale, including the surveyed area. This section should provide contexts for research questions, survey methods, site evaluations and recommendations for further work.
5. a **REVIEW** of known sites, previous investigations and research in the project area and vicinity and information provided by local collectors and archaeological societies.
6. **PRIMARY DOCUMENTARY RESEARCH** for the project area, may include historic maps, deeds, or other pertinent information. Detailed individual property title searches may be appended.

I. A **RESEARCH DESIGN** will outline the purpose of the investigation, basic assumptions about the location and type of cultural resources within the project area and the rationale for the methods employed in the investigation. The following shall also be included:

1. **RESEARCH OBJECTIVES** and **THEORETICAL CONTEXT**

2. specific **RESEARCH PROBLEMS** or questions.
3. **METHODS** to be employed to address the research objectives and questions.
4. a **DISCUSSION** of the expected results, including hypotheses to be tested.

J. A **METHODS** section shall include:

1. a **DESCRIPTION OF FIELD METHODS** employed, including rationale, discussion of biases and problems or obstacles encountered.
2. a **DEFINITION** of site used in the survey.

K. **FIELD RESULTS** shall include a clear description of all areas investigated, a description of each identified site, including structural features and maps, figures and photographs as appropriate.

L. **INTERPRETATIONS AND RECOMMENDATIONS.** A discussion of the results in terms of the background cultural context, research design, goals and research problems with reference to historic contexts and potential research questions. This section should also include an evaluation of National Register eligibility, project effects and recommendations and should be explicit for each reach. National Register eligibility should reference the four National Register criteria. Recommendations should indicate why a site is or is not eligible for the National Register. The following should be included:

Each resource identified should be evaluated in terms of known information and research potential within the context of current broad questions in anthropological and historical theory. The eligibility of each resource should be assessed for its potential for listing in the NRHP, using the National Register criteria for evaluation. The factors considered in making the assessment should be fully described.

2. Appropriate recommendations for each site identified, including no further work, additional investigations, data recovery or avoidance shall be explained in full. These recommendations shall be specific for each site or groups of sites.

3. If sites are eligible for the NRHP under criterion D, specific statements regarding the sorts of new information that will be gained must be included.

4. Site evaluations must be presented within the context of known sites relevant to the resource potential of the site.

M. A **REFERENCES CITED** section will list all references and citations located within the text, including all figures, plates or maps, and within any appendices. All sources (persons consulted, maps, archival documentation, etc.) maybe listed together. This list must be in a format used by professional archaeological journals, such as *American Antiquity*.

N. **APPENDICES** shall include, but not be limited to:

1. **QUALIFICATIONS** of the Principal Investigator and any other key personnel used.

2. final **SCOPE OF WORK**.

3. **INTERIM REPORT**.

O. **PHOTOGRAPHS** will be glossy black and white prints no smaller than 5" x 7". Photographic illustrations should be securely mounted by use of an archivally stable mounting medium. Photograph captions for site overviews must include direction or orientation. Photographs of features should include a scale, title board and orientation. At a minimum, captions should identify feature or location, direction, photographer and date of exposure. All photographs should be fully captioned on the reverse of the photograph in case they should be removed from the report. Photographs should be counted as "Figures" in a single running series of illustrations, plates, etc.

P. **GRAPHIC PRESENTATION OF THE RESULTS**.

1. All pages, including graphic presentations, will be numbered sequentially.

2. All graphic presentations, including maps, charts and diagrams, shall be referred to as "Figures". All figures must be sequentially numbered and cited by number within the body of the text.

3. All figures, plates and tables should be incorporated into the text on the page following their citation. They should not be appended.

4. All tables shall have a number, title, appropriate explanatory notes and a source note.

5. All figures shall have a title block containing the name of the project, county and state.

6. All maps, including reproductions of historic maps, must include a north arrow, accurate bar scale, delineation of the project area, legend, map title and year of publication.

7. The report must include the project area accurately delineated on a U.S.G.S. 7.5' topographic map and a county soils survey map, if available for that area.

VI. PROJECT SCHEDULE

A. All reports should be submitted in a timely manner as stipulated below:

1. One interim report will be submitted six (6) weeks after receipt of notice to proceed from the Corps. The draft report shall be submitted twelve (12) weeks after the notice to proceed is received. The draft report will be submitted by the Corps to the agencies for review and comment.

2. The agencies shall have four (4) weeks to review the report and submit comments. All comments received will be submitted to the Contractor for incorporation in the final report. All copies of the final report will be submitted to the Corps four (4) weeks after the receipt of comments.

B. The number of copies of each report should be submitted according to the above schedule, as follows:

1. One (1) copy of the interim report.

2. Four (4) copies of the draft report; one of the copies shall include original photographs.

3. Eight (8) copies of the final report; two of these copies shall contain original photographs and one of these copies shall be unbound. All bound copies of the report shall be provided in a hardcover binder suitable for shelving. A copy of all photographic negatives with a list identifying each shot will be submitted with the final report.

Scheduled completion date for the work specified in this scope is nine months after date of award.

VII. Additional Contract Requirements

A. Agencies, institutions, corporations, associations or individuals shall be considered qualified when they meet the minimum criteria given below. As part of the supplemental documentation, a contract proposal and appendices to the draft and final report must include vitae for the **PRINCIPAL INVESTIGATOR** and **MAIN SUPERVISORY PERSONNEL** in support of their academic and experiential qualifications for the research, if these individuals were not included in the original contract proposal. Personnel must meet the minimum professional standards stated below:

1. Principal Investigator (PI). Persons in charge of a cultural resource project or research investigation contract, in addition to meeting the appropriate standards for the discipline, must have a doctorate or equivalent level of professional experience as evidenced by a publication record that demonstrates experience in project formulation, execution, and technical monograph reporting. Suitable professional references may also be made available to obtain estimates regarding the adequacy of prior work. If prior projects were of a sort not ordinarily resulting in a publishable report, a narrative should be included detailing the proposed project director's previous experience along with references suitable for to obtain opinions regarding the adequacy of this earlier work.

2. Standards for Consultants. Personnel hired or subcontracted for their special knowledge and expertise must carry academic and experiential qualifications in their own fields of competence. Such qualifications are to be documented by means of vitae attachments to the proposal or at a later time if the consultant has not been retained at the time of proposal.

B. Principal Investigators shall be responsible for the validity of the material presented in their reports. In the event of a controversy or court challenge, Principal

Investigators shall be required to testify on behalf of the government in support of findings presented in their reports.

C. Neither the Contractor nor his representatives shall release any sketch, photograph, report or other data, or material of any nature obtained or prepared under this contract without the specific written approval of the Contracting Officer prior to the time of final acceptance by the government.

D. The Contractor shall furnish all labor, transportation, instruments, survey equipment, boats and other associated materials to perform the work required by this Scope of Work.

E. The Contractor shall return all copies of reports provided by the Corps when the final report is submitted.

VIII. Fiscal Arrangements

A. Partial payments of the total amount allocated shall be dispersed upon the receipt of invoices. Invoices shall be submitted with the interim reports and with the draft report and shall reflect the amount expended. The total amount of all monthly invoices shall not total more than 90% of the agreed work order amount. The remaining 10% of the agreed work order amount shall be paid upon the receipt and acceptance of the final report, all reports provided by the Corps, etc.

and receipt of the final invoice. No invoice payments shall be made if it does not include an accompanying interim or draft report.

B. Invoice payments shall be made pursuant to the "Prompt Payment" clause of the contract.

REPORTS on file at the NY District Office

CULTURAL RESOURCES RECONNAISSANCE LIBERTY STATE PARK E.S.

Rutsch, Historic Conservation and Interpretation (1977)

CULTURAL RESOURCES SURVEY OF PRIORITY AREA 1 OF LIBERTY HARBOR BASED ON RECOMMENDATIONS OF RECONNAISSANCE REPORT BY LARRABEE AND KARDAS (1976): SURVEY OF THE NEWTON No Author (1976)

PHOTOGRAPHIC RECORDING AND ARCHITECTURAL DESCRIPTION OF THE STANDING STRUCTURES, PIER 19 LIBERTY STATE PARK, JERSEY

CITY, N.J. Herbert Githens, Michael Spozarsky, Ralph Leo, and Edward Rutsch, Historic Conservation and Interpretation (1980)

PREHISTORIC AND HISTORIC ARCHAEOLOGICAL RECONNAISSANCE FOR CULTURAL RESOURCES: PRIORITY AREA 1 OF LIBERTY PARK NEW YORK HARBOR COLLECTION AND REMOVAL OF DRIFT PROJECT
S. Kardas and E. Larrabee (1976)

SURVEY OF CULTURAL RESOURCES IN THE FORM OF DERELICT SHIPS AND BARGES AREA II (COMPLETION) OF SHOOTERS ISLAND, NEW JERSEY, NEW YORK HARBOR COLLECTION AND REMOVAL OF DRIFT PROJECT Norman J. Brouwer (1983)

SURVEY OF CULTURAL RESOURCES IN THE FORM OF DERELICT SHIPS AND BOATS: PRIORITY AREA 2 OF LIBERTY STATE PARK, NEW YORK HARBOR COLLECTION AND REMOVAL OF DRIFT PROJECT
(20 Supplement S1) Norman J. Brouwer (1977)

SURVEY OF CULTURAL RESOURCES IN THE FORM OF DERELICT SHIPS AND BOATS: PRIORITY AREA 3 OF LIBERTY STATE PARK, NEW YORK HARBOR COLLECTION AND REMOVAL OF DRIFT PROJECT
(20 Supplement S2) Norman J. Brouwer (1977)

SURVEY OF CULTURAL RESOURCES IN THE FORM OF DERELICT SHIPS AND BOATS: PRIORITY AREA 4 OF LIBERTY STATE PARK, NEW YORK HARBOR COLLECTION AND REMOVAL OF DRIFT PROJECT
(20 Supplement S3) Norman J. Brouwer (1977)

Appendix C
VITAE OF KEY PERSONNEL

PCI BUFFALO • TUSCALOOSA • MEMPHIS • TAMPA

Buffalo Branch Office • 2390 Clinton Street • Buffalo, NY 14227 • (716) 821-1650 • Fax (716) 821-1607

ROBERT J. HANLEY III, RPA Senior Archaeologist

EDUCATION

- M.A. Archaeology, State University of New York at Albany, 1994
- B.A. Anthropology, State University of New York, College at Buffalo, 1989

EXPERIENCE

Mr. Robert J. Hanley is currently a Senior Archaeologist with Panamerican Consultants, Inc. (PCI). He has more than eleven (11) years experience in prehistoric and historic period archaeology serving as principal investigator, field director, crew chief and field technician. He has participated in over 100 field investigations throughout the Northeast, including New York, New Jersey, Pennsylvania, Connecticut, Maryland, and Rhode Island, as well as in Puerto Rico, St. Croix, Iowa, Illinois, Texas and Virginia. He is experienced at conducting cultural resource investigations on large-scale projects including waterfront development, pipeline/corridor and highway projects and military installations, which often require design of field methodology including predictive site modeling strategies, all phases of archaeological field investigations, and report preparation.

He has extensive experience in lithic and human bone analysis. Mr. Hanley has directed and implemented a comprehensive array of field methodologies pertinent to cultural resource investigations, including developing and implementing research designs, directing field investigations, and preparing detailed written discussions of fieldwork. As principal investigator and field director, he has coordinated and supervised field investigations and artifact analysis. His other responsibilities include data analysis and report writing. While with PCI, he has presented *Cultural Resources Management Planning and Predictive Modeling at Picatinny Arsenal, New Jersey* at the 2000 Society for American Archaeology Meeting and for the Houghton Chapter of the New York State Archaeological Association. He has also conducted presentations for primary and secondary education classes to broaden public knowledge of archaeology and cultural resource preservation. He is a member of the Register of Professional Archaeologists (RPA) and the Society for American Archaeology (SAA).

PANAMERICAN CONSULTANTS, INC. EXPERIENCE (MAY 1997 TO PRESENT)

Summary of Recent Experience

For the U.S. Army Corps of Engineers (USACE), New York District, Mr. Hanley served as Principal Investigator for a cultural resources investigation as part of a navigation project at the Town of Athens, Greene County, New York. The investigation was conducted to determine site boundaries and the extent of buffer zones around three previously identified historic ice-house sites on Schodack-Houghtaling Island.

Mr. Hanley served as Principal Investigator and Field Director for a Phase I cultural resource investigation of proposed waterline construction in the Town of Newstead, New York, Water District No. 5. Covering 31,000 linear feet of proposed waterline construction in a rural community, the

investigation included field inspection of the entire waterline route, shovel testing of sensitive areas, and photographic documentation of site and field conditions. His responsibilities included supervision of a 5-person crew, landowner liaison, photography, survey mapping of disturbance, site conditions, and area of field survey, laboratory analysis, and report writing.

For National Fuel Gas Supply Corp. under contract to Northern Ecological Associates, Inc., Mr. Hanley served as Co-Principal Investigator for a Phase I Cultural Resource Investigation of the Proposed Ellisburg Alternative Natural Gas Pipeline, Towns of Allegany and Hebron, Potter County, Pennsylvania. Served as PCI's Co-Principal Investigator for the cultural resources investigation of the proposed Northwinds natural gas pipeline installation.

Mr. Hanley served as Principal Investigator and Field Director for a Phase I investigation for the proposed Aurora Water Improvement Area No. 7, Town of Aurora, Erie County, New York. The survey investigated 10,500 linear feet of proposed waterline construction in a residential town, and included field inspection of the entire project area, shovel testing in all undisturbed area, and photographic documentation of site and field conditions. Mr. Hanley's responsibilities included supervision of a 5-person crew, landowner liaison, photography, survey mapping of disturbance, site conditions, and area of field survey, laboratory analysis, and report writing.

For URS Greiner, Inc., he served as Principal Investigator and Field Director for a Phase IB cultural resource investigation at the West Seneca Soccer Field, Seneca Street, West Seneca, New York. His responsibilities included supervision of a field personnel, photography, survey mapping of disturbance, site conditions, and area of field survey, laboratory analysis, and report writing. One prehistoric archaeological site was identified as a result of the investigations.

Mr. Hanley was Co-Principal Investigator and Field Director for a Phase I cultural resources survey of the Selody property in the Borough of Manville, Somerset County, New Jersey. The investigation was completed for the U.S. Army Corps of Engineers (USACE), New York District under contract to Barry A. Vittor and Associates, Inc., Mobile, AL, and conducted as part of an evaluation of a potential wetland mitigation site for the Green Brook Flood Control Project. The purpose of the survey was to identify any cultural resources that may exist in the project area. The project area consisted of approximately 43 acres along the Millstone River and adjacent to Royce Brook. Field investigations comprised a pedestrian or walkover reconnaissance, photographic documentation, shovel testing, and stratigraphic auger sampling.

For the New York District, USACE (under contract to NEA, Inc.), he served as PCI Field Director and Co-Principal Investigator for the Phase I cultural resources investigation of the Union Beach Flood Protection and Beach Restoration Feasibility Study, Union Beach, NJ. The purpose of the survey was to identify any cultural resources in the project area and to determine if the flood control and ecosystem restoration activities would impact these resources. Field investigations included walkover reconnaissance, photographic documentation, shovel testing, and stratigraphic sampling.

For the New York District, USACE (under contract to Barry Vittor & Associates), he served as Field Director and Co-Principal Investigator for the Phase I cultural resources investigation of the South River Flood Control and Ecosystem Restoration Project in Sayreville and South River, NJ. The purpose of the survey was to identify cultural resources in the project area and to determine if the flood control and ecosystem restoration activities would impact them. Field investigations included walkover reconnaissance, photographic documentation, shovel testing, and stratigraphic sampling.

He was Field Director for PCI's Phase IB cultural resources investigation at Clinton Square in the City of Syracuse, Onondaga County, New York. Prepared for Edward V. Curtin & Associates (under contract to Clough, Harbour & Associates, LLP), the investigation identified the presence and assessed the condition of the historic Erie Canal at Clinton Square. Phase IB investigations at Clinton Square involved backhoe monitoring in proposed areas of construction and hand excavation at six locations determined in consultation with Dr. Robert Kuhn of the New York SHPO. Remains of canal or canal basin walls were found at five of the six locations beneath modern fill.

For National Fuel Gas Supply Corp. under contract to Northern Ecological Associates, Inc., Mr. Hanley served as Field Director for a Phase I cultural resource survey for the proposed Line S-43 replacement in the Summit Township, Erie County, Pennsylvania. Field methods consisted of intensive surface and subsurface investigations of the complete study area. The study area is a proposed 9,445-ft long gas line replacement with a 100-foot right-of-way and three existing staging areas. The purpose of the project was to determine the presence of cultural resources prior to potential construction impacts.

He has served as PCI field director for at least ten terrestrial archaeological projects sponsored by the USACE, New York District under contracts DACW51-97-D-0009 and DACW51-97-D-0010, including a cultural resource survey for the South River Flood Control and Ecosystem Restoration project, Middlesex County, NJ; a cultural resources investigation of the Selody Property, Manville, Somerset County, NJ; a Phase I investigation of the Finderne property, Bridgewater Township, NJ; a Phase II investigation for the Hemlock Street weir and wing dam, Bergen County, NJ; and a Phase I cultural resources investigation at Building 117 (the Lee House) at Fort Hamilton, Brooklyn.

For the USACE, New York District, Mr. Hanley has served as Field Director for Phase II cultural resource investigations at three prehistoric sites in Sensitivity Areas 16A and 25A at Picatinny Arsenal, Rockaway Township, Morris County, New Jersey. The investigation included field inspection of the three archaeological site areas, supplemental, close-interval shovel testing of sensitive areas, excavation of 1-x-1-meter units, and photographic documentation of the sites and field conditions. His responsibilities included supervision of a 4-person crew, photography, survey mapping of disturbance, site conditions, and area of field survey, and report writing.

ADDITIONAL FIELD EXPERIENCE (1988-1997)

Prior to exclusive employment with PCI, Mr. Hanley participated in CRM projects with other companies. His responsibilities included conducting archival research and site file searches, and client and landowner relations as well as a variety archaeological field techniques and activities. Mr. Hanley served as a field technician, field and lab assistant, or crew chief with Pratt & Huth Associates, Williamsville, NY; Ecology & Environment, Inc., Lancaster, NY; WFA Associates, Buffalo, NY; Ladd Archaeological Services, Pavilion, NY; John D. Holland Lithic Laboratory, Buffalo Museum of Science, Buffalo; S.J.S. Archaeological Consultants; The Chazen Companies, Poughkeepsie, NY; and the University of Buffalo Archaeological Survey, Buffalo.

SELECTED PAPERS/PUBLICATIONS

Cultural Resources Management Planning and Predictive Modeling at Picatinny Arsenal, New Jersey. Presented at 65th Annual Meeting of the Society for American Archaeology, Philadelphia, April 2000 (with Dr. Frank J. Schieppati).

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MICHAEL A. CINQUINO, Ph.D. **Senior Archaeologist, Senior Vice President**

EDUCATION

- Ph.D. Anthropology, State University of New York at Stony Brook, 1986
- M.A. Anthropology, State University of New York at Stony Brook, 1977
- B.A. Sociology, St. John Fisher College, Rochester, New York, 1971

EXPERIENCE

Dr. Cinquino is currently a Senior Archaeologist with Panamerican Consultants, Inc. and director of the Buffalo (New York) Branch Office. He has served as project manager/ principal investigator on over 250 cultural resources projects throughout New York, Pennsylvania, New Jersey, Puerto Rico, the U.S. Virgin Islands, and the United States. These projects include natural gas pipelines, developments, transportation projects, flood control projects for the Corps of Engineers, light rail rapid transit systems, industrial parks, wastewater treatment plants, fuel storage projects, interceptor sewers, a demolition project, construction monitoring, and U.S. military installations. In addition, he prepared numerous cultural resource sections for environmental assessment, impact statements, environmental resource documents, and cultural resource management plans and environmental audits.

He is experienced at conducting cultural resource investigations on large-scale projects including corridor pipeline and highway projects, military installations, wastewater projects, etc. which often require detailed archival and historic map research, design of field methodology including predictive site modeling strategies, all phases of archaeological field investigations, documentation and report preparation. He has conducted investigations at military installations throughout the Eastern United States, Puerto Rico and in the Virgin Islands.

Dr. Cinquino also has extensive regulatory experience on the federal and state levels as State Archaeologist and Review and Compliance Archaeologist for the Puerto Rico State Historic Preservation Office (SHPO) and as a consultant for the New York State Department of Environmental Conservation (NYSDEC) directing the cultural resource review for the NYSDEC permit program and SEQRA compliance. As an employee of Ebasco, he assisted in report reviews for the Federal Energy Regulatory Commission.

He is a member of the Register of Professional Archaeologists and certified in Field Research and Archaeological Resource Management. He is also on the New York State SHPO's list of archaeologists and a member of the New York Archaeological Council certified to conduct all phases of investigations in prehistoric and historic archaeology. Dr. Cinquino has completed the hazardous waste training course and is familiar with archaeological investigations in areas of potential hazard (e.g., hazardous materials, unexploded ordnance).

REPRESENTATIVE PANAMERICAN CONSULTANTS, INC. EXPERIENCE

Dr. Cinquino has served or is serving as Project Manager/Principal Investigator for more than seventy (70) projects for the New York District, Corps of Engineers including preparation of Cultural Resource Management Plans for the Picatinny Arsenal, Dover, New Jersey, Watervliet Arsenal in Albany County, and Fort Hamilton in Brooklyn, NY; a Cultural Resource Investigation for the Joseph G. Minish Passaic River Waterfront Park in northern New Jersey; and Phase I/II archaeological investigations at the U.S. Military Academy at West Point, Seneca Army Depot.

Dr. Cinquino has served as Principal Investigator or Project Director for more than thirty (30) cultural resource investigations for proposed cellular communications tower projects for URS Corporation. Project areas for these investigations include locations in the following New York State counties: Erie, Cattaraugus, Chautauqua, Steuben, Seneca, Cayuga, Onondaga, Jefferson, and Madison. The investigations included supervising archival and documentary research; systematic survey of the project areas; and report preparation.

In addition, he served as Project Director and Co-Principal Investigator for cultural resources investigation of 16 wetland restoration areas in Central and Northern New York. Conducted for the Natural Resources Conservation Service, these investigations were conducted for sites in Broome, Jefferson, Madison, Montgomery, Oswego, Otsego, Lewis, Oneida, and St. Lawrence counties.

Dr. Cinquino serves as PCI's Project Manager for pipeline projects conducted for National Fuel Gas Supply Corporation (NFGS) in Pennsylvania and New York (under contract to Northern Ecological Associates, Inc.). PCI's recent projects for NFGS were a Phase I cultural resource investigation for the proposed Line X-M10 installation in the Town of Pendleton, Niagara County, NY; a Phase I cultural resource survey for the proposed Line S-43 replacement in the Summit Township, Erie County, Pennsylvania, and a Phase I cultural resource survey for the proposed Line K replacement in the Town of Orchard Park, Erie County, NY.

ADDITIONAL EXPERIENCE

Dr. Cinquino was employed by Ebasco Environmental, Inc. as archaeologist. His responsibilities included providing technical support to FERC staff, reviewing cultural resource reports and preparing documentation for FERC certificated EISs and EAs. He conducted various cultural resource projects including serving as co-principal investigator for a Stage 1A Cultural Resource Survey, Olean Superfund Site, Cattaraugus County, NY.

Puerto Rico State Historic Preservation Office (3 Years), San Juan, Puerto Rico

Dr. Cinquino served as State Archaeologist and Review and Compliance Archaeologist for the PRSHPO. His responsibilities included direction of Review and Compliance Section for Archaeology, review of Stage IA, IB, II, and III cultural resource reports, environmental assessments and impact statements for compliance of federal preservation laws and regulations, initial project assessment to determine level of archeological investigation, review of archeological proposals to conduct site testing (Stage II) and data recovery/mitigation (Stage III) investigations, site inspection visits through the island, review of cultural resources for eligibility to the National Register of Historic Places.