CULTURAL RESOURCES BASELINE STUDY
BRONX RIVER ECOSYTEM RESTORATION STUDY,
WESTCHESTER AND BRONX COUNTIES,
NEW YORK

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March 2007

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ABSTRACT

At the request of the United States Army Corps of Engineers (USACE), New York District, a cultural resources baseline study was completed by USACE, New England District (NAE) as part of the Bronx River Ecosystem Restoration Study, Bronx and Westchester Counties, New York. New York District, in cooperation with Westchester County and the New York City Department of Environmental Protection are evaluating sites and activities to be included in the Bronx River Ecosystem Restoration Study. The study area begins at the Kensico Reservoir in Westchester County and ends at the confluence of the Bronx River with the East River.

NAE conducted a baseline cultural resources study of the Bronx River which entailed archival research to prepare environmental, prehistoric, and historic contexts for the River. Previously identified cultural resources, including properties listed on or eligible for listing on the National Register of Historic Places and sites described in previous archaeological surveys in the Bronx River vicinity, were also identified that were situated within one mile on either side of the Bronx River.

The background research and development of environmental, prehistoric, and historic contexts was instrumental in determining whether the proposed restoration study has the potential to disturb archaeological and historic properties that are listed or eligible for listing on the National Register. Preliminary recommendations to avoid, minimize, and mitigate impacts to cultural resources are provided including the potential for additional archaeological survey and/or historical documentation at locations where significant properties could be impacted by the proposed restoration study.

CHAPTER ONE

INTRODUCTION

Scope and Authority

This report presents the results of a reconnaissance level, cultural resources baseline investigation for a proposed ecosystem restoration project along the Bronx River in Westchester and Bronx Counties, New York. The U.S. Army Corps of Engineers (USACE), New England District, prepared this report under the guidance of the New York District of the USACE. New York District, in cooperation with Westchester County and the New York City Department of Environmental Protection are evaluating sites and activities to be included in the Bronx River Ecosystem Restoration Project.

Scope

As a federal undertaking, the Bronx River Ecosystem Restoration Project is subject to review under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implementing regulations 36 CFR 800. Section 106 requires all federal agencies take into account the effect of their undertaking on cultural resources listed or eligible for listing in the National Register of Historic Places (National Register) (36 CFR 60). The agency must also afford the Advisory Council on Historic Preservation the opportunity to comment on the undertaking. The Section 106 process is coordinated at the state level by the State Historic Preservation Office (SHPO), which in New York operates within the office of the New York State Office of Parks, Recreation, and Historic Preservation.

The scope of the cultural resources baseline investigation included archival research, and a pedestrian/windshield survey of the proposed ecosystem restoration study area. The report will assist New York District in assembling an inventory of resources to comply with Section 106 of the NHPA. The report will be a scholarly document that not only fulfills the mandated legal requirements, but also serves as a scientific reference for future professional studies.

Authority

The cultural resources baseline study of the Bronx River ecosystem restoration project area was authorized to comply with the National Historic Preservation Act of 1966 (P.L. 89-665; 80 Stat. 915), as amended (16 U.S.C. 470 et seq.); the National Environmental Policy Act of 1969 (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321 et seq.); the Advisory Council on Historic Preservation, Protection of Historic Properties (36 CFR 800); the National Register of Historic Places, Nominations by States and Federal Agencies (36 CFR 60); and, the Corps of Engineers Regulations ER 1105-2-50, Planning Environmental Resources, Chapter 3, Historic Preservation.

Project Location and Background

The Bronx River Basin is located in southeastern New York (Figure 1). The basin lies within the metropolitan area of Greater New York and occupies 56.4 square miles in central and lower Westchester County and central Bronx County. The river travels from the north-northeast and travels to the south-southwest, before heading southeast to its confluence with the East River. The Bronx River's headwaters begin at Davis Brook, northeast of the Kensico Dam and Reservoir (White Plains). The basin is 24.3 miles in length, from its mouth at the East River in the Hunts Point and Soundview sections, northeast to its northern most point in the town of New Castle. The Bronx River extends 23 miles south from its headwaters to the East River. The Bronx River is tidally influenced to approximately 2 miles north, to the weir at East 172nd Street, from the its mouth at the East River.

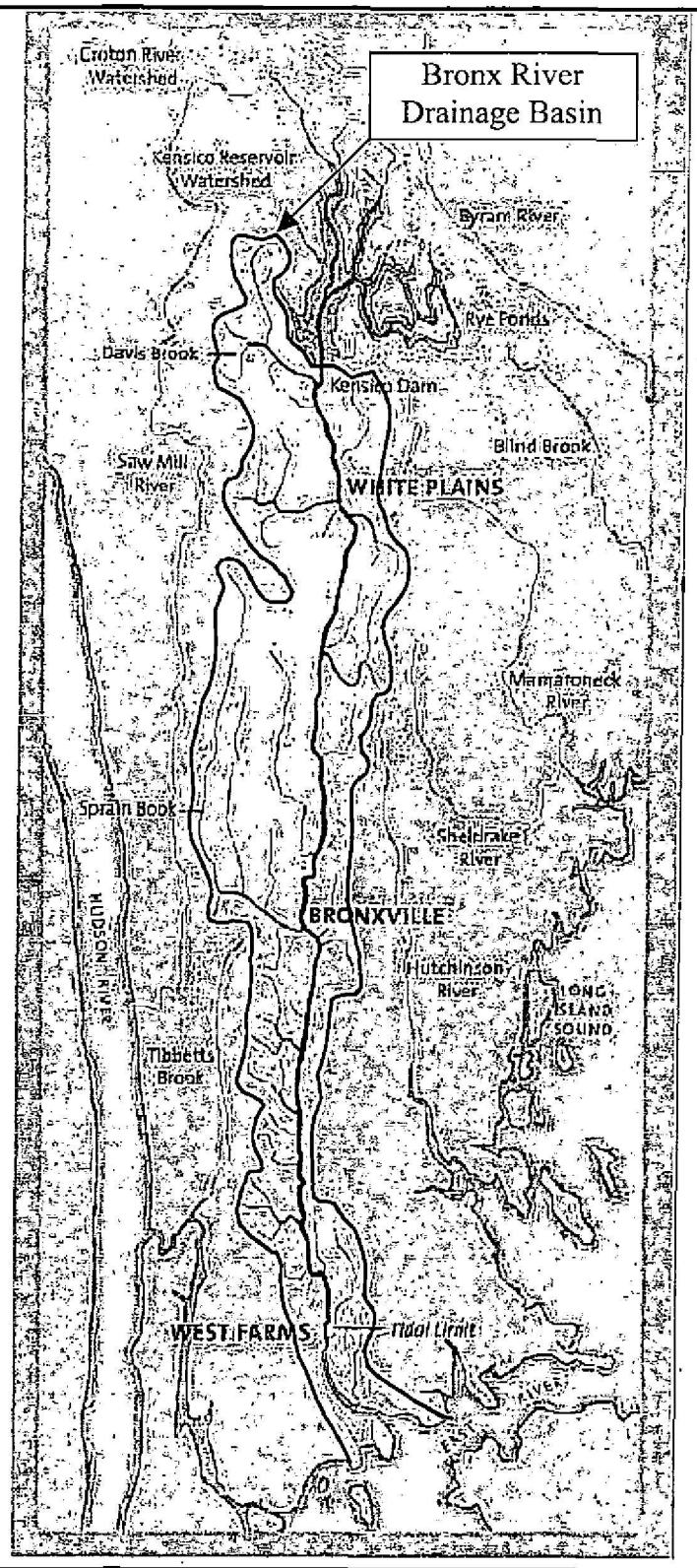
While the Bronx River flows through some densely populated urban, industrial, and suburban areas, there are also areas that appear relatively undisturbed from the New York Botanical Gardens and the Bronx Zoo, to the mouth of the river. The river flows most of its length near the Bronx River Parkway, the construction of which altered its channel and created the park-like corridor along the northern and central stretch of the river. The Harlem Line of the Metro-North commuter railroad is also adjacent to the Bronx River and crosses the river in several places.

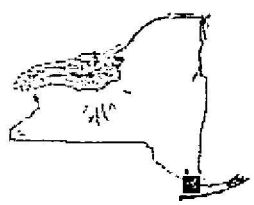
Nature of Study

New England District conducted a baseline cultural resources study of the Bronx River. This entailed archival research to prepare environmental, prehistoric and historic contexts for the Bronx River. Previously identified cultural resources were also identified that were situated within one mile on either side of the Bronx River. These resources included properties listed or previously determined to be eligible for listing on the National Register and sites described in previous archaeological surveys in the vicinity of the Bronx River or in similar environmental contexts. The study also included a pedestrian/windshield survey of a large portion of the project area.

The archival research was conducted at the Westchester County Historical Society and Westchester County Archives, the New York City Preservation and Landmarks Commission, the New York Public Library (research library), the New York SHPO, the Westchester Department of Parks, Recreation and Construction, the Boston Public Library, and from several websites including that of the Bronx River Alliance, and Heritage Quest.

The background research and the development of environmental, prehistoric and historic contexts, will assist in determining whether the proposed restoration project has the potential to disturb archaeological resources and other properties that are listed or eligible for listing on the National Register. This study also makes recommendations to avoid or





Approximate Site Location

Figure 1.
Location of the Bronx River Basin,
Westchester and Bronx Counties, New York

Date:
10–19–04

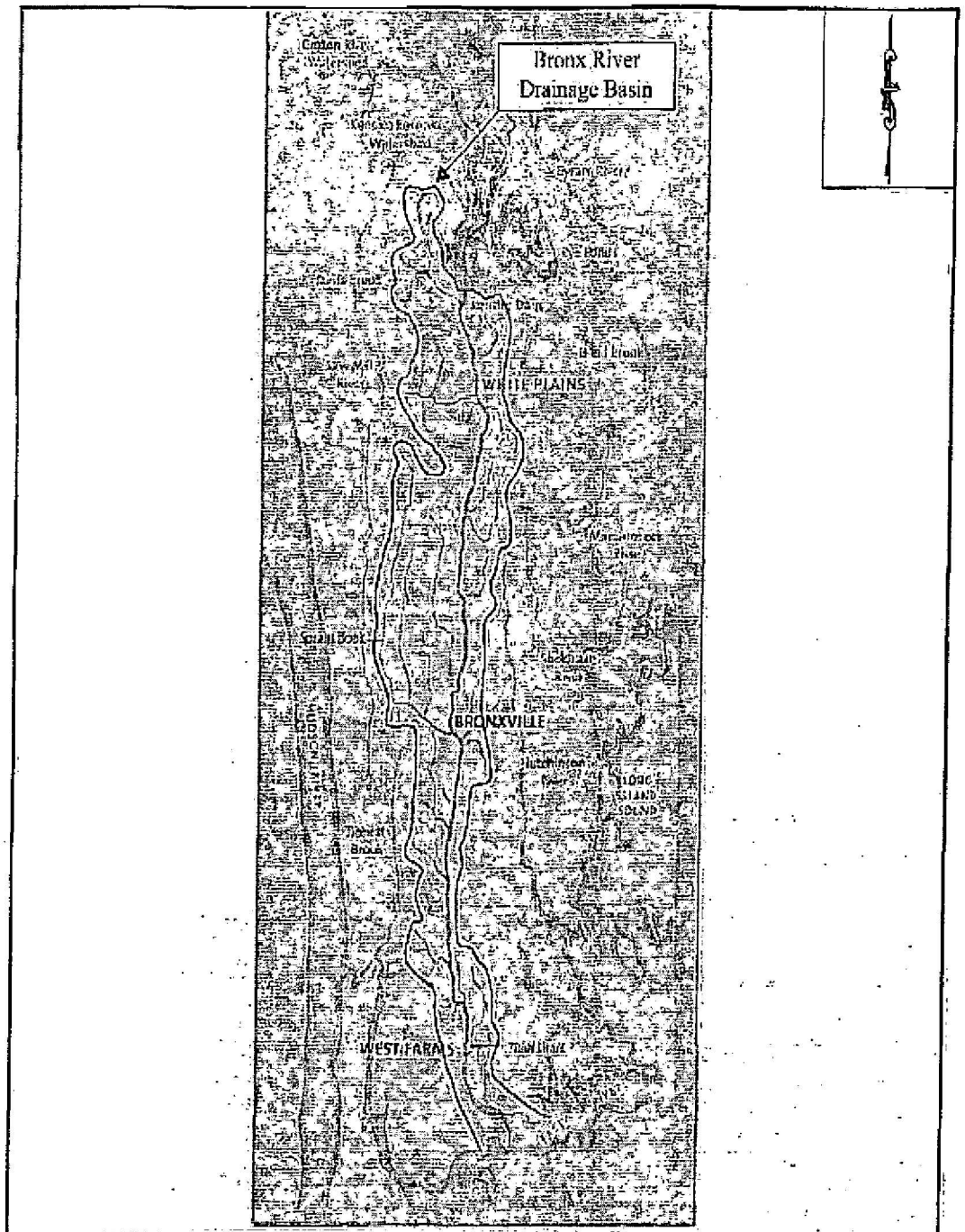


Figure 1.
Location of the Bronx River Basin,
Westchester and Bronx Counties, New York

Date:
10-19-04

minimize impacts to cultural resources, and makes preliminary recommendations for additional investigations, including intensive archaeological surveys, or documentation of landscapes or structures that could be impacted physically or visually by the proposed restoration project.

Project Personnel

Archival research was conducted in June and August 2006, with the windshield/pedestrian survey occurring in August and September 2006, and report writing completed in September. Ms. Kirsten Smyth was the New York District Project Manager for the study. New England District personnel involved in the project were Kathleen A. Atwood, Marcos A. Paiva, and Saji Varghese. Ms. Atwood and Mr. Paiva conducted the archival research and site survey, Mr. Paiva and Ms. Atwood wrote the report, and Mr. Varghese produced the mapping through the use of GIS data.

Disposition of Project Materials and the final Report

All information used in the production of the report is on file at New England District offices (696 Virginia Road, Concord, MA). This information consists of maps, copies of local histories, pertinent archaeological reports, site data from the NY SHPO, and the GIS data used in preparation of site and sensitivity maps.

Copies of the report will be filed at the New York District office, the NY SHPO as well as at the New England District office.

CHAPTER TWO

ENVIRONMENTAL CONTEXT

Geology and Geomorphology

The proposed ecosystem restoration project is located within Westchester and Bronx Counties, in southeastern New York. This area is considered part of the New England Uplands region, a division of the Appalachian Highlands. The area is underlain by the Manhattan Formation, which is formed mostly of quartz, mica, hornblende, and feldspar (Wells 1927). On the Bronx River, limestone and dolomitic marble (Inwood Marble) belts begin near Bronxville, and taper out to the south, while in the north, the bedrock is divided into bands of mica-schist (Manhattan formation) and gneiss (Fordham formation) (Scharf 1886:7). Topographically, the geological landscape is composed of this volcanic rock which consists of mainly north to south gneiss ridges, as Fordham and Riverdale Heights and in Van Cortlandt Park, declining eastward to Long Island Sound. Streams in Westchester and Bronx Counties tend to flow from north to south and southeast between the steep ridges, and have been heavily influenced by glacial action.

It is believed that 12,000 to 15,000 years ago the landscape of this area was highly affected by four North American glaciers. The most recent of glaciers, the Wisconsin, deposited glacial till, moraines (Long Island is a terminal moraine), kettle holes, and also exposed bedrock leaving grooves and striations on the bedrock itself. This can be seen quite clearly on the Bronx River in the New York Botanical Gardens (Lawyer and Leckie 1983; Historical Perspectives, Inc. 1993). The soil cover in the Bronx River drainage consists of a combination of glacial till and river alluvium (Jacobson 1977).

Drainage Patterns

Several sources indicate that prior to the Wisconsin glaciation, the Bronx River emptied into the Hudson River. "...On the retreat of the glacial till blocked up the old channel and the Bronx River, whose ordinary flow was much increased by water pouring flowing from the melting face of the retreating ice sheet, had to dig itself a new channel in its rush toward salt water. It now empties into Long Island Sound." (Kieran 1982:27).

The Bronx River Valley has a drainage area of 56.4 square miles. The valley's width averages approximately 2.5 miles, and has over 80 miles of tributaries. The river from its source to its mouth at the East River is 30 miles long. The most concise description of the Bronx River Drainage appears in "Bronx River Retrospective (Lawyer and Leckie 1983). The following is a summary of that discussion.

The (Bronx) valley's northern-most reach begins on a hill about 650 feet (ft.) above sea level (ASL) in what is now the Town of New Castle. It flows some five miles south in a steep descent to where it is joined by waters from Rye Lake, coming west and draining a small portion of Fairfield County, Connecticut. The existing Kensico Dam, built in the twentieth century, siphons off a portion of the Bronx River into the reservoir, the river

then proceeds south to the confluence with Davis Brook, in the village of Valhalla. The river elevation at this location is approximately 200 ft. ASL. Ten to 12 miles south of the river's source, the Bronx enters the broad, level plain (White Plains) that was originally marsh. The tributaries entering the Bronx River at this location are the Fulton and Manhattan Park Brooks from the west, and the Davis and Tompkins Brooks from the east. Below White Plains, the main body of the river becomes wider, cuts through a relatively steep, narrow valley that extends nearly 10 miles to the confluence with Sprain Brook. Four tributaries enter above Sprain Brook, Harts Brook from the west, the north and south Fox Meadow Brooks from the east, and Troublesome Brook in Tuckahoe.

Sprain Brook, the largest tributary of the Bronx River, has its confluence with the Bronx south of Bronxville. The river's elevation at this location is 75 ft. ASL. The Bronx River then continues south to southeast through Bronx County for 12 miles before entering the East River (Lawyer and Leckie 1983:3-4).

A narrow gorge formed through bedrock is present in what are now the Botanical Gardens. The river is tidally influenced up to the weir at 172nd Street in the Bronx.

Hydrology

The current hydraulic pattern of the Bronx River has been influenced in large part by industrialization. At least 12 dams were constructed on the Bronx River from the 1600s to the nineteenth century. Landform features, stream morphology, and vegetation patterns along the Bronx River have been heavily altered, and stream flow is influenced by runoff from impervious surfaces and sewer outfalls. The construction of the New York Central Railroad in the 1840s and particularly that of the Bronx River Parkway in the 1920s allowed the re-channeling of many miles of the river, especially in Westchester County.

The *Bronx River Ecological and Watershed Management Plan* (Bronx River Alliance 2005-:2-10) notes that: "Though the parkway did help to preserve large tracts of parkland that still exist today (including Garth Woods, the New York Botanical Gardens and the Bronx Zoo), reclamation work also included straightening the river, armoring the banks, and filling the floodplain, acts that contribute to many of the river's current environmental problems."

Climate

The Bronx River Ecosystem Restoration Project area is located in southeastern New York. The overall climate in this area is temperate with generally warm to hot summers, and moderately cold winters. The mean annual precipitation is about 40 inches. On average, the precipitation is uniformly distributed throughout the year, but there can be considerable variation in the minimum and maximum precipitation occurring in the individual months. Weather patterns are determined mainly by the prevailing westerly wind and weather flow, but can also be changeable by storms that develop over the Atlantic Ocean and extend up the eastern seaboard.

Flora and Fauna

Prior to European exploration and settlement, the Bronx River drainage had a wide variety of plants and animals. One species that was essential to the success of European trade and contact with Native Americans was the beaver, valued for its fur. Other animals most likely also included deer, otter, muskrat, and other small mammals. The predominant tree cover was mixed hardwood-pine forest with likely marsh grass at the mouth of the river and along frequently flooded areas upstream (Bolton 1881, Wells 1927, Scharf 1886, French 1925).

Flora

The Bronx River Alliance website has a list of native plants and animals of the Bronx River Corridor that are currently present. The list does not include invasive species such as purple loosestrife, phragmites, or Japanese knotwood.

Flora includes flowering shrubs, such as dogwood, honeysuckle, and laurel. Berry producing shrubs include chokeberry, huckleberry, winterberry, elderberry, and highbush blueberry. Trees present include red and silver maple, several types of birch, hickory, dogwood, ash, sycamore, cottonwood, black cherry, and varieties of oak. Grasses include varieties of sedge, rush, and bulrush. Swamp vegetation are milkweed, asters, marigold, boneset, jewelweed, and lobelia.

Fauna

Native wildlife present along the Bronx River includes many small mammals, muskrat, chipmunk, and rabbit. It is likely that larger mammals such as deer, fox, and bobcat, exist in the upper reaches of the drainage in Westchester County. Many songbirds have been identified in the Bronx River area and the corridor most likely serves as a resting place for migrating birds. Wading birds have been identified such as egrets, herons, and cormorants. Ducks, swans and gulls are also present. Small reptiles include painted turtle, tree frog, bullfrog, and snakes. Several types of insects have also been identified.

Project Area Conditions

The Bronx River project area is a mix of suburban and urban development, with major changes in channel and flow from construction of the Bronx River Parkway and industries downstream. While it appears that much of the Bronx River project area has been disturbed, there are areas of that have not been seriously altered.

Sixteen prehistoric sites are recorded within or near the project area in Westchester County, and six in Bronx County.

The possibility of additional, unidentified archaeological resources being present within the one mile buffer that is under investigation is moderate to high. Any restoration

project that would require excavation, plantings, changes in channel morphology, or restoration of salt or freshwater wetlands could impact archaeological resources.

In addition to pre-contact resources, the Bronx River has been utilized by post-contact populations since the early 1600s. Many of the industries that have contributed to the ecosystem problems on the Bronx River have remnants of factories, dams, or archaeological resources that are or could be considered significant. Known resources include the millpond and dam (Scarsdale Falls) in Scarsdale for the Haubold Gunpowder mill, Swain's Cutlery Mill in Bronxville, the tapestry mill in Williamsbridge just north of Gun Hill Road, the Snuff Mill established by Pierre Lorillard, now in the New York Botanical Gardens, the Bronx Bleach Works and Cloth Tape Factory, now within the Bronx Zoo, and DeLancey's Mills near 180th Street operating as a saw and grist mill as early as c. 1650, with a dam still present across the Bronx River. It is possible that other unknown historic resources could still be present along the present banks of the Bronx River or within the one mile study area.

CHAPTER THREE

RECORDED SITES AND PREVIOUS INVESTIGATIONS IN THE BRONX RIVER STUDY AREA

Bronx County

Recorded Sites

Parker (1922) excavated many sites in the Bronx and Westchester County areas which are recorded in the NYSM database. The information in the NYSM files is separate from that of the NY SHPO sites files on Peebles Island. Generally, there is usually much less information in the NYSM database than in the SHPO files. However, they do provide insight into sites that may not be covered elsewhere. Please refer to Table 1 which listed the recorded sites, both SHPO and NYSM, in Bronx County.

NYSM Sites #2831, 2837, and 2840 were all midden sites in Bronx County excavated by Parker in 1922 and for which there is no additional information. Site #5322, also excavated by Parker in 1922, is an occupation site in Bronx County with no further info. The Quinnahung Site (A005-01-0027) is an aboriginal site excavated by Bolton in 1922 which was destroyed by the construction of a terminal market in the Hunts Point section of the Bronx. Also in the Bronx, Fort Number 4 (A005-01-0056), a Revolutionary site located at the southwest corner of Jerome Reservoir and east of Sedgwick Avenue, was excavated in 1910 by Calver and Bolton.

Boesch (1996) summarizes archaeological site locations in the Bronx as part of his archaeological assessment (Appendix C – Previously Documented Native American Archaeological Sites in the Bronx, New York). A total of 130 sites are referenced; only those relating to the present Bronx River study vicinity are discussed here:

"A Woodland Period site with a possible Contact Period component was identified in Van Cortlandt Park north of the Van Cortlandt Mansion house. Most of the site was destroyed in 1890 when the field was graded for a parade ground and playing field. The recovered artifact assemblage included chipped, groundstone, and bone tools, pottery, and subsistence remains consisting of bone, shellfish, and nutshell were recovered. In addition, a number of features which included trash and storage pits and hearths and a midden were discovered. Lastly, 13 interments were also discovered, four of which were interred in hearth features. A number of dog burials were also present.

The existence of an "Indian Field" northeast of the Van Cortlandt Mansion is reported by Bolton. This is likely a former Native American agricultural field where shell pits and artifact scatters were located. This is also the site of a Revolutionary War battle between

TABLE 1
BRONX COUNTY RECORDED ARCHAEOLOGICAL SITES

ARCHAEOLOGY SITE INVENTORY FORMS @ NY SHPO

A005-01-0027
1977
Quinnahung Site @ Hunts Point and Randall Avenue
Aboriginal Site
Excavated 1922 by Bolton
Site destroyed by construction of terminal market

A005-01-0056
1977
Fort Number 4 @ Southwest corner of Jersome (sp?) Reservoir and East of Sedgewick Avenue
Revolutionary Site
Excavated 1910 by Calver and Bolton

NEW YORK STATE MUSEUM RECORDED SITES

Site # 2831: Excavated in 1922 by Parker; midden; no further info.

Site # 2840: Excavated in 1922 by Parker; midden; no further info.

Site # 2837: Excavated in 1922 by Parker; midden; no further info.

Site # 5322: Excavated in 1922 by Parker; occupation site; no further info.

British and American troops. Of the American troops, fifty were Stockbridge Indians who joined the American cause. Many were killed in battle and buried in the "Indian field" which now comprises the northeastern portion of Van Cortlandt Park west of the Major Deegan Expressway.

Also at Van Cortlandt Park, a Woodland Period site was identified on Vault Hill near the cemetery of the same name. Quartz tools were discovered by Pickman and Boesch (1991) west of the cemetery. This site is likely associated with the larger site discussed above north of the Van Cortlandt Mansion. A trash pit feature with oyster and clam shell, debitage, and quartz projectile point fragments was encountered on the west side of the Mansion during archaeological field work in 1991. Another pit feature was uncovered in 1990 during construction northwest of the Mansion.

A Late Archaic through Late Woodland shell midden and small camp site containing pit features were located in the West Farms section east of the Bronx River in the vicinity of Bronx River Avenue and Westchester Avenue. This site was also identified by Parker in 1922 and is NYSM site #2830 and 2831.

The area of Clason's Point south of Seneca Avenue was referred to during the Contact Period as "Quinnahung" which translates to "the planting neck" referring to the numerous Native American agricultural fields located there (NYSM #713). Clason's Point was also the location of a large Contact period Siwanoy village site known as Snakapins which extended west and south of the present intersection of Soundview, Lacombe, and Leland Avenues to the East River shoreline. Nearby Hunt's Point was also the location of a number of Native American sites located near the mouth of the East River that flows into the Bronx River to the north.

A large Contact Period Siwanoy Village was located in the Morris Park/Westchester section of the Bronx. This location is south of Pelham Parkway and east of Bronx Park Road in the vicinity of Lydig and Brady Avenues. The site was reportedly occupied by remnants of the Siwanoy as late as 1782 with surface evidence of occupation visible as late as the 1920's. A native path crossing at the Bronx River is now located within the Bronx Botanical Gardens just north of the Pelham Parkway.

A habitation site from the Late Woodland period was located near the junction of Fordham Road and the Bronx River in the area of what is today the Bronx Zoo. Shell heaps were indicated on the Westchester County Historical Society's 1978 Heritage Map on the east bank of the Bronx River south of Delancy's Mills. This area is within or just south of the Bronx Zoo. The Westchester County Historical Society's 1933 Map of Westchester County Showing Indian Occupation indicates the presence of a camp site south of the New York Botanical Garden along the banks of the Bronx River.

Boesch (1996) indicates that Bolton (1922) identified a small campsite along the banks of the Bronx River at the wading place known during the Contact Period as

"Acqueegenom." Additionally, Bolton reports that another small campsite was located along the banks of the Bronx River at the crossing place for the Westchester Path known as "Cowangongh" or "boundary place." This area is now the location of the Gunhill Road Bridge over the Bronx River and refers to where the territory of the Siwanoy and the Weckquaesgeek met.

Parker (1922) in Boesch (1996) also identified traces of Native American occupation along the southern limits of the Jerome Reservoir, in an area which is just outside of the Bronx River study area.

A site containing large quantities of Native American artifacts is located on Department of Parks and Recreation property, adjacent to the former course of Pugsley Creek between Lacombe, Newman, Pugsley, and Randall Avenues (east of Soundview Park).

A small campsite was reportedly located adjacent to a large glacial erratic located at the intersection of Boston Post Road and East 166th Street.

A small campsite with earthen embankments and a cave site were reportedly present near a bend of Rattlesnake Creek on the former W.E. Seton Estate. The site location is now within Seton Falls Park south of the intersection of East 233rd Street with Wilder and De Reimer Avenues, just outside the 1-mile boundary from the Bronx River.

At the New York Botanical Garden, Boesch reports the existence of four pre-Contact sites. First, a camp site was reportedly located within the former property of Fordham University in the area of the former Jesuit Cemetery (now part of the NY Botanical Gardens). A large number of oyster shells and arrowheads were reportedly recovered. The interments at the cemetery were moved to a new location on the Garden grounds. Second, a cave site or rockshelter was located on the west side of the Bronx River near the Magnolia Road Bridge. Third, a turtle petroglyph was reportedly located on a glacial erratic on the east side of the Bronx River north of the waterfall in the middle of a trail east of the River. The erratic has been removed and is now on view at the Watson Building of the Botanical Garden. Lastly, Dr. Theodore Kazimiroff reportedly collected numerous projectile points eroding from areas with the Botanical Garden ground.

At the Fordham University, Rose Hill Campus, a late archaic period projectile point fragment, likely from a Brewerton point, was recovered from fill deposits during excavations at the site of the 19th Century Rose Hill Mansion."

Previous Investigations

1. A cultural resource assessment for the Croton Water Treatment Plant at the Mosholu Golf Course in Van Cortlandt Park was conducted by Historical Perspectives, Inc. (Kearns et al. 2004). The New York City Department of Environmental Protection

proposed to design and construct a 290-million-gallon-per-day water treatment plant (WTP) to provide filtration and disinfection of the Croton Water System. The project also included the construction of new raw water and finished water tunnels to connect the proposed plant to the New Croton Aqueduct (NCA), and improvements and rehabilitation of structures related to distribution connections at and near Jerome Park Reservoir. The Mosholu Site was one of three sites evaluated for the water treatment plant (2004:7).

Archaeological sites have been investigated in the area surrounding Van Cortlandt Park including village sites, tool manufacturing and food processing sites, and isolated finds. Shell middens and lithic processing sites have been identified within two miles of the golf course. A village called Keskeskick was at one time located within Van Cortlandt Park. Research has located this site close to the Van Cortlandt mansion, to the west of Van Cortlandt Lake, and southwest of the project area. Native planting fields, discussed above, surrounded the mansion and were also located on the eastern side of the park, north of the golf course (Kearns et al. 2004:14).

Documentary research indicated that the project area has high sensitivity for pre-contact archaeological resources with eight known sites within a two-mile radius of the proposed facility. The presence of a nearby native trail at the southwest corner of Van Cortlandt Park together with the village of Keskeskick also within the park indicates that extensive occupation and use of the area, including the proposed WTP site, is possible. Additionally, the 1868 Berrian/Dickinson house stood within the southern edge of the proposed project area; subsurface features may be present. Recommendations for a follow-up Phase IB archaeological investigation of the project area were proposed (Kearns et al. 2004:15, 23, and 27).

Additional studies at the site of the Van Cortlandt Mansion (Louis Berger and Associates 1985 and 1987) prior to proposed egress stair and dry well excavation, and sewage/lines and a seepage basin encountered no intact archaeological deposits and no further work was recommended.

Pickman (1990) encountered a small quantity of Native American lithic debitage in disturbed contexts during a Stage I investigation at Van Cortlandt Park for the reconstruction of an electric feeder system. Additional study was recommended for an historic period feature identified during this same survey.

Pickman and Boesch (1991) conducted research for a project at the Vault Hill Cemetery, also at Van Cortlandt Park. Native American artifacts were recovered from the surface in the vicinity of the cemetery. Subsurface testing of the area was recommended.

Lastly, Phase Ia and Ib investigations of the proposed area for the construction of tennis courts on the parade ground of Van Cortlandt Park (Rothchild and Matthews 1993) encountered Native American lithic debitage in disturbed contexts in several locations.

2. A Stage IA archaeological assessment of the New York Botanical Garden was conducted in 1993 by Historical Perspectives, Inc. Only portions of the Garden were considered sensitive for the presence of Native American sites, primarily within the Forest and Magnolia Grove. South of the Snuff Mill are located additional areas (one east and one west of the Bronx River) sensitive for pre-contact resources. Field testing of these areas is recommended if project impacts are expected.

3. Historical Perspectives, Inc. (1994) conducted a Phase IA archaeological study for a police service facility (#8 Block 3540) in the Castle Hill section of the Bronx. Evidence indicated that a strong pre-contact and early contact period Native American presence was likely near Castle Hill Neck, along the shore of Westchester and Pugsley Creeks, as well as on neighboring Clason Point. A Native American path linked Castle Hill Neck with other mainland settlements and resource areas. However, as the site is part of a larger salt marsh along Westchester Creek, the area is not considered sensitive for Native American sites (1994:17).

4. Historical Perspectives (1989b) conducted a Phase IA archaeological assessment for the Hunts Point Correctional Facility to be located on the west bank of the mouth of the Bronx River. Although portions of the project area were considered sensitive for Native American cultural resources, inundated areas are now covered by about 15 feet of fill. Early Archaic Period sites may be located beneath the fill; however any sites would be situated below the water table. It was decided that field testing not be conducted due to the problems in retrieving information from deeply buried sites (Boesch 1996).

Westchester County

Recorded Sites (see Table 2)

In Westchester County, two pre-Contact archaeological sites are identified within the Bronx River study area. The Woodland Viaduct site in Scarsdale (A119-48-00-0020) is an aboriginal campsite excavated in 1995 by Boesch (Malcolm Pirnie, Inc.) at the Bronx River Parkway Reservation. This site has been previously impacted by cultivation although some cultural material was located below the plow zone. At the Purdy House in White Plains (A119-43-0693), an aboriginal camp with buried evidence was identified along with an historic component circa 1720 by Hunter Research Associates in the late 1980's.

Three historic period sites are recorded within the study area. At the Fowler House site in Greenburgh (A119-04-0022), evidence of historic residence circa 1870 is documented from a New York State Route 100 study. The J. Gibson Site (A119-08-0324) at Kensico Cemetery in Valhalla is an historic site dated prior to 1868 which was excavated in 1997 by Joseph Sopko. Lastly, the Woodlands Viaduct (Feature 1) site (A119-43-0766) in White Plains consists of an historic privy dated circa 1990, which was excavated in 1997 by Eugene Boesch.

TABLE 2
WESTCHESTER COUNTY RECORDED ARCHAEOLOGICAL SITES

ARCHAEOLOGY SITE INVENTORY FORMS @ NY SHPO

A119-48-00-0020
1996
Woodland Viaduct (Area P1, Zone A), Bronx River Parkway Reservation, Scarsdale
Aboriginal Campsite with material within and below plow zone
Excavated in 1995 by Eugene J. Boesch of Malcolm Pirnie, Inc.
Previously cultivated.

A119-04-0022
No Date
Fowler House Site, Greenburgh
Historic Residence Site
Recorded by Mary Santangelo (CRS Report of NYS Route 100, Grasslands Road, Greenburgh and Mount Pleasant
Dated circa 1870

A119-08-0324
1997
J. Gibson Site (New York State Museum Site 10566, MDS 3) @ Kensico Cemetery, Valhalla
MDS 3 (Historic Site?)
Excavated 1997 by Joseph Sopko
Dated prior to 1868

A119-43-0693
1989
Purdy House Site, White Plains
Hunter Research Associates (Richard Hunter)
Excavated 1984 (MALFA) and 1988 (Hunter Research Associates)
Dated circa 1720; also aboriginal camp with buried evidence

A119-43-0766
1998
Woodlands Viaduct - Feature 1, White Plains
Historic Privy
Excavated 1997 by Eugene Boesch
Dated circa 1900.

TABLE 2 (CONTINUED)
WESTCHESTER COUNTY RECORDED ARCHAEOLOGICAL SITES

NEW YORK STATE MUSEUM RECORDED SITES

Site # 5194: Village site excavated in 1922 by Parker; "Grooved Axe"; Harrison; Along the Bronx River West of White Plains Cemetery.

Site # 5201: Quarry/Rockshelter excavated in 1922 by Parker; New Rochelle; North Section of New Rochelle on property of New Rochelle Water Company.

Site # 5221: "Traces of Occupation" excavated in 1922 by Parker; Yonkers and Bronxville; no further info.

Site # 5230: Village site excavated in 1922 by Parker; White Plains; no further info.

Site # 5231: "Traces of Occupation" excavated in 1922 by Parker; Harrison; no further info.

Site # 6793: Eastchester Reservoir #1, Middle-Late Archaic and Early Woodland Periods; reported by Whiteman 1990; Eastchester; no further info.

Site # 6800: Hutchinson Blvd., Late Archaic-HU?; recorded by Whiteman 1990; Eastchester; no further info.

Site # 6801: Wilmot Road, Late Archaic-Late Woodland Periods; recorded by Whiteman 1990; Eastchester; no further info.

Site # 6803: Iselin Farm, Late Archaic Period; recorded by Whiteman 1990; Mamaroneck; no further info.

Site # 6804: Wilmot Park, Late Archaic and Middle-Late Woodland Periods; recorded by Whiteman 1990; Mamaroneck; no further info.

Site # 6805: Hanflings Corner, Middle-Late Archaic and Middle Woodland Periods; recorded by Whiteman 1990; Eastchester; no further info.

Site # 7725: Burial Site excavated in 1922 by Parker; Yonkers; no further info.

Site # 7726: Middens (Shell/Kitchen) excavated in 1922 by Parker; Yonkers; no further info.

Site # 7779: Burial Site excavated in 1922 by Parker; Greenburg; no further info.

TABLE 2 (CONTINUED)
WESTCHESTER COUNTY RECORDED ARCHAEOLOGICAL SITES

Site # 7783: "Traces of Occupation" excavated in 1922 by Parker; Harrison and White Plains; no further info.

Site # 9034: Woodland Viaduct, Middle-Late Woodland Camp excavated in 1996-98 by Boesch; Scarsdale; Levanna point, chopper, hammer, fcr, debitage, and 1850s kaolin pipe bowl in plowzone.

A total of 16 NYSM sites were identified for Westchester County in the study area. These sites range from village sites to burials and shell middens and encompass all pre-Contact periods.

Previous Investigations

1. Evidence of Native American activity has been identified in the town of Scarsdale on areas of high ground bordering the Bronx River as part of a Stage Ia archaeological investigation for the Popham Road Bridge replacement (Malcom Pirnie, Inc. (MPI) 1999). A campsite is located on a terrace overlooking the east bank of the Bronx River about two miles from the Popham Road Bridge and south of its confluence with an unnamed tributary. A Levanna projectile point, stone tools including a reamer, hammerstone, denticulate, and groundstone, and lithic debitage were recovered from the site (MPI 1999: 3-11).

2. A Phase Ia historical/archaeological study was conducted for a proposed subdivision in the town of Greenburgh at 221 Old Army Road (Pickman and Harris 2001). The property consisting of 1.3 acres includes the historic Frank MacGregor-Smith (also known as the Hunt-Morris House), one of the few surviving remnants of the Revolutionary and pre-Revolutionary War history of the community. Significance of the property also derives from its proximity to Old Army Road, formerly known as Tuckahoe Road. A portion of American forces traveled along this road to the Battle of White Plains during the Revolution (13). The sensitivity for pre-contact sites at this area is low. Portions of the proposed subdivision were considered to have a high sensitivity for historic period resources. The installation of new sewage/water lines, if they follow the route of trenches previously excavated for the original existing lines, would not impacted undisturbed contexts. However, if these facilities are placed in new, undisturbed contexts, archaeological testing is recommended (13-16).

3. Stage Ia and Ib archaeological investigations for the Woodland Viaduct project at the Bronx River Parkway in White Plains were conducted in 1994 (Boesch and Pickman) and 1997 (Malcolm Pirnie, Inc.). The portion of the Bronx River Parkway Reservation between Kensico Dam and Sprain Brook Road, including the study area, is listed on the National Register of Historic Places. The parkway, planned and constructed between 1906 and 1925, was nominated to the National Register in 1990. The Woodlands Viaduct Bridge is a contributing element to the parkway's significance (Boesch and Pickman 1994:1). Five areas were deemed archaeologically sensitive for Native American resources and subsurface testing recommended. As a portion of the Battle of White Plains occurred in this area, the possibility for Revolutionary War era remains is suggested, and shovel testing recommended along the base and slopes of Chatterton Hill as well as a knoll overlooking the Bronx River southeast of the Main Street bridge.

Lastly, numerous 19th Century sites including 4 industrial sites (water-powered sawmill, tannery, slaughterhouse, and steam-powered sawmill) and a total of 19 domestic sites were located in the project vicinity (Boesch and Pickman 1994:38-39).

Results of the Stage Ib investigations (Malcolm Pirnie, Inc. 1996 and 1997) revealed buried foundation remains associated with a 19th Century hotel. An intact stone privy box containing late 19th and early 20th Century deposits was identified and further investigation was recommended (1997:i-ii). Additionally, several areas of archaeological sensitivity were identified as requiring further investigation at the Stage II evaluation level, including a portion of terrace east of the Bronx River occupied during the Late Woodland Period based on the find of a Levanna projectile point, the location of a human tibia in one shovel test pit, and fill deposits associated with the construction of the Woodlands Viaduct (1996:14-16).

4. A highway salvage archaeology report for the Route 119 arterial work in White Plains (Jacobson 1977) determined that no significant archaeological resources would be impacted by the proposed widening and other modifications to sections of Route 119 in Westchester County. Artifacts from the 19th Century were discovered in disturbed fill contexts and a single Late Archaic projectile point was found in 20th Century fill. No further work was recommended.

5. A cultural resources survey for proposed sewer lines in the Knollwood-Mayfair area of the town of Greenburgh (Brennan 1978) found that there would be no impact on cultural resources from the proposed project. This area is approximately one mile west of the Bronx River.

CHAPTER FOUR

PRECONTACT USE AND OCCUPATION OF THE BRONX RIVER STUDY AREA

In order to properly assess the potential for archaeological resources to be located within the Bronx River project area, an examination of the relevant cultural chronology and contexts is necessary. Since this project encompasses two counties (Bronx and Westchester), we will examine each separately following some general statements.

An understanding of Native Americans in New York State generally and within the Bronx and Westchester Counties specifically, is typically obtained from several sources, namely, archaeological investigations in the region, ethnographic reports of Native peoples by anthropologists, and artifact collections usually obtained by local residents that may shed light on archaeological sites already excavated or destroyed by construction or other impacts. Recently, Native American oral tradition has also been utilized as an important source in amplifying or clarifying the data obtained from these sources. It is through a compilation of these sources that our knowledge of precontact populations is garnered.

Archaeologists have devised a cultural chronological scheme that divides the various periods of North American history prior to European contact: Paleo-Indian (circa 12,000-10,000 years ago), Archaic (circa 10,000-2,700 years ago), Woodland (circa 2,700-500 years ago), and Contact (circa 500-300 years ago). Each period is characterized by particular settlement systems, subsistence practices, and diagnostic artifacts that distinguish them from each other. Archaeological sites are categorized by period based upon the information obtained therein and in conjunction with the sources mentioned above.

Generally, precontact sites are characterized by their proximity to a water source, fresh game, and exploitable natural resources such as plants and raw material for stone tools including quarries and cobbles. Factors such as defensibility and protection from the elements are also important to the location of these sites (Kearns et al. 2004:10-11). Many Native American archaeological sites in New York were recorded in the early 20th Century by Parker (1922) and others; these sites comprise a majority of those included in the New York State Museum (NYSM) site files which will be discussed further below. NYSM sites can be identified by a 4-digit number. Sites from the files of the New York State Historic Preservation Officer on Peebles Island are also discussed below and are distinguished by a larger site number beginning with the letter A.

Paleo-Indian Period

The earliest period of human occupation, the Paleo-Indian Period is characterized by small groups of big-game hunters who seasonally traversed large areas of land and in addition to the hunting of game, gathered plants and riverine resources. The large game

animals included mastodon, bison, and caribou which made up a large portion of the Native American diet. It is generally thought these early bands crossed from Asia over the existing land bridge to Alaska and eventually spread throughout North America. Diverse site types have been identified based upon an examination of artifact assemblages and environmental settings including base camps, quarry workshops, rockshelter habitations, open air hunting camps, kill and butchering sites, and temporary camp sites (Boesch 1996; Kearns et al. 2004:11).

During the early Paleo-Indian Period, northeastern North America was evolving into a more favorable deciduous forest environment. Paleo-Indian sites have been recovered in well-elevated fertile sites located close to a water source although actual "kill sites" have not been recovered. This could be the result of flooding of coastal sites as the glaciers retreated or the small size of these early sites. The diagnostic artifact of the Paleo-Indian Period was the fluted point which was usually hafted to a spear for hunting purposes. By the late Paleo-Indian Period, however, bifacial knives, scrapers, and borers were part of the tool kit as well. As the climate moderated, small game animals became an increasing part of subsistence practices, replacing large game that rapidly became extinct (Kearns et al. 2004:11).

Information from known Paleo-Indian sites in the New York-New Jersey-Pennsylvania-Connecticut region suggests that high, well-drained areas near streams or wetlands were preferred areas for occupation. Additionally, rock shelters, areas near lithic sources or quarries, and lower river terraces were favorable locations for Paleo-Indian occupation and use (Boesch 1996:8).

A small number of Paleo-Indian sites have been identified in the New York metropolitan area although none in the Bronx. The closest site to the Bronx is the multi-component Piping Rock site located adjacent to the Hudson River in the Village of Ossining. Other Paleo-Indian sites found in the region include Staten Island (see Boesch 1994) and in Orange County (Funk 1976). While Paleo-Indian sites have not been identified in the Bronx, fluted point finds have been reported in the Croton Point area in Westchester County. A number of archaeological investigations during the mid 1980's noted a distinct level of Paleo-Indian occupation in Westchester County. To the south, in Staten Island, a small campsite from the period has also been recovered (Kearns et al. 2004:12). A Clovis fluted point was recovered in White Plains, Westchester County, during work around the foundation of the Purdy House. Fluted point and other Paleo-Indian associated artifacts have also been recovered from disturbed contexts on the Rippowam River in Westchester County in the town of Pound Ridge (Boesch 1996:8; Kearns et al. 2004:12).

Archaic Period

During the Early Archaic Period, the environment in the Northeast had developed into a deciduous woodland forest. As the climate warmed, new resources were established in the river valley which added to the existing sources of subsistence. Archaic peoples are said to have subsisted through hunting, fishing, and gathering. They

hunted smaller game animals such as deer, rabbit, beaver, and wild turkey, gathered a variety of wild plants, and exploited the fish and shellfish of the marine environment. The expanded subsistence economy is attested to in the artifactual database with the inclusion of fishing implements and the mortar and pestle using for grinding. In the lower Hudson Valley and Long Island Sound areas, the oyster became an important subsistence product during this period (Boesch 1996; Kearns et al. 2004:12).

The expanding resource base together with the technological capacity to exploit these resources likely initiated the significant increase in population during this period. Archaic hunters began exploiting a more defined territory and re-occupied favored sites. Because of the repeated occupations of these sites over time, archaeologists have been able to recognize specific cultural traditions in the archaeological record. River valleys and coastal areas were the preferred locations for primary campsites as this environmental supported the game, plants, and marine resources desired by Archaic peoples (Kearns et al. 2004:12).

Site types recognized for this period include spring fishing camps along major streams, fall open-air hunting camps, rockshelter habitations, shellfish collecting and processing stations, mortuary sites, quarry and workshop sites, and semi-permanent villages. Most Archaic sites were small and multi-component in nature, lacking traces of substantial dwellings, fortification, storage pits and graves (Boesch 1996). Robert Funk has suggested that the Laurentian, Susquehanna, and Small-Stemmed cultural traditions, identified through diagnostic projectile points, persisted in the Hudson River Valley during the Archaic Period. Snow, however, suggests that the Susquehanna Tradition was dominant in the first half of the period and the Orient Complex in the latter (Kearns et al. 2004:12).

By the Late Archaic Period, Native American populations in the Hudson River Valley had increased significantly. Recovered sites include rockshelters, open woodland camps, and secondary processing locations overlooking the various water sources. At the Bronx's Riverdale Park, archaeologists recovered a Late Archaic assemblage of oyster shells, fire cracked rocks, scrapers, bifaces, lithic debitage and diagnostic projectile points indicating hunting and fishing practices near the Hudson River (Kearns et al. 2004:13). Late Archaic sites in the Bronx region have been found in low-lying areas in close proximity to area estuaries and along major interior streams. Brennan (1978) notes that interior sites in Westchester County likely represented small short-term seasonal or resources procurement camp sites which were located along north-south running streams including the Saw Mill, Sprain, and Bronx Rivers (Pickman and Harris 2001:2).

Woodland Period

The Woodland Period is characterized by the introduction of pottery and horticulture, the appearance of large permanent or semi-permanent villages, and the establishment of defined trade networks which indicated a more settled or sedentary culture. Archaeological evidence suggests a preference for large-scale habitation sites in close proximity to a fresh water source such as a river, lake, stream, or pond. Resource

procurement and processing sites were typically located near the resource to be exploited such as quarry or shellfish locations. An increase in shellfish collecting is noted for this period (Kearns et al. 2004:13; Boesch 1996).

The first appearance of pottery was during the Early Woodland Period in New York (circa 1000 B.C.) when crude, undecorated pottery known as Vinette 1 was first produced. This type of pottery is known from sites on major waterways and tributaries. Regional variations in ceramic styles are noted as the Woodland Period progresses and can be associated with specific Native groups. Cultural innovations such as pipe-smoking, mortuary ceremonialism, and the introduction of the bow and arrow are also noted (Kearns et al. 2004:13).

Human populations gradually adopted a more sedentary lifestyle as the Woodland Period progressed with hunting and gathering supplemented by fishing, shellfish, and possible domestication of plants. By the Late Woodland Period (1,050-350 BP), horticulture was the primary means of subsistence and permanent villages existed, along with temporary and special purpose sites for hunting and resources procurement. Most Late Woodland sites in New York are located along the Hudson River, its tributaries, and the Long Island Sound/East River shore, although smaller inland sites have also been identified (Boesch 1996). Parker (1922) notes that a village site was located along the Bronx River west of the city of White Plains cemetery. This corresponds with New York State Museum Site #5194 which lists a village site in the town of Harrison along the Bronx River west of the cemetery. Reverend Blackie donated a grooved ax from the site to the Museum (Halpern in Jacobson n.d.). Late Woodland sites are numerous within the Bronx with large village and/or base camps located adjacent to major rivers and smaller inland sites located near a water source (Boesch 1996).

Contact Period

The Contact Period dates from roughly 1600-1750 A.D. and is the period of large-scale interaction between Native Americans and European explorers and colonists. The first contact between these groups occurred when Henry Hudson docked his vessel near present-day Yonkers in Westchester County. Trade of wampum and furs for European goods were initiated along the Hudson River and moved inland. At this time, the Native Americans were part of the widespread Algonquian cultural and linguistic stock, specifically a group of Munsee speakers who migrated into southeastern New York and southwestern Connecticut during Late Woodland times. Their descendants were known collectively as the Wappinger (also Waranoans or Warban). The Bronx and Westchester County area was reportedly known to the Wappinger as "Laaphawachking" which translates as the "place of stringing" referring to Native American wampum manufacturing that occurred in the area. The Wappinger also occupied much of present day Putnam, Dutchess, and New York Counties, as well as southwestern Connecticut (Boesch 1996).

Kearns et al. (2004) refer to the Hendricks Map of 1616 which depicts a group called the Wikagyl, subsequently known as the Wiechquaesgeek, as the inhabitants of the northern Bronx and lower Westchester County. The Wiechquaesgeek were able to exploit the rich environment of the northwest Bronx between the Hudson and Bronx Rivers, including an area known as the "Indian Field" located on the eastern edge of present-day Van Cortlandt Park. This area was optimal for deer, raccoon, fox, rabbit, and waterfowl. Historic documents indicate that many of the surviving native peoples sold their lands and moved to the north (2004:17).

The Wappinger were divided into seven or nine main groups or chieftaincies with numerous sub-groups and bands. The majority of these groups were known as the River Indians to the Dutch and English. The total population of the Wappinger Confederacy has been estimated at about 13,200 individuals at the beginning of European Contact. Their settlements included camps along the major rivers with larger villages located at the river mouths. However, few single component Contact period sites have been identified and systematically investigated in southeastern New York (Boesch 1996).

Two groups of the Wappinger Confederacy, the Siwanoy and Wechquaesgeek, claimed land holdings in the study vicinity. The Wechquaesgeek have been traditionally associated with the area west of the Bronx River including present day Greenburgh, White Plains, the western part of Yonkers, the western Bronx, and the upper portions of Manhattan, also extending into Rye and Norwalk, Connecticut. This group had two main villages: Wechquaesgeek in present day Dobbs Ferry and Alipconck in present day Tarrytown. Other villages may have existed but were not chronicled. The Siwanoy, one of the largest groups of the Wappinger Confederacy, were known as "one of the seven tribes of the sea coast" with their traditional lands extending along the west and north shores of Long Island Sound from Hell Gate in the Bronx to Norwalk, Connecticut and as far inland as the Bronx River. These lands include the present day towns of Scarsdale, Pelham, New Rochelle, Eastchester, New Castle, North Castle, Mamaroneck, White Plains, Harrison, the eastern portion of the Bronx, and Stamford, Connecticut. The Siwanoy had villages of varying sizes in present day Rye, North Castle, New Rochelle, Eastchester, Pelham Neck, Castle Hill Neck and Clason's Point in the Westchester section of the Bronx, and in Norwich, Greenwich, and possibly Stamford, Connecticut (Malcolm Pirnie, Inc.1999: 3-8 - 3-9).

During the 17th Century, problems and conflicts between Native Americans and the Dutch in the lower Hudson Valley resulted in the death of large numbers of Native peoples. The introduction of European diseases such as smallpox further devastated local Indian populations. By the time of the late pre-Contact period, the Wechquaesgeek probably numbered in the vicinity of 900 individuals; by the end of the 17th, this number had dropped to 200. During early European contact, the Siwanoy probably numbered about 1,800 individuals; by 1650, this number had been reduced to approximately 700-900 people. In February 1644, an estimated 500-700 individuals from both Wappinger villages were slaughtered by the Dutch under Captain John Underhill at a village in the Pound Ridge area in Westchester County (Malcolm Pirnie, Inc. 1999: 3-10).

By the early 18th Century, only remnants of the Wechquaesgeek and Siwanoy peoples remained. Survivors of the Wechquaesgeek were rumored to be living in the vicinity of the Nepperhan neighborhood of Yonkers in 1715. Most of the Siwanoy were reportedly living in the vicinity of Rye Pond in North Castle. The last recorded Siwanoy settlement was located near Bear Swamp, formerly in the Morris Park section of the Bronx, and was occupied until 1782 (Malcolm Pirnie, Inc. 1999: 3-10).

Archaeological Potential of the Bronx River Study Area

Bronx County

Most of the Native American archaeological sites present in the Bronx have been identified through the efforts of amateur archaeologists during the past century. These include habitation sites, camp sites and shell middens. Many of the sites were identified in the vicinity of the East River and Long Island Sound shores, particularly at Throgs Neck and Pelham Bay Park. The biologically rich and diverse shoreline areas, with adjacent upland forests with game and mast resources, would have afforded excellent subsistence opportunities for native peoples. The lack of extensive development in many of these areas ensures that many sites remain intact well into the 20th Century (Boesch 1996).

However, detailed information about many of the identified sites is often lacking. The location of artifacts, site size, time periods, and site function are lacking in many cases. Other sites such as temporary camps, small-scale habitations, and small shell middens remain to be identified. Many of these sites are likely located in areas that have yet to be examined archaeologically. Others may be buried under alluvial, colluvial, or other natural deposits or under historic fill. Most of these sites will not be identified using traditional shovel test pit excavation strategies; additional strategies such as machine stripping of the top soil may be required in some of these areas (Boesch 1996).

In Boesch's archaeological sensitivity assessment (1996), the Bronx was divided into zones of high, moderate, and low sensitivity. Generally, high sensitivity areas are characterized by three or more of the following:

1) known sites or surface finds in the immediate vicinity;
2) freshwater source located nearby;
3) high subsistence potential for an area (marsh, shoreline, river confluence, etc.);
4) high ground overlooking water with a slope of 30 percent of less; and
5) well drained soil, particularly areas underlain with sandy soil

Moderately sensitive areas are characterized as having less than three of the above characteristics, while locations of low sensitivity typically have no more than one of the above criteria (Boesch 1996).

According to Boesch (1996), the following locations within the Bronx should be considered highly sensitive for the presence of Native American sites:

1) The area of Pelham Bay Park including Hunter's Island and Rodman's Neck has perhaps the greatest potential of any area in New York City for undisturbed Native American sites. Pelham Bay Park has not been subject to extensive development and contains environments known to be sensitive including ridges, knolls, and other high ground overlooking sources of fresh water.

2) The Bronx shoreline of the Hudson River, especially the lower terraces, are considered sensitive for Native American shell middens and camp sites.

3) The Kingsbridge section of the Bronx is located in the area of numerous previously identified Native American sites.

4) The knolls and ridges within Van Cortlandt Park may contain evidence of Native American use, particularly overlooking Tibbetts Brook. Filled areas both within and beneath the Parade Ground are particularly sensitive. Additionally, the area northwest of the Van Cortlandt Mansion is sensitive due to the recent identification of intact Native American pit features. The base of the west slope of Vault Hill has not been subject to extensive grading as at the Parade Ground and may contain Native American evidence. Lastly, the Indian Field within the Park reportedly contained traces of Native American occupation and is the location of Revolutionary War burials.

5) Large portions of the New York Botanical Gardens, and possibly parts of the New York Zoological Park and Fordham University, have experienced minimal disturbance and contain evidence for Native American use. It is possible that petroglyphs may be located within the Botanical Garden and/or Zoological Park.

6) The extreme southeastern portion of the Bronx was intensively utilized in the pre-contact period and should be considered sensitive for archaeological resources. A number of sites including habitations, camps, burials, and shell middens were identified, particularly along the shoreline. A number of sites have also been identified adjacent to the major rivers including the Bronx River which extends through the southeastern corner of the Bronx. The banks along these rivers should be considered sensitive.

7) The large north-to-south ridge overlooking the Harlem River east of Jerome Avenue may have been the location of numerous hunting or temporary use sites. Additionally, the north-to-south ridge overlooking the Hudson River along Palisades Avenue has been the location for previously identified sites.

8) Submerged areas near the East River and Long Island Sound shorelines of the Bronx were dry land during periods of the lower sea level during the Wisconsin glaciation between approximately (12,500 and 4,000 years BP). This period includes the time of the earliest occupation of the New York-New Jersey region by Native Americans during the Paleo-Indian and Archaic Periods.

Westchester County

In Westchester County, the major prehistoric sites were located along the Hudson River which would have been the most favorable location due to the abundance of fish and shellfish. Interior sites likely represented seasonal or short-term procurement or utilization areas. Most of these sites were located along the north-south running streams including the Saw Mill, Sprain, and Bronx Rivers. Sites along the Bronx River are less numerous, however, more recent cultural resource surveys have confirmed the presence of sites along the Bronx River in White Plains (Pickman and Harris 2001:2).

The favorable topography in the area likely influenced Native American settlement and utilization. The presence of high ground, knolls and terraces overlooking the Bronx River and its tributaries, and former marsh areas were factors that contributed to its suitability. Additionally, the Bronx River afforded native peoples with water, a mode of transportation, and fish; nearby marsh areas provided waterfowl and plants, and terraces and valley lands were ideal for cultivation and agriculture. These areas would have been excellent locations for temporary or semi-permanent camps for the exploitation of game moving through the Bronx Valley to the Bronx River or its tributaries (Boesch and Pickman 1994:9-10).

Evidence of Native American activity is suggested by the presence of Contact period aboriginal trails in the area. Scarsdale Road in Scarsdale, which borders the Bronx River and Bronx River Parkway, follows the route of an early native trail. White Plains Road, east of the Bronx River in Scarsdale, also follows the route of an aboriginal trail. Other trails likely would have followed along the edge of the Bronx River valley with branches providing access to adjoining high ground and bluffs (Boesch (MPI): 1999:3-13).

During the Contact Period, the Bronx River reportedly supported large beaver and muskrat populations. Native Americans would have exploited these animals as they conducted trade with both Dutch and English traders. As a result, numerous locations in the vicinity of the river would have been used as temporary camp sites and trapping areas, particularly where beaver ponds may have existed. A number of these sites likely developed on high and dry ground overlooking these ponds (Boesch (MPI): 1999:3-13).

CHAPTER FIVE

BRONX COUNTY HISTORIC CONTEXT

The first European settler in what became the Borough of the Bronx was Jonas Bronck. He arrived in 1639 with his wife, Antonia Slagboom, from Amsterdam. Bronck purchased 500 acres from two Indian sachems, Rauaqua and Taekamuck, and the property became known as "Bronxland". The estate was described as being between the Harlem River and the Aquahung, which became known first as the Bronck's River, or the Bronck River, and then Bronx River. Some historians suggest that Bronck's house was not far from the mouth of the Bronx River, although its exact location has never been identified (Comfort 1906; Shonnard and Spooner 1900).

Jonas Bronck died in 1643 and his widow remarried and relocated to Albany, NY. The Bronck property was sold in 1651. It was eventually sold to Captain Richard Morris, and became a part of the Manor of Morrisania (Shonnard and Spooner 1900).

English settlers also came to this area during the same time period. One of the most prominent during this period was Anne Hutchinson who arrived in 1642. She and her family settled in what is now known as Pelham, on what became known as the Hutchinson River. Most of the party perished in an Indian attack the following year. The same year John Throckmorton settled near the East River on a neck of land that was named after him, and then shortened to "Throgg"s Neck. A Thomas Cornell settled on the long neck of land south of Throgg's Neck, which became known as Cornell's Neck. The four patents (Bronck's, Hutchinson's, Throckmorton, and Cornell) were all fairly contiguous. Bronck's patent extended to the Bronx River, where it adjoined Cornell's property, beyond which was Throckmorton's grant and then Anne Hutchinson's patent.

The patent for Cornell's Neck was issued at about the same time that the grant to Adrian Van der Donck of what is now Yonkers was made. Van der Donck's property extended to the Bronx River. The patroonship of Van der Donck became known as "De Jonkheer's Land", or "De Jonkheer's ", from which the present name of the City of Yonkers was established.

Other early settlements or purchases of large tracts of land which became the manors within Westchester County occurred during the latter half of the seventeenth century. About 40 years of European settlement was often retarded by attacks by Native Americans as the Europeans expanded their land holdings north of Manhattan (Shonnard and Spooner 1900; Greenburgh Nature Center 1984).

In 1664, New Amsterdam and Westchester were permanently made English territories. Connecticut and Massachusetts residents began to increase the population living within what is now Bronx County, although settlement was slow north of the Bronx River's mouth.

West Farms was conveyed to Edward Jessup and John Richardson by the Patent of West Farms in 1666. This settlement remained a part of the community of Westchester until 1846, when West Farms became a village encompassing all of the land to the west of the Bronx River, bounded on the north by Yonkers, south by the East River, and west by the Harlem River (Bolton 1881).

Thomas Pell purchased a large tract in Westchester from the Indians in 1654. He does not appear to have settled there himself, but sold parcels off to private individuals and groups of land speculators. The erection of Pelham Manor by royal patent dated from 1666, with Thomas Pell becoming the first Lord of the Manor. He died in 1669, and the property was bequeathed to his nephew John Pell of England. Separate local names were given to some of the subdivisions of Pell's grant. The first company to make a large land purchase named the property Eastchester which was immediately adjacent to Westchester town at the east.

In 1670, Captain Morris, a British merchant from Barbados, bought for himself and his brother Lewis, a large portion of the former "Broncksland". Captain Morris' son, Lewis, became the first Lord of the Manor of Morrisania, which at one time comprised over 1,920 acres. The Fordham Manor was granted in 1701, and the Phillipsburgh Manor in 1666.

The manors were subdivided and several villages and towns created, all within the land comprising what is now Westchester County (Figures 2 and 3).

The original Westchester County was formed in 1683. It extended from Putnam County to the north, south to the Harlem and East Rivers. This included West and East Chester, "Bronxland", Fordham, Anne Hooks Neck (Pelham Neck)), as well as Yonkers. By the beginning of the eighteenth century: "Westchester County had acquired the elements of serious development in all its parts. Practically all its land had been appropriated by purchase...All of the six manorial estates had been granted by letters patent, and in part settled by tenants, with here and there the foundations of villages laid... new settlers had generally begun to occupy the non-manorial lands in the interior" (Spooner and Shonnard 1900:198-199).

The county was subdivided into townships in March of 1788. Twenty-one towns were created: Bedford, Cortlandt, Eastchester, Greenburgh, Harrison, Mamaroneck, Morrisonia, Mount Pleasant, New Rochelle, North Castle, North Salem, Pelham, Poundridge, Rye, Salem (now Lewisboro), Scarsdale, Stephentown (now Somers), Westchester, White Plains, Yonkers, and Yorktown. The Town of Westchester included all of the original Westchester and West Farms tracts, with Fordham Manor. Morrisania was annexed to Westchester in 1791.

The federal census of 1790 gave the population of the County of Westchester as 24,000. Three thousand of these people lived in the Bronx River Valley (Bolton 1881; Greenburgh Nature Center 1984; Spooner and Shonnard 1900)

Figure 2 – Bronx and Westchester Counties,
New York
Source: F.W. Beers 1867 Atlas of New York
and Vicinity

Figure 3 – Bronx and Westchester Counties, New York

Source: F.W. Beers 1867 Atlas of New York and Vicinity

The Bronx River was one of the rivers in Westchester County utilized since the seventeenth century for water powered industry (Figure 4). About three miles from the mouth of the Bronx, and opposite the village of West Farms was a mill seat. It is suggested that Jonas Bronck, erected a mill and laid out a plantation here as early as 1639. On August 16, 1680, the Town of Westchester granted William Richardson and his associates, the privilege at this part of the river to set up two mills, a saw and a corn mill. In 1711, William Provost was granted four mills, three grist mills, and one saw mill at the same location. From the Provost's, this property was purchased by Stephen de Lancey, prior to his death in 1735 (Bolton 1881: 426). The de Lancey mill consisted of one large building, near the present 181st Street, housing a saw and grist mill on the east side of the Bronx River in what was East Chester. The mill was in service until 1845 when it was destroyed by fire.

In 1825, de Lancey sold part of his property on the west side of the river to David Lydig. Lydig's mills were located further downstream from the de Lancey mill location and operated as a grist mill (Comfort 1906). A dam is still present at this location on the Bronx River.

Immediately north of the village of West Farms was Bronxdale. The Lorillard's (an old Huguenot family who arrived in Westchester County by the mid-eighteenth century) purchased the mill privilege by 1790. They converted a wooden grist mill into a mill for grinding snuff and smoking tobacco. The mill was in operation by 1793. In 1840, a large stone mill replaced the wooden mill. In 1856, the Lorillard's built a large stone mansion overlooking the Bronx River. The tobacco company was taken over by Peter Lorillard Jr. upon the death of his father. The company moved to Jersey City in 1870, and the factory on the Bronx was abandoned sometime in the early 1880s. The property was sold to the City of New in 1884, and became part of Bronx Park. The estate is now the location of the New York Botanical Gardens (Bolton 1881; Comfort 1906; Historical Perspectives, Inc. 1993). The stone mill is incorporated into the garden property and is listed as a National Historic Landmark.

Downstream of the snuff mill, a bleach works and cloth tape factory was constructed by James Bolton who first came to the area in 1818. Bolton describes "Bronx Dale" in the following manner. "In this neighborhood is a small scattered hamlet containing two public houses, two stores and about twenty dwellings; also the extensive bleach factory of the late Mr. James Bolton." (Bolton 1881: 31). The houses were constructed to house the mill workers at the bleachery. Upstream around what is now 180th Street, the Metropolitan Dye Works were located on the east bank of the river, c. 1890. There was also a tapestry factory further upstream near Gun Hill Road (Bronx County Historical Society 1982:14).

In Bronxville, in West Mount Vernon, Lancaster Underhill operated a saw and grist mill in the early nineteenth century. Circa 1840, the mill was taken over by a Mr. James P. Swain who utilized the large stone factory as a grist mill and a screw and axle manufactory. A short distance downstream, a Mr. Frederick W. Kraft operated a piano and glove factory. Near Hunt's Bridge

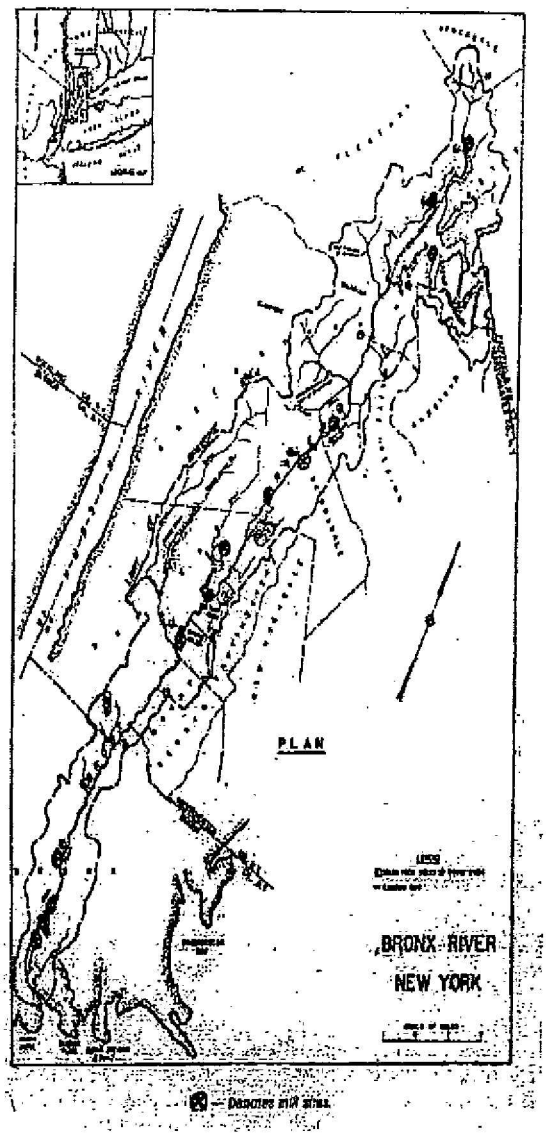


Figure 4 – Map of Bronx River, New York depicting mill sites

Source: Greenburgh Nature Center, 1984

(also in West Mount Vernon) was a glue factory. In Tuckahoe, just north of Bronxville, was an India rubber manufactory.

A railroad from lower Manhattan to Harlem was chartered in 1831. Providing an impetus for settlement and industry, the New York and Harlem Railroad companies merged in 1838 to provide rail service to Westchester. The Harlem River was bridged, and by 1844 the rail extended to Tuckahoe, and to White Plains by 1846 (Greenburgh Nature Center 1983).

In 1874, the lands west of the Bronx River, south of the boundary of Yonkers, were formed into the 23rd and 24th Wards of the City of New York. In 1875, the section of Westchester County south of Mount Vernon also became part of the 24th Ward. In 1898, these two Wards were incorporated into the Borough of the Bronx (Jenkins 1912).

By the late nineteenth century, the Bronx River had become increasingly polluted by industry and sewage. In 1892, the City of New York purchased land originally named Bronx Park, which was later developed to create the Bronx Zoo and the Botanical Gardens. In 1905, the Bronx Valley Sewer Commission was appointed to clean up pollution above this parkland, and sewerage lines were connected to all of the communities north of the Botanical Gardens by 1915 (Greenburgh Nature Center 1983:23).

The Bronx River Parkway Commission was created in 1906 to establish a parkway on either side of the Bronx River. The parkway consisted of a roadway and reservation of lands on either side of the Bronx River. The Commission began work in 1914. Over 1,555 acres of land was acquired from Kensico Reservoir to almost the mouth of the Bronx River. The river was cleaned, dredged and straightened (particularly in Westchester County). The parkway was originally dedicated in 1925 (Bronx County Historical Society 1982; Greenburgh Nature Center 1983).

The Bronx experienced a building and population boom after World War I. The extension of the New York City Subway allowed new residents to commute to work in Manhattan. This resulted in a large increase in residential construction. By 2005, the population of Bronx Borough was estimated by the U.S. Census Bureau as almost 1.4 million people.

While the Bronx River still has some pollution problems due to extensive urbanization along most of its length in the Bronx itself, there are many advocates working to clean up the river and establish a "green" corridor along its banks to provide a natural experience to urban dwellers.

Table 3 lists all of the currently recorded Bronx County historic properties listed on the National Register of Historic Places. This information was obtained from the site files at the New York State Historic Preservation Office on Peebles Island.

Table 3 – National Register Properties in Bronx County

NR Number	Name	Status	Address	City	County	Listing Date
04NR05284	Jackson Avenue Subway Station	Listed	East 152nd Street, Jackson and Westchester Ave.	New York	Bronx	7/20/2004
99NR01459	Keeper's House at Williamsbridge Reservoir	Listed	3400 Reservoir Oval	Bronx	Bronx	7/23/1999
90NR00060	Longwood Historic District	Listed	Roughly bounded by Beck St., Longwood, Leggett, and Prospect Avenues	New York	Bronx	8/5/1983
90NR00072	Lorillard Snuff Mill	Listed	Off U.S. 1	New York	Bronx	6/23/1980
90NR00057	Morris High School Historic District	Listed	Roughly bounded by Boston Rd., Jackson and Forrest Aves., and East 166th and Home Streets	New York	Bronx	8/12/1983
90NR00041	New York Botanical Garden	Listed	Southern and Bedford Park Blvds.	New York	Bronx	6/23/1980
90NR00037	NY, Westchester and Boston Railroad Admin Building	Listed	481 Morris Park Avenue	New York	Bronx	6/23/1980
04NR05283	Prospect Avenue Subway Station	Listed	Westchester and Longwood Avenues and Prospect Street	New York	Bronx	6/18/2004
90NR00033	Rainey Memorial Gates	Listed	New York Zoological Park	New York	Bronx	6/23/1980
04NR05285	Simpson Street Subway Station	Listed	Westchester Avenue between Simpson Street and Southern Boulevard	New York	Bronx	6/18/2004
90NR00058	Sunnyslope Bright Temple AME Church	Listed	812 Faile Street	New York	Bronx	8/15/1983
90NR00069	US Post Office – Morrisania	Listed	442 East 167th Street	New York	Bronx	11/17/1988
90NR00056	United Workers Cooperative	Listed	2700-2870 Bronx Park East	New York	Bronx	8/13/1986
90NR00034	Valentine Varin House	Listed	3266 Bainbridge Avenue	New York	Bronx	6/23/1980
90NR00065	52nd Police Precinct Station and Stable	Listed	3016 Webster Avenue	New York	Bronx	9/27/1982

CHAPTER SIX

WESTCHESTER COUNTY HISTORIC CONTEXT

Westchester County is situated on the east side of the Hudson River, immediately north of New York City and Bronx County. It is bounded on the north by Putnam and Dutchess Counties; on the east by the state of Connecticut; southerly by Long Island Sound and the East River; west by the Harlem and Hudson Rivers, by New York County, the state of New Jersey, and Rockland County in New York. It has also been described as "all the land beyond the island of Manhatten along the Sound to the Connecticut line, which is its eastern boundary. It extends northward to the middle of the Highlands, and westward to Hudson's River" (quoted in Bolton 1881:viii).

Westchester County covers an area of approximately 457 square miles with a terrain of rolling hills intersected by three main streams: the Croton, Bronx, and Saw Mill Rivers. Although it has adapted to the modern, cosmopolitan nature of nearby New York City, Westchester County still retains its rural character and is one of the most forested areas in the state.(www.westchestergov.com/history).

Table 4 lists the National Register historic properties within Westchester County, specifically those within the Bronx River study area and vicinity. This information was obtained from the site files at the New York State Historic Preservation Office on Peebles Island.

Early Exploration and Settlement

European exploration of the region began with the voyages of Verrazano (1524) and Hudson (1609) followed soon thereafter by traders who were drawn by the diversity of wildlife, particularly beaver. The 17th Century explorers found several Algonquian Indian villages in Westchester as was described in the pre-Contact narrative. The first permanent non-native settlers of Westchester County were the Dutch who began to occupy the Hudson Valley between present-day New York (New Amsterdam) and Albany (Fort Orange). The Dutch West India Company sponsored settlement and under director-general William Kieft lands were acquired in Westchester and the Bronx circa 1639 for that purpose. As the English moved west from New England and encroached upon the Dutch, conflict was inevitable. By 1664, the Dutch were forced to surrender the colony of New Amsterdam to the English (www.westchestergov.com/history).

Large tracts of land comprising present-day Westchester County were purchased in 1646 by Adrian Van Der Donck and in 1649 by Peter Stuyvesant on behalf of the Dutch West India Company. Following the English takeover of New Amsterdam in 1665, Frederic Philipse acquired by royal grant and by purchase from Native Americans nearly all the land extending between the Hudson and Bronx Rivers and from Kings Bridge to the

Table 4 - National Register Properties in Westchester County

NR Number	Name	Status	Address	City	County	Listing Date
91NR03356	Bronx River Parkway Reservation	Listed	Bronx River Parkway from jct. with Sprain Brook Rd. to and including Kensico Dam Plaza	Bronxville	Westchester	10/31/1990
99NR01566	First United Methodist Church	Listed	226 East Lincoln Avenue	Mount Vernon	Westchester	10/04/1999
97NR01163	Good Counsel Complex	Listed	52 North Broadway	White Plains	Westchester	1/14/1997
94NR00536	Grainger, Percy, Home and Studio	Listed	7 Cromwell Place	White Plains	Westchester	2/17/1993
90NR02466	Hart, Eleazer, House	Listed	243 Bronxville Road	Yonkers	Westchester	6/23/1983
90NR02443	Hartford, John A., House	Listed	SW of Valhalla on NY 100	Valhalla	Westchester	6/23/1980
90NR02509	Hyatt, Caleb, House	Listed	937 White Plains Post Road	Scarsdale	Westchester	6/23/1980
90NR02527	Lawrence Park Historic District	Listed	Roughly bounded by Side Hill, Prescott, Kensington, Garden and Chestnut Ave., Maidens Lane, Valley and Pondfield Rds.	Bronxville	Westchester	6/23/1980
90NR02513	Mapleton	Listed	52 North Broadway	White Plains	Westchester	6/23/1980
90NR02528	Masterton-Dusenberry House	Listed	90 White Plains Road	Bronxville	Westchester	6/23/1980

90NR02439	Miller House	Listed	Virginia Road	North White Plains	Westchester	6/23/1980
90NR02435	Old Croton Aqueduct	Listed	Runs N from Yonkers to New Croton Dam	Yonkers	Westchester	6/23/1980
99NR01567	People's National Bank and Trust Company Building	Listed	31 Mamaroneck Avenue	White Plains	Westchester	4/5/2000
90NR02489	Purdy, Jacob, House	Listed	60 Park Avenue	White Plains	Westchester	6/23/1980
99NR01519	Scarsdale Railroad Station	Listed	Popham Road at Depot Place	Scarsdale	Westchester	No Date
90NR02471	Sherwood House	Listed	340 Tuckahoe Road	Yonkers	Westchester	4/3/1984
99NR01469	Stony Hill Cemetery	Listed	Buckout Road	Harrison vicinity	Westchester	4/6/1999
97NR01276	Trinity Episcopal Church	Listed	324 South Third Avenue	Mount Vernon	Westchester	8/25/1997
90NR02529	US Post Office – Bronxville	Listed	Pondfield Road	Bronxville	Westchester	11/17/1988
90NR02480	US Post Office – Mount Vernon	Listed	15 South First Street	Mount Vernon	Westchester	5/11/1989
90NR02511	US Post Office – Scarsdale	Listed	Chase Road	Scarsdale	Westchester	5/11/1989
90NR02510	Wayside Cottage	Listed	1039 Post Road	Scarsdale	Westchester	3/9/1981
90NR02490	White Plains Armory	Listed	35 South Broadway	White Plains	Westchester	6/23/1980
02NR04975	White Plains Rural Cemetery	Listed	167 North Broadway	North White Plains	Westchester	3/6/2003
90NR02465	Yonkers Water Works: Gate House,	Listed	Grassy Sprain Road	Yonkers	Westchester	6/1/1982

	Grassy Sprain Reservoir					
90NR02465	Yonkers Water Works: Tubewell Station	Listed	Saw Mill River Road	Yonkers	Westchester	6/1/1982
90NR02465	Yonkers Water Works: Tuckahoe Road Pump Station	Listed	Tuckahoe Road	Yonkers	Westchester	6/1/1982

Croton River. Under the royal charter confirming ownership of this tract in 1693, Philipse was conferred the title "Lord of Philipsborough (Philipsburg) Manor" with absolute title to the land and the right to lease it and collect rents and tolls from tenants (Pickman and Harris 2001:3).

As English towns were being developed, large tracts of land in Westchester County were established as "freehold" manors whereby proprietors or owners could lease the land or sell it outright to tenants. There were a total of six manors in Westchester: Pelham, Fordham, Philipsburgh, Morrisania, Cortlandt, and Scarsdale. Manor owners were required to build mills for the tenants; survey lots and provide livestock for farms; provide mechanics, millers, boat builders, and if needed, doctors, clergy, and a schoolmaster (www.westchestergov.com/history).

The earliest English settlements in Westchester County were the villages of Westchester (once the Borough of Westchester and now part of the Bronx), Rye, Mamaroneck, Eastchester, and Bedford. English colonists came to America primarily for religious and economic reasons. In the 1680s, Huguenots (French Protestants) who were persecuted in France also came to Westchester for religious freedom (www.westchestergov.com/history).

On November 1, 1683, the county of Westchester was created by an act of the New York General Assembly. Nearly everything consumed in the county was either raised or made on the farms including grains, vegetables, fruit, and livestock. Flax was an important crop and each home had a spinning wheel for the making of wool and linen thread. Anything that could not be produced at home was bartered for with wood, cattle, and food (westchestergov.com/history). Westchester County was represented in the first legislative assembly of the colony which met in New York in April 1691 and has remained as a single county since (Bolton 1881).

The American Revolution

Westchester County played a large role during the American Revolution, particularly during the main campaign of 1776. Numerous marches and battles took place between the colonists and British troops, who were in control of New York at this time. The campaign of the Battle of White Plains was fought in late 1776, an area of strategic importance for the Americans as it controlled travel to the eastern states and to the north and was also the repository of a large quantity of American military supplies. The western boundary of White Plains is Chatterton Hill located behind the Bronx River. Chatterton's Bridge crossed over the Bronx River at its northern end; the current Main Street Bridge occupies the location of this 18th Century bridge (Bolton 1881:xii; Boesch and Pickman 1994:18).

British forces under General Howe attacked American positions on Chatterton Hill. After repulsing the initial attack, American reinforcements retreated across the Bronx River near the present Woodland Viaduct and scrambled up Chatterton Hill where they repulsed Hessian forces together with the main militia positioned at the top of the hill. This resulted in the retreat of the Hessians back over the Bronx River. Meanwhile, British forces were then able to march into White Plains without incident. British artillery fired upon the American positions on Chatterton Hill with cannon fire. The Hessians ascended the east slope of the hill followed shortly thereafter by the British who attacked the east slope further to the north, near the present location of the Bronx River Parkway north of the Woodlands Viaduct. After two unsuccessful charges, the British and Hessian forces made it to the top of the hill on the third attempt. Attacking American forces from the south, the Hessians caused their retreat from the eastern slope (Boesch and Pickman 1994:19-21).

At the same time, British forces attacked the northeast slope of Chatterton Hill and American forces guarding the Chatterton Bridge. Although the attack pushed back forces on the hill, the British were unable to take the bridge, the only line of retreat for American forces. American forces then retreated over the bridge where reinforcements under General Putnam were met and withdrew to the main American line at Purdy's Hill. Following the American retreat, British forces ascended and took control of Chatterton Hill (Boesch and Pickman 1994:21-22).

Casualties from the battle for control of Chatterton Hill were high, with 229 British and Hessians killed, wounded, or missing and about 175 American casualties. Although the British intended to attack again, Washington had consolidated the American force and supplies in the heights of North Castle. The American right wing was on Miller Hill, adjacent to the Bronx River directly north of the White Plains and North Castle border. During this time, Washington's headquarters were located in the Miller house at the base of the hill. Although there were additional minor skirmishes, Washington and the Americans were able to again occupy White Plains following the battle. The entrenchments at North Castle remained garrisoned by American troops until the Treaty of Paris which ended the war in 1784 (Boesch and Pickman 1994:22-24).

Post-Revolutionary Era

The Revolution devastated Westchester County which was the subject of raids and plundering over a period of seven years. Many of the landholdings of former British loyalists were confiscated by the state and sold. This included the Westchester holdings of 54 Loyalists, the largest of which was the Philipsburgh Manor. Many farmers were able to own the lands that they formerly worked as tenants. By 1788, Westchester County was formally divided into twenty towns and the first census in 1790 indicated a total population of 24,000, mostly in the northern part of the county. The chief occupation remained farming, primarily for subsistence, with crops including potatoes,

vegetables, fruit, corn, and wheat. Most farms had dairy cows and poultry with sheep grazing on lands too rough for cultivation (www.westchestergov.com/history).

One of the necessities of transporting crops and cattle to market (which included New York City) was an improved transportation network. In 1800, the first commercial toll road, the Westchester Turnpike was chartered, running through Pelham and New Rochelle. In the northern part of the county, the Croton Turnpike (also known as the Somerstown Turnpike) linked Somers to the Hudson River at Sing Sing (now Ossining). By the middle of the 19th Century, the turnpikes were made free public roads.

Additionally, post roads were important means of conveying products to market, as well as for carrying the mail. The prominent post roads of the period were the Albany, Danbury, and Boston. These roads also became main routes for stagecoach travel, also spurring the development of taverns and inns for travelers. Despite these improvements, travel by water was still the most practical and convenient way for passengers and freight to be shipped. Sloops made regular stops at the docks along the Hudson River. In 1807, the first steamboat, the *Clermont*, made its first trip up the Hudson. The disadvantage to Westchester County residents, however, stemmed from the fact that steamboats landed on the west side of the Hudson and passengers had to be rowed out to board them.

Following the Revolution, small industries emerged in Westchester County, primarily cottage industries such as shoemaking which helped supplement farming incomes. Larger industries such as iron making developed in Port Chester, Peekskill, and Morrisania (now part of the Bronx) where foundries produced stoves and plowshares. Brickyards were established in Croton and Verplanck and marble quarries in Tuckahoe, Sing Sing (Ossining), Hastings, and Thornwood supplied the building material for neoclassical architecture which was popular in public buildings during this era. Many of the federal building destroyed by the British during the War of 1812 were rebuilt using Westchester marble.

Two developments during the mid-19th Century (Figure 5 and 6) had a great impact upon the growth of Westchester County. The first was the construction of Croton Dam and Aqueduct which was begun in 1837 and completed in 1842. At the time, the Croton River was determined to be the best water supply source for New York City. Westchester County watershed construction during the 1830s and later was instrumental to the emerging metropolis of New York. The second major development was the coming of the railroads in the 1840s, with the New York and Harlem, the New York and Hudson River, and the New York, New Haven, and Hartford lines opening during this decade. The construction of both the watershed systems and the railroads were the work of Irish laborers that emigrated during this period to escape famine in their homeland.

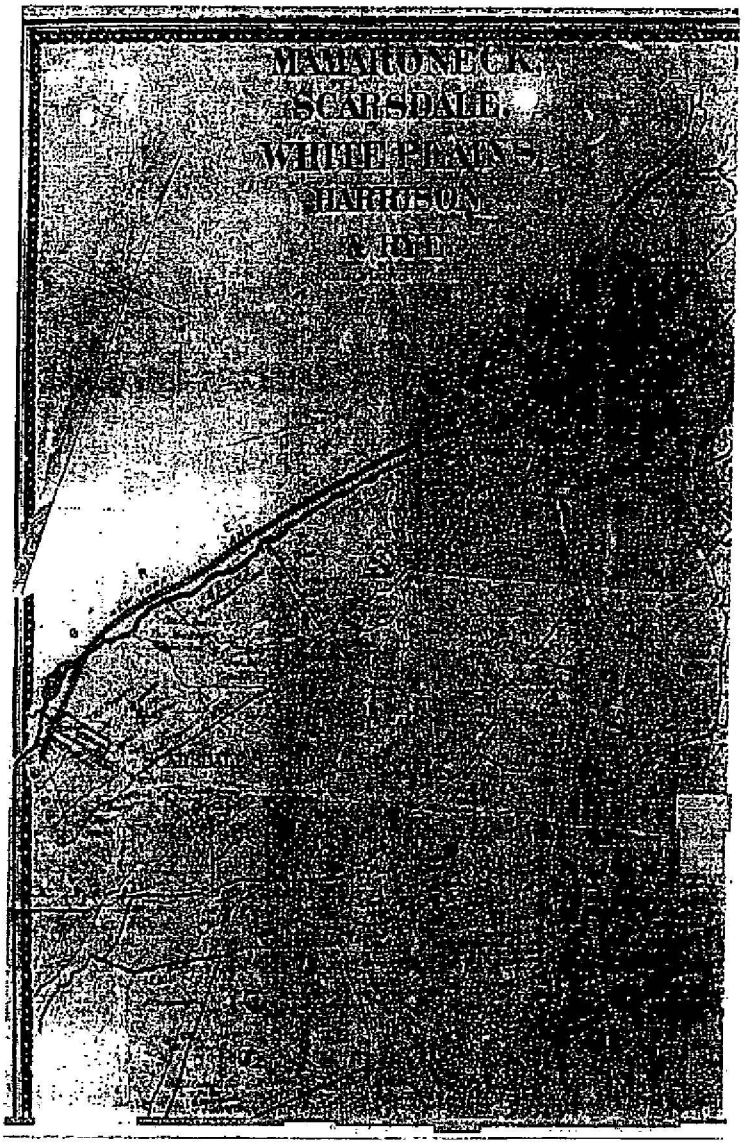


Figure 5 – Northern Portion of Westchester County

Source: F.W. Beers 1867 Atlas of New York and Vicinity

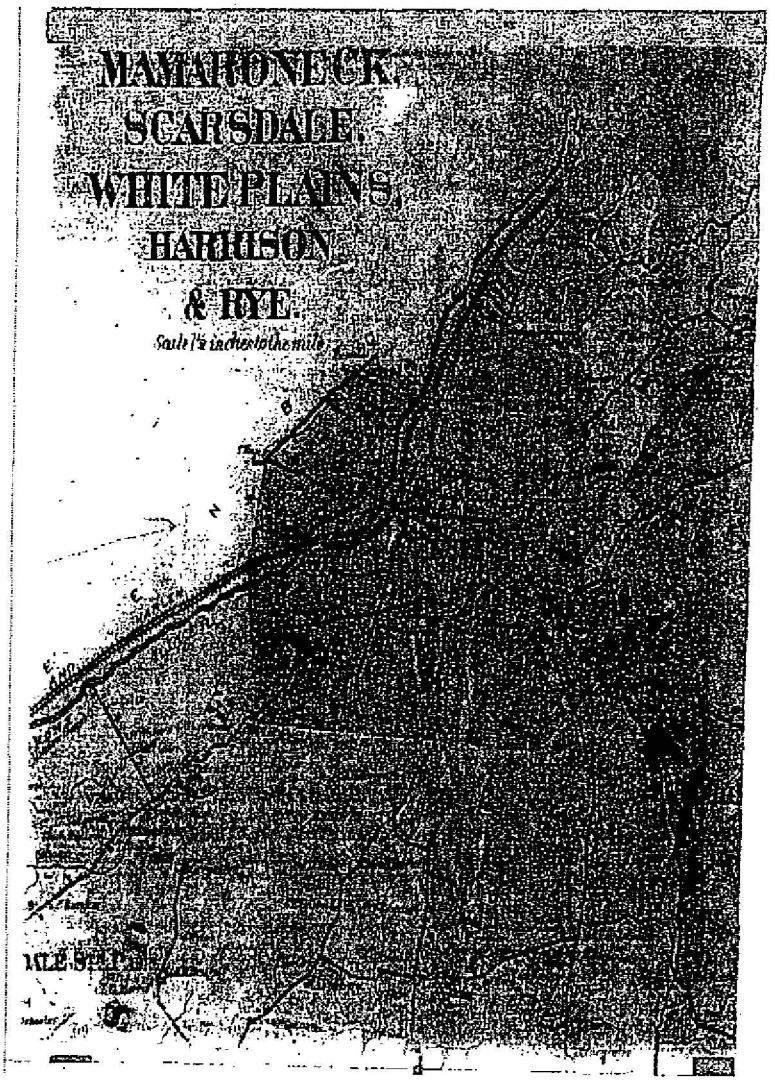


Figure 6 – Northern Portion of Westchester County

Source: F.W. Beers 1867 Atlas of New York and Vicinity

The emergence of the railroads to Westchester County promulgated a shift from primarily subsistence farming to dairying as local farmers were better able to produce and ship milk and milk products commercially. The railroads also affected a population shift from the northern portions of Westchester County to areas in the south. People chose to settle close to railroad lines and new towns were established as a result, notably Mount Vernon which was carved out of Eastchester during this time.

The Early 20th Century

Following the close of the Civil War and Reconstruction, Westchester County was still primarily rural in nature. However, by the beginning of the 20th Century, that changed, due to the transformation brought on by the railroad, trolleys, automobiles, and paved roads and highways. The countryside was now more accessible than ever to New York City and surrounding urban areas. Prior to World War I, factories and suburbs developed along the Hudson River and in the interior south of White Plains. Immigrants from Italy and Eastern Europe came to Westchester and built the railroads, dams, roads, and homes that fueled the increased prosperity and urbanization of the county.

Following the construction of Croton Dam in 1842, New York City made plans to build more dams and reservoirs in Westchester County. Between the 1880's and the 1920's, the Kensico, Croton, and Catskill water systems were constructed. Construction of these facilities entailed the flooding of thousands of acres in many communities north of White Plains. The Kensico water system was constructed in the 1880's, drawing water from Little and Big Rye Ponds and Wampus Lake. Between 1892 and 1907, the Croton water system was developed which included the Titicus Dam, Muscoot Dam, Amawalk Reservoir, and a larger Croton Dam.

In 1898, when New York incorporated the boroughs of the Bronx, Brooklyn, Queens, and Staten Island, the water supply had to be increased yet again. The Catskill water system was built between 1906 and 1915 and brought water from west of the Hudson through Westchester by means of a new aqueduct that, in turn, created a new reservoir behind the larger Kensico Dam also completed in 1915. By 1924, New York City owned 18,320 acres of land in fourteen Westchester towns for water supply purposes.

The Modern Era (1920s to the Present)

By the 1920s, life in northern Westchester County still retained a rural character with farming and isolated villages predominating the region. However, the Depression forced many farmers out of the business altogether with competition from other areas lowering the demand for their products. Rising land taxes and falling profits led those who remained to sell off their properties after World War II to developers. South of White Plains, the few remaining farms disappeared rapidly after 1920, and suburbanization began in earnest.

The first major effort towards the suburbanization of Westchester County was the construction of the Bronx River Parkway which opened in 1925. Begun in 1906, primarily as a project to clean up the river, the Parkway transformed Westchester into the premier bedroom community of New York City. Many young, middle-class professionals flocked to the county to buy homes and invest in real estate which rapidly increased in value. Consequently, transportation networks expanded to accommodate the influx of residents.

The Bronx River Parkway was followed by the Saw Mill River Parkway, the Hutchinson River Parkway, the Taconic Parkway, and the Cross County Parkway, all completed by the 1930's. The next major road construction period was not until the 1950's and 1960's when the interstate expressways and thruways were built. The Westchester County Planning Commission, under the direction of William Ward, promulgated a plan for recreational improvements in the region. Major recreational areas in Westchester County were created during this time including the Playland amusement area in Rye which opened in 1928, and was followed by Ward Pound Ridge Reservation, Croton Point Park, Glen Island Park, and Kingland Point Park.

Following World War II, Westchester County entered an era of prosperity during the 1950's. Homes were built through the lower county area for young families, while in the north, developers built new homes in the fields and woods of former farms. The baby boomer period following the war created a new period of suburbanization. During this time, many major corporations and their headquarters relocated to Westchester including General Foods (1953) and Nestle (1958). The development of corporate parks in the 1960's and 1970's, which blended in appropriately with the nearby parks and parkways, further enticed corporations including Hitachi, Texaco, Union Carbide, IBM, and Pepsi to the area. A combination of factors including the opportunity to build their own facilities, access to an available work force, and the interstate road and transportation network all contributed to the desirability of Westchester County.

CHAPTER SEVEN

THE BRONX RIVER RESERVATION

During the late 19th Century, the increasing population of Westchester County caused development pressures along the Bronx River floodplain. Residences were built closer to the river and annual flooding produced extensive damage to these structures. In an effort to control the flooding in the White Plains area, many marshy areas in the Bronx valley were filled and major tributaries of the Bronx River were placed in storm sewers. However, as these areas had provided natural drainage, their modification increased the severity of the flooding. As population increased, there was a greater need for a supply of fresh water. Wells and local streams were either inadequate or became contaminated (Boesch and Pickman 1994:27).

Industrial development along the Bronx River increased during this period with various industries introducing a wide range of contaminants into the river. The increasing population also contributed to pollution through raw sewage which was simply dumped into the river. In 1892, the city of New York purchased a large tract of land between West Farms and Williamsbridge for Bronx Park (now the Bronx Zoo and Botanical Garden). Before developing the park, however, pollution in the Bronx River needed to be cleaned up. In 1905, the Bronx Valley Sewer Commission was formed and by 1915 all of the communities north of Bronx Park along the Bronx River had connected to the sewer line (Boesch and Pickman 1994:27).

In 1906, a Bronx River Parkway Commission was appointed by the New York State Legislature and charged with establishing "a reservation of the lands on either side of the [Bronx] river" (quoted in Boesch and Pickman 1994:27). The main purpose of the reservation was to protect the zoo and botanical garden from pollution and development pressures. Although developers initially resisted the establishment of a reservation where they owned property, a compromise was reached. In return for allowing development of the Bronx River Reservation, a two-lane roadway was constructed through the reservation connecting Bronx Park with White Plains. The Commission was authorized to begin work in 1913 and a total of 1,155 acres of land was acquired for the reservation, which extended as far north as the Kensico Reservoir. Over 200 buildings were moved or destroyed and the river and its tributaries cleaned and dredged. Paths were developed for public use and trees and shrubs planted. The Bronx River Parkway and Reservation were officially dedicated in 1925 (27-28).

CHAPTER EIGHT

PRELIMINARY STUDY RECOMMENDATIONS

The Bronx River Basin Reconnaissance Study (USACE 1999) evaluated potential flood control solutions and ecosystem restoration measures that demonstrated a Federal interest in implementing solutions to environmental degradation and other water resource issues. New York District identified ten potential ecosystem restoration areas within the Bronx River study area. Seven of the potential sites are located within Westchester County and three are within Bronx County. Each is listed below together with potential ecosystem restoration techniques that may be implemented:

Westchester County

-Fisher Lane Pond, North White Plains:
Techniques include channel, wetlands, and riparian forest restoration.

-Westchester County Center, White Plains:
Techniques include bioengineering solutions for stream bank stability; restoration of wetlands; installation of fish ladders, and pond restoration.

-Green Acres Pond, west of Scarsdale:
Techniques include bioengineering solutions for stream bank stability and the restoration of the wetland area.

-Pond north of Harney Road:
Techniques include the implementation of bioengineering solutions for stream bank stability and the installation of aquatic benches and/or fish ladders.

-Crestwood impoundment:
Techniques include channel and wetland restoration, installation of aquatic benches, and the restoration of a riparian forest buffer.

-Old Yonkers Mill:
Techniques include the installation of a fish passage.

-Bronxville Lake:
Techniques include the re-alignment of the stream channel and the restoration of floodplain wetlands.

Bronx County

-Shoelace Park and areas north to the County border:
Techniques include the installation of bioretention and/or infiltration systems and the implementation of bioengineered stream bank stabilization measures.

-Bronx Zoo dams and ponds:
Techniques include the installation of aesthetically appropriate fish passageways and the restoration of the riverine corridor.

-Starlight Park and 172nd Street weir system:
Techniques include possible grading and revegetation of tidal marsh areas and the riverine corridor.

Each of these techniques has the potential to impact significant historic properties including historic and archaeological sites and standing structures identified throughout the Bronx River study area. Examples would include historic dams or mill sites and pre-Contact archeological sites that may be uncovered during excavation and grading activities. Selected restoration sites would need to be evaluated on a case-by-case basis for cultural resources sensitivity based upon the actual techniques chosen to be implemented at each. Additional background research, evaluation, and historic or archaeological investigations may be required at each site, in consultation with the State Historic Preservation Officer.

At this time, recommendations for further work and specific determinations of effect upon cultural resources cannot be made specifically, however, general recommendations are provided here as a guide to the process typically followed and that which should be adhered as this study proceeds.

Section 106 of the National Historic Preservation Act of 1966, as amended, requires Federal agencies to take into account the effect of any undertaking on any cultural resource included in, or eligible for inclusion in, the National Register of Historic Places. As the project proceeds cultural resource surveys will be conducted to identify resources and evaluate their eligibility for inclusion on the National Register of Historic Places. Project plans will be modified to avoid or minimize any impacts to eligible resources. An evaluation of the impact of alternative plans on eligible properties will be developed in consultation with the SHPO. If eligible resources cannot be avoided a Memorandum of Agreement (MOA) will be developed in consultation with the SHPO to mitigate for unavoidable impacts. Any work stipulated in the MOA will be undertaken prior to initiation of project construction unless otherwise agreed with the SHPO. If any additional alternatives are considered cultural resource studies will be required at additional costs.

Preliminary cultural resource investigations will be conducted for all proposed project locations. The initial surveys will include background research followed by limited fieldwork consisting primarily of pedestrian survey. The site survey report will provide information on potential cultural resources and will guide the need for, and direction of, further cultural resource investigations.

Locations identified as sensitive for cultural resources will be investigated further through additional research and fieldwork. Fieldwork may entail subsurface testing, geomorphological sampling and remote sensing. The fieldwork will be tailored to each alternative proposed and will be based on site topography, fill depths, anticipated resources, and proposed project actions. If resources are identified their eligibility for listing on the National Register of Historic Places will be evaluated. Recommendations will be made for avoiding significant sites and possible mitigation measures will be suggested, if sites cannot be avoided.

If eligible resources are encountered, and cannot be avoided by project plans, then an MOA must be developed based on the results of the cultural resource studies conducted for the project and on project plans as they develop. MOA preparation will be conducted by the New York District and will require coordination with the appropriate SHPO(s) and, possibly, the Advisory Council on Historic Preservation. Other interested parties may also be consulted. This task will not be required if no significant resources are encountered. Implementation of the MOA must be completed prior to the initiation of project construction.

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