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101-117 WORTH STREET MANHATTAN

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101-117 WORTH STREET

MANHATTAN

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EXECUTIVE SUMMARY

The proposed redevelopment of a section of Block 170 bounded by Worth Street, Catharine Lane, Broadway, and Lafayette Street in Lower Manhattan, required the completion of an archaeological assessment. The proposed development, which entails constructing a new residential structure on Lots 12 through 20 of the eastern end of Block 170, is located at 101-117 Worth Street.¹ Development under the proposed action would result in the demolition of several existing one and five-story buildings.

This Phase 1A documentary study, completed by Historical Perspectives, Inc., was designed to determine the likelihood that pre-European contact (or precontact/prehistoric) and historic-period (post-contact) archaeological resources were once present on the project site and the likelihood that these resources have remained undisturbed by historic and modern development and still possess their integrity. Background research included a review of primary and secondary sources, including modern soil borings, to document the prior usage of the project site; cartographic analysis, site file reviews of previous pertinent archaeological findings; informant interviews; and a field visit (December 2000). Research was completed to determine the archaeological potential of the project site, and was undertaken as per New York Archaeological Council (NYAC) Standards (2000).

The documentary research clearly demonstrated that there is no precontact or historic-period sensitivity within the site's boundaries. Prior to any development, Block 170 sloped downward from a rise at Broadway, east to the Collect (a fresh water pond) which bordered the eastern end of the block. The sloping topography probably precluded precontact settlement and definitely delayed historic development. Sometime near the end of the 18th century/beginning of the 19th century, the rise near what is now Broadway was reduced in elevation, and the Collect was filled. The regulating and opening of Worth Street and Catharine Lane in the early 19th century allowed for the creation of Block 170, and eventually it was subdivided into building lots and developed.

The likelihood that precontact resources were ever deposited on the project block is minimal given its sloping topography. Historic grading, filling, and development episodes which impacted levels beneath fill, would have disturbed any remnants of the precontact living surface. Therefore, the project site is not sensitive for precontact period resources that would have research potential and meet the criteria necessary for inclusion on the National Register of Historic Places.

Research identified two potential historic-period resource types in the vicinity of the project site, but not within its boundaries. The African Burial Ground and an 18th century pot baker were both documented near the Collect. However, an extensive review of documentary and cartographic records verify that both of these important resources are situated south of the project site. The northern boundary of the burial ground was established between Duane and Reade Street, and the pot baker was situated south of Worth Street, somewhere on Block 156 near Duane Street. No

¹The block north of Catharine Lane, bounded by that street, Broadway, Leonard, and Lafayette Streets, is also denoted as Block 170. For the purposes of this report, Block 170 is the project block unless otherwise described.

historic-period resources were identified within the project site boundaries. Therefore, no further research of any type is recommended due to the lack of archaeological resource potential.

INTRODUCTION

The proposed redevelopment of a section of Block 170 bounded by Worth Street, Catharine Lane, Broadway, and Lafayette Street in Lower Manhattan required an archaeological assessment (Figures 1, 2). The proposed development, which entails constructing a new residential structure on Lots 12 through 20 of the eastern end of Block 170, is located at 101-117 Worth Street. Development under the proposed action would result in the demolition of several existing one and five-story buildings (Photographs A-D). In concurrence with the New York City Landmarks Preservation Commission (NYCLPC), the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) recommended that a Phase 1A documentary study be prepared (Gina Santucci, NYCLPC Letter of 9/25/00, and James Warren, OPRHP Letter of 12/2/99). Specifically, the NYCLPC cited the potential for 18th and 19th century archaeological remains on the project site, and the OPRHP was concerned over the project site's proximity to the National Historic Landmark African Burial Ground (Ibid.).

This Phase 1A documentary study, completed by Historical Perspectives, Inc., was designed to determine the likelihood that precontact and historic-period archaeological resources were once present on the project site and the likelihood that these resources have remained undisturbed by historic and modern development and still possess their integrity. Background research included a review of primary and secondary sources, including modern soil borings, to document the prior usage of the project site; cartographic analysis; site file reviews of previous pertinent archaeological findings, informant interviews; and field visits. This research was analyzed to determine the archaeological potential of the project site, and was completed as per New York Archaeological Council (NYAC) Standards (2000).

RESEARCH GOALS AND METHODS

Background research was conducted to establish a precontact and historical framework for the interpretation of potential resources. Areas of precontact and historic-period sensitivity were identified through archival and cartographic research, following those criteria put forth in the current CEQR (City Environmental Quality Review) technical manual, and by the Department of the Interior, National Park Service (NPS).

Background research was designed to address two major questions:

- What is the specific level of potential for precontact and historic-period archaeological resources of significance to exist in the project site; and
- What is the likelihood that such resources have survived the subsurface disturbances concomitant with construction episodes, utility line installations, landscaping activities, and playground construction.

Sufficient information must be gathered to compare, both horizontally and vertically, the precontact past, the historical past, and the subsurface disturbance record. In order to answer these questions, background research was conducted, including reviews of primary and secondary sources, cartographic analyses, site file reviews, informant interviews, and field visits.

Review of Primary and Secondary Sources

Primary and secondary source material was researched in order to document the prior usage of the project site. These resources included pertinent archaeological reports as well as local and regional source material for data on precontact and historical settlements, and manuscripts held by the New York Public Library. In addition, several soil borings were performed nearby in the 1930s. Logs and summaries from these borings were acquired from the Department of Design and Construction, and were reviewed to determine existing subsurface conditions.

Cartographic Analysis

Historical maps and atlases were obtained from the Map Division of the New York Public Library, and through on-line searches of various map repositories. These were compared for early and later land use, topography, historical events, and documented subsurface disturbance episodes. Early maps helped to provide an account of land-use modifications and episodes of construction over the course of the last two centuries.

Site Files Review

Site file reviews were conducted at the New York State Office of Parks, Recreation and Historic Preservation, State Historic Preservation Office (OPRHP), and the New York State Museum (NYSM), to determine if precontact or historic-period materials had previously been reported in the vicinity of, or within, the project site.

Informant Interviews

Archaeologists with experience in the area of the project site provided detailed information regarding construction episodes which may have impacted archaeologically sensitive areas and also reported areas where cultural resources had been previously identified.

Field Visit

A field visit was conducted in December 2000. Photographs were taken of current conditions in the project site and obvious signs of disturbance were recorded (Photographs A - D).

SITE LOCATIONS AND CONDITIONS

Environmental Conditions

The prehistory and history of Manhattan was in part shaped by the topography, ecology, and economic conditions that prevailed at various times. Understanding the city's geologic history aids in understanding the land-use history. During the Pleistocene period, ice advanced in North America four times. In the last 50,000 years, the Wisconsinian period, ice was 1,000 feet thick over Manhattan. Gravel and boulders deposited at the ice sheet's melting margin formed Long Island about 15,000 years ago (Kieran 1982:26). During the last 10,000 years, glacial till and outwash were covered by the fluvial deposits of the Hudson River. Sea levels have gradually risen as glaciers retreated, and the velocity of the Hudson River has decreased. Estuary formation in the Hudson began between 11,000 and 12,000 years ago. Between 8,000 and 10,000 years ago, the river experienced a reduction in salinity, which then increased between 7,000 and 8,000 years ago when the estuary obtained its maximum extent (Rutsch et al. 1983:25). The Hudson River is known for freezing in the winter, with ice floating downriver during spring thaws (Luke 1953:10).

The project area is part of the embayed section of the Coastal Plain which extends along the Atlantic Coast and ranges from 100 to 200 miles wide. The Manhattan prong, which includes southwestern Connecticut, Westchester County, and New York City, is a small eastern projection of the New England uplands, characterized by 360 million year old highly metamorphosed bedrock (Schubert 1968:11). The Manhattan ridge generally rises in elevation toward the north, and sinks toward the south. South of 30th Street, the bedrock dips down several feet beneath the earth's surface, and south of Washington Park it plunges down below 100 feet, forming a subterranean valley.

The prevalent gneissoid formation underlying much of Manhattan is known as Hudson River metamorphosed rock. It is characterized by a group of gneissoid islands, separated from each other by depressions which are slightly elevated above tide and filled with drift and alluvium. These low-lying depressions were typically filled and leveled when the system of streets was created in Manhattan in the 19th century. The area consists of drift with underlying crystalline rocks including stratified gneiss, mica schist, hornblende gneiss and hornblende schist with some feldspar and quartz (Gratacap 1909:27). Soil within Manhattan is mostly glacial till, clay, sand, gravel, mud, and assorted debris (Kieran 1982:24). Surficial geology at the project site consists of Paleozoic bedrock material and urban fill.

Historical development has altered many of the natural topographic features that once characterized Manhattan, and thus the project site was historically very different from how it appears today (Gratacap 1909:5). The western section of the site was situated on a slope bordering the top of a lateral, kame-like, ridge which once extended from Warren Street to Canal Street (Gratacap 1909:6). The eastern edge of the site sloped downward into a valley where the Collect was formerly located. The Collect, a spring-fed pond formed by a geological rift which cuts across Manhattan Island, was drained by a stream which formerly ran through what was Lispinard's swamp, along the current route of Canal Street, and emptied into the Hudson River northwest of the project site (French 1860:418). Eventually a sewer line replaced the route of the stream and the Collect was drained and filled; one

example of how development has obliterated and hidden previously visible topographic features (Gratacap 1909:5).

Current Conditions

The project site is situated on Block 170, Lots 12 through 20 between Worth Street, Lafayette Street, Broadway, and Catharine Lane (Figures 1, 2). Currently, five contiguous buildings cover the entire project site, each with a basement. Three of these buildings are one-story and house a variety of stores and restaurants. Two of the buildings are four-story residential structures. Sidewalk vaults along Worth Street provide access to several of the buildings' basements.

As described above, the site historically sloped downward from west to east toward the Collect. Current elevations at Broadway and Worth Street are at 35.2 feet above mean sea level, and at Worth Street and Lafayette Street are at 22.5 feet above mean sea level. The site appears relatively flat with little visual evidence of the extensive sloping that was evident historically. Catharine Lane, a small alley way, forms the northern most boundary of the project site, and bears evidence of ground subsidence (Photographs A-D). Subway tunnels run beneath both Broadway and Lafayette Street.

PRECONTACT RESEARCH

Precontact Background

Archaeologists interpret precontact finds within both a locally derived and regionally based contextual framework. Established models for precontact cultural chronologies are based on previously investigated archaeological sites. Precontact settlement and subsistence trends have been established for the lower Hudson Valley and coastal New York areas, providing a framework for understanding precontact land and resource utilization that can represent stages in Manhattan's prehistory, and therefore, the project site's prehistory. Based on long term archaeological research, the following chronological description outlines the prehistory of the region. As research in the area continues, data bases increase and theoretical issues become more refined, further enhancing this regional chronology.

Archaeologists have concluded that Native Americans established themselves in the Northeast after the last glacial episode, the Wisconsin. Between 18,000 and 16,000 years ago, the last episode of the Pleistocene in the Northeast, ice reached its maximum advance and then receded north. Glacial gravels and erratics were left along the melting margin. Striations can be seen on Manhattan's bedrock outcrops marking the path of receding glaciers. By 13,000 years ago, ice had retreated north enough so that the lower Hudson Valley and surrounding area were open for the reestablishment of flora and fauna. As ice melted, glacial lakes formed, eventually filling with sediments and becoming swamps. Current studies indicate that the exact date Native Americans first occupied the Northeast was around 12,000 years ago, although there is increasing evidence to suggest an earlier date. Until this evidence becomes substantiated, the accepted date remains ca. 12,000 years Before Present (B.P.).

- PaleoIndian Period (12,000-9,500 B.P.)

The precontact environment of post-glacial New York was far different from what it is today. Between 14,000 and 12,000 years ago the Northeast was characterized by a spruce dominated open woodland, and by 10,000 years ago the region was predominately defined by pine (Gaudreau 1988:240). Pollen samples show that the southeastern New York region had a mixed coniferous-hardwood forest following deglaciation (Salwen 1975:43). This post-glacial environment supported mega-fauna hunted by PaleoIndians including mammoth, giant ground sloth, horse, and giant beaver. The PaleoIndian period represents the earliest documented human occupation in the Northeast, dating approximately between 12,000 and 9,500 B.P.

Few sites have actually been found dating to this period, perhaps because Native Americans first settled on the exposed continental shelf, now submerged. The immense quantity of water retained in ice sheets and glaciers drastically lowered the sea level, extending the Atlantic coastline twenty to thirty miles south and east of what it currently is (Ibid.). The exposed continental shelf, now submerged beneath the ocean, would have possessed the resources necessary to support the emergent PaleoIndian population (Edwards and Emory 1977:19).

A typical artifacts assemblage from PaleoIndian sites in the Hudson River Valley and throughout the Northeast include diagnostic Clovis-type fluted projectile points and processing tools such as scrapers, gravers, and drills suggesting animal processing. Stone tools were made from cherts native to eastern New York, and jasper from Pennsylvania and New Jersey. To some archaeologists, lithics recovered far from their sources suggest well-defined or extensive travel or trade networks in operation at that time. Other research in the Northeast has lead to the postulation that small bands of hunters nomadically roamed large territories, relying predominantly on post-pleistocene megafauna. Alternative hypotheses based on research in the mid-Hudson valley suggest that PaleoIndians inhabiting the area used a wide variety of resources and had a restricted territory in which they operated (Eisenberg 1978:139). Further research continues to assist in developing and refining models of regional and local subsistence and settlement.

Despite the years of research, there are still many questions left unanswered regarding the culture and settlement and subsistence systems of PaleoIndians. Sites found tend to be situated in one of three specific geographic locales: on lowland waterside camps near coniferous swamps and near larger rivers; on upland bluffs in areas where deciduous trees dominated; and on ridge tops also dominated by deciduous trees (Eisenberg 1978:138). Throughout the Northeast it has been more common to locate isolated spot finds of diagnostic artifacts than habitation sites. The lack of recovered habitation sites may be due to post-glacial changes in topography or subsequent development where habitation sites once existed (Saxon 1973:252). The rising sea levels and resultant changes in water courses have probably inundated numerous encampments. However, since the Hudson River is a fjord (a narrow inlet of the sea bordered by steep cliffs), it is possible that early occupation sites may be preserved along the naturally elevated post-glacial shoreline (Snow 1980:180). Currently, no habitation sites have been identified on Manhattan Island.

Several miles southwest of the project site, on nearby Staten Island, a PaleoIndian habitation site was found at Port Mobil (Ritchie 1980: xvii). The site was situated on high ground, sloping down to the Arthur Kill, about 1000 feet away. Although the site was substantially disturbed, several fluted points were recovered together with tools made of eastern Pennsylvania tan and yellow jasper, and eastern New York Normanskill flint. Not far from Port Mobil, on the tidal beach of the Arthur Kill, six fluted points were also found made of jasper and local and exotic flints (Ibid.). This represents the only PaleoIndian component recovered within the metropolitan New York area. Spot finds further north have occurred along the Hudson River and its tributaries (Funk 1976:205).

- Archaic Period (9,500-3,000 B.P.)

The Archaic period lasted for about 6,500 years. Unique point types and tool kits have caused this period to be further subdivided into the Early, Middle, Late, and Terminal periods. Throughout the Early Archaic (9,500-7,000 B.P.) fluctuations in the climate occurred, giving way to a gradual warming trend and allowing new resources to become established. Although sea levels were rising, New York Harbor was still considerably smaller than it is today (Salwen 1975:49). As a result of environmental changes, it appears that the primary dependence on big game gave way to a hunting, fishing, and gathering economy, relying upon a diversity of resources. The more reliable resource base may have encouraged population growth.

Diagnostic projectile point types of this period are predominantly bifurcate-based points found on major drainages. Sites in the coastal New York area have been found on tidal inlets, coves, and bays, and on fresh water ponds (Ritchie 1980:143). Few inland sites of the Early Archaic period have been recovered and excavated in northern New York and New England. However, on nearby Staten Island four sites were found with an Early Archaic component (Salwen 1975:50). Salwen ascribes the earlier and more prolific population of the southeastern New York area to the early establishment of hardwood forests in this region (Ibid.). Although resources may have been abundant in more northern regions, climatic fluctuations and extremes would have prohibited the establishment of a reliable resource base. The locally established hardwood forests may have attracted people to the southern New England and New York area (Dincauze and Mulholland 1977:450).

Subsequently, Middle Archaic cultures populated the region from about 7,000 to 5,500 years ago, as the climate continued to warm allowing assorted flora and fauna to grow. Dincauze and Mulholland (1977) suggest that in this period seasonal population movements, based on the exploitation of specialized resources, became well established and may have led to the creation of territories. Tool kits expanded in response to diverse resources, with artifacts including Neville and Stark projectile points. Middle Archaic shell middens, situated to the north along the Hudson River, show a growing reliance on shellfish. At Croton Point and Montrose Point, archaeological sites on the Hudson River in Westchester County north of the project area, shell middens (shellfish refuse heaps) yielded dates of between 5,600 and 5,800 B.P. (Brennan 1974:85).

Late Archaic cultures radiated across the Northeast from approximately 5,500 to 4,000 B.P., with continued climatic warming providing a resource-rich environment. Diagnostic projectile point types of this period include small stemmed points such as Lamokas and Taconics, as well as Squibnocket and Brewerton Points. The lower Hudson Valley has evidence of increased habitation, with numerous shell middens along it dating to this period (Brennan 1974:87). Site types of this period include rockshelters, open woodland camps, and high bluffs along the Hudson, identified north of the project site. Archaic points found in metropolitan New York were commonly made from locally available quartz (Suggs 1966:42). The switch to local, versus exotic, lithics could mean decreased seasonal migration or a reduction in trade with neighboring groups.

Settlement and subsistence patterns in operation may have been a centrally based wandering pattern focused on the use of seasonal resources. A high degree of cultural complexity is suggested by the wide range of site types and the great diversity in site locations. More Late Archaic sites have been found than sites of either of the two previous periods. This may be because of either an increase in the population brought on by the more stable environment, or a bias in site visibility. By the Late Archaic period, sea levels were much as they are today, and sites of this period would have less of a chance of being inundated. In another interpretation, archaeologists in the Northeast have postulated that small stemmed quartz points attributed to this period actually represent an underlying cultural tradition, persistent through later periods. Therefore, sites attributed to this period based on projectile point typologies may actually have been misinterpreted.

During the Terminal Archaic period (4,000-3,000 B.P.), three cultural traditions persisted in the Northeast. These include the Laurentian tradition represented by the Vergennes phase and the

Vosberg complex; the small stemmed tradition represented by the Sylvan Lake complex; and the Susquehanna tradition represented by the Snook Kill and Orient phases (Funk 1976:250). Although New York State Archaeologist Bob Funk defines these three separate traditions as persisting in the Hudson River Valley, Snow reassesses the distribution of Terminal Archaic points and suggests that the Susquehanna tradition dominated the first half of the period and was comprised of Snook Kill, Perkiomen and Susquehanna Broad points, while the latter half of the period was dominated by the Orient complex characterized by the Orient Fishtail point (Snow 1980:237). The precise sequence of Terminal Archaic traditions, complexes, and phases is a continuing source of debate.

These three cultural traditions, based on unique projectile point types, may represent distinct settlement patterns centered on the use of specific resource niches. According to Funk and Ritchie, authors of *Aboriginal Settlement Patterns in the Northeast*, sites of the Snook Kill Tradition, predominant in the southern subarea, tend to be located on high, sandy river terraces (1973:342). Orient phase habitation and burial sites have been recovered from eastern Long Island (Ibid.:344). Whether these three distinct traditions, Laurentian, Small Stemmed and Susquehanna, represent the migration of new people into the area, or the spread of new technological ideas, has yet to be answered. Each of these tool traditions predominantly used locally available raw materials, with the small stemmed point tradition relying heavily upon quartz.

Local Terminal Archaic groups added a new type of artifact to their tools kit. Bowls and other utilitarian and decorative items were fashioned from ground and polished steatite, or soapstone. The majority of sites found in the surrounding region were located on the banks of the Hudson River and its major tributaries. This may be because of the high visibility along major river drainages rather than the actual lack of sites in remote settings. Continued research from interior areas has more recently begun to find sites of this period. Orient points recovered in the Hudson Valley have been radiocarbon-dated to approximately 4,000 to 2,800 B.P.

- Woodland Period (3,000-500 B.P.)

The Woodland period continued in the Northeast from approximately 3,000 to 500 years ago. Like the Archaic period, the Woodland is further divided into three subcategories: the Early, Middle and Late periods. The first of these, the Early Woodland period, lasted from about 3,000 to 1,700 years ago and manifests itself by the Middlesex Phase in eastern New York. Crude, undecorated ceramic vessels, called Vinette 1 pottery, were tempered with steatite. Simple pottery designs of this type have been found at sites on major waterways and tributaries. Early Woodland, Middlesex Phase sites are commonly uncovered at sand and gravel mining operations near fresh water as these sites tend to be located on well drained knolls adjacent to water (Ritchie 1980:201).

The climate gradually cooled during this period, perhaps reducing resource availability. Settlement systems changed with the need to exploit alternative resources. Coastal resources, providing year round availability, were sought while upland hunting and gathering supplemented coastal resources. Fish runs in rivers provided a stable and reliable resource. Fish weirs were used in the Hudson and smaller tributary rivers to catch large quantities of anadromous fish to feed the growing population (Brumbach 1986:35).

The Middle Woodland period lasted from ca. 1,700 to 1,000 B.P. This period is marked by regional changes in ceramic and projectile point styles. Stone tool assemblages include Jack's Reef Corner Notched and Pentagonal points, and Fox Creek points. More exotic lithics were used, perhaps suggesting a growth in trade networks. By this time, subsistence and settlement seems to have been characterized by semipermanent settlements with task-specific locations used for the purpose of exploiting target resources. Ritchie and Funk identify several settlement types for Middle Woodland cultures including repeatedly occupied small and semipermanent large camps, small temporary camps, workshops, cemeteries and burial mounds (1973:349).

Shell middens found on the seacoast and shores of the Hudson River suggest an increase in the reliance on aquatic resources. During this period, maize horticulture was introduced from the west and horticultural practices were slowly adapted. The nature and extent of precontact maize cultivation has been debated among archaeologists working in the Northeast. Research on Long Island has led to the hypothesis that before European contact, maize was not cultivated on the sandy, nutrient-poor soils of the island. Nonetheless, with the benefits of trading with Europeans, Native Americans on Long Island settled more permanently along the sandy coast where shells were available for wampum manufacturing, an integral part of the mercantile exchange. Concurrent with this was the need for a reliable and storable food source. It is theorized that maize horticulture was incorporated to provide food, and a commodity for trade, required to support villages (Ceci 1979:72). Other archaeologists throughout the Northeast are now questioning the distribution and adoption of non-indigenous, that is, introduced, horticultural systems.

Again, artifacts encountered changed with the addition of ornamental pendants and pins, and the bow and arrow. Ceramics changed technologically as walls were thinned and overall shape was rounded. Some interpretations suggest that the shift to a rounded bottom corresponds to the adoption of maize and results from the desire to cook food longer (Braun 1980:100). Surface decorations included netmarking and ornamentation of the collars and bodies, reflecting the cultural affiliation of the producer. Overall, the material remains in the region are limited in number, compared to those found further to the northwest in the Great Lakes region of New York (Funk 1976:298). This bias may be due to sampling and preservation rather than the actual lack of sites.

Within the Late Woodland period, the Windsor cultural tradition was defined with its components found in the Long Island Sound area and in the Hudson and Connecticut River drainages. In the lower Hudson Valley and on western Long Island, the tradition is represented by the Windsor North Beach and Clearview phases (Snow 1978:63). The Fox Creek Phase of the Middle Woodland period may have been centered in the New York coastal region, and in the eastern New York drainages (Ritchie and Funk 1973:356). Artifact types of this period include the Levanna triangular projectile point and Cayadutta Incised pottery. General trends of the period show a move toward semipermanent villages.

By the Late Woodland period, 1,200 to 500 years ago, the climate was much as it is now. Settlement patterns suggest the use of diverse topographic settings including coastal and island sites, inland sites on major drainages, and campsites located near swamps and along streams as well as inland rockshelter sites. There is evidence of an increase in site size and number in addition to abundance and frequency of artifacts. The annual subsistence round may have included seasonal movements

among river, coastal and inland wintering sites. Increased use of horticulture may have affected seasonal movements, with spring and summer spent planting crops. While maize, beans, and squash were procurable, these did not comprise the entire subsistence base. Hunting and gathering were continued. A semipermanent settlement pattern may have led to competition and defense of productive land, contributing to territoriality (Mulholland 1988:163).

The Windsor tradition was replaced by the East River cultural tradition by about 600 B.P., while the Bowmans Brook and later Clasons Point phases are local manifestations of the ceramics associated with this period (Snow 1978:63). The Bowmans Brook culture may have entered New York from New Jersey through Staten Island, where many artifacts of this phase have been found (Ritchie 1980:269). Sites have been found on tidal streams or coves, with large village sites containing between fifty and one hundred storage pit features (Ibid.). There appears to be more shellfish use at these sites. Ritchie notes that sites of the Clasons Point culture tend to be found on the second rise of ground above high-water level, on tidal inlets, and have many of the characteristics of Bowmans Brook Phase sites (Ibid.:271).

- Contact Period (500-300 B.P.)

The initial interactions between Native Americans and Europeans typifies the Contact period, dating from 500 to 300 B.P. At the beginning of this period, Native American settlement patterns were essentially the same as those of the Late Woodland period. Stream-side camp sites were occupied in the spring and fall to take advantage of bountiful fish runs. Upland and inland task specific sites were also occupied for short periods for hunting, trapping, and lithic procurement. Semipermanent villages, with oval and round bark and mat covered houses, were located near planting fields. Large pits were used for storing dried meat, fish, and corn, and to bury unwanted trash. Planting fields were commonly burned at the end of the season to encourage new growth and, as a result, fauna. Horticultural villages were commonly moved to a new site after ten or twenty years when soil fertility, firewood, and nearby game resources were reduced (Salwen 1975:57).

Initial interactions between Native Americans and Europeans occurred when early explorers traded with the native population. As non-indigenous materials were introduced into the native material culture, tool assemblages and settlement and subsistence patterns changed drastically. Traditional stone, bone, and wood tools were replaced by European goods made of copper and iron. Shell beads and wampum were produced, and furs were collected by Native Americans as a medium of exchange. Europeans were happy to procure furs from Native Americans, resulting in many trading posts being established along the Hudson River. Although early historical accounts discuss the presence of Native American stockaded villages or forts in the Hudson Valley and coastal New York, archaeological data does not confirm their presence until the middle of the 17th century (Ritchie and Funk 1973:368).

In the 17th century, metropolitan New York was populated by Native Americans speaking a Munsee dialect of the Eastern Algonquian language (Goddard 1978b:73). At that time, Native Americans called the Hudson River "Mahicanituk," which translated to "the great waters or seas, which are constantly in motion" (Ibid.:22). Manhattan itself was called "Minna-atn," which meant "Island of Hills" (Bolton 1934:47).

The arrival of Governor Willem Kieft in 1638, who maintained a hard-line policy with the local Indians, resulted in large scale conflicts between Native Americans and European settlers. His policies resulted in the deaths of about 1,000 Native Americans between 1640 and 1645 (Washburn 1978:98). In 1655 Native Americans attacked the growing city of New Amsterdam, and the ensuing Esopus Wars, named so for the involvement of the Esopus Indians of the mid-Hudson Valley, lasted until 1664. As a result, Algonquian bands in the lower Hudson Valley lost their independence and fell under Dutch control (Ibid.).

Plagues, intertribal stress, and the pursuits of Europeans to obtain land rights resulted in the subsequent breakdown of native sociopolitical organization during the 17th century. The plagues of 1616-1620, inadvertently introduced by Europeans, depopulated many groups with total losses in southern New England and New York estimated at between 70-90 percent of the original population (Snow 1980:34). Moreover, the conflicts engendered by rapid colonial expansion, war, and epidemics, caused many Native American groups either to leave the area or take up habitation in established communities, i.e., reservations (Brasser 1978:85).

The foregoing cultural chronologies are based, in part, on precontact sites found in the metropolitan New York area, although none were ever found within the project site. On Staten Island, numerous precontact sites have been reported, ranging from the PaleoIndian through Woodland periods. The Tottenville site, a burial site on the southern portion of the island, was found on a bluff overlooking the shoreline and may represent a wampum manufacturing station (Jacobson 1980:5). In total, over one hundred precontact sites have been reported from Staten Island, although significantly fewer have been scientifically studied. It is thought that cultural groups inhabiting Staten Island were probably affiliated with groups in New Jersey and the mid Atlantic region. Staten Island may have demarcated the boundary of New York and New Jersey groups (Ritchie 1980:145). If this is the case, then the role of Manhattan Island may have been similar. With the proximity of New Jersey cultural groups, as well as the Long Island Sound groups, cultural traits of Manhattan Indians would undoubtedly reflect these associations.

Because of the lack of sites actually recovered on Manhattan, the accepted settlement system established for the New York area has been based primarily on the large and highly visible sites found along the coast of Long Island Sound and on the shores of the Hudson River. Yet more recent archaeological research indicates a variety of occupation sites other than villages associated with shell middens. An intensive survey of Shelter Island in the Long Island Sound, many miles east of the project site, has yielded a number of small short term lithic workshops and food processing stations, previously unseen and excluded from settlement pattern studies (Lightfoot et al. 1985:59). Further research and unbiased testing strategies in upland areas have also shown that many sites exist in these locales. While it's true that the coast of Manhattan was undoubtedly attractive for Native American habitation and resource procurement, smaller sites located inland may have been used as well but would be situated east of the project site towards the river.

Known Precontact Sites in the Vicinity

No precontact sites were inventoried at either the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) or the New York State Museum (NYSM). Stokes reported that the

Native American village of Werpoes was formerly situated north and west of the Collect, and the project site, approximately extending between Franklin Street, Lispenard Street, Church Street, and Lafayette Street (Stokes Vol. VI: 92). Grumet reports that Schoolcraft stated that the "Warpoes" was a piece elevated land above the Collect. However, Grumet's more in depth analysis of this term suggests that neither assertion is supported by the historic record (Grumet 1981:59).

HISTORICAL RESEARCH

Historical Overview

New York City, with Manhattan Island as its commercial and locational center, developed at a rapid pace over the last three centuries. Important factors were the flourishing commercial waterfront, the growth of the surrounding mercantile and later industrial ventures, and the rich agricultural land that fostered growth throughout the island.

Although early Dutch trading expeditions had already been visiting the Hudson River for many years, the first settlement in New Netherland was not undertaken until 1624, under the authority of the Dutch West India Company. The purpose of this expedition was to strengthen Dutch ownership claims by occupying strategic points in the territory. Surprisingly, Manhattan was ignored in favor of Governors Island, where eight men were left to build a fort to protect the mouth of the Hudson. The main group of colonists traveled north and established Fort Orange, now part of Albany, in an area advantageously situated for participation in the lucrative fur trade (Brodhead 1853:150-151).

Eventually, Manhattan was recognized as the strategic heart of the region by Europeans attempting to establish worldwide trade connections. The Dutch West India Company, formed by a group of merchants, focused their attention on this area. In 1623 the Company received a grant for all of the land rights on Manhattan Island (Buttenwieser 1987: 25). Colonization of Manhattan began in earnest in 1625, when an expedition of Company farmers with livestock, tools and provisions arrived on the Hudson River, establishing itself at the southern tip of Manhattan Island, with the purpose of building a fort and laying out nine Company farms, or *bouwerijen* (bow-wer-RAY-en). Farm land, e.g., the small tract north of what became Prince Street, was also designated for the "Company's Negroes" (Stokes 1926 (6): 70-72). These *bouwerijen* were intended to supply Company personnel with agricultural provisions, so that the Manhattan post would be self-sufficient (Bachman 1969:82-87).

The Dutch West India Company was generally scrupulous about acquiring title to the lands it occupied, and upon his arrival on Manhattan Island in 1626, Governor Peter Minuit opened negotiations with the local Native Americans, and purchased the approximately 22,000 acres of the island for about 60 guilders worth of goods. The erection of Fort Amsterdam was begun near the foot of present Broadway, commanding the upper bay and the entrances to the Hudson and East Rivers (Brodhead 1853:164).

Most of Manhattan's farmsteads suffered greatly during the Native American troubles of 1642-43, and by the end of hostilities, the *bouwerijen* needed so many improvements that the Dutch West India Company decided to sell them rather than invest the money. Land Tract No. 1 was purchased by Director-General Peter Stuyvesant and became known as "Stuyvesant's Great Bowery." The Bowery Road, the only road from New Amsterdam (now The Bowery and Fourth Avenue) was improved as far as his property [about present Stuyvesant Street] Jenkins 1913:70,73,94).

In 1660, when farmers were ordered to gather into settlements for common defense, those directly north of the city asked to be allowed to remain in their homes, but requested that others be permitted

to establish a village in the vicinity. The site selected was on Stuyvesant's Bouwery, and became known as the Bowery Village, in the vicinity of present day East 10th Street and Second Avenue, far northwest of the project site (Jenkins 1913:73; Brodhead 1853:681). Only two miles from the city, the "three or four houses" and a tavern, early became a popular recreational spot, a "stopping place, and the pleasure-ground of the Manhattans" (Brodhead 1853:681; Valentine 1853:69). During this time, development north of the city centered around the Bowery Village, not the project site area.

The settlement which grew up around the fort at the southern tip of the island, eventually called Nieuw Amsterdam, grew slowly. At the time of the English conquest in 1664, it extended only as far north as the palisades built along present Wall Street. The majority of these settlers were merchants and fur traders who needed access to the shipping routes. As a result, much of the land granted was located along the rivers surrounding the island.

Following the 1664 conquest of New Netherland by the English, most private property was confirmed in its pre-conquest ownership. The area of land just north of what is now City Hall Park, several blocks south and east of the project site, was set off by the Dutch colonial government as the Commons. This area around the Collect, a body of fresh water that once stood roughly within the present bounds of Canal, Pearl, Mulberry, and Elm Streets, was originally used as communal pasture for livestock. However, the nature of this area changed through time as watercourses and swamps were filled in. By 1720 the area south of the Collect was used for governmental activities such as executions, and was considered remote enough from the city proper - located much further south - to construct an almshouse in 1735 (Harris et al 1993:3). An African Burial Ground was also established here in the early 1720s, and remained in use until about 1795 (see discussion below). The African population further used this area to celebrate holidays, and in the 1740s it was the site of a palisade with blockhouses across what is now the northern end of City Hall Park (Ibid.).

The Revolutionary War saw a seven-year British occupation of New York City, which followed Washington's evacuation of Manhattan Island in 1776. Officially, New York City was the entire island of Manhattan, with the "Out Ward" created by Governor Dongan in 1683. The Out Ward extended from approximately present Canal Street north to the Spuyten Duyvil (Valentine 1853:182,184). The line of city fortifications which protected "the compact part of the city" had begun its slow march northward, as a palisade on Wall Street was demolished in 1699, and a new line erected in 1745 slightly north of present Chambers Street. New military works, known as "The Barrier" were begun by the Americans in 1776, but completed by the British occupation forces. The Barrier crossed Bowery Lane near present Grand Street (Jenkins 1913:59,84; Frances 1848:18).

Many of the residences in the city's outskirts suffered greatly during the occupation. Due to the British force's enormous demand for firewood for heating and cooking, large sections of Manhattan and its environs were completely denuded of trees. Soldiers also cut down long-established orchards and razed and stripped buildings. Livestock was officially confiscated or simply stolen. Within the city proper, disastrous fires in 1776 and 1778 left Broadway from Trinity Church (Wall Street) to the Battery in ruins. Trinity and the nearby Lutheran Church on Rector Street had been consumed in the conflagration, and not rebuilt. The British used the buildings of the Dutch, Presbyterian and other "dissenting" denominations as a riding school, stables, prison and hospital (Smith 1972:5,50).

Following the war the recovery of the city was swift. Central to this revitalization was the establishment of new trade routes to China which gave new vitality and energy to American industry. The China trade and open markets encouraged buying, filling, repairing, and building along the banks of the East River and Manhattan grew. Inland development was also progressing.

During the pre-Revolutionary period, the Commons was the hub of communal, public, and civic endeavors and was the site of mass meetings and demonstrations. By the end of the century, its nature began to change drastically. The natural barriers of the Collect Pond, Bayard's Hill, Smith's Hill and Lispenard's Meadow were overcome as city expansion pushed north of the Collect Pond. Northern sections of the growing metropolis were laid out in a street grid prior to 1785. Chambers Street was laid out (1796), blocks were devised and lotted, and City Hall construction began in 1803 (Ibid.). Higher terrain along Broadway was leveled and fill was used to raise the low-lying ground around the Collect Pond. The area gradually acquired a more landscaped park-like character, and former features were buried beneath new structures and roadbeds.

By the early 19th century it was clear that the street system throughout lower Manhattan was poorly designed with pedestrian and commercial traffic becoming increasingly congested. City planning responded by devising a regulated system of streets and avenues throughout Manhattan. The resultant Commissioner's Plan of 1811 imposed a grid system over the city, disregarding natural topographic features which may have impeded road construction. Street regulations called for extensive grading and filling, removing massive rocks and boulders, and tearing down existing houses located in the path of proposed roadways. Although the plan was laid down on paper, many streets were not regulated and opened until decades later (Commissioners of New York State: 1811; Ewen 1927-30).

Worth Street was originally laid out west of the Collect as Catherine Street (not to be confused with Catharine Lane), prior to 1797 (Stokes Vol. III:1012; Taylor-Roberts 1797, Figure 6). By this time, Catharine Lane had also been established from Broadway to the Collect (Ibid., Figure 6). As a result of the *Commissioner's Plan*, in 1819 Worth Street was opened - as Anthony Street - and was improved from the Collect west to Orange (now Baxter) Street. In 1855 this thoroughfare's name was finally changed to Worth Street (Stokes Vol. VI:992).

As the city grew, so did the need for a fresh, unfetid water supply. By the middle of the 18th century it was clear that the growing need for fresh, clean water within the city was not being met. In 1774 Christopher Colles embarked on a waterworks near the Collect Pond, with the intention of using this unpolluted spring-fed source to supply the city's households. His plan was to use hollowed logs as aqueducts, but it never materialized due to the ensuing American Revolution. In 1799 the Manhattan Company, under the auspices of Aaron Burr, was established to provide water for the city, creating the first true water supply system in New York. A reservoir was built at Chambers Street and water was piped through hollowed tree trunks as Colles had recommended. However, service was limited and at its peak only reached 2000 houses. Furthermore, water from wells near the Collect soon became impure and foul tasting. Pollutants distributed through the Manhattan Company's system may have actually contributed to a series of epidemics in the 1820s and 1830s (White 1987:42). These events lead to the establishment of the Croton Reservoir system in Westchester County in 1835, and the opening of miles of pipes beneath the city streets in 1842.

The first half of the 19th century also marked vast improvements in the system of sewage disposal within the city. Early residents used vaults or sinks beneath privies which were made of either stone, brick, or wood and were periodically emptied. By 1823 the city had established legislation to provide for more uniform privy construction codes, and vaults had to be cleaned out more frequently. Night soil was shipped to outlying farms as fertilizer, but eventually it became clear that this system was inadequate. To better dispose of sewage, buried sewer pipes were first installed in the area around Union Square Park in the 1830s (Goldman 1988:35). Prior to the 1840s, few sewers were constructed south of Houston Street since this area was predominantly occupied by industries, factories, warehouses, and tenements (Ibid.:36). However, construction of sewers in this area increased greatly between 1846 and 1855 in conjunction with the laying of pipes for the Croton Water supply. Where it was previously feared that sewers would stagnate, water was now available to carry wastewater through the system (Ibid.:38). By 1854, the Common Council ruled that all residences must be serviced by sewers (Ibid.:39).

As 19th century New York continued to expand in both size and population, more of the street-grid system was laid across the former landscape. As a result, many of the low hills on the island, e.g., the hill along Broadway, were cut down and the material deposited along the shoreline and in low lying areas. In addition, the construction of streets and new buildings, especially those with cellars, provided soil, sand, rocks, and other debris for fill. Slowly, the landscape of Manhattan was artificially carved, filled, and developed into that which we see today.

Known Historic Archaeological Sites in the Vicinity

The African Burial Ground, a National Historic Landmark and a New York City Historic District, is situated between Duane Street, Broadway, Park Row, Centre Street, Park Street and Lafayette Street about two blocks south of the project site (Howson and Harris 1991; Harris et al 1993). The boundaries of the Historic District include Blocks 153, 154, and 155 and encompasses approximately seven acres. The burial grounds are thought to extend well beyond the bounds of the National Historic Site, thus the NYCLPC expanded the boundaries when they designated it a city landmark. The Landmarked site also encompasses Block 122 to the south, where City Hall is now located, and Blocks 155 and 158 to the north, between Lafayette Street, Pearl Street, and Park Street. Block 170, the project site block, is not included in either designation.

Archaeological excavations were completed at the burial ground on a portion of Block 154, three blocks south of the project site. Research found that the level of overall preservation was good because sixteen to twenty-five feet of fill protected the original surface and an intact stratum of burials. A low-lying ravine and the Collect Pond, once just north of City Hall, were filled during the late 18th and early 19th centuries when Broadway was leveled between four and 15 feet (Howson 1991:5; Harris et al 1993:21). Modern basements, built years after the burial ground was abandoned, only penetrated fill except on the lots fronting Broadway where the original ground surface was higher.

According to Howson (1991), the Viele (1859) map showed that the original topography at the burial ground sloped down to the Collect Pond north of present-day Chambers Street and east of Broadway. The site of the burial ground was in a ravine between two hills, distant from the colonial community,

and thus it was an acceptable place to bury African Americans. The Dutch West India Company granted farms to Africans north of the town, around the Collect Pond and in some places, extending northward as far as present-day 34th Street.

The earliest documented burial at the grounds dates to 1712/13, and burials probably ceased in 1795. Excavations found that burials were densely distributed. The site was used intensively, resulting in superimposed burials, which, in some cases, caused disturbance to earlier interments. In total, over 400 burials were professionally excavated by archaeologists. In Republican Alley, between Reade and Duane Streets three blocks south of the project site, burials ranged in depth from 6.53 feet above sea level to -.23 feet below sea level at the eastern end, and were protected by 16 to 25 feet of fill (Harris et al 1993:21, 40). Areas likely to have additional intact burials are all south of the project site and include 14-26 Reade Street, the parking lot between Elk Street and the Emigrant Industrial Savings Bank, beneath the Jones Building, beneath the Court Square Building, beneath the A.T. Stewart Store Building, and the Street beds of Chambers, Reade, Duane, and Elk Streets (Howson 1991:14). Neither Worth Street, Catherine Lane, nor Block 170 were cited as potentially sensitive areas (Harris et al 1993:21).

Site Specific History

Currently, the project site encompasses Lots 12 through 20 on Block 170 (Figure 2). The following cartographic descriptions of development will consistently use current lot numbers rather than historic designations, which changed frequently.

Early historic maps of Manhattan indicate that the Worth Street project site was north of the city proper, which extended only as far north as Frankfort Street, through the first third of the 18th century (Miller 1695; Lyne 1730). In the 1740s, the project site was depicted as a wooded slope just west of the Collect pond, an early water source for much of Manhattan (Grim 1813; Figure 3). The *Grim Plan*, portraying conditions in ca.1742-44, depicted a road skirting the base of the hill somewhere in the vicinity of the project site (Ibid.). Bordering the path's eastern side, opposite the project site, were wetlands surrounding the Collect. However, since Grim's portrayal of ca.1742-44 Manhattan was drawn from memory (Augustyn and Cohen 1997:62), the location of the road in relation to the project site is questionable.

In 1755 the site was still vacant. To the south of the project site the Negro Burial Ground had been established west of what was called the "Little Collect," a second small basin directly south of the main body of the Collect (Maerschalek 1755; Figure 4). Pot bakers (potteries) were established just north and south of the burial grounds, but they appeared to also be south of the project site which was adjacent to the northern end of the Collect (Ibid.). The detailed Montresor Plan of 1766 also showed the project site vacant and sloping from west to east (Montresor 1766). At this time most of the development in the vicinity was centered south and east of the Collect.

The 1766-67 Ratzer map provided great detail with regard to the project site's topographic conditions. At that time the site was still unimproved and undeveloped, and the western half was again portrayed as elevated woodland. The site sloped from the top of the hill to the west near Broadway, downward to the east into wetlands bordering the Collect Pond. A small stream crossed

the northeastern corner of the project site, adjacent to the wetlands, which terminated to the south at the Little Collect (Ratzer 1766-67; Figure 5). The site remained unimproved until the 1790s when it may have been at least partially developed (McComb 1789; Taylor-Roberts 1797; Figure 6). By this time both Worth Street, then Catherine Street, and Catharine Lane had been laid out from Broadway to the Collect (Figure 6). Although no specific structures were shown on the project site in 1797, the whole block was shaded which suggests it was either filled or had experienced some degree of development (Ibid.).

Between 1789 and 1797 Worth Street was laid out - first as Catherine Street and later as Anthony Street - and Catharine Lane was created, beginning at Broadway and terminating at the Collect. By 1817 the Collect had been filled, and the project block was created. The project parcel remained shaded - perhaps indicating some development - although, again, no specific structures were shown. Presumably it was still vacant (Poppleton 1817). Documentary sources indicate that much of the fill for this low-lying area was derived from the removal of four to 16 feet of the hilltop near Broadway (Harris et al 1993:21).

In 1835 the Sixth Free Presbyterian Church, also known as the Broadway Tabernacle, was built on Broadway between Worth Street (then Anthony) and Catharine Lane (Stokes Vol. VI: 343).² The Tabernacle is shown fronting Broadway in 1836 (Colton 1836), but it appears to be set back off of Broadway covering all of Lot 20 on later maps (Ensign 1845; Dripps 1852; Figure 7). By 1842, seven years after the Tabernacle was built, public water from the Croton Reservoir system was available to the project block, and, sewer was available shortly thereafter. By 1852, most of the project site was covered with structures (Endicott 1842; Dripps 1852; Figure 7). A more detailed plan dating to 1853 showed several wood and stone structures on the project site, fronting Worth (then Anthony) Street, Lafayette (then Elm) Street, and Catharine Lane. Adjacent to the eastern side of the Tabernacle was the only commercial venture indicated on the project site - a coal yard with several small frame sheds and offices which covered most of Lots 18 and 19 (Perris 1853). By 1867 additional building episodes expanded development across most of the project site, excluding the coal yard (Dripps 1867).

In 1879 little had changed on the project site, but by 1885 it was entirely covered by brick, stone, and wood buildings which appeared to have replaced earlier structures since they were vastly larger and in different configurations (Bromley 1879; Robinson 1885). The 1890-93 atlas also portrayed the lots entirely covered with buildings, but by then they were all shown as brick, and the Broadway Tabernacle had been removed. However, the three easternmost structures had facades of stone or wood, coinciding with the location of stone and wood buildings portrayed on the 1885 atlas (Robinson 1885, 1890-93; Figure 8). Most likely the buildings were unaltered, and this cartographic difference reflects a change in mapping style rather than the actual replacement of structures.

The site appeared unchanged through the early part of the 20th century (Bromley 1897, 1902). In 1911, from east to west, the buildings were the following heights (Bromley 1911; Figure 9):

²An ordinance passed in Manhattan in 1830 banned burials south of Canal Street. Therefore, there is no potential for burials associated with the Broadway Tabernacle, which was built five years after this date.

Lot 12 - six story brick
Lot 15 - five story brick
Lot 16 - five story brick

Lot 18 - five story brick
Lot 19 - four story brick
Lot 20 - five story brick

At that time the building on Lot 20 extended west along Catharine Street all the way to Broadway, and was occupied by Jas. H. Dunham and Company (Bromley 1911, Figure 9).

In 1916 the buildings were virtually unchanged, and the structure on Lot 12 was occupied by Smith Hogg and Company (Bromley 1916). Later the same building was taken over by the N.Y. Life Ins. Company (Sanborn 1923). Sometime between 1932 and 1951 the Dunham building on Lot 20 was razed, the lot was converted to a parking facility, and several small frame sheds were installed (Bromley 1932; Sanborn 1951; Figure 10). Between 1951 and 1976 the building on Lot 16 was razed, but the remainder of the lots appeared unchanged (Sanborn 1951, 1976). By 1986 the six-story building on Lot 12 was replaced by a one-story structure, and one-story buildings were also constructed on Lots 16 and 20 (Sanborn 1986). Currently, the buildings on the project site lots are the following heights (Sanborn 2000; Figure 2):

Lot 12 - one story brick
Lot 15 - five story brick
Lot 16 - one story brick
Lot 18 - five story brick
Lot 20 (including Lot 19) - one story brick

Each of the extant structures has a basement extending to an unknown depth below grade (Figure 2).

ARCHAEOLOGICAL POTENTIAL

Archaeological sensitivity for the Worth Street project site depends on two factors: the likelihood that resources were ever deposited within its footprint; and, the likelihood that such resources have withstood subsequent disturbance. Due to differences in technology, land use, and lifeways, archaeological resources from the precontact and historical periods generally vary in depth of burial relative to the ground surface at the time of deposition. As a result, subsequent activities such as construction or filling and grading result in different degrees of impact on buried cultural remains. Therefore, potential sensitivity can only be ascertained by determining current subsurface conditions.

Documentary research indicates that prior to any development and/or changes to the historic landscape, the Worth Street project site was characterized as sloping land which angled downhill from Broadway to Lafayette Street, where the Collect Pond formerly lay. A small stream bordering the Collect may have fallen within the eastern end of the project site, and some maps indicate that the Collect itself may have bordered the project block.

The project site experienced grading and filling in conjunction with late 18th- early 19th century surface improvements to allow for the creation of the street grid system. In order to provide for a relatively level building area, more fill would have been needed on the eastern half of the site which was lower, and the western half may have been graded. Current elevations, from west to east, decline from about 35 feet to 22 feet, indicating a 13-foot drop in grade between Broadway and Lafayette Street. Since no predevelopment elevations could be found in the cartographic record, there are no numbers to compare these to in order to determine the extent of grading or filling. Therefore, subsurface conditions and the depth of fill beneath the site may only be ascertained through a review of soil boring logs.

The New York City Department of Design and Construction (DDC) maintains rock data maps of the Borough of Manhattan. Vol 1, Sheet 9 of these maps shows elevations at the intersection of Broadway and Worth Street, and Worth and Lafayette Streets, the same as they are today (Rock Data Map Vol. 1, Sheet 9:1937). The map also shows a series of soil borings taken in close proximity west, north, and east of the project site, but none directly within it (see Appendix). The following three borings taken just north of the project site were either completed prior to the construction of the NY Insurance Company Building, which completely covered all of Block 170 north of Catharine Lane in 1889-96 or, most likely, was taken at a later date from the basement of the building. Elevations suggest that regardless of either scenario, they were taken from the basement level. The results of these surrounding boring logs are as follows:

Boring #126 - Just north of Catharine Lane Mid-Block Between Broadway and Lafayette Street.
Surface Elevation 7.0' ASL

Depth below grade	Soils
0-49'	Coarse Sand
49'-56'	Medium Sand
56'-67'	Very Fine Sand
67'-72'	Course Sand
72'	ROCK

Boring #127- Just north of Catharine Lane Mid-Block Between Broadway and Lafayette Street.
Surface Elevation 7.0' ASL

Depth below grade	Soils
0-38.5'	Coarse Sand
38.5-44'	Fine Sand

Boring #129- Just north of Catharine Lane Mid-Block Between Broadway and Lafayette Street.
Surface Elevation 7.0' ASL

Depth below grade	Soils
0-17.1'	Medium Sand
17.1'-35.6'	Fine Sand

None of these boring logs report any fill for the block between Broadway, Catharine Lane, Leonard Street, and Lafayette Street. Furthermore, no logs bear evidence of organic levels, silt, or any potential precontact living surfaces. It appears that if a loam/silt/organic level once covered the hillside, as would be anticipated, no evidence of it exists. Only coarse, medium and fine sand levels remain. These were probably subsoil levels that were once buried beneath the topsoil, which has been removed. Directly south and west of the project site near Broadway, similar results were encountered.

Boring #90 - Intersection of Broadway and Worth Street.
Surface Elevation 35.2' ASL

Depth below grade	Soils
0-10'	No data
10'-17'	Gravel
17'-25'	Sand
25'-39'	Course Sand
39'-95'	Sand

The lack of data for the first ten feet may result from the presence of the subway which was built in early 20th century. As anticipated, there is also no indication of any fill levels along the higher elevations near Broadway. The lack of loam, silt, or any organic levels suggests that the original precontact surface, or the top of the hill, was probably truncated as documentary references suggest. This supports the contention that several feet of the land surface were removed during the overall leveling of the area.

Borings taken from the block just east of the project site indicate that at least some fill was added to raise elevations in this area.

Boring #25 - North Side of Worth Street, Just East of Lafayette Street.
Surface Elevation 19.4' ASL

Depth below grade	Soils
0-5'	Fill
5'-10'	Heavy Gravel
10'-15'	Gravel and Little Clay
15'-25'	Course Sand and Gravel
25'-30'	Heavy Gravel
30'-35'	Fine Sand and Gravel
35'-40'	Coarse Sand
40'-45'	Clay and Gravel
45'-65'	Coarse Sand
65'-67'	Fine Sand

Boring #26 - Just East of Boring #25, North Side of Worth Street, East of Lafayette Street.

Surface Elevation 11.2' ASL

Depth below grade	Soils
0-5'	Fill
5'-10'	Heavy Gravel
10'-15'	Red Clay
15'-20'	Gravel and River Fill
20'-25'	Coarse Gravel
35'-30'	Hand Packed Gravel
30'-35'	Coarse Sand
35'-40'	Fine Sand and Gravel
40'-45'	Heavy Gravel

Both of these boring logs indicate that at least five feet of fill was added above levels characterized by heavy gravels, some clay, and sand. Considering these borings were taken approximately where the Collect once lay, these underlying levels are consistent with the anticipated sand and gravel deposits expected in proximity to a body of water. Directly relevant toward establishing the depth of fill on the Worth Street project site is the presence of only five feet of fill in both locations. Given that fill levels are much deeper (16' to 23') near Duane and Reade Streets about three blocks south of the project site (Harris et al 1993:21), one would expect deeper fill levels here as well since both were in proximity to the Collect. Review of additional boring logs indicated that as one progresses south on Lafayette Street, closer to Foley Square, fill levels get deeper.

Boring #25 - Northern Sidewalk of Park, Worth Street Between Lafayette and Center Streets.
Surface Elevation 16.2' ASL

Depth below grade	Soils
0-16.2'	Fill
16.2'-26.2'	Sand and Gravel
26.2-43.2'	Coarse Sand
43.2'-118'	Alternating Levels of Fine/Coarse Sand

Although the surface elevation at this location is five feet above the surface of Boring #26, taken from the opposite side of Worth Street, the fill is 11.2' deeper here (16.2 feet of fill minus the 5 feet of fill observed in Boring #26). The boring, and the result of excavations completed near Duane and Reade Street, demonstrated that as one progresses south from the project site, further into the footprint of the Collect and closer to the deep ravine observed on historic maps, the depth of fill gets deeper. Clearly the precontact, or predevelopment, surface in the immediate vicinity of the Worth

Street project site was somewhat elevated above the ravine and lower-lying land south of the Collect. This could account for why extensive fill levels, up to 23' in depth, were observed beneath Republican Alley where the African Burial Ground was found, about three blocks south of the Worth Street project site, but not in direct proximity to Block 170.

Precontact Potential

There is no indication that the project site ever hosted extensive precontact resources. Throughout the precontact period, the site was characterized as a sloping hill adjacent to the Collect. Settlement patterns in the greater New York area suggest that precontact encampments, resource processing stations, and other site types of the size capable of leaving a substantial archaeological deposit, were situated on well-drained level land in proximity to fresh water. While the site is in proximity to the Collect, its sloping topography would have made habitation impractical.

The Collect, a spring-fed pond, may have extended into the eastern end of the project block during the precontact period when water levels were raised above what they are today. If the pond were raised considerably above its historic levels, it may have even inundated much of the project site, further inhibiting habitation. In all probability, the elevated well-drained terrain west of the project site, closer to Broadway and continuing to the west, would have been more suitable to habitation. Therefore, there is little probability that precontact resources were ever deposited within the project site.

Within Manhattan, precontact archaeological resources are shallowly-buried, usually within three or four feet of the pre-development surface. As a result, they are extremely vulnerable to post-depositional construction. Given that grading and filling was undertaken to even out the topography in this area, any resources - if they were ever present - would have been extensively disturbed. Borings taken directly north and west of the site show no fill underlying the surface, and no evidence of topsoil, indicating the upper levels were truncated. Directly east of the site, fill is only five feet below the surface. Therefore, the depth of fill on the project block is probably somewhere between zero feet, to the west, and five feet to the east. Since all of the buildings on the block have basements, and each lot has experienced several 19th and 20th century construction episodes, the likelihood that the predevelopment surface was left undisturbed is almost nonexistent.

The combination of low sensitivity for the deposition of precontact resources, coupled with extensive post-contact land manipulation and development indicates that the Worth Street project site has no sensitivity for precontact archaeological resources.

Historic-Period Potential

Historic-period archaeological resources relating to dwellings, workplaces and schools are often preserved in privies, cisterns or wells, which in the days before the construction of municipal services - namely sewers and a public water supply - were an inevitable part of daily life. These shafts became convenient receptacles for all sorts of trash, providing a valuable time capsule of stratified deposits for the modern archaeologist. They frequently provide the best domestic remains recovered on urban sites. Truncated portions of these shaft features are often encountered on homelots because the shafts are deeper (to approximately eight feet) and therefore earlier layers remain undisturbed by subsequent construction. In fact, construction often preserves the lower sections of these features by sealing them beneath structures and fill layers.

Other commonly occurring, but much more shallowly-buried historic-period remains include foundations and builder's trenches, which, if a structure did not include a basement, would extend only a few feet below the pre-development land surface. Even more fragile backyard remains such as fence lines, paths, traces of landscaping and sheet midden scatter can provide valuable data to the archaeologist.

The documentary and cartographic record indicate that the project site remained undeveloped until the mid-19th century (Grim 1813; Ratzer 1766, Taylor-Roberts 1797; Figures 3, 4, 5). The first documented development occurred when the Broadway Tabernacle was constructed on Lot 20 in 1835. Public water from the Croton Reservoir system was piped to this block by at least 1842, and possibly earlier, suggesting that the Tabernacle may have only stood on the lot for seven years without public utilities. Sewer lines were probably installed in the 1840s, and perhaps earlier, as well.

The likelihood that public sewer and water lines were accessible to this substantial structure at an earlier date, or perhaps even upon its construction, is high given that it was built fronting Broadway which was one of the earliest roads to be piped. Also, the building was in close proximity to the Manhattan Company reservoir at Chambers Street, which had established their water lines by 1799. Therefore, there is only a low to moderate likelihood there were outhouses or privy vaults on the project block that were associated with the Tabernacle. Furthermore, since the locations of these potential features is unknown, they could have constructed on lots within the block, but not within the project site.

Subsequent development on the project site included the construction of a series of structures and the establishment of a coal yard. In the 1880s, all of the buildings on the block, including the Tabernacle, were razed and replaced by substantial brick structures, each possessing a basement. Therefore, both the footprints of earlier buildings and any associated yards and/or yard features, would have been obliterated by the 1880s construction.

The only historic archaeological resources identified in the vicinity of the project site include the African Burial Ground and a pot baker which were established near the Little Collect in the 18th century. An extensive documentary review for the African Burial Ground designation report, utilizing deeds, conveyance records, and survey maps, established the northern most boundary of

the burial ground several blocks south of the Worth Street project site. Research concluded that the "Negro Burial Ground" fell on lands within the Van Borsum patent, which was bounded on the north by the "Calk Hook" farm, owned by the Barclay/Rutgers family (Harris et al 1993:20). A survey map of the "Calk Hook" property, provided in the designation report, placed its southern boundary half way between Duane and Reade Streets, and indicated that the "Negroes Burying Ground" abutted its southern border (Ibid.:Figure 13A). Based on this information, the burial ground did not extend as far north as the current project site, but terminated at least three blocks to the south.

The pot baker observed on an 18th century map, was clearly south of the project site opposite and slightly south of the location of the Powder House, which stood on an island between the Collect and the Little Collect (Maerschalek 1755; Figure 4). Later, more detailed maps, comparing the location of the Collect and the Little Collect to modern development indicate that these features were situated adjacent to or within City Hall Park (Viele 1865). The African Burial Ground designation report confirms the location of the powder house at the southern end of modern day Foley Square on Block 155 near Pearl Street (Harris et al 1993:42; Figure 2). Therefore, the pot baker - which stood south and west of the powder house - would have been situated somewhere on the southern end of Block 156, two blocks south of Block 170, near Duane Street. This block is now occupied by Federal Plaza. More modern maps of the Collect also show the small island, between the Collect and the Little Collect, as south of the project block by two blocks (White 1987:39; Figure 10). Therefore, the project site is not sensitive for the pottery.

CONCLUSIONS AND RECOMMENDATIONS

This Phase 1A documentary study, completed by Historical Perspectives, Inc., was designed to determine the likelihood that archaeological resources were once present on the project site and the likelihood that these resources have remained undisturbed by historic and modern development, and could still possess their integrity. Specifically, the potential for remains from historic 18th and 19th century use in the vicinity and the horizontal extent of the Negro Burial Ground were examined. Background research included extensive documentary and map research, site files review, and field review.

The documentary research completed for the Worth Street project site clearly demonstrated that there is no precontact or historic sensitivity within the site's boundaries. Prior to any development, Block 170 sloped downward from a rise at Broadway, east to the Collect (a fresh water pond) which bordered the eastern end of the block. The sloping topography probably precluded precontact settlement and definitely delayed historic development. Sometime near the end of the 18th century/beginning of the 19th century, the rise near what is now Broadway was reduced in elevation, and the Collect was filled. The regulating and opening of Worth Street and Catharine Lane in the early 19th century allowed for the creation of Block 170, and eventually it was subdivided into building lots.

During the 19th century the project site experienced several building episodes, culminating with the construction of brick structures covering all of the lots in the 1880s. These were subsequently razed and replaced by more modern buildings in the 1970s and '80s. All of the buildings currently standing on the site have basements.

Since the first elevations observed on maps were recorded for the project site, they have not changed. In other words, after the original filling of the project block was completed, it has not experienced additional filling or grading. Soil borings taken in the immediate vicinity indicate that the western end of the block has no buried fill or subsoil, but the eastern end has up to about five feet of fill. Therefore, modern buildings with basements probably impacted subsoil on the western end of the project site, and 19th century landfill and subsoils on the eastern end of the lot, causing extensive subsurface disturbance.

The likelihood that precontact resources were ever deposited on the project block is minimal. Its sloping topography would have made habitation difficult, and certainly, at some time during the precontact period when water tables were higher than they are today, the site may have been inundated by the Collect. These factors suggest low sensitivity for precontact deposition. The subsequent grading, filling, and development episodes which impacted levels beneath fill, would have disturbed any remnants of the precontact living surface. These two issues negate any precontact sensitivity for the project site. Therefore, the project site is not sensitive for precontact period resources that would have research potential and meet the criteria necessary for inclusion on the National Register of Historic Places.

Research identified two potential historic resource types in the vicinity of the project site, but not within its boundaries. The African Burial Ground and an 18th century pot baker were both

documented near the Collect. However, an extensive review of documentary and cartographic records verify that both of these important resources are situated south of the project site by several blocks. The northern boundary of the burial ground was established between Duane and Reade Street, and the pot baker was situated south of Worth Street, somewhere on Block 156 near Duane Street. No historic resources were identified within the project site boundaries.

According to the City Environmental Quality Review (CEQR) guidelines, at the conclusion of the documentary research it is necessary "to determine whether there is sufficient evidence to justify another phase of work, namely field work, and to set forth the appropriate scope of the field effort. The level of work may depend on how likely it is that archaeological resources may be on the site" (CEQR Manual, 1993). For the Worth Street project site, no further research of any type is recommended due to the lack of archaeological resource potential.

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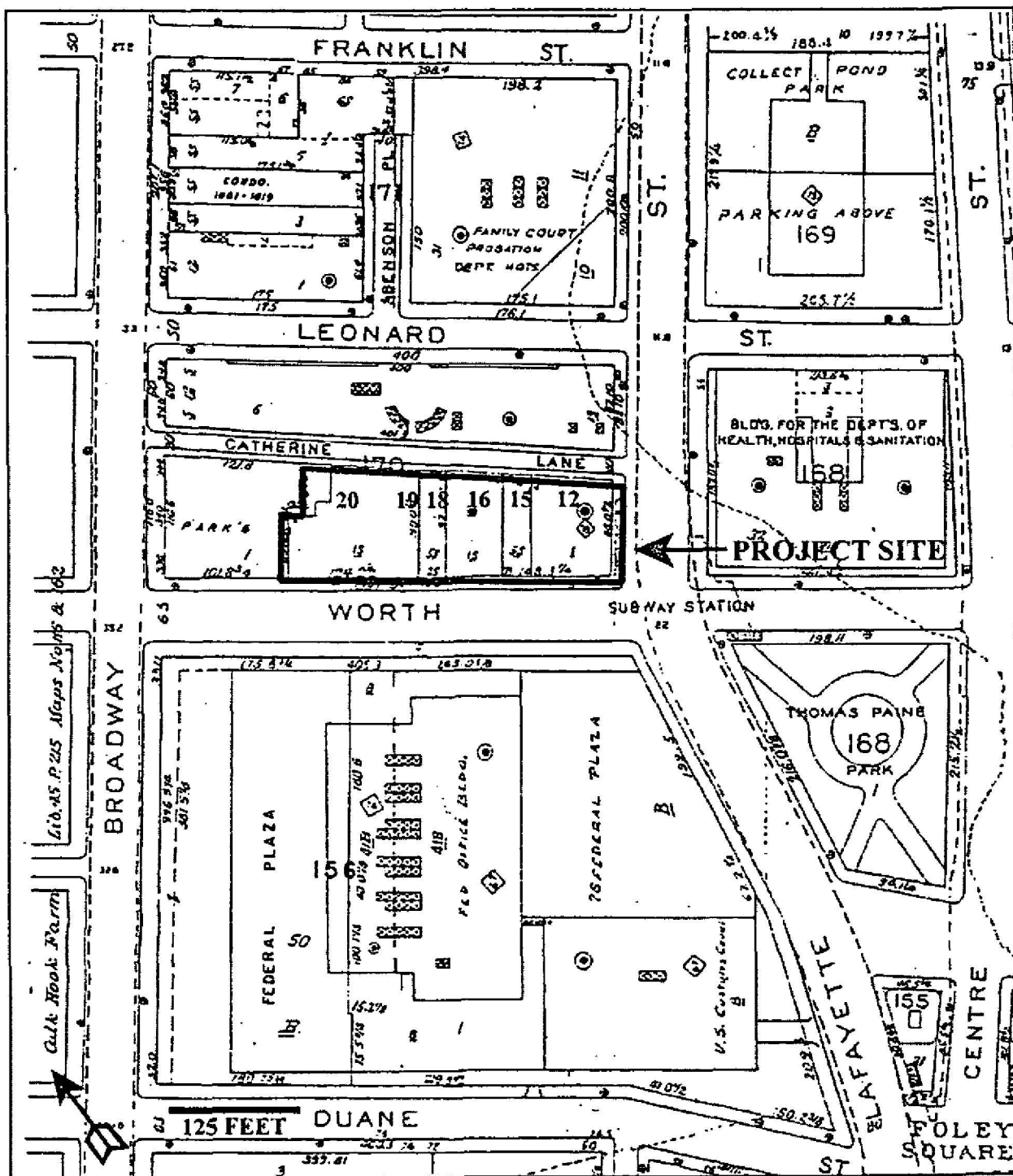


FIGURE 2

PROJECT SITE BOUNDARIES
Sanborn, 2000

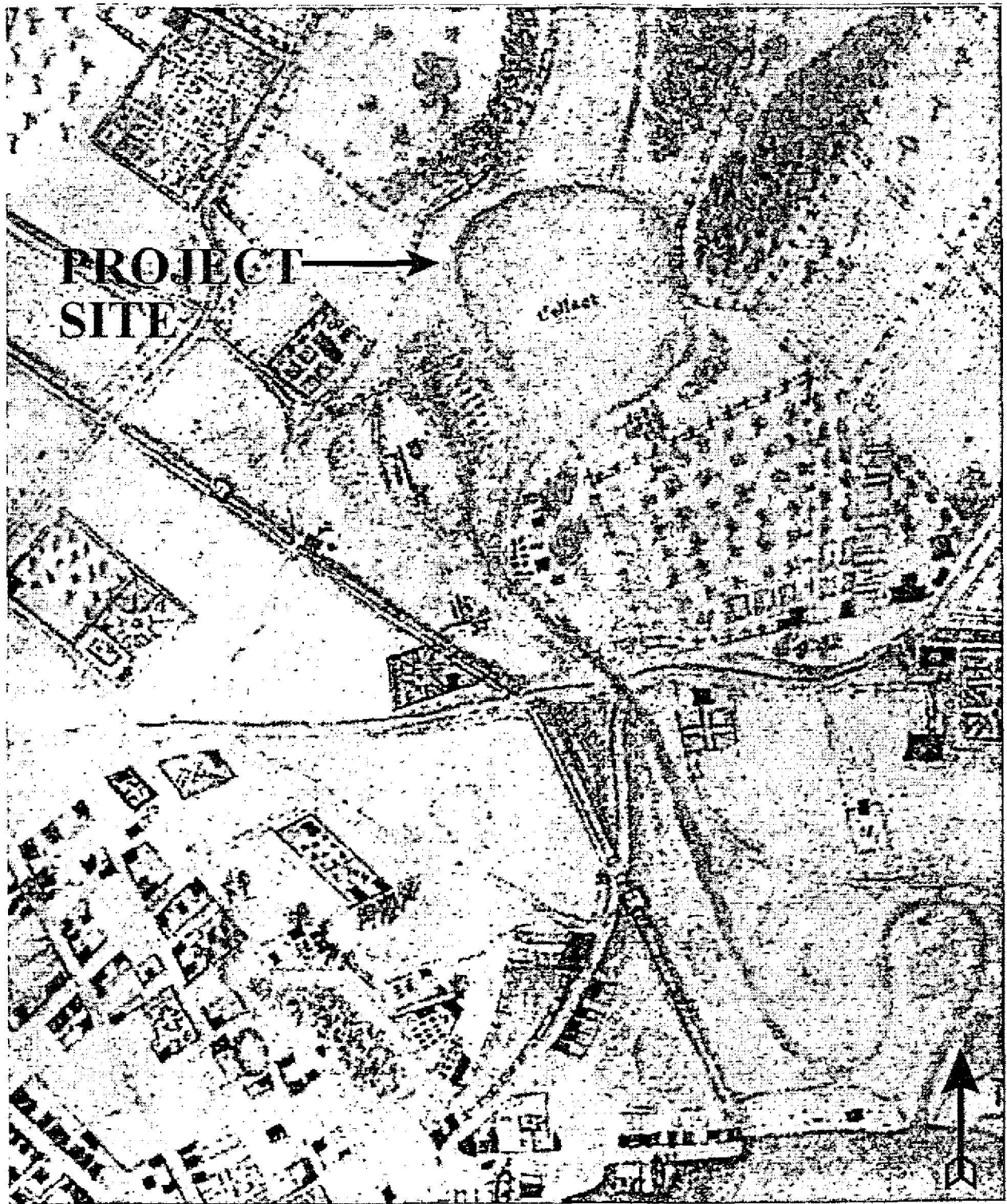


FIGURE 3

*A Plan of the City and Environs of New York
as they were in the years 1742, 1743 & 1744.
Grim, 1813*

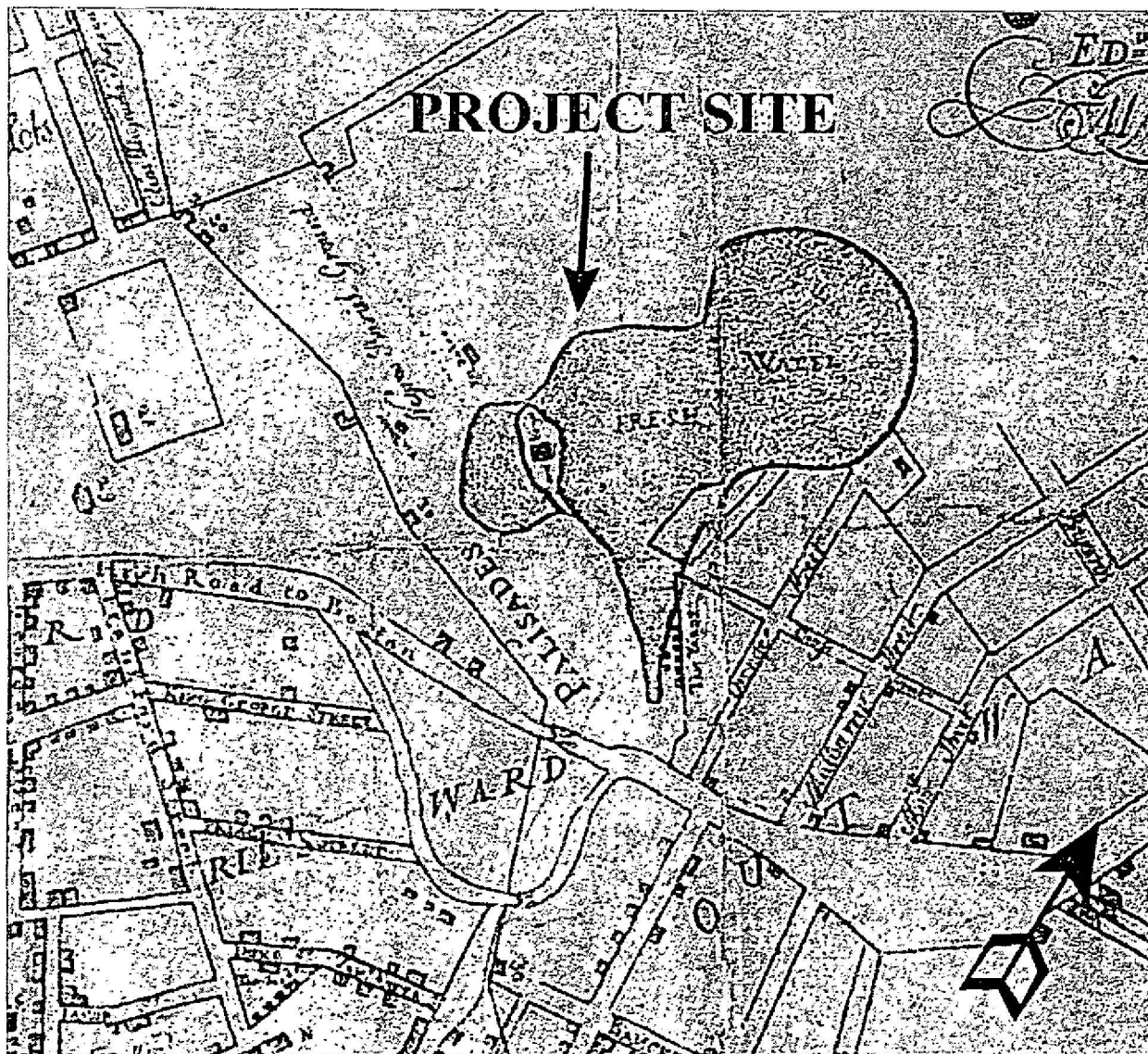


FIGURE 4

A Plan of the City of New York from an actual Survey Anno Domini—M,DCC,IV.
 Maerschallck, 1855

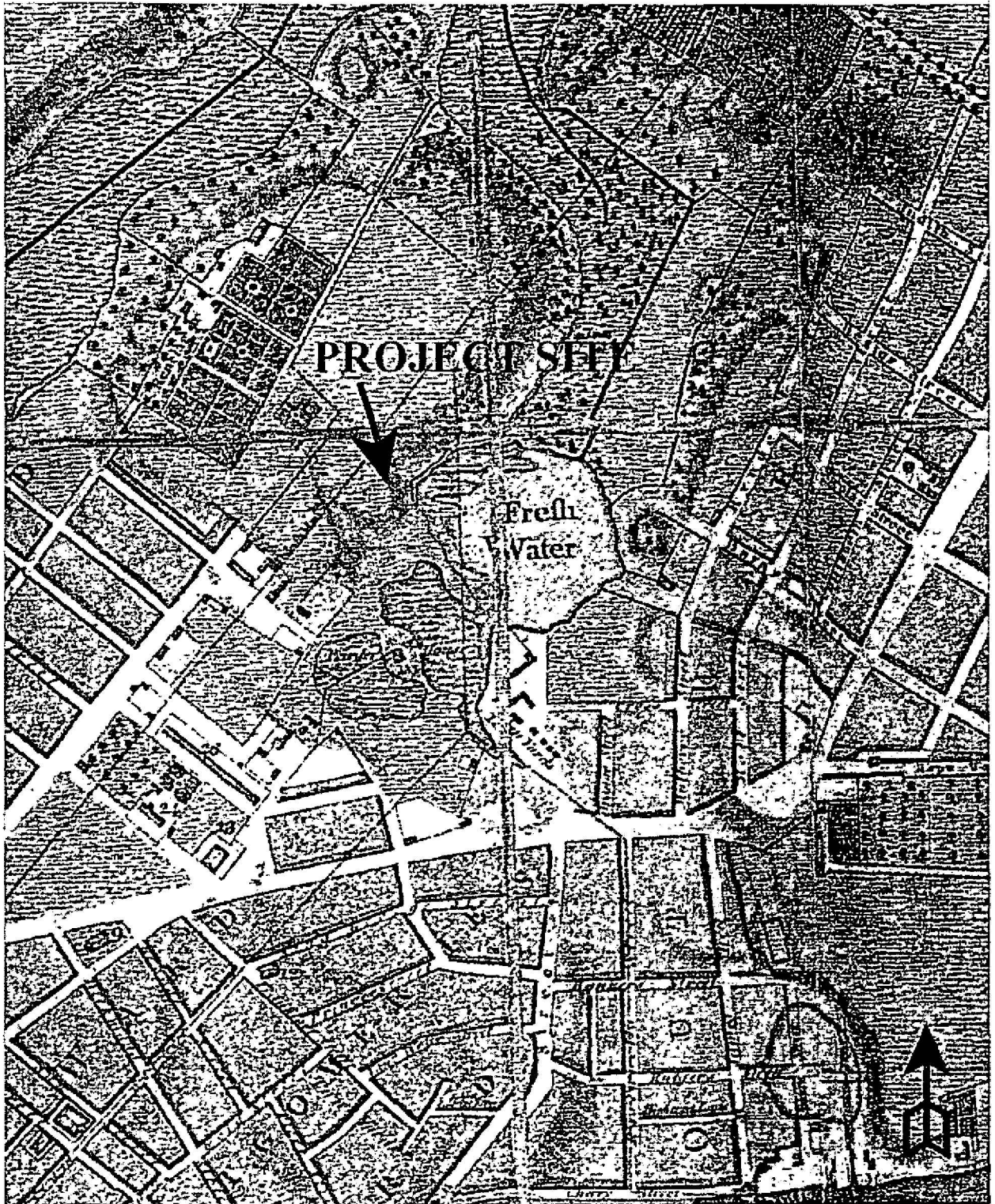


FIGURE 5

Plan of the City of New York.
Ratzer, 1766-67

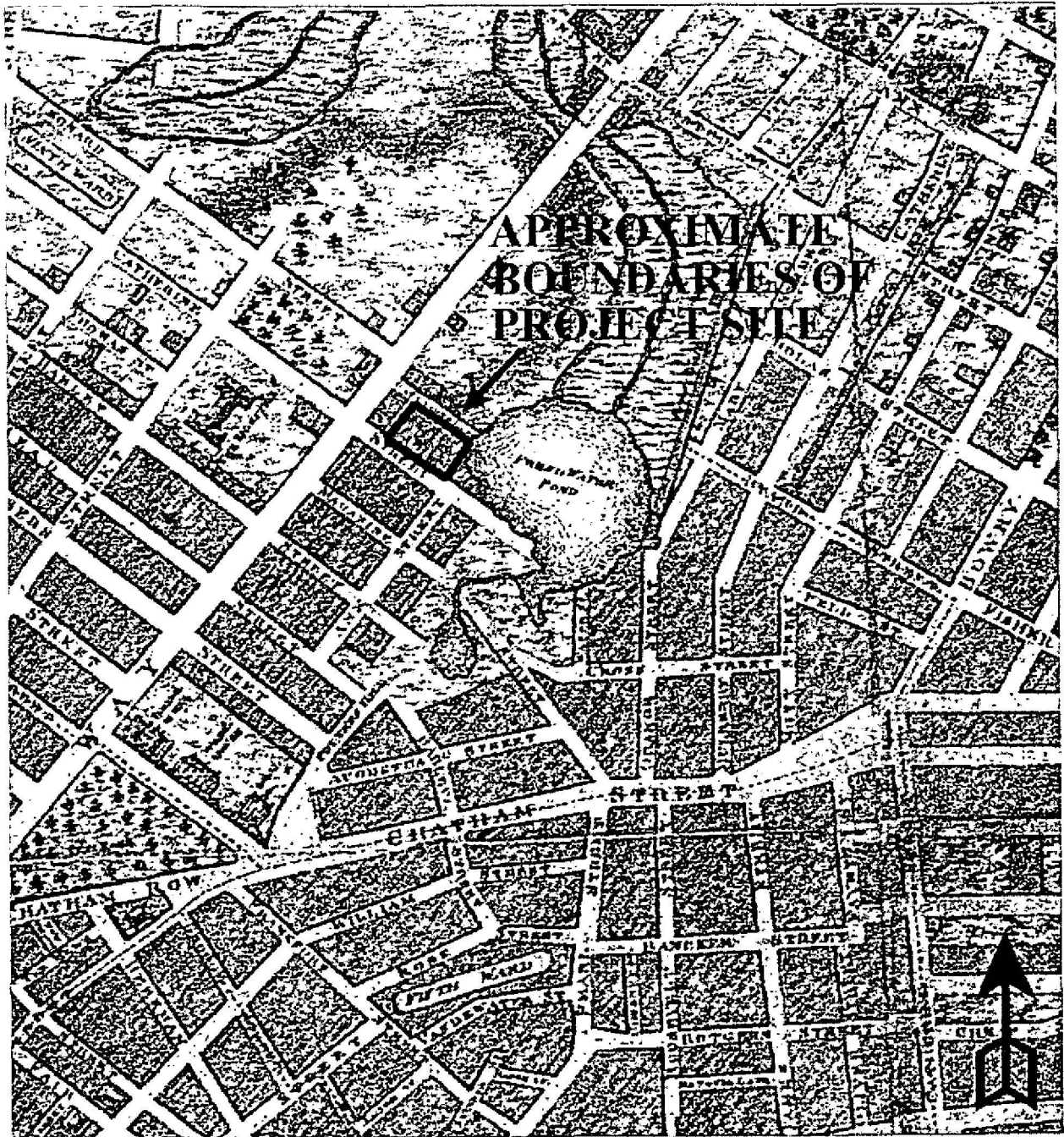


FIGURE 6

A New and Accurate Plan of the City of New York. Taylor-Roberts, 1797

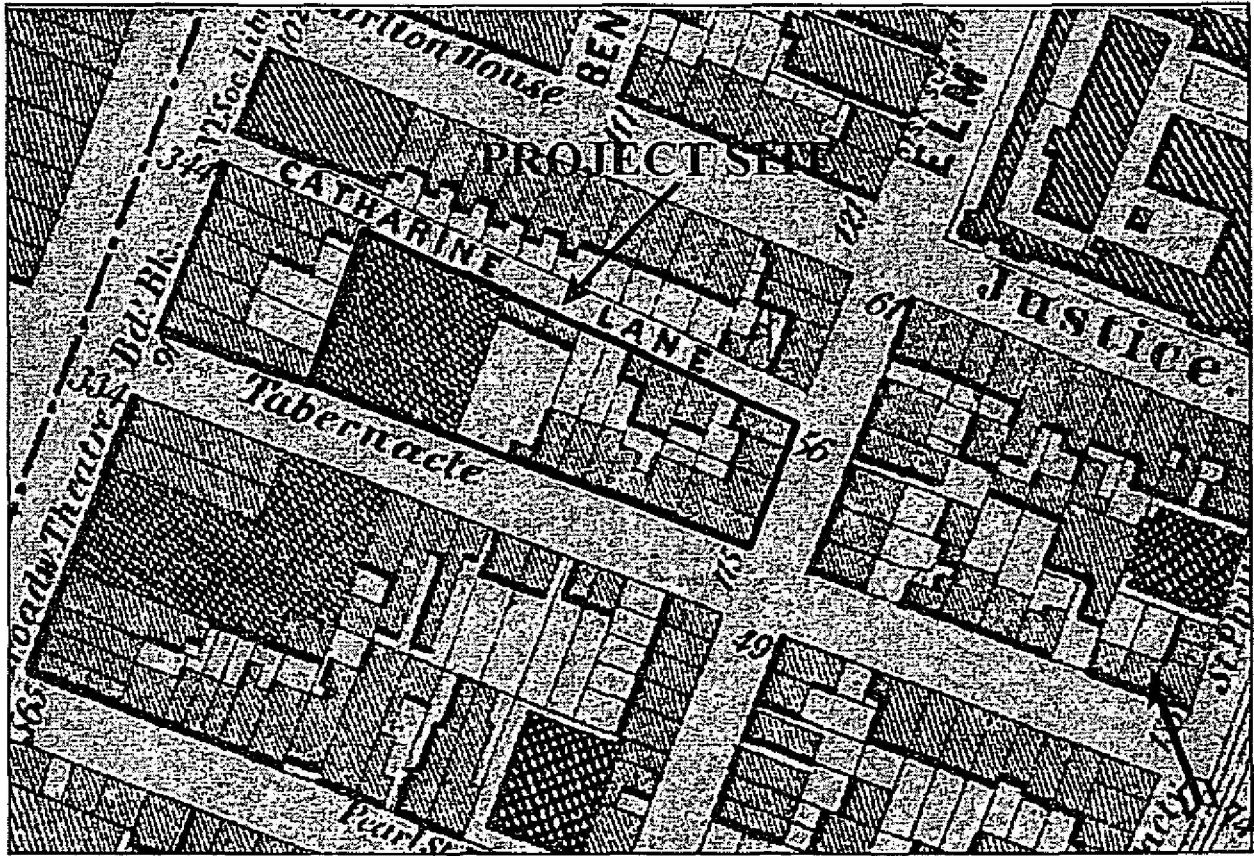


FIGURE 7

City of New York Extending Northward to Fiftieth Street.
Dripps, 1852

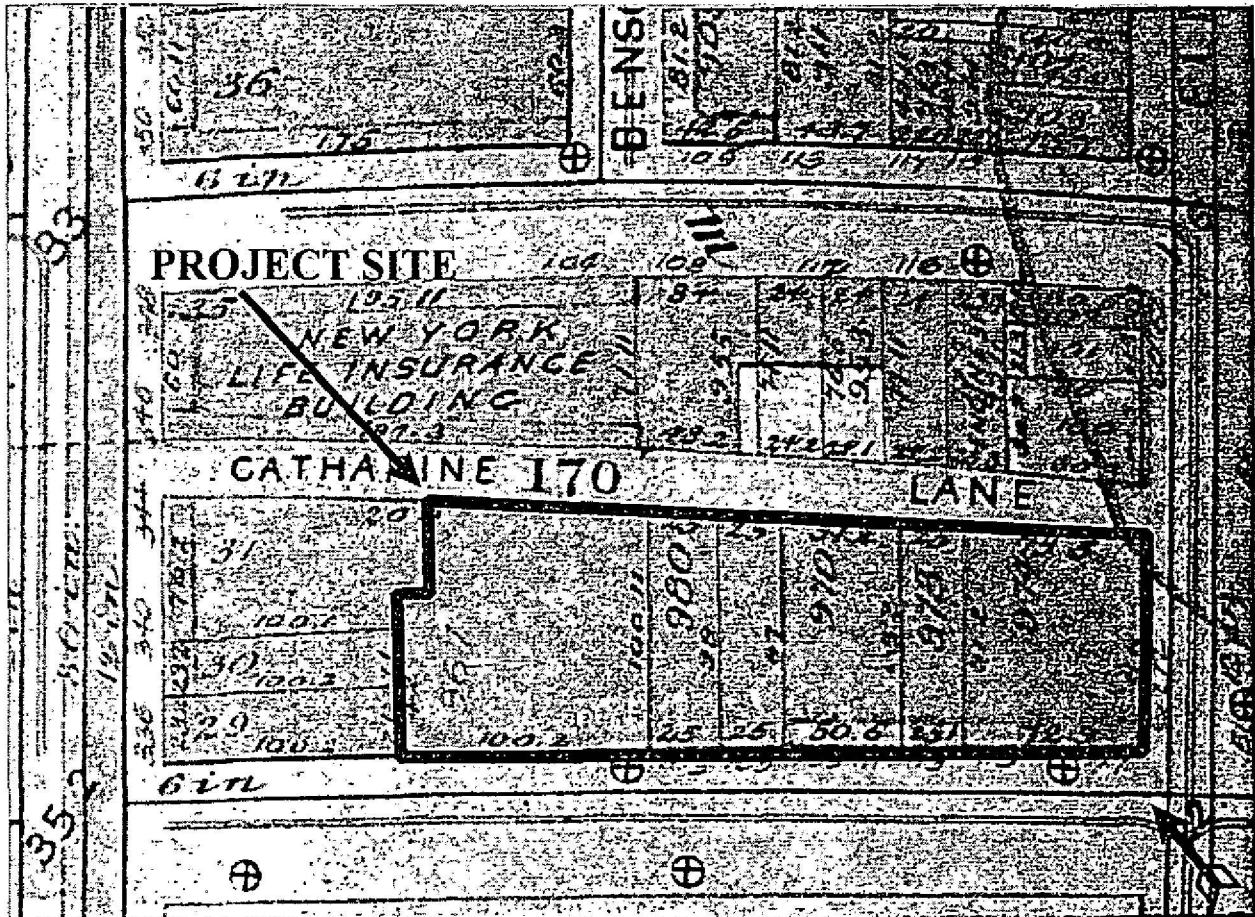


FIGURE 8

*Atlas of the city of New York : from official records,
private plans & actual surveys.
Robinson 1890-03*

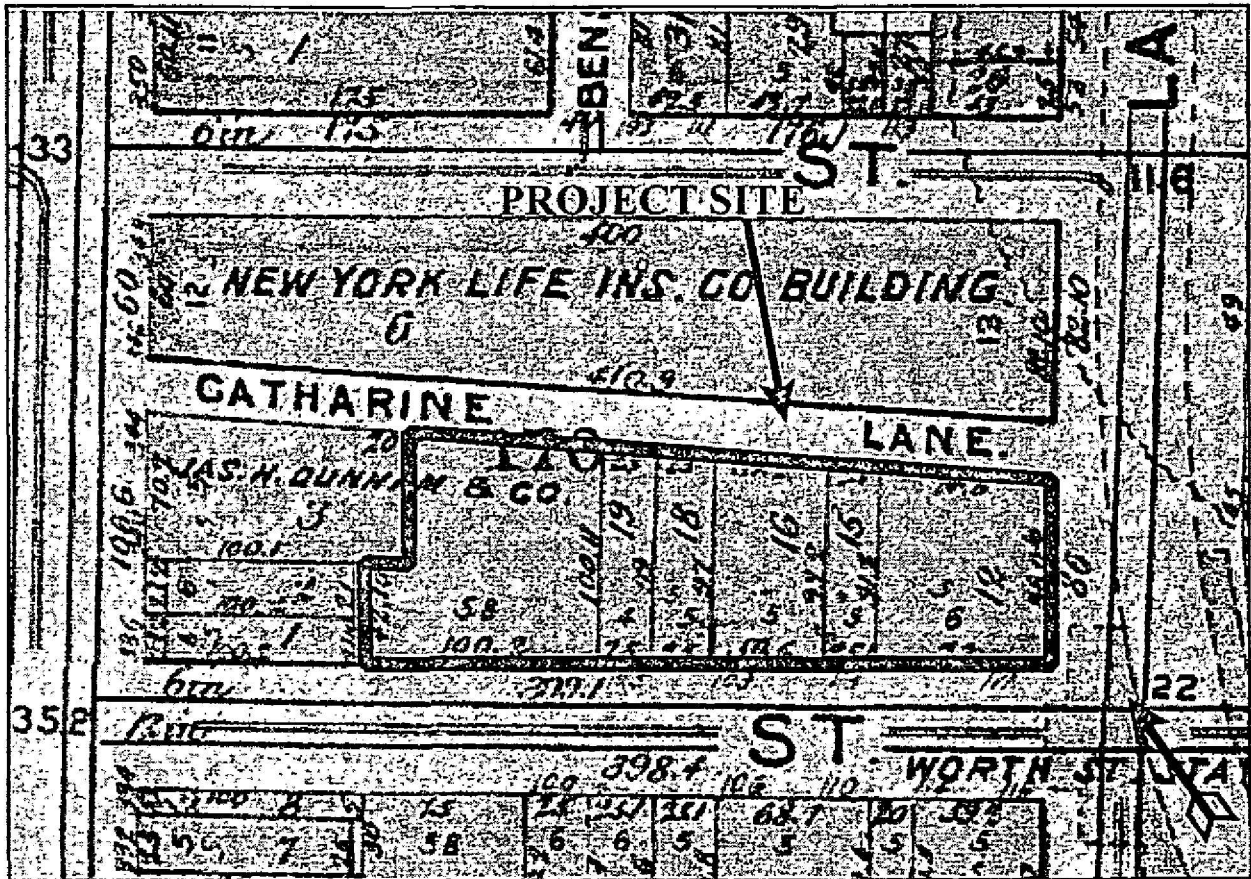


FIGURE 9

Atlas of the City of New York borough of Manhattan : from actual surveys and official plans.

G.W. Bromley, 1911

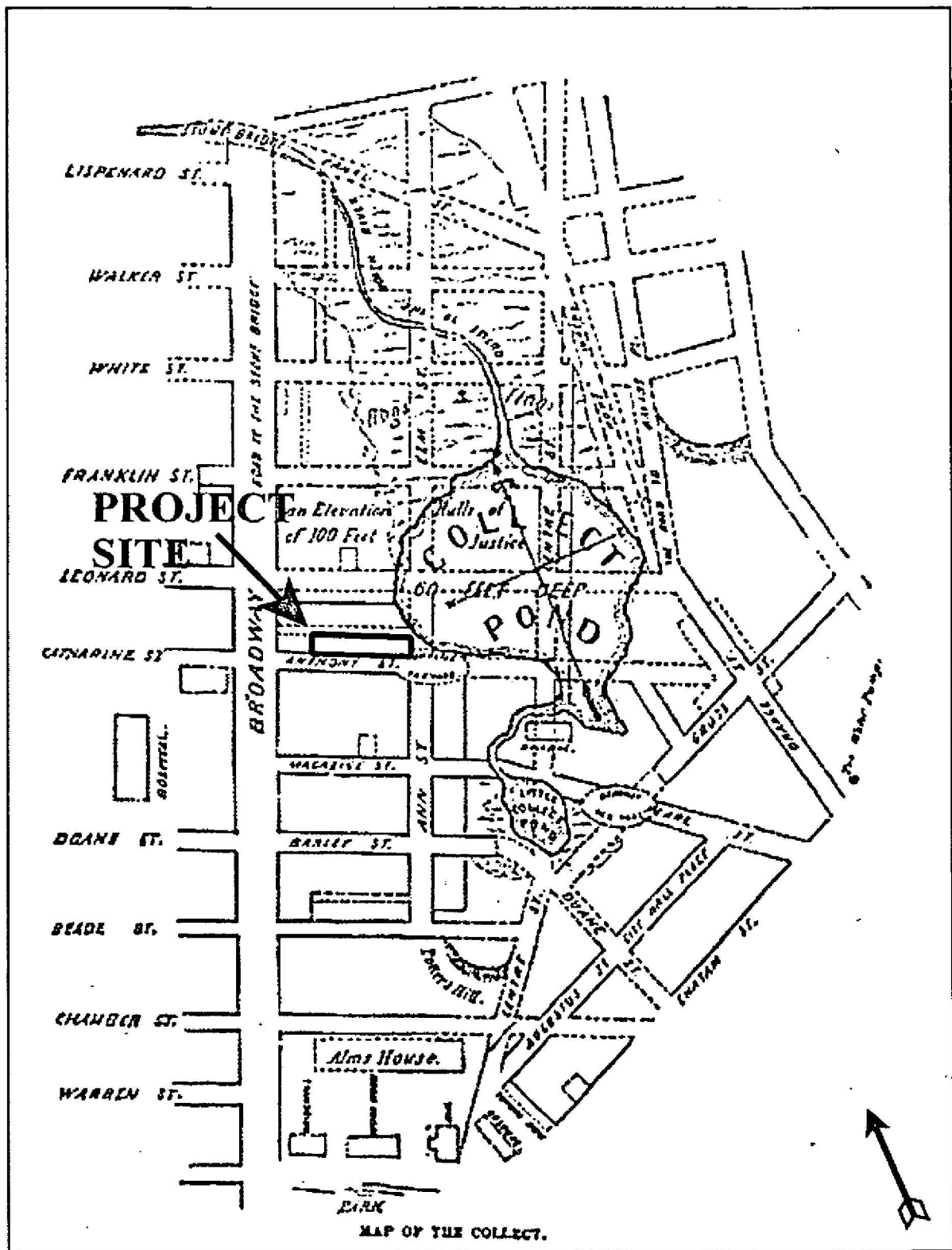
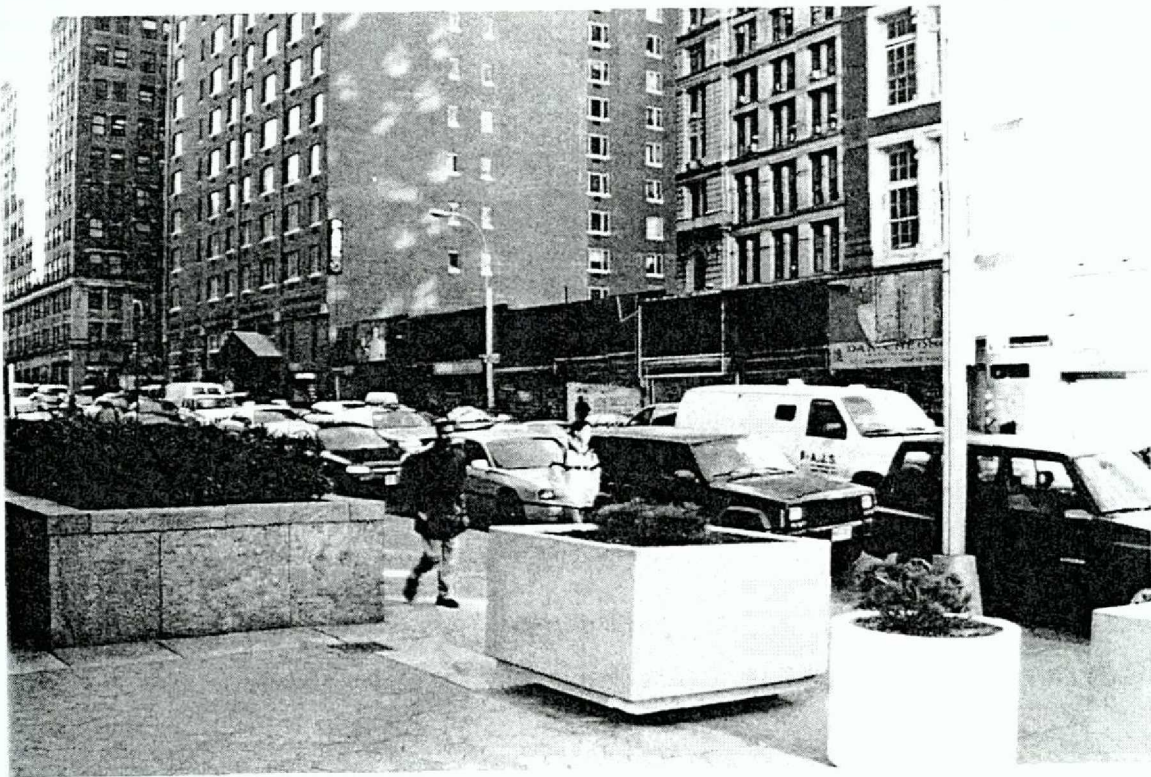


FIGURE 11

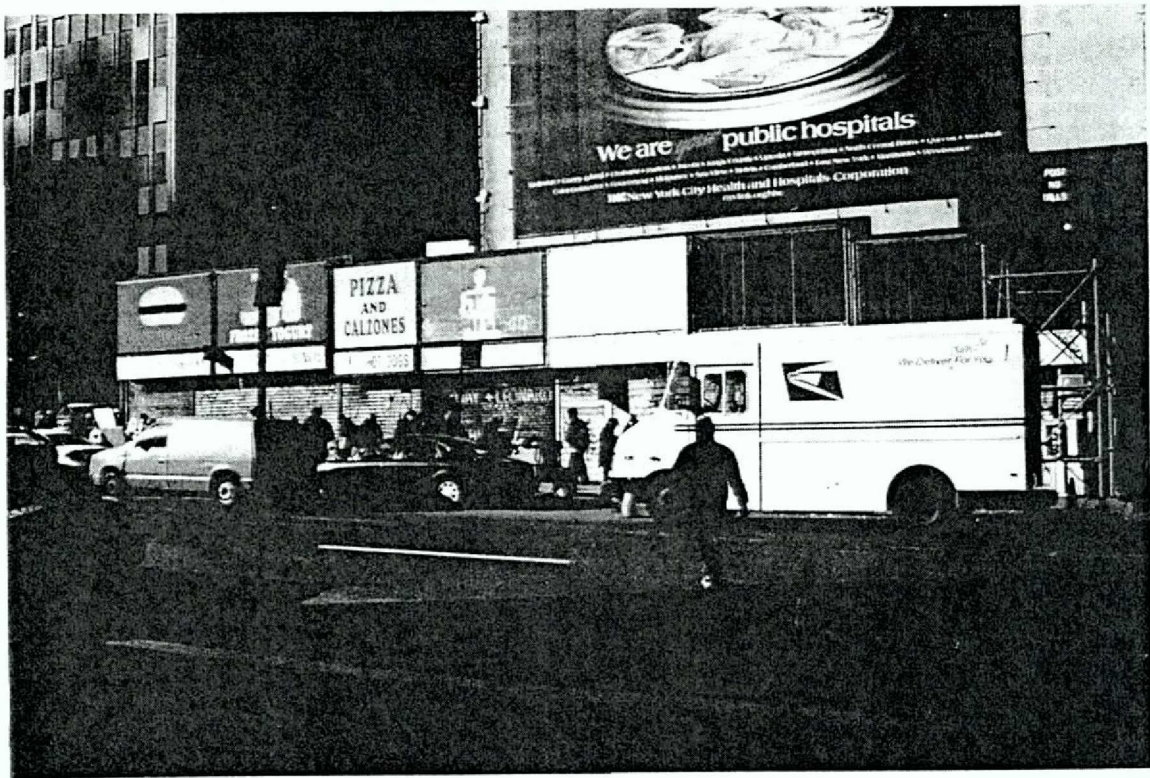
The Collect. Freshwater Pond and Springs.
 White, 1987:39



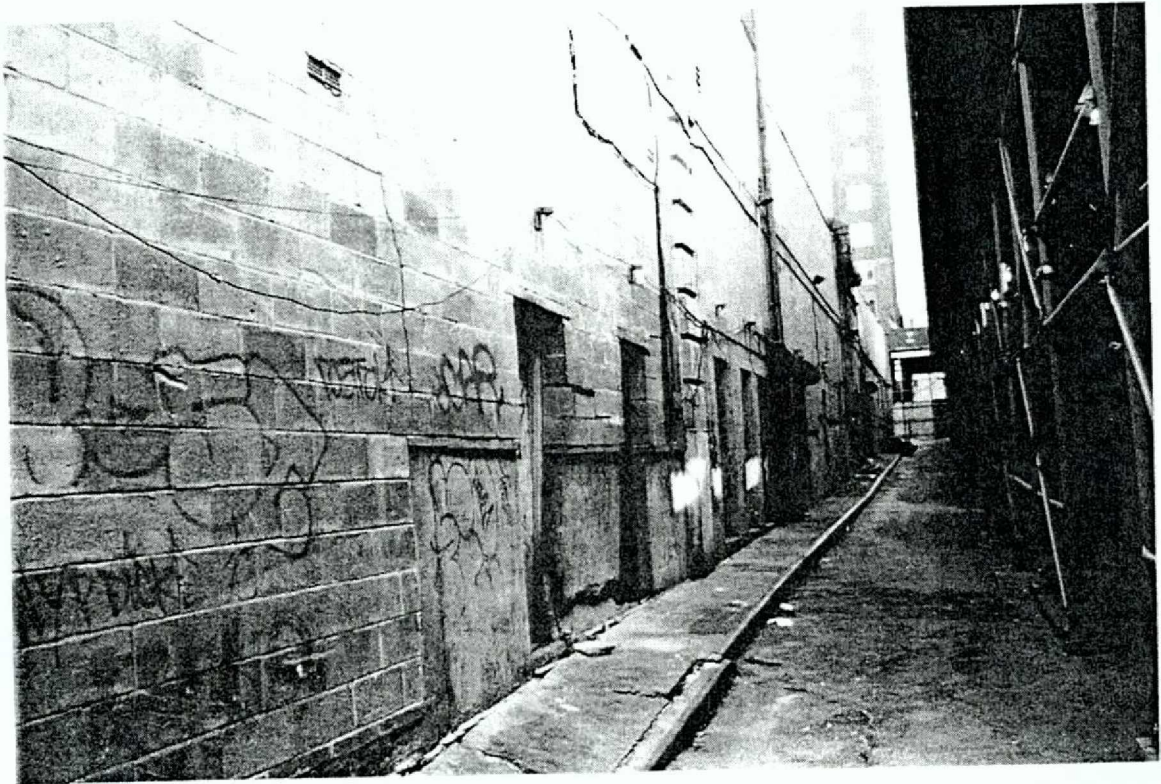
PHOTOGRAPH A: Facing north toward 101-117 Worth Street from south side of Worth Street.



PHOTOGRAPH B: Facing northwest toward Lot 20 of Block 170 from south side of Worth Street.



PHOTOGRAPH C: Facing southwest from Lafayette Street to southeast corner of Worth Street.

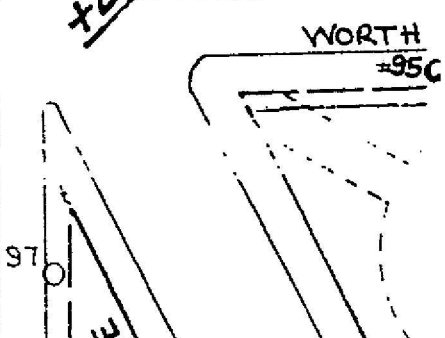
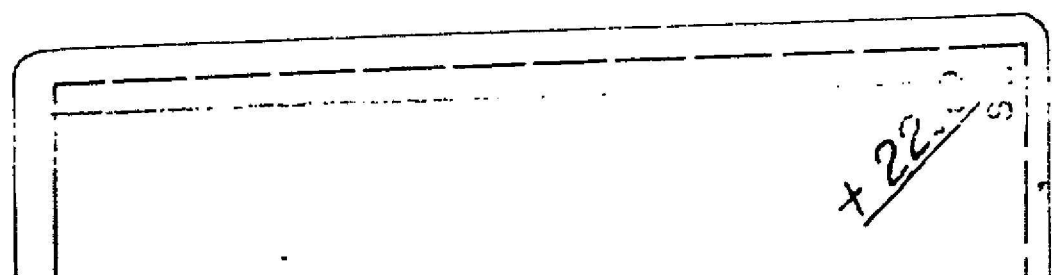
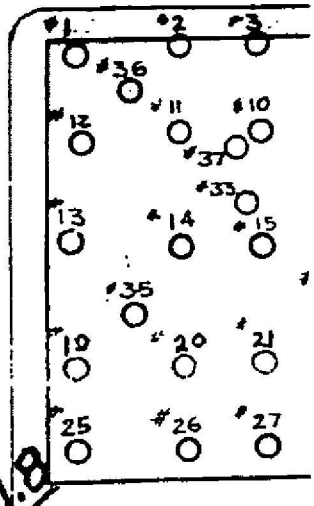
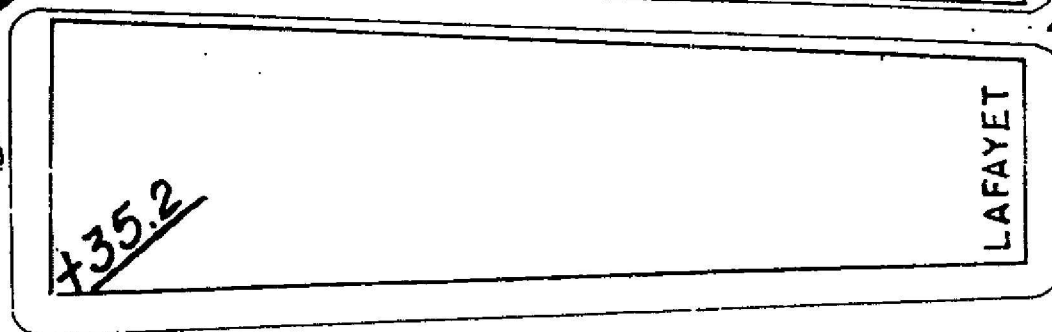
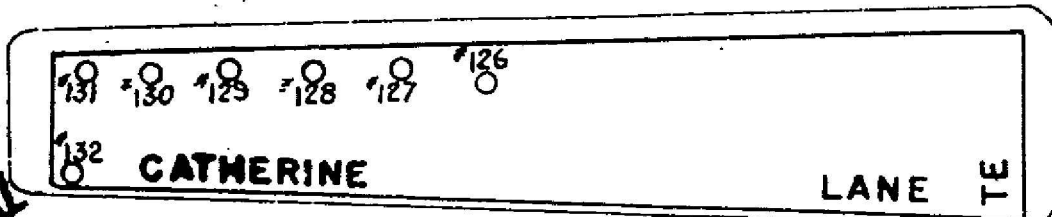
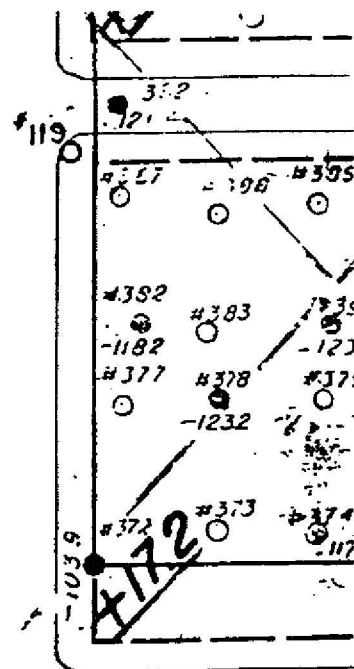
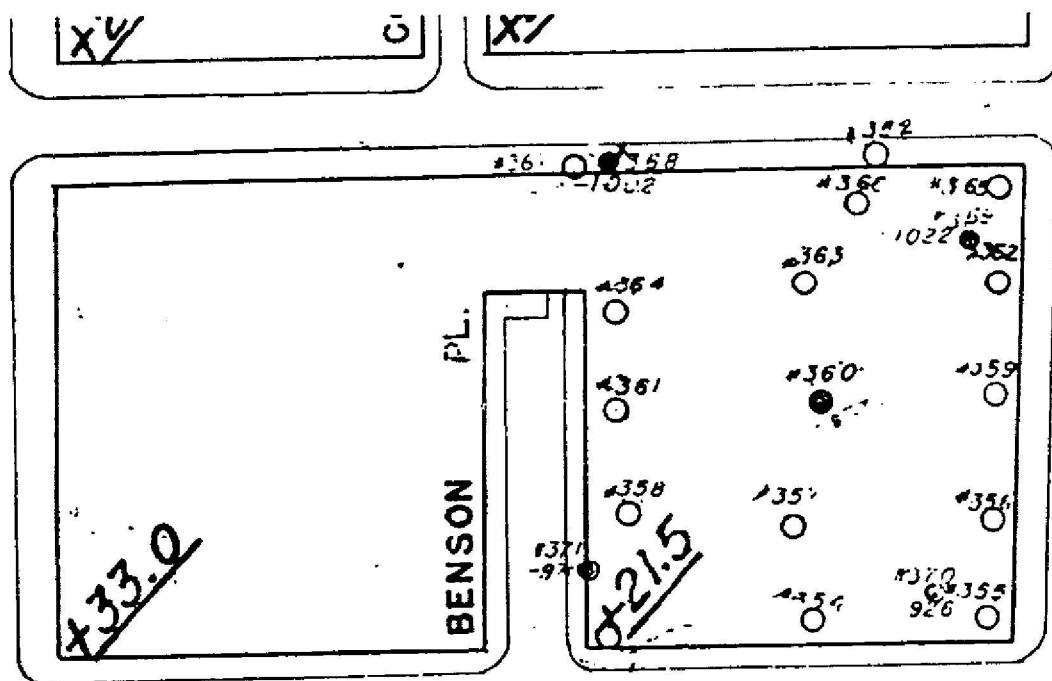


PHOTOGRAPH D: Catharine Lane facing west from Lafayette Street. Project site is on left side of picture.

APPENDIX

Soil boring locations and logs

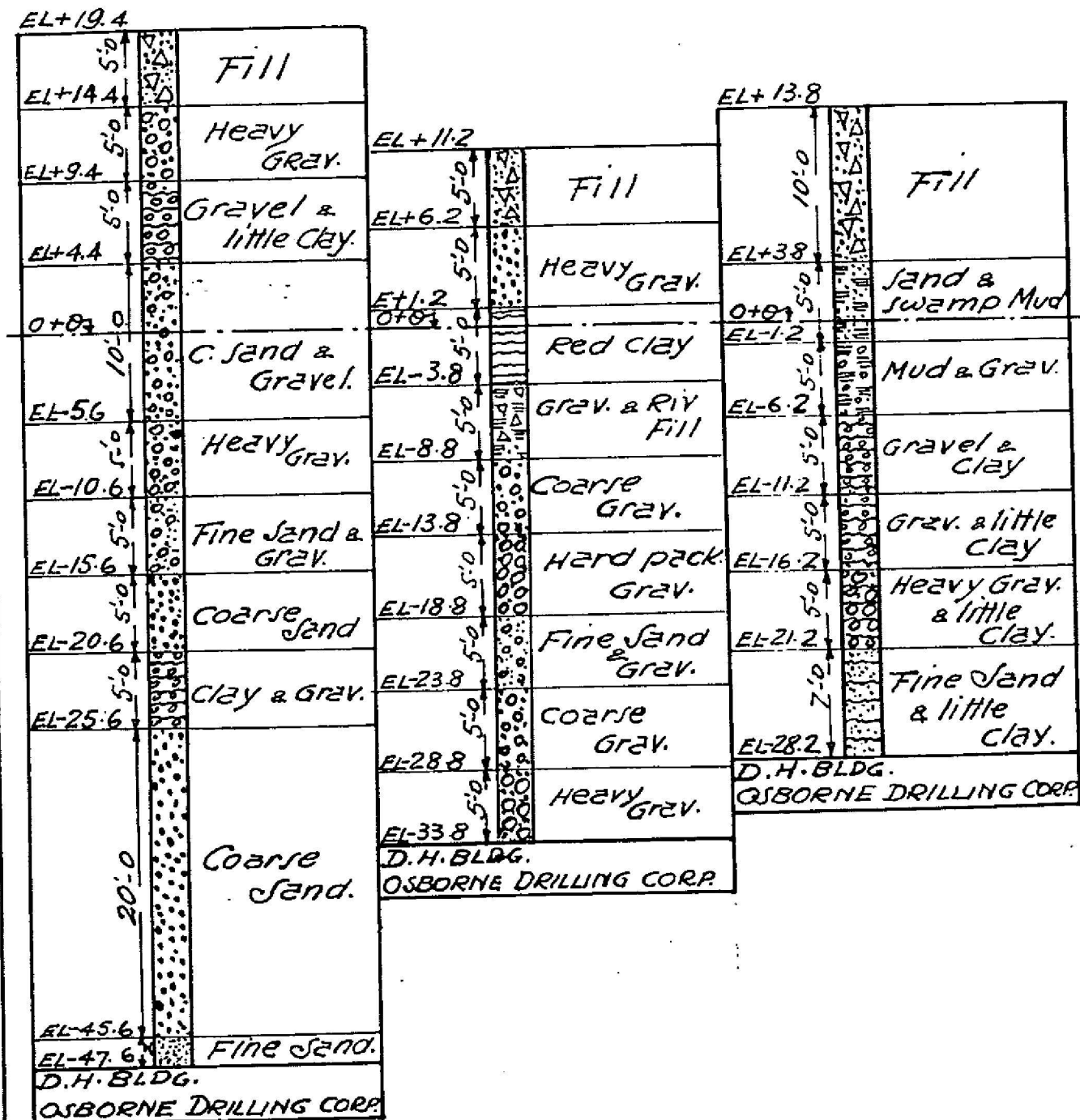
Rock Data Map showing Original Shore-Line, Ponds, Marshes, and Waterways, Together with Rock Floor of Manhattan Island as Determined by Core Borings and Excavations.
Office of President, Bureau of Manhattan, Topographic Bureau. 1937



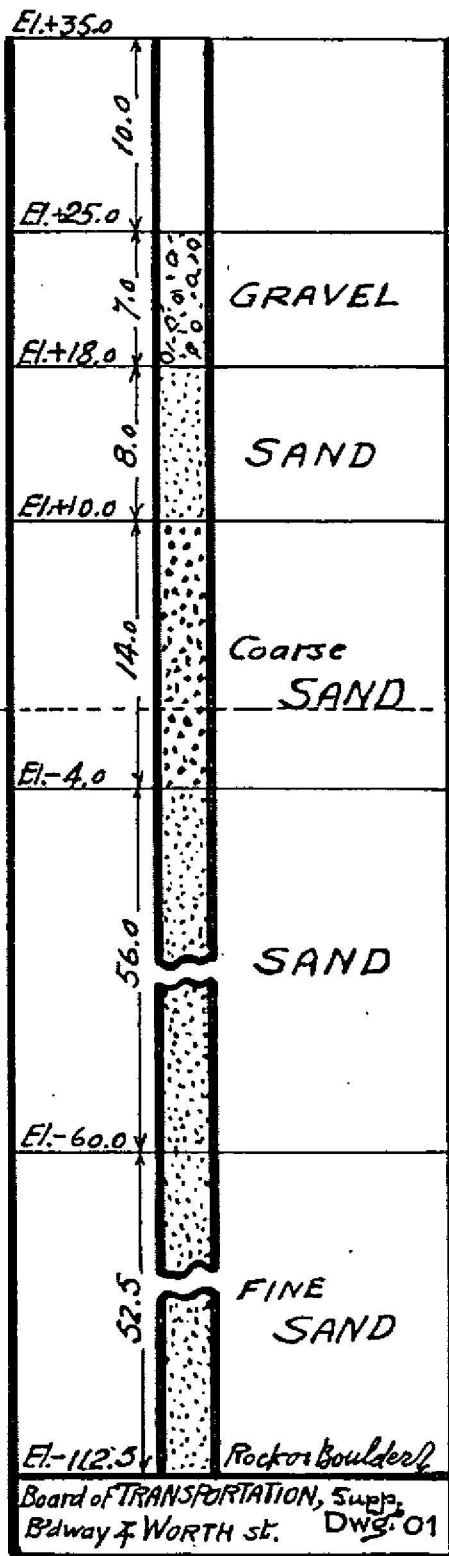
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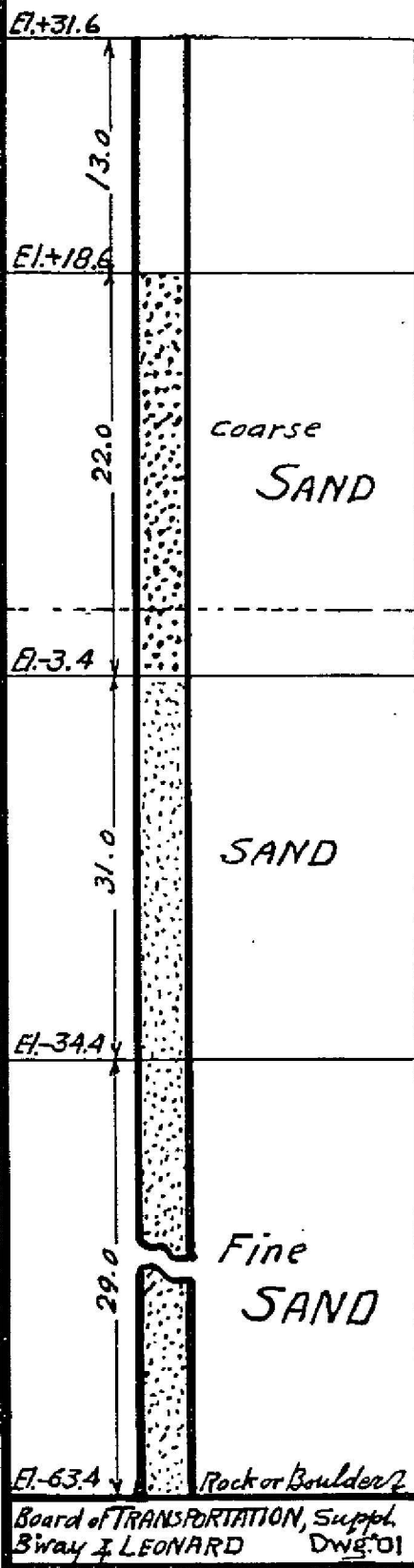
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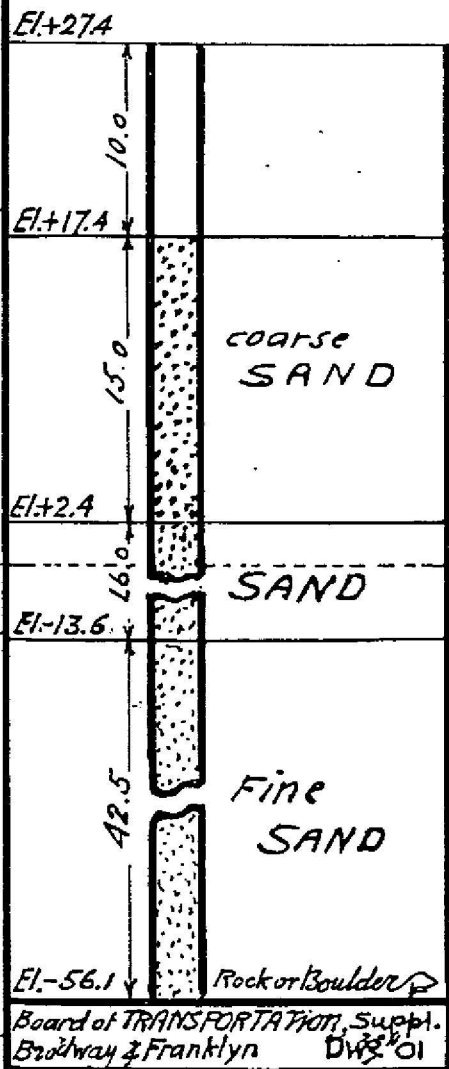
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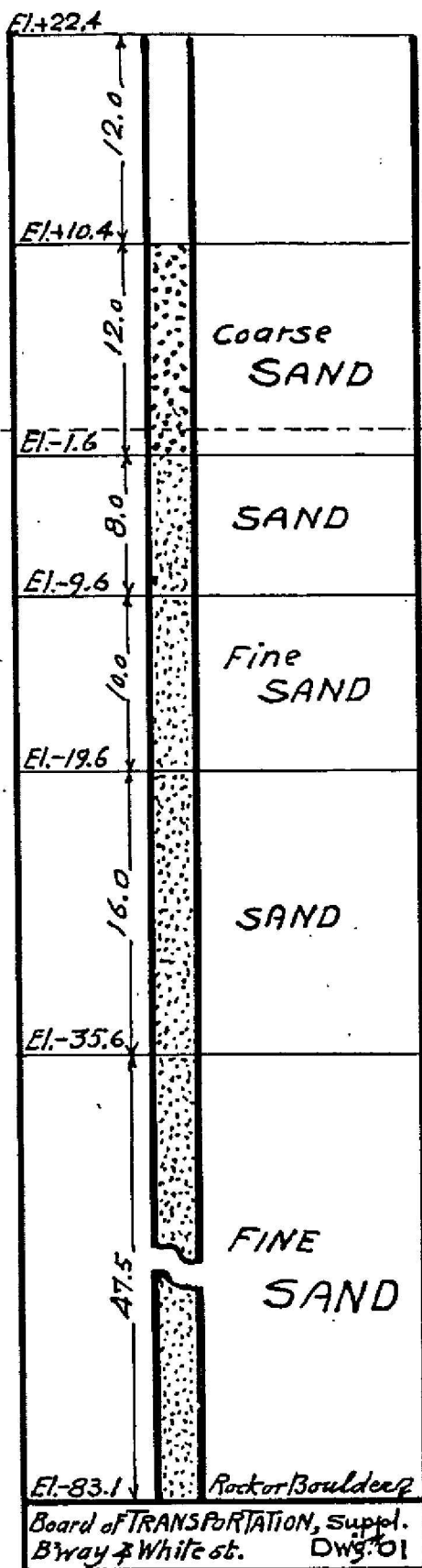
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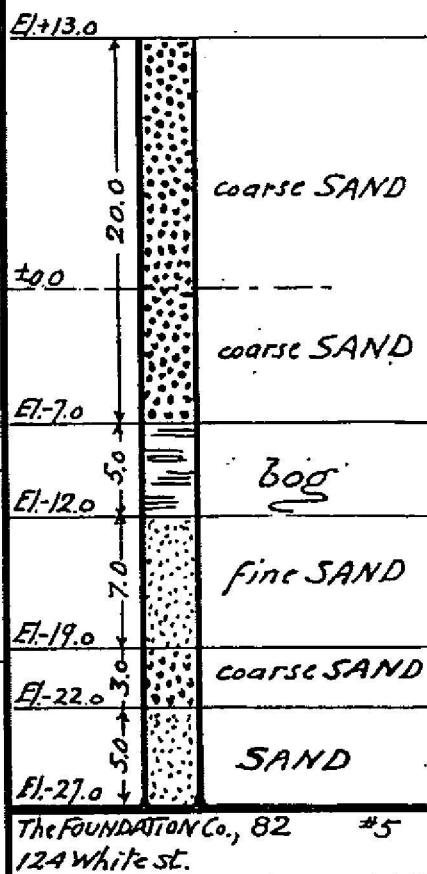
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*93



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