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STAGE 1A ARCHAEOLOGICAL ASSESSMENT

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55 WATER STREET MANHATTAN

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STAGE 1A ARCHAEOLOGICAL ASSESSMENT

55 WATER STREET

MANHATTAN

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EXECUTIVE SUMMARY

Proposed improvements to the 55 Water Street plaza on Water Street between Old Slip and Coenties Slip in Manhattan may cause subsurface disturbance through the installation of new utility lines, plantings, and curbing (Figures 1, 2). The project site is situated directly adjacent to a 1969 building at 55 Water Street, which is designated New York City Block 32, Lot 1 (Appendix A). As part of the permitting process for the undertaking of the proposed actions, a Stage 1A Archaeological Assessment was necessitated.

As part of the development process, a Stage 1A Archaeological Assessment was prepared. The Stage 1A documentary study, completed by Historical Perspectives, Inc., was designed to determine the likelihood that precontact - or prehistoric - and historic 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.

Precontact Period Resources

The precontact archaeological potential on the project site is almost nonexistent. At the time of European Contact, the project site was outboard of the East River shoreline. There may have been periods prior to that time when the water table was lower and the project site was drained and available for exploitation. However, documentary research indicates that the coastal area in lower Manhattan was rocky and not necessarily ideally suited for precontact habitation. Furthermore, inundation, tidal action, and waterfront dredging along the submerged project block shoreline may have impacted any fragile precontact remains. It is highly unlikely that any precontact remains, if they ever existed on the site, would have survived subsequent tidal action and dredging episodes. Finally, if resources were ever deposited, they would have been deeply buried beneath historic fill in the 1740s. 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.

Historical Period Resources

Previous archaeological research on the 55 Water Street block, as well as other similar projects in lower Manhattan, proved invaluable in assessing historic sensitivity for the project block. Documentary research found that while the larger, eastern portion of the project site is disturbed by the foundation of 55 Water Street, the smaller, western portion is potentially sensitive for:

DEPTH	RESOURCE	LOCATION
6" to 7' below grade	Late 18 th century fill	Old Slip
5' to 7' below grade (excluding manhole sites)	Late 18 th century fill	Water Street
7'+ below grade (excluding manhole sites)	Mid 18 th century fill	Water Street
7'+ below grade (excluding manhole sites)	1690s Wharf that was originally Water Street	Water Street
7' + below grade (excluding manhole sites)	the section of the wharf that acted as a retaining wall to allow for the creation of Old Slip	Old Slip/Water Street
7' + below grade	the ca.1740s dwellings which fronted Water Street when it was a wharf	Water Street

Each of these resource types could potentially be impacted by the proposed project depending on the location and depth of subsurface impacts. Negative impacts will occur if disturbance extends into potentially sensitive levels, as described above (Figure 15).

Recommendations

In order to further assess whether potential archaeological resources will be impacted, Stage 1B field investigations are recommended if it is anticipated that excavation would extend into the potentially sensitive areas. Field work should be completed when proposed actions have been refined, so that the proposed horizontal and vertical extent of impacts can be compared to the depths of potentially sensitive strata. A proposal for field investigations should be created in consultation with the NYCLPC. All fieldwork should be undertaken as per NYAC Standards, 2000.

INTRODUCTION

Improvements to the 55 Water Street plaza on Water Street between Old Slip and Coenties Slip in Manhattan may cause subsurface disturbance through the installation of new utility lines, plantings, and curbing (Figures 1, 2). The project site is situated directly adjacent to a 1969 building at 55 Water Street, which is designated New York City Block 32, Lot 1 (Appendix A). As part of the permitting process for the undertaking of the proposed actions, a Stage 1A Archaeological Assessment was necessitated.

This Stage 1A documentary study, completed by Historical Perspectives, Inc., was designed to determine the likelihood that precontact - or prehistoric - and historic 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).

For ease of discussion in this report, Water Street will be considered the west side of the project site, and Old Slip is to the north.

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 historical 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 historical 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 analyzes, 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 and document disturbance episodes. These resources included pertinent archaeological reports as well as local and regional source material for data on precontact and historical settlements, and manuscripts and newspaper articles held by the New York Public Library. Particularly valuable were local historians' accounts, and precontact archaeological work conducted by both professional and amateur archaeologists. Building records were sought at both the Manhattan Building's Department and the Municipal Archives in order to further document construction and disturbance episodes, however, no original plans of the extant structure or earlier buildings were available at either repository. Building permits found were limited to interior alterations to specific sections of the 55 Water Street building.

Further attempts were made to locate the original building plans for the extant building on the project site in order to determine the horizontal extent of subsurface impacts. Efforts to find archival drawings for the current building on the site that included an inventory listing any potentially useful drawings proved unsuccessful. In another effort, the systems manager at 55 Water Street was contacted and an archaeologist sent to the site. This resulted in only one useful set of building plans becoming available for review.

In addition to copying sections of the plans, which did not portray any information outside of the footprint of the building, the systems manager escorted archaeologists to the location of incoming water and outgoing sewer lines. This helped to establish the probable location of these utilities

beneath the sidewalk on Water Street. Another set of existing condition plans with partial utilities plotted was reviewed for this project (Appendix B), but these lacked most utilities other than sewer and water.

In addition, several soil borings were performed nearby in the 1930s and 1980s. Logs and summaries from these borings were acquired from the Department of Design and Construction, and were reviewed to determine existing subsurface conditions. Furthermore, the Municipal Archives possessed tax photographs of the project site from the 1930s and 1940s. These helped to establish prior disturbance

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 (NYSOPRHP), and the New York State Museum (NYSM), to determine if precontact or historical 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 LOCATION AND CONDITIONS

The project site is situated on the east side of Water Street between Old Slip and Coenties Slip, directly adjacent to 55 Water Street several blocks west of the East River (Figures 1, 2). The site is directly adjacent to Block 32, Lot 1. Specifically, the area of potential impact is limited to the sidewalk bordering the eastern side of Water Street and a small section of the south side of Old Slip adjacent to Water Street (Photographs A, B).

The precontact period and historical development of Manhattan has been influenced, in part, by existing topographic, ecological, and economic conditions. Establishing the project site's geological and ecological history is necessary toward understanding land-use history.

Manhattan Island lies within the Hudson Valley region and is considered to be part of the New England Upland Physiographic Province (Schubert 1968:10). The underlying geology, much like that of the Bronx and lower Westchester County, is made up of "gneiss and mica schist with heavy, intercalated beds of coarse grained, dolomitic marble and thinner layer of serpentine" (Scharf 1886:6-7). During the three known glacial periods, ice was sometimes as thick as 1,000 feet over Manhattan. Advancing and retreating glaciers carved, scraped, and eroded the land surface in the Northeast. With the final retreat during the Post-Pleistocene, glacial debris, a mix of sand, gravel, and clay, formed the many low hills or moraines that constitute the present topography of the New York City area. Along these low hills many rivers, streams, lakes, and ponds were formed. The constant flow of these rivers and streams as well as the corresponding rise in sea level continued to mold the landscape. Manhattan, a low lying island marked by hills, is surrounded by rivers and a large protected deep water bay, and was formed following the last of the three glacial periods.

The project site falls within 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 Square Park it plunges down below 100 feet, forming a subterranean valley.

The prevalent gneissoid formation underlying the project site is Hudson River metamorphosed rock. Manhattan 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. 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).

Historical development has altered many of the natural topographic features that once characterized Manhattan, including the early historic shoreline (Gratacap 1909:5). During the late Precontact and early Historical Periods the project site was submerged under the East River and the coastline was at the eastern side of present day Pearl Street, about one block west of the project site. By the end of the 17th century, a wharf had been constructed east of Pearl Street to allow for the creation of

Water Street. Filling the project block commenced in the 1740s. Throughout the historical period, the desire for new commercial, waterfront real estate spurred many politicians and businessmen to enthusiastically support landfilling activity along the East River. Filling episodes were also undertaken in an effort to support and maintain the waterfront along the East River as the coastline became overburdened with trash and the build-up of river silt.

PRECONTACT RESEARCH

Precontact Overview

Archaeologists have divided the North American precontact period into three distinct units, the Paleo-Indian, Archaic, and Woodland. The latter periods are generally divided into subperiods using the appellations Early, Middle, and Late. Changes in the precontact environment, the characteristics of precontact peoples, and the cultural artifacts that were left behind enable archaeologists to present a chronological framework for the precontact period in North America. What follows is a brief overview of these periods with emphasis on the characteristics of, and archaeological evidence for, each period in the New York City area.

Paleo-Indian Period (10,000 - 7,000 B.C.)

Near the end of the Wisconsin glacial age the first humans crossed into the New World via a narrow land bridge in the vicinity of the Bering Strait. These nomadic hunters, known as the Paleo-Indians, are identified by their utilization of a distinctive artifact, the fluted point. Archaeological evidence suggests that although Paleo-Indians were limited in number and traveled in small groups, they soon spread across the pristine environment of North America. Perhaps they were following the migration patterns of the game animals they depended upon for subsistence. Numerous Paleo-Indian "kill sites" have been discovered in the western and southwestern United States. In contrast, none have been recovered in the Northeast. Several camp sites have been excavated in the Northeast, however, leading scholars to suggest that seasonal patterning or perhaps territorialism commenced during the latter part of this period (Ritchie 1965: 3,9).

The environment during the Paleo-Indian period was dominated by the retreating glaciers and the change toward the deciduous woodland setting prominent in the Archaic Period. The warmer climate and the new open river valleys provided ample hunting grounds. As a result, the favored location for Paleo-Indian sites, and most other precontact sites, were well-elevated large fertile valleys close to a fresh water source. Along with the fluted point, scrapers and borers were part of the nomadic hunter's "tool kit." These tools were used to hunt and butcher mastodon, elk, caribou, bison, and other smaller mammals. A variety of these animals, dated to this time period, have been excavated in New York State, particularly in the vicinity of former glacial lakes and moraines (Ritchie 1965: 9-16).

Although Paleo-Indians were dispersed across the North American continent no human skeletal material, or artifacts such as animal hides or wood objects have been recovered. Perhaps due to the transitory nature of these people little remains of their culture but lithic material. In New York State a few camp sites have been examined (For a detailed discussion on Paleo-Indian, Archaic, and Woodland sites in New York see Ritchie 1980). The closest recorded Paleo-Indian site to the project area is Port Mobil, a small camp site, recovered in Staten Island (Ritchie 1980: 1,3,7).

Archaic Period (7,000 - 1,000 B.C.)

The transition from the Paleo-Indian period to the Archaic was marked by the availability of a larger variety of plants and small-game as the post-glacial Archaic peoples exploited the now dominant deciduous woodland environment. The decreased population of big-game animals led to the hunting of smaller game including the white-tailed deer, moose, wild turkey, and rabbit. In addition, Archaic peoples began to exploit the marine environment. Although not as mobile as the Paleo-Indians, archaeological evidence indicates that early Archaic peoples continued to travel seasonally. Their group movements, however, were within well-defined territorial boundaries and the camp sites that have been recovered indicate that they were repeatedly occupied over time.

River valleys and around other sources of fresh water were locales that could support the game animals exploited by Archaic hunters. The tool kit of the Archaic Period was expanded to include the grooved axe, beveled adz, and narrow bladed projectile point. In addition, the mortar and pestle, grinders, and various implements used for fishing, are evidence of the Archaic peoples expanded diet (fishing and increased gathering).

An increase in the number and size of archaeological sites recovered from the Archaic period suggests that the human population had expanded and that Archaic peoples were becoming more settled and therefore having a greater impact on the landscape. A result of becoming more settled, and the establishment of specific territories, was the emergence of different cultural phases. A phase has been defined "as a recurring complex of distinctive archaeological traits" representing an individual cultural group (Ritchie 1965: xvi). The Lamoka, Vosburg, and Brewerton phases are among those identified in New York State by Ritchie (1980).

A number of small multicomponent sites have been recovered in coastal New York. Like the inland sites, they are usually located near fresh water ponds, tidal inlets, coves, and bays. These locales provided abundant resources including small game, fish, shellfish, and a large variety of plants and tuberous grasses. Sites discovered in coastal areas around New York City indicate that by the Late Archaic there was a distinct reliance upon shellfish, particularly oysters and clams. No large camp site or settlement has been found within the boundaries of the five boroughs and the few Archaic period artifacts encountered within the city are isolated finds.

Woodland Period (1,000 B.C. - c.1600 A.D.)

The Woodland period is characterized by the introduction of pottery and horticultural activity, as well as the establishment of clearly defined trade networks. During the Woodland Period primary habitation sites, or villages, had increased in size and were permanent (year-round) settlements. As in the Archaic Period these sites were located near a large fresh water source (e.g., pond, lake, tributary, or river). Secondary sites, where specific activities took place (e.g., shellfish gathering and/or processing, tool making), were usually situated near the location of the resource.

The first significant and identifiable use of pottery in New York State can be traced to the Early Woodland Period, around 1,000 B.C. By the Middle Woodland Period a wide variety of stamped, impressed and cord-decorated pottery types were developed. Smoking pipes, another Woodland

innovation, reflected different cultural styles which archaeologists have been able to link to specific groups. The tool kit of the Woodland peoples expanded to include a larger variety of knives, drills, hammerstones, etc. Although some Archaic human burials have been recovered, those discovered dating from the Woodland Period suggest that more complex ceremonial burials commenced during the later period. Furthermore, this widespread mortuary ceremonialism (mound building) peaked during the beginning of the Middle Woodland and was essentially nonexistent by the close of the Period.

Although the use of cultigens was evident in many areas of North America during the Early Woodland, it was not until near the end of the Middle Woodland stage (c.800-1000 A.D.) that agriculture may have played a part in the economy of New York State culture groups. By the Late Woodland, cultigens had become an essential element in daily life. The introduction of agriculture brought about a major change in settlement patterns as larger villages, some fortified or palisaded, were established. One such site was noted by the early Dutch explorer Adriaen Block, who described seeing "large wigwams of the tribe on Castle Hill" in the Bronx (Skinner 1919: 76). With the creation of more permanent sites came the development of extensive trade networks for the exchange of goods between the coastal and inland areas.

Late Woodland Stage sites of the East River Tradition in Manhattan and other parts of southern New York have been noted on the "second rise of ground above high water level on tidal inlets," and situated on "tidal streams or coves" and "well-drained sites" (Ritchie 1980:269). Carlyle S. Smith, who studied and analyzed the distribution of precontact ceramics in coastal New York, stated that "village sites" are found on the margins of bays and tidal streams" (Smith 1950:130). Early 20th century archaeologist Reginald P. Bolton writes that "the indispensable elements in the selection of native dwelling places," were an accessible spring, and shelter from prevailing winter winds, which on Manhattan Island was found on "the eastern side of hills, or a southern exposure" (Bolton 1922:46,62,64).

Contact Period (A.D. 1600-A.D. 1800)

Much of what is known about the Contact Period has been acquired from the documentary record. Using legal documents and early ethnohistoric accounts, archaeologists have been able to learn much about the Native groups that were present upon contact with Europeans. One example is the journal of Robert Juet who traveled with Henry Hudson on his 1609 voyage. Juet provided a description of the native population encountered and the exchange of "Indian Wheate" (maize) and tobacco for beads and knives (Van Zandt 1981: 10-11).

In *Native American Place Names in New York City* (1981), Robert Steven Grumet categorized data from historical documents and the work of previous scholars in an attempt to synthesize and verify known information on Native American sites, pathways and culture groups. Grumet notes that the 1610 Velasco map used the name *Manahata* as the designation for the native inhabitants of both banks of the lower Hudson River (1981: 24). The Manhattan Indians were identified on Dutch 17th-century maps but not on many other documents. In addition, no individual Manhattan Indian was referred to by name in the documentary record. The Manhattan Indians were identified on Dutch

17th-century maps but not on many other documents. In addition, no individual Manhattan Indian was referred to by name in the documentary record.

Isaak de Rasieres reported c.1628, that the island was "inhabited by the old Manhatesen; they are about 200 to 300 strong, women and men, under different chiefs." The Wiechquaesgeck have been identified as the denizens of northern Manhattan, as well as parts of the Bronx and Westchester County. However, there is little data available to identify the "Manhatesen" who dwelt to the south, in lower Manhattan. Tradition, rather than firm evidence, has identified them as Canarsee Indians, while another, also discredited line of reasoning, suggested that they were Rechgawawancks. However, there is no 17th century documentary evidence to support this, nor even the idea that Manhattan was divided north/south between different maximal groups. It is likely that the Manhattan Indians were a sub-group of the Wiechquaesgeck, with whom they eventually combined (Grumet 1981:24-26; Bolton 1972:127).

The Manhattan and their Wiechquaesgeck relatives had few furs to trade with the Dutch. As a result, there was little motivation on either side for good relations, and New Amsterdammers probably considered the local Indians an annoyance. In addition, the sometimes cruel and often dishonest practices of European traders led to Wiechquaesgeck retaliation, which took the form of several murders between 1640 and 1642, leading to various raids and counter raids between Dutch and Indians (Grumet 1981:60-61; Kammen 1975:45-46).

The Dutch practice of trading firearms to the upriver Mahican and Mohawk, while denying guns to the Indians of the lower Hudson, left them vulnerable to attack. When a large force of Mahican or Mohawk attacked the Wiechquaesgeck and Tappan in 1643, the surviving Indians fled to the Dutch in New Jersey and Corlaer's Hook on Manhattan for protection. Governor Kieft and his advisors seized this chance to revenge themselves, and sent a force to attack the refugee camp at Pavonia (now Jersey City), massacring 80 Tappan, while another force killed another 40 Wiechquaesgeck on Manhattan. Eventually every lower Hudson native group joined in war against the Dutch, with disastrous results for European settlers. "Governor Kieft's War" ended when the Manhattan and Wiechquaesgeck sued for peace in 1644, after a series of surprise attacks on Indian villages ended in brutal massacres. Nevertheless, friction with the Dutch continued, as the Wiechquaesgeck participated in the "Peach War" (1655-1657) and the "Esopus War" (1659-1664) (Grumet 1981:60-62; Brodhead 1853:349-353; Bolton 1975:79).

These hostilities, coupled with the introduction of European diseases against which Native American populations had no natural protection, decimated Indian populations in the New York City area, and forced many groups to merge in order to maintain viable communities. The last of the Manhattans apparently left the island sometime after 1628, joining the mainland Wiechquaesgeck, where they were noted in 1680 as the *former* inhabitants of Manhattan Island (Grumet 1981:24,25).

Previously Identified Precontact Sites in the Project Area

According to Grumet the very southern tip of Manhattan was called Kapsee (Grumet 1981:68). This was described as a ledge of rocks at the southernmost point of Manhattan Island, probably in the vicinity of what is now Battery Park (Grumet 1981:17). To the north, the landform termed Ashibic

was probably a narrow ridge or ancient cliff north of Beekman Street in lower Manhattan, which was bounded by marsh to the south (Ibid.:3). In addition, "Catiemuts" was possibly a "fort or hill located near Pearl Street and Park Row," also out of the project site several blocks to the west (Ibid.:8).

Although no precontact sites were identified within the project site, NYSM Site #4060, was reported north of the project site somewhere on the east side of Manhattan near the Manhattan Bridge. It was simply described as an unnumbered village on Arthur C. Parker's map, with no detail of age, location, or size.

Although not technically precontact period "sites," archaeological excavations at historic sites in lower Manhattan have occasionally encountered precontact material (Baughner-Perlin et al. 1982:12; Karen Robinson, personal communication to Cece Kirkorian, 1989). No *in situ* habitation or other site types have been successfully recovered.

HISTORICAL RESEARCH

Historical Overview

New York City, with Manhattan Island as its commercial and locational center, has developed at a rapid pace over the past three centuries. An important factor has been the flourishing commercial waterfront and the surrounding mercantile and later industrial ventures. The expansion and development of the waterfront along the East River began in the early 17th century. Although parts of the current project area along Water Street were submerged at that time, landfilling along the East River began before the end of the 17th century and continues today. Early historical maps indicate that the waterfront near Water Street hosted small piers. These areas were eventually filled in and the newly created blocks were commercially developed.

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, a private trading company founded in 1621. 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, the Dutch traders recognized Manhattan as the strategic heart of the region. Colonization 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). These *bouwerijen* were intended to supply Company personnel with agricultural provisions, so that the Manhattan post would be self-sufficient (Bachman 1969:82-87). In addition, farm land, including a small tract north of what became Prince Street, was also designated for the "Company's Negroes" (Stokes 1926 VI: 70-72).

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 General Peter Minuit opened negotiations with the local Indians, 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). The settlement which grew up around the fort, eventually called New Amsterdam, grew slowly, and at the time of the English conquest in 1664, extended only as far north as the palisades built along present Wall Street. Many 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.

Since the Dutch first established the settlement of New Amsterdam, the growth of the waterfront has played a vital role in the history of Manhattan Island. The first public dock on the East River was

constructed in 1647 near the area of Pearl and Broad Streets (Buttenwieser 1987: 26). Ships would anchor in the river and passengers and cargo would be transported via a small boat to the narrow wooden dock. Less than twenty years later, the British, now ruling the colony renamed New York, transferred ownership of vacant (unpatented) and public (wharves, streets, and highways) land to the City of New York. In an effort to bolster trade, City leaders concentrated on developing the waterfront (e.g., the construction of the Great Dock in 1675).

Anxious to increase their colonial exports, the British constructed the Great Dock in 1675. Consisting of curved stone extensions of Coenties Slip and Whitehall Street, which together formed a large, protected wet basin two blocks outshore of the original high-water line, the Great Dock also enclosed two new waterfront blocks between Pearl and Water Streets. (Buttenwieser 1987:27)

The Dongan Charter of 1686 granted all unencumbered lands to the City of New York. In addition, this allowed the city to expand eastward 200 feet, to the low water mark in the East River. Water lots were sold with the proviso that owners must build a street and wharf along the water's edge. The area between high water, at Pearl Street, and the low water line at what is now Water Street, was built by 1687 (Ibid.:27). While the population of Manhattan was increasing, soil removed from sections where new homes were built was deposited along the lower East River bank, horizontally extending the shoreline one block to the east (from Pearl to Water Street) by 1700.

Wharves were built throughout the colonial period, the most common type of wharf constructed was made of timber. The two types of timber wharves are "crib" and "cobb." Crib wharves are made out of rough timbers that are placed in alternating rows of "headers" (running lengthwise) and "stretchers" (spanning the width). In most cases a floor is built at the base to support the fill placed within. The cobb wharf is an openwork variant of the crib wharf. It's name comes from the cobblestone fill used to fill and sink the wharf. The least common wharf is that made out of wrecked or burned ships. After securing the ship in the desired place, the framework of the hull is filled in much the same manner as the cobb wharf. While the primary function of these wharves was to provide docking space, in some cases they were later used as bulkheads for the continuing landfill along the East River. Most of the bulkheads constructed were of stone, although in some cases timber bulkheads were driven into the river bottom.

For the first two decades of the 18th century houses and stores sat on the banks of the East River adjacent to the stone bulkheads and in some cases supported by wooden stilts extending out over the water (Buttenwieser 1987: 32). It was during the 18th century that the urbanization of Manhattan Island began in earnest. Most of the landfilling that took place from 1700-1776 was conducted by private citizens (Ibid.:13). The need for more waterfront land promoted the Montgomerie Charter of 1730, which extended the boundary for development around the island to 400 feet (Ibid.:28). Waterfront construction escalated and numerous shipyards were established along the shores of the East River. As a result, the number of ships owned in Manhattan increased dramatically from approximately 60 at the turn of the 17th century to 447 by 1760, and nearly doubled to 709 by 1770 (Ibid.: 35-36). The shortage of waterfront dock space was critical.

Along with the lack of dock space, Manhattan merchants had the additional problem of having their shipping curtailed by British taxation. In the few years before the Revolutionary War, waterfront expansion was reduced by the lack of freedom in colonial trading. During the War the occupation of the harbor by the British also prevented waterfront construction and in most cases even the maintenance of the existing facilities. In addition, the population of Manhattan dropped from approximately 20,000 to 10,000 during the war years.

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 "fresh impulse and energy to American industry" (McKay 1969: 5). The China trade and open markets encouraged buying, filling, repairing, and building along the banks of the East River. In order to address the problem of the lack of dock space, the East River waterfront was filled, expanding the boundaries of lower Manhattan to South Street (McKay 1969: 7). By the end of the 18th century, the waterfront all along the East River was covered with wharves of all sizes. However, conditions in some areas were not always good.

The accumulation of refuse and natural sedimentation between wharves contributed to the problems plaguing the shipping lanes on the East River. In addition, the build-up of sewage and garbage adjacent to the shoreline was also a major problem for both sanitary and economic reasons. The piers and jettys that lined the crowded waterfront were preventing the removal of debris by the river's natural tidal fluctuations. Although dredging was conducted along the East River beginning in 1785, most of the activity took place in the vicinity of slips and wharves, leaving the channel to fill with debris (Historical Perspectives 1987: 23-24). By the end of the 19th century, dredging alone could not keep up with the accumulation of refuse.

During the early 19th century the continued growth of maritime trade made New York the most important port in the United States. Historical documents are full of requests for more docking space including an 1803 letter from Comptroller Strong to the Common Council where he states there is:

a great want of accommodations for market boats and coasting vessels . . . there being no public slips between Catherine & Rutgers slips the distance of near half a mile.
(Stokes 1918:1403)

The Randall Plan, or Commissioner's Map of 1811, established new roads for Manhattan's unoccupied and newly filled areas along the waterfront. Many coastal landowners built narrow private piers at the ends of the newly laid out streets. The area directly adjacent to the waterfront became the location for supplementary shipping activities (e.g., machine works, sail makers, ship's carpenter tool makers, iron and brass foundries and lumber yards). Between 1800 and 1820 a shipbuilding community was located along the East River from Catherine Street to Corlears Hook (McKay 1969: 69). There were numerous markets throughout Manhattan.

As 19th-century New York continued to expand in both size and population, sources for landfill were abundant. Many of the low hills on the island, e.g., Bayard's Hill at the intersection of Grand and Centre Streets, 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. Another source of fill was the immense amount of garbage generated by the inhabitants of the island.

By the mid-19th century most of eastern Manhattan had been filled to South Street. Several events occurred toward the middle of the century that had a profound effect upon the character of the Lower East Side. The first was the influx of waves of new immigrants from European countries. Second, was the change in the types of ships that came into New York Harbor.

By 1870, New York, with over ten thousand vessels moored in the harbor, had been established as one the world's preeminent seaports (Buttenwieser 1987: 56). Shipwrights, riggers, sailmakers, merchants, and blacksmiths, as well as lumber yards, and iron foundries were among the many commercial establishments crowding the riverfront. The newly created land along the waterfront in the Lower East Side became the center of the economic life of the city, while the streets further inland were lined with overcrowded tenements. The majority of the commercial activity between Cherry and South streets was directly tied to the fluctuating shipping industry. Along with the many boat builders and lumber yards, iron foundries dotted the many blocks along the shore of the East River. These industrial enterprises were needed for constant ship repairs, as well as boiler and engine work.

As mentioned above, during the first quarter of the 19th century, city officials were concerned with the overcrowded East River waterfront. "Made land" was used for new waterfront construction and landowners built long thin piers to allow deep water wharfage to ships. In many areas land was generated at the expense of harbor space. The shift from sail to steam power changed the construction of the large cargo ships. Longer, faster boats were now being used to ship goods in and out of New York. The immense investment in the new shipping was noted by diarist Philip Hone who, in 1850, wrote:

I witnessed this morning, at nine o'clock, a novel, exciting, and glorious exhibition. Three steam vessels, of the aggregate cost of more than \$1,000,000 were launched in succession from the shipyard of William H. Brown, at the foot of Twelfth Street, East River
(1927: 882).

However, these new ships could not move easily on the East River and many of the narrow piers became obsolete. Increased shipping traffic also amplified the difficulty of docking along the East River. The new longer, and, in many cases wider, ships began to use the western side of Manhattan, on the much wider, deeper Hudson River, for berth space. Although there were markets and warehouses all along the shore in the late-19th century, many of the piers on the East River were in terrible condition and insufficient for most ships.

The historical importance of Lower Manhattan's waterfront is accentuated by the fact that the South Street Seaport District is listed on the National Register. The district encompasses the blocks bounded by Burling (John Street) and Peck Slips, and Water and South Streets several blocks to the north of the project site.

By the middle of the 19th century, the core of the city's businesses and residences had expanded to the point of requiring six major markets below Chambers Street and a seventh market at Catherine Slip where a ferry to Brooklyn berthed. Fires, poor sanitation, disease, and overcrowding forced people out of lower Manhattan into surrounding districts such as Greenwich Village, Bloomingdale Village, and Haerlem Village. New lines of transportation were opened and passenger boats left from the east and west sides of Manhattan to accommodate these "commuters" (NYCLPC 1983:25).

One of the agencies created to address waterfront conditions was the Department of Docks, established in 1870. The department was granted rights and land for the construction of wharves, bulkheads, docks, piers, basins, and slips. They then instituted the McClellan Plan which resulted in the construction of a solid block and granite bulkhead wall around the southern half of Manhattan between West 61st and East 51st Streets over the course of the next sixty years. The wall was to be placed outside of the previously existing bulkhead to allow for the creation of new exterior streets (Buttenwieser 1987:73). The plan further called for building 60 to 100-foot wide finger piers outside of the wall, at right angles to the island. To help resolve the problem of sediment aggregation between slips, sewer outlets were relocated to the ends of the piers (Ibid.).

The turn of the century brought the introduction of the subway to New York City. By 1918 the original IRT system had been expanded to include a link to Brooklyn via the Clark Avenue Tunnel. The chosen route for extending the Seventh Avenue subway to Brooklyn entailed running south through lower Manhattan to a stop at Wall and Williams Street, and then heading south along William Street to Hanover Square where it veered east at Pearl Street to run beneath Old Slip.

In the mid-20th century, transportation improvements within Manhattan resulted in the construction of the East River Drive. Opened from Montgomery to East 30th Street in May 1940, the drive was eventually extended south over the ensuing decades. In the late 1960s further street improvements caused the widening of West Street from its original breadth of 30 feet, including sidewalks, to its current width of about 50 feet, excluding sidewalks. This was accomplished by razing all of the buildings on the eastern side of the street, and extending the roadbed east about 45 feet across their former locations.

Project Site History

Although some early historic maps suggest that the shoreline of Manhattan was actually east of the project site (i.e., the MacCoun 1909 reconstruction of the 1609 shoreline; Miller 1855; Viele 1874), others place it west of the project site along the eastern edge of Pearl Street (Castello Plan 1660; Miller 1695). Supporting the contention that Water Street between Old Slip and Coenties Slip was predominantly submerged in the early 17th century, a diagram of shoreline landfill episodes shows that the project site was filled between 1650 and 1776 (Kardas & Larrabee 1977:62). Stokes refines this date to sometime between 1679 and 1716. His discussion of a painting portraying the East River shoreline reports the following:

The Burgis View depicts the water front along the East River from the turn in State Street west of Whitehall to a point a little north of Catherine Street. The shore line, which, in 1679, corresponded to the north side of Pearl Street, had at the time of this

picture (c. 1716-8) been extended a full block into the river, so that the street or wharf on which the houses in the foreground of our view are aligned is the present Water Street, which, in 1679, was the low-water line. (Stokes 1922:366)

Since the 1695 *Miller Plan* shows that filling had only extended out as far east as Dock Street, which eventually became part of Pearl Street, the date that Water Street was created can be further refined to sometime between 1695 and 1716 (Miller 1695; Stokes 1922:366).

Detailed accounts of how Water Street was created are documented in the minutes of the Common Council. Apparently, it was first constructed as a wharf, parallel to the shoreline. In 1691 the Common Council directed builders to construct Water Street, between Whitehall Slip and Moore Street south of the project site, as follows:

They shall build a good and substantial stone wall, 3 ½ feet broad at the bottom 'to batter one foote inwards on the outside.' They shall protect it from the rubbing of boats by driving 'spoiles or stockaedes' every 5 ft., and these shall be 7 in. in diameter, bound together at the top by a plate. When finished this wall shall be kept in good repair by the owners of the lots fronting the street or wharf, who, nevertheless, are not to claim any property or interest in the street or wharf, which, instead, is 'to remaine to the use of the City.' The owners of this land, to fill up their respective lots, are obliged to use 'the Dock Mudd Twenty foot into the Dock before their owne houses.' The street or wharf is to be completed in 12 months. The city agrees that no building shall be built in front of these lots. (Stokes 1922:372)

When the wharf that became Water Street was created within the project site, openings - or slips - were left to allow for the passage of ships inland. As the shoreline pushed eastward, it had the effect of lengthening these slips. Old Slip, being the first in the city, was created prior to 1696, when its first reference is noted in the minutes of the Common Council (Stokes 1922:397). At that time the Common Council made provisions for a cart way from the "Slipp at Burger's path," originally a landing which eventually was transformed into Old Slip (Ibid.:397). The following year, adjacent landowners were ordered to pave around it (Ibid.:671).

In 1691 a market was established at Pearl Street near the waterfront harbor, which eventually became Old Slip (DeVoe 1862:67). Initially this small meat and produce market was only a collection of temporary sheds and tents located under the trees by the slip. However, in 1736 these ramshackle structures were replaced by an enlarged wooden building which stood one block northwest of the project site (Ibid.:67).

Coenties Slip was created through a process similar to Old Slip. As wharves were built along the shoreline, the slip became deeper and deeper. In 1691 a fish market had also been established at its foot near Pearl Street. Although no formal market structure stood on the site for many year, in the 1720s a wood building was erected for this purpose (DeVoe 1862:113).

By 1728, fill was beginning to extend the wharf along the shoreline (now Water Street) beyond its early 30-foot width, as docks and "keys" were constructed on its eastern side. These included docks

adjacent to Coenties Slip and Old Slip (Lyne 1728). After Water Street was created between Old Slip and Coenties Slip, Cruger's Wharf was constructed outboard of it. According to a previously completed archaeological study of the 55 Water Street block:

In 1739 Henry Cruger, Henry Cuyler, and their partners hired an Albany builder named Adam van Alen to construct a huge wharf of 30-foot timbers along the waterfront beginning 170 feet from Clock's corner at Old Slip [near Pearl Street] and extending southwestward parallel to Water Street. Every 20 feet a cedar post was set into the wharf for tying up ships...Cruger's Wharf was finished in 1740...and it enclosed an area that was subsequently filled between it and the shore at Water Street. In 1754 Cruger widened the Wharf about four feet. (Huey 1984:15)

While a 1735 map shows no sign of the construction of Cruger's Wharf (Buchnerd 1735), by 1742-44 it was clearly present. Also by that time, many structures had been built along the eastern side of Water Street within the project site, and along the southern border of Old Slip out to what would eventually become Front Street (Grim 1813; Figure 3).

By 1758 a theater was constructed somewhere on the block below Water Street between Cuyler's Alley and Old Slip (Stokes 1918:986). This would have stood almost directly within the project site near what is now the corner of Old Slip and Water Street. It was erected by a man named Douglass, and presented its first production in 1758 with *Jane Shore*, an early opera.

In 1744, the Common Council declared that Old Slip was a public nuisance, and that all "nuisances should be removed at the city's expense" (Stokes 1922:578). In 1774 a petition was granted to remove the old market from the foot of Old Slip, and to allow for its filling (Stokes 1922:671). By 1775, filling was complete between Coenties Slip to Old Slip allowing the creation of a new city block out to Front Street (Holland 1757; Ratzer 1766-67, Figure 4). Almost immediately upon the completion of filling the project site block, it was developed. However, since 18th century maps depict only the block as shaded, it is difficult to determine how many and where structures existed (Holland 1757; Ratzer 1766-67, Figure 4).

Old Slip remained open and used for shipping until filling began in 1784. By 1791 filling had been completed enough to allow for the passage of Front Street across it (Huey 1984:18), and by 1796 private parties had been granted permission to continue filling it at their own expense (Stokes 1922:671). It remained open for passage as far inland as Front Street until sometime between 1829 and 1836 when it was filled out to South Street (Taylor Roberts 1797; Hooker 1829; Colton 1836, Figures 5, 6).

In 1821 after Old Slip was filled to Front Street, the Franklin Market was erected on it (Hooker 1824). In 1835 the original market building burned to the ground, but it was rebuilt of brick in 1837 (DeVoe 1862:520). Although early maps place the building between Water and Front Streets (Hooker 1829; Colton 1836; Tanner 1836; Mitchell 1846; Figure 6), later maps place it between Front and South Streets at its current location (Dripps 1852; Perris 1857-60, 1859; Dripps 1867; Figures 7, 8).

The project site block was almost entirely covered by buildings throughout this period. In 1852, individual lots are depicted as developed, but a small alley way was left vacant between the buildings fronting Water Street, and those fronting Front Street (Dripps 1852, Figure 7). Cuyler's Alley bisected the block about half way between Old Slip and Coenties Slip. This layout was repeated on the Perris 1857-60 map, when all buildings on the block were shown as stone (Perris 1857-60).

By 1867 the building on Old Slip between Front and South Streets was still labeled as "Franklin Mkt." but it had a second label indicating it was part of the "First Ward Police" (Dripps 1867, Figure 8). Also by 1867, a trolley route had been established on Water Street from Whitehall Street. The line ran northeast to Old Slip, then took a sharp right turn onto Old Slip for one block, then veered left to continue northeast on Front Street. A second trolley line ran parallel to this on Front street, also veering right at Old Slip to pass the northern side of the police building (a.k.a. Franklin Market), where it then turned left to continue on South Street (Dripps 1867, Figure 8). Both lines were just north of the project site boundaries.

In 1884 the Franklin Market building was occupied by the First Precinct Police Station, a brick building (Bromley 1879; Robinson 1884, Figure 9). By this time, all of the buildings on the project block were also brick (Ibid.). In addition to the trolley lines, sewer and 12" water lines had been laid in the center of Water Street and on Old Slip to the south and north of a fire department building, described below, and a police station building. At that time the elevation at the intersection of Water Street and Old Slip was seven feet above sea level, and at Front Street it was five and a half feet above sea level (Ibid.).

Sometime between 1881 and 1884 the Hook and Ladder Company No. 15 had erected a framed structure on Old Slip between Water and Front Streets (Robinson 1881, 1884, Figure 9). Between 1884 and 1893 it was replaced by a slightly larger brick structure (Robinson 1893). Elevations along Old Slip at its intersections with Water and Front Streets remained unaltered from 1884, and the site appeared unchanged for many years (Bromley 1897, 1902, 1911; Figure 10). Between 1909-1911 the police precinct was replaced by the extant limestone building, designed by Hunt and Hunt, and now occupied by the New York City Landmarks Preservation Commission (Dolkart 1994:17). By 1916, the building on Block 32 at the intersection of Old Slip and Water Street, was labeled "Arbuckle Building," a seven-story brick building with no basement (Bromley 1916).

Twentieth century maps predating the 1960s all depict the project block as occupied by a series of four and five story brick buildings with first story stores, and more importantly, without basements (Bromley 1925, 1934, 1950, 1955, 1959; Figures 11, 12). In the late 1960s, all of the buildings on Block 32 were razed, and Water Street was widened from its original width of about 30 feet to about 60 feet, excluding sidewalks (Bromley 1911, 1967; Figure 10). By 1969, construction began on the 55 Water Street building (Huey 1984; Bromley 1974; Sanborn 1985, 1990). All of Block 32, Lot 1 was impacted by its construction (Figures 13, 14).

Previously Inventoried Historic Archaeological Sites in the Project Area

Although there are numerous historically important places in the vicinity, there are no archaeological sites in the project site currently listed on the National Register of Historic Places, nor are there any

with New York City Landmark status. A site file search at the New York State Museum (NYSM) in Albany, and the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) listed the following.

OPRHP #	Site Name and Date	Location
A061-01-0491	Municipal Ferry Pier ca. 1909	11 South Street
A061-01-0490	Battery-Castle Clinton pre 1812	Battery Park
A061-01-1282	Ronson Project Site/Dutch West India Co. Warehouse, etc. 17th-20th c.	Whitehall St.
A061-01-1272	Hist. Landfill Site 17th c.+	64 Pearl St.
A061-01-1285	Site 1 Washington St. Urban Renewal Project 17th c., 1826	West & Hubert St.

Resource types included a ferry landing, a foundry, Dutch living surfaces, and 17th through 20th century landfill. Only the first two sites listed above, the Municipal Ferry Pier and Castle Clinton at Battery Park, are currently listed on the National Register of Historic Places. None of the above sites are located within the project site boundaries.

South and just west of the project site is the Fraunces Tavern Block Historic District, designated by the New York City Landmarks Preservation Commission. The block, bounded by Broad, Pearl and Water Streets and Coenties Slip, contains mostly early 19th century buildings that escaped the fire of 1835. Eleven buildings within the district date between 1827 and 1833. Also within the district is the renovated 1719 Fraunces Tavern at 54 Pearl Street, now a museum. Although these are all standing structures rather than archaeological sites, their historic importance relates directly to the project area.

In addition to these inventoried archaeological and historic sites, much archaeological research has been undertaken in lower Manhattan which is not reflected in the inventory. Most relevant to the project site are archaeological salvage excavations completed within Block 32 when the present building at 55 Water Street was constructed (Huey 1984:17; Figures 13, 14). In addition to the large number of artifacts found in the remaining landfill within the block (most of the block has been impacted by foundation excavations and little remained by the time archaeologists were permitted to proceed), the original log crib footing under the northeast end of Cruger's Wharf, dating to 1740, was visible (Ibid.:18; Figure 14). Cribbing extended 175 feet southeast from Water Street along the original line of Old Slip. Artifacts within the landfill were able to address issues regarding colonial trade patterns and waterfront development (Ibid.:23).

Elsewhere in lower Manhattan, archaeological research at nearby Block 31, bounded by Pearl, Wall, and Water Streets and by the south lot line of Lot 11, revealed that the site possessed landfill associated with a series of water lot grants dating to 1694-95, and some of the earliest commercial activities associated with the waterfront in that area. By the middle of the 18th century and into the early 19th century, the block was mixed residential, with a cluster of chemist/druggists, artists and

small scale merchants (Louis Berger & Associates 1987:11). The block was eventually used as brokerages and for warehousing; by the 1820s it was all commercial.

Stage I testing performed at the site exposed extensive yard deposits, middens, privies, wells, cisterns, and house and outbuilding foundations. The rear yard areas were concentrated within the center of the block. Deposits along the street fronts were destroyed by late 19th and 20th century construction. Most of the deposits dated between 1780-1820. Home lot and commercial activities were reflected in the archaeological deposits (Louis Berger & Associates 1987:4).

In addition to the above inventoried sites, the NYCLPC generated a study of archaeological resource potential for lower Manhattan, identifying specific site types by designated time periods (NYCLPC 1983). Although no specific sites were depicted within the project site, the NYCLPC study identified the previously discussed market at Old Slip, dating from 1691 to 1780, and the Coenties Slip Market, a fish market operating from 1691 until 1781. Both were located at the foot of their respective slips near Pearl Street, about one block west of the project site (NYCLPC 1983:96).

ARCHAEOLOGICAL POTENTIAL

Precontact Resources

When assessing site potential for Native American resources archaeologists rely on several indicators: past environmental features of the site landscape, ethnographic accounts, published archaeological reports, and predictive models based on precontact settlement pattern data. There are ethnographic accounts and archaeological material to document the presence of Native Americans in Lower Manhattan. As reported in Bolton, Skinner and Parker's works, the southern tip of Manhattan, at the confluence of two major water systems, was undoubtedly exploited by pre-Colonial inhabitants for shellfish harvesting and habitation. West of the site, near Pearl Street where the c.1600 shoreline ran, early chroniclers reported abundant shellfish remains and speculated that the area functioned as a canoe landing (Geismar 1986:7).

The preservation of precontact sites in an urban environment is rare due to the fact that later historic development often disturbs or destroys such sites. This is particularly true in lower Manhattan where development of an urban landscape has been occurring for over three hundred years. However, some precontact material has been recovered from archaeological excavations in lower Manhattan in recent years. In 1980 during the excavation of Stone Street, as part of the Stadt Huys block, aboriginal pottery and lithics were found in the lowest levels of the excavation (Baugher-Perlin et al. 1982:12). In the later Broad Street field investigation led by Joel Grossman, an *in situ* Contact period feature was found in direct association with the Dutch West India storehouse (Karen Robinson, personal communication to Cece Kirkorian, June 27, 1989). These artifacts are evidence of Native American occupation, but they do not represent verifiable sites.

On the New York City Landmarks Preservation Commission's "Predictive Model" of precontact land use - based on the known availability of resources, distances to fresh water and established regional models of settlement and subsistence - the project site is not in a zone marked as sensitive. Because the site was under water throughout the historic period, it is not likely that the project site directly experienced any extensive occupation or use during the precontact period. Subsequent intensive development over the last 300 years - filling and construction episodes detailed in this report - would have destroyed any of the scant identifiable traces of a possible precontact presence.

Historic Resources

- *Residential Dwellings*

Clearly, archaeological research in lower Manhattan has shown that residential neighborhoods have the potential to yield important information on former occupants. Although several 19th century sites have been archaeologically studied in lower Manhattan such as 64 Pearl Street, 175 Water Street, 209 Water Street, and Old Slip, these do not address the borough's general settlement patterns or land use (NYCLPC 1983:14). The expansion of city services to developing areas and the differences in availability to rich and poor or commercial and residential neighborhoods is poorly understood. Foundations, builder's trenches, and yards are potentially sensitive features from home-lot sites.

Therefore, residential yards and features throughout Manhattan are considered a potentially important historical resource toward understanding the issue of community development and expansion.

Concentrations of historical archaeological resources relating to dwellings 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' 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.

The earliest buildings in the project area were those along the western side of the early 30-foot wide Water Street wharf. Sometime between 1735 and 1743-44 a series of structures, presumably residential dwellings, were built along the eastern side of Water Street within the project block. In 1857 these were depicted as stone structures (Perris 1857-60), and by 1884 these had clearly been renovated or replaced since the project site contained only brick structures (Robinson 1884, Figure 9). Each of the later buildings had a store at street level.

The ca. 1740 dwellings within the project site all fronted Water Street. Shaft resources related to early residential episodes are typically found behind dwellings in back yards. For Block 32, Lot 1, these types of resources would have probably been deposited mid-block behind the dwellings where an alley once ran between the buildings fronting Water Street and those fronting Front Street. This area has since been completely impacted by the construction of the present 55 Water Street building. Directly within the project site, only the front of one of these dwellings stood. Foundations, side yards, and possible builders' trenches may have been sealed beneath levels of fill and slab foundations from later structures.

• *Landfill and Landfill Retaining Devices*

Archaeological research in lower Manhattan, and particularly on Water Street, has shown that landfill can be a potentially important resource. In their 1981 study of the 175 Water Street Block, Soil Systems, Inc. (1981) map research showed that the block was filled between 1730 and 1766-67. The Dongan charter of 1686 permitted filling to the low water mark, and after this, city ordinances regulated the granting and filling of water lots (Soil Systems 1981:3). The Montgomery Charter of 1731 extended the landfill 400 feet below the low water mark, which required the creation of a bulkhead or dock and backfilling. Boats and other items were used for fill.

In another study of a parcel directly west of Water Street, field investigations at Block 71 between John, Front, Fletcher, and Water Streets recovered a Merchant ship in the landfill. In 1736 water lots were granted to merchants, and they were filled by 1773. The ship dated to the late 17th or early 18th century, and was discovered outside of the backyard area. This block is reclaimed land located on the fringe of the South Street Seaport Historic District, which, as described earlier, is on

the National Register of Historic Places (Soil Systems 1982:2). Preliminary documentary research verified the block's commercial history, tying it to the mid-to-late 18th century development of New York City. Background research chronicled the backyard sections of the lots and determined that this was a predominantly mercantile area with china and glass shops as well as warehouses (Ibid.:5).

For about the past twenty years archaeologists have focused on research documenting changes in urban landfill and the growth and development of the urban waterfront. These two issues have important implications for our understanding of the process of urbanization. The majority of the research on these types of sites has been conducted within the boundaries of New York City, with Manhattan receiving most of the attention because of the intensive development currently occurring on the island. Beyond increasing our knowledge of Manhattan's development, archaeologists must also be interested in the possibility that information from these archaeological resources might cast light on the process of urbanization in general. This might be done through comparison of data from sites located in different cities and associated with different time periods.

Water Street is located entirely on an area of landfill. The Castello Plan, depicting the year 1660, clearly shows the East River shoreline of Manhattan, with Pearl Street as the easternmost dry land (Castello 1670). Fill operations had already begun to create building lots on the east side of Pearl Street, and during the last decade of the 17th century, landowners at different locations along the *eastern* side of Pearl Street were required to "build a wharf" 30 feet wide behind their properties for use as a public street, which later became Water Street (Stokes 1922:366, 382, 395-396).

Historical atlases from the mid-19th century on show Water Street as originally 40 to 50 feet wide. Currently, Water Street is approximately 90 to 100 feet wide within the project site. The street widening completed in the 1960s, facilitated by a general replacement of 19th-century structures, appears to have taken this additional land from lots on the eastern or shore side of Water Street. This swath was covered by structures from the 18th century onward, none of which had basements portrayed on maps and atlases. However, tax photographs taken in the 1930s and 1940s, now on file at the Municipal Archives, showed the pre-1969 buildings on the project block with partial basements (Manhattan Tax Photographs A-17). The potential impacts of these are discussed below.

Archaeological excavations at the 55 Water Street block in the 1960s found extensive artifact deposits within the landfill. Somewhere near the corner of Old Slip and Water Street, Ted Kazimiroff reportedly found a wine bottle with an A. SCHUYLER seal, in addition to many other significant objects. Paul Huey of the New York State Office of Parks, Recreation, and Historic Preservation, who undertook salvage excavations at the site, stated that it appeared that significant strata appeared to continue westward under Water Street (personal communication December, 2000).

When Huey excavated the 55 Water Street block, he found that subsurface stratigraphy from the surface down contained roughly the following deposition (depths were not provided):

- 1) a thick level of brown sand and fill
- 2) a small pocket of blue clay
- 3) a thick layer of dense black clay
- 4) a thin layer of white sand
- 5) a moderately thick level of dense grey clay
- 6) wood
- 7) a moderately thick level of grey sand
- 8) red sand
- 9) red clay

According to Huey:

Most noticeable in the soil profile was the reddish sand that represents the original river bottom. The same natural reddish sand deposit was visible to the northwest in the construction cut along Water Street, closer to the original shore and where the upper surface of the red sand had sloped up to 9 feet 6 inches above the datum level measured from the base of the log cribbing...The gray sand dates to probably ca.1650-ca.1700 and represents deposition on the harbor bottom while the shore line was expanding from Dock Street to Water Street. Above this, the dense gray clay dates probably ca. 1700-ca. 1740, or until Cruger' Wharf was constructed if not slightly later. The wood chips deposited on the surface of this layer probably date from this construction...The next deposit is dense black clay and in part represents the gradual filling of the block inland from Cruger's Wharf, ca. 1740-ca. 1765 or later. These two layers, the dense gray clay dating from about 1700 to 1740 and the dense black clay dating from about 1740 to 1765, yielded a useful sequence of artifacts. (Huey 1984:18-19)

Within the deeper levels, which predated filling, numerous bottle, ceramic vessels, pieces of ships' rigging, leather shoes, and other objects were found. These were presumably lost or discarded overboard as part of the typical waterfront activities (Huey 1984:23).

The upper levels just below grade contained brown sand and fill. According to Huey, this level contained artifactual material dating from about ca. 1775 to 1800, based on the artifacts (personal communication, December 2000). Artifacts included:

- Chinese porcelain
- Jackfield-type redware
- coarse salt-glazed stoneware (none with post-1800 Albany slip glaze)
- some burned or partially melted clay pipes of a style from the 1780s
- plain creamware (one sherd with a feather edge pattern)
- iron concretions
- delft tiles

- mottled brown glazed English buff-bodied ware (ca. 1720s)
- white salt-glazed stoneware
- and hand-blown wine bottle bases (body diameters of 3 ½ and 4 3/8 inches).

Conceivably, since the brown sand and fill level within Block 32 yielded abundant artifacts dating to the ca.1775 to 1800 period, if this level exists within the project site, it may also yield additional important materials.

Documented Disturbance

Old Slip. Although the IRT Seventh Avenue line runs beneath Old Slip, its construction probably did not cause subsurface impacts to the project site. According to Robert A. Olmsted, former Transit Authority Engineer and Chair of History and Heritage of the Metropolitan Section of the American Society of Civil Engineers, the Clark Street tunnel was built between 1914 and 1919 (personal communication, December, 2000).

Since the War Department required the top of the Clark Street tunnel to lie at least 45 feet below mean low water at the pierhead line, construction of the subway beneath the project site entailed shield tunnel boring rather than the cut-and-cover method (Olmsted 1995:8). The shield method causes disturbance to a discrete area limited to the face of a movable cylinder slightly larger than the finished tunnel. The land approach sections of the tunnel were also built by the shield method, with access on the Manhattan side allowed through a steel-lined construction shaft at Front Street (Olmsted 1995:8). The access point is now a ventilation shaft and emergency exit, and is visible directly in front of the NYCLPC building, formerly a police precinct, in the center of Old Slip (Photograph D). Shield tunneling continued west of Water Street to Pearl Street, where cut-and-cover construction was then employed.

In order to avoid potential impacts to the precinct building, the east and west bound tunnels were built on either side of the structure's foundation. The tunnels, each 17.6 feet in diameter, lie deeply buried beneath Old Slip (Olmsted 1995: Profile Old Slip-Clark Street Tunnel). At the intersection of Front Street and Old Slip, the track level inside the tubes is 40 to 42 feet below grade, indicating that the top of the tunnel is about 25 feet below grade. The track level at Water Street is about 35 feet below grade, with the top of the tunnel at about 18 feet below grade. Even if impacts from tunnel boring extended another three feet outside of the tunnel's outer shield, it would have left an area of 15 feet above it relatively undisturbed. The advantage to shield boring, from an archaeological perspective, is that it was deep enough to avoid impacts to relatively shallow potential cultural resources.

An undated, untitled plan of the project site showing the location of sewer and water lines was provided by the development team (Lowell and Belcher; Appendix B). This showed a four-foot circular sewer running through the center of Old Slip. At about 75 feet east of the corner of Old Slip and Water Street, the line veered southeast to extend under the sidewalk for about 75 feet. At this point, about 150 feet east of Water Street, it angled to the northeast and extended back out from under the sidewalk into Old Slip. The top of the sewer was shown at five feet below grade, and the

invert - or bottom - was about nine feet below grade. Its installation caused impacts to this discrete location extending at least nine feet below the sidewalk surface.

No other utilities were shown beneath the sidewalk, but, as noted, the plan only plotted sewer and water lines (Ibid.). However, about 50 feet east of Water Street, a light pole, and two fire hydrants were noted within the sidewalk, close to the curb line. Impacts from each of these probably extend at least five feet below grade (Office of Lower Manhattan Development 1976:85).

Water Street. As previously mentioned, there were a series of four and five story buildings covering all of the project site prior to the extant building's construction in the 1960s. The sidewalk in front of 55 Water Street crosses the former locations of the fronts of these buildings. While the maps and atlases do not depict any basements beneath these buildings, tax photographs taken in the 1930s and 1940s indicate otherwise (Manhattan Tax Photographs A-17). The photographs, which were not clear enough to reproduce for this report, showed five-step landings leading up to the entrances of each building on the Water Street side of the block. Separating the steps between each building were Bilco doors leading to subterranean basements. However, the photographs did not show how deep these basements were. Presumably they were rather shallow since 20th century atlases failed to record them as full basements. It is assumed that they would have impacted at least the first five feet below current grade.

At present there are a number of utility lines running beneath Water Street which would have adversely impacted potential buried archaeological resources in some areas. A 1976 study of Water Street access and development documents the approximate location and impact of subsurface utilities (Office of Lower Manhattan Development 1976:77-88). First, it documents how Water Street was widened from 40' to 90' as part of a plan to relieve traffic, build middle income housing, and create office space and parking facilities (Ibid.:7). Second, the report details how utilities were upgraded and realigned as part of this plan. Sewer, water, electricity, steam, and telecommunication piping and ducts were all affected.

Beneath the surface of Water Street, trunk sewers, which tend to be larger than collector sewers, operate on the gravity flow system. Their lowest elevation, or invert elevation, has to allow for the flow of liquid waste. Buildings are connected to these sewers with pipes ranging in diameter from four to 12 inches, and occasionally larger (Ibid.:77). These collector sewers are generally located in the middle of the street. Rerouting sewers in this area was particularly difficult because the existing sewers had flat gradients and all were *close to the street surface* (Ibid.).

Electrical cables are usually constructed in groups of two or more that are known as banks. These are typically two to four-inch steel pipes in four inch concrete or tile ducts. Sometimes banks can range in size from about 1 ½ feet square to 2 ½ feet square. Manholes to access these are usually six to eight feet square, but can be up to eight by 15 feet (Ibid.:79). In addition, telephone and communication cables, operated by the Empire City Subway Company (ECS), run beneath the streets. Trunk cables are beneath Water Street, and can range in size from 2 ½ inch piping to four inch ducts. Older duct banks can generally be found under streets two to three feet from the curb with four feet of cover, and under electrical distribution systems that supply street lights and signals. Newer banks are usually under two feet of cover (Ibid:83). When new facilities were installed by

the telephone company to link to their central office at Broad and Water Street with a new office elsewhere, 120 new cables were proposed for Water Street (Ibid.).

Water systems in Water Street include a 20-inch main, which is typically found under four feet of cover (Office of Lower Manhattan Development 1976:85). Buildings are connected to mains with pipes ranging from small sizes to 12-inches in diameter (Ibid.). High pressure water mains, designed to service hydrants, include a series of 12 to 20-inch distribution pipes, and are connected to hydrants by eight-inch pipes. These are typically buried under five feet of cover (Ibid.). Furthermore, a 24-inch steam main and a 24-inch gas main both run beneath the street. Service to individual buildings are through pipes ranging from two to 16-inches for steam, and one to six inches for gas (Ibid.:88).

Excavations for the installation of these utilities would most probably have extended not more than one to two feet beyond the diameter of the utility pipe or conduit, both horizontally and vertically. Utility plans and profiles of other sections of Water Street indicate that the earlier (pre-widening) lines ran from depths of approximately two feet to as much as seven feet below grade (WPA 1937).

The undated, untitled Lowell and Belcher plan of the project site depicting the location of the existing sewer and water lines (Appendix B) showed a four foot sewer line and 20 inch water main in the center of Water Street, each outside of the existing curb line and well within the street bed. Minimal utilities are shown beneath the sidewalks outside of the footprint of the 55 Water Street building, but a note on the plan stated that gas, electric, steam, telephone, and ECS ducts had not been mapped (Ibid.). Regardless, two fire hydrants were shown within the sidewalk, adjacent to the curb. The first was situated just south of the intersection of Old Slip and Water Street, close to the curb line. The second was located approximately 175 feet south of Old Slip (Ibid.). The impacts from these are each at least five feet deep, the depth of high pressure water pipe connections (Office of Lower Manhattan Development 1976:85). Unfortunately, the plan did not show from where these connections were made.

The plan also shows two telephone manhole covers, one about 25 feet south of Old Slip, and the other about 33 feet south of Old Slip (Lowell and Belcher; Appendix B). Both are located half way between the Water Street curb line and the footprint of the 55 Water Street building. Manholes for telephone lines can range in size from six by nine by nine feet for older ones, to 14 by 17 by 21 feet for newer ones, and are typically located under two feet of cover (Office of Lower Manhattan Development 1976:83). Since these are probably newer manholes installed in conjunction with the need to service the newly built high-rise at 55 Water Street, the larger area of impact is assumed. Telephone lines are clearly connected from these two manholes to the building, and are probably also buried beneath about two feet of cover (Ibid.).

An inspection of the basement of 55 Water Street helped to identify the location of incoming and outgoing sewer and water lines (February 21, 2001). At that visit, the 55 Water Street systems manager was able to provide plans of interior conditions of the building, and the locations of these utility egress points. Unfortunately, copies of these plans were not available for inclusion in this

report.¹ These plans and on site observations in the field determined that a water main and sprinkler lines entered at the southwest corner of the building near Vietnam Veterans Plaza, and that another water main and sewer line entered the building near the intersection of Vietnam Veterans Plaza and South Street. Both of these utility lines are far south of the project site and would not have caused impacts in the project site.

Elevations at the intersection of Old Slip and Water Street have remained consistent. As early as 1884 the elevation at this intersection was reported as seven feet above sea level (Robinson 1884, Figure 9). The elevation at the same intersection is currently seven feet, two inches, indicating only a two inch raise in grade, undoubtedly from repaving (Sanborn 1990).

The analysis of soil boring logs helps to elucidate subsurface conditions in the vicinity. One soil boring was performed near the project site in 1982, on the east side of Water Street at the western edge of the sidewalk, 19 feet south of Old Slip. The log was made available by the City Bureau of Subsurface Exploration (City of New York Department of General Services 1982:1396). The subsurface stratigraphy here was as follows:

Boring #2	
<u>Surface elevation 6.0'</u>	<u>Depth Below Grade</u>
Concrete and gravel	0' to -6"
Fill: brown sand, silt, trace gravel, cinders and brick	-6" to -7.0'
Brown sand, trace silt	-7.0' to -26.5'
Water	-11.5'

An additional boring taking from the west side of Water Street just south of Old Slip in the 1930s had similar results:

Boring #349	
<u>Surface elevation 8.3'</u>	<u>Depth Below Grade</u>
Cellar	0' to -6.7'
Fill: sand and brick	-6.7' to -19.3'
Medium fine sand	-19.3' to -36'
Sand and Clay	-36' to -40'
Rock	-40'

Within Old Slip itself, a boring was taken about 25 feet north of the project site just east of what is now the eastern boundary of Water Street and between the two subway tunnels. This revealed the following (Office of the President of the Borough of Manhattan, 1937: Rock Data Vol. 1, Sheet 1):

Boring #123

¹The plans are extremely oversized. Small copied sections of the drawings would not have been illustrative without an indication of location and placement within the 55 Water Street building. In addition, the systems manager did not feel comfortable having the original drawings leave the building to be blueprinted.

Boring #123	
Surface elevation 5.5'	Depth Below Grade
Fill	0' to -5'
Fine sand and gravel	-5' to -20'
Fine sand	-20' to -33.5'
Mica Schist	-33.5'

The top six inches within the project site were disturbed when the existing sidewalk was constructed at 55 Water Street in the late 1960s. Furthermore, discrete locations were probably disturbed up to 1 ½ feet below the surface where excavations for root-balls were undertaken for the existing tree plantings (Photographs B, C).

The footprint (basement) of the building at 55 Water Street extends west beneath the eastern portion of the project site (see Figure 2). Although the building appears to terminate at street level at the plaza's eastern boundary, its basement extends out to the west toward Water Street, up to the building line of the southern half of the building, which is a 53-story tower (see Figure 2). Therefore, the eastern portion—the majority of the site—is completely disturbed by the basement. This leaves a more narrow area, between the edge of the basement and the Water Street curb, which requires further consideration.

The construction of the 55 Water Street building was horizontally confined by metal sheeting driven below grade at the extant structure's edge (Figure 13). Although an exhaustive search for building records showing the horizontal extent of impacts was conducted, none could be found. Therefore, only an assumption of impact around the building's perimeter can be made. Outside of its foundation, construction within the sheeting probably caused little (less than two feet), if no, impact, leaving the western portion of the plaza potentially undisturbed and archaeologically sensitive in some areas.

As stated above, at least five feet below grade was probably impacted by earlier building basements. Most utility lines - gas, electric, telephone, steam - were likely buried within this five foot deep area of impact (Office of Lower Manhattan Development 1976:77-88). Only larger documented telephone manholes, about 14 by 17 by 21 feet in size, would have caused impacts beneath this five foot impact area (Lowell and Belcher; Appendix B).

Historic Archaeological Potential

The smaller, western portion of the project site may be sensitive for historic period landfill, and possible domestic remains from the ca.1740 dwellings which were built on the block where impacts were not documented (Figure 15).

Each of the soil borings indicate that beneath the concrete and gravel, or beneath the cellar in the case of the boring taken from the west side of Water Street, lies a level of fill. The brown sand and fill level reported from the 1982 boring, taken closest to the project site, extended from six inches to seven feet below surface. On Water Street, the assumed depth of prior impacts extends, in most places, only five feet below the surface. The description of this level roughly matches Huey's

characterization of the ca. 1775 to 1800 fill level observed on Block 32, which he described as brown sand and fill (Huey 1984:18-19).

Documentary research has clearly demonstrated that except where deep manholes for telephone lines are located, the project site is potentially sensitive as follows: for late 18th century fill from about five feet to seven feet below grade on Water Street (the basements of the earlier buildings on the project site impacted to a depth of at least 5 feet), and from about 6" to seven feet below grade along Old Slip - where utilities have not caused deeper disturbance (this part of the project site has never been occupied by any structures that would have caused any significant disturbance). See Figure 15 for a depiction of areas of potential sensitivity. In addition, beneath this depth are levels sensitive for even earlier fill, for the 1690s wharf that was originally Water Street, and for the section of the wharf that acted as a retaining wall to allow for the creation of Old Slip. Furthermore, evidence of the ca. 1740s dwellings which fronted Water Street may also be present. These areas are described in detail under "Conclusions and Recommendations."

CONCLUSIONS AND RECOMMENDATIONS

This Stage 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 still possess their integrity. Background research included extensive documentary and map research, as well as interviews with archaeologists previously active in the immediate vicinity.

The precontact archaeological potential of the project site is almost nonexistent. At the time of European Contact, the project site was outboard of the East River shoreline. There may have been periods prior to that time when the water table was lower and the project site was drained and available for exploitation. However, documentary research indicates that the coastal area in lower Manhattan was rocky in places and not necessarily ideally suited for precontact habitation. Furthermore, inundation, tidal action along the sandy shore, and waterfront dredging along the submerged project block shoreline may have impacted any fragile precontact remains. It is highly unlikely that any precontact remains, if they ever existed on the site, would have survived subsequent tidal action and dredging episodes. 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.

Previous archaeological research on the 55 Water Street block, as well as other similar projects in lower Manhattan, proved invaluable in assessing historic sensitivity for the project block. Documentary research and soil boring log analysis found that the western portion of the project site outside of the 55 Water Street foundation is potentially sensitive for a variety of historic resource types which include (see Figure 15):

DEPTH	RESOURCE	LOCATION
6" to 7' below grade	Late 18 th century fill	Old Slip
5' to 7' below grade (excluding manhole sites)	Late 18 th century fill	Water Street
7'+ below grade (excluding manhole sites)	Mid 18 th century fill	Water Street
7'+ below grade (excluding manhole sites)	1690s Wharf that was originally Water Street	Water Street
7' + below grade (excluding manhole sites)	the section of the wharf that acted as a retaining wall to allow for the creation of Old Slip	Old Slip/Water Street
7' + below grade	the ca.1740s dwellings which fronted Water Street when it was a wharf	Water Street

Each of these resource types could potentially be impacted by the proposed project depending on the location and depth of subsurface impacts. Negative impacts could occur if disturbance extends into potentially sensitive levels, as described above. Conversely, negative impacts may be avoided if disturbance is restricted to the area above the potentially sensitive strata as shown for Old Slip and Water Street on the previous table and as shown in Figure 15.

If excavation is anticipated to occur to a depth that would impact the potentially sensitive areas of the project site, Stage 1B field investigations are recommended to further assess whether potential archaeological resources will be impacted. Field work should be completed when proposed actions have been refined, so that the proposed horizontal and vertical extent of impacts can be compared to the depths of potentially sensitive strata. A proposal for field investigations should be created in consultation with the NYCLPC. All fieldwork should be undertaken as per NYAC Standards, 2000.

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Photograph A: Facing northeast to 55 Water Street from Coenties Slip/Water Street intersection.



Photograph B: Sidewalk on east side of Water Street directly in front of 55 Water Street, facing north. Note existing tree plantings along sidewalk.



Photograph C: Facing west towards Water Street from south street and Old Slip. Note existing tree plantings along sidewalk.



Photograph D: Facing east from the Old Slip and Water Street intersection to former Police Precinct building, now occupied by the New York City Landmarks Preservation Commission. Note the subway vent mid-picture.

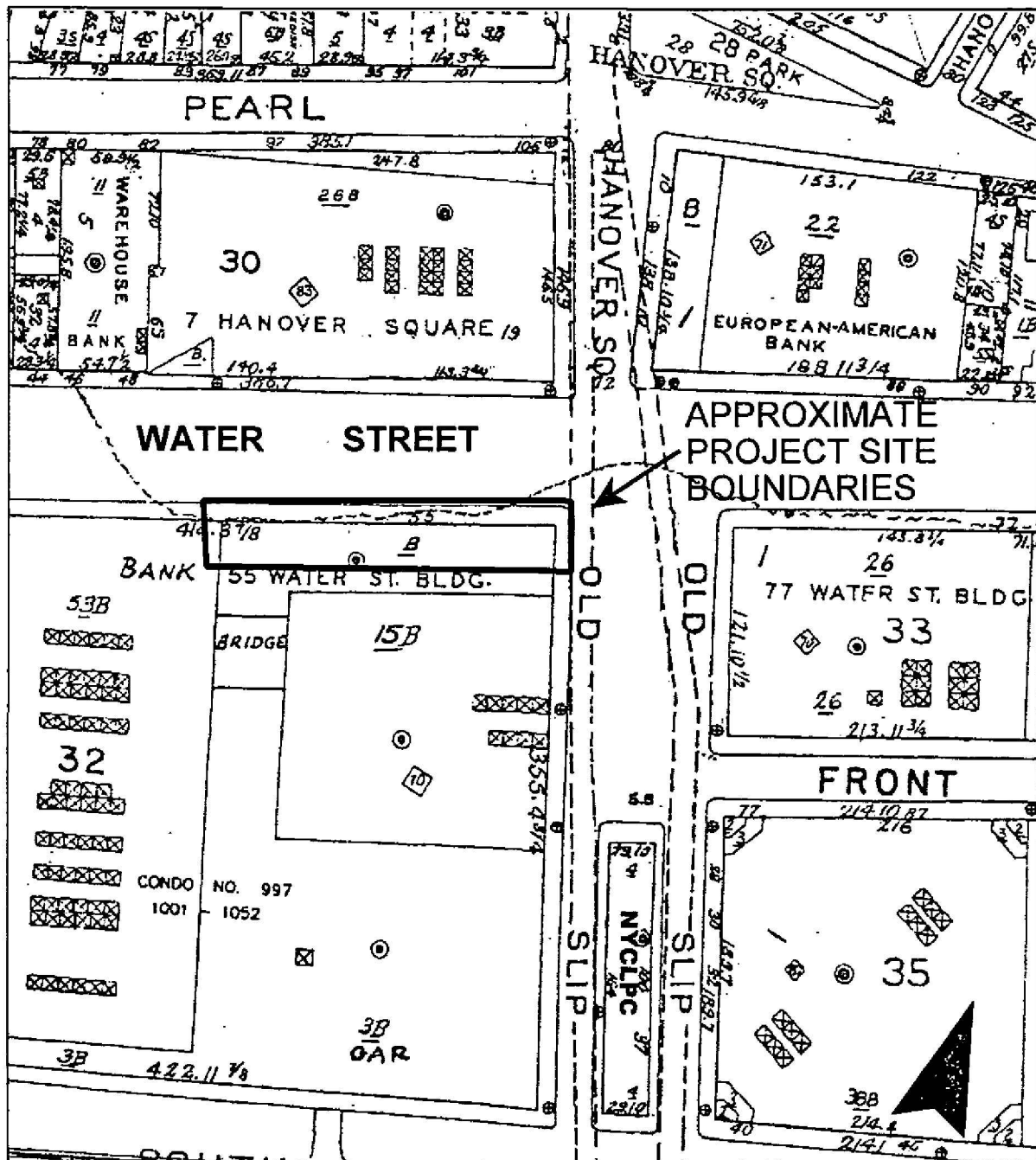


FIGURE 2

Project Site Boundaries
Base Map: Sanborn, 1999

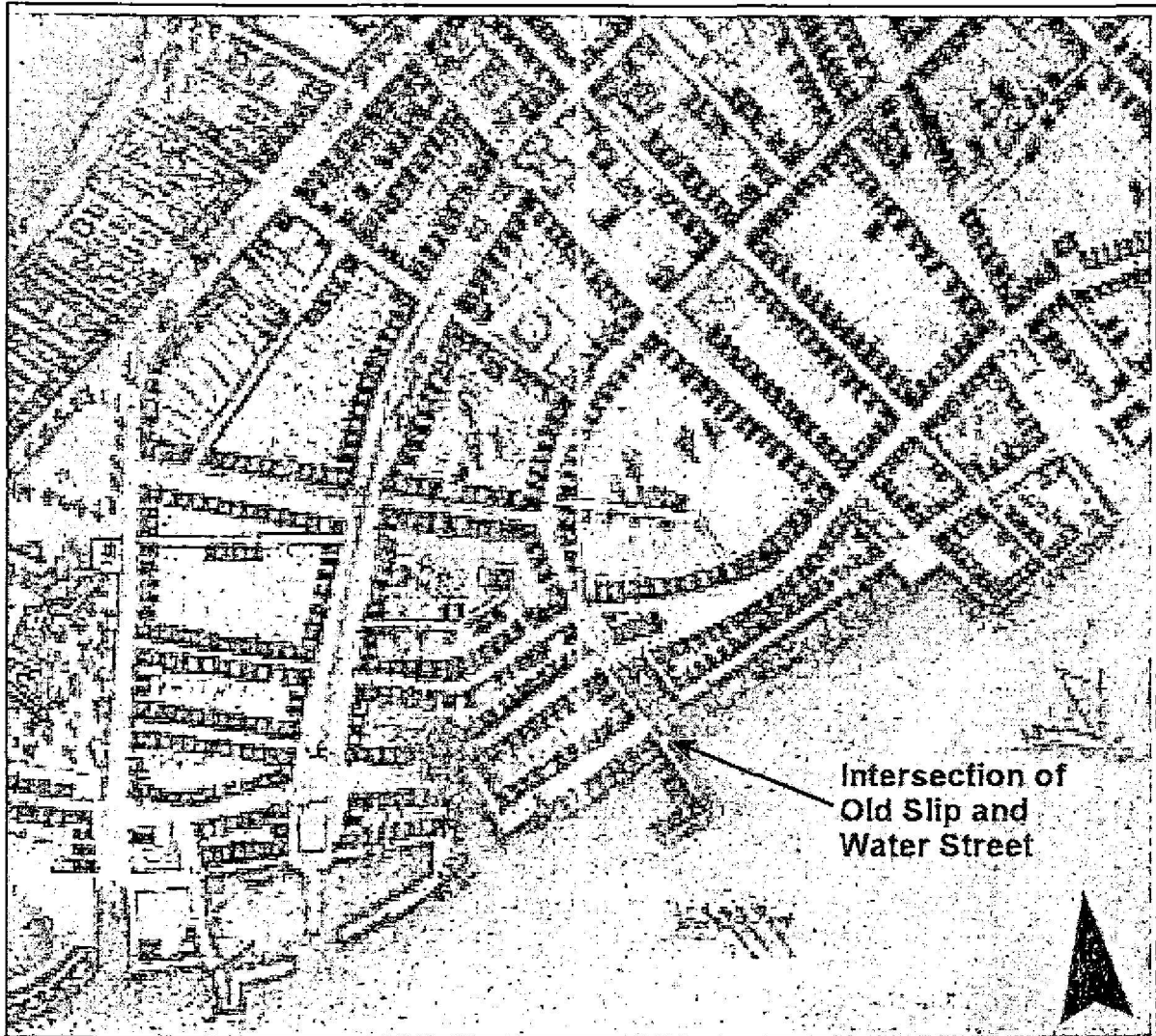


FIGURE 3

*A Plan of the City and Environs of New York as they were in the years
1842 1843 & 1844
Grim 1813*

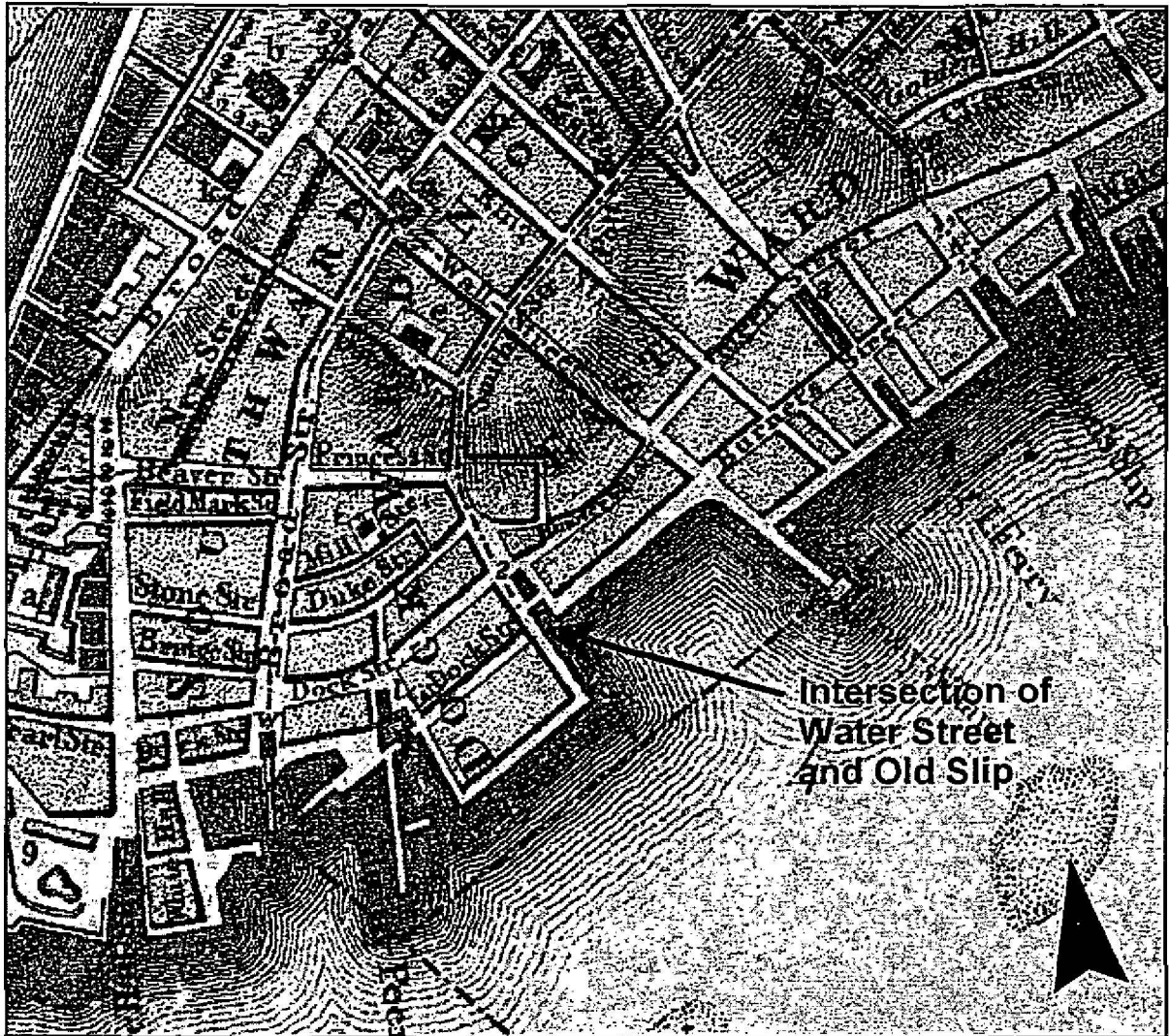


FIGURE 4

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

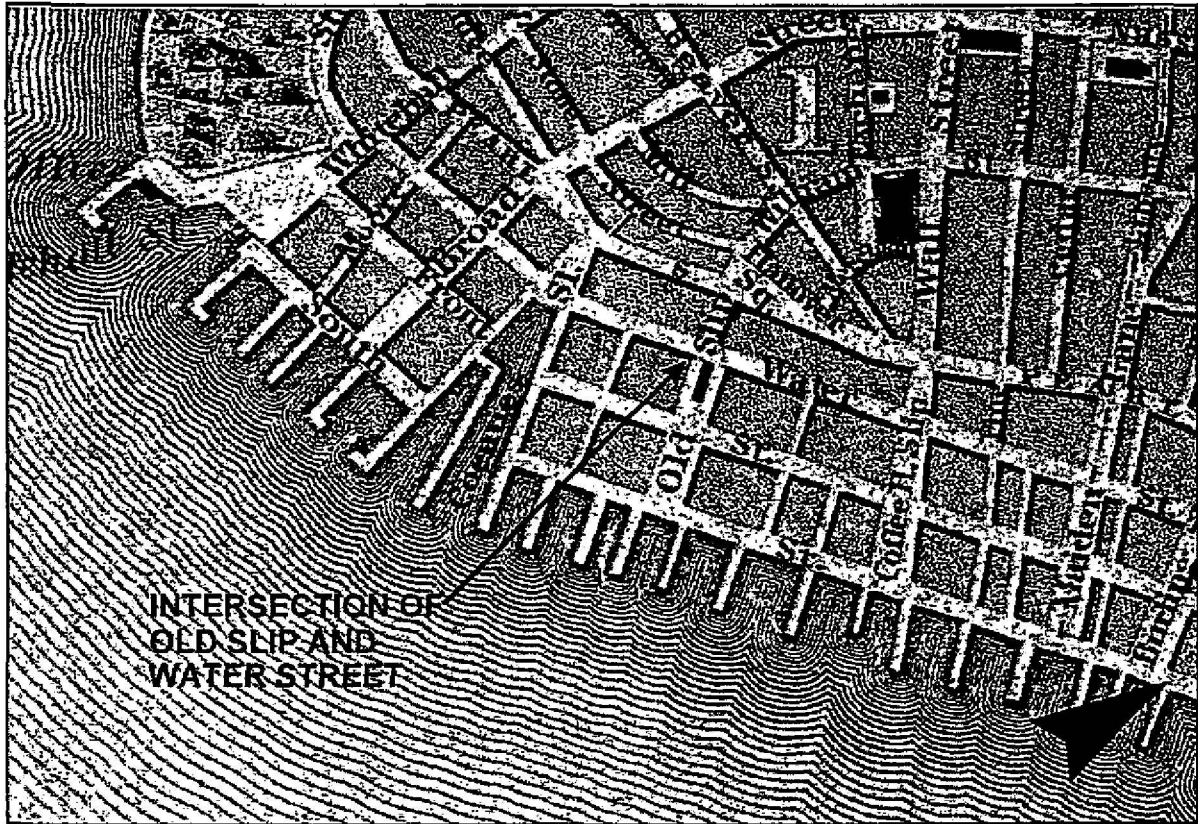


FIGURE 6

Topographical Map of the City and Country of New-York, Colton 1836

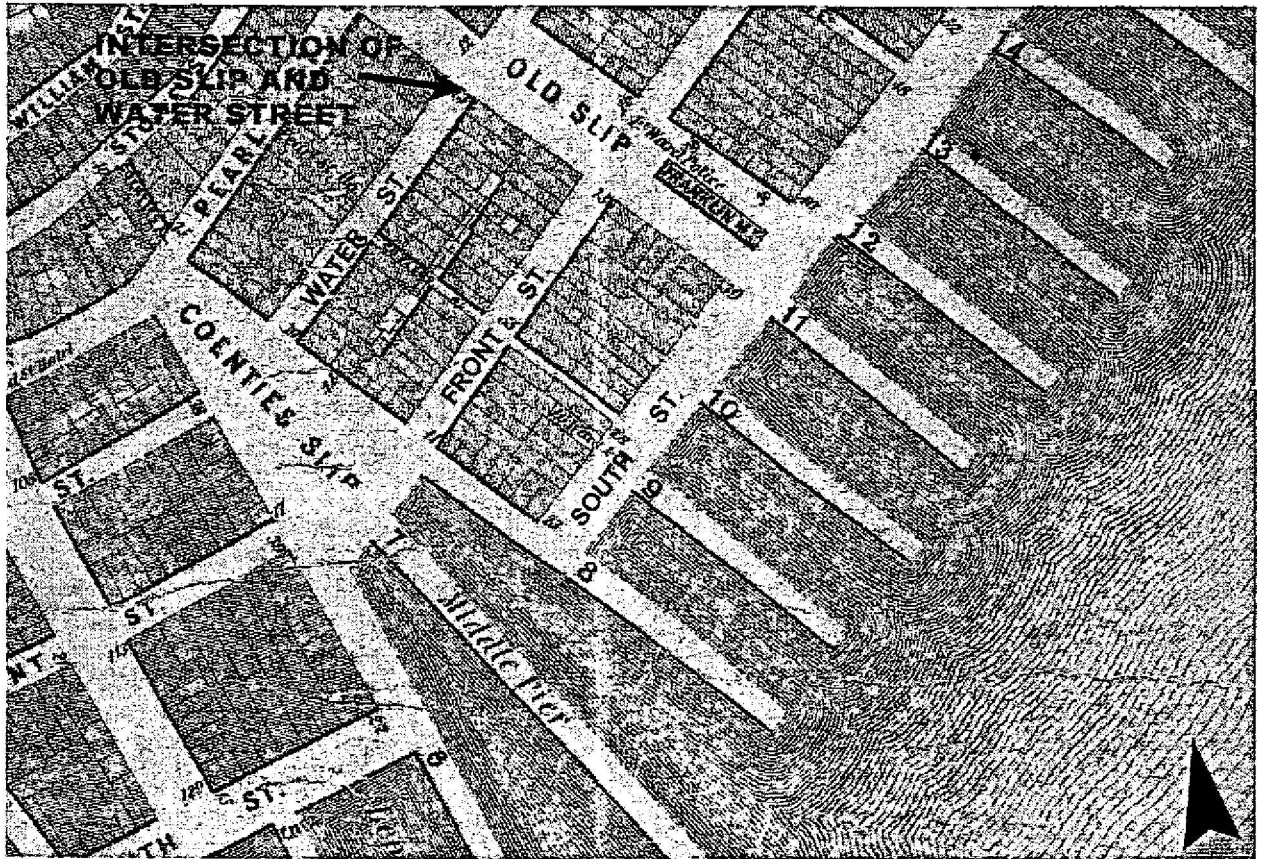


FIGURE 7

The City of New York Extending North to Fiftieth Street, Dripps 1852

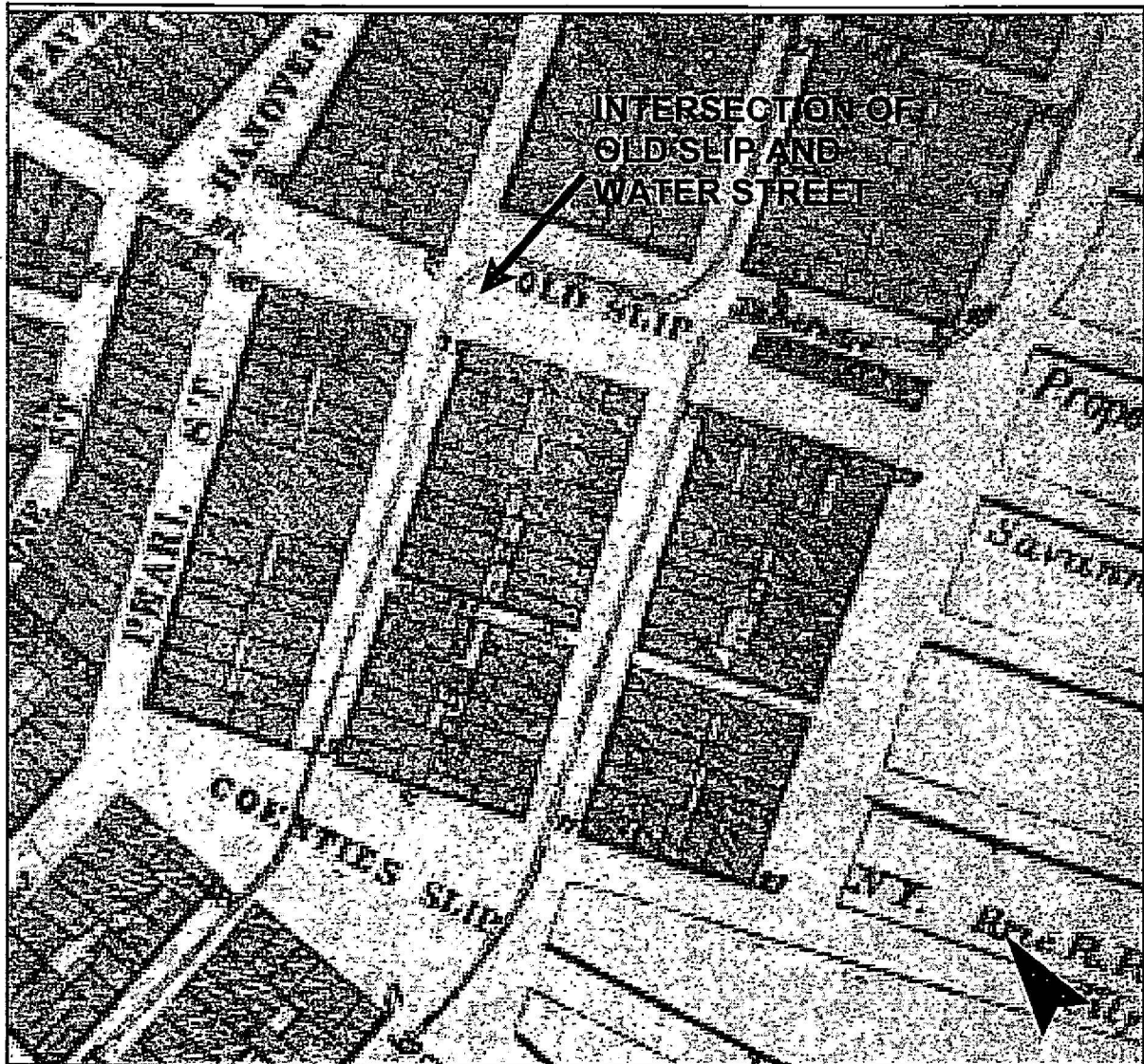


FIGURE 8

Map of New York and Vicinity, Dripps 1867

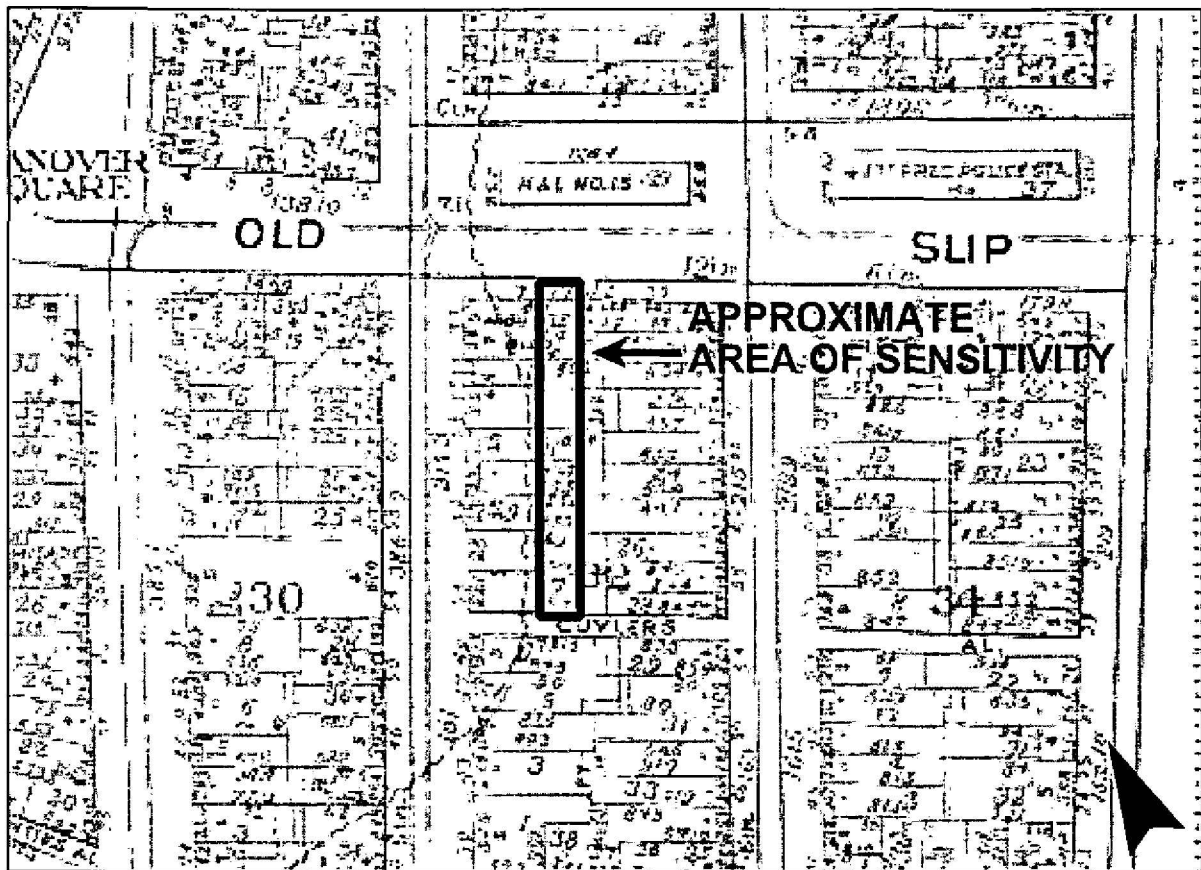


FIGURE 10

Atlas of the city of New York—Borough of Manhattan, Bromley 1911

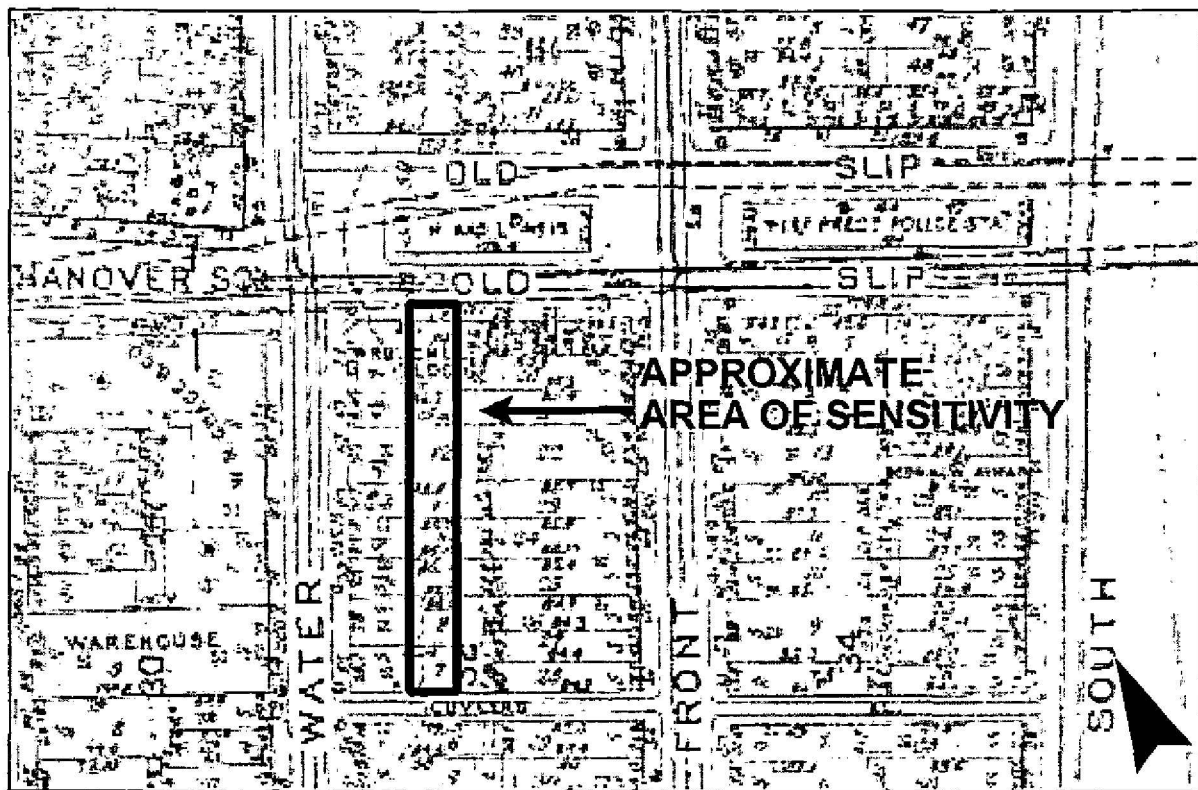


FIGURE 11

Atlas of the city of New York—Borough of Manhattan, Bromley 1925

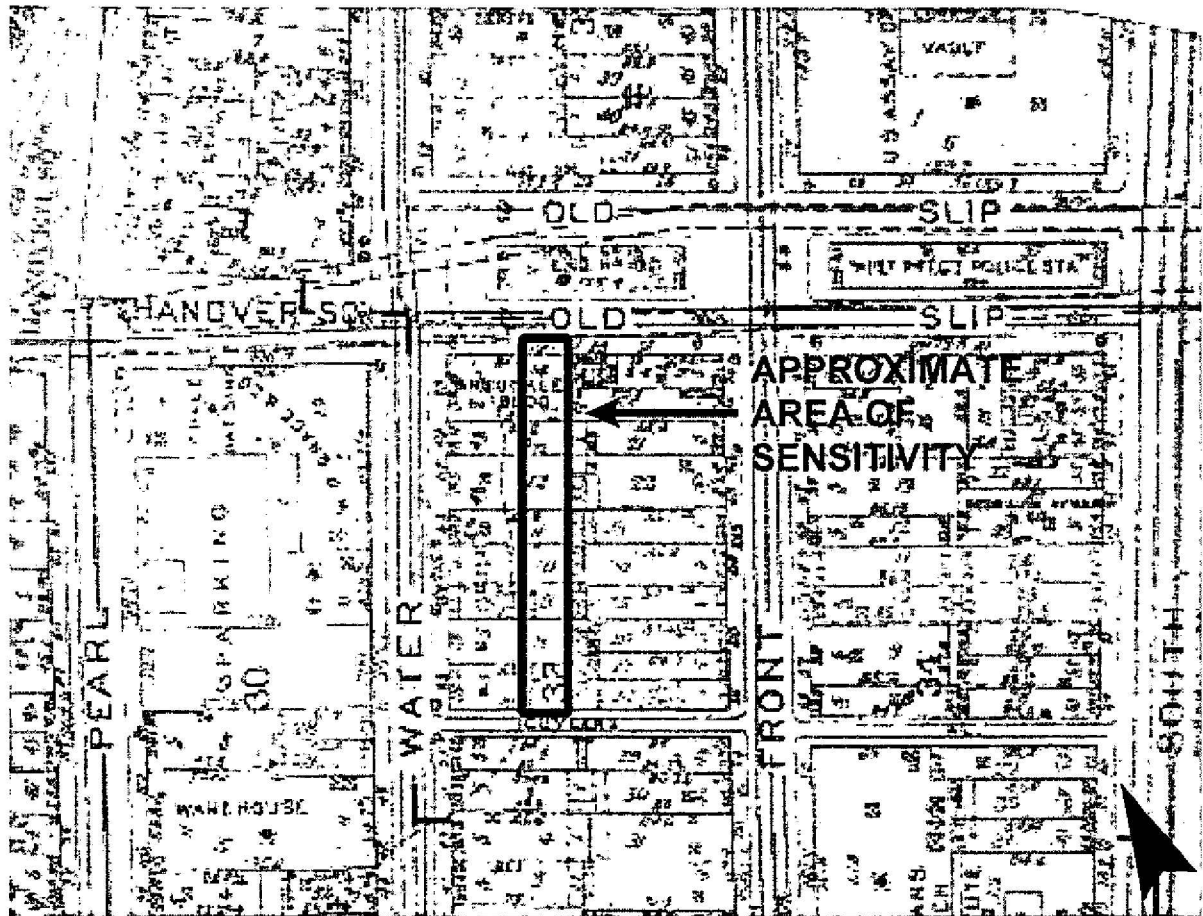


FIGURE 12

Atlas of the city of New York—Borough of Manhattan, Bromley 1955

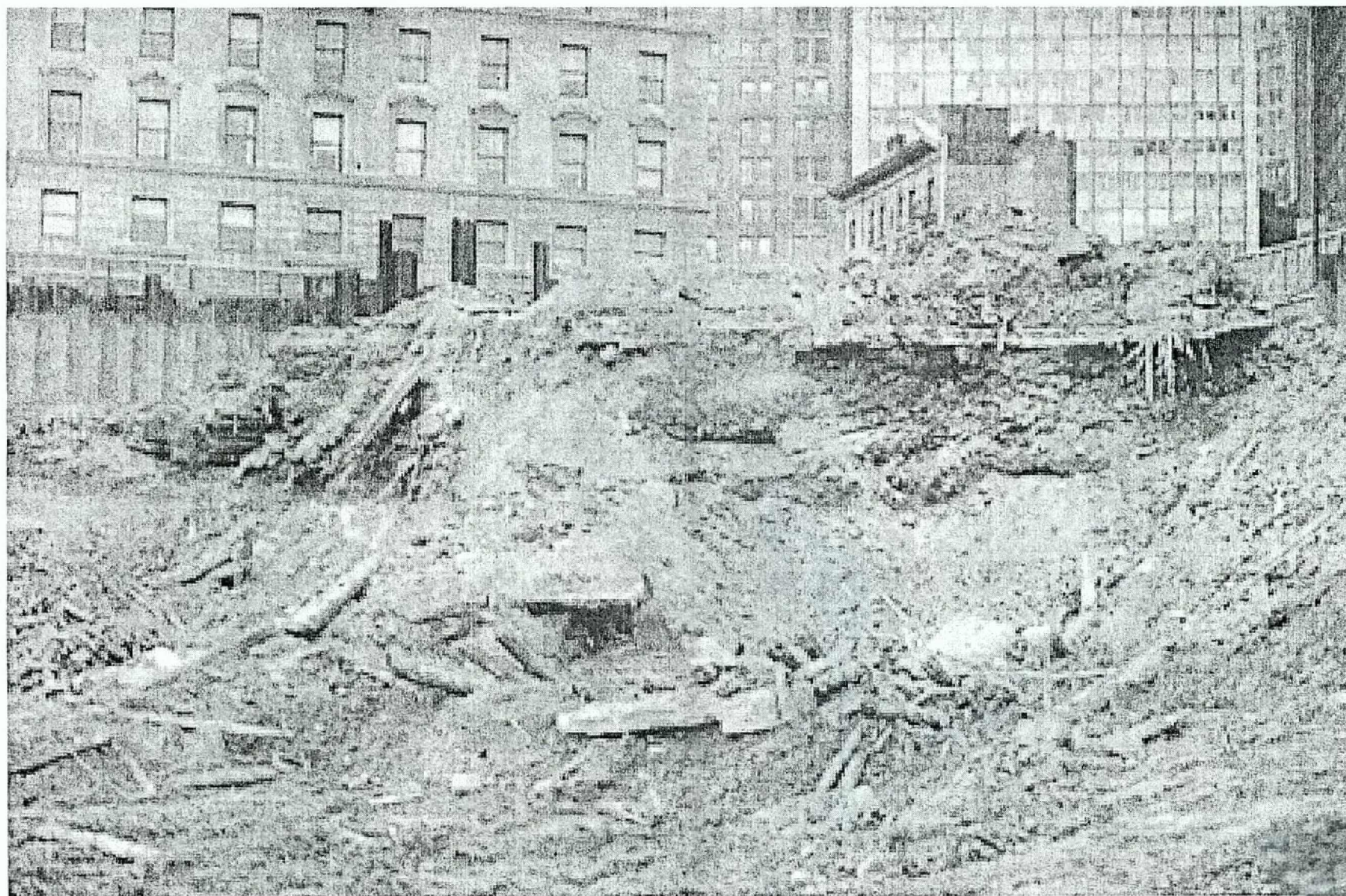


FIGURE 13

Excavations for the 55 Water Street Building. Facing north to corner of Water Street and Old Slip, ca.1969.
Note the pilings and sheeting blocking excavations from extending into the street.
Photographs courtesy of Paul Huey, NYSOPRHP.



FIGURE 14

Excavations for the 55 Water Street building. Facing northwest to corner of Water Street and Old Slip, ca.1969.
The log cribbing is what remains of Cruger's Wharf.
Photograph courtesy of Paul Huey, NYSOPRHP.

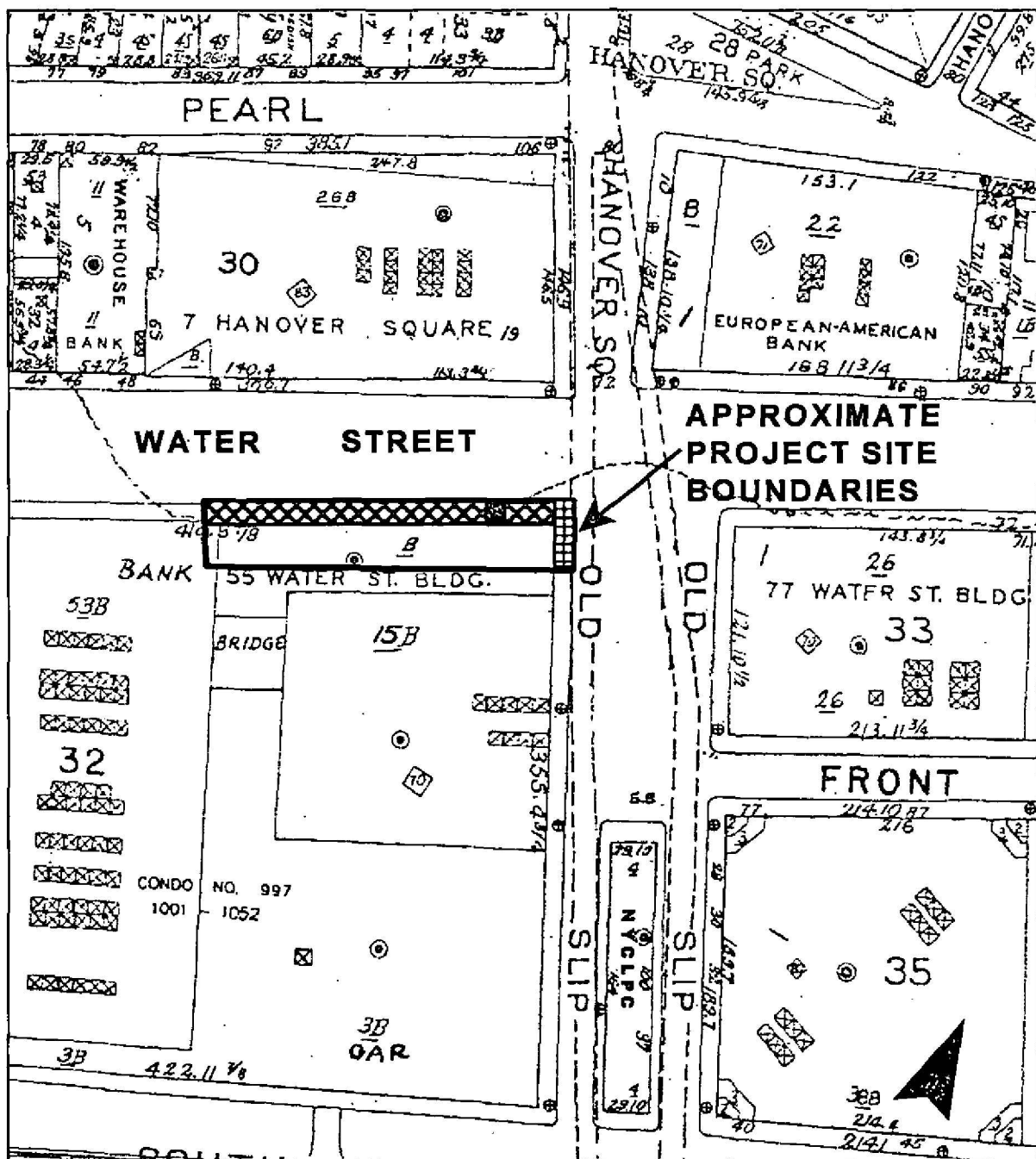


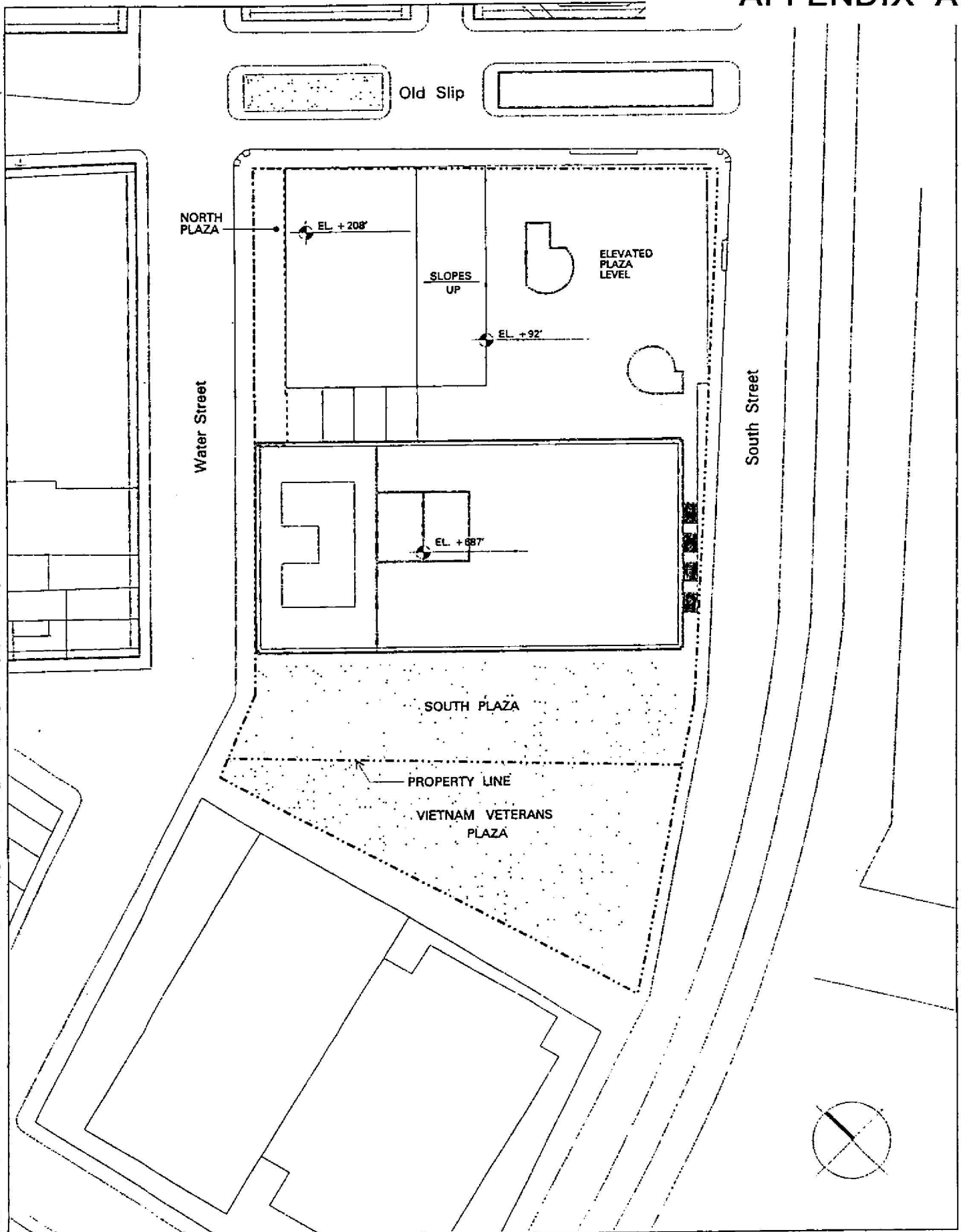
FIGURE 15

Archaeological Sensitivity Base Map: Sanborn, 1999

APPENDICES

A. Existing Condition Plans

B. Lowell and Belcher Utility Plan



EXISTING SITE PLAN

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pages 61 and 62 of
Report

