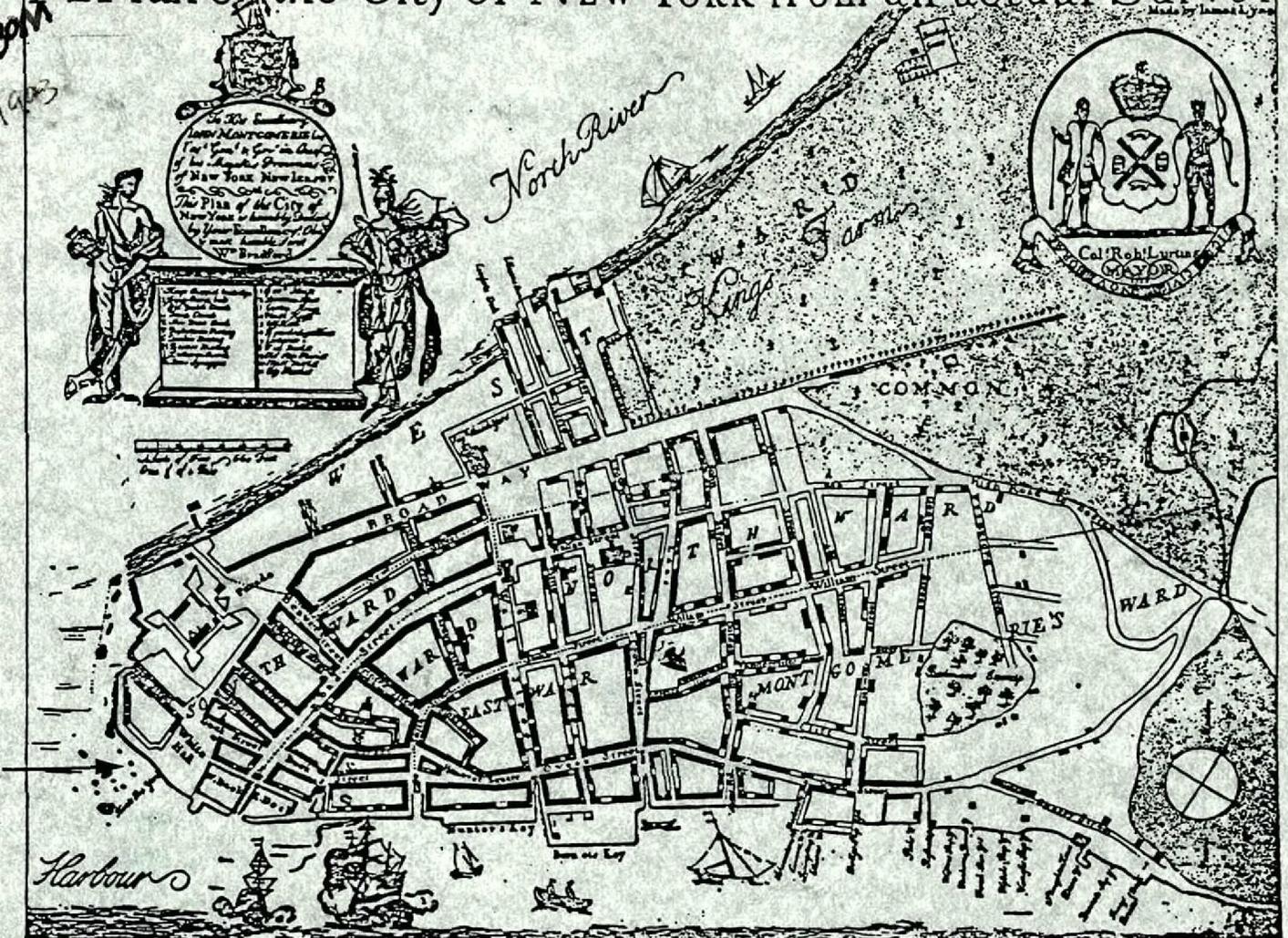


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A Plan of the City of New York from an actual Survey

Made by James L. Lyne



Lyne Plan, 1728.



PHASE 1A ARCHAEOLOGICAL DOCUMENTARY STUDY

PETER MINUIT PARK MAP CHANGE

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March 1993

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Ø Whitehall Ferry Terminal

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PHASE 1A ARCHAEOLOGICAL DOCUMENTARY STUDY

PETER MINUIT PARK MAP CHANGE

March 1993

**Prepared by: Historical Perspectives, Inc.
P.O. Box 331
Riverside, CT. 06831**

**Co-Authors: Betsy Kearns, SOPA
Cece Kirkorian, SOPA**

**Soil Boring
Analysis: Richard Schaefer**

**Prepared for: Philip Habib & Associates
39 West 29th Street
New York, N.Y. 10001**

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INTRODUCTION

The New York City Economic Development Corporation has proposed the establishment of an expanded park, Peter Minuit Park, on the present site in Lower Manhattan of Peter Minuit Plaza (see site location maps, Figures 1 and 2). The plaza, currently a fragmented array of five traffic islands and three interior roadways north of the Whitehall Ferry Terminal, would be incorporated into a single landscaped open space of more than two acres. Facilities for bus and taxi loading and unloading and bus layover would be located on the periphery of the park, reducing the potential for vehicular/pedestrian conflicts. The mapped park, as proposed, would accommodate the reconstruction of the fire-damaged Whitehall Ferry Terminal, allowing the expansion of the building footprint. Park development would entail relatively shallow sub-surface excavations for the installation of columns and light posts. Currently under consideration is the additional construction of a subway entrance, which would impact a limited portion of the project parcel to a greater depth.

Proposed actions include the demapping and mapping of city streets, which have initiated the environmental permit review process. A component of this review is an assessment of development impact on inventoried and potential archaeological sites within the project bounds. The project land is in an area rich in historic and archaeological resources from the time of the earliest Dutch settlements through the mid-twentieth century. Because of the historic sensitivity of the project parcel's neighborhood and the stipulations of the municipal review, a Phase 1A cultural resources survey was required. The following assessment, performed by Historical Perspectives, Inc., fulfills these survey requirements.

The purpose of the survey is to determine the presence, type, extent and significance of any archaeological resources which may be present on the site. It is based on archival research which documents the probability that the Peter Minuit Park site hosted any prehistoric or historical resources through time. In order to address these concerns, various sources of data were researched and evaluated. Primary and secondary source material and

a series of maps on the project site were collected to determine the study lot's original topography, to establish a neighborhood contextual history, and to compile a building history. Archaeological literature, site reports and journal publications were researched for data specific to the project area. Parallel research documented the type and degree of subsurface disturbance that the proposed parkland has experienced in the last 300 years, which yielded predictions of possible survivals of post-deposition developments.

As described in detail below, three areas of the project parcel have been identified as potentially sensitive for in situ and specific historic-era cultural resources.

METHODOLOGY

In order to satisfy fully the requirements of the New York State Office of Parks, Recreation and Historic Preservation for the assessment of archaeological potential, Historical Perspectives, Inc. has completed five separate processes. Each of these, described in more detail below, were necessary to address the two guiding concerns:

1. What is the potential that the Peter Minuit Park site hosted significant prehistoric and/or historical resources?
2. What is the likelihood that such resources have survived the subsurface disturbances concomitant with urbanization?

Primary Source Material

Of crucial importance in assessing the potential for site exploitation by prehistoric humans is the reconstruction of the site's pre-development topographic conditions (i.e., elevation and drainage) during various prehistoric cultural periods. Such information, 17th-, 18th- and 19th-century topographical maps, was sought during each of the task phases.

Other sources of early maps include historical and archaeological reports on adjacent properties (e.g., Dr. Joan Geismar's and Nancy S. Dickinson's individual studies on State Street parcels). Land use atlases of the 19th- and 20th-century were also researched in the New York Public Library Map Division, providing information on the installation of municipal utilities and building type and construction. I. N. P. Stoke's massive compilation of primary sources, The Iconography of Manhattan Island, provided important information concerning water grants, slip/pier/wharf construction sequences, land title and use, as well as dates of street openings and closings.

Secondary Source Material

Works concerning Native American exploitation of the resources of Coastal New York written by Reginald P. Bolton, Arthur C. Parker, Robert S. Grumet and William A. Ritchie were researched as well. In order to place the Peter Minuit Park site in an historical context, local and regional histories were reviewed for pertinent material (e.g., Valentine's Manual of the Corporation of the City of New York and Cudahy's Over & Back, the History of Ferryboats in New York Harbor).

Archaeological Literature

In addition to the sources described in the previous paragraphs, archaeologically sensitive loci identified by professionals working in Lower Manhattan were noted. Archaeological reports filed with the New York City Landmarks Preservation Commission were reviewed at the Municipal Reference Library.

Subsurface Disturbance Record

Paralleling the research conducted to determine the prehistoric and historical archaeological potential of the Peter Minuit Park site was an investigation of sources to determine the likelihood that any such resources were extant, surviving the normal

destructive forces of shoreline expansion, development, and transportation system construction and utility installations. Documentation of past landfilling, construction, demolition, etc. was collected to determine the cycles of three centuries of subsurface disturbances and to identify the possible impact of these cycles upon cultural resources. Atlases, insurance maps and comparative data, as well as sewer maps and boring logs from the Subsurface Exploration Section, Bureau of Building Design were reviewed.

Site Reconnaissance

A site visit and photographic record of current conditions was made in February 1993 (see Photographs).

PREHISTORIC PERIOD

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 prehistoric 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. North 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).

However, due to its extremely low elevation, actually under water, and extremely uneven topography, it is not likely that the Peter Minuit Park site directly experienced any extensive occupation or use during the prehistoric period. The site was part of that rock-studded outboard section of the original settlement of New York City referred to as "Kapsee" or

"Capske." Various sources use different spellings for the name of these rocks. R. S. Grumet in his book, Native American Place Names in New York City, opines that the name was "probably derived from the Dutch kaaphoekje a 'little cape or promontory'" (Grumet 1981:17; see Figure 3). Subsequent intensive development over the last 300 years -- filling and construction episodes detailed in the following pages -- would have destroyed any of the scant identifiable traces of a possible prehistoric presence.

HISTORICAL BACKGROUND

Seventeenth and Eighteenth Centuries

The first European to view Manhattan was probably Giovanni da Verrazano, when he sailed into New York Harbor in 1524. Despite reports of Portuguese explorers entering the bay prior to Henry Hudson's voyage, historical accounts are sketchy and often cannot be verified (Kieran 1982:2). The nature of early trading voyages suggests that even if they did sail into the bay and up the Hudson River, activities were probably confined to the traders' ships, so as not to set foot on unexplored territory. It was not until 1609 when Hudson sailed up the great river, now bearing his name, that Europeans first landed on the island.

In 1613 the New Netherland Company, which sponsored many voyages to the New World in search of trade goods, set up a storage and trade house on the southern tip of Manhattan (Wilson 1902:395). In addition, several shacks were built for traders settling on the island. As the fur trade grew, so did the population of Manhattan, and the small village expanded. In 1623 the Dutch West India Company received from the Dutch States General a grant for all lands within Manhattan (Hoag 1905:32) and the first permanent settlement in 1625 was named Nieuw Amsterdam. Later, in 1626 Peter Minuit, the Director General, purchased Manhattan Island from the local Indians for what amounted to less than 25 dollars (Jones 1978:10). Land grants encouraged permanent residents and the village began

its evolution into a market place, financial center and shipping hub.

By 1664 the English had obtained possession of the island from the Dutch, and King Charles II had granted the land to the Duke of York. The population of Nieuw Amsterdam at this time was about 1500. The first governor of the Province of New York was the duke's agent, Colonel Nicolls. In "1665 the first mayor was Thomas Willet, whose city was extended by fiat to include all of Manhattan Island, although its urban parts still barely passed Wall Street" (White 1987:17).

Generally, the names of early streets reflected usage or geographical location rather than honorifics. For example, State Street (to the north and west of the site and forming its northern boundary), "before its rebaptism,...was called Copsey Street, for the Indian village of Kopssee that had existed nearby. At the time of its change of name, the street was one of the city's most elegant residential areas and it remained fashionable until after the Civil War" (Moscow 1979:96). Whitehall Street, to the east of Peter Minuit Park and forming its eastern boundary, "is the site of the governor's house built by Peter Stuyvesant, and when the British took over the city they christened the street and building for England's seat of government - no doubt with their tongues firmly in their cheeks" (Ibid.:112). The location of the Governor's mansion (c.1657) was 1 State Street at the northwest corner of Whitehall Street [not on the project site] and "occupied a tiny peninsula projecting from the east end of the Battery" (White and Willensky 1988: 10).

Water Street, which extends in an easterly direction from the site, was where high tide of the East River washed during the 17th century. "Erosion along the street forced residents to drive planks on end into the riverbank and in 1692 the city began a landfill program and sold the lots thus created. Front and South [which runs east from the Park] Streets developed on the fill and Water Street, originally one block long [to the east of the site] was extended" (Ibid.: 110). The land which Peter Minuit Park occupies was created by this landfill process. In fact, Manhattan Island south of City Hall was increased by 33 per cent by this process (Buttenwieser 1987: 21).

In assessing the types of archaeological resources that might be present on a waterfront site, it is crucial to determine whether the parcel is composed of landfill or natural land. It is important to ascertain as nearly as possible the path of the original shoreline in relationship to the Peter Minuit Park site, although documentary sources differ as to its exact line. In her research on the block immediately north and inland of Peter Minuit Park which is bound by Pearl, State, and Whitehall Streets, Dr. Joan Geismar researched this problem and a page from her evaluation is included in this report as Appendix B. Our research confirms her conclusion that the original shoreline ran north of the current State Street (the northern boundary of the project site) in the block bounded by State, Pearl, and Whitehall Streets. The shoreline turned north along Whitehall Street to Pearl Street and then ran east along Pearl Street. West of Whitehall Street where the shoreline curved there was a projection of land from Pearl Street known in the mid-17th century as Schreyers Hook or Kapsee (aka Capske - see Figure 4). The Kapsee rocks extended into the water and constituted navigation hazards. Schreyers Hook would not have been on the project site, although some of the Kapsee rocks probably were (see Figures 4, 6, 8, & 9).

"Near the rocks called Kapsee, where Indians had landed on their trips from Brooklyn, the British kept a battery of guns from 1683 to 1687 to protect the harbor. Named for this battery, the present 22-acre park was created atop the rocks after the Revolution. Landfill for its creation came from the rubble that had been Fort George, on the site of the present Custom House" (Gold 1988:4).

Today Battery Park is located directly west of the Park, but it was once larger, encompassing much of the project parcel, and some of the rocks themselves would have been within the project block. The rocks lay offshore from the projection of Schreyer's Hook, which can be seen on Figures 4, 8, & 9. At the period depicted on the 1644 map (Figure 4), filling and development in the project parcel had not begun with the exception of the "Public Dock," which does not re-appear on later maps.

Using a series of maps, augmented with information from written documents, the evolution of the project site as made land and the uses of the land over time can be traced.

Although not on the project parcel itself, the first extension of land into the water in the project area can be seen on the Castello Plan of 1660, the map generally accepted as the first accurate cartographic representation of the city (Figure 5). The small projection from Block J into the water is directly adjacent to the northern limit (State Street) of the project block. It may be a wall associated with Director-General Peter Stuyvesant's house and garden (#1 on the plan) which was completed by 1658, although it originally was a 1647 land grant to Jorchim Kierstese (Figure 6). The mansion burned in 1716 (Stokes 1915:III 952).

During the 17th century, the Strand (present-day State Street - again directly north of, but not on the project parcel) shown on the land grant map (Figure 6) became a center of trade and marketing. The Strand and other streets shown on the Castello Plan and the land grant map bear witness to the Dutch-era street grid which evolved as development occurred around the Dutch Fort first built in 1628 and standing in some form for more than a century and a half (note the fort on the Castello Plan, Figure 5). The growth of the village, founded for trade, was complemented by its emergence as a port. Governor Stuyvesant began to deal with this activity as early as 1647 when he issued an ordinance regulating shipping. Large ships were to anchor between Capske Point (approximately the east side of Whitehall Street) and Wall Street (Stokes 1915: I 25). The small pier shown on the Castello Plan is an example of the results of the ordinance.

In 1686, with the city under British control and renamed "New York," Lt. Governor Thomas Dongen "transferred ownership of unencumbered lands to the City... to the low-water mark" (Buttenwieser 1987: 26).

"The city quickly disposed of the newly acquired space between high and low water. These lots were sold with the proviso that the owner must build the street and wharf along the water end...[and] five water-edge blocks between Whitehall and Old Slip were sold. The area from high water at Pearl Street to the low-water line at Water Street was filled, and a new wharf was constructed at the edge to retain the land" (Ibid.:27).

On the Miller Plan of 1695 (Figure 7) one can see the results depicted. Boats surround docking facilities east of Whitehall Street, and the portion of Pearl Street east of Whitehall is named "Dock Street." The project site itself is still almost completely under water where the number "3" indicates a gun battery; however, the filling process had begun since the 1660 Castello Plan view was made.

Indeed, docking facilities were generally built from Whitehall Slip (a basin constructed about 1662 according to Stokes 1915: III 991) moving east rather than west toward what would become the project block. The Lyne Plan of 1728 and the Bradford Map of 1730 illustrate this situation (Figures 8 and 9). It is from Whitehall east where development is taking place, and the project area is still mostly under water, although it is possible that "Hunt's Ship Yard," whose location is not pinpointed, could be on or very close to what would become the project site. The presence of a ship yard suggests the potential for archaeological resources from the era before the site was filled, that is, harbor debris resulting from shipbuilding, cargo spillage, dumping and other activities associated with a busy waterfront. Although no recorded instances of shipwrecks occurring in the project site parcel were located, deposits from the above mentioned sources were undoubtedly present at one time and may have been covered over by subsequent landfill.

The date of the Bradford Map -- 1730 -- was also the date of the Montgomerie Charter, which increased ownership privileges "four hundred feet, or two blocks, beyond the low-water mark" (Buttenwieser 1978:35). On the Grim Plan of 1742 (Figure 10), one notes improvement of waterfront facilities at Whitehall Slip and east of it, but no massive change. But there is a significant change on the project site itself, which has been filled in and expanded past the line of present-day Front Street. It is labeled the "Half Moon Battery," and had been ordered built on the "Capsy Rocks" by a Bill of the Assembly in 1734 (MCC IV:237-8). Figure 11, a detail of the well-known Burgis View of New York shows the project area in 1717 when only a small amount of landfill had taken place. Figure 11A is the same view updated to 1746 and shows the Half Moon Battery. As can be seen on the Grim Plan (Figure 10), the landfill pattern left a pond between the battery and the Pearl Street block which abuts the northern boundary of the project site.

Curiously, the Maerschallck Plan of 1755 resembles the earlier Lyne and Bradford maps and does not show the Half Moon Battery. It is shown, however, on the Montresor Plan of 1766 (Figure 12). In addition to the batteries (Letter "B") and the pond shown in 1742, there is a military hospital (Letter "C"), a long rectangular building. The block is definitely filled out to what is presently South Street, and its shape is rectangular rather than half-moon shaped as in 1742.

Two versions of the B. Ritzer Map of 1767 are substantially the same as each other, except that one labels the Staten Island Ferry location on the east side of Whitehall Slip, just east of the project site (Figures 13 and 14). What Montresor called the military hospital is here called "The Lower Barracks" (Numbers 9 and 26), and some improvements in the battery can be seen. (The reader should note that the three-block long street labeled "Whitehall" on these two maps is today Moore Street; all references to Whitehall in this report refer to the current Whitehall Street, which is where Whitehall Slip is shown on the Ritzer maps.)

A decade later, in 1776, Major Holland's Plan shows a slightly different configuration of the parcel (Figure 15). There is also an addition to the barracks, and two small buildings in the vicinity of the earlier pond that is no longer extant. This would concur with Stokes who reported that the pond was filled in 1773 upon the order of Mayor Hicks and Governor Tyron who considered that "the same is at present but a Nuisance" (Stokes 1915: IV 165).

A final 18th century map, the 1797 Taylor-Roberts Plan (Figure 16), shows still further change. Not only has the barracks been removed, but also the fort and "The Battery" has become an open green space planted with trees; it had begun its existence as a park space as a result of an act of the State Legislature in 1790. Again, this agrees with Stokes, who noted that the barracks was demolished in 1792 and the fort in 1790 (Ibid.:III 943 & 962).

The Taylor-Roberts 1797 Plan also shows that filling has been done in Whitehall Slip, which once extended all the way to State Street. According to Stokes, a "recently

constructed basin here" was mentioned in 1662 and was filled in 1772 and 1774 (Ibid.:991). There were subsequent fill episodes and in 1786 a bulkhead was constructed across the slip, 80 feet further into the East River than the previous one (MCC I:248). The 1797 map shows the "Elizabeth Town Ferry" on the eastern side of Whitehall Slip (out of the project zone), which Stokes reports "existed prior to 1783" (Ibid.:944).

Nineteenth Century

The fill that took place in Whitehall Slip continued and the slip's reduced size is easily discernible on the early 19th century Goerck and Mangin Plan (1803 - Figure 17). It seems that the new century ushered in a new attitude in the thriving city. It was the opinion of historian Myron Luke that

"the physical aspect of the city was changing rapidly with the paving and cutting through of streets and the construction of buildings, and the mounting optimism of the period was reflected in the Goerck & Mangin Map of 1803 on which future streets were planned far north of the settled portion of the island. At the same time, a gigantic task of renovation of the water front was in progress. One city newspaper noted in 1801 that a plan of filling up the slips, reconstruction of the wharves and erection of new buildings had been begun along the East River while, in the same years, the Common Council ordered that the piers be numbered and known thereafter by that designation" (Luke 1953:12).

However, the 1803 map still used name instead of number designation for the piers.

Thus, the advent of the 19th century saw the division of what is now the Peter Minuit Park project site into two parts. The western section was part of Battery Park, while the eastern section contained the western part only of Whitehall Slip (Figure 18). Whitehall Slip, which had been the terminus for several ferry lines in the 18th century, saw the establishment of a series of ferry lines to Brooklyn, Staten Island, and New Jersey by various

companies in the 19th century. In 1805, the City Council recommended that Whitehall Slip again be partially filled and that a new L-shaped pier be built on the west side of the slip (partially within the project site). After 1815, this structure was designated Pier No. 1 (MCC VIII: 302). At this time, Whitehall Slip extended inland (north) to approximately the midpoint between South and Front Streets and slightly west of the present-day line of Whitehall Street, which is the eastern boundary of the project site as can be seen on the 1804 map (Figure 18).

The same situation of the street grid, harbor structures, and park territory in relation to the project parcel existed through the 19th century according to maps. It is also well depicted in a mid-century print (Figure 21). That is, the majority of the project site bounded by the south side of State Street to the north and the bay to the south was part of Battery Park. The exception was the southeast corner of the site at the current intersection of South Street and Whitehall Street where parts of a succession of harbor buildings and piers existed (Hill, 1804; Hooker, 1824; Ewen, 1827; Dripps 1867 and 1868; Bromley 1879; and Pidgeon 1881).

As of 1804, no piers or structures were shown on the southeast corner of the project site, and the landfill extended only halfway through what would be the street-bed of South Street toward the harbor (Figure 18). But in 1809 Robert Fulton's successful experiment with the steamboat brought great changes in water transportation and ferries proliferated in the New York Harbor, including Whitehall Slip. Thereafter the Whitehall Slip area saw the expansion/establishment of ferry lines to Elizabethtown, Atlantic Street in Brooklyn, Hamilton Avenue in Brooklyn, Staten Island, and Governor's Island (Stokes 1915:III, 942,943,943, and maps herein cited). Naturally there were also support structures such as ticket offices or baggage rooms. Some parts of structures from various construction episodes during the remainder of the 19th century would have been within the small southeast corner of the project site that would have been in Whitehall Slip during that period.

In 1824 (Figure 19) the L-shaped pier (Pier 1) mentioned above was shown, and fill extended the full width of South Street, which is the southern boundary of the project site. This coincided with an 1822 Common Council resolution that a bulkhead be extended across Whitehall Slip from Pier No. 1 in a line with the southern side of South Street, which continued the filling of the Slip southward to South Street (MCC XII:457). The 1827 Ewen Map (Figure 20) shows the same configuration. More fill was later added to the bulkhead along South Street consisting of debris from the great fire of 1845 (Costello 1887: I, 239).

The area of Whitehall Slip was gradually occupied by maritime news offices and ferry facilities during the decades. In 1864 a cast iron ferry building was built by the Union Ferry Company in the area formerly occupied by news offices and ferry facilities. The process of filling in land to approximately 50 feet below South Street, where it intersected with Whitehall, largely ended with this construction (Figure 22). Further construction included the U.S. Barge Office as shown on the 1881 Pidgeon Map (Figure 24), but it is out of the impact zone of the proposed project. In fact, a large portion of the harbor structures are located outside the project site boundaries; the 1881 map is marked to show the approximate bounds of the current project site in relation to Whitehall Slip.

Whitehall was also a terminus for omnibus and horsedrawn stage lines during the mid to late 19th century. By the 1890's, horse trolleys and elevated railroad lines terminated at the foot of Whitehall Street, and the turn of the century found the area to be a maze of intersecting surface and overhead tracks converging at the South Ferry Elevated Station within the project area (Figures 22 and 23).

Thus, by the end of the 19th century, Whitehall Street and part of the adjacent Battery Park were already the site of a multi-modal transportation facility, functioning as the terminus for surface and elevated rail lines, along with heavy ferry activity. Its openness today reflects its long use as a hub for interconnecting systems.

Twentieth Century

The actual land mass of the project site has remained essentially the same as existed at the end of the 19th century. However, there have been important above-ground and subsurface changes. For example, the 1864 ferry terminal was replaced by another building in 1906; it was extensively altered and expanded north over the South Street roadbed in 1954 to become the present-day Whitehall Ferry Terminal. The Battery Maritime building (located southeast of the project site), today a landmarked structure, was built in 1909.

The 20th century brought subway construction that severely impacted the project site. Specifically, the Whitehall Loop and IRT tunnel to Brooklyn were in use by 1905. The extension of the IRT down lower Broadway to South Ferry greatly improved the line's terminal procedures at the southern end of the island. "The South Ferry station was built on a turnaround loop, which allowed inbound trains to be dispatched back uptown with greater flexibility. The South Ferry loop, however, was an engineering horror to construct. It came to within a few feet, literally, of Manhattan Island's shoreline, so that pumps ran continuously to keep the waters of Upper New York Bay out of the works. To add to the woe, the entire complex was directly under a large and busy elevated terminal, which had to be carefully shored up" (Cudahy 1988:33). The 1.2 mile IRT tunnel from the southern tip of Manhattan to the foot of Joralemon Street in Brooklyn was the first long tube to carry any kind of regular passenger vehicles beneath tidewater in New York (ibid.).

Construction for the Brooklyn-Manhattan Transit (BMT) line and its tunnel to Brooklyn took place between 1906 and 1917 within the project parcel. On the 1916 Bromley atlas (Figure 25) the outlines of these underground tubes are shown. Construction of the Battery Tunnel, which passes beneath the project site on its southern border, caused further and massive subsurface disturbance along the route of South Street in the late 1940's. The path of the tunnel is shown on Figure 26.

Whitehall Street/Battery Park was still playing a dual role as park and transportation facility as late as 1946, when a City Planning Commission report on the proposed construction of present-day Peter Minuit Plaza commented on the division:

"the portion of Battery Park proposed to be eliminated and included within the lines of the plaza is in use as a park. The remainder of the area to be included within the plaza is presently utilized for street purposes and as a means of access to the terminal of the Staten Island Ferries."

The construction of Peter Minuit Plaza by 1952 reorganized the area to permit traffic access to the ferries and the East River Drive via two north-south extensions of State Street. The portions of Battery Park were eliminated and the leftover pockets of land were mostly utilized as traffic islands, although mapped as park.

The appearance of the project site today reflects its decades of usage as a transportation hub (see the photographs included with this report). Ferries, subways, buses, automobiles, and pedestrians vie for space.

ARCHAEOLOGICAL RESOURCE POTENTIAL

As discussed earlier in this report, the Battery Park/ Whitehall area was certainly utilized by Native Americans. However, the possibility that the site ever hosted an extensive habitation or processing station is limited and that any cultural resources from that usage would have survived the centuries of landfill and construction is extremely low. More importantly, the project site itself was off-shore until after the horizontal expansion accomplished by European settlers. It is concluded that no further consideration of prehistoric resources at the Peter Minuit Park site is warranted.

However, there are other categories of cultural resources that would have been present on the project site.

#1) River Bottom Remains

As documented in the preceding section, the project site was within the original harbor of New Amsterdam/New York. As such it was used for the transportation of goods and people. Before the construction of long piers, larger ships were off-loaded in the harbor and their cargos brought to shore -- some of it undoubtedly lost overboard. (There is, however, no documentary evidence of shipwrecks within the project site area.) There is also the indication that it was a location of maritime support facilities such as boat repair or ship building. For example, two 18th century maps note "Hunt's Ship Yard" within the project site (Figures 8 and 9). There is also the probability of material deposited from the land side either deliberately as waste or by accidental loss. Thus, artifacts from the Colonial and Federal periods might be contained and preserved in the anaerobic environment of the river silts underlying the landfill.

#2) Landfill Deposits and Landfill Retaining Devices

The landfill process on the project site was episodic and took place from post 1660 for approximately the next two hundred years. The nature of the landfill and the devices for retaining the fill in place (such as cribbing and bulkheads) have been a topic for archaeological investigation in lower Manhattan for more than a decade. Also of interest is the pond associated with the c.1735 Half Moon Battery; it was not completely filled until c.1773.

#3) Remains of Fortifications from the 17th and 18th Centuries

From maps and documents, defense structures are known to have existed within the project site from at least 1695 until c.1800. A gun battery is indicated on the 1695 Miller Plan (Figure 7). The 1742 Grim Plan (Figure 10) shows the Half Moon Battery whose construction had been mandated in 1734. By 1766 a military hospital/barracks was located near the current State Street. With some modifications it existed until 1792 (Figures 12, 13, 14, 15).

#4) Port and Ferry Related Structures from the 19th Century

Port-related resources in the Whitehall Slip vicinity of the project site could include elements of 19th century piers, wharves, and buildings such as the 1864 cast-iron ferry terminal building.

#5) Land Transportation Elements of the 19th Century

The pier-supported terminal buildings (including signal towers and waiting platforms) for the converging elevated lines rose above the current project land. Built in the 19th century and not demolished until well into the twentieth century, these terminal buildings, referred to as the South Ferry Y, served as a pivotal ingress and egress for thousands of city travelers (Black 1973:10).

Horse-drawn trolley cars and omnibuses operated over an extensive system of rails laid in the brick-lined streets of the project site (ibid.). Abandoned rails, depending on construction schedules, city economics, war time demands for scrap metal, etc. have not always been removed but may rest beneath a new, and perhaps shallow, fill overburden. As recently presented at an archaeology conference, a study of even small sections of track rails can sometimes help to elucidate technological adaptations and processes in an evolving transportation system (Society of Industrial Archeology/Southern New England Chapter Annual Meeting, Lowell, MA, National Park Service/Boott Museum, 2/6/93).

SUBSURFACE DISTURBANCE RECORD

While the Peter Minuit Park project site has the potential to contain archaeological resources of significance, the subsurface disturbances that have occurred over time must surely have obliterated some resources and seriously impacted the integrity of others. The major components of the disturbance consist of the IRT South Ferry/Whitehall/Battery Loop and the placement of the IRT and BMT subway tunnels and their respective subway entrances. They were built by the "cut and cover" method which consisted of excavations

within vertical sheeting to a depth of 20 to 30 feet below sea level (Interborough Rapid Transit 1969:40-42).

"A typical four-track section of tunnel, built by the cut-and-cover method, was 55 feet wide. Tracks - 100 pound rail laid in 33-foot sections - were spiked to conventional hard pine cross-ties embedded in broken stone ballast. Track and ballast were installed atop a poured concrete floor, a slab generously treated with waterproofing compounds of several varieties. Between each set of tracks, as well as along the tunnel's outside walls, rows of steel I beams were erected on 5-foot centers..." (Cudahy 1988:23).

Subway construction had to avoid damage to the footings and support structures of the Second, Third, Sixth, and Ninth Avenue Elevated train lines already in place.

"One of the most troublesome problems [of subway construction] was the shoring and protecting of existing construction along the subway route. The elevated structures of the Manhattan Railway [whose southern terminus was at South Ferry] particularly caused trouble for [the subway] engineers" (Cudahy 1988:23).

Approximately 50 support piers would have traversed the project site to support the converging elevated rail lines at the terminal buildings. These footings and their foundation supports would themselves have disturbed earlier deposits. In addition, there are a ventilation shaft and multiple utility lines present on the site.

Additional subsurface disturbances would have included the construction of the Battery Park Underpass and the existing ferry terminal with its large ramp entrance. Also constructed by the cut and cover method, the tunnel's impact depth was approximately 24 feet below grade and width impact was between 75 and 85 feet (Allee, King, Rosen & Fleming, Inc. 1987:II.C-5). As can be seen on Figure 26, the Underpass routing necessitated the destruction of the mid-19th century structures at the edge of the ferry slip.

Figure 27 is a composite map showing the locations of these known subsurface features. And undoubtedly there are other, unrecorded instances of disturbance. For instance, there

may be early, abandoned utility lines, which is too often the case according to city engineers, such as Larry Ebbitt of the Subsurface Exploration Division of the Topographic Bureau, familiar with underground New York.

It is obvious that the archaeological potential of a large portion of the Peter Minuit Park site has already been adversely impacted. The path of the Battery Park Underpass and the present ferry building have certainly destroyed any vestiges of one category of resource - the port and ferry related structures from the 19th century (#4) which were located there in the southern portion of the site. Similarly, according to comparative measurements taken from the 1916 Bromley (Figure 25) and the current site plan (Figure 2), the above-ground, pier-supported terminus for the elevated train lines, which was in the path of the Underpass, would have been destroyed.

Therefore, the resource category 19th century port and ferry related structures (#4) requires no further consideration. However, as discussed in the following section, there are some less affected zones of the site where cultural resources in the other defined categories may be relatively intact.

CONCLUSIONS AND RECOMMENDATIONS

While much of the archaeological potential of the Peter Minuit Park site has been destroyed by subsurface invasions, there are some areas that are possibly relatively undisturbed. However, the below grade impact zone of the proposed project is shallow for the great percentage of the site. As currently planned, it will not entail excavation of more than 5 feet in depth with the possible exception of subway entrance improvements in the southwest sector where excavations may be as deep as 15 to 20 feet. Therefore, the park plan as proposed will most probably eliminate yet another category of potential archeological resource from further consideration: deeply buried river bottom remains (#1).

In order to assess this topic, an analysis of available soil boring logs from borings taken in the area was undertaken (for the full analysis, see Appendix A). Evidence indicates that a thick fill stratum lies over the river mud/silts. It is estimated that excavations to at least 10 feet below the current surface would be required before reaching any of the river sediments; only 5 foot intrusions are planned for the majority of the site. In the limited vicinity of the possible deeper impact zone for the subway entrance, there were three borings taken (see locational map in Appendix A). Boring #250 revealed a fill layer approximately 23 feet thick; there is no river mud stratum below the fill. Likewise, Boring #252 contained approximately 17 feet of fill and there was no mud layer below. Boring #60, slightly east of Boring #250 shows a somewhat different pattern. Below the surface elevation of +5.9 there is a fill layer down to -6.1 feet, or approximately 12 feet below grade. Beneath the fill there is a 2 foot thick layer of river mud.

When the plans for the subway improvement locus are finalized, the precise location of the deep excavation should be compared to the prior disturbance of the southern edge of the Battery loop. According to preliminary designs it is very possible that the proposed subway entrance will fall within the envelope of the prior disturbance by the loop. If not, it is recommended that a soil boring be taken to determine the presence/absence of a mud stratum, indicating river bottom (#1) in the precise impact zone. If a mud stratum is present and would be impacted, mitigation measures, if indicated, could be designed.

For the remaining categories of cultural resources pertaining to landfill (#2), fortifications (#3), and transportation elements (#5), the site may be divided into sensitivity sections based on limited known disturbance (the reader should refer to Figure 28). The Sensitivity Sections are placed within areas estimated to be relatively clear of recorded disturbances, including utility lines. Since the proposed Park development impact is to be within five feet of current grade, the utility infrastructure is considered to be a valid factor in determining sensitivity potential.

Sensitivity Section 1 is in the northern portion of the site between the Battery loop and the BMT tunnel that runs underneath Whitehall Street. To the south it is bounded by the subway entrance and subsurface walkway. It overlaps with post-1660 landfill areas to the north and post-1766 landfill areas to the south. This section corresponds with the initial landfill expansion of historic New York and may, based on archaeological work along Pearl Street, contain archaeological deposits at a rather shallow depth. The potential also exists to locate remains of 17th century cribbing or bulkheads. A comparison of this section with 18th century maps such as Ratzler (Figures 13 and 14) suggests that elements of the Lower Barracks may also be within this locus. In situ rail portions of the 19th century trolley/omnibus track system may lie within this section.

Sensitivity Section 2 consists of the area bounded by the Battery loop to the east, the IRT tunnel to the south and southwest and the western site boundary. According to the Ratzler maps, it may contain part of the 18th century pond whose elevation at the time it was completely filled is unknown. Survivals of the western portion of the barracks may also be in this section as well as remnants of the Half Moon Battery walls and its interior grounds (Figure 10).

Sensitivity Section 3 is in the southeast area of the project site between the two subway tunnels and also bounded by utility lines and the Battery Tunnel to the south. Map comparisons indicate that it could contain remains of the exterior wall of the 18th century fortifications. It also contains what was the westernmost portion of historic Whitehall Slip with its filling episodes dating from c. 1730. Structural elements from bulkheads and landfill retaining devices also might be present. In situ rail portions of the 19th century trolley/omnibus track system may lie within this section.

Excavation for the proposed Peter Minit Park could potentially disturb or destroy archaeological resources relating to the use and development of New York Harbor and the East River waterfront dating from the 17th through the 19th centuries. Three areas, Sensitivity Sections 1 - 3, have been identified that may contain intact cultural material in

the resource categories of landfill and landfill devices (#2), 17th and 18th century fortifications (#3), and 19th century land transportation elements (#5).

In order to avoid and/or mitigate impacts to potential resources, locus-specific testing will be necessary in order to evaluate potential impacts to surviving archaeological remains. The subsurface testing would provide otherwise unobtainable evidence 1) to confirm the presence or absence of deposits in these sensitive sections, and 2) to determine the nature, integrity, and extent of any such deposits. The methodology for the testing should be determined by the degree of subsurface disturbance proposed after the project site plans are finalized and would be designed in cooperation with the New York City Landmarks Preservation Commission. In addition, the final design plans for the project should be developed so as to minimize potential disruption to the Sensitivity Sections identified in this report.

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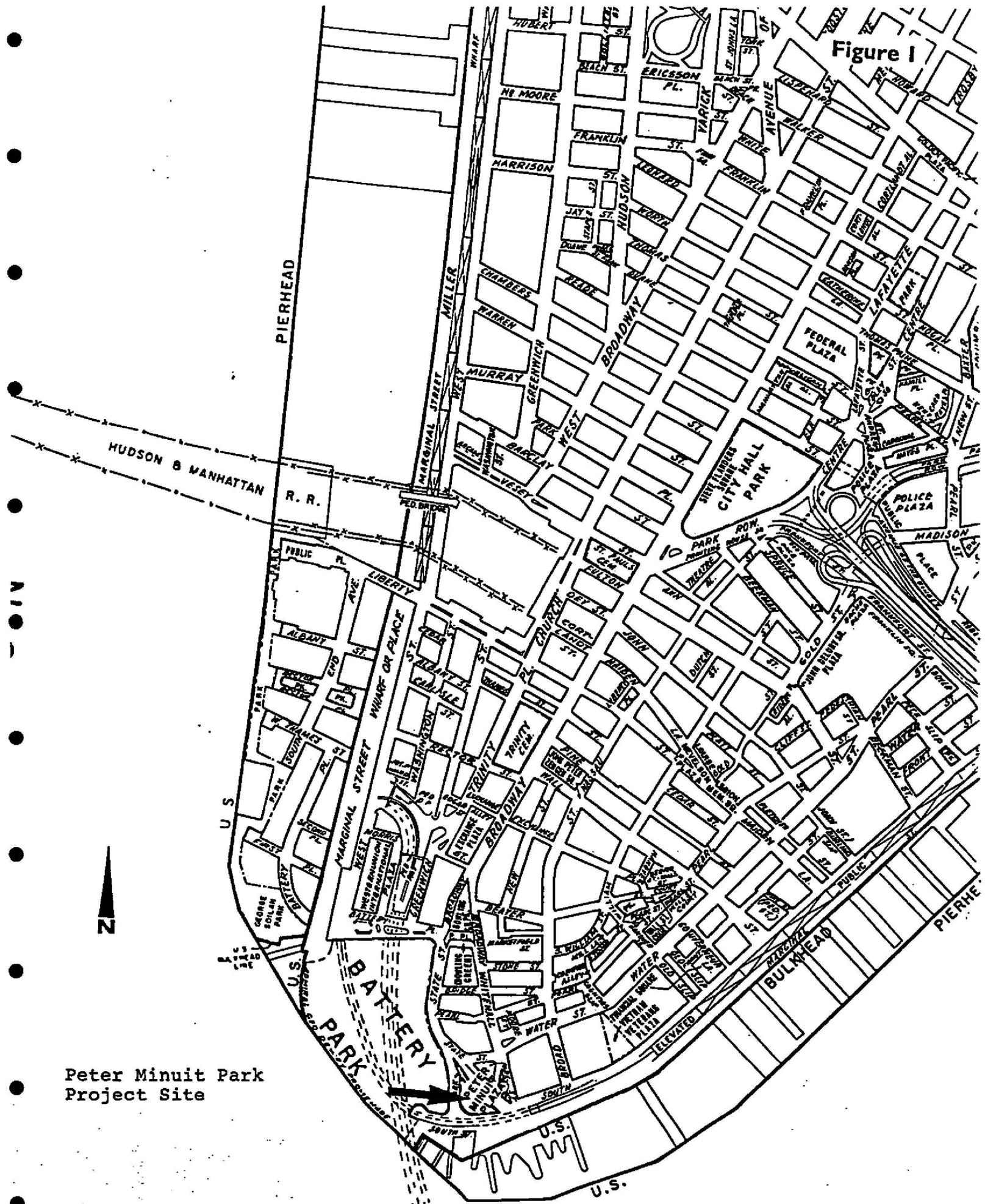
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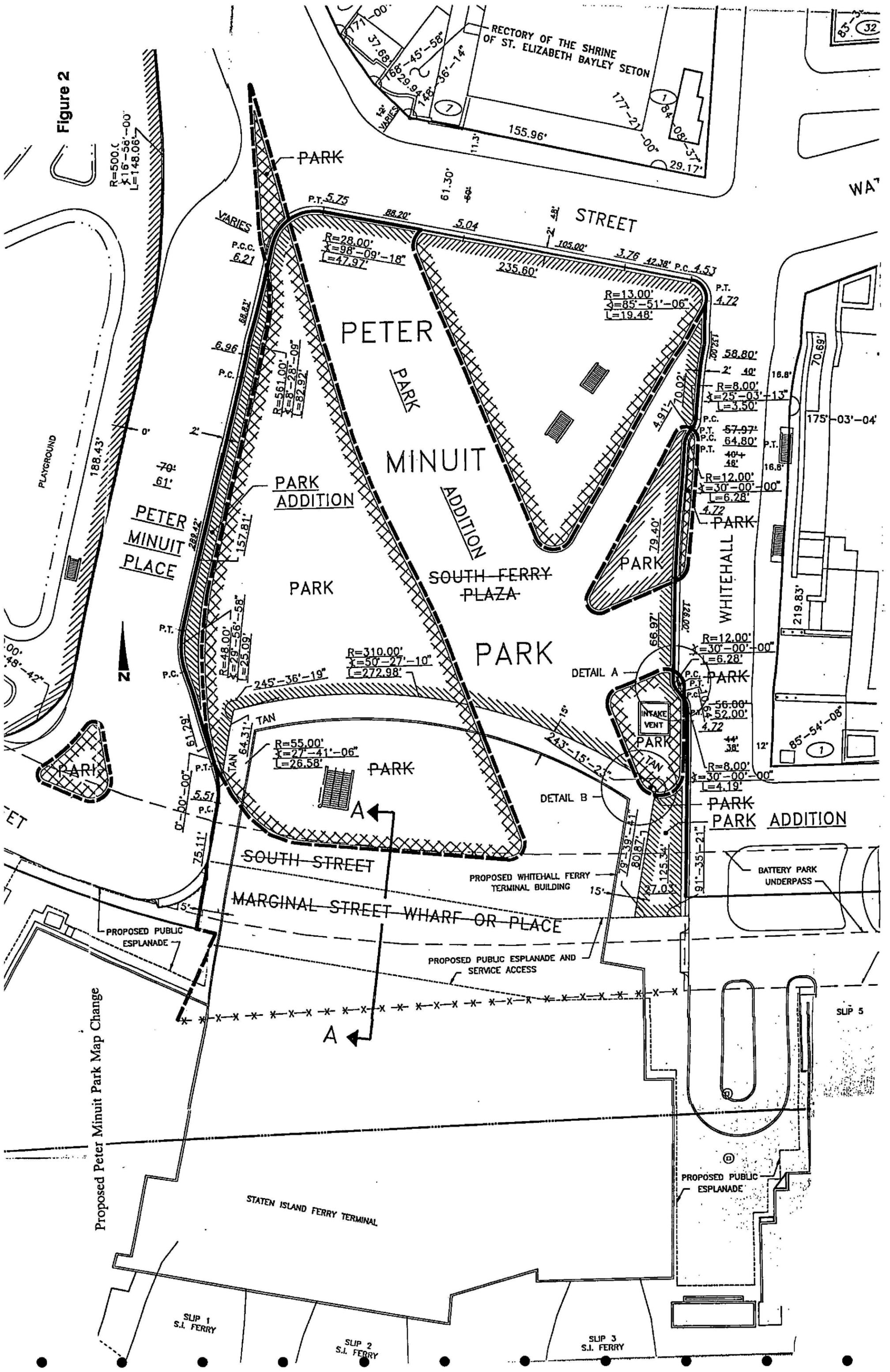
Figure 1



Peter Minuit Park
Project Site

CITY

Figure 2



Plan of New Amsterdam

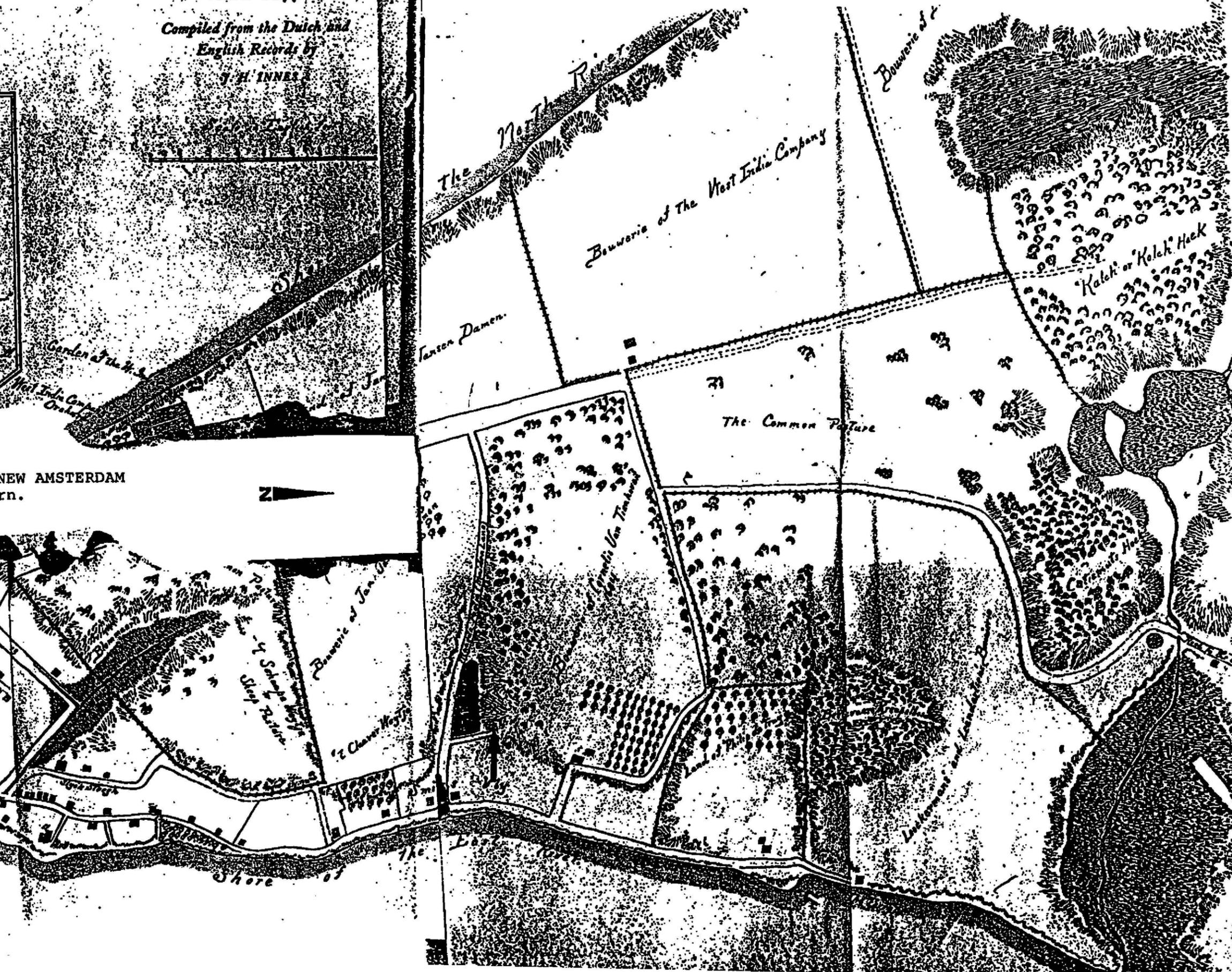
About 1644

Compiled from the Dutch and English Records by

J. H. INNES

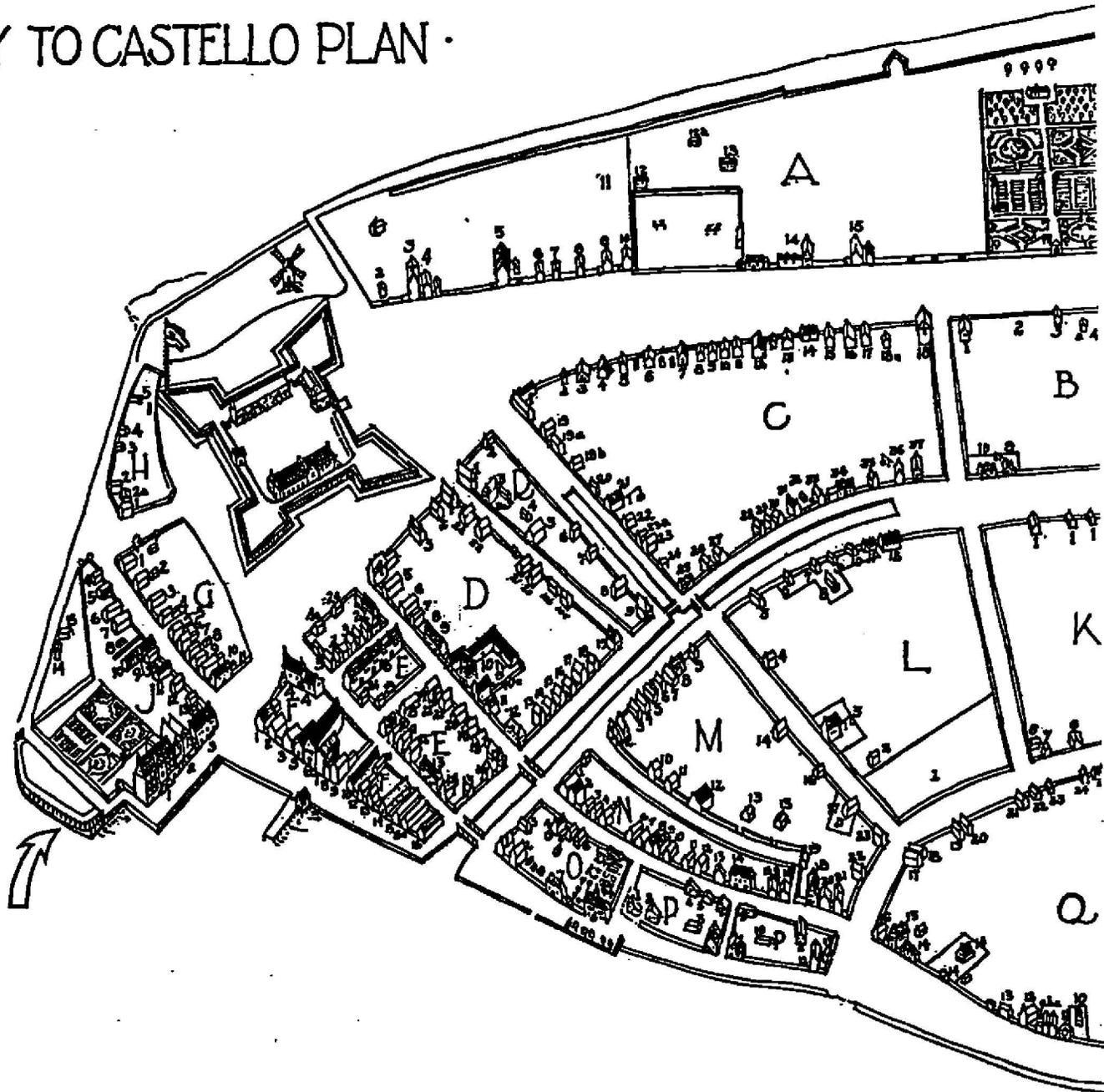
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 3. Church of the Holy Spirit
 4. Street Map of the West India Company
 5. Survey of the West India Company
 6. Dutch Records of the West India Company
 7. House of the West India Company
 8. The West India Company
 9. The West India Company
 10. The West India Company
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 14. The West India Company
 15. The West India Company
- a.a. - General Survey of the West India Company

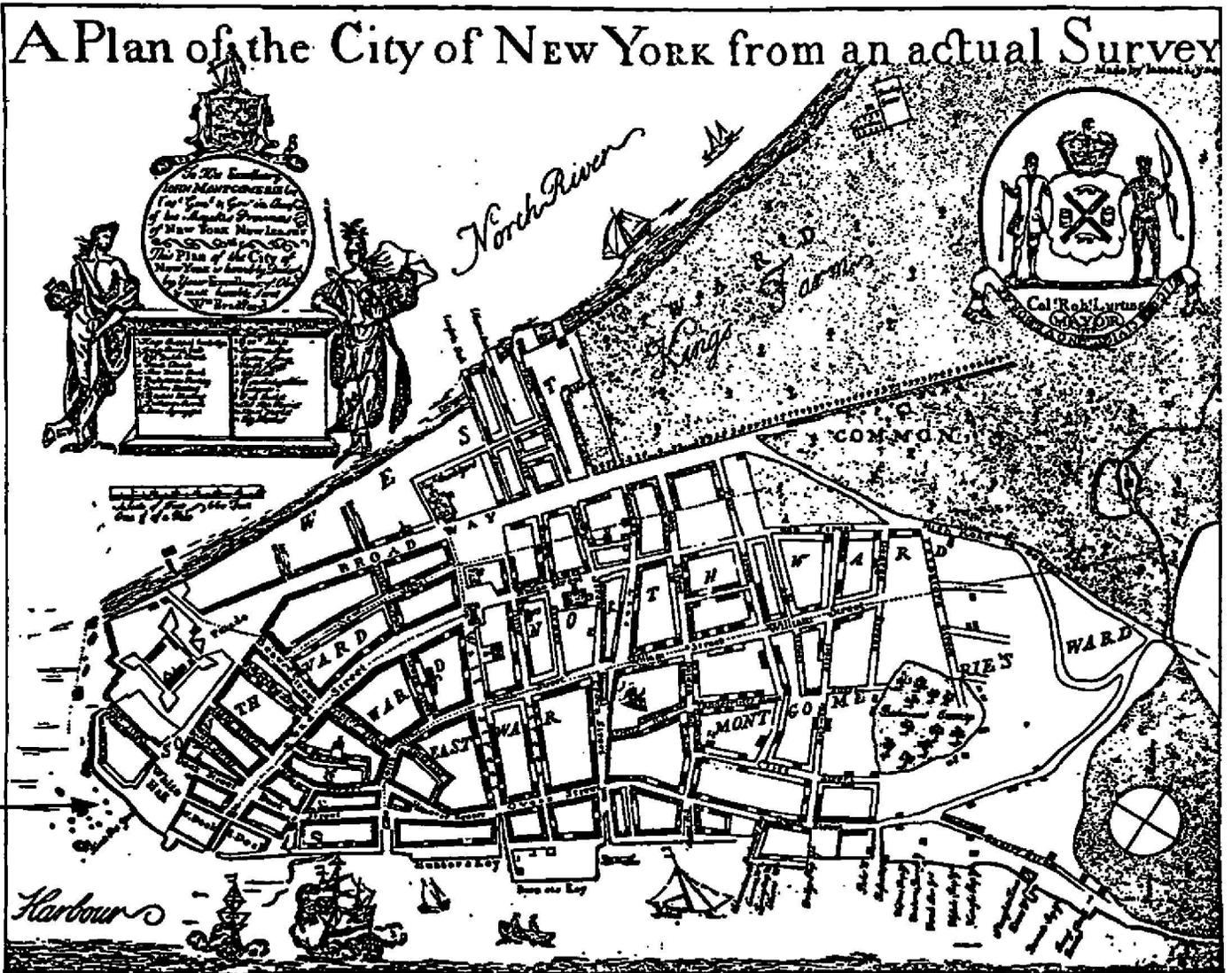


Photocopied from Innes, 1902, NEW AMSTERDAM AND ITS PEOPLE. The map is torn.

KEY TO CASTELLO PLAN



1660 Castello Plan

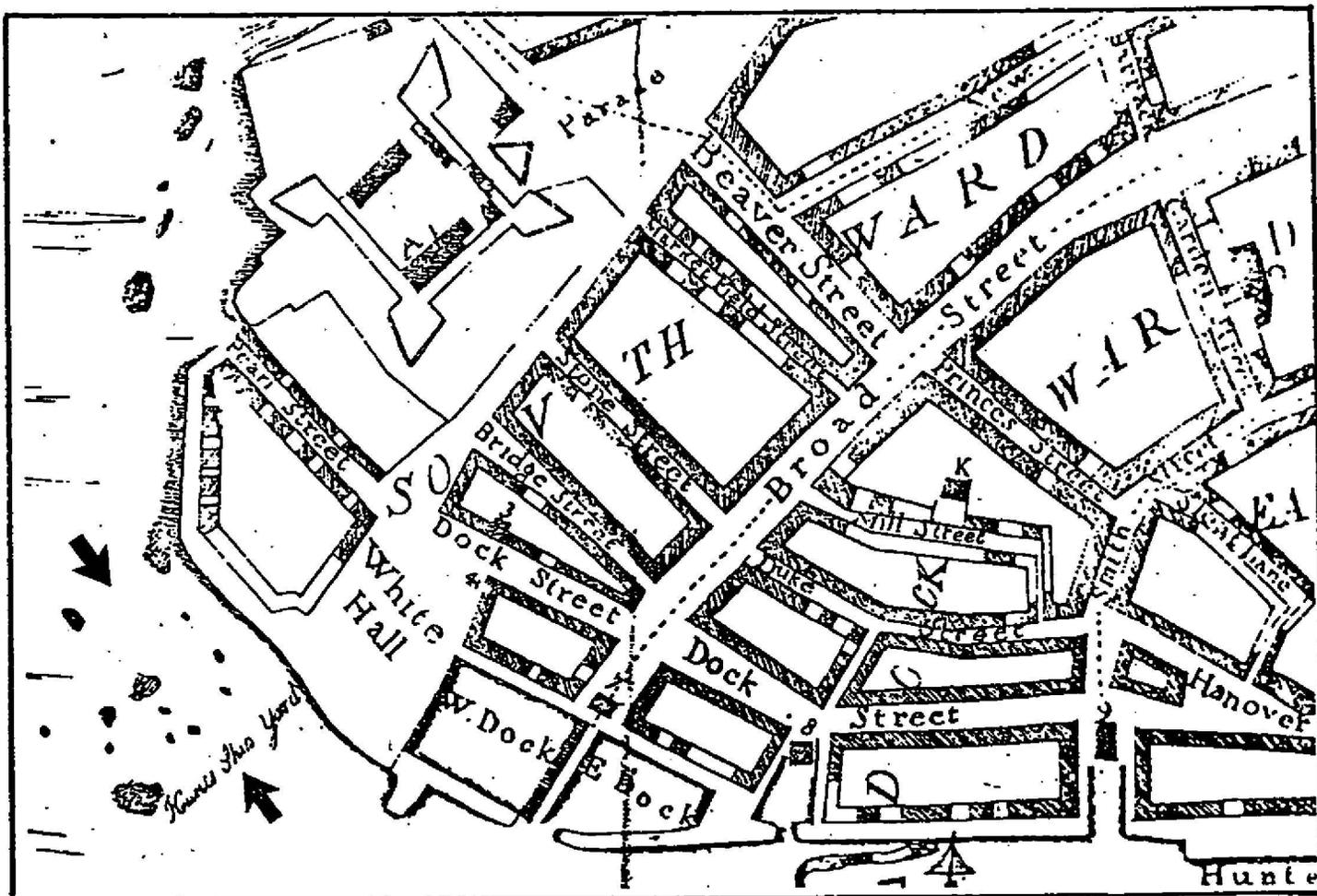


Lyne Plan, 1728.



Note the location of the Capske Rocks and the Notation for "Hunt's Ship Yard" off-shore.

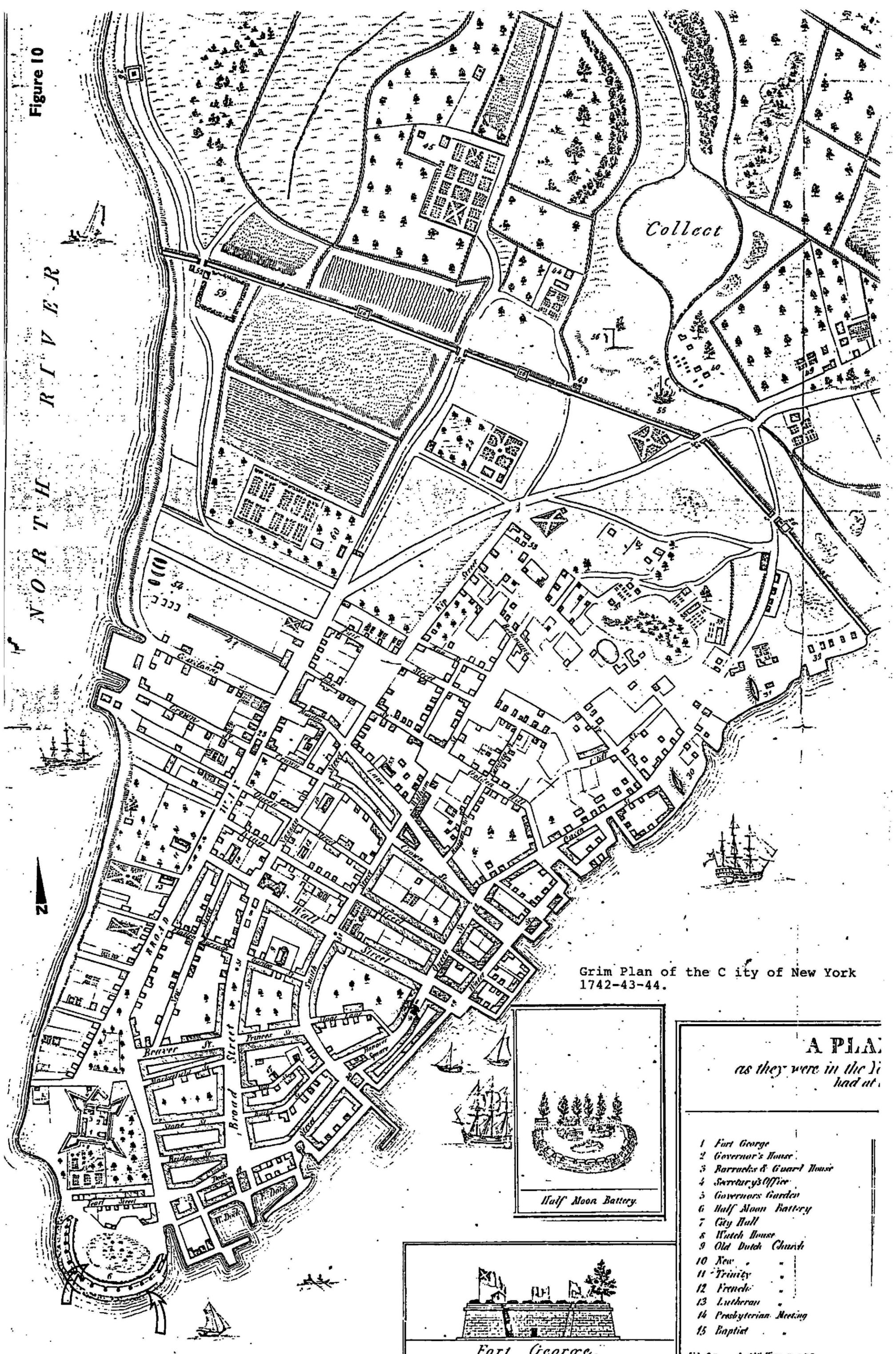
Figure 9



Detail from the 1730 Bradford Map. Note the "Capske Rocks" off-shore and the reference to 'Hunt's Ship Yard.'

Figure 10

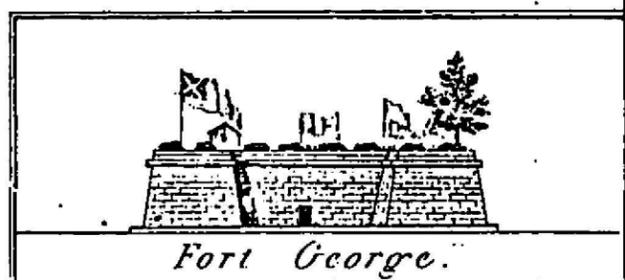
NORTH RIVER



Grim Plan of the City of New York 1742-43-44.

A PLAN as they were in the Year had at

- 1 Fort George
- 2 Governor's House
- 3 Barracks & Guard House
- 4 Secretary's Office
- 5 Governor's Garden
- 6 Half Moon Battery
- 7 City Hall
- 8 Watch House
- 9 Old Dutch Church
- 10 New
- 11 Trinity
- 12 French
- 13 Lutheran
- 14 Presbyterian Meeting
- 15 Baptist



Edw. C. Hayward 120 Nassau Street N.Y.

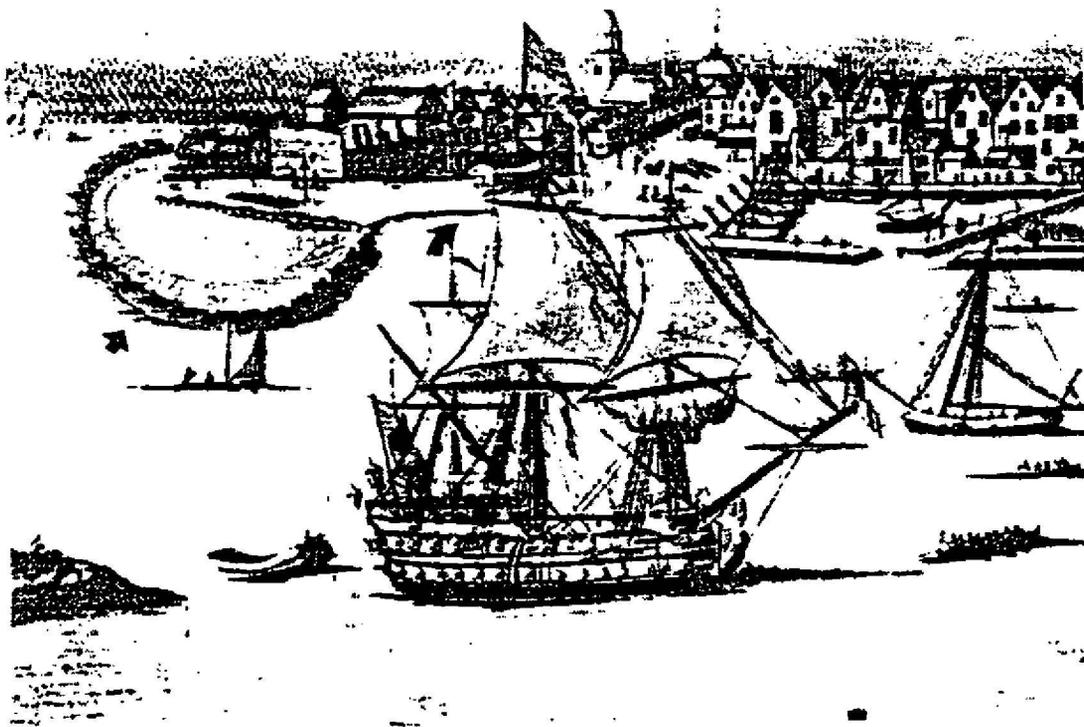
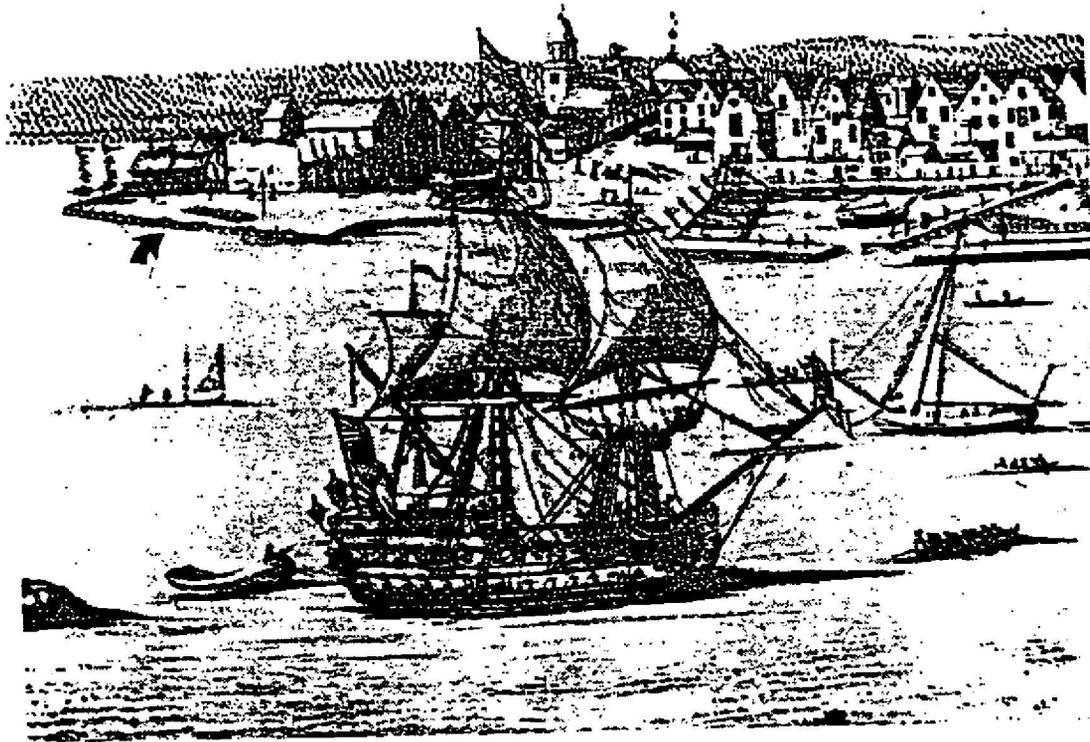
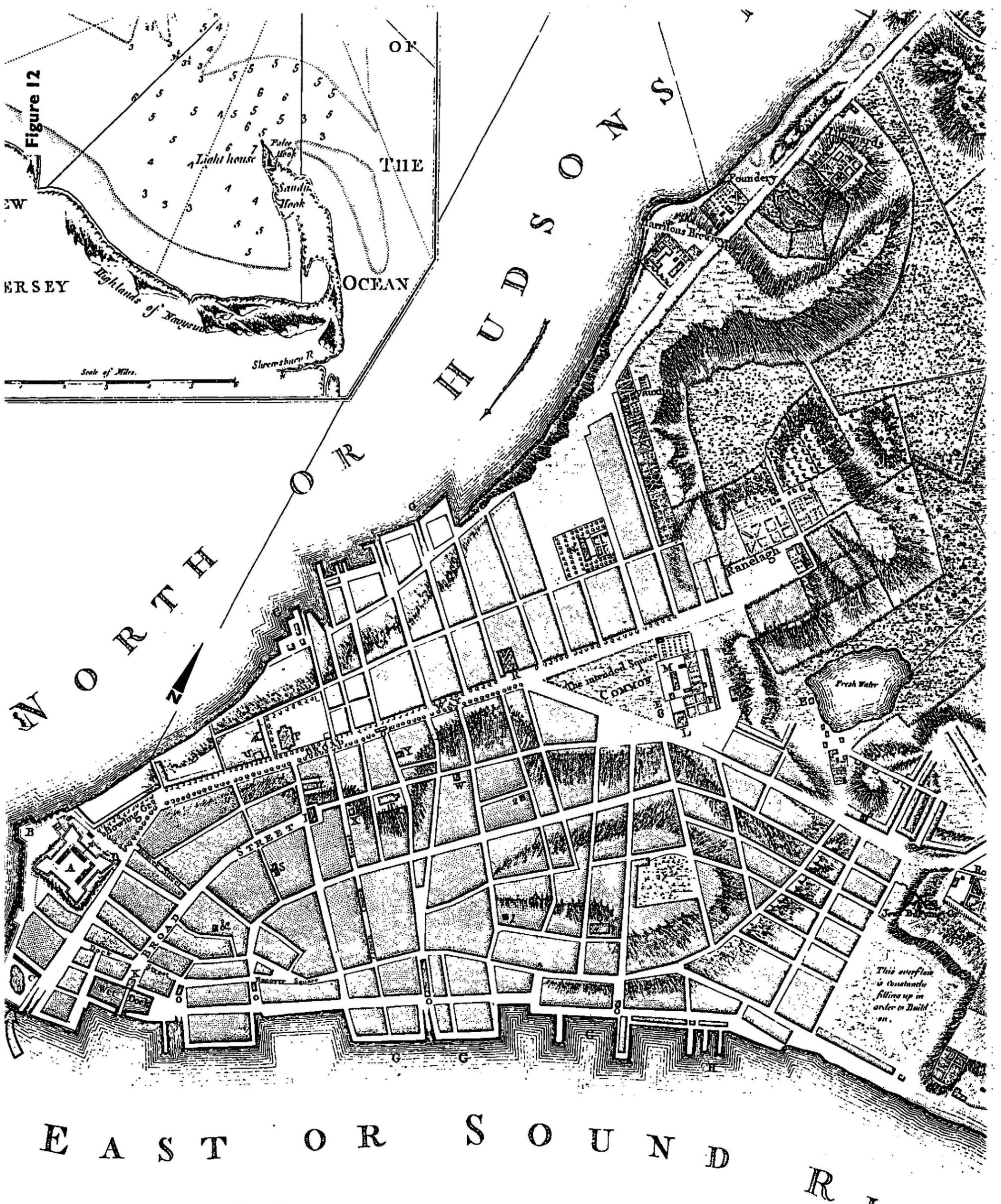


Figure 11: A detail from the 1717 Burgis View of New York. The small arrow points to where Peter Stuyvesant's house would have been before it burned shortly before. There is some fill and a retaining wall in the project site, but most of it is still under water.

Figure 11A: A detail from the 1746 Bakewell View, an updated version of the Burgis View. The Half Moon Battery, which filled in a large portion of the project site, is in place and indicated in a large portion of the project site, is in place and indicated by an arrow. Another arrow shows the position of Whitehall Slip is to the right of the Battery.



NEW YORK.

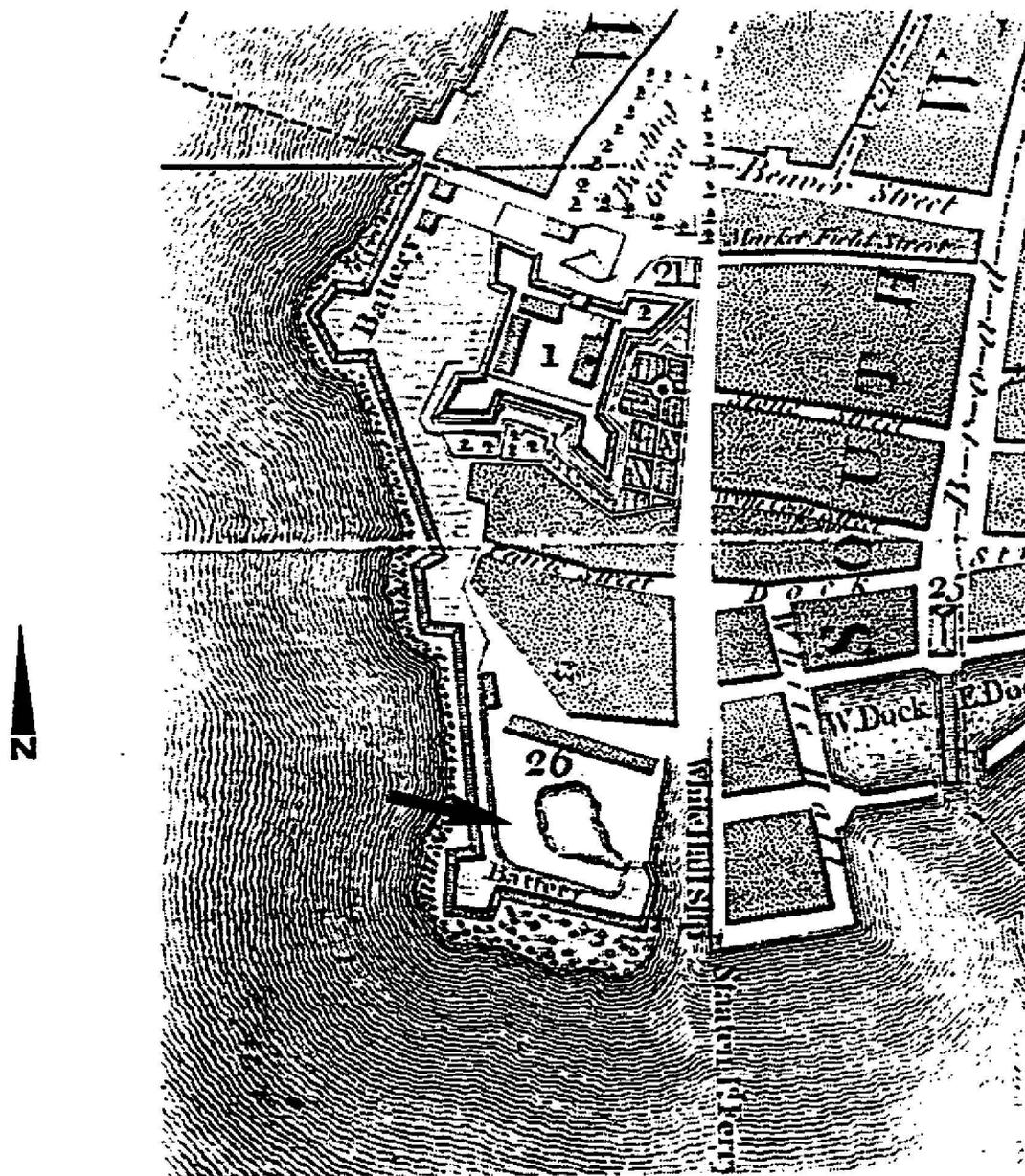
1766 John Montresor
A Plan of the City of New York and Its Environs.

*ibacum, a City in the Province of that Name; formerly New Amsterdam, and the Country Now Netherland, or Nova Belgia, from having been first settled by
though first discovered by Men Hudson, an Englishman commissioned by King James, and employed by the E. India Company, for finding a Passage through N. America,
in 1609, who sold his Discovery to them. This its Metropolis, is situated in 40. Deg. 42. Min. 30. Sec. N. Lat. and on the South West end of an Island, of the
r. 4. Miles in length, and about one Mile wide, which comprehends the Liberties or Charter of the City, and was call'd by its original Natives the Sacages,
via Island, the City is Constructed at the confluence of the North or Hudson's River, leading to Albany, and the East or Sound, which divide N. York, now Long Island,
& N. York (N. York) from the Main, and the direct Navigation for small Vessels to the Eastern Provinces; its about thirty Miles from Sandy Hook, the entrance
Ocean, so through a winding course call'd the East and West Banks, to the Narrows one Mile across, being form'd by Long and Statens Islands, both in
iron on the S. West end of the City, stands a Fort of Stone, where the Governor resides, constructed by the Dutch in 1624, call'd Fort Amsterdam, now Zeet
which has often been repair'd the whole on Barbette, & where Exterior Line is 350. Feet, its Flanks which are very Intigent, are nearly at Right
contains Barracks for Men, and constructed originally for two of the first New York, Independent Companies (the paid by the Crown) it has two
Ware, but damp, & no other Comarts, & badly supplied with water; in its N. East Point towards the Town, is situated a Ravelin or Quarrt Port or
that rather obstructs its Defence, which are of themselves but bad, this Front is command. by a Piece of Ground Equal to it at the end of 3/4 Bowling
original Parade, & formerly in the Jurisdiction of the Fort; this height is 350. feet from it, to where its Principal street commences call'd the Broad way; this
restructed in a small Side, just sufficient for the Work, which is two foms to the Town, & to the Water, one facing the East and one the North River, & Battery
series a respectfull appearance with it (at a distance) in a very ruinous situation, it was constructed at an Enormous Expence, & seems to have been
for Profit & Form than Defence, it being entirely exposed to a fire in reverse, & Enfilade; it consists of 90. Embrasures, in which are 71.
1. Cannon mounted.*

References.

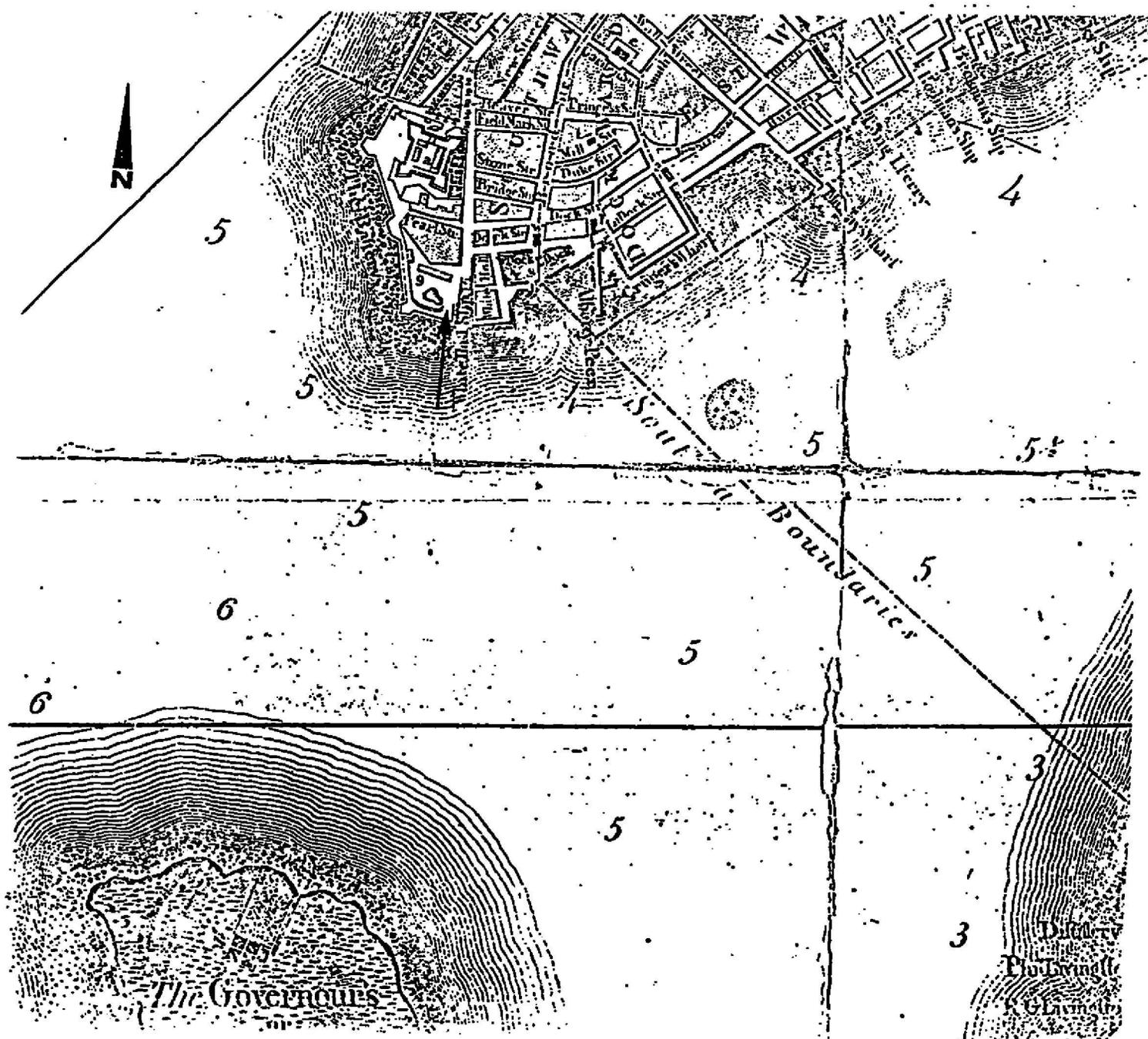
A. Fort George	M. Workhouse	Y. Quakers
B. Batteries	N. Colledge	Z. Dyabotery
C. Military Hospital	O. Markets	2. Jews Syn
D. Secretaries Office	P. Trinity Church	1. Baptist
E. Powder Magazine	Q. St. Georges Chapel	2. Moravian
F. Soldiers Barracks	R. St. Pauls Church	3. New Luth.
G. Wharf and Quay	S. Old Dutch Church	1. Old Scho.
H. Ship Yard	T. New D...	3. Ruins of
I. City Hall	U. Lutheran Church	Rome's H
K. Exchange	W. Calvins Church	6. Fresh Wat.
L. Canal	X. French Protestant Church	11. Town

Figure 13



Detail of 1767 Ratzel Map. #26 is labeled the Lower Barracks. Note the pond also located on what would be the project site.

Figure 14



1767 Ratzel Map (1853 Colton version) #9 is labeled "The Lower Barracks" and is on what would be the project site.

A New & Accurate PLAN of the CITY of NEW YORK in the State of NEW YORK in NORTH AMERICA. Published in 1797



8209

copied from a Map belonging to Gen. Jackson for D. T. Valentines Manual, 1853

W. Blaylock & Co. No. 100 N. 2nd St. N.Y.C.
(7471)
1797

THE TAYLOR-ROBERTS PLAN

- 32 Bridewell
 - 33 Alms House
 - 34 State Prison
 - 35 College
 - 36 Hospital
 - 37 Library
 - 38 Arsenal
 - 39 Theatre
 - 40 Exchange
 - 41 Fly
 - 42 Oswego
 - 43 Bear
 - 44 Catharine Slip
 - 45 New Court House
- Markets
- Chamber St.
Greenwich
Robinson St.
Broad Way
Nassau St.
Tryon Row
Chatham St.
- opposite the Park

1803 Goerck and Mangin Map



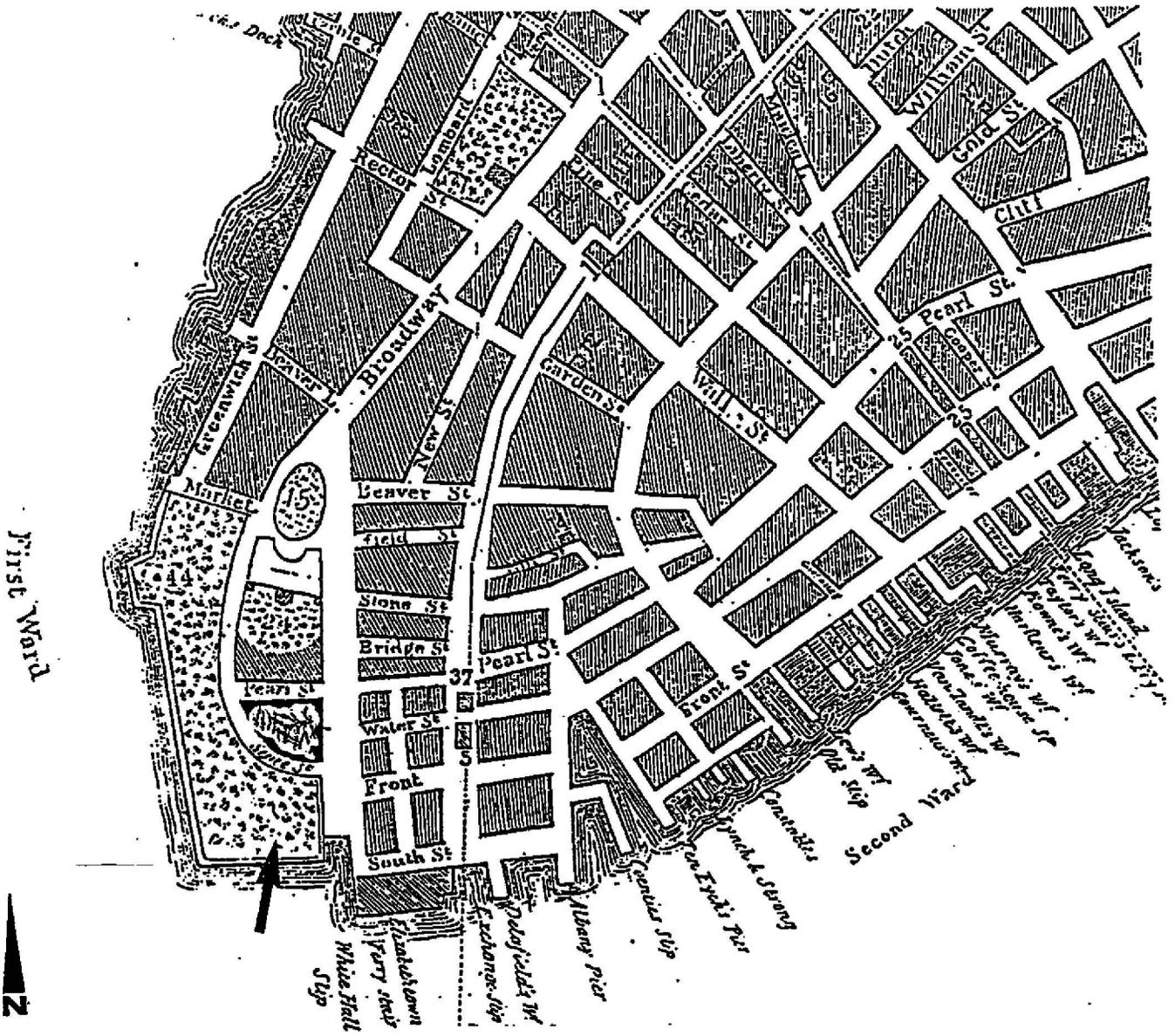
East

PLAN OF THE CITY OF NEW YORK.

Drawn from Actual Survey by Casimir Th. Goerck and Joseph M. Mangin.

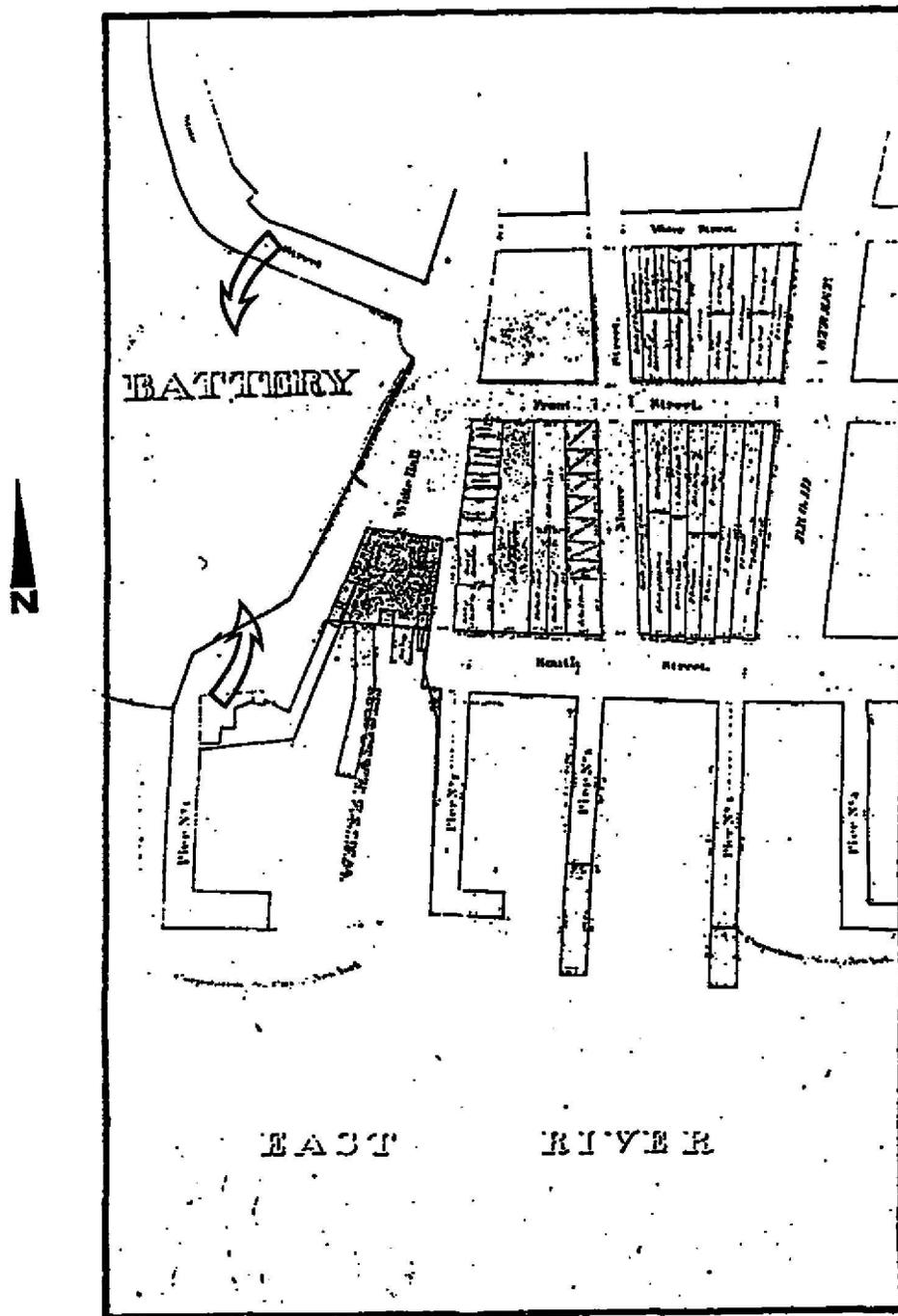
This Plan shows the Wards of the City as lately altered by the Legislature and designates with accuracy most of the streets of a line beginning on the North River; at Wall Street thence extending through said Street to Hudson Street, thence to Broad Street, thence to Broadway, thence to Bullcock St, and through this Street to the East River. Except the streets of the line mentioned have been created to the Corporation or have been approved and opened under their authority, future arrangements as the Corporation may deem best calculated to promote the health, introduce regularity and

Figure 18



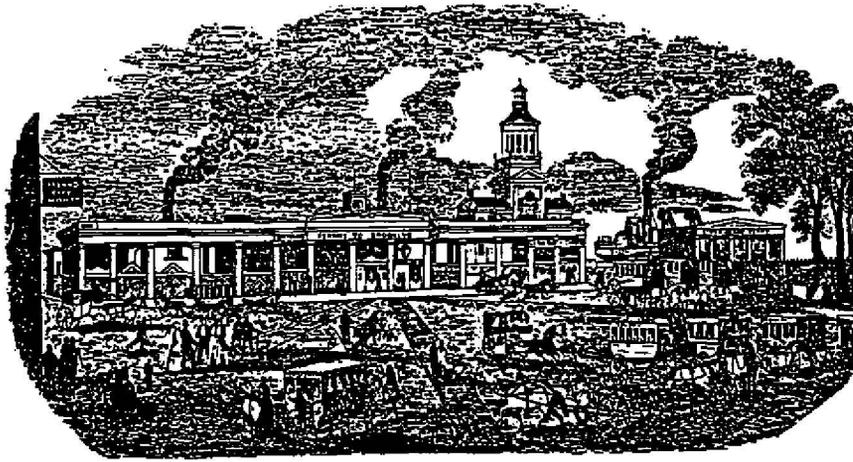
1804 Hill Plan of the City of New York.
(Valentine's MANUAL, 1850)

Figure 20



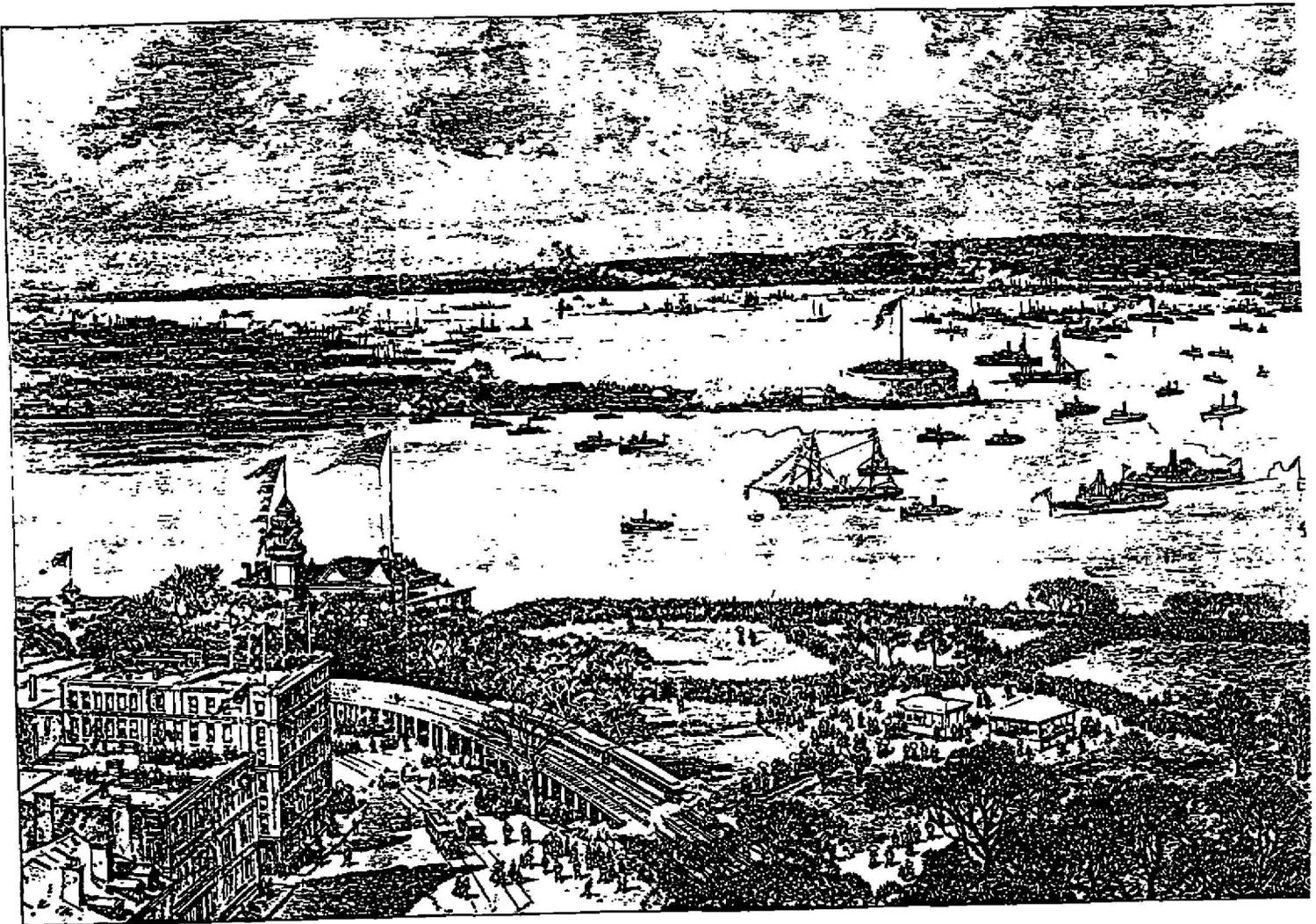
1827 Ewen Map of the waterfront

Figure 21



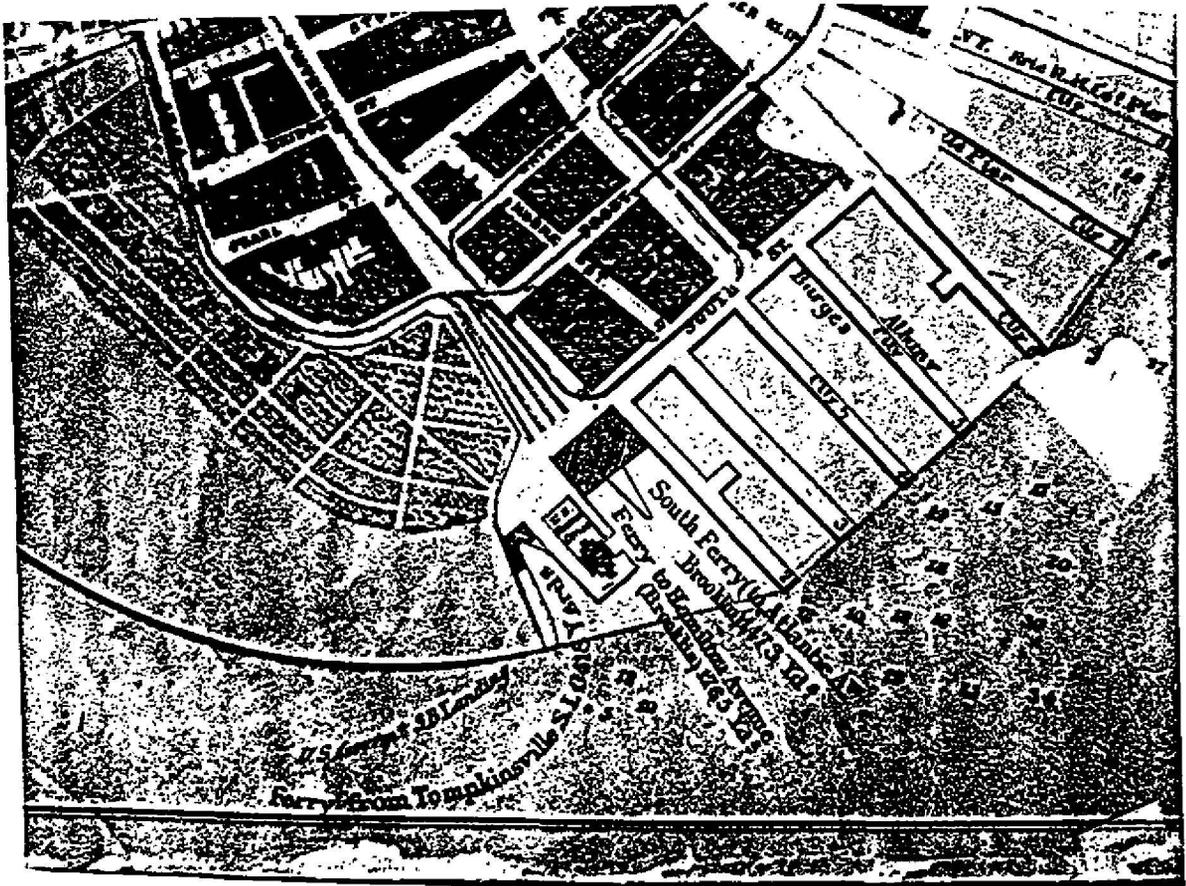
A view of the various ferry terminals at the foot of Whitehall St. in Manhattan ca. 1840. Ferryboats bound for Brooklyn and Long Island used slips in the middle; Staten Island service operated out of the building (and ferry slip) to the right. Horse-drawn omnibuses were available for debarking ferry passengers. [author's collection]

From Cudahy 1990:67



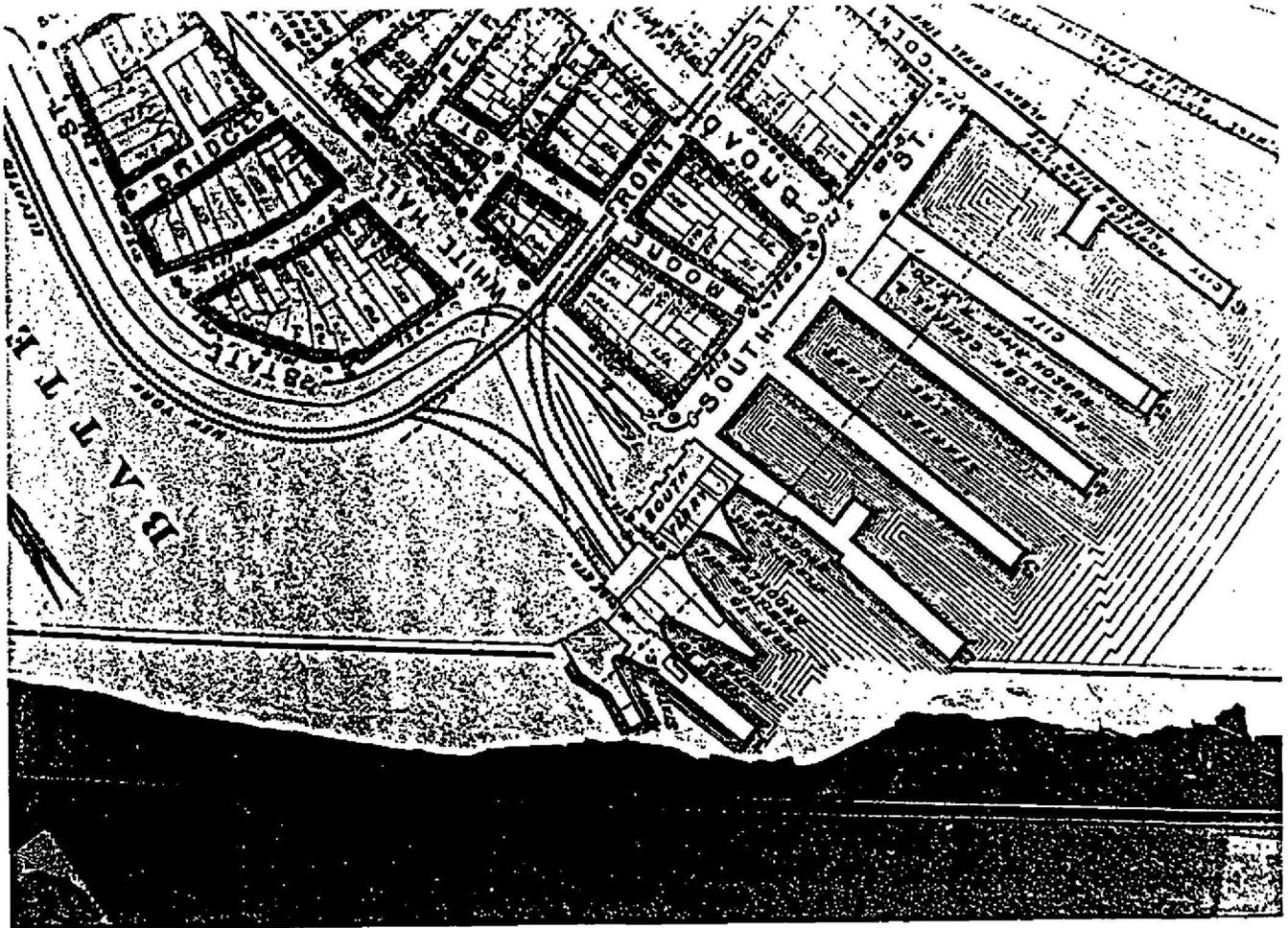
The same view from landside in 1889. Note the elevated train tracks. From Grafton 1980: 245.

Figure 22

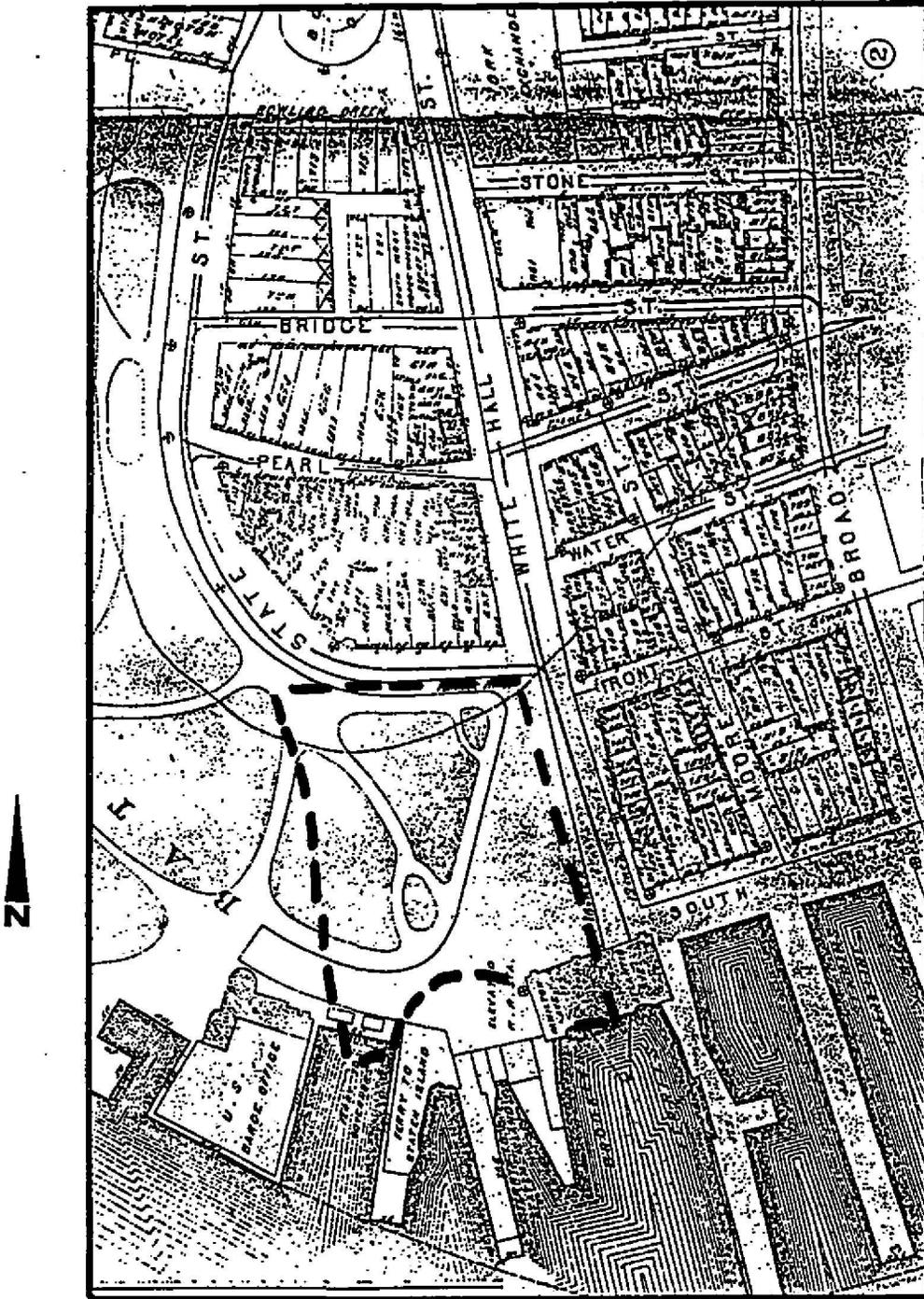


Photograph of a section of the 1867 Dripps Map

Figure 23



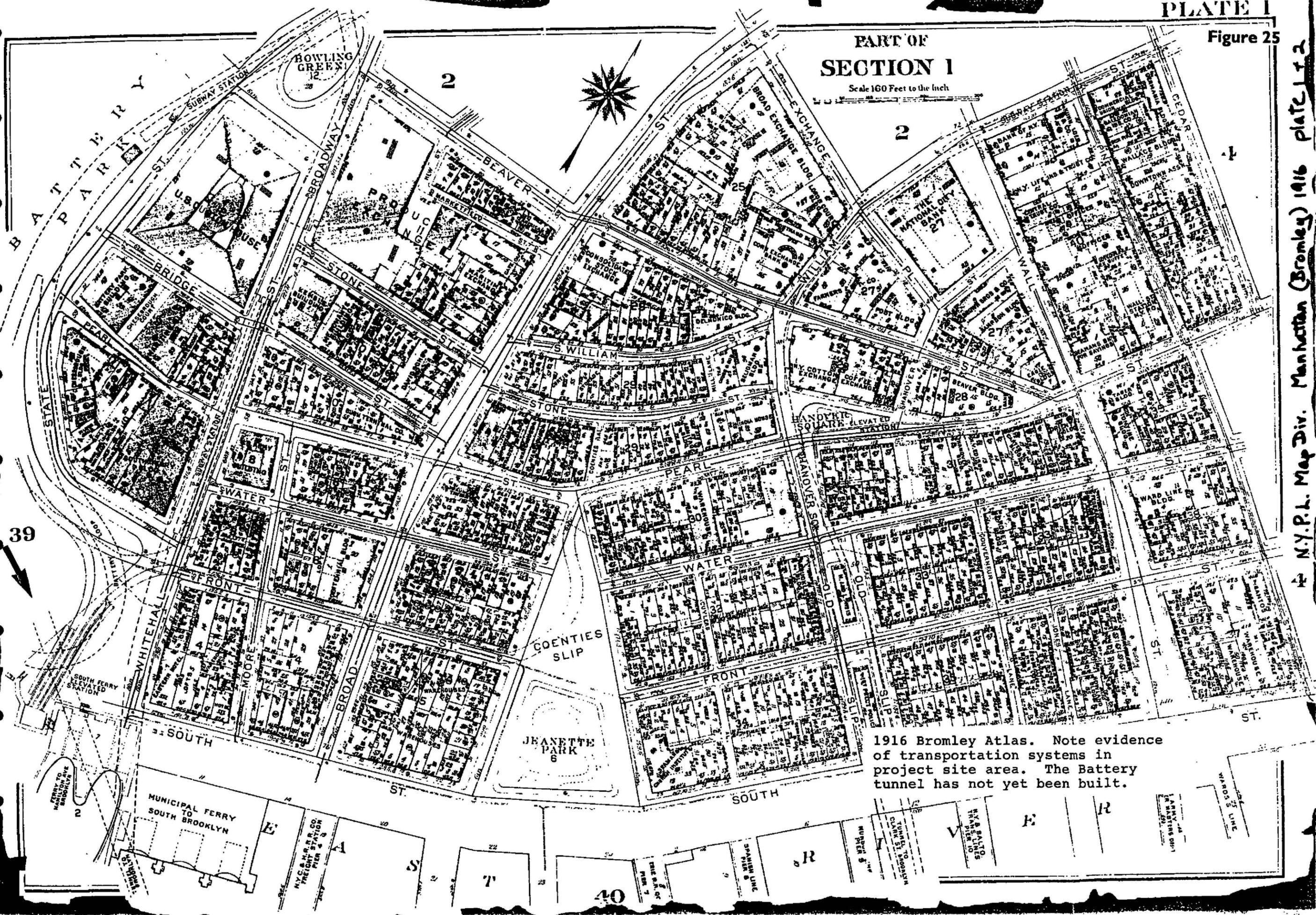
Photograph from the 1879 Bromley Atlas showing harbor structures and transportation lines adjacent to Battery Park in the project area.



1881 Pidgeon Atlas showing approximate boundary of proposed Peter Minuit Park site.

PART OF SECTION 1

Scale 160 Feet to the Inch

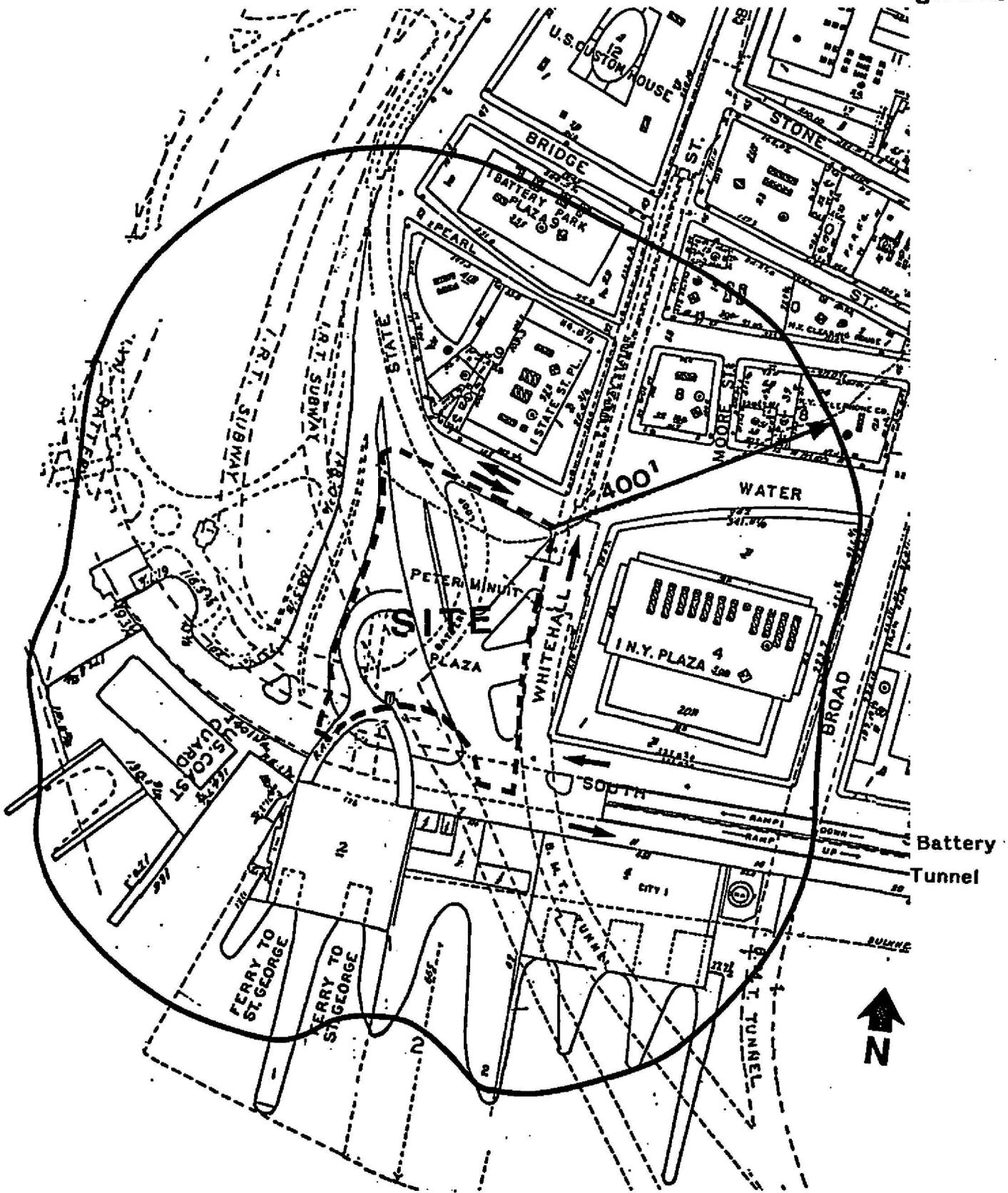


1916 Bromley Atlas. Note evidence of transportation systems in project site area. The Battery tunnel has not yet been built.

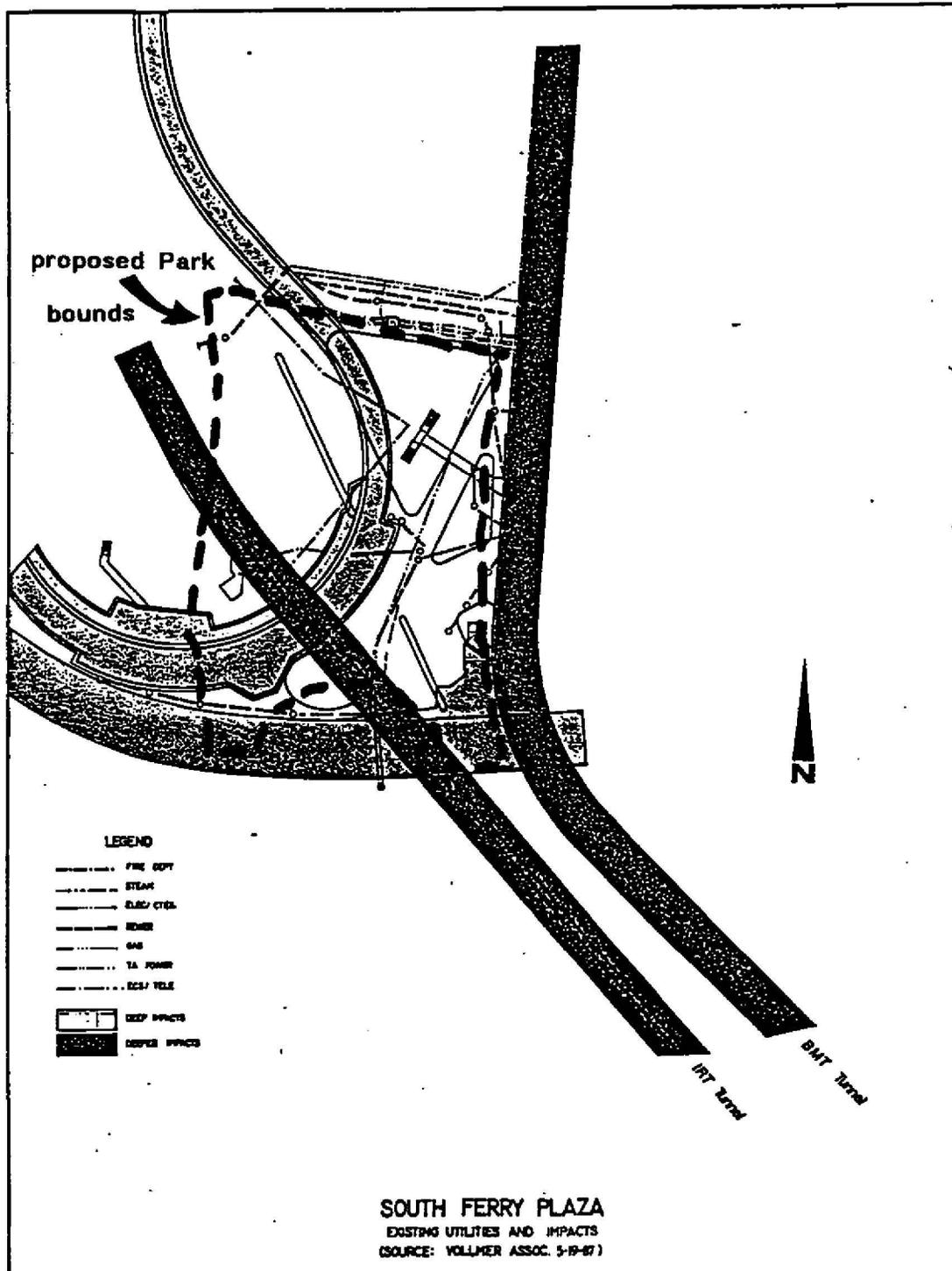
N.Y.P.L. Map Div. Manhattan (Bromley) 1916 Plate 1.2

39

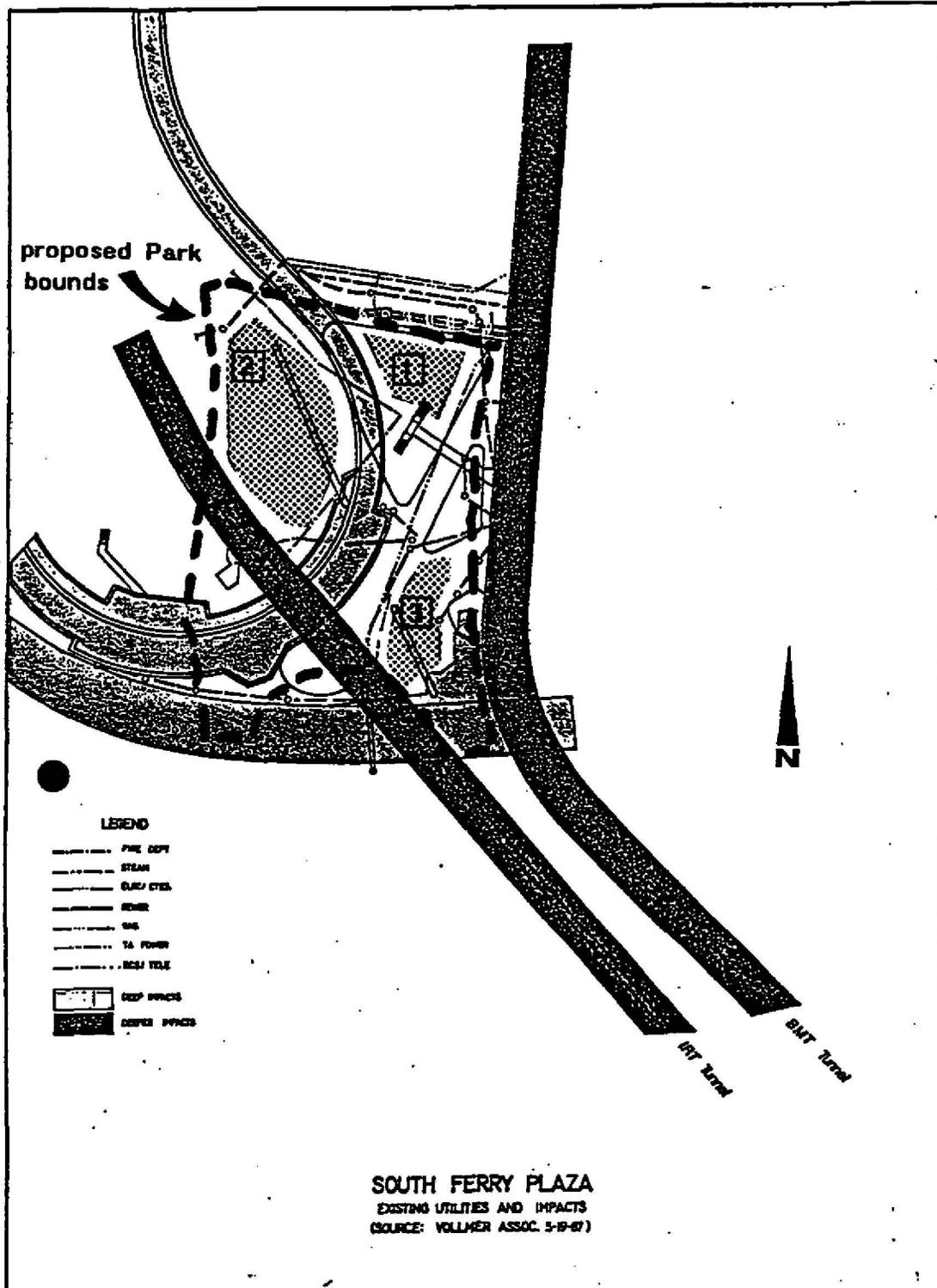
40



Proposed Peter Minuit Park Site. Note Battery tunnel. Furnished by Philip Habib & Associates.

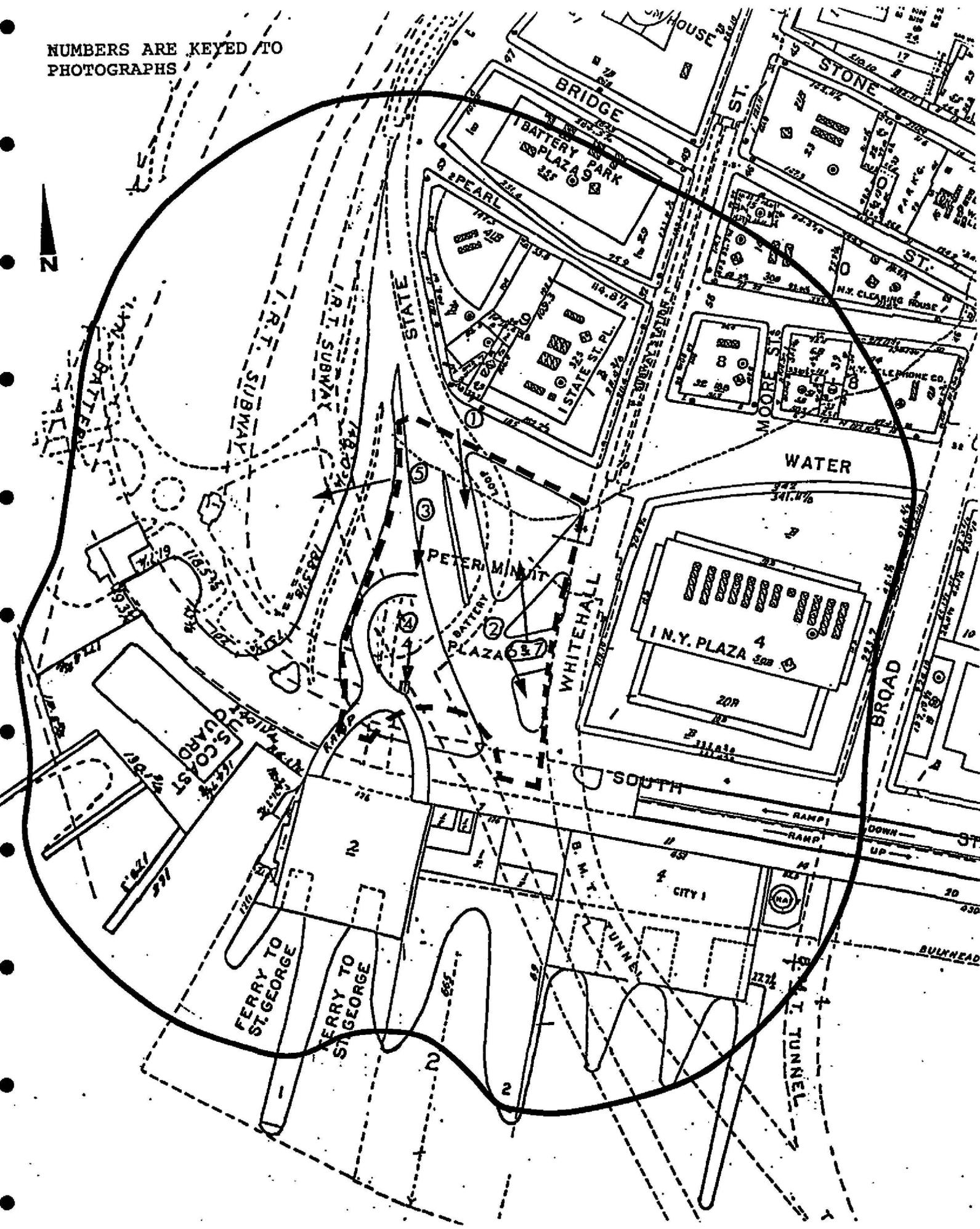


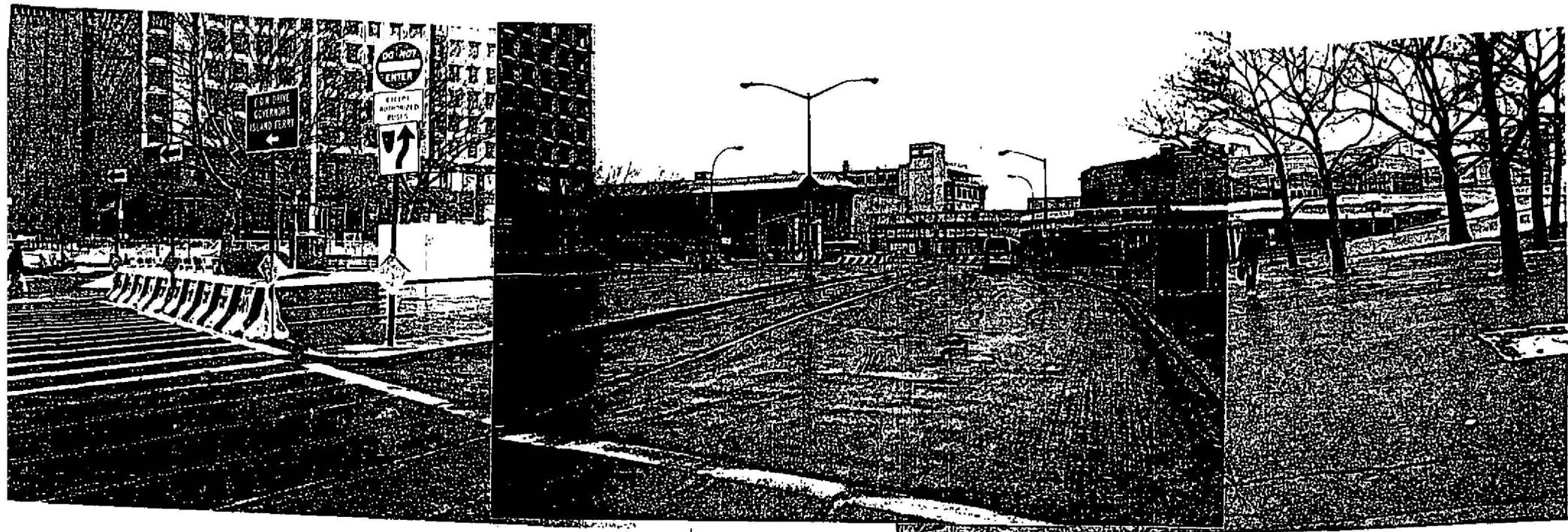
**COMPOSITE MAP: Showing Approximate Relation
of Proposed Peter Minuit Park Site to Known Disturbances**



Sections of Archaeological Sensitivity

NUMBERS ARE KEYED TO
PHOTOGRAPHS





Photograph 1: Looking south-southeast from State Street



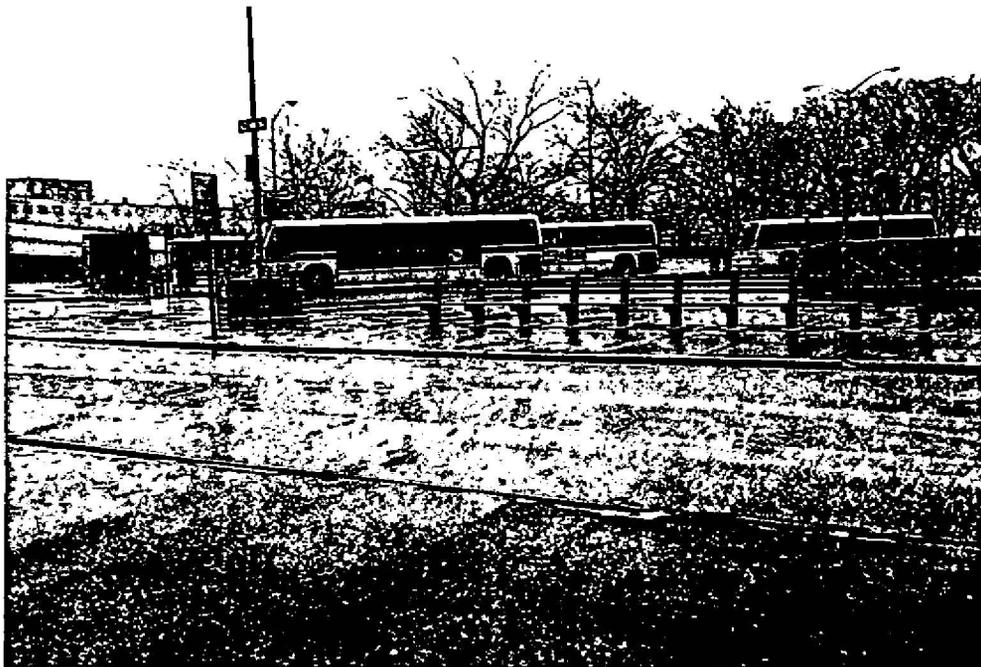
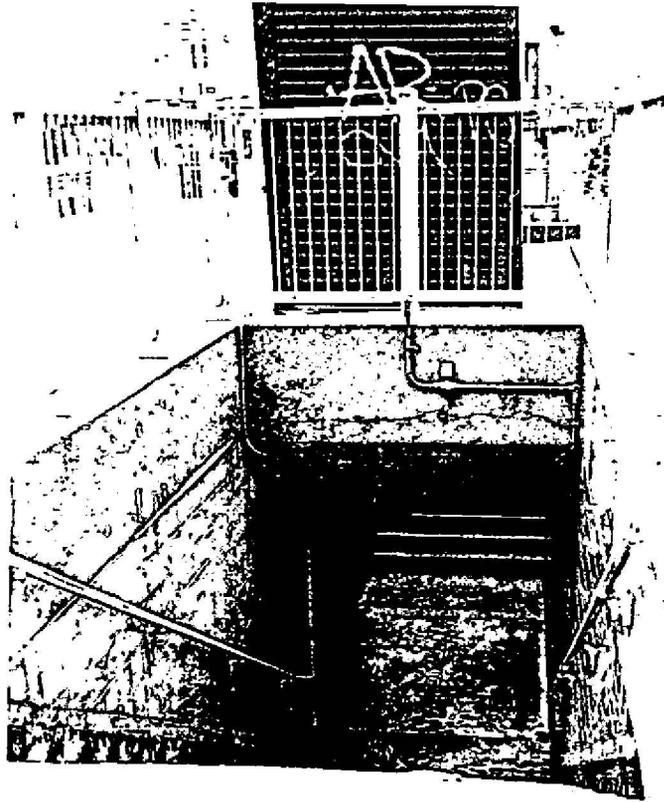
Photograph 2: Close-up of ventilation shaft

Photograph 3: Close-up of Ferry Terminal ramp

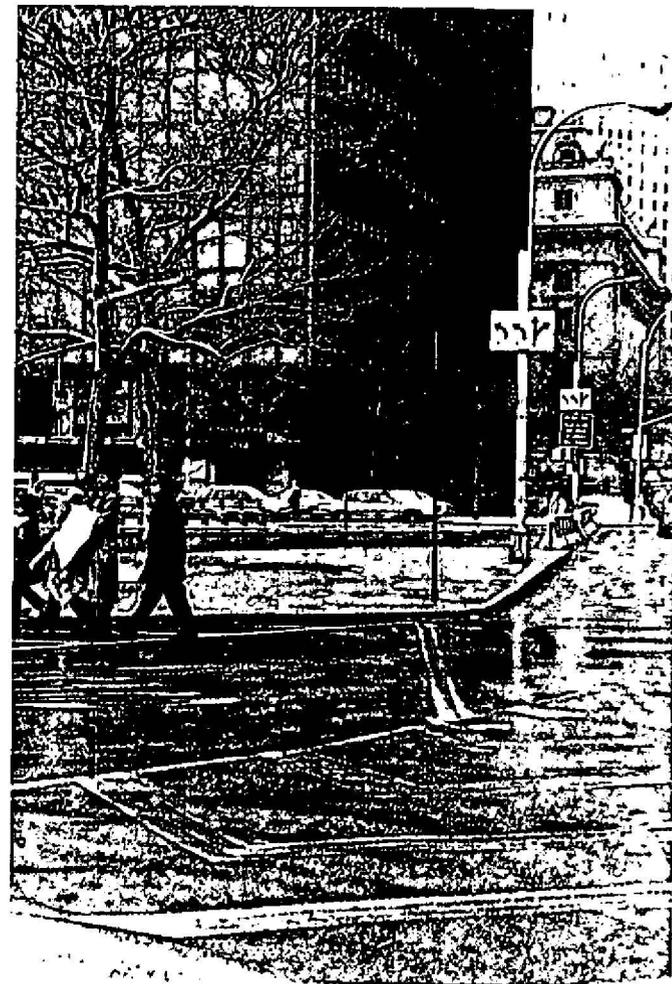


Photograph 4: Close-up of
subway entrance

Photograph 5: Looking south-
west toward Battery Park



Photographs 6 & 7: Looking
north-northwest toward
State Street



APPENDIX A

Soil Borings Analysis

APPENDIX A - BORING LOGS

As discussed in the previous sections of this report, the present surface of the project area was created through a series of filling episodes. The land of the project site itself can be divided into three general zones corresponding to different phases of this landfill process, as well as different pre-colonial topography: 1) the extreme northern part of the site, near State Street and its intersection with Whitehall, adjacent to a section of the land Peter Stuyvesant reclaimed from "the water swamp" (Geismar 1986:46); 2) the extreme eastern edge of the project parcel, along the west side of Whitehall Street, which formed the western shore of Whitehall Slip, only completely filled in by the remaining section of the parcel, actually the bulk of the project site, filled by 1766, with smaller shore additions by 1797, once a continuously submerged part of the river bed. Because of this fairly clear tripartite division, the borings and Rock Data Maps provided by the Topographic Bureau - Subsurface Exploration Division will be discussed in three groups according to the relevant zone.

State Street Zone

Four borings are available from the northeastern edge of the site, all near the intersection of State and Whitehall (59, 110, 111, 112). Unfortunately only one of these, #110, provides any description of what lies between fill and bedrock, which in this case is a 6' layer of "sand & clay," beneath 13' of fill. This is comparable to data from six borings done opposite the project parcel, on the north side of State Street. These reveal fill layers of between 5' and 15' (including the concrete surface) over various combinations of sand, silt and clay with some gravel underlain by bedrock (Geismar 1986:70). The absence of river mud from all of these borings suggests that this part of the study parcel and the adjacent area to the north were not part of the river bottom where mud would collect. Historical data support this assumption describing the adjacent area as "swamp" and "rilled beach" (Ibid.:46), a low-lying area only fully inundated during high tide. Based on this data, the top of the sand and clay layer, at an elevation of -8.7' in boring 110 (13' below present surface), barring subsequent construction disturbance, might represent the original 17th-century land surface.

Using the boring information from north of State Street (Geismar 1986:70), it can be generalized that the surviving surface of this sand and clay layer would lie between greater than 5' (from Boring A on Pearl Street) and 16.5' below the present surface.

Whitehall Slip Zone

Although not part of the study site, four borings that were performed along Whitehall Street, in the former bed of Whitehall Slip (58, 214, 254, 256), could provide valuable comparable data concerning the survival and depth of cultural resources on the adjacent project site. These borings were done prior to the construction of the present Battery Park Underpass, which runs under South Street. A subsurface profile chart, included in this appendix, was drawn for at least 1,000 feet along the river and land sides of the underpass, providing a clear model of what sort of subsurface topography would result from the simple filling of a section of river shore. Basically, the profile shows a layer of fill, over a layer of river mud, the former river bottom. This is underlain by glacial till over the mica schist bedrock. Such a profile would be expected in Whitehall Slip, despite any dredging episodes which may have occurred in its history. Borings 58, 254 and 256 conform to this expected profile, each revealing a layer of fill between 10' and 19.2' thick (including surface soil and paving) over a layer of river mud of highly variable thickness (at least 6.2', 1.3' and 11' respectively). Beneath 254 and 256 (58 ends at a boulder) is the expected layer of till and then bedrock. The boring logs of 254 and 256 also show wood inclusions in the river mud deposits, which could have migrated from the fill layer, or have been debris dropped into the slip. The variation in mud layer thickness may be attributable to changing sedimentation rates in time and geographic location along the East River. Another possible explanation is construction excavation removing a part the mud, and later refilling of the site. Whatever the reason, prior to underpass construction, sections of either the early colonial river bottom or the later Whitehall Slip bed survived relatively intact.

Although boring 214 does not show the expected mud layer, it is possible that construction excavation may have obliterated a thin lens of river mud. When compared to the Battery Park Underpass Subsurface Profile Map, the 17' of fill in 214, which ends at a till-like layer at an elevation of -13.8', easily extends into the till layers of some sections of the profile. However without more data, this hypothesis can not be proven.

Late 18th-century Fill Zone

The path of the Battery Park Underpass borings continued from Whitehall Street west along South Street, into the zone of the project parcel created during 18th-century filling episodes. The subsurface profile discussed in the previous paragraph applies to this area as well, with an expected boring profile of fill, mud, till and bedrock. Six borings were performed in this section of the study parcel (60, 250-253, 255). Borings 60, 251 and 255

conform to this model, encountering the mud at elevations of -6.1', -5.2' and -5.2' respectively (10' to 12' below the present surface). Boring 251 also shows fill and till components mixed in with river mud, suggesting a gradual filling and levelling process. This interpretation is supported by 251's proximity to the river shore, which was filled and stabilized over a longer period.

Despite the surviving river bottom in borings 60, 251 and 255, borings 250 and 252 suggest post- or pre-filling disturbance. Both exhibit extremely thick layers of fill, 23.3' and 17.4' (to -18.9' and -12.8'), indicating excavation disturbance through the river bottom into the till layer. Boring 253, with the highest bedrock elevation in the study area, -13.3', shows only a fill layer underlain by bedrock. This high outcrop of mica schist might well be part of the Kapsee rock formation, whose presence in the study parcel was hypothesized in the discussion of historical background. Described as navigational hazards, the boring 253 rock would have jutted up through the till layer and the river bottom.

The variable survival of river mud layers among the various borings in this section indicates that no single large subsurface disturbance (until the construction of the underpass) was able to obliterate all traces of the river bottom. Therefore, mud layers should be present on other sections of the site which exhibit similar scattered deep disturbance. The definition of "deep" disturbance is interpreted as any excavation which would extend into the top of the till layer, this destroying the river mud layer. From the borings cited in the discussion of the last two zones of the study parcel, certain destruction of the mud layer would necessitate disturbance to elevations of below -18' (58) and -23.2' (251). Using the Subsurface Profile, which employs many more borings over a much larger area, and is therefore more reliable when making generalizations, the top of the till layer can extend to elevations as deep as -30', with elevations between -20' and -30' not unusual.

In addition, the surviving river bottom sections are protected by a thick layer of fill. The thinnest of these layers is 10' thick, ending at an elevation of -5.2' (252, 255 and 256), numbers which are supported by the data from the Subsurface Profile. This indicates that any modern construction excavation in these two zones would have to reach at least 10' below the present surface before disturbing the existing river mud layers.

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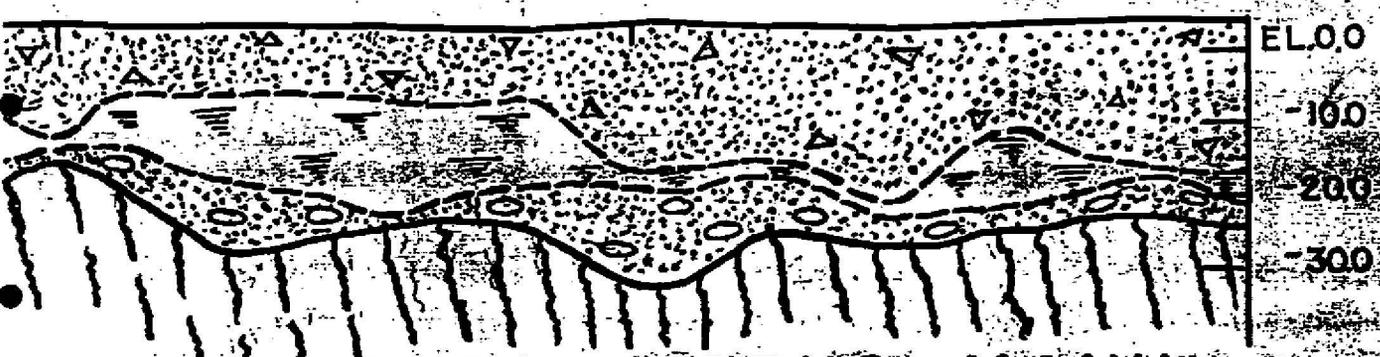
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BORO WORKS MANH.

BATTERY PARK UNDERPASS

SUBSURFACE PROFILE

BY

JOHN J. MURPHY & THOMAS W. FLUHR

10/2/50

LAND SIDE OF UNDERPASS

15+00

20+00

ARTIFICIAL FILL

RIVER MUD

GLACIAL TILL
GARDINERS CLAY

SCHIST

15+00

20+00

ARTIFICIAL FILL

RIVER MUD

GLACIAL TILL

GARDINERS CLAY

SCHIST

BORC

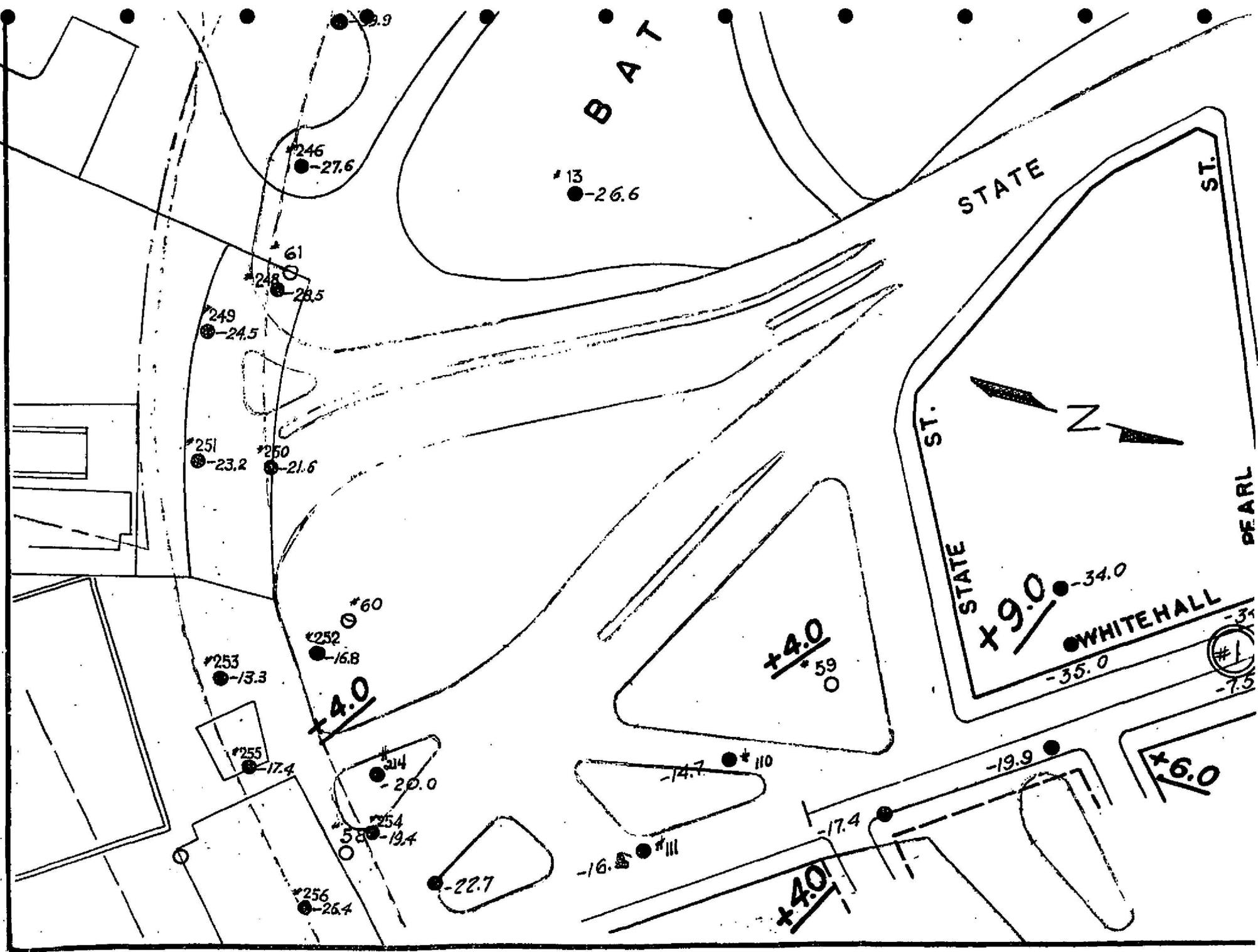
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SUBS

RIVER SIDE OF UNDERPASS

JOHN J. M

Boring Location Map



APPENDIX B

Notes on the topography in the project area from Joan Geismar's 1986 report "17 State Street: An Archaeological Evaluation, Phase 1 Documentation," on file at the New York City Landmarks Preservation Commission.

Section 7. NOTES

1. Since the site's natural topography is an issue in the interpretation of its archaeological potential, it is discussed in some detail here:

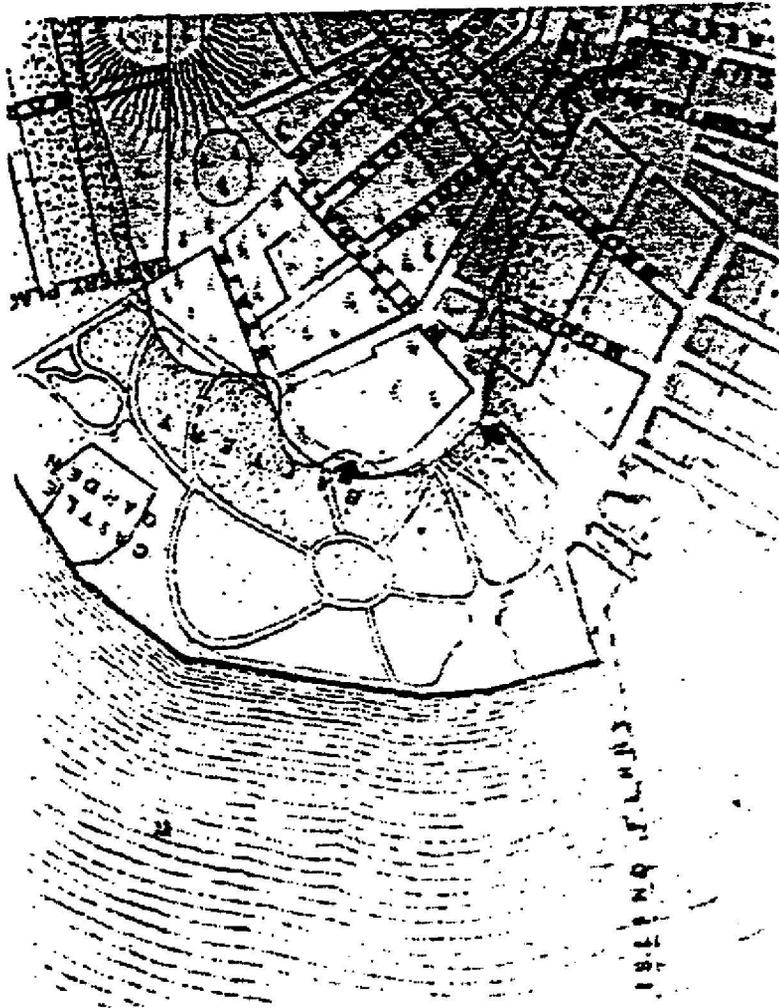
In his reconstruction of Manhattan's prefill shoreline, the nineteenth-century city surveyor, Egbert Viele, indicates that the site block is almost entirely virgin land rather than landfill (Plate 23). Subsequent map makers have used this as a reference as do most engineering firms. However, The Street Opening Map at the Topographic Bureau of the Borough President's Office (Manhattan), indicates that more than three-quarters of the block is landfill (Figure 9 this report).

Data from boring and archaeological reconstruction have often proven the Viele reconstruction somewhat inaccurate (e.g., Geismar and Shmookler 1985). Historical data suggests this may be true of the site block. For example, while Viele shows the corner of Whitehall and State Streets as virgin land, Peter Stuyvesant described a different situation.

In 1658, when he petitioned for property on the site block at what is now Whitehall and State Streets, Stuyvesant indicated that he had "fenced, recovered and raised up at great cost and labor out of the water swamp" the land on which his house then stood (Stokes 1922 IV:186). In 1917, I.N.P. Stokes inadvertently verified this when he observed a "rilled beach" 6 ft. below the ground surface during demolition of the building then standing on the site (Stokes IV 1922:1715). It seems likely that similar filling would have occurred on the block's western shore, a peninsular-like protrusion until later filling to the north and south altered its configuration (see Figure 4 for its original shape).

A profile of the site's sub-surface conditions based on soil borings shows that the depth of bedrock increases to the west (see Appendix C). It also indicates shell in several of the samples, but only in B105 does it appear to be of any significance. Here, at a depth of about 35 1/2 to 37 1/2 ft. below the current ground surface, shell was noted in the wash water (Langan 1985:B102, p.3), indicating more than an isolated fragment (Newman 1986:personal communication). However, the depth of this occurrence, which is somewhat inexplicable, is well below that of the current excavations.

It appears then that at least some filling may have occurred on the site block, particularly on the river side and presumably in its western portion. Undoubtedly, much of this fill has been eradicated during the block's successive building episodes. There are no soil borings from Lot 23.



0 500 ft.
└──────────┘

Plate 23. Detail of 1874 Viele map indicating Manhattan's filled land. The shoreline in the site area according to this reconstruction is indicated by arrows (NYPL Map Division).

APPENDIX C

Results from site files review at the New York State Office of Parks, Recreation, and Historic Preservation and the New York State Museum in Albany, New York.



FOLEY SQUARE

VILLAGE SQUARE

NEW YORK UNIVERSITY

NEW YORK CITY BOUNDARY

HUDSON

GOVERNORS ISLAND

RED HOOK

CLOSED TO TRAFFIC

WORLD TRADE CENTER

Castle Clinton Nat Mon

Municipal Ferry Terminal

Castle William Light

COAST GUARD STATION

ATLANTIC BASIN

Atlantic Basin

Red Hook

BLUETOWN

MADISON

EAST SIDE

ST. JAMES

EAST

ATLANTIC

HOLLAND TUNNEL Ventilator

TUNNEL Ventilator

4059

4060

26

38

36

40

39

28

25

2

6

2

2

2

2

29

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New York State Office of Parks, Recreation and Historic
Preservation

File search results:

1.	A061-01-1273	Sheridan Square	historic
2.	A061-01-1285	Washington St. Urban Renewal	historic
3.	A061-01-1304	City Hall Park	historic
4.	A061-01-0604	209 Water St.	historic
5.	A061-01-0623 D0-23	Telco Block	historic
6.	061-01-0001 N/A	structure	
7.	061-01-0014 N/A	structure	
8.	A061-01-1283	Barclays Bank Site	historic
9.	A061-01-1284	Assay Site	historic
10.	A061-01-0490	The Battery/Castle Clinton	historic
11.	A061-01-0491	Municipal Ferry Piers	historic
12.	A061-01-1271	175 Water Street	historic
13.	A061-01-1282	Broad Street Plaza Site	historic
14.	A061-01-1286	Expansion of NYU Library	historic
15.	A061-01-0074	Empire Stores Monitoring	historic
16.	A016-01-0179	Fulton St. dock remnant	historic
17.	A016-01-0102	Corporation House	historic

ARCHAEOLOGICAL SITE FILE SEARCH
 NEW YORK STATE MUSEUM
 CULTURAL EDUCATION CENTER
 ALBANY, NEW YORK

NYSM SITE #	OTHER SITE #'S	SITE NAME	TIME PERIOD	SITE TYPE	SOURCE OF DATA	15' QUAD NAME	7.5' QUAD NAME	REPORTER NAME	PROJECT NAME OR #
4059	ACP NYRK-9	NO INFO	NO INFO	VILL AGE		STATON ISLAND QUAD	JERSEY CITY QUAD	PARKER	NO INFO
4060	ACP NYRK-(UN NUMBERED)	NO INFO	NO INFO	VILL AGE		BROOKLYN QUAD	BROOKLYN QUAD	PARKER	NO INFO

2/20/92 To: CECE KIRKORIAN, HISTORICAL PERSPECTIVES

Project: Topo. Maps: BROOKLYN, JERSEY CITY
BIA (Initials) Anthropological Survey, NYSM

New York State Museum Prehistoric Archaeological Site Files
EVALUATION OF ARCHAEOLOGICAL SENSITIVITY FOR PREHISTORIC (NATIVE AMERICAN) SITES
Examination of the data suggests that the location indicated has the following sensitivity rating:

HIGH PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA

The reasons for this finding are given below:

- A RECORDED SITE IS INDICATED IN OR IMMEDIATELY ADJACENT TO THE LOCATION AND WE HAVE REASON TO BELIEVE IT COULD BE IMPACTED BY CONSTRUCTION.
- A RECORDED SITE IS INDICATED SOME DISTANCE AWAY BUT DUE TO THE MARGIN OF ERROR IN THE LOCATION DATA IT IS POSSIBLE THE SITE ACTUALLY EXISTS IN OR IMMEDIATELY ADJACENT TO THE LOCATION.
- THE TERRAIN IN THE LOCATION IS SIMILAR TO TERRAIN IN THE GENERAL VICINITY WHERE RECORDED ARCHAEOLOGICAL SITES ARE INDICATED.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION SUGGEST A HIGH PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION SUGGEST A MEDIUM PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION SUGGEST A LOW PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- EVIDENCE OF CULTURAL OR NATURAL DESTRUCTIVE IMPACTS SUGGESTS A LOSS OF ORIGINAL CULTURAL DEPOSITS IN THIS LOCATION.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION ARE MIXED, A HIGHER THAN AVERAGE PROBABILITY OF PREHISTORIC OCCUPATION OR USE IS SUGGESTED FOR AREAS IN THE VICINITY OF EITHER PRESENT OR PREEXISTING BODIES OF WATER, WATERWAYS, OR SWAMPS. A HIGHER THAN AVERAGE PROBABILITY IS SUGGESTED FOR ROCK FACES WHICH AFFORD SHELTER OR FOR AREAS SHELTERED BY BLUFFS OR HILLS. AREAS IN THE VICINITY OF CHERT DEPOSITS HAVE A HIGHER THAN AVERAGE PROBABILITY OF USE. DISTINCTIVE HILLS OR LOW RIDGES HAVE AN AVERAGE PROBABILITY OF USE AS A BURYING GROUND. LOW PROBABILITY IS SUGGESTED FOR AREAS OF EROSIONAL STEEP SLOPE.
- PROBABILITY RATING IS BASED ON THE ASSUMED PRESENCE OF INTACT ORIGINAL DEPOSITS, POSSIBILITY UNDER FILL, IN THE AREA. IF NEAR WATER OR IF DEEPLY BURIED, MATERIALS MAY OCCUR SUBMERGED BELOW THE WATER TABLE.
- INFORMATION ON OTHER SITES MAY BE AVAILABLE IN A REGIONAL INVENTORY MAINTAINED AT THE FOLLOWING LOCATION(S).

COMMENTS:

cc: N.Y.S. OFFICE OF PARKS, RECREATION AND HISTORIC PRESERVATION; HISTORIC PRESERVATION FIELD SERVICES BUREAU