Appendix D
Historic and Cultural Resources

Appendix D.1
Phase 1A Archaeological Documentary Study and Supplemental Phase 1A Archaeological Documentary Study

North/West Battery Park City Resiliency Project

Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 12, 15, 20, 70, 100, 120, 125, 140, 150, 160, 210, 215, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7509 (formerly Lot 45), and 7511 (formerly Lot 25); and Portions of Streetbeds of Greenwich, North Moore, Harrison, and Route 9A/West Streets

MANHATTAN, NEW YORK COUNTY, NEW YORK

Phase 1A Archaeological Documentary Study

SHPO Project Review Number: 22PR07165
LPC Unique Site Identifier: 36492

Prepared for:

Battery Park City Authority
200 Liberty Street, 24th Floor
New York, NY 10281

Prepared by:

AKRF, Inc.
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New York, NY 10016
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NOVEMBER 2022

Management Summary

SHPO Project Review Number:	22PR07165
LPC Unique Site Identifier:	36492
Involved Agencies:	Battery Park City Authority New York State Department of Transportation New York State Department of Environmental Conservation U.S. Army Corps of Engineers
Phase of Survey:	Phase 1A Documentary Study
Location Information	
Location:	Portion of the streetbed of Greenwich Street south of North Moore Street; Portion of the streetbed of North Moore Street between Greenwich Street and Route 9A/West Street; Portion of the streetbed of Harrison Street between Greenwich Street and Route 9A/West Street; Portions of the streetbed of West Street between North Moore Street and a point near Carlisle Street; Portions of Block 142, Lots 25 and 50; and Portions of Block 16, Lots 3, 12, 15, 20, 70, 100, 120, 125, 140, 150, 160, 210, 215, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7509 (formerly Lot 45), and 7511 (formerly Lot 25) New York, New York
Minor Civil Division:	06101
County:	New York County
Survey Area	
Length:	Approximately 5,000 feet
Width:	Approximately 1,000 feet
Area:	Approximately 38 acres
USGS 7.5 Minute Quadrangle Map:	Jersey City
Report Author:	Elizabeth D. Meade, PhD Registered Professional Archaeologist 16353
Research Assistance:	Theresa Imbriolo, MA Registered Professional Archaeologist 5161
Date of Report:	November 2022

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Chapter 1: Introduction and Methodology

A. INTRODUCTION

The Battery Park City Authority (BPCA) is proposing the North/West Battery Park City Resiliency Project (NWBPCR Project) to provide coastal flood protection for Battery Park City (BPC) and surrounding areas of Lower Manhattan (see **Figure 1**). The project is intended to protect against coastal storm events and predicted future more intense storms, taking into account climate change and sea level rise, and to reduce coastal storm impacts to residential populations, commercial business, and critical transportation systems. The proposed flood protection is functionally independent from but would connect with the South BPC Resiliency Project (SBPCRP).

B. PROJECT DESCRIPTION

The NWBPCR Project is being designed to provide independent flood risk reduction for the proposed protection area from the 2050s 100-year storm event, inclusive of rainfall, coastal surge, and predicted sea level rise. The proposed flood barrier system would include passive structures (e.g., above-grade concrete walls, below grade concealed walls, etc.) with deployable structures at vehicle and pedestrian crossings. As described in this scope, the term "flood barrier system" is used to identify this potential combination of flood barrier measures. In describing the location of the proposed flood barrier system protection measures, the term "flood barrier alignment" is used. In addition, to protect against interior flooding, improvements are proposed to the City's drainage infrastructure, including the isolation of the existing underground sewer components. The proposed flood barrier alignment would span the Port Authority Trans-Hudson (PATH) tunnels that run beneath the Project Area; the Port Authority of New York and New Jersey has separately implemented measures to provide flood protection for other assets in the Project Area. The following elements are expected to be included in the final design:

- **Flood Barrier Elements:** the flood barrier system will be comprised of passive and deployable flood barrier elements such as floodwalls and floodgates. Foundations for the flood barrier system are anticipated to extend 50 to 90 feet below the ground surface, pending final geotechnical investigation and final foundation design.
- **Interior Drainage Improvements**: Interior drainage improvements are also proposed to prevent storm surge from unprotected areas from entering the NWBPCR Project Area through the sewer system and to handle runoff and combined drainage that may accumulate during the storm event. A near surface isolation system is proposed to provide interior drainage improvements, which consists of a slide gate within existing regulator structures that would be closed in a flood event. Other drainage improvements include the construction of tide gates at existing stormwater outfalls at Chambers, Albany, and Rector Place and at combined sewer overflows near Rector Park, Vesey Street, and Stuyvesant Plaza. Isolation of other wet or dry utilities crossing the proposed coastal barrier alignment will be implemented as necessary.

The Proposed Project would also include landscape and urban design enhancements in a manner consistent with the design excellence standards established by Battery Park City's long history of high quality public open spaces.

The Proposed Project will be implemented pursuant to BPCA's design-build authority. Although the final design will be determined by the design-build contractor, a Project Area has been identified for the purposes of environmental analysis and encompasses all properties for which it is expected that direct physical/subsurface disturbance will be necessary to implement the project (see **Figures 2A-B and 3A-C**).

C. DEFINITION OF PROJECT AREA

The Project Area as defined herein and depicted in the accompanying figures encompass all possible areas of subsurface disturbance within the defined project area (see **Figures 2A-B**). The following streetbeds and tax lots are included within the seven reaches of the Project Area:

- Portion of the streetbed of Greenwich Street south of North Moore Street;
- Portion of the streetbed of North Moore Street between Greenwich Street and Route 9A/West Street;
- Portion of the streetbed of Harrison Street between Greenwich Street and Route 9A/West Street;
- Portions of the streetbed of Route 9A/West Street between North Moore Street and a point near Carlisle Street;
- Portions of Block 142, Lots 25 and 50; and
- Portions of Block 16, Lots 3, 12, 15, 20, 70, 100, 120, 125, 140, 150, 160, 210, 215, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7509 (formerly Lot 45), and 7511 (formerly Lot 25).

For analysis purposes, the waterfront portions of the Project Area has been divided into seven "reaches." The reaches are defined as follows:

- **Reach 1—Tribeca, Borough of Manhattan Community College, and Hudson River Park (1,430 linear feet/2.0 acres)**: the "tie-back" to the inland flood barrier limits which are outside of BPCA property, including streetbeds of West, Greenwich, and North Moore Streets;
- **Reach 2—North Esplanade (485 linear feet/0.7 acres)**: a section of the Battery Park City Esplanade between the Hudson River, the Hudson River Greenway, and Route 9A/West Street;
- **Reach 3—Rockefeller Park (1,700 linear feet/6.5 acres)**: Reach 3 covers the BPC waterfront from the North Esplanade south to Reach 4 at the southern end of Rockefeller Park's South Meadow and is bounded to the east by River Terrace;
- **Reach 4—Belvedere Plaza (500 linear feet/1.4 acres)**: The southern portion of Rockefeller Park, including the Battery Park City Ferry Terminal, and the open spaces surrounding the Irish Hunger Memorial;
- **Reach 5—North Cove (1,630 linear feet/8.7 acres)**: Reach 5 includes the North Cove Marina and surrounding open spaces, collectively referred to as North Cove;
- **Reach 6—South Esplanade (1,500 linear feet/2.8 acres)**: Reach 6 includes the Battery Park City Esplanade between Esplanade Plaza at the southern terminus of North Cove to the northwest corner of 21 South End Avenue;
- **Reach 7—South Cove (950 linear feet/2.7 acres)**: Reach 7 includes South Cove and the adjacent upland esplanade and includes the tie-in to the South Battery Park City Resiliency Project at 1st Place.

The interior portions of the Project Area, including the streetbeds of Route 9A/West Street and Vesey Street, are not assigned to a specific reach, but are referred to collectively as the "Potential Interior Drainage Work Area."

D. SUMMARY OF ENVIRONMENTAL REVIEW

The Proposed Project would require permits and approvals from several city, state, and federal agencies. The Proposed Project is therefore subject to the New York State Environmental Quality Review Act (SEQRA) the National Environmental Policy Act (NEPA), and Section 106 of the National Historic Preservation Act ("Section 106"). BPCA is serving as lead agency for the environmental review of the above referenced action. As a state action taking place within New York City, the methodologies for assessing environmental impacts are based on SEQRA and 2021 *City Environmental Quality Review (CEQR) Technical Manual* guidelines.

Pursuant to CEQR, consultation was initiated with the New York City Landmarks Preservation Commission (LPC) regarding the project area's potential archaeological sensitivity. In a comment letter issued on July 18, 2022, LPC determined that the project area is potentially archaeologically significant in association with its indigenous occupation in the precontact period. LPC requested that an archaeological documentary study be prepared to further clarify its archaeological sensitivity. Consultation was also initiated with the New York State Historic Preservation Office (SHPO) pursuant to Section 106. In a comment issued through the New York State Cultural Resource Information System (CRIS) on October 11, 2022, SHPO also requested a Phase 1A Archaeological Documentary Study ("Phase 1A Study") of the project area to confirm its archaeological sensitivity. This Phase 1A Study has been prepared to satisfy the requests made by SHPO and LPC.

E. RESEARCH GOALS AND METHODOLOGY

The Phase 1A Study of the Project Area has been designed to satisfy the requirements of LPC and SHPO, while also following the guidelines of the New York Archaeological Council (NYAC). The study documents the development history of the proposed Project Area and its potential to yield archaeological resources, including both precontact and historic cultural resources. In addition, this report documents the current conditions of the Project Area, as well as previous cultural resource investigations that have taken place in the vicinity.

This Phase 1A Study has four major goals: (1) to determine the likelihood that the Project Area was occupied during the precontact (Native American) and/or historic periods; (2) to determine the effect of subsequent development and landscape alteration on any potential archaeological resources that may have been located within the Project Area; (3) to make a determination of the Project Area's potential archaeological sensitivity; and (4) to make recommendations for further archaeological analysis, if necessary. The steps taken to fulfill these goals are explained in greater detail below.

The first goal of this documentary study is to determine the likelihood that the Project Area was inhabited during the precontact and/or historic periods and identify any activities that may have taken place in the vicinity that would have resulted in the deposition of archaeological resources.

The second goal of this Phase 1A Study is to determine the likelihood that archaeological resources could have survived intact within the Project Area after development and landscape alteration (e.g., erosion, grading, filling, etc.). Potential disturbance—associated with paving, utility installation, and other previous construction impacts—was also considered. As described by NYAC in their *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*, published in 1994 and subsequently adopted by SHPO:

> *An estimate of the archaeological sensitivity of a given area provides the archaeologist with a tool with which to design appropriate field procedures for the investigation of that area. These sensitivity projections are generally based upon the following factors: statements of locational preferences or tendencies for particular settlement systems,*

> *characteristics of the local environment which provide essential or desirable resources (e.g., proximity to perennial water sources, well-drained soils, floral and faunal resources, raw materials, and/or trade and transportation routes), the density of known archaeological and historical resources within the general area, and the extent of known disturbances which can potentially affect the integrity of sites and the recovery of material from them* (NYAC 1994: 2).

The third goal of this study is to make a determination of the Project Area's archaeological sensitivity. As stipulated by the NYAC standards, sensitivity assessments should be categorized as low, moderate, or high to reflect "the likelihood that cultural resources are present within the project area" (NYAC 1994: 10). For the purposes of this study, those terms are defined as follows:

- Low: Areas of low sensitivity are those where the original topography would suggest that Native American sites would not be present (i.e., locations at great distances from fresh- and saltwater resources), locations where no historic activity occurred before the installation of municipal water and sewer networks, or those locations determined to be sufficiently disturbed so that archaeological resources are not likely to remain intact.
- Moderate: Areas with topographical features that would suggest Native American occupation, documented historic period activity, and with some disturbance, but not enough to eliminate the possibility that archaeological resources are intact on the Project Area.
- High: Areas with topographical features that would suggest Native American occupation, documented historic period activity, and minimal or no documented disturbance.

As mentioned above, the fourth goal of this study is to make recommendations for additional archaeological investigations where necessary. According to NYAC standards, Phase 1B testing is generally warranted for areas determined to have moderate sensitivity or higher. Archaeological testing is designed to determine the presence or absence of archaeological resources that could be impacted by a proposed project. Should they exist on the Project Area, such archaeological resources could provide new insight into precontact occupation in Lower Manhattan, the transition from Native American to European settlement, or the historic period occupation of the Project Area.

To satisfy the four goals as outlined above, documentary research was completed to establish a chronology of the Project Area's development, landscape alteration, and to identify any individuals who may have owned the land or worked and/or resided there, and to determine if buildings were present there in the past. Data were gathered from various published and unpublished primary and secondary resources, such as historic maps, topographical analyses (both modern and historic), historic and current photographs (including aerial imagery), newspaper articles, local histories, and previously conducted archaeological surveys. These published and unpublished resources were consulted at various repositories, including the Main Research Branch of the New York Public Library (including the Local History and Map Divisions) and the Library of Congress. Previously identified sites and previously conducted archaeological resources in the vicinity were collected from the files of LPC, SHPO, and the New York State Museum (NYSM). Information on previously identified archaeological sites and previous cultural resources assessments was accessed through the New York State Cultural Resource Information System (CRIS).[1] Online textual archives, such as Google Books and the Internet Archive Open Access Texts, were also accessed. Attempts were made to identify the owners and occupants of the Project Area using historical maps.

[1] https://cris.parks.ny.gov

A. RESEARCH THEMES

Previous archaeological assessments of waterfront sites in Lower Manhattan—including those along both the East and Hudson Rivers—have identified nearly 20 archaeological sites within a half mile of the Project Area, as summarized in **Table 2-1**. Many of these sites were associated with the landfill used to construct Manhattan's waterfront and its associated maritime industries while others were associated with historical and precontact occupation and development, including the 17th and 18th century fortifications that formerly occupied The Battery and for which the park was named. These sites are characteristic of a number of general archaeological research themes that have been established by archaeologists for waterfront sites in New York City as outlined below. Generalized locations of previously identified archaeological sensitivity are depicted on **Figure 4**.

Table 2-1
Previously Reported Archaeological Sites Within One-Half Mile of the Project Area

Site Name/ Number	Time Period	Approximate Distance from Project Area	Site Type
Shell Point/Werpoes *NYSM*: 4059	Precontact	Partially overlaps northeastern corner	Native American village and shell middens
64 Pearl Street/34 Water Street Historic Landfill Site *SHPO Site*: 06101.001272	Late 17th century	2,250 feet	Landfill-retaining structures and landfill deposits
Washington Street Urban Renew Project Site 1 *SHPO Site*: 06101.001285	19th century	285 feet	Historical landfill and foundry remnants dating to 1826
Whitehall Ferry *SHPO Site*: 06101.013334	18-19th century	2,100 feet	Timber landfill-retaining structures and landfill deposits
Whitehall Slip Site *SHPO Site*: 06101.015598	18th-19th centuries	1,850 feet	Timber landfill-retaining structures and landfill deposits associated with the historical Whitehall Slip and its subsequent filling
South Ferry Terminal Project *SHPO Site*: 06101.016196	17th-19th centuries	850 feet	Landfill-retaining structures and landfill deposits within modern Battery Park
Ronson Project Site (Pearl Bridge and Whitehall Streets) *SHPO Site*: 06101.001282	17th century	1,700 feet	Ground surfaces associated with Dutch colonial occupation underneath 19th century structural foundations
World Trade Center Vehicular Security Center Ship Remnant *SHPO Site*: 06101.018000	18th-19th centuries	975 feet	18th century ship remnant found in context with landfill-retaining structures and landfill deposits
Pier 7 Complex Site *SHPO Site*: 06101.018120	20th century	575 feet	60- by 10-foot section of Hudson River Bulkhead constructed c. 1903
Liberty Street Pilings Site *SHPO Site*: 06101.018121	19th century	700 feet	Timber pilings associated with a former ferry terminal situated near the 1857 bulkhead line
Battery Wall *SHPO Site*: 06101.015768	18th century	1,400 feet	Preserved sections of the stone fortifications that surrounded historical Fort George

Table 2-1 (cont'd)
Previously Reported Archaeological Sites Within One-Half Mile of the Project Area

Site Name/ Number	Time Period	Approximate Distance from Project Area	Site Type
City Hall Park Site *SHPO Site*: 06101.001304	Early 18th century	2,650 feet	Archaeological site associated with 18th century military barracks, almshouse, and cemeteries
African Burial Ground *SHPO Site*: 06101.006980	17th-19th centuries	3,200 feet	Burial place for enslaved and free persons of African descent with evidence of later disturbance
576 Broome Street *SHPO Site*: 06101.007671	19th century	1,950 feet	Privy pit with artifacts representing refuse from German and Irish households
101-117 Worth Street *SHPO Site*: 06101.012569	19th century	2,775 feet	Disturbed archaeological site with evidence of the former Broadway Tabernacle Church; a late-19th century commercial building; a truncated mid-19th century well; and a buried ground surface dating to the Holocene
Federal Hall Archaeological Site *SHPO Site*: 06101.013876	18th century	1,800 feet	Artifacts and foundation remnants from buildings pre-dating the existing Federal Hall
Spring Street Presbyterian Church Burial Vaults *SHPO Site*: 06101.017265	19th century	2,250 feet	Early-19th century burial vaults impacted by construction that contained more than 200 burials
Corbin Building Historical Well *SHPO Site*: 06101.017931	19th century	2,150 feet	Historical well remnant found beneath the subbasement of the existing Corbin Building
60 Wall Street *SHPO Site*: 06101.019277	20th century	2,650 feet	Structural elements of buildings determined to have disturbed older deposits in the general location of Dutch colonial fortifications
Sources: Site file forms accessed through CRIS (https://cris.parks.ny.gov/)			

PRECONTACT ARCHAEOLOGICAL RESOURCES

The precontact occupation of New York City is discussed in detail in **Chapter 4, "Precontact Archaeological Resources**," and as shown in **Table 2-1**, at least one precontact archaeological site has been identified in the immediate vicinity of the Project Area. While few sites associated with indigenous occupation of Lower Manhattan have been documented archaeologically, those that have been found in New York City are frequently documented in coastal areas adjacent to rich and varied natural resources. Precontact archaeological sites found along Manhattan's original shoreline before it was expanded with landfill have the potential to reveal new insight into the indigenous occupation and use of the region as well as contact with colonizing forces and the socio-cultural changes that resulted.

LANDFILL-RETAINING STRUCTURES AND LANDFILL DEPOSITS (INCLUDING SUNKEN VESSELS)

The anthropomorphic extension of Manhattan's waterfront has been well-documented by archaeologists and historians. Across the waterfronts of the East and Hudson Rivers, historic piers, wharves, and docks that formerly marked the outer limits of Manhattan's development were often repurposed as landfill-retaining structures as shorelines were expanded. Additional timber structures were often built for the specific purpose of retaining fill and supporting newly made land. While landfill and landfill-retaining structures are subject to disturbance, particularly as a result of basement excavation, intact deposits have been identified at relatively shallow depths at other archaeological sites along the East and Hudson Rivers. Work at several archaeological sites along the East River waterfront has uncovered the original wooden cribwork that was used to create artificial land within water lots. These sites include the Assay Site (Louis

Berger and Associates 1990), the Barclay's Bank Site (Louis Berger and Associates 1987), the Whitehall Ferry Terminal (AKRF, et al. 2012), the Telco Block (Soil Systems, Inc. 1982), the Schermerhorn Row Block (Kardas and Larrabee 1991), and the sites located at 175 Water Street (Soil Systems, Inc. 1983) and 209 Water Street (Schuyler, et al. 1978). While fewer landfill sites have been documented along the Hudson River, intact deposits were observed at the World Trade Center Vehicular Security Center site (AKRF 2013); the World Trade Center Transportation Hub site (Louis Berger Group 2006); Battery Park (AKRF, et al. 2012); and along portions of Route 9A/West Street (Lenardi 2011). The general limits of pier and bulkhead development as outlined in the mid- to late-19th century are depicted on **Figure 4**.

Landfill deposits can include rocky material and clean fill that was generally obtained from grading and construction projects (e.g., basement excavation) as well as refuse including merchandise broken in transit, ballast from ships, garbage dumped on or near the docks, household trash, dredged material from nearby slips, and detritus from artisans' workshops. With the invention of the steam-powered pile driver in the 19th century, earlier methods of creating landfill became obsolete in favor of wharves constructed of vertical pilings. Wharves built atop deeply embedded piles quickly became standard (Kardas and Larrabee 1991).

Derelict vessels were also often used as landfill-retaining structures and as such, become incorporated into landfill (AKRF 2013; Riess and Smith 2015). A critical component of Manhattan's 18th and 19th century maritime economy involved the construction and maintenance of slips along the shoreline, providing a place where boats could dock and load and unload goods and passengers. The Project Area included a number of piers and docks at various points in history. Therefore, ships would have been a frequent presence in the vicinity of this Project Area, increasing the likelihood that sunken or derelict vessels could be incorporated into the landfill in the vicinity. Sunken vessels would be expected to extend to great depths, as the vessels would be expected to be located on what was historically the river bottom. The top of the ship found within the southern site of the World Trade Center redevelopment—which was represented by only the bottom portion of a sloop's hull with a single deck remaining—was identified at a depth of between 11.5 and 20 feet below mean sea level, or between about 20 to 30 feet below the modern street grade (AKRF 2013). However, the upper portions of the large, multi-decked vessel discovered within the landfill deposits of 175 Water Street—formerly known as "The Ronson Ship" and now identified as the 18th century vessel, *Princess Carolina*—was identified at a shallower depth of approximately 8 to 9 feet below the ground surface as the upper portions of that ship remained intact (Soil Systems 1983; Riess and Smith 2015).

STREETBED INFRASTRUCTURE AND ARTIFACT DEPOSITS

Previous archaeological investigations have documented archaeological resources within active streetbeds, both in the form of artifact deposits and evidence of streetbed infrastructure, including wooden water mains and evidence of historical transportation systems (e.g., streetcar/trolley lines and associated elevated structures).

Despite its status as one of America's largest and most industrial cities, New York did not have a reliable network of water and sewer lines until the mid-19th century. The first water pipes were installed in the early 19th century by the Manhattan Company, the precursor to what would later become the Chase Manhattan Bank (Koeppel 2000). These wooden pipes carried water from local sources to other areas of Lower Manhattan. By 1829, the city had constructed a reservoir near the intersection of modern 13th Street and the Bowery (Burrows and Wallace 1999). An iron pipe ran between the reservoir and Catherine Street, bringing water to the Lower East Side (ibid). The initial water supply system could not be sustained for very long because local water sources became too polluted for continued use. It was not until 1842 that the Croton Aqueduct system brought significant amounts of clean water into Manhattan. A map of the complex distribution system associated with the Croton waterworks published by Endicott in 1842 depicts water lines and stop cocks running through most of Lower Manhattan, including within the Project Area.

Previous research into the historic occupation and development of the New York City waterfront has resulted in the documentation of early-19th century wooden water pipes representing some of the earliest infrastructure in Manhattan's streetbeds (Chrysalis Archaeological Consultants, Inc. [CAC] 2007). Wooden water mains associated with thousands of historic period artifacts were recovered at a depth of 3 feet below the ground surface near the intersection of Beekman and Pearl Streets (CAC 2007). Water mains were found at much greater depths—approximately 20 feet below the ground surface—in the vicinity of Dey Street and were determined to be within a disturbed context (URS 2008). Wooden water mains were also observed at the World Trade Center Vehicular Security Center site (AKRF 2013).

Archaeological resources associated with older street surfaces have also been documented in the vicinity of the Project Area at various depths. Brick and metal footers for elevated rail lines associated with a late-19th century transportation hub were observed during the archaeological investigation of the South Ferry Terminal project site (AKRF, et al. 2012). Similar footings had been discovered during subway construction in the early 20th century, confirming that buried transportation infrastructure can survive multiple disturbance episodes associated with major improvement projects (ibid). Buried trolley tracks and yokes associated with 19th century transportation systems have also been encountered during roadwork in Lower Manhattan, including in recent years (*Tribeca Citizen* 2019).

DOMESTIC SHAFT FEATURES

Although water lines were present by 1842, sewers were not installed throughout the majority of the city until after the 1850s and many buildings were not immediately connected to the sewers after their initial installation (Goldman 1997). Therefore, historic properties that were developed before water and sewer networks were accessible in the mid-19th century relied on backyard shaft features (e.g., privies, cisterns, and wells) for the purposes of water gathering and sanitation. Privies—the shaft features constructed beneath outhouses—are typically expected to be located at the rear of the historic property while wells and cisterns are typically located closer to a dwelling. These features would have remained in use until municipal water and sewer networks became available in the mid- to late-19th century, and possibly for decades after and were typically filled with refuse either during or following their periods of active use. Therefore, any historical lots that were developed prior to the availability of water/sewer networks in the mid- to late-19th century and that were not previously disturbed by basement excavation should therefore be considered sensitive for shaft features. While the upper portions of these features may have been truncated as a result of subsequent development and disturbance, the lower portions of these features may still be extant within those undisturbed portions of the historic blocks.

HISTORICAL CEMETERIES AND HUMAN REMAINS

While the Project Area is not likely to contain human burials, hundreds of historical cemeteries—including those that are preserved and those that have been destroyed—have been documented in Lower Manhattan, the center of New York City's population for centuries (Meade 2020). While many cemeteries are located to the east of the Project Area, no historical burials are expected to have been located within or immediately adjacent to the Project Area itself (ibid). However, isolated and disarticulated human remains have been unexpectedly documented within landfill sites in the area, including at the South Ferry Terminal site and in the vicinity of Peter Minuit Park (AKRF, et al. 2012; CAC 2020). Human remains can become incorporated into landfill deposits inadvertently as a result of the use of soil from cemetery sites as landfill material or otherwise through the accidental deposition of human remains in waterlogged areas.

B. SUMMARY OF PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

WESTSIDE HIGHWAY RECONSTRUCTION, 1983

As a part of the reconstruction of the West Side Highway (now known as Route 9A/West Street) in 1983, Historic Conservation and Interpretation, Inc. (HCI) prepared a documentary study to identify areas of

archaeological sensitivity within a study area that extended from Battery Place to West 44th Street. Two segments of the 1983 study area were within or near the boundaries of the Project Area. A segment referred to as "Area 1" encompassed a portion of the West Side Highway and an area within the Hudson River to the west north of modern Battery Park City. A segment referred to as "Area 2" included the section of the West Side Highway between Battery Place and the northern line of modern Battery Park City. The current Project Area therefore overlaps with portions of both Areas 1 and 2 in limited areas.

Within Area 1, the Phase 1A study determined that precontact resources both within the highway and out in the Hudson River could be impacted during dredging, filling, and pile driving operations associated with that project and further archaeological analysis was recommended. The area of sensitivity was situated within the Hudson River west of the current Project Area in the area generally bounded by the lines of Jay and North Moore Street. The segment referred to as Area 2 was determined to have archaeological sensitivity associated with the landfilling of that part of Manhattan, including the construction of historic period wharves, piers, docks, and basins within this area. Additional archaeological analysis was recommended for that portion of the study area.

Using soil borings, HCI reconstructed historical landscapes in an attempt to identify buried landscape features that could have the potential to contain precontact archaeological sites. The following potentially sensitive landscape features were identified in areas that overlap the current Project Area (see **Figure 4**):

- **Landscape Feature 4**: spit of land north of a bay northwest of the corner of Liberty Street and Route 9A/West Street at 40 feet below sea level;
- **Landscape Feature 5**: islands in the vicinity of Route 9A/West Street between Albany Street and Liberty Street at 40 to 30 feet below sea level;
- **Landscape Feature 6**: a 125 by 350-foot cove situated west of the line of Vesey Street at 40 feet below sea level;
- **Landscape Feature 7**: possibly the southern side of a bay between Park Place and North Moore Street at 40 feet below sea level;
- **Landscape Feature 10**: spit of land extending into a bay or into the river in the vicinity of Murray Street at 30 feet below sea level;
- **Landscape Feature 16**: a lagoon or cove in the vicinity of Harrison Street at 60 feet below sea level; and
- **Landscape Feature 18/18A**: small coves between Vesey Street and Park Place at 50 feet below sea level.

MARGINAL STREET ADJACENT TO THE SOUTH RESIDENTIAL NEIGHBORHOOD, 1989

A Phase 1A Study was prepared in 1989 by Hartgen Archaeological Associates, Inc., in association with Historical Perspectives, Inc. (HPI), as part of the proposed development of the Hudson River Esplanade—then known as Marginal Street—between Liberty Street and The Battery, partially overlapping the current Project Area. This investigation analyzed a study area situated east of the southern extent of the Project Area. An area of precontact archaeological sensitivity was identified in the vicinity of the intersection of Morris and Route 9A/West Streets. The archaeologically sensitive soil strata were expected to be situated at a depth of approximately 30 to 40 feet below sea level. Because these depths would not be impacted as a result of the construction of the project and because of the complexities involved in excavating at such great depths, no additional archaeological analysis was recommended. The Phase 1A Study concluded that the study area was located in an area of landfill dating to the mid-19th through 20th centuries and possibly disturbed as a result of subsequent redevelopment. Because of the age and potential disturbance of the fill deposits, the study area was not determined to have archaeological significance associated with the historic period.

ROUTE 9A, 1990

In 1990, Hartgen Archaeological Associates, Inc. in association with HPI prepared a Phase 1A Study in association with the reconstruction of Route 9A/West Street. The report's study area includes the portion of Route 9A/West Street between Battery Place and Harrison Street, which overlaps the eastern boundary of the Project Area. The study concluded that the study area was formed through landfilling and determined that piers and wharves dating to the 18th and 19th centuries may have been incorporated into the landfill. The study area was determined to be sensitive for landfill deposits and landfill-retaining structures including piers, wharves, and possibly sunken vessels.

The report re-examined the archaeological sensitivity of some of the landscape features identified in the 1983 study prepared by HCI as described above. Given the great depth of these potentially sensitive strata, the study concluded that there was no practical way to confirm the presence or absence of archaeological resources in those areas. The study identified historic period sensitivity in the locations of historical piers that entered the study area in various locations, though only in those areas where waterfront structures pre-dating the mid-19th century were located. The report also identified the potential for sunken vessels to be present in the vicinity of the intersections of Warren and Chambers Street and Route 9A/West Street.

PETER MINUIT PLAZA AND WHITEHALL FERRY TERMINAL PROJECT 1993-2000

In 1993, Historical Perspectives, Inc. (HPI) prepared a Phase 1A Archaeological Documentary Study associated with the construction of Peter Minuit Park and reconstruction of the Whitehall Ferry Terminal, southeast of the Project Area. Despite extensive disturbance associated with the construction of existing subway tunnels, the project site was determined to be sensitive for a variety of archaeological resources, including resources associated with the former river bottom, including ship's cargo and wrecked vessels; landfill and landfill-retaining structures; fortifications associated with 17th and 18th century military activity; and remnants of 19th century transportation structures/streetcar lines. The construction of the park was expected to disturb the project site to a maximum depth of 5 feet below the ground surface. Archaeological testing was recommended in limited areas.

A Phase 1B Archaeological Investigation of the general area was completed by Louis Berger & Associates, Inc. (LBA) in 2000. Testing resulted in the identification of an 18th century landfill-retaining structure, though the landfill deposits were determined to have low research value as a result of disturbance and because the artifacts within the landfill could not be associated with specific individuals or groups. Landfill deposits were generally found between depths of 2 feet below grade and depths of 5 to 7 feet below grade, where excavation was terminated (LBA 2000). The landfill-retaining structure was observed between depths of 5 and 9 feet below grade and was observed on top of soil deposits identified as the original river bottom (ibid). No evidence of fortifications or military activity was observed during the excavation nor was evidence of the remains of 19th century transportation elements observed. Additional archaeological monitoring was recommended to further document the 18th century landfill-retaining structures in the area.

SECOND AVENUE SUBWAY PROJECT, 2003

In association with the construction of the Second Avenue Subway, a Phase 1A Archaeological Documentary Study of the proposed subway route was prepared by HPI in 2003 (HPI 2003). HPI's 2003 study and numerous supplemental studies that were prepared thereafter identified areas of prehistoric and historic archaeological sensitivity along much of the proposed subway's extensive alignment in the vicinity of the Peter Minuit Park/Whitehall Terminal project site southeast of the Project Area. The Phase 1A Study concluded that the Second Avenue Subway project would not result in disturbance to potentially sensitive depths in the vicinity of Peter Minuit Park. As a result, no additional archaeological analysis was recommended, although the Phase 1A Study determined that this recommendation would have to be

reevaluated in the event that project plans were altered and would result in disturbance to other areas in the vicinity.

SOUTH FERRY TERMINAL PROJECT 2003-2012

In 2003, the Louis Berger Group, Inc. (LBG) prepared a Phase 1A Archaeological Documentary Study for the site of the new South Ferry Terminal. The study examined the archaeological sensitivity of an 1,800-foot study area that included much of the location of Battery Park south of the Project Area. The site of the terminal was identified as sensitive for historic period archaeological resources including: evidence of Dutch and English colonial occupation; the remnants of military fortifications including the 17th-century "Half-Moon Battery," the 18th century Fort George (also known as Fort Amsterdam), remnants of barracks, and artifacts such as ordnance and personal effects; and late-19th- and early-20th-century transportation elements such as the remains of elevated railway structures and streetcar lines.

During the construction of the terminal, an extensive archaeological investigation was completed that involved the monitoring of more than 80 percent of the project site. A final report summarizing the results of the Phase 1, 2, and 3 archaeological investigations was prepared by AKRF, URS Corporation, and Linda Stone, RPA in 2012. The archaeological investigations identified four truncated segments of the 18th century fortification walls that originally surrounded Fort George (including one wall immediately north of the Battery Playscape project site), the remnants of Whitehall Slip, and landfill deposits and landfill-retaining structures. Human remains representing a minimum of five individuals were also recovered during the archaeological investigation. It was determined that these remains may have been associated with a chapel cemetery formerly located in Fort George or perhaps were remains that were incorporated into the landfill through other means (AKRF, et al. 2012). The upper portions of three of the four battery wall segments were found at depths greater than 8 feet, though Wall 3 was encountered between depths of 4.4 and 8.2 feet below the ground surface (ibid). The upper portions of the remnants of Whitehall Slip were encountered between 6.3 and 8.3 feet below the ground surface (ibid).

WORLD TRADE CENTER SHIP REMNANT AND VEHICULAR SECURITY CENTER, 2006-2013

The final report documenting the ship remnant at the site of the World Trade Center Vehicular Security Center was produced by AKRF in 2013. The study area examined during that investigation was located east of the Project Area between Cedar and Liberty Streets. The investigation of that site resulted in the documentation of extensive landfill deposits, landfill-retaining structures, and the remnants of a historic vessel. This ship was determined to have been constructed between the late 1770s and 1780s and incorporated into the present landfill by the 1790s. Prior to the creation of the landfill, this area was along an active waterway and was one of the busiest commercial areas along the Hudson River.

RECONSTRUCTION OF BATTERY PARK AND PERIMETER BIKEWAY PROJECT (PHASE 1A AND ARCHAEOLOGICAL MONITORING), 2010

A Phase 1A Archaeological Assessment of Battery Park was prepared by archaeologist Joan H. Geismar, Ph.D. in 2010. The project for which the report was prepared involved the restoration of a 12-acre bikeway around the perimeter of the park and landscaped areas situated south of the Project Area. Dr. Geismar's analysis determined that given the archaeological sites discovered during the construction of the South Ferry Terminal, the remainder of The Battery was likely sensitive for archaeological resources associated with 17th and 18th century defensive fortifications and 17th through 19th century landfill and landfill-retaining structures. Overall, the project was not designed to include deep impacts, so its potential to disturb archaeological resources was minimal and archaeological monitoring was recommended in undisturbed areas within the project sit where project-related excavation would extend to depths greater than 3.5 feet below the ground surface. In 2011, Dr. Geismar completed the archaeological monitoring of nine test

trenches excavated to a maximum depth of 6 feet within the park. The test pits revealed only disturbance associated with filling and utility construction dating between the 20th century and the present, and it was determined that while resources may be present at greater depths, the project would not impact archaeological resources and no additional analysis was required.

NEW YORK HUDSON RIVER BULKHEAD, 2011

In 2011, Michael Lenardi and the New York State Museum (NYSM) issued a Cultural Resource Survey Report summarizing the results of Phase 1B archaeological monitoring through Phase 3 Data Recovery/mitigation in association with the construction of Route 9A/West Street between West Thames Street and Chambers Street, including portions of the Project Area. The report focused on two highly sensitive areas: a section of the historical Hudson River Bulkhead—which is has been determined to be eligible for listing on the State and National Registers of Historic Places (S/NR)—in the vicinity of West Thames Street, and the median of the intersection Route 9A/West Street and Liberty Street.

As described by NYSM (2011), the Hudson River Bulkhead represents the historical limit of Manhattan's waterfront in the late 19th and early 20th centuries. It was constructed between 1871 and 1935 along the western side of what is now Route 9A/West Street and extends between the Battery and West 59th Street (NYSM 2011:6). During archaeological monitoring, a nearly 60-foot-wide and 10-foot-deep portion of the bulkhead was exposed at the West Thames Street location to facilitate the installation of a new sewer connection. The sewer work impacted a limited (6-foot) portion of the bulkhead and the remainder of the exposed bulkhead and a historical (c. 1908) building foundation remnant that was also observed were documented in place and backfilled. NYSM's analysis suggested that the bulkhead segment was constructed c. 1903 and was consistent with plans and drawings of the bulkhead produced by the City around that time. The site was designated as the Pier 7 Complex Site and assigned NYSM Site number 12322 (identified as SHPO Site 06101.018120 in **Table 2-1** above).

The NYSM report also documents additional wood pilings were encountered during construction within the median of Route 9A/West Street at its intersection with Liberty Street. The pilings were encountered during excavation associated with the reconstruction of the Liberty Street pedestrian bridge, which was damaged as a result of the terrorist attacks on September 11, 2001. NYSM determined that the timber elements were associated with an older ferry terminal formerly along an older bulkhead line established in 1857. The archaeological site was designated as the Liberty Street Pilings Site and assigned NYSM Site number 12321 (identified as SHPO Site 06101.018121 in **Table 2-1** above).

BATTERY PLAYSCAPE, 2018

In 2018, AKRF completed a Phase 1B Archaeological Investigation in association with the construction of the "Battery Playscape." The Playscape is a modern playground that was designed to replace an older playground located to the south of the Project Area at the southeastern end of The Battery. The proposed Playscape was in the immediate vicinity of the remnants of the historical Battery Wall that were observed during the previously discussed archaeological investigation of the South Ferry Terminal project. Because of the potential for the Playscape project to impact more segments of the Battery Wall, the Phase 1B Archaeological Investigation involved the excavation of nine backhoe trenches within the project site. The testing identified additional disturbed portions of the Battery Wall and recovered 441 artifacts dating from the mid-17th to early 20th centuries. Due to the fragmented and diagnostically scattered nature of these artifacts, the assemblage was determined not to possess sufficient integrity to meet eligibility for S/NR listing. However, measures were taken to redesign the playground to limit adverse effects to the previously discovered S/NR-eligible portions of the Battery Wall.

BATTERY PARK CITY BALLFIELD, 2020

In 2020, HPI completed a Phase 1A Study prior to the installation of an interim flood barrier system. This system was proposed in a portion of Block16 bounded by West, Murray, and Warren Streets, which is surrounded by and adjacent to elements of the current Project Area at the southwest corner of Route 9A/West Street and Warren Street. The Phase 1A Study determined that while much of the study area was developed with landfill in the 1970s, portions of the S/NR-eligible Hudson River Bulkhead—which was constructed in the late 19th century—may be present beneath the study area. The bulkhead is considered to be significant due to its construction circa 1871-1875; however, HPI determined that the section of the bulkhead in this part of Manhattan may have been constructed in the 1890s. The bulkhead wall was determined to be potentially present in two locations: along the northern side of Murray Street west of Route 9A/West Street and along the southern side of Warren Street west of Route 9A/West Street. The Phase 1A Study recommended a Phase 1B Archaeological Investigation prior to construction to document bulkhead conditions and confirm its construction methodology. It is possible that the Bulkhead extends west, past the Ballfield site boundaries and into the Battery Park City site boundaries.

LOWER MANHATTAN COASTAL RESILIENCY (LMCR) BATTERY COASTAL RESILIENCY PROJECT, 2021

A Phase 1A Study was completed by Joan H. Geismar, Ph.D., in 2021. This study was prepared in association with the proposed replacement of The Battery's deteriorated 1941 sea wall and wharf, located within the park to the south of Project Area, as part of the Battery Coastal Resiliency Project. The Phase 1A Study concluded while Castle Clinton and its associated wharf were situated within the study area, this portion of The Battery is not archaeological sensitive because of subsequent development associated with the construction and demolition of buildings and other park features. Other archaeological resource types were determined to be potentially present in undisturbed pockets around the study area, including resources related to historical occupation and landfilling efforts. The study concluded that when the project's design was completed, an archaeologist should review the plans to determine if project-specific impacts could disturb archaeologically sensitive soil strata. The study also recommended that an archaeological Unanticipated Discoveries Plan be prepared to provide a protocol for the archaeological investigation of any potential resources impacted during the construction of the project.

SOUTH BATTERY PARK CITY RESILIENCY PROJECT, 2022

In 2022, AECOM completed a Phase 1A Study in association with the South Battery Park City Resiliency Project (SBPCRP) as described in **Chapter 1, "Introduction and Methodology."** The study area for this project included several discontinuous areas, some of which overlap with the current Project Area. The majority of the SBPCRP study area is situated within Battery Park City south of the Project Area with the exception of the area where the SBPCR would connect with the NWBPCR Project at the southern end of South Cove just north of the line of 1st Place. The SBPCRP study area also includes the location of a proposed new tide gate at the western end of Rector Place at the Battery Park City Esplanade, also partially overlapping the Project Area. Finally, the study area included seven small, incongruous areas within Route 9A/West Street—all outside the current Project Area—where near surface isolation (NSI) elements would be installed to upgrade existing subsurface infrastructure.

The Phase 1A Study concluded that no further archaeological analysis was required in locations where project impacts were shallow (e.g., 2 feet or less below the ground surface), including in areas where historical bulkheads may be present given the extent of previous disturbance to those depths in the area. AECOM determined that several other portions of the study area that were determined to have low to moderate sensitivity for historical landfill deposits and landfill-retaining structures would be impacted at greater depths. Additional archaeological analysis in the form of Phase 1B archaeological monitoring was recommended in the following locations: the location of a flip-up deployable gate at Pier A Plaza and at the

NSI element locations within Route 9A/West Street. No archaeological sensitivity was identified in the two locations where the SBPCRP study area and the NWBPCRP Project Area overlap and the Phase 1A Study documented existing infrastructure (e.g., storm sewers and outfalls) in both locations.

A. CURRENT CONDITIONS

As described in Chapter 1, "Introduction and Methodology," the project area has been divided into seven analytical segments known as "reaches" (see **Figures 2A-B**). The existing conditions of each of these segments are described as follows and depicted on **Photographs 1 through 12**:

REACH 1—WEST STREET CROSSING/TRIBECA (1,430 LINEAR FEET/2.0 ACRES)

Reach 1 is situated in the northeastern portion of the project area and incorporates the streetbeds of Greenwich Street, North Moore Street, and Route 9A/West Street. Each of these is an active thoroughfare underlain by a variety of utility lines. The project area within this reach extends around the perimeter of the campus of Borough of Manhattan Community College (BMCC), a private residential development known as Independence Plaza, and Hudson River Park.

REACH 2—NORTH ESPLANADE (485 LINEAR FEET/0.7 ACRES)

Reach 2 includes a small portion of the Battery Park City Esplanade between a marina to the north, the Hudson River Greenway, and Route 9A/West Street. The Battery Park City Esplanade in this reach is used as pedestrian, bicycle, and emergency and maintenance vehicular access point to Rockefeller Park and Battery Park City. The esplanade is paved and lined with trees, benches, and street lighting. Along the eastern boundary of this segment are access and egress points connecting the esplanade with Stuyvesant High School and Tribeca Pointe Apartments.

REACH 3—ROCKEFELLER PARK (1,700 LINEAR FEET/6.5 ACRES)

Reach 3 is occupied by Rockefeller Park, the largest contiguous open space in Battery Park, and represents the northwestern corner of the project area. Reach 3 is bounded to the east by River Terrace, and on the north and west by the Hudson River. The park is dominated by relatively flat grassy lawns separated by and surrounded by paved pathways and the esplanade and landscaped gardens. The park contains a one-story maintenance facility; basketball courts; a one-story covered structure/art installation known as *Pavilion* by the artist Demetri Porphyrios; public restrooms; and landscape elements such as decorative courtyards and staircases. An extensive playground with permanent playground equipment is located at the southern end of the park (and Reach 3) that is situated at a grade lower than Route 9A/West Street to the east.

REACH 4—BELVEDERE PLAZA (500 LINEAR FEET/1.4 ACRES)

Reach 4 comprises the southern end of Rockefeller Park north of the North Cove Marina. This reach incorporates several features, including the Lily Pond, an artificial body of water; the waterfront structures of the Battery Park City Ferry Terminal, and open space surrounding the Irish Hunger Memorial.

REACH 5—NORTH COVE (1,630 LINEAR FEET/8.7 ACRES)

Reach 5 includes the North Cove Marina and surrounding open spaces, collectively referred to as North Cove. North Cove includes multiple distinct active and passive use areas situated within the terraced plaza surrounding the marina. North Cove provides access to Brookfield Place—a commercial building and retail center with a dining and retail atrium known as the Winter Garden—and is the location for seasonal

temporary programming. Permanent programming in North Cove includes outdoor dining, the Sirius Dog Run, Pumphouse Park, Kowsky Playground, and the NYC Police Memorial.

REACH 6—SOUTH ESPLANADE (1,500 LINEAR FEET/2.8 ACRES)

Reach 6 includes the Battery Park City Esplanade between Esplanade Plaza at the southern terminus of North Cove to the northwest corner of 21 South End Avenue, also known as "The Regatta Building." The project area in this reach includes a portion of the Battery Park City Esplanade and all or portions of three streets that intersect it: Albany Street, Rector Place, and West Thames Street. Albany Street, Rector Place, and West Thames Streets are active roads underlain by various utilities. These streetbeds are part of the tax parcel known as Block 16, Lot 3.

REACH 7—SOUTH COVE (950 LINEAR FEET/2.7 ACRES)

Reach 7 is the southernmost portion of the Project Area. It encompasses the area surrounding a marina known as South Cove and the adjacent upland esplanade. At this area, the project will tie-in to the South Battery Park City Resiliency Project at 1st Place. The esplanade in this reach is mostly paved with landscaping/gardens, trees, and street lighting. The area contains decorative landscape elements on land and extending on piles out into the water, including open pavilions and elevated viewing structures.

POTENTIAL INTERIOR DRAINAGE WORK AREA

The Potential Interior Drainage Area includes a portion of the streetbed of Route 9A/West Street and Vesey Street. Both are active roadways underlain by utilities. Route 9A/West Street is a multi-lane highway divided by landscaped center medians. Vesey Street to the west of Route 9A/West Street is an active roadway underlain by utilities that is part of the tax parcel known as Block 16, Lot 3.

B. GEOLOGY AND TOPOGRAPHY

The Project Area is situated within a geographic province known as the Manhattan Prong of the New England (Upland) Physiographic Province (Isachsen, et al. 2000). Manhattan's physical setting was shaped by massive glaciers up to 1,000 feet thick which retreated from the area toward the end of the Pleistocene. There were four major glaciations that began approximately 17,000 years ago and lasted until roughly 12,000 years ago when the Wisconsin period—the last glacial period—came to an end. Bedrock in lower Manhattan is associated with the Manhattan Formation which dates to the Middle Ordovician Period of the Paleozoic Era and were likely formed more than 435 million years before present (Fisher, et al. 1995; Isachsen, et al. 2000). Surficial geological deposits are identified as glacial till (Cadwell 1989).

As described in greater detail later in this Phase 1A Study, much of Battery Park City is situated in an area of relatively recent landfill. As shown on the 1865 Viele map and the 1873 Department of Docks map (see **Figures 5A-B**), the original shoreline of Manhattan in the vicinity of the Project Area was situated in the vicinity of what is now Greenwich Street. Fast land, or the original dry land along the coast, extended slightly into the project area within and west of Greenwich Street between Vesey and North Moore Streets. This intrusion was less than half a block in width except in the location between Reade and Franklin Streets, where the fast land extended as far west as Washington Street, which is now demapped in the vicinity of North Moore Street within the Project Area. South of Duane Street, the coastline is depicted as hills or bluffs lining the waterfront.

Harriot's 1865 sanitary map represents some of the earliest topographical information for the portion of the Project Area that was dry land prior to the landfilling efforts that reshaped Manhattan's coastline. However, North Moore, Greenwich, and Washington Streets were all constructed by that time, and little is known about topographical conditions and surface elevations before the streets' construction. Along North Moore Street, the map indicates that the elevation of the streetbed was 4 feet at West Street; 8 feet 11 inches at Washington Street (now de-mapped); and 12.5 feet at Greenwich Street. These surface elevations are

generally similar to those documented on 20th century maps, including the 1951 Sanborn map, which lists the street intersection elevations along North Moore Street as 5 feet at West Street; 9 feet at Washington Street; and 12 feet at Greenwich Street. This suggests that limited changes occurred to the streets between the mid-19th and mid-20th centuries.[1]

Table 3-2
Selected Street Elevation Data Collected from Historical and Modern Maps

Intersection of North Moore Street and:	1865 Harriot	1885 Robinson	1937 Rock Data Map	1951 Sanborn	2013 LIDAR (MBD)	2013 LIDAR (NAVD88)
West Street	4	4	5.2	5	6.4	8
Washington Street	8.92	8.9	8.6	9	10.4	12
Greenwich Street	12.5	12.5	12.2	12	12.4	14

Notes: The elevations on these maps are identified as "above high tide" with the exception of the 1937 Rock Data Map (which is relative to the Manhattan Borough Datum [MBD]) and 2013 LIDAR (which is relative to NAVD88and is also presented as converted to MBD for the sake of comparison). See below for a discussion of datum points. Furthermore, these maps and atlases may depict the city's legal grade at these intersections; which may have differed from the actual elevation.

C. HYDROLOGY

Prior to European colonization and subsequent landscape modification, the landscape of Manhattan fluctuated in the millennia that followed the end of the glacial period. Between 12,000 and 6,000 years before present, sea levels fluctuated followed by a rapid rise in sea levels, reaching their current state by approximately 3,000 years ago (Geoarcheology Research Associates [GRA] 2014). This process "raised the base level of the small creeks draining Manhattan and…initiated a mosaic of estuarine and near shore environments in the brackish zone" eventually creating marshes along Manhattan's shores (ibid: 43). The glacial runoff created by the retreat of ice sheets created many small streams, rivers, and lakes. As temperatures increased and this runoff ceased, many of these small watercourses evolved into swamps and marshlands punctuated with brooks and streams while others continued to etch their way through the glacial bedrock.

[1] A significant problem with the comparison of these data sets is the lack of an accurate, consistent datum across all maps. A datum is the point from which surface elevations are measured (where the elevation is considered to be 0). Elevations of the same ground surface, recorded at the same time, but taken relative to different datum points, will obviously differ despite the fact that they refer to the same location. As shown in **Table 3-1**, datums have historically been linked to tidal action, either mean sea level (representing the average of high and low tide) or the high water mark. Therefore, understanding the datum from which an elevation was measured is critically important to an analysis of historic elevations and landscape change. However, given historic surveying techniques and inaccuracies that may exist in measuring tides and elevations, especially during the 19th century, as well as sea level rise, discrepancies may be encountered when comparing current and historic elevation data. Small differences in elevation between historical maps may therefore vary according to the datum that was used to calculate the elevation as well as the exact point where the elevation was measured, which likely also varied as some cartographers measured the center of intersections and others measured specific street corners. Furthermore, the National Oceanic and Atmospheric Administration (NOAA) has calculated that since 1850, the mean sea level near the Battery at the southern end of Manhattan has risen at a rate of approximately 0.11 inches per year, or almost one foot over the course of a century. Therefore, while the location of sea level should not contribute greatly to differences in elevation as depicted on historical maps, some variation may be the result in the change of sea level itself or in inaccurate ways of measuring sea level and high tide during the historic period.

As described previously, the Project Area was almost entirely inundated by the Hudson River except for limited areas in the vicinity of what is now Greenwich Street. Of the areas of fast land located within the Project Area, the area north of Duane Street was located within inundated marshland associated with a large swamp known as "Lispenard's Meadows." The swamp was a stagnant pool "covered with stunted bushes [and] filled with swamp rubbish and the 'rotten growth of ages'" (Gratacap 1904: 23). The tidal swamp surrounded was drained by a small stream that connected the Hudson River with the Collect Pond, a large freshwater pond located to the northeast and east of the Project Area. A network of streams crossed through and drained the marshes and the Viele map depicts a small pond within the marsh within the area now bounded by Franklin, Hudson, Beach, and Greenwich Streets. The marsh was filled in the 18th century the construction of the City's street grid beginning in the early 19th century contributed greatly to the large-scale transformation of Manhattan island as hills were cut down and the resulting sediments used to fill in low-lying areas (Koeppel 2015). As described later, landfilling intensified along the Hudson River in the 19th century and the remainder of the Project Area was reclaimed from the river between the 19th and 20th centuries.

D. SOILS

The Web Soil Survey maintained by the United States Department of Agriculture (USDA)'s National Resource Conservation Service indicates that four soil complexes and open water are mapped within or adjacent to the Project Area. These soil types are summarized below and described in **Table 3-1**.

- **Laguardia-Urban Land Complex (LUA)**: Mapped along the waterfront near the northwest corner of Battery Park. Comprises soils associated with Laguardia and Urban Land, Till Substratum; typically found in paved urban areas underlain by till with 0 to 3 percent slopes.
- **Urban Land-Laguardia Complex (ULA)**: A soil complex comprised of two soil types (Urban Land, Till Substratum and Laguardia soil) mapped along the waterfront the western boundary of the Project Area adjacent to the Hudson River in southern half of the project area;. Typically found in paved urban areas underlain by till with 0 to 3 percent slopes;
- **Urban Land, Tidal Marsh Substratum (UmA)**: Mapped to a small area near intersection of Greenwich Street and North Moore Street; typically found in paved urban areas underlain by former marshes or fill deposits with 0 to 3 percent slopes;
- **Urban Land, Reclaimed Substratum (UrA)**: Mapped along the eastern boundary of the Project Area along Route 9A and in limited areas elsewhere in the project area; typically found in paved urban areas with 0 to 3 percent slopes; typical of areas underlain by natural till with 0 to 3 percent slopes profiles with 0 to 3 percent slopes; and
- **Water (W)**: inundated areas.

Table 3-1
Project Area Soils

Series Name	Typical Soil Profile			Slope (%)	Drainage	Landform
	Level	Soil Horizon Depth (inches)	Soil Type			
Urban Land, Reclaimed Substratum (UrA)	M	0 to 15	Cemented Material	0 to 3	n/a	Summit
	2^C	15 to 79	Gravelly Sandy Loam			
Urban Land, Till Substratum (LUA, ULA)	M	0 to 15	Cemented Material	0 to 3	n/a	Summit
	2^C	15 to 79	Gravelly Sandy Loam			
Laguardia (LUA, ULA)	^Au	0 to 8	Cobbly-Artifactual Coarse Sandy Loam	0 to 3	Well Drained	Summit, Shoulder, Backslope, Footslope, Toeslope
	^BCu	8 to 26	Very Cobbly-Artifactual Coarse Sandy Loam			
	^Cu	26 to 79	Very Cobbly-Artifactual Coarse Sandy Loam			
Urban Land, Tidal Marsh Substratum (UmA)	M1	0 to 6	Cemented Material	0 to 3	n/a	Summit
	M2	6 to 20	Cemented Material			
	2^C	20 to 79	Very Gravelly Sand			

Sources: USDA Natural Resources Conservation Service Web Soil Survey: https://websoilsurvey.sc.egov.usda.gov (accessed September 2022).

A. PRECONTACT CONTEXT

Archaeologists have divided the time between the arrival of the first humans in northeastern North America and the arrival of Europeans more than 10,000 years later into three periods: Paleo-Indian (11,000-10,000 BP), Archaic (10,000-2,700 BP), and Woodland (2,700 BP–AD 1500). These divisions are based on certain changes in environmental conditions, technological advancements, and cultural adaptations, which are observable in the archaeological record.

PALEO-INDIAN PERIOD

Human populations did not inhabit the Northeast until the glaciers retreated more than 11,000 years ago. These new occupants included Native American populations referred to by archaeologists as Paleo-Indians, the forebears of the Delaware—also called the Lenape Indians—who would inhabit the land in later years. Archaeological evidence suggests that the Paleo-Indians were likely highly mobile hunters and gatherers who utilized a distinct style of lithic technology, typified by fluted points. They appear to have lived in small groups of fewer than 50 individuals (Dincauze 2000) and did not maintain permanent campsites. In addition, most of the Paleo-Indian sites that have been investigated were located near water sources. Because of the close proximity of Paleo-Indian sites to the coastline, few have been preserved in the New York City area. Of the few Paleo-Indian sites that have been discovered in New York City, nearly all have been found on Staten Island (Cantwell and Wall 2001). One of the most well-known precontact site is the Port Mobil site, in what is now a heavily disturbed oil tank farm on the southwestern coast of Staten Island. Like most precontact sites, this location is situated on high ground overlooking the water. Because of heavy disturbance in the area the site has yielded nothing more than a collection of fluted points and other stone tools characteristic of the period (Ritchie 1980). Paleo-Indian artifacts were also found along the eroding shoreline 500 yards south of the Port Mobil site and at the Cutting site in the Rossville section of Staten Island (ibid). Recent excavations at the Old Place site in northwestern Staten Island by the Public Archaeology Laboratory (PAL) have yielded new evidence regarding the site's occupation during the Paleo-Indian period through the Late Woodland, though the majority of the collected artifacts date to the Archaic (PAL 2014).

ARCHAIC PERIOD

The Archaic period has been sub-divided into three chronological segments, based on trends identified in the archaeological record which reflect not only the ecological transformations that occurred during this period, but the cultural changes as well. These have been termed the Early Archaic (10,000–8,000 BP), the Middle Archaic (8,000–6,000 BP), and the Late Archaic (6,000–2,700 BP) (Cantwell and Wall 2001). The Late Archaic is sometimes further divided to include the Terminal Archaic (3,000-2,700 BP). The abundance of food resources that arose during this period allowed the Archaic Native Americans to occupy individual sites on a permanent or semi-permanent basis, unlike their nomadic Paleo-Indian predecessors. Fishing technology was developed during the Middle Archaic in response to an increasing dependence on the area's marine resources. Tools continued to be crafted in part from foreign lithic materials, indicating that there was consistent trade among Native American groups from various regions in North America throughout the Archaic period.

Due to rising sea levels and to the rapid development of the area, as well as the dominance of coniferous forests at that time which generated a habitat ill-fit for human habitation (Boesch 1994), few Early Archaic sites have been identified in New York City. Most of those that have been identified are also located on Staten Island, including Ward's Point at the southwestern tip of the island; Richmond Hill; the H. F. Hollowell site; and the Old Place site. Sites such as Ward's Point—a domestic habitation location that due to lowered sea levels was originally inland—tend to be deep and stratified and have yielded stone tools related to cooking, woodworking, and hide processing. The many years of constant occupation caused the artifacts to be deeply buried under more recent debris deposits (Cantwell and Wall 2001). However, at the Old Place Site, the only artifacts that were discovered—stone tool assemblages—were found at relatively shallow depths of around 42 inches or 3.5 feet (Ritchie 1980).

There are also few Middle Archaic sites in the region. The majority of these tend to consist of large shell middens, which are often found near major watercourses such as the Hudson River, although stone points have also been found in such locations. These sites were in great danger of obliteration because of their proximity to the shrinking coastlines. Unlike the Early and Middle periods, many Late Archaic sites have been found throughout the New York City area. Late Archaic habitation sites are often found in areas of low elevation near watercourses and temporary hunting sites are often located near sandy areas (Boesch 1994).

Finally, many Terminal Archaic sites from all across the city have provided examples of what archaeologists call the Orient culture, which is characterized by long fishtail stone points and soapstone bowls. Extremely elaborate Orient burial sites have been found on eastern Long Island, but none have been identified in Manhattan.

WOODLAND PERIOD

The Woodland period represents a cultural revolution of sorts for the Northeast. During this time, Native Americans began to alter their way of life, focusing on a settled, agricultural lifestyle rather than one of nomadic hunting and gathering. Social rituals become visible in the archaeological record at this time. Composite tools, bows and arrows, domesticated dogs, and elaborately decorated pottery were introduced to Native American culture; and burial sites grew increasingly complex. Woodland-era sites across North America indicate that there was an overall shift toward full-time agriculture and permanently settled villages. Archaic sites in New York City, however, suggest that the Native Americans there continued to hunt and forage on a part-time basis. This was most likely due to the incredibly diverse environmental niches that could be found across the region throughout the Woodland period (Cantwell and Wall 2001; Grumet 1995).

CONTACT PERIOD

The Woodland period ended with the arrival of the first Europeans in the early 1500s, and the beginning of the Contact Period. The contact period in the New York City area began with the arrival of European expeditions led by Giovanni de Verrazano in 1524 and Henry Hudson in 1609, and the area was first colonized by Dutch settlers in the early 17th century. Beginning in 1621, Dutch West India Company (WIC) managed Dutch interests in the New World and began to purchase large tracts of land from the Native American groups that inhabited the region.

B. PREVIOUSLY IDENTIFIED NATIVE AMERICAN ARCHAEOLOGICAL SITES

In general, Native American habitation sites in the northeastern United States are most often located in coastal areas with access to marine resources, and near fresh water sources and areas of high elevation and level slopes not exceeding 10 to 12 percent (NYAC 1994). The potential presence of Native American

activity near a project site is further indicated by the number of precontact archaeological sites that have been previously identified in the vicinity of a project site. Information regarding such previously identified archaeological sites was obtained from various locations including the site files of SHPO and the New York State Museum (NYSM)—accessed through SHPO's CRIS database,[1] and other published accounts. Additional information was collected from publications such as R.P. Bolton's 1922 work, *Indian Paths in the Great Metropolis*. The Project Area is partially situated within an archaeological buffer area—formerly referred to by SHPO as a generalized area of archaeological sensitivity—as mapped in CRIS, indicating that it is within a certain distance of one or more previously reported archaeological sites. These sites are summarized in **Table 4-1**, below. Because these sites were discovered and/or reported by late 19th or early 20th century archaeologists (e.g., Parker 1920 and Bolton 1922), there is limited descriptive information available about what these sites contained.

Table 4-1
Precontact Archaeological Sites in the Vicinity of the Project Area

Site Name/ Number	Time Period	Approximate Distance from Project Area	Site Type
Shell Point/Werpoes **NYSM**: 4059	Precontact	Partially overlaps northeastern corner	Native American village and shell middens
Nechtanc **NYSM**: 4060	Precontact; Contact	1 mile	Native American village used as a retreat during 17th century wars with the Dutch
*Shepmoes**	Precontact	7,400 feet	Occupation site
*Sapohanikan**	Precontact	6,500 feet	Landing place and trading point

Note: *Not mapped in CRIS, included in Bolton (1922)
Sources: CRIS; Parker 1922, and Bolton 1922.

As described in **Table 4-1**, two Native American village sites have been identified within 1.5 miles of the Project Area. The first site, known as "Shell Point" or "Werpoes" (NYSM site #4059) was located north of City Hall Park and, as mapped in CRIS, extended into the northeastern corner of the Project Area. Bolton (1922) suggests that the village was more closely situated to the Collect Pond, in the vicinity of what is now Elm Street between Duane and Worth Streets, more than 2,000 feet east of the Project Area. The village was located on a hill known *Kalch Hoeck* adjacent to the Collect Pond, or *Kolch* (Bolton 1922; Bolton 1975). The name *Werpoes* is possibly derived from the word *Wapu*, meaning "a hare" and "Shell Point," likely refers to the many shell middens that covered the site (ibid).

The other village site, most commonly referred to as *Nechtanc*, meaning "sandy place" (Grumet 1981), is also known as *Rechtauck* or *Naghtogack* (Bolton 1922; Bolton 1975). According to Bolton's 1922 map of Native American trails, the village was located atop a large hill, later known as Jones' Hill, in the vicinity of the intersection of Jefferson, Henry, Clinton, and Madison Streets, more than 1,000 feet southeast of the Project Area (Bolton 1922).

Nechtanc's high elevation and close proximity to the river's varied resources would have made it an ideal location for a precontact village. Later in the Contact Period, its natural topography also made it an important refuge for the Lower Hudson River Delaware Indians from all over the New York City area. Brutal wars with the Dutch took place in the early 1640s and forced many Native Americans to flee their ancestral territory. Ultimately, *Nechtanc* was not a safe haven for them, and in 1643, the Dutch staged a nighttime attack on several Native American villages, including *Nechtanc*, at which time many Native Americans were killed in their sleep (Grumet 1981).

[1] https://cris.parks.ny.gov.

Another major habitation site, known as *Shepmoes*, was situated along the Hudson River waterfront in the vicinity of East 14th Street between Second and Third Avenues (Bolton 1922). Either a village or "plantation," Bolton (1922) hypothesized that the location was named after a nearby brook and contained a group of lodges. As it lacked a source of fresh water and shelter, the residents of this site may have relied heavily on the adjacent marshland for resources (ibid). The site of Sapohanikan along the Hudson River waterfront near what is now Gansevoort Street was also poorly suited for long-term occupation given the absence of a fresh water source (ibid). Bolton suggests that this site served as a landing point and trading post rather than a habitation site, facilitating trade with Indigenous groups residing in what is now New Jersey. Its name is reported to mean, "pipe-making place" (ibid: 59).

A series of Native American trails connected these villages with other Native American habitation and resource exploitation sites further north. A major Native American roadway—known as *Wickquasgeck*—ran along the approximate path of what was historically called the Bowery Road (now simply referred to as "Bowery") and a portion of modern Broadway to the east of the Project Area.

A. HISTORICAL CONTEXT FOR THE HUDSON RIVER WATERFRONT

EARLY COLONIZATION AND DEVELOPMENT

The formation of the Dutch town of New Amsterdam represents the first organized effort by Europeans to colonize what is now the island of Manhattan in the early 1600s. The lower end of Manhattan was a prime location for the center of the new colony's economy, as its position on the Hudson River was perfectly suited for trade with both Europe and the rural parts of New Amsterdam, where trade in furs was rapidly developing. New Amsterdam functioned as the major center for commercial activity in the area spanning Fort Orange in Albany on the upper Hudson River to the Delaware Bay in the south. New Amsterdam's early shipping industry began circa 1610 and was largely focused on the transport of furs purchased from the Native Americans residing along the upper reaches of the Hudson River to the colony at the lower tip of Manhattan (Bank of Manhattan Company 1915). Regular shipping routes were established between Holland and New Amsterdam, which proved to be "highly profitable business ventures" as well as an excellent way to explore and document the new colony, leading to "notable discoveries" (ibid: 7).

In 1621, Dutch West India Company (WIC) was chartered to consolidate Dutch activities in the New World (Stokes 1967). In 1626, the Dutch famously "purchased" the Island of Manhattan from the local Native American tribe—the Munsee—for goods valuing sixty guilders (ibid). This municipal framework remained unchanged throughout the 17th century. On February 2, 1653, New Amsterdam's municipal charter was officially proclaimed, establishing a city government similar in form and function to that of Amsterdam in Holland (ibid).

After the English conquest of New Amsterdam in 1664, the colony was renamed New York. As managed by the English, the colony began to grow as new trade networks were opened and old ones were expanded. Whereas the Dutch had primarily traded furs and other local goods from the port of New Amsterdam, the English focused on agricultural exports in the late 17th century, most notably flour (Albion 1967). An important aspect of this trade involved the transport of goods and passengers via the Hudson River between New York and the communities upriver (ibid). The colony grew steadily during the second half of the 17th century, although most of the development was concentrated at the tip of Manhattan and along the East River shoreline. Until landfilling efforts along the Hudson River intensified in the 18th and 19th centuries, the waterfront in this portion of Manhattan was several blocks east of the Project Area in most locations. A map of the original shoreline published by the New York City Department of Docks in 1873 (see **Figures 5A-B**) indicates that the high water mark—the location of the shoreline at high tide—was located in the vicinity of Greenwich Street between what are now the Battery and Chambers Street. The low water mark—the location of the shoreline at low tide—was more variable but was consistently located to the east of what is now Washington Street. As described previously, the only portions of the Project Area that are situated within or immediately adjacent to areas of fast land/the low water mark are the areas north of the approximately line of what is now Jay Street.

EXPANSION OF COMMERCE AND TRADE IN THE 18TH CENTURY

Towards the end of the 17th century, the fur trade had diminished and with the British passage of the Bolting Act in 1678, New York obtained a "monopoly in bolting flour and in packing flour and biscuit for export"

which "threw the export trade in breadstuffs into the hands of the millers and merchants of New York" (Bank of Manhattan Company 1915: 19). The number of ships in the Port of New York around that time was 18, however by 1694 that number rose to more than 160 (ibid). The increased trade brought about a similar increase in development and population in early New York. At the beginning of the 18th century, New York's expansion—fueled by the booming flour trade (ibid)—continued and the city of New York began to slowly stretch north of Wall Street, its previous boundary. This resulted in the need to transform Manhattan's naturally uneven terrain, and many hills were cut down and the resulting sediments used to fill in low-lying areas. Stabilizing the waterfront and making it more uniform became a priority at this time and landfilling along Manhattan's shoreline became increasingly common (discussed in greater detail below). This allowed for ships to come and go from the colony with greater efficiency, although the colony's maritime and trade industries remained focused on the East River.

Despite being less developed, the relatively few wharves and piers along the Hudson River were critically important to the economy of the colony as a whole, as the Hudson was used to transport goods and people from Manhattan to the northern reaches of New York (Albion 1967). However, these piers were still largely situated to the east of the Project Area. This included the "Oswego Landing," a dock that served as a critical landing point and marketplace during the French and Indian War in the mid18th century at what was then the foot of Liberty Street in the vicinity of modern Greenwich Street (DeVoe 1862: 271).

The British colony of New York continued to thrive through the mid- to late-18th century, although it was not as commercially successful as other American port cities, such as Boston, Charleston, and Philadelphia (Albion 1967). New York was a major trading location for British merchants across the ocean and it was the entry point and destination for many ships passing back and forth between the New and Old Worlds. Trade along the Hudson River began to increase during this time (ibid). By the late 18th century, the majority of New York's trade was conducted with the West Indies, although significant trade also occurred with Great Britain, other parts of Europe, and Africa (Albion 1967). Ratzer's 1776 map depicting Manhattan in 1767 continues to depict the Project Area at some distance from the waterfront except in the location of that portion situate along North Moore Street (see **Figure 6**).

THE IMPACT OF THE REVOLUTIONARY WAR

The increase in trade success accompanied the growth of tensions between American colonists and the British crown in the late-18th century. In 1776, the American colonists declared their independence from the British crown and the Revolutionary War ensued, with New York remaining a British stronghold until the war's end in 1783. During the course of the war, the British army occupied much of Manhattan and therefore many of its residents chose to flee the city rather than live alongside the army that had commandeered a large amount of personal property. Those that remained were loyal to the King of England, and the city became "the center of the British authority in America and there was much official business as well as lively Tory privateering" (Albion 1967: 6). The British military complex known as Fort George was located within what is now The Battery.

The 1782 British Headquarters Map depicting conditions in Manhattan during the war continues to depict the Project Area within an inundated portion of the Hudson River with the exception of the extreme northern end. The 1797 Taylor Roberts map (see **Figure 7**) suggests that by the close of the 18th century, waterfront development had started to extend slightly into limited portions of the Project Area in the vicinity of what is now Route 9A/West Street. Waterfront developments extending as far west as the Project Area by this time largely included the western end of long, narrow piers that stretched into the Hudson River from points near what is now Washington Street. These included Swartwout's and Lake's (Leake's) Wharves located in the vicinity of modern Albany and Cedar Streets and which were described in great detail in the final report summarizing AKRF's archaeological investigation of the World Trade Center Ship (AKRF 2013). Other docks that extended within or immediately adjacent to the Project Area included a City-owned dock

at the foot of Fulton Street (then known as Partition Street); unnamed docks at the termini of Vesey and Barclay Streets; Tenbrook's Dock along the waterfront between Warren and Chambers Streets; and Rhinelander's Dock between the lines of Harrison and Jay Streets.

COASTLINE CHANGES FOLLOWING THE REVOLUTIONARY WAR

During the course of the war, New York City's maritime industries suffered, with "commerce and shipping…almost completely destroyed even to [its] fishing fleets" (Bank of Manhattan Company 1915: 32). The loss of trade with the British West Indies after the War ended also crippled the Port of New York (ibid). It was not until after the end of the War of 1812, that American commerce—the Port of New York in particular—surged and trade networks expanded, with the newly formed country opening up new trade routes and reestablishing itself in international trade. While the wars had disturbed New York's maritime industry more than many other cities, within a few years of the conflict's end, the city's shipping networks were reformed (Albion 1967). Americans developed new appetites for imports such as tea and porcelain. By the 1790s, merchants had established far-reaching networks for both domestic and foreign trade—reaching as far as China by the 1780s—and aided by a disruption of European trade caused by Old World wars (ibid). The East River waterfront maintained a prominent role in the shipping industry until the early-19th century, when the advent of steam-powered ships forced the focus of New York's trade economy to shift to the deeper waters of the Hudson River.

Between 1815 and 1860, the waterfront in New York City was intensively developed, resulting in a surge of growth in the city's maritime and shipping industries and making it the most successful port in the country (Albion 1967). The opening of the Erie Canal in 1825 and the development of packet services to distant American and European ports led to expanded reciprocal trade between local merchants, the rest of the country, and the rest of the world. In the years preceding the American Civil War in the mid-19th century, "New York City handled two-thirds of America's imports, and dominated exports and passenger trade" (Novek 1992:24). This in turn attracted merchants to the waterfront areas, resulting in the establishment of one of the nation's most important commercial and shipping districts along the waterfront in Lower Manhattan.

As such, during the first half of the 19th century, significant efforts were made to fill in shallower waters and to construct new, more modern wharves and piers out into deeper waters. This was particularly true of the Hudson River, as New York's shipping industries had been re-focused there in part because technologically advanced steam ships were now too large for the East River piers (Albion 1967). The expansion of Hudson River piers is visible on maps published by Colton in 1836 and Dripps in 1852 (see **Figures 10 and 11**). Steamships took over the lucrative fine cargo and passenger businesses which soon moved to the west side of Manhattan, as well. Throughout the late-19th and 20th centuries, the Hudson River was lined with piers and wharves (ibid). As the residential areas of the city had been slowly spreading northward during the mid- and late 19th century, Lower Manhattan remained the focus of New York's commercial endeavors.

GROWTH AND GLOBALIZATION IN THE 20TH CENTURY

The success of the waterfront and other business enterprises in the late 19th and early 20th centuries therefore helped to transform Lower Manhattan and the New York waterfront into a center of global trade and commerce. During the mid-20th century, the continued success and growth led to the replacement of smaller commercial and industrial institutions with large-scale developments to house business and financial enterprises, such as the World Trade Center, which was constructed east of the Project Area in the 1960s and 1970s. The transformation of the waterfront between 1924 and 1951 is visible on aerial photographs taken in both years (see **Figures 10 and 11**). Excavation for the construction of the World Trade Center generated a massive volume of soil, which was subsequently used to continue Manhattan's history of landfilling to create the landform now known as Battery Park City. The two major development

projects were designed to revitalize both commercial and residential real estate in Lower Manhattan in the second half of the 20th century (Urstadt 2005). While the role of shipping and maritime trade in New York's economy has diminished somewhat in favor of finance and business, the commercial success of the modern Port of New York would not have been possible without the early development of the New York waterfront.

B. HUDSON RIVER WATERFRONT DEVELOPMENT, LANDFILLING, AND BULKHEAD CONSTRUCTION

As described above, before landfilling activities, the Hudson River shoreline ran to the east of the Project Area in the vicinity of modern Washington and Greenwich Streets. While landfilling along the Hudson River in the vicinity of the Project Area began at the turn of the 18th century and continued through the early 19th century, much of the Project Area was not filled until the 19th and 20th centuries.

The Dongan Charter of 1680 had a profound effect upon the transformation of Manhattan's waterfront. This charter permitted the colonial government to raise money by selling water, "or the right to build wharves and 'make land' out into the rivers between the low and high watermarks, a distance of 200 feet" (Cantwell and Wall 2001: 225). The Montgomery Charter of 1731 extended the range to 400 feet, well beyond the low water mark. Water lots were sold in the same manner as lots composed of solid ground, however, the new owners of these lots were charged with filling them in and with building wharves, piers, and/or bulkheads along the shore to prevent further erosion caused by the swift river currents. The construction of docks and piers at the ends of many of Manhattan's streets created slips, or landing places for ships, which were usually no more than one city block in length (Huey 1984). Soon after they were granted, the water lots were filled by "individuals with disparate interests [who] broadened their local residential and commercial holdings" through the creation of land (Buttenweiser 1987: 32).

In the second half of the 19th century, New York City began to make greater efforts to regulate and normalize the shoreline. As seen on the 1873 Department of Docks map, "bulkhead lines" were established along the waterfront to demarcate the limit of bulkhead development as defined by city law. The map identifies the "Harbor Commissioner's Bulkhead Line Established as per Act 1857" largely running along the western side of the historical line of West Street. A corresponding pier line established the same year approximately 680 feet to the west —through the area now in the center of Battery Park City—marked the western legal limit of pier construction. The bulkhead line was described as the western limit of "solid filling," marking the boundary between developable land and the waterfront docks, piers, and wharves built on piles over the water and also differentiating between territory owned by the City and the State (Finch 1887: 306).

The map also depicts a second bulkhead lines established by the Department of Docks in 1871 approximately 130 feet west of the 1857 line and 250 feet west of the line of the historical line of West Street (New York City Law Department 1886). The same 1871 act also established a new western limit approximately 750 feet to the west, marked on the map as the "Exterior Line of Grant of Lands Under Water [sic]." The bulkhead line would be reestablished further west in subsequent years as the City took control of a greater amount of inundated, unclaimed land as well as control of waterfront structures lining Manhattan's coast (ibid). The bulkhead wall itself extends between the Battery and West 59th Street and was gradually constructed, and in some cases replaced, by the Department of Docks (or other related City agencies) between 1871 and 1936, with reconstruction continuing through the 1960s (Raber and AKRF 1997). Older timber bulkhead remnants are believed to exist at depths of 20 to 25 feet below mean low water (ibid). As documented by Raber and AKRF (1997), seven construction styles have been documented within that portion of the bulkhead that extends through the Project Area as summarized in **Table 5-1** and shown on **Figure 4**). This documentation suggests that the bulkhead running through the Project Area was constructed in segments over many decades, with several sections having been replaced later. Other archaeological investigations (AECOM 2022) have confirmed that in addition to the documented original

conditions of the bulkhead walls, many segments were later modified or removed as a result of additional development in the late-20th century.

Table 5-1
Previously Documented Bulkhead Conditions

Bulkhead Type	Description	Years of Construction	Approximate Location within Project Area
I.A	Granite or concrete walls set on riprap	1871	Extreme southern end, south of 2nd Place
I.B	Granite walls built on one to three pre-cast concrete blocks with a concrete base	1872 to 1920	Route 9A/West Street between Cedar and Liberty Streets
II.A	Granite walls built on top of concrete blocks	1873 to 1875, certain sections later replaced	Route 9A/West Street between Murray and Warren Streets
			Northern end, north of the line of Jay Street
II.C	Granite walls built on top of pre-cast concrete blocks	c. 1900	Route 9A/West Street between West. Thames and Carlisle Streets
III.B	Granite walls on narrow concrete blocks with inclined bracing piles and timber binding frame	1876 to 1898	Route 9A/West Street between Warren and Jay Streets
III.C	Same as III.B without timber binding frames	1899 to 1915	Route 9A/West Street between Carlisle and Albany Streets
			Route 9A/West Street between Liberty and Dey Streets
			Route 9A/West Street between Fulton and Murray Streets
IV	Concrete bulkheads with timber or concrete relieving platforms on piles built to replace older bulkhead segments	1920 to 1960	Route 9A/West Street between 2nd Place and Rector Street
			Route 9A/West Street between Dey and Fulton Streets

Note: See **Figure 4.**
Source: Raber and AKRF 1997.

C. DEVELOPMENT HISTORY OF THE PROJECT AREA BY ANALYTICAL SEGMENT

REACH 1—WEST STREET CROSSING/TRIBECA

Reach 1 is the only segment of the Project Area that was partially situated on dry or fast land prior to the expansion of Manhattan's shoreline through the incorporation of landfill. As shown on the 1873 Department of Docks map, the portion of the Project Area within the streetbed of North Moore Street between Washington and Greenwich Streets was situated east of the high water mark. The remainder of the Project Area within this reach was situated wither between the high and low water marks or in the area inundated

by the Hudson River. This portion of Manhattan was situated north of the oldest portion of the historical settlement of New Amsterdam and is not depicted on some older maps of the island, including James Lyne's 1729-1731 surveys and the 1755 Maerschalck map. Ratzer's 1776 map depicting conditions ca. 1767 indicates that a bluff was situated near the high-water mark that sloped down to the west (see **Figure 6**).

Shortly after they began to colonize New Amsterdam, the Dutch began to divide much of the island into large farm parcels known as *bouweries* (Burrows and Wallace 1999). That portion of Reach 1 that was located on fast land was included within a bouwerie granted to Roelof Jans or Jansen, who was born in Sweden, and his Dutch wife, Anneke, who arrived in the colony in 1630 and were granted the farm six years later (Stokes 1967). Anneke's second husband was the Reverend ("Dominie") Everardus Bogardus, resulting in the farm being referred to as the "Dominie's Bouwerie" (ibid). Though other individuals occupied the farm during the 17th century, following the English takeover of Manhattan, the property was consolidated within the massive landholdings of Trinity Church by 1697 (ibid).

The ca. 1767 Ratzer map (see **Figure 6**) indicates that a foundry was situated along the waterfront in the immediate vicinity of what is now North Moore Street between Washington and Greenwich Streets. A precursor to modern Greenwich Street—then known as the "Road to Greenwich"—lined the western side of the island of Manhattan at that time and the foundry was located between the road and the river. The foundry continues to be depicted on the 1782 British Headquarters Map (and the 1900 copy of the same made by B.F. Stevens). That map indicates that defensive fortifications lined the waterfront in the vicinity of this portion of the Project Area during the Revolutionary War. The 1797 Taylor Roberts plan (see **Figure 7**) depicts the transition of the area from an industrial area to a fully developed urban neighborhood in an active waterfront area following the end of the war. That map is the first to depict the construction of North Moore and Washington Streets in the vicinity of Reach 1. While the map does not depict individual building footprints, it uses shading to reflect the present of development on the blocks on either side of North Moore Street in the vicinity of the Project Area.

Landfilling appears to have intensified in the vicinity of Reach 1 at the turn of the 19th century. The 1873 Department of Docks map (see **Figures 5A-B**), maps of the Trinity Church Farm issued by Dr. Heinrich Windwart in 1877, and a map of original tracts and farms prepared by J.B. Gill in 1917 identify some of the water lot grants that resulted in the earliest waterfront development in this area. The maps identify two water lot grants at what was historically the western terminus of North Moore Street within and west of Washington Street. The northern portion of the modern streetbed was included within a water lot grant issued on November 24, 1806 to John McKie, who appears to have owned the adjacent land to the east. The lot to the south, including a portion of what is now Block 142, was granted to Benjamin Romaine on the same day. Additional water lot grants in the vicinity of Reach 1 include the following:

- Grant to F. Skidmore and James Conway November 23, 1806: east of the historical line of West Street and north of Franklin Street.
- Grant to Thomas Streathfield Clarkson and Levitus Clarkson, July 4, 1805; east side of historical West Street south of Franklin Street.
- Grant to Rachel DeForest and Hugh Fairlie, December 14, 1807; area surrounding historical West Street north of Harrison Street; A map filed with the conveyance granting this water lot (Manhattan Conveyance Liber 149, Page 48) indicates that the water lot grant extended as far west as the permanent bulkhead line as established by that time.
- Grant to William Rhinelander, November 16, 1807; historical West Street between Harrison and Jay Streets (aka "Rhinelander's Wharf"). A map filed with the conveyance granting this water lot (Manhattan Conveyance Liber 174, Page 360) indicates that Rhinelander owned the fast land to the east and that the water lot extended as far west as the permanent bulkhead line as established by that time. A pier extending from the wharf out into the river is identified on the map as "contemplated."

The 1808 Longworth map of Manhattan depicts the waterfront within Reach 1 in a similar manner to that seen on the 1797 Taylor Robert map (see **Figure 7**), suggesting that the water lots were not filled rapidly following the issuance of the grants. The 1811 Bridges map—which depicts proposed developments rather than actual developments—indicates that the historical line of West Street was planned to continue as the western limit of Manhattan between North Moore Street and Jay Street. Between Jay Street and Duane Street, the map depicts the historical line of West Street interrupted by a large basin lined with three piers—one at either end and one in the center—that is identified as "Duane Street Ships." A market is shown on the map just outside the Project Area near the intersection of Washington and Duane Streets. The 1836 Colton (see **Figure 8**) and 1852 Dripps (see **Figure 9**) maps continue to identify historical West Street as the western limit of the developed portion of Manhattan, though the map depicts the entire waterfront lined with piers extending out into the Hudson River. Piers were located at the western terminus of North Moore, Franklin, and Harrison Streets, as well as in the three locations of the Duane Street Ships basin previously depicted between Jay and Duane Streets. The 1852 map depicts what appear to be proposed basins to the west of the developed waterfront.

Perris' 1852 atlas of Manhattan does not depict the waterfront west of historical West Street, but does indicate that the portion of North Moore Street located within the Project Area was a fully constructed right of way lined with developed industrial/commercial and residential lots. Maps of the Hudson River piers created by City Surveyors Edwin Smith in 1855 and J.C. Buckhout in 1860 depict three piers within or immediately adjacent to the Reach 1 portion of the Project Area: Pier 34 at the foot of Harrison Street; Pier 33 at the foot of Jay Street (also partially situated within Reach 2); and Pier 32, located midway between Jay and Duane Streets. The same piers are depicted on the 1867 Dripps map of Manhattan, which identifies the occupants of the piers as: Pier 34—"S.B. Hudson Catskill, &c"; Pier 33—Delaware & Hudson Canal Line," "Kingston Rondout Pier" and New York City; and Pier 32: New York City. The map also depicts streetcar lines running through Reach 1 along West, Washington, and Greenwich Streets. The 1879 Bromley atlas depicts similar conditions in both the streetbeds and along the waterfront. At that time, Pier 34 was occupied by "Rondout and Kingston Boats; Peekskill Sing Ferry and Tarrytown Steamboat Co." Pier 33 was occupied by the "Stonington Line for Boston." The occupant of Pier 32 is not identified on the map, which possibly indicates that it was in use by the occupant of Pier 31, "NY Lake Erie and Western RR."

The piers were renumbered and possibly modified before the publication of the 1885 Robinson atlas. Former Pier 35 at the foot of Harrison Street was renamed Pier 23, and remained under the use of "Rondout and Kingstone Steamboats" and was developed with wood pier structures. A northern extension of the pier shown on previous maps is no longer depicted. Former Pier 33 at the foot of Jay Street was renamed Pier 22, and was occupied by the "Stonington Line for Boston" and was developed with iron and wood pier sheds. Former Pier 32—once located between Jay and Duane Streets—appears to have been demolished. A new, larger pier was constructed at the foot of Duane Street that was known as Pier 21 and in use by the New York Lake Erie & Western Railroad. Similar pier alignments and uses are shown on the 1891 Bromley atlas and the 1904 Sanborn map. Pier 21 appears to have been extended further out into the river before the publication of the 1922 Sanborn map. Both the 1922 and 1951 Sanborn maps show Piers 21 and 22 extending as far west as a pierhead line established by the Secretary of War in 1913, while Pier 23 did not extend as far, remaining aligned with older pier limits. The waterfront structures in the vicinity of Reach 1 were removed in the second half of the 20th century as the adjacent area was transformed into the World Trade Center and Battery Park City.

REACH 2—NORTH ESPLANADE

The early development history of Reach 2 is summarized within adjacent Reach 1, above. Reach 2 was in an area entirely inundated by the Hudson River until the mid-19th century. The 1852 Dripps map (see **Figure 9**) depicts the T-shaped Pier 33—occupied by the Delaware & Hudson Canal Line's Kingston &

Rondout Pier—extending west from the intersection of West and Jay Streets. The western end of this pier appears to have extended into Reach 2 of the Project Area. The pier was extended further west by the publication of the 1867 Dripps map. The pier at the foot of Jay Street was later named Pier 22 and was occupied by the Baltimore & Ohio Railroad for most of the 20th century, as shown on Sanborn maps. Reach 2 was not fully developed until the construction of Battery Park City in the second half of the 20th century.

REACH 3—ROCKEFELLER PARK

Reach 3 was entirely inundated by the Hudson River until the late 19th and early 20th centuries. Those piers and waterfront structures that were present built by 1852 were situated east of the Project Area. Reach 3 was not fully developed until the construction of Battery Park City in the second half of the 20th century.

REACH 4—BELVEDERE PLAZA

Reach 4 was entirely inundated by the Hudson River until the late 19th and early 20th centuries. Those piers and waterfront structures that were present built by 1852 were situated east of the Project Area. Reach 4 was not fully developed until the construction of Battery Park City in the second half of the 20th century.

REACH 5—NORTH COVE

That portion of the Project Area that is included within Reach 5 is situated west of the bulkhead line as established in 1871. The 1797 Taylor Roberts map (see **Figure 7**) suggests that waterfront structures do not appear to have extended into this portion of the Project Area until the 19th century. The 1836 Colton map (see **Figure 8**) depicts piers entering the eastern end of Reach 5 near the western ends of Vesey and Fulton Streets and at a point midway between Cortlandt and Dey Streets.

The 1852 Dripps map (see **Figure 9**) depicts more advanced development along the waterfront. By that time, a large wharf had been constructed opposite the Washington Market west of historical West Street between Vesey and Fulton Streets. The wharf was developed with "market houses" and several piers extended west from it, including Pier 21—generally along the line of Fulton Street—which entered the Project Area. Pier 29 extended west from Dey Street and was either partially within or immediately adjacent to the Project Area. Piers 17 and 18 formed a slip used by the Jersey City Ferry that extended west from the terminus of Cortlandt Street and partially entered the Project Area. Pier 18 formed the northern side of the slip and is identified on the map as a destination for ships to and from "Boston, Worcester, Nashua, Lowell, and Lawrence." A second slip was formed between Piers 16 and 17 with Pier 16, also partially within the Project Area, in use by the New Jersey Railroad Company.

The 1867 Dripps map reflects expansion of the Washington Market facilities and the extension of Piers 20 and 21 out into the river for additional transportation uses, including the "Atlantic Steamship Company for London," "Norfolk & Richmond;" "Propeller to Albany City;" and "N.B. Line for Newark & Berger Point." Some additional expansion had occurred in the vicinity of Piers 16 through 18, with the wharf at the eastern end of the slip used by the Jersey City Ferry having been expanded to encompass much of Pier 17. The 1879 and 1891 Bromley atlases depict similar pier formations with similar uses.

The 1905, 1922, and 1951 Sanborn maps depict larger pier structures in the same general locations. Piers 13 and 14 are depicted near the western termini of Dey and Fulton Streets, respectively, seemingly replacing former Piers 20 and 21. Similarly, a smaller ferry slip appears in the area between Liberty and Cortlandt Streets in 1905 and appears as a larger facility on later maps. The 1922 Sanborn is the first to depict the "Hudson and Manhattan Railroad" tunnels now used by the PATH trains running through the Project Area west of the line of Cortlandt and Fulton Streets.

REACH 6—SOUTH ESPLANADE

That portion of the Project Area that is included within Reach 6 is situated west of the bulkhead line as established in 1871. The 1797 Taylor Roberts map (see **Figure 7**) suggests that waterfront structures do not appear to have extended into this portion of the Project Area until the 19th century. The 1836 Colton map (see **Figure 8**) depicts at least three piers extending into or immediately adjacent to the eastern portion of Reach 6 near the termini of Albany and Carlisle Streets and a point north of Rector Street. The 1852 Dripps map (see **Figure 9**) indicates that these piers had been replaced or extended further east. As shown on that map, Pier 12 was a T-shaped Structure at the foot of Albany Street and was in use for "Philadelphia St. Boats." Pier 11 is depicted at the foot of Carlisle Street and Pier 10 to the south, between Carlisle and Rector Streets, though the map does not identify the use of either pier. By the publication of the 1867 Dripps map, Pier 12 had been modified through the removal of the northern extension that created a slip with the expanded Pier 13 to the north. At the time the pier was used as a docking point for steamships from Newbern, North Carolina. Piers 10 and 11 are depicted in a similar manner to the 1852 Dripps map and the 1867 map identifies them as in use for the "Dispatch Line to Philadelphia" and the "Steamship for Boston," respectively. Piers 10, 11, and 12 continue to be shown on the 1879 Bromley and 1885 Robinson atlases, which identify their respective uses as "Cromwell's Line, Halifax and St. John, New Foundland;" "Metropolitan Line for Boston;" and "Central Railroad of New Jersey." The 1891 Bromley atlas depicts the same piers and many of the same uses, and suggests that Pier 10 may have been expanded slightly through the construction of a wharf along historical West Street. The maps indicate that the bulkheads lining historical West Street did not extend as far west as the 1871 Bulkhead line during this time, with only piers extending as far west as the Project Area.

The 1905 Sanborn map indicates that former Pier 12 at the foot of Albany Street had been replaced by the larger new Pier 10, which remained part of a larger waterfront complex operated by the Central Railroad of New Jersey. The map continues to depict old Piers 10 and 11—then used as freight piers by the Metropolitan Steamship Company—but depicts the proposed outline of new Pier 9, which was proposed to be constructed between the two older piers west of the 1871 Bulkhead line. Pier 9 was fully developed by the publication of the 1922 and 1951 Sanborn maps, which identifies it as the freight and passenger pier of the United Fruit Company while new Pier 10 remained under the control of the Central Railroad of New Jersey. The waterfront structures in the vicinity of Reach 6 were removed in the second half of the 20th century as the adjacent area was transformed into Battery Park City.

REACH 7—SOUTH COVE

That portion of the Project Area that is included within Reach 7 is situated west of the bulkhead line as established in 1871. The 1836 Colton (see **Figure 8**) and 1844 Hassler maps suggest that waterfront structures do not appear to have extended into this portion of the Project Area until the mid-19th century. The 1852 Dripps map (see **Figure 9**) depicts the western end of three piers extending into or immediately adjacent to this portion of the Project Area. The three piers within or adjacent to Reach 7 included Piers 3, 4, and 5. Pier 4 extended west from the terminus of Morris Street with Piers 3 and 5 to the south and north, respectively. The 1852 map does not identify the use of Pier 5, but identifies Piers 3 and 4 are identified as the docking points for "Steamships Washington & Herman for Bremen & Southampton" and "Steamships for Charleston," respectively. The same piers are depicted on the 1867 Dripps map, which identifies Piers 3 and 4 as the docking point for steamships to and from Havana, Cuba; London, England; Veracruz, Mexico; Jamaica, West Indies. Pier 3 was also in use by the Raritan and Delaware Bay Railroad.

By the publication of the 1879 Bromley atlas, Piers 4 and 5 had been replaced by larger piers extending from a large wharf built out to the 1871 Bulkhead line. The complex was occupied by the Pennsylvania Railroad Company. Pier 3 remained in its original condition and was the docking point for the New York, Havana, and Mexico Steamship Line. The piers are depicted similarly on the 1885 Robinson and 1891

Bromley atlases, the latter of which identifies the Lehigh Valley Railroad Company as the occupant of Pier 3. Piers 4 and 5 continue to be depicted within the Pennsylvania Railroad complex on the 1905 Bromley atlas, which depicts the outline of proposed larger new piers in the same general location. Pier 3 continues to be depicted as part of a waterfront freight complex of the Lehigh Valley Railroad, which was so be replaced by a new, larger pier in an area to the south. The proposed piers were not constructed immediately, and the old waterfront structures continue to be depicted on the 1922 Sanborn map, by which time all three were operated by the Pennsylvania Railroad. Piers 4 and 5 were replaced by a larger structure called new Pier 3 and old Pier 3 replaced by a large structure called Pier 2 by the publication of the 1951 Sanborn map. Both piers were part of the expanded waterfront property of the United Fruit Company.

POTENTIAL INTERIOR DRAINAGE WORK AREA

The Potential Interior Drainage Area includes portions of Route 9A/West Street that were previously analyzed as part of other archaeological documentary studies as outlined in **Chapter 2, "Summary of Previous Archaeological Analysis of and Near the Project Area."** This portion of the Project Area was entirely inundated by the Hudson River until the late 18th century as shown on the 1776 Ratzer map depicting conditions in 1767 (see **Figure 6**). The 1797 Taylor Roberts plan (see **Figure 7**) reflects the beginning of the extension of piers and wharves into portions of what is now the streetbed of Route 9A/West Street, including: Tenbrook's Dock between Warren and Chambers Streets; docks at the foot of Barclay and Laight (formerly Partition) Streets; "the Botting House" and Lindsay's Wharf at the foot of Liberty Street; Lake's Wharf at the foot of Cedar Street; and the Albany Basin and Swartwout's Wharf between what are now Albany and Cedar Streets. The histories of Lindsay's, Lake's, and Swartwout's Wharves and the Albany Basin were included in AKRF (2013) as the World Trade Center Ship remnant was found in the context of these waterfront structures further to the east of the Project Area.

The historical streetbed of West Street was largely filled by the publication of the 1836 Colton map (see **Figure 8**), which depicts the street in the vicinity of the wharf/bulkhead that lined the Hudson River between at least Duane and Cedar Streets. Piers extended west of this line throughout the entire Project Area corridor. These waterfront structures were expanded by the publication of the 1852 Dripps map. The 1867 Dripps map depicts historical West Street as a developed right-of-way with a streetcar line running through its entire length within the Project Area. It remained the western extent of the filled portion of Manhattan through the late 20th century when Battery Park City and the World Trade Center were constructed. The area was further transformed by the construction of Route 9A in the closing decades of the 20th century.

A. CONCLUSIONS

As part of the background research for this Phase 1A Archaeological Documentary Study, various primary and secondary resources were analyzed, including historic maps and atlases, historic photographs and lithographs, newspaper articles, and local histories. The information provided by these sources was analyzed to reach the following conclusions.

PREVIOUS DISTURBANCE

The Project Area has been subject to three centuries of landscape modification as it was transformed from inundated river to an industrial waterfront and then again into a residential community. In the location of North Moore Street between Washington and Greenwich Streets, the only portion of the Project Area that was dry land by the 17th century, disturbance has occurred as a result of the construction and demolition of 18th century industrial buildings and later the construction and maintenance of North Moore Street.

In waterfront area, disturbance occurred as a result of the landfilling process and the construction of a working waterfront. Such disturbance could have included dredging of the river bottom and in slips to permit the passage of increasingly large ships. Additional disturbance would have occurred as a result of the construction of piers and wharves, which often involved driving piles into the river bottom to anchor waterfront structures. Many older piers and docks were replaced with more modern facilities in the late 19th and 20th century, resulting in further disturbance. However, the extent to which older pier structures and pilings were entirely removed is unclear, and the possibility remains that older waterfront structures were incorporated into later replacements or otherwise left in place.

All streetbeds within the Project Area are assumed to be disturbed to a depth of at least 2 feet below the ground surface as a result of the installation of extensive networks of utilities, including water, sewer, gas, and electric and telecommunications lines in addition to other subsurface vaults, conduits, catch basins, fire hydrants, and street lighting connections. However, streetbeds may include undisturbed areas that do not contain utility lines or feature large gaps between existing utility lines. For the purpose of this analysis, it is assumed that the locations of any existing utilities are considered to be disturbed from the ground surface to a depth of 1 to 2 feet below the bottom of the utility line and to a distance of 1 to 2 feet on either side, beyond the outer edges of each utility line, representing the trench that was likely dug as part of the line's installation. Any location where no utilities are present or where there is a space of 5 feet or more between the outer edges of existing utilities is considered to be undisturbed. Those locations beneath the disturbed portions of existing utility trenches are also considered undisturbed in areas that have not experienced landscape modification.

PRECONTACT SENSITIVITY ASSESSMENT

As described in **Chapter 4, "Precontact Archaeological Resources**," the precontact sensitivity of project sites in New York City is generally evaluated by a site's proximity to level slopes (less than 12 to 15 percent), watercourses, well-drained soils, and previously identified precontact archaeological sites (NYAC 1994). The Project Area was historically inundated and only a small portion in the vicinity of North Moore and Greenwich Streets is known to have been dry, inhabitable land prior to the initiation of landfilling efforts along the Hudson River coast. Other coastal precontact archaeological sites have been identified in

Lower Manhattan, and the Project Area was situated near waterfront bluffs in close proximity to fresh- and saltwater resources provided by the Hudson River and nearby marshes. The area was therefore likely to have been utilized by Indigenous populations for resource exploitation if not for long or short term occupation. However, despite the high likelihood that Native Americans utilized the land across the project corridor, Native American archaeological sites are typically found at shallow depths, within the top 5 feet of the original ground surface. Given the extent of development and landscape modification on the Project Area during the 19th and 20th centuries, much of the pre-development ground surface was likely destroyed as a result of development between the 18th and 19th centuries. The Project Area is therefore determined to have low sensitivity for precontact archaeological resources.

The portions of the Project Area that were part of the Hudson River proper to landfilling efforts could have been dry, inhabitable land prior to the rise of sea levels thousands of years ago. Previous archaeological investigations (HCI 1983; Hartgen and HPI 1990) determined that deeply buried landforms are present within the streetbed of Route 9A/West Street at depths greater than 30 to 60 feet below what was the ground surface before modern Route 9A was constructed. In 1990, based on the impacts proposed as part of the Route 9A reconstruction project, it was determined that an archaeological investigation of deeply buried landforms would be impractical. However, subsurface impacts for the current project could impact depths greater than 30 to 60 feet in limited locations.

HISTORIC SENSITIVITY ASSESSMENT

The Project Area's historical development extended gradually westward, with different portions of the Project Area being filled and occupied at different times. The Project Area is sensitive for two types of historical archaeological resources associated with 18th century industrial uses in that portion that was originally fast land in the vicinity of North Moore and Greenwich Streets and for 18th through mid-19th century resources associated with landfilling.

The portion of the Project Area in the vicinity of North Moore Street between Washington and Greenwich Streets was the site of an 18th century foundry as depicted on the 1776 Ratzer map (see **Figure 6**). The streetbeds of North Moore and Greenwich Streets appear to have been constructed by the late 18th century and has been maintained as active roads since that time. Historical maps suggest that within the Project Area, these streets have maintained the same widths[1] and approximately the same surface elevation (with potential increases of 1 to 2 feet) since the mid- to late-19th century. Washington Street historically passed through the Project Area but has since been demapped. Undisturbed portions of this streetbed could contain archaeological resources associated with the 18th century foundry that was located in this area before North Moore Street was constructed. Therefore, this portion of the Project Area is determined to have low to moderate sensitivity for archaeological resources dating to the 18th century and earlier (see **Figure 12**).

As described in Chapter 2, "Summary of Previous Archaeological Analysis," landfill and landfill-retaining structures became standardized beginning in the mid-19th century. As such, landfill deposits pre-dating 1850 have significantly higher archaeological research value and provide greater insight into historical land-making technology. While many of the older waterfront structures may have been removed as part of the construction of later, more modern pier structures, the extent to which older structures were entirely removed is unknown. As described previously, intact segments of the historic Hudson River Bulkhead—which is eligible for listing on the State and National Registers of Historic Places—have been documented along Route 9A/West Street within and in the vicinity of the Project Area. Those portions of the Project Area that were developed with landfill or waterfront structures (e.g., wharves, piers, or docks) prior to 1850

[1] The streetbed of North Moore Street between West and Greenwich Streets was widened to the north by approximately 15 feet, but the southern line (including the portion of the streetbed included within the Project Area) has not been altered.

are therefore determined to have moderate sensitivity for historical landfill-retaining structures and landfill deposits. The general locations of these areas are depicted on **Figure 12**.

B. RECOMMENDATIONS

Given the identified historic period archaeological sensitivity of the Project Area and the potential that it contains deeply buried landforms with potential precontact archaeological sensitivity, further archaeological analysis is recommended to confirm the presence or absence of archaeological resources within the Project Area.

Given the fact that potential precontact landforms initially identified as a result of a review of soil borings in the early 1980s are deeply buried at depths of 30 to 60 feet or more, a geomorphological analysis of the Project Area is recommended to revise and update the conclusions of the previous investigation and to determine if the construction of the proposed project would impact intact archaeologically sensitive landforms. This investigation is recommended for all locations within the Project Area where subsurface impacts would extend to depths greater than 30 feet below the ground surface.

Additional archaeological analysis of areas of historic period or landfill archaeological sensitivity that would be impacted by the proposed project to depths of greater than 2 feet would be completed in the form of a Phase 1B Archaeological Monitoring Investigation. The monitoring would occur during excavation of undisturbed areas that is completed for the construction of the project both in the area of 18th century archaeological sensitivity identified on North Moore Street between Washington and Greenwich Streets and in the locations that are sensitive for pre-1850 landfill (see **Figure 12**).

Both the geomorphological investigation and the Phase 1B Archaeological Monitoring should be completed in coordination with LPC and SHPO. Prior to the completion of any testing or analysis, an Archaeological Work Plan outlining the proposed analytical strategy(ies) and scope(s) of work should be completed and submitted to LPC and SHPO for review and concurrence.

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Figures

11.3.22

Data source: USGS The National Map, https://basemap.nationalmap.gov/arcgis/rest/services/USGSTopo/MapServer

0 2,000 FEET

Project Site

Approximate coordinates of Project Site:
74°0'53"W 40°42'48"N

USGS Topographic Map – Jersey City Quadrangle

NORTH-WEST BATTERY PARK CITY RESILIENCY

Figure 1

11.3.22

Project Area

Reaches

Photograph View Direction and Reference Number

0 400 FEET

Project Location

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 2A

11.3.22

Project Area

Reaches

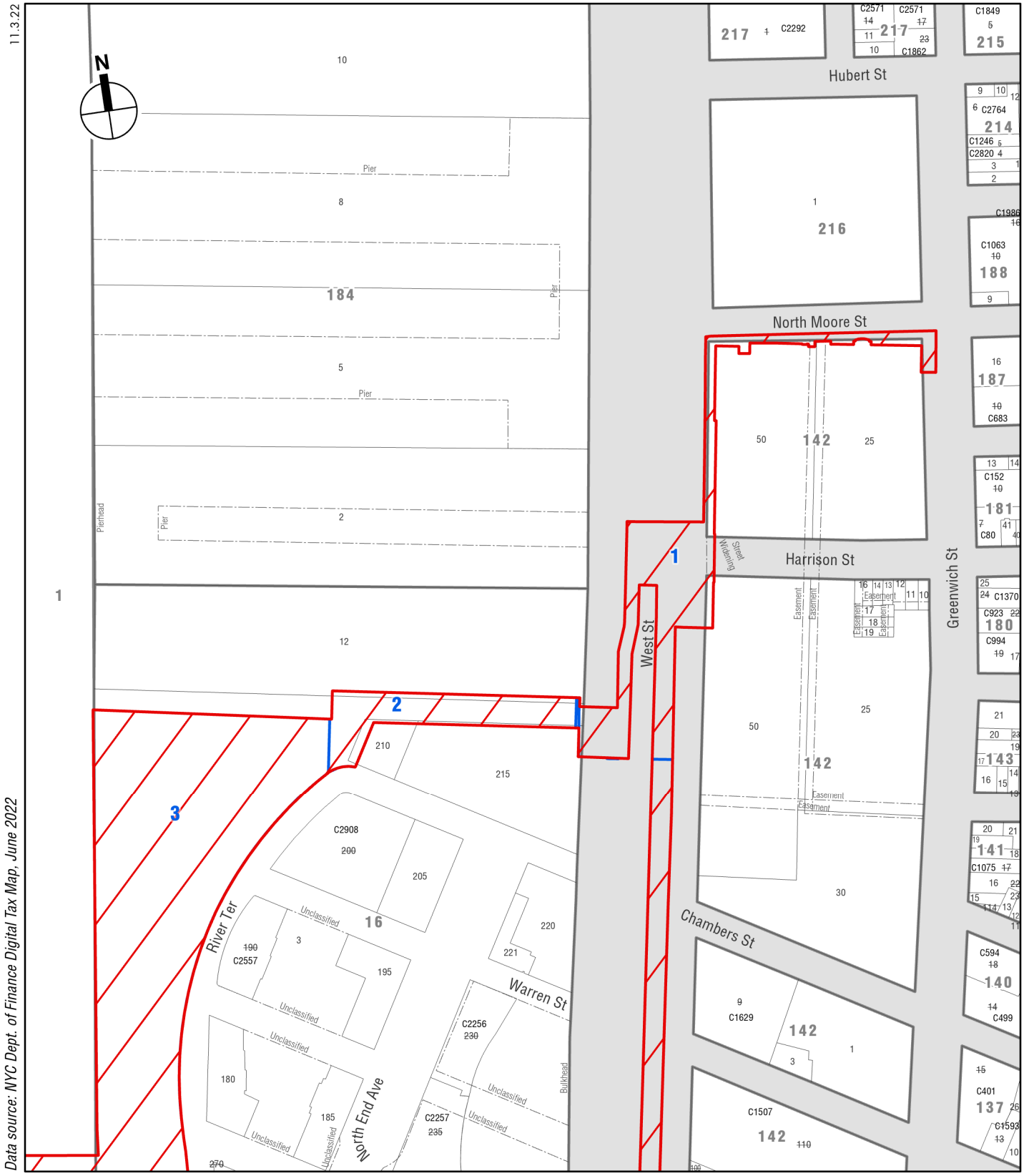
Photograph View Direction and Reference Number

0 400 FEET

Project Location

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 2B



Data source: NYC Dept. of Finance Digital Tax Map, June 2022

Project Area

Reaches

Tax Lot Boundary

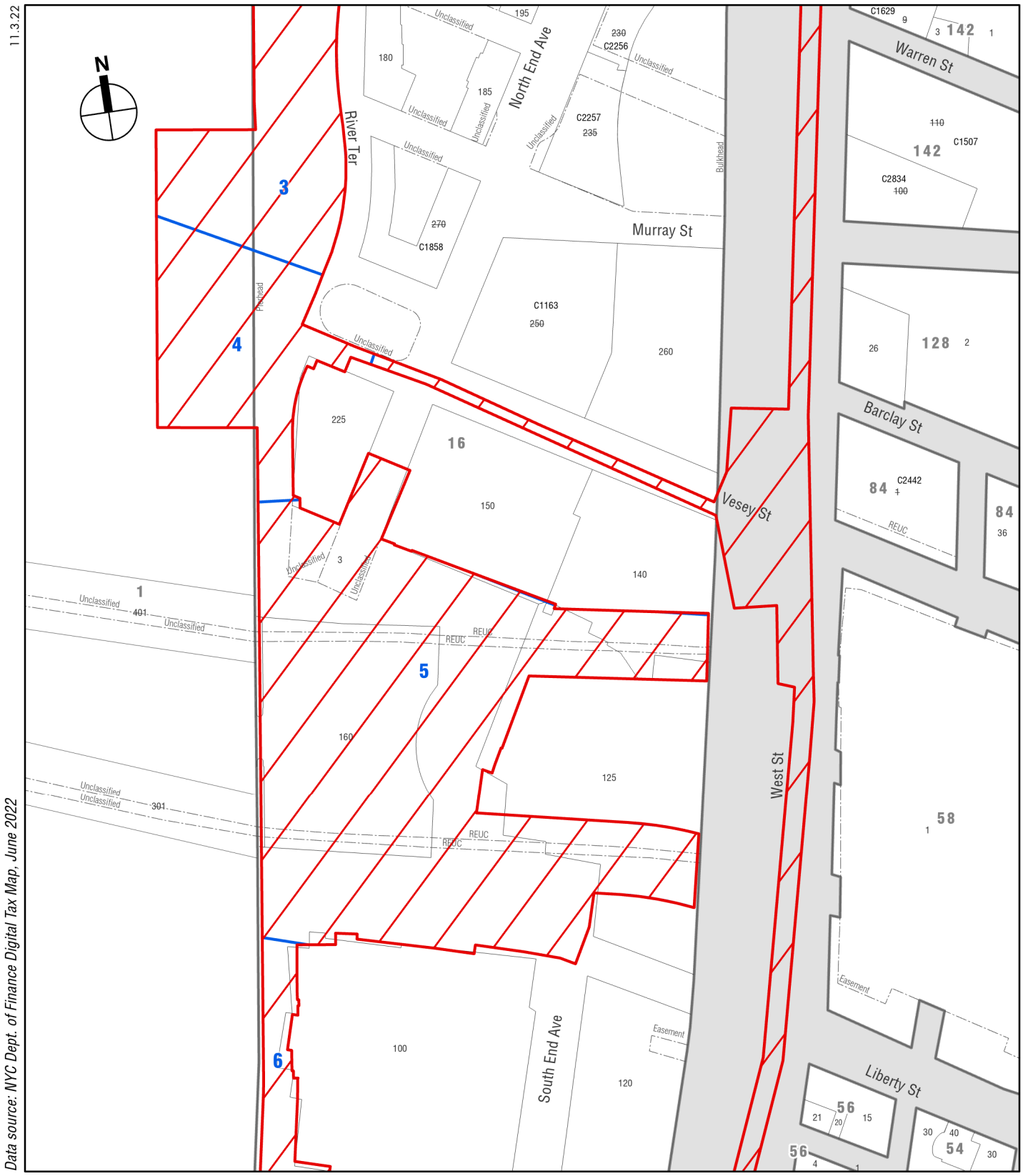
Tax Block Boundary

Other Boundary

Tax Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

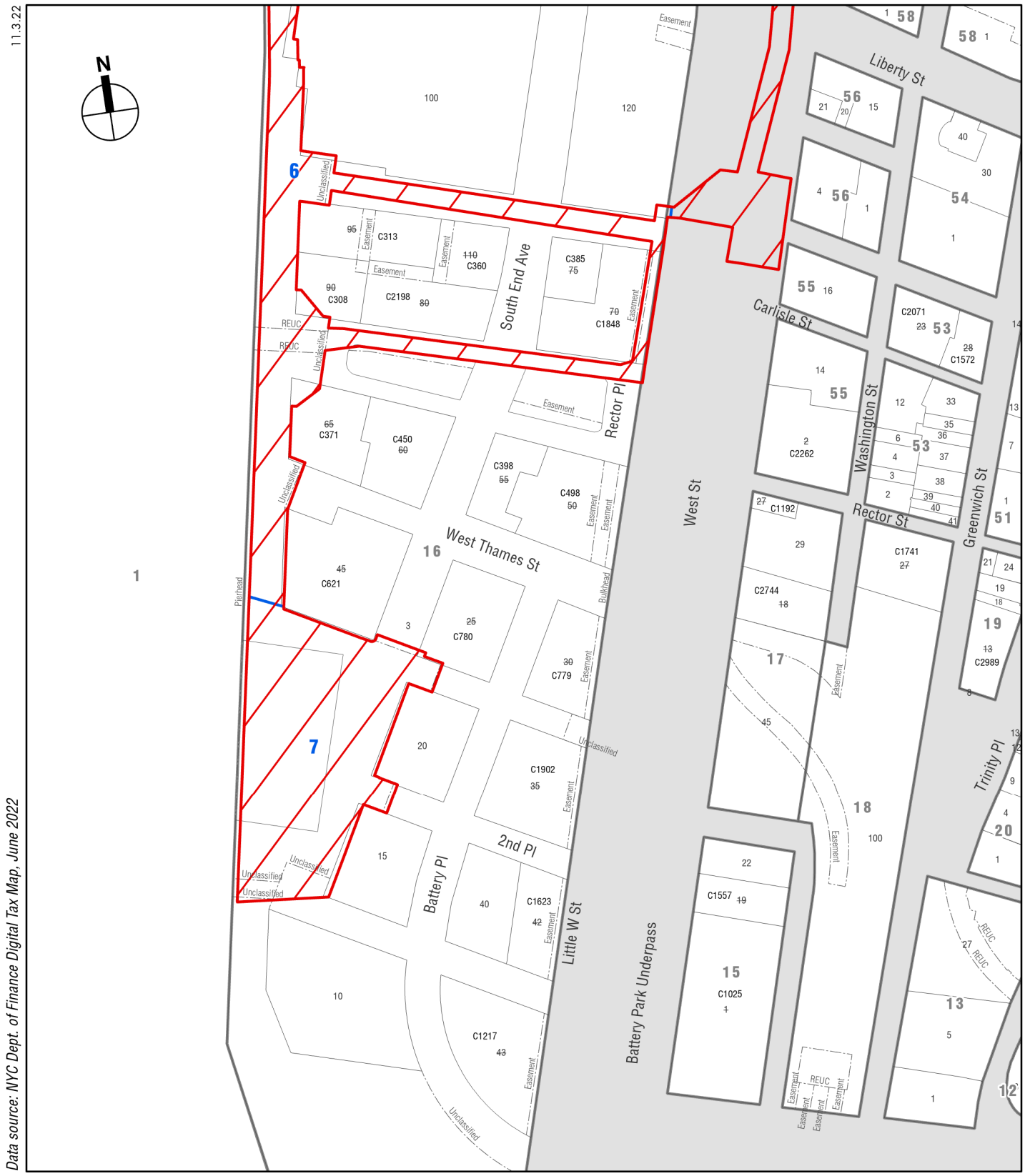
Figure 3A



Tax Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 3B



Data source: NYC Dept. of Finance Digital Tax Map, June 2022

11.3.22

Project Area

Reaches

Tax Lot Boundary

Tax Block Boundary

Other Boundary

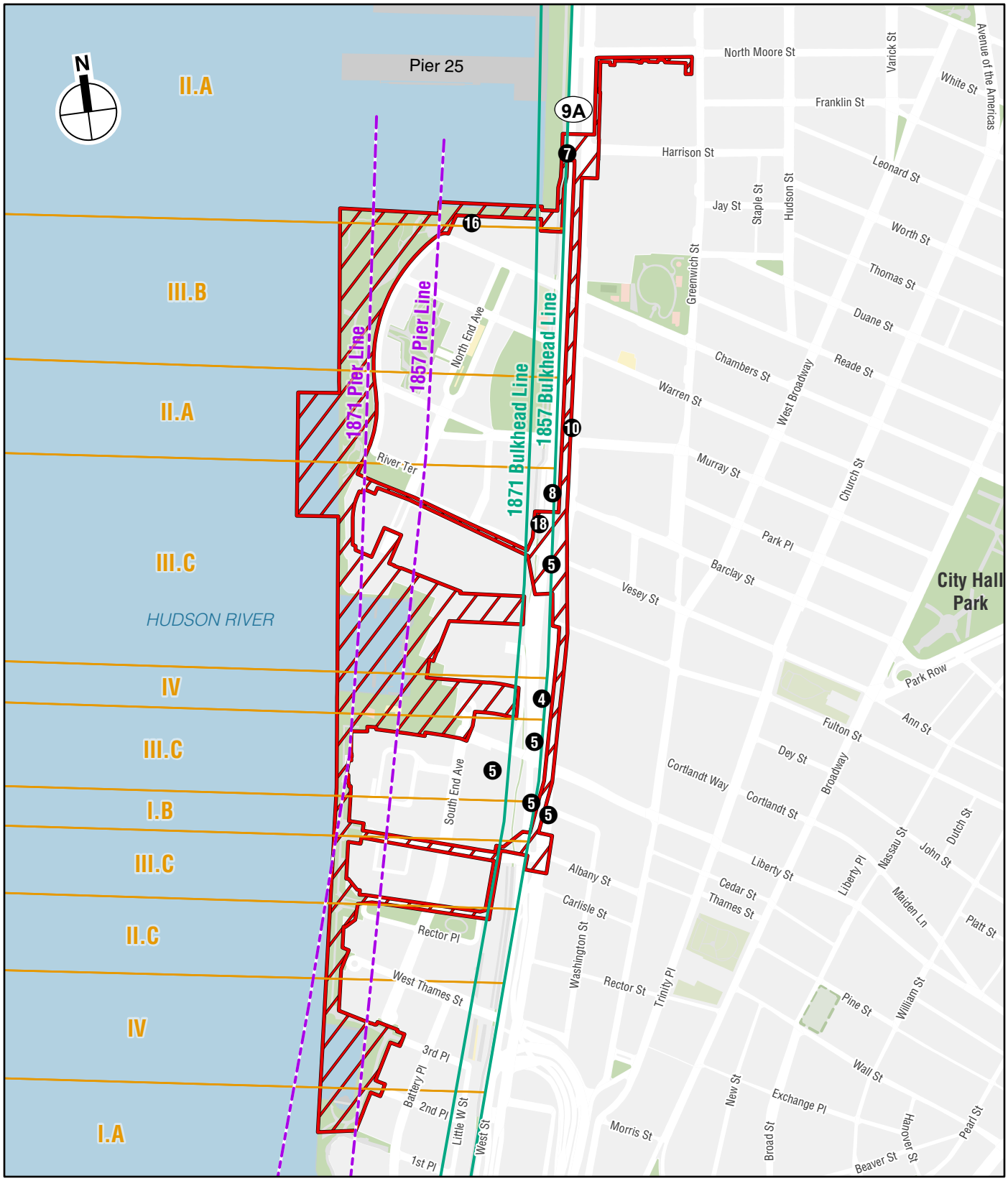
0 400 FEET

Tax Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 3C

11.3.22



Project Area

Bulkhead Conditions as Identified by Raber and AKRF 1997

General Locations of Precontact Landforms Identified by HCI 1983

Historical Pier Lines

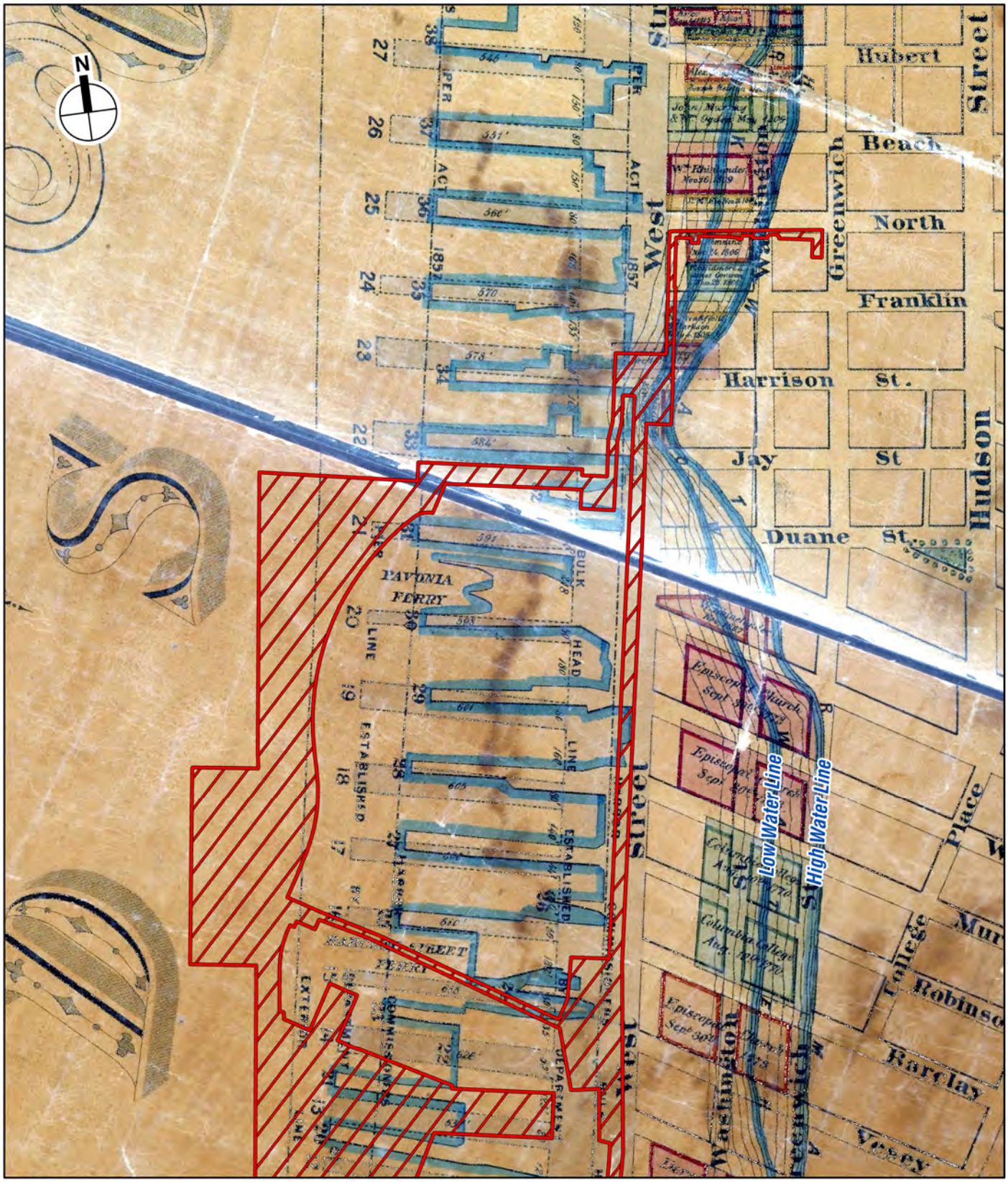
Historical Bulkhead Lines

Previously Identified Sensitivity

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 4

11.3.22

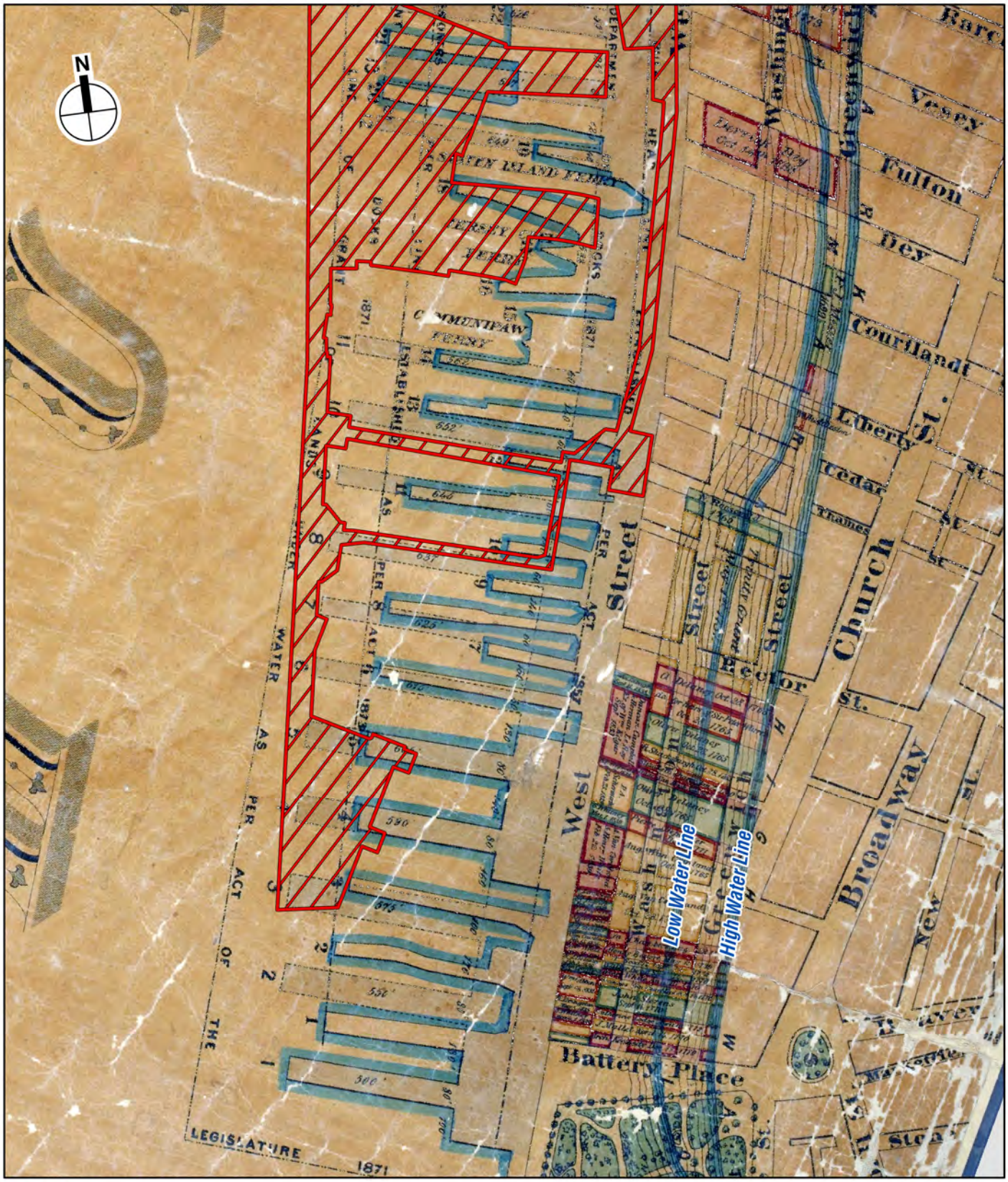


1873 Department of Docks Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 5A

11.3.22

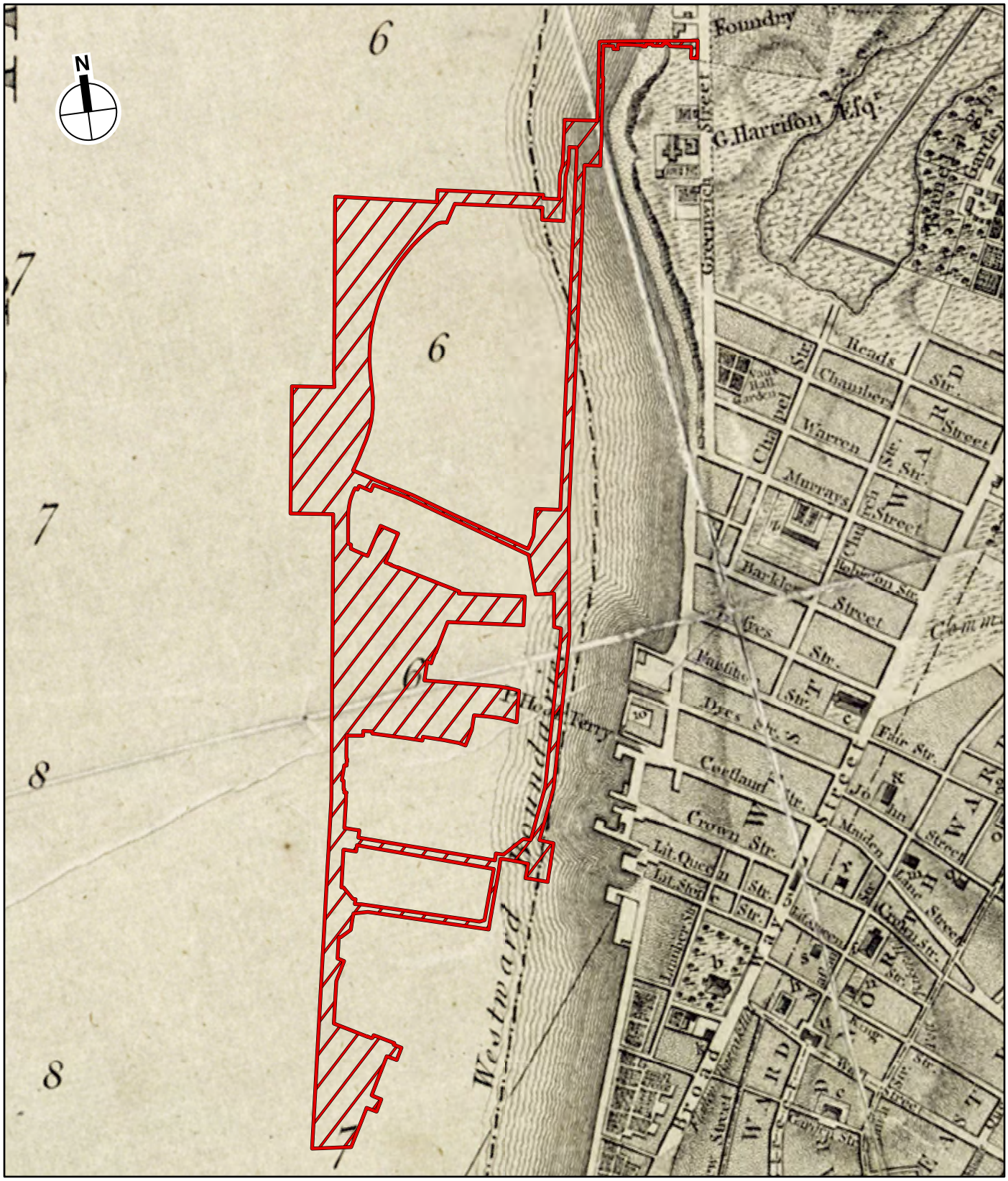


1873 Department of Docks Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 5B

11.3.22



Project Area

0 1,000 FEET

1776 Ratzer Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 6

11.3.22

Project Area

0 1,000 FEET

1797 Taylor Roberts Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 7

11.3.22

1836 Colton Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 8

11.3.22

1852 Dripps Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 9

11.3.22

Project Area

0 1,000 FEET

1924 Aerial Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 10

11.3.22

Project Area

0 1,000 FEET

1951 Aerial Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 11

11.3.22

Project Area/Location of Recommended Geomorphological Analysis Where Project Impacts are Greater than 30 feet in Depth

Areas sensitive for pre-1850 landfill resources in undisturbed areas

Areas with historic period sensitivity in undisturbed areas

0 1,000 FEET

Areas of Archaeological Sensitivity

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 12

Photographs

View north on Greenwich Street from North Moore Street **1**

Borough of Manhattan Community College, view south across North Moore Street **2**

Chambers Street pedestrian bridge, view northwest on Chambers Street **3**

Battery Park City Esplanade North, view east by northwest corner of Rockefeller Park **4**

Rockefeller Park north lawn, view northeast from esplanade **5**

Rockefeller Park south lawn and basketball courts, view north **6**

View north on Hudson River Greenway Trail from Vesey Street **7**

North Cove, view north **8**

Pumphouse Park lawn, view west **9**

View west on Albany Street from South End Avenue **10**

Battery Park City Esplanade, view north to West Thames Street **11**

South Cove, view north of southern planted area **12**

North/West Battery Park City Resiliency Project

Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 15, 20, 100, 125, 140, 150, 160, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7508 (formerly Lot 50), 7509 (formerly Lot 45), and 7511 (formerly Lot 25); and Portions of Streetbeds of Greenwich, North Moore, Harrison, and Route 9A/West Streets

MANHATTAN, NEW YORK COUNTY, NEW YORK

Supplemental Phase 1A Archaeological Documentary Study

SHPO Project Review Number: 22PR07165
LPC Unique Site Identifier: 36492

Prepared for:

Battery Park City Authority
200 Liberty Street, 24th Floor
New York, NY 10281

Prepared by:

AKRF, Inc.
440 Park Avenue South
New York, NY 10016
212-696-0670

DECEMBER 2024

Management Summary

SHPO Project Review Number:	22PR07165
LPC Unique Site Identifier:	36492
Involved Agencies:	Battery Park City Authority New York State Department of Transportation New York State Department of Environmental Conservation U.S. Army Corps of Engineers
Phase of Survey:	Phase 1A Documentary Study
Location Information	
Location:	Portion of the streetbed of Greenwich Street south of North Moore Street; Portion of the streetbed of North Moore Street between Greenwich Street and Route 9A/West Street; Portion of the streetbed of Harrison Street between Greenwich Street and Route 9A/West Street; Portions of the streetbed of West Street between North Moore Street and Albany Street; Portion of West Thames Street west of Route 9A/West Street; Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 15, 20, 100, 125, 140, 150, 160, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7508 (formerly Lot 50), 7509 (formerly Lot 45), and 7511 (formerly Lot 25) New York, New York
Minor Civil Division:	06101
County:	New York County
Survey Area	
Length:	Approximately 5,000 feet
Width:	Approximately 1,000 feet
Area:	Approximately 14 acres
USGS 7.5 Minute Quadrangle Map:	Jersey City
Report Author:	Elizabeth D. Meade, PhD Registered Professional Archaeologist 16353
Date of Report:	December 2024

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Figure 5: Revised Areas of Archaeological Sensitivity

Chapter 1: Introduction and Methodology

A. INTRODUCTION

The Battery Park City Authority (BPCA) is proposing the North/West Battery Park City Resiliency Project (NWBPCR Project) to provide coastal flood protection for Battery Park City (BPC) and surrounding areas of Lower Manhattan (see **Figure 1**). The Proposed Project is intended to protect against coastal storm events and predicted future more intense storms, taking into account climate change and sea level rise, and to reduce coastal storm impacts to residential populations, commercial business, and critical transportation systems. The proposed flood protection is functionally independent from but would connect with the South BPC Resiliency Project (SBPCRP).

The Proposed Project would require permits and approvals from several city, state, and federal agencies. The Proposed Project is therefore subject to the New York State Environmental Quality Review Act (SEQRA) the National Environmental Policy Act (NEPA), and Section 106 of the National Historic Preservation Act ("Section 106"). BPCA is serving as lead agency for the environmental review of the above-referenced action. As a state action taking place within New York City, the methodologies for assessing environmental impacts are based on SEQRA and 2021 *City Environmental Quality Review (CEQR) Technical Manual* guidelines.

Pursuant to CEQR, consultation was initiated with the New York City Landmarks Preservation Commission (LPC) regarding the Project Area's potential archaeological sensitivity. In a comment letter issued on July 18, 2022, LPC determined that the Project Area is potentially archaeologically significant in association with its Indigenous occupation in the precontact period. LPC requested that an archaeological documentary study be prepared to further clarify its archaeological sensitivity. Consultation was also initiated with the New York State Historic Preservation Office (SHPO) pursuant to Section 106. In a comment issued through the New York State Cultural Resource Information System (CRIS) on October 11, 2022, SHPO also requested a Phase 1A Archaeological Documentary Study ("Phase 1A Study") of the Project Area to confirm its archaeological sensitivity. A Phase 1A Study of the Project Area as then delineated was prepared by AKRF in November 2022. In comment letters issued November 29, 2022, and December 9, 2022, LPC and SHPO, respectively, concurred with the conclusions and recommendations of the Phase 1A Study.

This Supplemental Phase 1A Archaeological Documentary Study ("Supplemental Phase 1A Study") has been prepared to address project design changes that have occurred since the preparation of the Phase 1A Study in November 2022. As a result of these revisions, the Project Area has been refined, and some areas identified as archaeologically sensitive in the Phase 1A Study are no longer part of the Project Area while additional areas that have not yet been analyzed have been added to the Project Area. This Supplemental Phase 1A Study clarifies the areas of archaeological sensitivity for the revised Project Area as described in the following section and depicted on **Figure 2**. This Supplemental Phase 1A Study follows the research themes and methodology outlined in the November 2022 Phase 1A Study and relies on the same background research and contextual information, including historical cartographic research (see **Figures 3 and 4**). This Supplemental Phase 1A Study therefore only includes information relevant to justify any revisions to the areas of archaeological sensitivity as initially identified in the November 2022 Phase 1A Study; any revised areas of archaeological sensitivity are presented on **Figure 5**.

B. DEFINITION OF REVISED PROJECT AREA

The Project Area as defined herein and depicted in the accompanying figures encompass all possible areas of subsurface disturbance within the Project Area based on design changes that have occurred between November 2022 and December 2024 (see **Figure 2**). The following streetbeds and tax lots are included within the revised Project Area:

- Portion of the streetbed of Greenwich Street south of North Moore Street;
- Portion of the streetbed of North Moore Street between Greenwich Street and Route 9A/West Street;
- Portion of the streetbed of Harrison Street between Greenwich Street and Route 9A/West Street;
- Portions of the streetbed of Route 9A/West Street between North Moore Street and Chambers Street and along isolated areas between Chambers Street and Albany Street;
- Portions of Block 142, Lots 25 and 50; and
- Portions of Block 16, Lots 3, 15, 20, 100, 125, 140, 150, 160, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7508 (formerly Lot 50), 7509 (formerly Lot 45), and 7511 (formerly Lot 25).

A. INTRODUCTION

As a result of the project design changes that occurred subsequent to the preparation and approval of the November 2022 Phase 1A Study, the Project Area has been revised. While in many portions of the Project Area, the limits of disturbance have been reduced, in limited areas, the limits of disturbance have been expanded to include areas that were not previously analyzed in the November 2022 Phase 1A Study. In locations where the revised Project Area is smaller than the Project Area as previously analyzed, areas of archaeological sensitivity have been adjusted as indicated on **Figure 5**.

B. CONCLUSIONS OF THE NOVEMBER 2022 PHASE 1A STUDY

The archaeological sensitivity of the areas that have been added to the Project Area are analyzed in this chapter using the methodologies employed for the November 2022 Phase 1A Study. The conclusions of the November 2022 Phase 1A Study are presented below. These conclusions also apply to the revised study area and were used to inform the likelihood of the existence of additional areas of archaeological sensitivity as documented in the Section C below.

PREVIOUS DISTURBANCE

The Project Area has been subject to three centuries of landscape modification, as it changed from an inundated section of the Hudson River to an industrial waterfront and then again into a residential community. In the location of North Moore Street between Washington and Greenwich Streets—the only portion of the Project Area that was dry land by the 17th century—disturbance has occurred as a result of the construction and demolition of 18th century industrial buildings and later the construction and maintenance of North Moore Street.

In waterfront areas, disturbance occurred as a result of the landfilling process and the construction of a working waterfront. Such disturbance could have included dredging of the river bottom and slips to permit the passage of increasingly large ships. Additional disturbance would have occurred as a result of the construction of piers and wharves, which often involved driving piles into the river bottom to anchor waterfront structures. Many older piers and docks were replaced with more modern facilities in the late 19th and 20th century, resulting in further disturbance. However, the extent to which older pier structures and pilings were entirely removed is unclear, and the possibility remains that older waterfront structures were incorporated into later replacements or otherwise left in place.

Due to this history of disturbance, all streetbeds within the Project Area were assumed to be disturbed to a depth of at least 2 feet below the ground surface as a result of the installation of extensive networks of utilities, including water, sewer, gas, and electric and telecommunications lines in addition to other subsurface vaults, conduits, catch basins, fire hydrants, and street lighting connections. However, streetbeds may include undisturbed areas that do not contain utility lines or feature large gaps between existing utility lines. For the purpose of this analysis, it was assumed that the locations of any existing utilities would be considered to be disturbed from the ground surface to a depth of 1 to 2 feet below the bottom of the utility line and to a distance of 1 to 2 feet on either side, beyond the outer edges of each utility line, to represent the trench likely dug as part of the line's installation. Any location where no utilities were present or where there was a space of 5 feet or more between the outer edges of existing utilities was considered to be

undisturbed. Those locations beneath the disturbed portions of existing utility trenches were also considered undisturbed in areas that have not experienced landscape modification.

PRECONTACT SENSITIVITY ASSESSMENT

The precontact sensitivity of project sites in New York City is generally evaluated by a site's proximity to level slopes (less than 12 to 15 percent), watercourses, well-drained soils, and previously identified precontact archaeological sites (NYAC 1994). The Project Area was historically inundated, and only a small portion in the vicinity of North Moore and Greenwich Streets is known to have been dry, habitable land prior to the initiation of landfilling efforts along the Hudson River coast. Other coastal precontact archaeological sites have been identified in Lower Manhattan, and the Project Area was situated near waterfront bluffs in close proximity to fresh- and saltwater resources provided by the Hudson River and nearby marshes. The area was therefore likely to have been utilized by Indigenous populations for resource exploitation if not for long- or short-term occupation. However, despite the high likelihood that Native Americans utilized the land across the project corridor, precontact period archaeological sites are typically found at shallow depths, within the top 5 feet of the original ground surface. Given the extent of development and landscape modification on the Project Area during the 19th and 20th centuries, much of the pre-development ground surface was likely destroyed as a result of development between the 18th and 19th centuries. The Project Area was therefore determined to have low sensitivity for precontact archaeological resources.

The portions of the Project Area that were part of the Hudson River proper to landfilling efforts could have been dry and habitable land prior to the rise of sea levels thousands of years ago. Previous archaeological investigations (HCI 1983; Hartgen and HPI 1990) determined that deeply buried landforms are present within the streetbed of Route 9A/West Street at depths greater than 30 to 60 feet below what was the ground surface before modern Route 9A was constructed. In 1990,as a result of the impacts disclosed as part of the Route 9A reconstruction project, it was determined that an archaeological investigation of deeply buried landforms would be impractical. However, subsurface impacts for the current NWBPCR Project could impact depths greater than 30 to 60 feet in limited locations.

HISTORIC SENSITIVITY ASSESSMENT

The Project Area's historical development extended gradually westward, with different portions of the Project Area being filled and occupied at different times. The Project Area is sensitive for two types of historical archaeological resources associated with 18th century industrial uses in the portion that was originally fast land in the vicinity of North Moore and Greenwich Streets, and for 18th through mid-19th century resources associated with landfilling.

The portion of the Project Area in the vicinity of North Moore Street between Washington and Greenwich Streets was the site of an 18th century foundry as depicted on the 1776 Ratzer map (see **Figure 3**). The streetbeds of North Moore and Greenwich Streets appear to have been constructed by the late 18th century and have been maintained as active roads since that time. Historical maps suggest that within the Project Area, these streets have maintained the same widths[1] and approximately the same surface elevation (with potential increases of 1 to 2 feet) since the mid- to late-19th century. Washington Street historically passed through the Project Area but has since been demapped. Undisturbed portions of this streetbed could contain archaeological resources associated with the 18th century foundry located in this area before North Moore Street was constructed. Therefore, this portion of the Project Area was determined to have low to moderate sensitivity for archaeological resources dating to the 18th century and earlier (see **Figure 2**).

[1] The streetbed of North Moore Street between West and Greenwich Streets was widened to the north by approximately 15 feet, but the southern line (including the portion of the streetbed included within the Project Area) has not been altered.

Landfill and landfill-retaining structures became standardized beginning in the mid-19th century. As such, landfill deposits pre-dating 1850 have significantly higher archaeological research value and provide greater insight into historical land-making technology. While many of the older waterfront structures may have been removed as part of the construction of later, more modern pier structures, the extent to which older structures were entirely removed is unknown. As described previously, intact segments of the historic Hudson River Bulkhead—which is eligible for listing on the State and National Registers of Historic Places—have been documented along Route 9A/West Street within and in the vicinity of the Project Area. Those portions of the Project Area that were developed with landfill or waterfront structures (e.g., wharves, piers, or docks) prior to 1850 were therefore determined to have moderate sensitivity for historical landfill-retaining structures and landfill deposits.

C. REVISED SENSITIVITY DETERMINATIONS FOR THE EXPANDED PROJECT AREA

EXPANDED PROJECT AREA WITHIN NORTH MOORE AND GREENWICH STREETS AND PORTIONS OF BLOCK 16, LOTS 25 AND 50

The November 2022 Phase 1A Study analyzed a portion of the streetbed of North Moore Street between Route 9A/West Street and Greenwich Street and a portion of the streetbed of Greenwich Street between North Moore Street and a point approximately 67 feet to the south. The eastern half of this section of North Moore Street and Greenwich Streets were the only portions of the Project Area that were not entirely located on anthropomorphic landfill. As such, the eastern half of that portion of the streetbed of North Moore Street that was located within the Project Area and all of that portion of Greenwich Street that was located within the Project Area were identified as sensitive for archaeological resources associated with the historic period usage of those streets. The western half of that portion of North Moore Street located within the Project Area was identified as sensitive for archaeological resources associated with landfilling efforts completed before 1850.

The Project Area within North Moore and Greenwich Streets has been expanded to the north and east as a result of project design changes. The revised Project Area also includes small portions of the adjacent properties on Block 16, Lots 25 and 50. Lot 25 is currently developed with a 39-story residential development complex, and Lot 50 is developed with a portion of the campus of the Borough of Manhattan Community College (BMCC). The revised Project Area includes an additional 20 to 30 feet of the streetbeds of North Moore and Greenwich Streets. Since these added portions of the streetbeds share the same development histories of the areas analyzed in the November 2022 Phase 1A Study, as a result of this supplemental analysis, they are determined to have sensitivity for the same resources as identified in that Phase 1A Study (see **Figure 5**).

The small portions of Block 16, Lot 25, on the south side of North Moore Street now included in the Project Area would have been heavily disturbed as a result of the construction of the 39-story residential development complex currently located on that parcel. Those portions of the Project Area situated within Lot 25 are therefore determined not to be archaeologically sensitive.

Finally, the revised Project Area includes small portions of Block 16, Lot 25 to the east of Route 9A/West Street. The November 2022 Phase 1A Study identified portions of this area as sensitive for deeply buried archaeological resources associated with landfill and landfill-retaining structures constructed before 1850. The Phase 1A Study concluded that those resources may be deeply buried and could therefore have survived intact despite subsequent development. The expanded portions of the Project Area adjacent to these areas of archaeological sensitivity share the same development histories as the locations analyzed in the November 2022 Phase 1A Study (see **Figures 3 and 4**). Therefore, the expanded Project Area is also determined to be sensitive for landfill-related archaeological resources pre-dating 1850 (see **Figure 5**).

EXPANDED PROJECT AREA WITHIN HARRISON STREET

The November 2022 Phase 1A Study analyzed the archaeological sensitivity of an approximately 15-foot portion of the streetbed of Harrison Street east of the line of Route 9A/West Street. This area was identified as sensitive for landfill-related archaeological resources dating to before ca. 1850.

The revised Project Area now includes a segment of Harrison Street extending approximately 130 feet east of Route 9A/West Street. As shown on the 1776 Ratzer map depicting conditions ca. 1767 (see **Figure 3**), the expanded Project Area includes a portion of Harrison Street that was historically occupied by a sandy beach situated along what was originally Manhattan's coastline. By the publication of the 1797 Taylor Roberts map, the area had been landfilled, and the line of Harrison Street was constructed. This portion of the Harrison Street streetbed is therefore determined to be sensitive for archaeological resources associated with the 18th century landfilling process.

EXPANDED PROJECT AREA WITHIN WEST STREET/ROUTE 9A

The study area analyzed in the November 2022 Phase 1A Study included a limited portion of the streetbed of Route 9A/West Street between Harrison and Chambers Streets and between Chambers and Albany Streets. These areas were identified as sensitive for archaeological resources associated with the pre-1850 landfilling of Manhattan's western coastline. The expanded Project Area in this location includes additional area in and around the previously identified areas of archaeological sensitivity. Historical maps published between the 1790s and 1850s depict the gradual filling of this area. The 1852 Dripps map (see **Figure 4**) depicts the piers, wharves, and bulkheads that were constructed through this portion of the revised Project Area. The same landfill-retaining structures and waterfront infrastructure extended through portions of the Project Area analyzed in November 2022. Therefore, the expanded portions of the Project Area within this portion of Route 9A/West Street adjacent to areas previously identified as archaeologically sensitive are also determined to be sensitive for archaeological resources associated with landfill constructed before ca. 1850 as shown on **Figure 5**.

EXPANDED PROJECT AREA WITHIN WEST THAMES STREET AND PART OF BLOCK 16, LOT 7508

This portion of the revised Project Area was not included in the November 2022 Phase 1A Study. Block 16, Lot 7508 (formerly Lot 50) is developed with a 44-story residential building constructed in 1987. To the east of the building, the lot is developed with an adjacent park/open space, a portion of which is included within the revised Project Area.

The 1776 Ratzer, 1797 Taylor Roberts, and 1836 Colton maps of Manhattan depict this area as entirely inundated by the Hudson River. By the publication of the 1852 Dripps map (see **Figure 4**), a pier identified on the map as Pier 6 had been constructed through that portion of the Project Area located in the vicinity of Block 16, Lot 50 and West Thames Streets. Therefore, the central area of this portion of the revised Project Area—a piece of land through which a pier ran in the mid-19th century, is determined to be sensitive for archaeological resources associated with landfill and waterfront structures constructed before the mid-19th century.

EXPANDED PROJECT AREA WITHIN PORTION OF BLOCK 16, LOTS 100, 210, 225, 7501, AND 7502

The expanded Project Area includes small portions of Block 16, Lots 100, 210, 225, 7501 (formerly Lot 90), and 7502 (formerly Lot 95) within Battery Park City that were not included within the study area of the November 2022 Phase 1A Study. As shown on the 1852 Dripps map (see **Figure 4**), these areas were inundated by the Hudson River in the mid-19th century. These portions of the Project Area are therefore

determined not to contain landfill predating the mid-19th century and are not considered archaeologically sensitive.

EXPANDED PROJECT AREA WITHIN SOUTH END AVENUE; WEST 3RD STREET; 1ST PLACE; AND PART OF BLOCK 16, LOTS 15, 20, AND 7511

The expanded Project Area includes small portions of the streetbed of South End Avenue and West 3rd Street as well as small sections of Block 16, Lots 15, 20, and 7511 (formerly Lot 25) southeast of South End Avenue. These newly added areas are adjacent to an area that was identified in the November 2022 Phase 1A Study as archaeologically sensitive due to the presence of landfill deposits and landfill-retaining structures that predate the mid-19th century. The small areas included in the expanded Project Area were developed with the same landfill deposits and waterfront structures documented previously. As such, the areas of archaeological sensitivity in this portion of the Project Area have been expanded to include the newly added portions of the Project Area. A small area west of the area of archaeological sensitivity within what is now the streetbed of 1st Place is not considered to be archaeologically sensitive because it did not include landfill deposits or waterfront structures before ca. 1850.

EXPANDED PROJECT AREA WITHIN PORTIONS OF BLOCK 16, LOT 3

The expanded Project Area includes several small locations situated within Block 16, Lot 3 but outside the study area analyzed in the November 2022 Phase 1A Study. The majority of these were inundated by the Hudson River until after the mid-19th century and are therefore not determined to be archaeologically sensitive. These areas include:

- An area near the intersection of Chambers Street and River Terrace;
- An area within River Terrace west of the terminus of Warren Street;
- An area within River Terrace northwest of the terminus of Murray Street;
- An area near between the southern terminus of River Terrace and Vesey Street;
- Two small areas in the vicinity of the two branches of Rector Place and the island median formed by the streetbeds; and
- An area near the circular path of the western end of West Thames Street;

In the area east of the North Cove Marina and west of the southwest corner of Block 16, Lot 125, a small area of the expanded Project Area extends to the north of the previously analyzed study area. This portion of the expanded Project Area is adjacent to an area previously identified as sensitive for resources associated with landfill created before the mid-19th century. The expanded Project Area has been developed with the same or similar landfill-retaining structures and waterfront structures as previously documented in this area. The area of archaeological sensitivity has therefore been expanded to include the newly added portion of the Project Area in this location.

A. CONCLUSIONS

As part of the background research for this Supplemental Phase 1A Archaeological Documentary Study, the archaeological sensitivity of all portions of the revised Project Area situated outside of the study area analyzed in the November 2022 Phase 1A Study was assessed. The newly added areas included small areas adjacent to the study area analyzed in the Phase 1A Study. Any areas that were adjacent to previously identified areas of archaeological sensitivity and which featured the same development histories as previously documented were likewise characterized as archaeologically sensitive as shown on **Figure 5**. Any newly added portions of the Project Area that are located on landfill constructed after the mid-19th century are determined to have no archaeological sensitivity.

B. RECOMMENDATIONS

The November 2022 Phase 1A Study recommended further archaeological analysis to confirm the presence or absence of archaeological resources within the Project Area owing to the identified historic period archaeological sensitivity of the Project Area and the potential for it to contain deeply buried landforms with potential precontact archaeological sensitivity. The recommendations also applied to the revised Project Area as analyzed in this Supplemental Phase 1A Study.

As recommended in the November 2022 Phase 1A Study, potential precontact landforms initially identified as a result of a review of soil borings in the early 1980s are buried at depths of 30 to 60 feet or more beneath the Project Area. The Phase 1A Study recommended a geomorphological analysis of the Project Area to revise and update the conclusions of the previous investigation and to determine if the construction of the Proposed Project would impact intact archaeologically sensitive landforms. This investigation was also recommended for all locations within the Project Area where subsurface impacts would extend to depths greater than 30 feet below the ground surface. A Work Plan outlining the scope of work for the geomorphological investigation was prepared by AKRF in March 2023. In comment letters issued March 23, 2023, and March 30, 2023, LPC and SHPO, respectively, approved the Work Plan. The geomorphological investigation commenced in the summer of 2023 and involved the monitoring of soil borings that were being completed to provide information required to inform the design of the Proposed Project. The analysis of soils samples and reporting is currently underway. The study area for the geomorphological investigation included the broader vicinity surrounding the Project Area and minor expansions to the areas already identified as archaeologically sensitive (see **Figures 2 and 5**). As such, no changes have been recommended to the scope of work for the on-going geomorphological investigation based on the revisions to the Project Area.

The November 2022 Phase 1A Study recommended additional archaeological analysis of areas of historic period or landfill archaeological sensitivity that would be impacted by the Proposed Project to depths of greater than 2 feet. This additional analysis would be completed in the form of a Phase 1B Archaeological Monitoring Investigation. The monitoring would occur during the excavation of undisturbed areas that would be completed for the construction of the NWBPCR Project both in the area of 18th century archaeological sensitivity identified on North Moore Street between Washington and Greenwich Streets and in the locations that found to be sensitive for pre-1850 landfill. It is recommended that the Phase 1B Archaeological Monitoring occur in the revised areas of archaeological sensitivity as shown on **Figure 5**.

Any areas previously identified as archaeologically sensitive that have been removed from the Project Area would no longer require archaeological monitoring. The Phase 1B Archaeological Monitoring should be completed in coordination with LPC and SHPO. Prior to the completion of the archaeological monitoring, an Archaeological Work Plan outlining the proposed analytical strategy(ies) and scope(s) of work should be completed and submitted to LPC and SHPO for review and concurrence.

References

AKRF, Inc.

2022 "North/West Battery Park City Resiliency Project: Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 12, 15, 20, 70, 100, 120, 125, 140, 150, 160, 210, 215, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7509 (formerly Lot 45), and 7511 (formerly Lot 25); and Portions of Streetbeds of Greenwich, North Moore, Harrison, and Route 9A/West Streets; Manhattan, New York County, New York: Phase 1A Archaeological Documentary Study." Prepared for: Battery Park City Authority; New York, NY.

2023 "North/West Battery Park City Resiliency Project: Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 12, 15, 20, 70, 100, 120, 125, 140, 150, 160, 210, 215, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7509 (formerly Lot 45), and 7511 (formerly Lot 25); and Portions of Streetbeds of Greenwich, North Moore, Harrison, and Route 9A/West Streets; Manhattan, New York County, New York: Work Plan for Geomorphological Investigation." Prepared for: Battery Park City Authority; New York, NY.

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1836 *Topographical Map of the City and County of New York and the Adjacent Country*. New York: J.H. Colton and Co.

Dripps, Matthew

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Historic Conservation and Interpretation, Inc.

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New York Archaeological Council

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1776 *Plan of the city of New York in North America: surveyed in the years 1766 & 1767 / B. Ratzer, lieutt. in His Majestys 60th or Royal American Regt.; Thos. Kitchin, sculpt., engraver to His Late Royal Highness, the Duke of York, &c*. London: Jeffrys and Faden.

Taylor, Benjamin and John Roberts

1797 *A New and Accurate Plan of the City of New York in the State of New York in North America*. New York: Publisher unknown.

Figures

12.2.24

Data source: USGS The National Map, https://basemap.nationalmap.gov/arcgis/rest/services/USGSTopo/MapServer

0 2,000 FEET

Project Area

Old Project Area

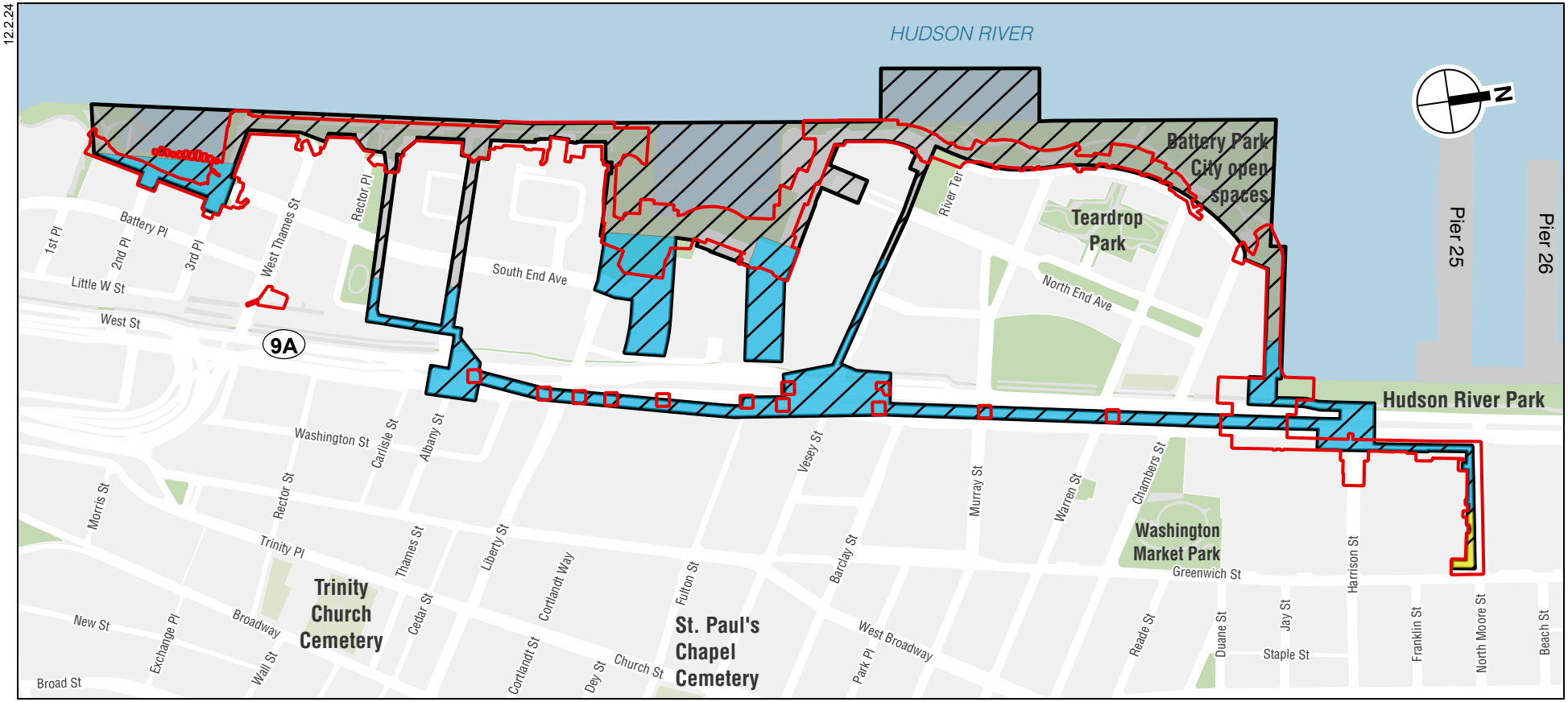
Approximate coordinates of Project Site:
74°0'53"W 40°42'48"N

USGS Topographic Map – Jersey City Quadrangle

NORTH-WEST BATTERY PARK CITY RESILIENCY

Figure 1

12.2.24



Project Area

Old Project Area

Location of Recommended Geomorphological Analysis Where Project Impacts are Greater than 30 feet in Depth

Areas sensitive for pre-1850 landfill resources in undisturbed areas

Areas with historic period sensitivity in undisturbed areas

Areas of Archaeological Sensitivity Identified in 2022

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 2

12.2.24

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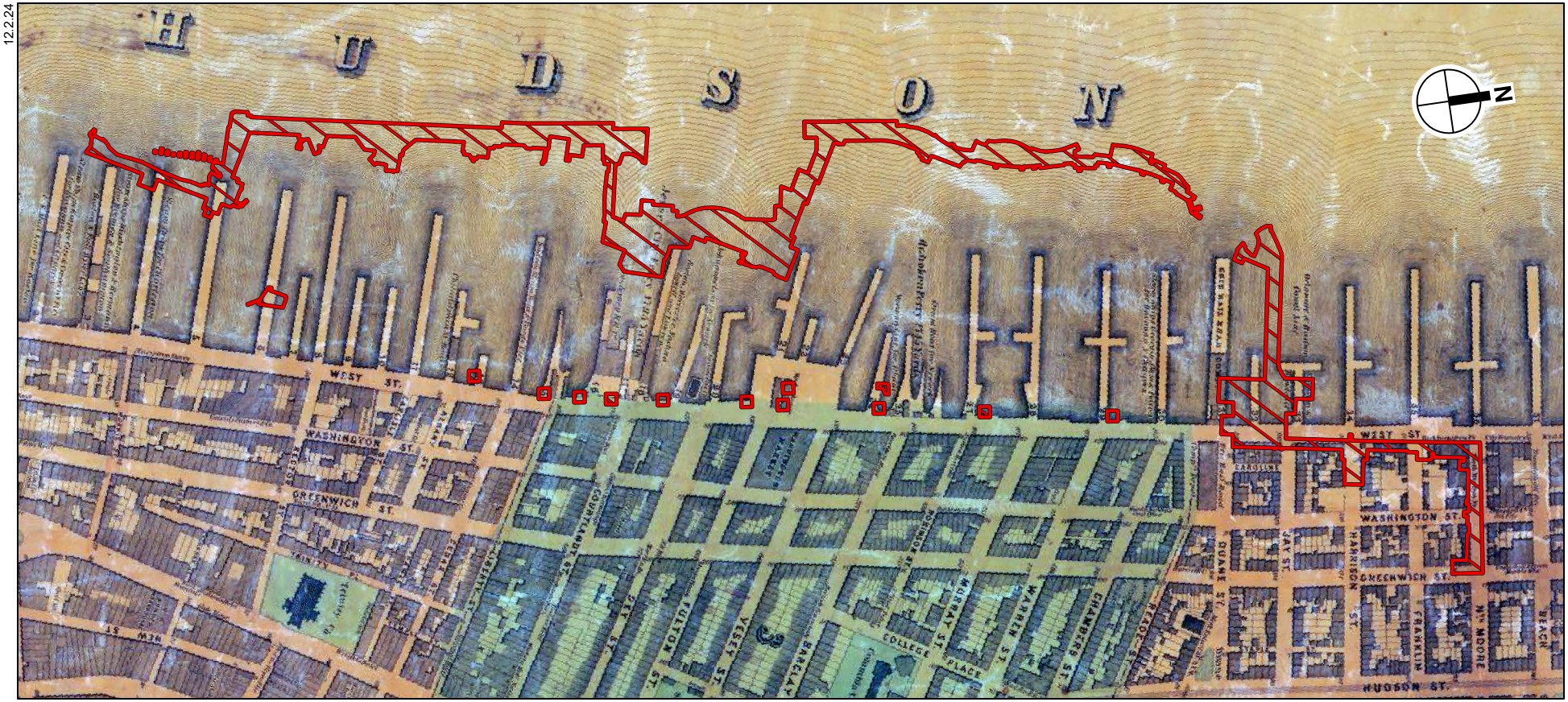
Project Area

1776 Ratzer Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 3

12.2.24



Project Area

1852 Dripps Map

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 4

12.2.24

Project Area

Location of Recommended Geomorphological Analysis Where Project Impacts are Greater than 30 feet in Depth

Areas sensitive for pre-1850 landfill resources in undisturbed areas

Areas with historic period sensitivity in undisturbed areas

Areas of Archaeological Sensitivity

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 5

440 Park Avenue South, 7th Floor
New York, NY 10016
tel: 212.696.0670
www.akrf.com

Memorandum

To:	Amanda Sutphin, New York City Landmarks Preservation Commission and Jessica Vavrasek, PhD, New York State Historic Preservation Office
From:	Elizabeth D. Meade, PhD, RPA
Date:	April 11, 2025
Re:	North/West Battery Park City Resiliency Project: Revised Archaeological Sensitivity Map

INTRODUCTION

The Battery Park City Authority (BPCA) is proposing the North/West Battery Park City Resiliency Project (NWBPCR Project) to provide coastal flood protection for Battery Park City (BPC) and surrounding areas of Lower Manhattan. The Proposed Project is intended to protect against coastal storm events and predicted future more intense storms, taking into account climate change and sea level rise, and to reduce coastal storm impacts to residential populations, commercial business, and critical transportation systems. The proposed flood protection is functionally independent from but would connect with the South BPC Resiliency Project (SBPCRP).

The Proposed Project would require permits and approvals from several city, state, and federal agencies. The Proposed Project is therefore subject to the New York State Environmental Quality Review Act (SEQRA) the National Environmental Policy Act (NEPA), and Section 106 of the National Historic Preservation Act ("Section 106"). BPCA is serving as lead agency for the environmental review of the above-referenced action. As a state action taking place within New York City, the methodologies for assessing environmental impacts are based on SEQRA and 2021 *City Environmental Quality Review (CEQR) Technical Manual* guidelines.

Pursuant to CEQR, consultation was initiated with the New York City Landmarks Preservation Commission (LPC) regarding the Project Area's potential archaeological sensitivity (LPC Unique Site Identifies 36492). In a comment letter issued on July 18, 2022, LPC determined that the Project Area is potentially archaeologically significant in association with its Indigenous occupation in the precontact period. LPC requested that an archaeological documentary study be prepared to further clarify its archaeological sensitivity. Consultation was also initiated with the New York State Historic Preservation Office (SHPO) pursuant to Section 106. In a comment issued through the New York State Cultural Resource Information System (CRIS) on October 11, 2022, SHPO also requested a Phase 1A Archaeological Documentary Study ("Phase 1A Study") of the Project Area to confirm its archaeological sensitivity (SHPO project review number 22PR07165). A Phase 1A Study of the Project Area as then delineated was prepared by AKRF in November 2022. In comment letters issued November 29, 2022, and December 9, 2022, LPC and SHPO, respectively, concurred with the conclusions and recommendations of the Phase 1A Study. The areas of archaeological sensitivity as identified in the Phase 1A Study are shown on **Figure 1**.

In December 2024, a Supplemental Phase 1A Study was prepared to address project design changes that occurred subsequent to the completion of the Phase 1A Study in November 2022. The Supplemental Phase 1A Study assessed the refined study area, which eliminated some areas identified as archaeologically sensitive in the Phase 1A Study that are no longer part of the Project Area and included additional areas that had not yet been analyzed that were added to the Project Area. The revised areas of archaeological sensitivity as defined by the Supplemental Phase 1A Study are depicted on **Figure 2**. In comment letters

issued December 10, 2024, and December 6, 2024, LPC and SHPO, respectively, concurred with the conclusions and recommendations of the Supplemental Phase 1A Study.

REVISIONS TO LIMITS OF DISTURBANCE

Subsequent to the completion of the Supplemental Phase 1A Study, the proposed limits of disturbance for the project have been further refined. The revisions have included minor changes that in most cases eliminate areas of archaeological sensitivity introduced in the Supplemental Phase 1A Study or include areas that were previously analyzed in the Phase 1A Study and removed from consideration in the Supplemental Phase 1A Study. As such, the archaeological sensitivity map (see **Figure 3**) has been modified to address these minor changes. The revisions are summarized as follows:

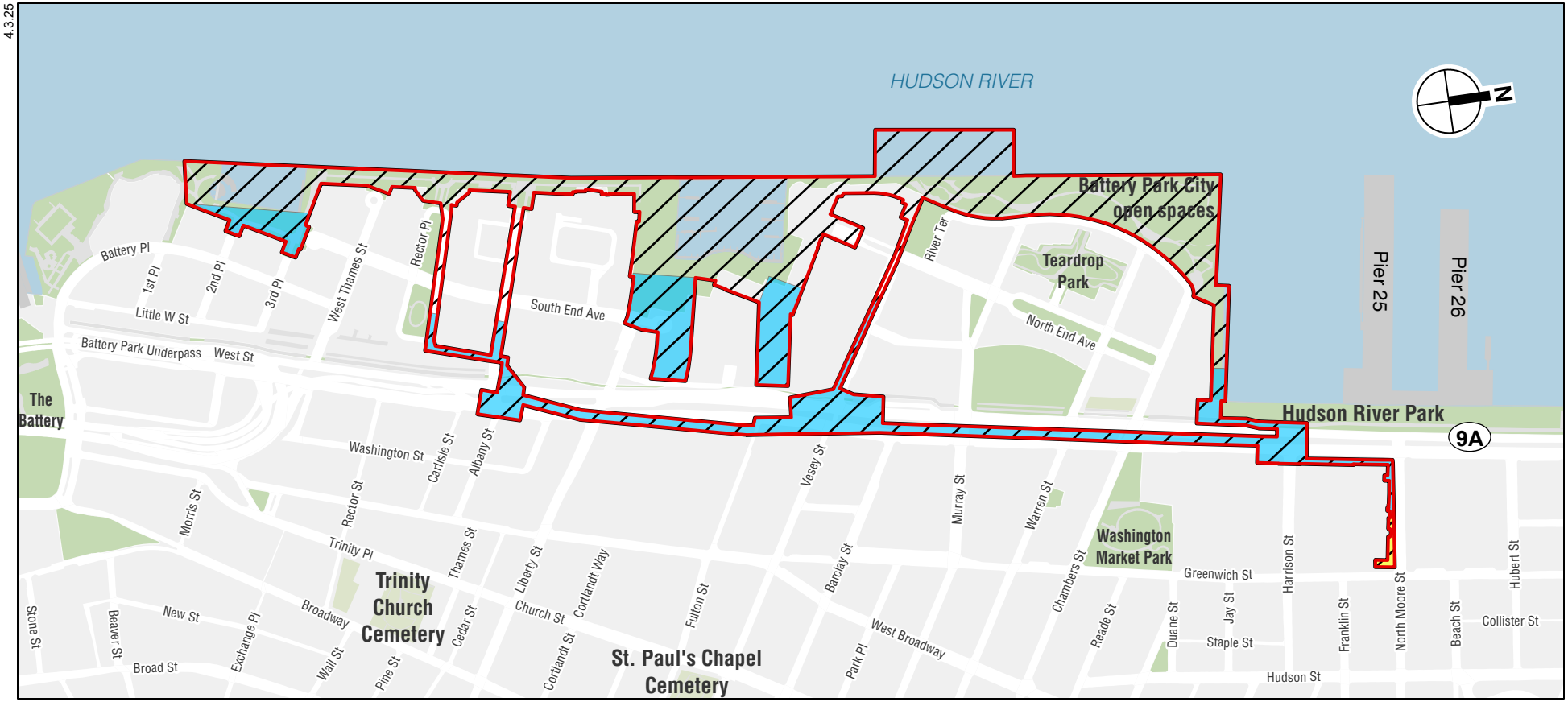
- A small area of less than 6,700 square feet was added to the limits of disturbance within the streetbed of Route 9A/West Street between Chambers and Harrison Streets. The majority of this area was previously identified as archaeologically sensitive in the Phase 1A Study. Additional analysis is therefore not required and this area is identified as archaeologically sensitive on **Figure 3**.
- Small (100 to 500 square-foot) areas have been added along the western side of the project site in the vicinity of River Terrace between Warren Street and North Cove and near the western terminus of Thames Street. These areas were previously analyzed in the Phase 1A Study and were determined to have no archaeological sensitivity as shown on **Figure 3**.
- Small (50 to 1,340 square-foot) areas have been added to the limits of disturbance adjacent to the areas of archaeological sensitivity situated to the southeast of North Cove and to the northeast of South Cove. Most of the land within these areas was previously analyzed in the Phase 1A Study, and they have been identified as archaeologically sensitive on **Figure 3**.
- Two archaeologically sensitive areas identified in the Supplemental Phase 1A Study have been removed from the limits of disturbance and will no longer be impacted by the proposed project. These locations include a small area within the western lane of Route 9A/West Street west of the terminus of Barclay Street and an area at the northwestern corner of the intersection of West Thames Street and Route 9A/West Street, including a portion of Block 16, Lot 50. These areas have been removed from **Figure 3**.

CONCLUSIONS AND RECOMMENDATIONS

The November 2022 Phase 1A Study recommended additional archaeological analysis of areas of historic period or landfill archaeological sensitivity that would be impacted by the Proposed Project to depths of greater than 2 feet. This additional analysis would be completed in the form of a Phase 1B Archaeological Monitoring Investigation. The monitoring would occur during the excavation of undisturbed areas that would be completed for the construction of the NWBPCR Project both in the area of 18th century archaeological sensitivity identified on North Moore Street between Washington and Greenwich Streets and in the locations that were identified as sensitive for pre-1850 landfill.

As the majority of the areas that have been added to the limits of disturbance subsequent to the completion and approval of the Supplemental Phase 1A Study were analyzed in the Phase 1A Study, no further analysis is warranted and the revised sensitivity determinations are presented in **Figure 3**. The November 2022 Phase 1A Study recommended further archaeological analysis to confirm the presence or absence of archaeological resources within the Project Area owing to the identified historic period archaeological sensitivity of the Project Area and the potential for it to contain deeply buried landforms with potential precontact archaeological sensitivity. The recommendations also applied to the revised Project Area as analyzed in the Supplemental Phase 1A Study and apply to all locations identified as archaeologically sensitive in **Figure 3**. Any areas previously identified as archaeologically sensitive that have been removed from the Project Area would no longer require archaeological monitoring. Phase 1B Archaeological Monitoring should be completed in coordination with LPC and SHPO. Prior to the completion of the archaeological monitoring, an Archaeological Work Plan outlining the proposed analytical strategy(ies) and scope(s) of work should be completed and submitted to LPC and SHPO for review and concurrence.

4.3.25



2022 Project Area

Location of Recommended Geomorphological Analysis Where Project Impacts are Greater than 30 feet in Depth

Areas sensitive for pre-1850 landfill resources in undisturbed areas

Areas with historic period sensitivity in undisturbed areas

Areas of Archaeological Sensitivity Identified in the 2022 Phase 1A Study

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 1

2024 Project Area

Location of Recommended Geomorphological Analysis Where Project Impacts are Greater than 30 feet in Depth

Areas sensitive for pre-1850 landfill resources in undisturbed areas

Areas with historic period sensitivity in undisturbed areas

Areas of Archaeological Sensitivity
Identified in the 2024 Supplemental Phase 1A Study

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 2

Project Area

Location of Recommended Geomorphological Analysis Where Project Impacts are Greater than 30 feet in Depth

Areas sensitive for pre-1850 landfill resources in undisturbed areas

Areas with historic period sensitivity in undisturbed areas

Areas of Archaeological Sensitivity

NORTH/WEST BATTERY PARK CITY RESILIENCY

Figure 3

Appendix D.2
Agency Correspondence

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ENVIRONMENTAL REVIEW

Project number: BATTERY PARK CITY AUTHORITY / 106.M
Project: NWBPCR
Date Received: 7/5/2022

ARCHAEOLOGY REVIEW ONLY.

Comments: The LPC has reviewed the project area and project description. Given the history of the area and what has been previously archaeologically documented, the LPC recommends that an archaeological documentary study be completed to assess the potential for the project to impact potentially significant archaeological resources that focuses upon the streetbeds and open areas within the project area that may be impacted by the proposed work. See Guidelines for Archaeological Work in New York City. cc: NYSHPO

Gina Santucci 7/18/2022

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 36492_FSO_ALS_07182022.docx

NEW YORK STATE OF OPPORTUNITY.
Parks, Recreation and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

ARCHAEOLOGY COMMENTS

Phase IA Archaeological Survey Recommendation
Project: North/West Battery Park City Reliance Project
PR#: 22PR07165
Date: 10/11/2022

Your project is in an archaeologically sensitive area. Therefore, the State Historic Preservation Office/Office of Parks, Recreation and Historic Preservation (SHPO/OPRHP) recommends that a Phase IA Literature Search and Sensitivity Assessment survey is warranted. A Phase IA archaeological survey is designed to identify previously recorded archaeological sites and other cultural resources within or near the project area, to assess the archaeological sensitivity of the project area, to document previous ground disturbance and to make recommendations regarding the potential need for Phase IB subsurface archaeological testing.

Our office does not conduct archaeological surveys. A 36 CFR 61 qualified archaeologist should be retained to conduct the Phase IA archaeological survey.

If you have any questions concerning archaeology, please contact Tim Lloyd at Timothy.Lloyd@parks.ny.gov

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

October 27, 2022

Claudia Filomena
Director of Capital Projects
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
NY
22PR07165

Dear Claudia Filomena:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (NY Environmental Conservation Law Article 8).

We have reviewed the project description and maps that were submitted to our office on October 3rd, 2022. Based upon our review, we have the following comments:

1. Will you be preparing a Historic Resources assessment of the potential architectural and landscape resources within the project area?
2. Please provide a map showing the Area of Potential Effect (APE) and the project "Reaches". It would also be helpful to show the location of potential historic resources.
3. Please see our comments on archaeology, under separate cover.

We look forward to continued consultation on this project. If you have any questions, I am best reached via e-mail.

Sincerely,

Olivia Brazee
Historic Site Restoration Coordinator
olivia.brazee@parks.ny.gov via e-mail only

cc: N. Riddle, AKRF, Inc.

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ENVIRONMENTAL REVIEW

Project number: BATTERY PARK CITY AUTHORITY / 106.M
Project: NWBPCR (NW BATTERY PARK CITY RESILIENCY
Date Received: 11/14/2022

Comments: as indicated below. Properties that are individually LPC designated or in LPC historic districts require permits from the LPC Preservation department. Properties that are S/NR listed or S/NR eligible require consultation with SHPO if there are State or Federal permits or funding required as part of the action.

Comments:

The LPC is in receipt of the Draft Scope of Work to prepare a DEIS dated October 19, 2022. The text pertaining to architectural and archaeological resources is acceptable.

The LPC is also in receipt of the, " Phase IA for the North/West Battery Park City Resiliency Project Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 12, 15, 20, 70, 100, 120, 125, 140, 150, 160, 210, 215, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7509 (formerly Lot 45), and 7511 (formerly Lot 25); and Portions of Streetbeds of Greenwich, North Moore, Harrison, and Route 9A/West Streets, MANHATTAN, NEW YORK COUNTY, NEW YORK," prepared by AKRF, Inc and dated November 2022. The LPC concurs with the sensitivity assessment and locations as noted in figure 12 as well as the recommendation that further archaeological work is needed. Please submit a Work Plan for LPC review and approval before such work occurs as per the Guidelines for Archaeological Work in New York City. In addition, please submit a paper copy of the report for the LPC archives.

cc: NYSHPO

Gina Santucci 11/29/2022

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 36492_FSO_ALS_11232022.docx

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

November 22, 2022

Claudia Filomena
Director of Capital Projects
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
NY
22PR07165

Dear Claudia Filomena:

Thank you for continuing to consult with the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project.

We have reviewed the "Draft Scope of Work to Prepare an Environmental Impact Statement", dated October 19th, 2022, that was submitted to our office on October 27th, 2022. Based upon our review, the document is acceptable for historic and cultural resources.

If you have any questions, I am best reached via e-mail.

Sincerely,

Olivia Brazee
Historic Site Restoration Coordinator
olivia.brazee@parks.ny.gov

cc: E. Meade and N. Riddle, AKRF, Inc. via e-mail only

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

December 9, 2022

Claudia Filomena
Director of Capital Projects
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
Manhattan, New York County, NY
22PR07165

Dear Claudia Filomena:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the submitted materials in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources.

We have reviewed the report of the Phase IA archaeological investigation (No. 22SR00598). The SHPO concurs with the recommendation of a geomorphological investigation and archaeological monitoring.

If further correspondence is required regarding this project, please refer to the SHPO Project Review (PR) number noted above. If you have any questions, please contact me via email.

Sincerely,

Tim Lloyd, Ph.D.
Scientist - Archaeology
timothy.lloyd@parks.ny.gov

via e-mail only

Environmental, Planning, and Engineering Consultants
440 Park Avenue South
7th Floor
New York, NY 10016
tel: 212 696-0670
fax: 929 284-1085
www.akrf.com

Memorandum

To:	Olivia Brazee, Historic Site Restoration Coordinator, New York State Office of Parks, Recreation and Historic Preservation
From:	Nathan Riddle
Date:	March 1, 2023
Re:	Potential National Register Eligibility of South Cove, Battery Park City 22PR07165
cc:	Claudia Filomena (BPCA), Gwen Dawson (BPCA), David Paget (Sive, Paget & Riesel), Jennifer Coghlan (Sive, Paget & Riesel), Margaret Hopkins (AKRF)

In response to your letter dated October 27, 2022, we have identified one potential landscape resource within the Project Area for the North/West Battery Park City Resiliency Project—South Cove in Battery Park City. There do not appear to be any potential architectural or landscape resources in the portion of the Area of Potential Effect within 400 feet of the Project Area.

This memorandum provides a description of the planning and design of South Cove and a rationale for why it appears to meet the eligibility criteria for listing on the National Register of Historic Places. This memorandum also addresses North Cove in Battery Park City and why it does not appear to similarly meet the criteria for National Register eligibility. Photographs of South Cove and North Cove were included in the Project's initial CRIS submission on October 3, 2022.

SOUTH COVE

The Postmodernist designed landscape of South Cove appears to be eligible for the National Register under Criterion A in the area of community and urban planning and under Criterion C in the areas of landscape architecture and art. South Cove also appears to meet the standard for exceptional significance necessary to satisfy National Register Criterion Consideration G for properties less than fifty years old.

South Cove opened in 1988 at the southern end of the Battery Park City Esplanade, and it is the product of a collaboration between the artist Mary Miss, the landscape architect Susan Child, and the architect Stan Eckstut that began with planning sessions in 1985. Mary Miss is an important artist of environmental art and site-specific land art, a late-20th-century movement in which women were traditionally excluded from the dominant narrative in favor of their male peers. She was also a leading sculptor of the 1970s feminist movement. Susan Child was an award-winning landscape architect and founder of the firm Child Associates, Inc., Landscape Architecture (originally Child, Hornbeck Associates, Inc.). Stan Eckstut with his firm Cooper Eckstut Associates designed the master plan for Battery Park City. Their collaborative process for the design of South Cove integrated art, landscape architecture, and architecture in a way that

differed from previous modernist approaches to the inclusion of art in architectural projects where the art was an ornamental addition to a designed space. South Cove was a total work of art and landscape that was to be experienced by the public rather than just observed as a sited sculpture. Multiple contemporary critics contrasted South Cove with Richard Serra's controversial sculpture *Tilted Arc* that was located at Federal Plaza in Manhattan between 1981 and 1989. Similarly, as a work of land or environmental art, South Cove differed from earlier examples of that art form like Walter de Maria's *Lightening Fields* and Richard Smithson's *Spiral Jetty* that were large-scale expressive artworks on the landscape. Mary Miss (as well as other women environmental artists at the time) sought to create "an art of engagement" that allowed viewers to engage with her explorations between landscapes and built forms.[1] In their reviews of South Cove, critics particularly cited the collaborative process that created it. South Cove was "a triumph of urban landscape design and of interdisciplinary cooperation,"[2] "among the finest examples of a truly collaborative process,"[3] and "evidence that, at least on some occasions, architects and artists can muster the goodwill to rise above their antipathies, creating something that would not have existed if either had the upper hand and, maybe, taking some of the sting out of urban life."[4]

In the planning process, Miss, Child, and Eckstut determined that the site should be approached as a cove, and to inform their design they researched the topographical, geological, and plant features typical to coves in the Northeast. According to Child, "After studying nature we began to see certain elements emerge as generic to coves…. A cove is a place of repose, protected, fortified by a strong grade, and strong vegetation at the mouth. We decided to adopt this scheme for our cove, and to try to emphasize these special qualities."[5] Eckstut further said of their design approach, "Once, since this is a cove, it was decided that nature should play a prominent role. Two, New York's maritime past is a vital presence on the island and should be addressed in our design. Three, we wanted to respond to the specifics of the place itself. This structure will be built at the terminus of a great street. It should be a fitting conclusion to South End Avenue."[6] As with her previous, impermanent environmental artworks, Miss wanted South Cove to be an experiential place, "a place where one could really hear the water, smell it, get wet if it was high tide—tying the water and land together. I wanted there to be a sensuousness to this place—a very rich sense of the land and the water meeting here." [7]

They achieved their goals through the design of a cove that creates layered meanings (natural, historical, maritime, urban), uses multiple planting types and planting zones, addresses the artificiality of the site built on landfill and a relieving platform over the Hudson River, provides shifting perspectives and a sequential experience of place, and deconstructs architectural forms—artistic approaches typical of Miss' work that were strengthened through the collaborative design with the expertise of Child and Eckstut. South Cove ties into the surrounding urban context, responding to the adjacent residential buildings and continuing the esplanade through the site, but it differentiates itself through changes in grade, the use of wood instead of the granite used elsewhere along the esplanade, curved forms, engagement with the river, and unique plantings. The design and construction of South Cove also pioneered techniques for creating a planted

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[1] Marpillero, Sandro, "Four Projects by Mary Miss," *A+U: Architecture and Urbanism* 12 (December 1996): 104.

[2] Princenthal, Nancy, "On the Lookout," *Art in America* 6:10 (October 1988): 160.

[3] Marter, Joan, "Collaborations: Artists and Architects on Public Sites," *Art Journal* 48 (December 1989): 315.

[4] Larson, Kay, "Pier Pressure," *New York* 21 (August 1, 1988): 46.

[5] Karson, Robin, "South Cove, Battery Park City," *Landscape Architecture* 76:3 (May-June 1986): 50

[6] Karson, Robin, "South Cove, Battery Park City," *Landscape Architecture* 76:3 (May-June 1986): 50

[7] Marpillero, Sandro, "Four Projects by Mary Miss," *A+U: Architecture and Urbanism* 12 (December 1996): 110

landscape on a structure cantilevered over the river, which included having a soil scientist calibrate the soil mix.[8]

Planned around a cove feature, South Cove has upper and lower sections connected by wide stairways. South Cove's upper level continues the established formal vocabulary of the Battery Park City esplanade, but the lower level suggests nature and New York City's maritime history. The distinct architectural zones are further differentiated with three planting zones that transition from formal to wild. The upper section is lined with benches and plantings along the inland edge abutting the adjacent residential buildings with the main area more loosely planted with a grove of honey locust trees. The curvilinear paths through the upper section have wood railings, and they are paved with the hexagonal pavers used on the other portions of the esplanade. The upper section slopes down to the river and a promenade along the waterfront edge. Densely planted and lined by boulders placed in specific locations by Miss, the sloped inland edge along the promenade suggests the historic, natural shoreline, and it clearly defines a transition between the upper and lower sections of South Cove. Wood railings and lampposts with blue harbor lights line the promenade's waterfront edge, and groupings of wood pilings continue the maritime design of the lower section into the water. At the southeast corner of the cove, a bowed bridge connects the promenade to a wood jetty that curves back to the shoreline, in a playful reconfiguring of a traditional maritime structure. Beyond the end of the jetty, the structure continues as a deconstructed framework. A wood pergola and benches are provided on the jetty. Located inside the curve of the jetty and crossed by the bridge is a small island planted with native flora. On the south side of the bridge, the surface of the circle created by the curved jetty has been partially removed to reveal the concrete substructure of the landfill on which Battery Park City was constructed, thereby directly addressing the man-made nature of the site. Benches line the southern edge of the curve, and a 9/11 Memorial has been inset into the path as later addition to the site. At the southeast corner overlooking the cove is a steel lookout formed by two curved stairs and an armature that references the crown of the Statue of Liberty. The paths through the honey locust grove, the waterfront esplanade, the bowed bridge and curved jetty, and the overlook provide unique experiential zones and different perspectives of the waterfront, and the promenade, jetty, and bridge allow visitors to get close to, and over, the water. The southern end of the cove is densely planted with native species to suggest a "wild" habitat that also creates a distinct visual edge to South Cove. There are curved paths through the "wild" habitat that connect to the esplanade, which continues south. The northern end of the cove has a level lower than that of the main esplanade level, plantings, benches, and wood lampposts with blue harbor lights with a circular, vine-covered wood pergola encircling a tree where the upper path of the cove connects back to the esplanade. After its opening, Eckstut said of South Cove, "'By going beyond one's expectations of a park, I think we expanded what a park means in the city. It's less a park and more an environmental experience."[9]

Before it even opened, Kay Larson, upon review of the plan, said that South Cove "is, to my memory, the most environmentally sensitive major sculptural enterprise that New York City has been offered.[10] She later wrote of South Cove that in "Manhattan, there is a magical point of transition where the cramped spaces of the city meet the sky and river, and the self-absorption of city people is deflected outward and upward."[11] In a review in *The New York Times*, Paul Goldberger called South Cove, "one of the most ambitious artist-architect collaborations yet. Designed by Mary Miss and Stanton Eckstut with the landscape architect Susan Child, this is both a fantasy structure evoking the Statue of Liberty and a gentle comment on the nature of

[8] Margolies, Jane, "Still Here: Nearly Three Decades After It opened in New York's Battery Park City, This Small Site Continues to Spread Its Influence – and Bring People Joy," *Landscape Architecture* 106:6 (June 2016): 108.

[9] "Union of Land and Water at a Hudson River Park," *The New York Times*, July 17, 1988.

[10] Larson, Kay, "Combat Zone," *New York* 18 (May 13, 1985): 117-18.

[11] Larson, Kay, "Pier Pressure," *New York* 21 (August 1, 1988): 46.

the urban waterfront."[12] Tony Hiss was even more laudatory in a review in *The New York Times*, in which he began:

> South Cove, a three-acre, sea-shell-shaped public park on the Hudson River in Battery Park City, overflows with a quiet power so potent that first-time visitors can take the taste and feel of it home with them, and run it over in their minds, like a vivid childhood memory. A weekend visit to South Cove is as bracing and adventuresome as a walk across a wind-swept, unexplored sand dune, and at the same time it's cozy and private, and feels as utterly safe as an hour spent rocking back and forth on a favorite old back-porch swing.
>
> There, you immediately encounter two familiar and opposite kinds of shoreline places that elsewhere in the region are bitterly at war with each other for final control of the coastlines: an irregularly wandering, boulder-strewn, untrammeled natural seacoast, and a busy, built-up waterfront with a seawall, a boardwalk, a curving jetty, an observation tower, a hump-backed bridge and benches.
>
> In this one place both well-known shoreline forms have blithely and breathtakingly been superimposed on each other. The boulders, for instance, spill down a hillside covered with beach grass and wild roses and roll out halfway across an asphalt path, in a way that knits boulders and path together to create a new kind of water's edge that's at once so welcoming and so unexpected it feels almost like a reunion with a long-lost friend you've never met before.[13]

Hiss continued, the designers have "given back to New Yorkers a sense of intimate companionship with the Hudson River that had been lost, it sometimes seems, ever since the mid-19th century…. South Cove works to 're-place' New York, as we might say, re-establishing its heritage as a river town. Only two years after its opening, the Cove already seems part of the permanent New York, those places such as Central Park or Carnegie Hall that are loved because they can permanently stretch our understanding of our connections to one another and to the world the city serves."[14] In less flowery language, Raymond W. Gastil wrote in *Progressive Architecture* that "South Cove offers the experiential intensity of art and the pleasures of a playground."[15]

In 1988, South Cove was included in the exhibition "Architectural Art: Affirming the Design Relationship" (May 11 – September 4) organized by the American Craft Museum in affiliation with the American Institute of Architects. In a review of the exhibition in *American Craft*, Jayne Merkel said of the exhibited work, "Instead of postmodern buildings based on historical sources and similarly embellished with ornament, the newest work by young avant-garde architects is inspired by modern architecture, experimental rather than traditional, and generally undecorated, though it is aesthetically oriented, expressive, and symbolic." She pointed to South Cove as an outdoor project where "the relationships between architects and artists seem to be different … and potentially more suggestive of new directions, perhaps because in such work the role of the various participants overlap more and are less predetermined than they are on building projects."[16] The exhibit was organized into four components: a historical preface; artists in dialogue with architecture; site-specific works; and four commissions by artist-architect partnerships, one of which included Mary Miss. In 1989, the American Society of Landscape Architects awarded South Cove a Merit Award, and the following year the American Institute of Architects awarded Mary Miss an Institute Honor for her

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[12] Goldberger, Paul, "Battery Park City: New York's Newest Neighborhood; To the Heights of Simplicity," *The New York Times*, November 20, 1988.

[13] Hiss, Tony, "At Land's Edge, a Contentment of Light and Shape," *The New York Times*, October 19, 1990.

[14] Hiss, Tony, "At Land's Edge, a Contentment of Light and Shape," *The New York Times*, October 19, 1990.

[15] Gastil, Raymond W., "On the Waterfront: Art/Architecture," *Progressive Architecture* 69:9 (September 1988): 25.

[16] Merkel, Jayne, "Beyond Postmodernism: Four Collaborations," *American Craft* 48:4 (August-September 1988): 26, 31.

explorations between art and landscape and interactions between building components and the environment as exemplified by her work at South Cove.

Later appraisals of South Cove continued to be laudatory. Philip Lopate referred to South Cove as the "jewel" of Battery Park City in his 2004 book *Waterfront: A Journey Around Manhattan*, noting South Cove's intimacy, immediate connection to the water, and references to the historical natural waterfront through the plantings and landscaping.[17] In a lengthy 2016 article in *Landscape Architecture*, Jane Margolies wrote that South Cove "helped spark New York's rediscovery of its waterfront. It gave those who lived and worked in Manhattan a toehold in the river. It pioneered technical innovations and design features that influenced the development of parks and waterfront spaces up and down the Hudson and indeed all around New York." Margolies also argued that "no other place in the development [Battery Park City] possesses such a rich and intriguing play of contrasts—water and land, natural and man-made, circular and straight, movement and stasis, positive and negative, continuity and disruption, past and present."[18]

As described in the National Register Resource Evaluation for Wagner Park, which was determined to meet Criterion G as a postmodern landscape, "postmodernism in landscape design emphasizes urban contextuality, ecological systems, diversity of site organization and experience, a pluralistic use of design motifs, and playfulness." South Cove expresses this design philosophy through its responsiveness to its natural but also man-made waterfront site, its multiple spaces and circulation systems that create a variety of experiences within a cohesive landscape that is distinct from the surrounding landscapes of Battery Park City but integrated with them, native plants, layering of histories, exposure of the landfill substructure beneath Battery Park City, and the playful forms of the curved jetty and overlook that reference the site's historic maritime context and visual relationship with the Statue of Liberty. South Cove's original location, postmodern design, and setting remain intact.

NORTH COVE

While North Cove is also a unique designed landscape with postmodernist design elements, it does not appear to meet the eligibility criteria for National Register listing.

Adjacent to Brookfield Place, North Cove was completed in 1989 and designed by the architect Cesar Pelli (who also designed Brookfield Place), artists Scott Burton and Siah Armajani, and the landscape architect M. Paul Friedberg. North Cove is a 3.3-acre multi-level plaza around the three sides of the North Cove Marina. The central portion of the plaza is unobstructed and surfaced in hexagonal pavers, curved metal railings enclose the plaza's waterfront edges, and ramps lead down to the marina. The west edge of the plaza has a curved extension and is ornamented with a curved metal balustrade with bronze letters spelling lines from Walt Whitman's "City of Ships" from 1867 and Frank O'Hara's "Meditations in an Emergency" from 1957 with four curved granite benches and a tall metal beacon on a granite pedestal. Along the north and east edges of the plaza are terrace cafes, each planted with two rows of trees. Linear reflecting pools edged in granite with gentle waterfalls transition the plaza from the terrace levels to intermediate levels formed by granite stairs and granite paving. Ornamental metal lampposts are along the intermediate levels where additional stairs connect to the main plaza level. Large cylindrical granite tables with stairs that form seats are placed where the main plaza level meets the granite intermediate levels.

Unlike South Cove, which reads as a distinct landscape unit, North Cove reads as a forecourt to Brookfield Place without clearly defined boundaries to the adjoining elements of the Battery Park City esplanade. North Cove is not visually differentiated from Esplanade Plaza to the south and west or from the Belvedere to the northwest. Further, the defining visual element of North Cove is the large marina and the unobstructed plaza. The unique postmodernist design elements of North Cove—the granite terraces, the metal balustrade

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[17] Lopate, Philip, *Waterfront: A Journey Around Manhattan* (Crown Publishers, New York, NY, 2004), 35.

[18] Margolies, Jane, "Still Here: Nearly Three Decades After It opened in New York's Battery Park City, This Small Site Continues to Spread Its Influence – and Bring People Joy," *Landscape Architecture* 106:6 (June 2016): 105, 114.

with the poetry fragments, and the beacon—are more secondary ornamental elements located along the periphery of the open space. North Cove also lacks these defining characteristics of postmodern landscape design: ecological systems, diversity of site organization and experience, and a pluralistic use of design motifs.

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ARCHAEOLOGY REVIEW

Project number: 106.M (BATTERY PARK CITY AUTHORITY)
Project: NWBPCR (NW BATTERY PARK CITY RESILIENCY
Date Received: 3/14/2023

Comments: as indicated below. Properties that are individually LPC designated or in LPC historic districts require permits from the LPC Preservation department. Properties that are S/NR listed or S/NR eligible require consultation with SHPO if there are State or Federal permits or funding required as part of the action.

This document only contains Archaeological review findings. If your request also requires Architecture review, the findings from that review will come in a separate document.

Comments: The LPC is in receipt of the, "North/West Battery Park City Resiliency Project Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 12, 15, 20, 70, 100, 120, 125, 140, 150, 160, 210, 215, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7509 (formerly Lot 45), and 7511 (formerly Lot 25); and Portions of Streetbeds of Greenwich, North Moore, Harrison, and Route 9A/West Streets NEW YORK, NEW YORK Work Plan for Geomorphological Investigation," prepared by AKRF, Inc and dated March 2023.

The LPC concurs with the plan.

Cc: NYSHPO

3/23/2023

SIGNATURE DATE
Amanda Sutphin, Director of Archaeology

File Name: 36492_FSO_ALS_03232023.docx

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

March 30, 2023

Claudia Filomena
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
Manhattan, New York County, NY
22PR07165

Dear Claudia Filomena:

Thank you for continuing to consult with the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project.

We have reviewed the *Memorandum, Potential National Register Eligibility of South Cove, Battery Park City* prepared by AKRF and submitted via CRIS on March 1, 2023. We concur that South Cove is significant under National Register Criterion A in the area of community and urban planning, and under Criterion C in the areas of landscape architecture and art. SHPO has determined that South Cove meets the standard for exceptional significance necessary to satisfy National Register Criterion Consideration G for properties less than fifty years old.

We also concur that North Cove is not eligible for listing on the National Register. It does not appear to meet the standards for exceptional significance under Criterion Consideration G.

Additional submissions should be provided via our Cultural Resource Information System (CRIS) at https://cris.parks.ny.gov/. You may log in as a guest and choose "submit" at the very top menu. Next choose "submit new information for an existing project". You will need this project number and your e-mail address. If you have any questions, I am best reached via e-mail at linda.mackey@parks.ny.gov.

Sincerely,

Linda Mackey
Historic Preservation Program Analyst

cc: Elizabeth Meade and Nathan Riddle, AKRF

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

March 30, 2023

Claudia Filomena
Director of Capital Projects
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
Manhattan, New York County, NY
22PR07165

Dear Claudia Filomena:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the submitted materials in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources.

The SHPO has reviewed and concurs with the "Work Plan for Geomorphological Investigation."

If further correspondence is required regarding this project, please refer to the SHPO Project Review (PR) number noted above. If you have any questions, please contact me via email.

Sincerely,

Tim Lloyd, Ph.D.
Scientist - Archaeology
timothy.lloyd@parks.ny.gov

via e-mail only

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner *Pro Tempore*

August 8, 2024

Claudia Filomena
Senior Director of Capital Projects & Resiliency Operations
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
Manhattan, New York County, NY
22PR07165

Dear Claudia Filomena:

Thank you for continuing to consult with the New York State Historic Preservation Office (SHPO). We have reviewed the documentation submitted in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources.

We have reviewed the excerpts from the Draft Environmental Impact Statement that were submitted to our office on July 11th, 2024. Based upon our review, the document appears acceptable and we have no further comments at this time.

If you have any questions, feel free to call me at (518)948-2067.

Sincerely,

Olivia Brazee
Senior Historic Site Restoration Coordinator
olivia.brazee@parks.ny.gov

cc: CRIS list via e-mail only

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NEW YORK 10278-009

REGULATORY BRANCH November 22, 2024

SUBJECT: Department of the Army Permit Application Number NAN-2024-00433-EMI by Battery Park City Authority

Olivia Brazee
Historic Site Restoration Coordinator
New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island
PO Box 189
Waterford, New York 12188-0189

Dear Ms. Brazee:

This is in reference to the subject Department of the Army permit application NAN-2024-00433-EMI, pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, submitted by the Battery Park City Authority. The proposed work involves the North/West Battery Park City Resiliency project, which involves the construction of a flood barrier system for coastal resiliency at Battery Park City in the Borough of Manhattan, New York County, City of New York, New York.

On November 6, 2024, this office submitted an Adverse Affect Determination letter to the New York State Historic Preservation Office (NYSHPO) for the above mentioned project. Following further discussion with the applicant and with NYSHPO on November 18, 2024, USACE has reviewed the supplemental information regarding the proposed project and is hereby submitting a revised effect determination.

Based on additional information provided by the applicant, we have determined the permit area for the proposed work within the purview of the U.S. Army Corps of Engineers (USACE) New York District remains unchanged from the submission on November 6, 2024. The permit area encompasses the in-water work associated with the construction of the flood barrier system. Eighteen (18) architectural resources have been identified within a 400-foot radius of the proposed project. Of these, three (3) are located within the project area: the Shearwater, South Cove and the Hudson River Bulkhead. USACE has also determined that the permit area is identical with the Area of Potential Effect (APE) for the associated project.

As per 33 CFR Part 325 Appendix C Section 1g.(1), the term permit area is defined as "…those areas comprising the waters of the United States that will be directly affected as a result of authorizing the work or structures and uplands directly affected as a result of authorizing the work or structures." In order for an activity undertaken

outside the waters of the United States to be included in the permit area the following criteria would have to be met as per 33 CFR Part 325 Appendix C Section 1g.(1):

(i) Such activity would not occur but for the authorization of the work or structures within the waters of the United States;

(ii) Such activity must be integrally related to the work or structures to be authorized within waters of the United States. Or, conversely, the work or structures to be authorized must be essential to the completeness of the overall project or program; and

(iii) Such activity must be directly associated (first order impact) with the work or structures to be authorized.

Based on the above criteria, we have determined that the portion of activity undertaken outside waters of the United States and upland of Spring High Water (SHW) are included in the permit area because it meets criteria (i), (ii) and (iii) listed above. As upland work associated with the complete project construction of the flood barrier system would not occur without such permitted activity. The proposed work upland of the SHW could not be constructed without the authorization of work in waters of the United States.

It is the determination of the New York District that the proposed work within the APE/permit area will not have an adverse effect upon these historic or architectural resources. This determination is based on several factors. First, Shearwater, which is used for sightseeing, would need to be temporarily relocated during construction. Since the ship itself is not being altered and its current location within the APE is not the ship's original location, no adverse effect to this resource is anticipated. Second, the proposed impacts to the Hudson River Bulkhead involve approximately 2-linear feet of concrete block atop the historic bulkhead during construction. Given the minimal scale of this impact, USACE has determined that the proposed would not adversely affect the resource. Lastly, the majority of the proposed work within the South Cove involves the removal and replacement of the existing overwater platforms at a higher elevation. Given that the proposed would not change the scale, visual prominence, or visual context of the resource, USACE has determined that the proposed would not adversely affect the resource. Overall, USACE's determination is based on the fact that most of the work involves in-water activities, with the majority of upland work occurring outside of the permit area and APE.

As we hope to conclude our coordination as soon as possible, it is requested that you confirm our findings within 30 days from your receipt of this letter.

Should you have any questions on our determinations contained herein, please contact Christopher Minck, of my staff, at Christopher.W.Minck@usace.army.mil

Sincerely,

Rosita Miranda
Chief, Metro NY/NJ Section

Enclosures

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner *Pro Tempore*

December 4, 2024

Claudia Filomena
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
Manhattan, New York County, NY
22PR07165

Dear Claudia Filomena:

Thank you for continuing to consult with the New York State Historic Preservation Office (SHPO). We have reviewed the documentation submitted in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources.

We have reviewed the Army Corps' determination letter dated November 22nd, 2024. Based on our review, the SHPO concurs that the undertaking will have No Adverse Effect upon historic and cultural resources.

If you have any questions, feel free to call me at (518)948-2067.

Sincerely,

Olivia Brazee
Senior Historic Site Restoration Coordinator
olivia.brazee@parks.ny.gov

cc: CRIS list via e-mail only

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner *Pro Tempore*

December 6, 2024

Claudia Filomena
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
Manhattan, New York County, NY
22PR07165

Dear Claudia Filomena:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the submitted materials in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources.

We have reviewed the report of the Supplemental Phase IA archaeological investigation (No. 22SR00598). The SHPO concurs with the recommendation of Phase 1B Archaeological Monitoring occurring within the revised areas of archaeological sensitivity as described in the Supplemental Phase IA.

If you have any questions concerning archaeology, I can be reached at Jessica.Vavrasek@parks.ny.gov.

Sincerely,

Jessica Vavrasek

Jessica Vavrasek, Ph.D.
Scientist – Archaeology/NAGPRA

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ARCHAEOLOGY REVIEW

Project number: 23BPC001M (BATTERY PARK CITY AUTHORITY)
Project: NWBPCR (NW BATTERY PARK CITY RESILIENCY
Date Received: 12/5/2024

Comments: as indicated below. Properties that are individually LPC designated or in LPC historic districts require permits from the LPC Preservation department. Properties that are S/NR listed or S/NR eligible require consultation with SHPO if there are State or Federal permits or funding required as part of the action.

This document only contains Archaeological review findings. If your request also requires Architecture review, the findings from that review will come in a separate document.

Comments: The LPC is in receipt of the, "Supplemental Phase IA Archaeological Documentary Study for the North/West Battery Park City Resiliency Project, Portions of Block 142, Lots 25 and 50; Block 16, Lots 3, 15, 20, 100, 125, 140, 150, 160, 225, 7501 (formerly Lot 90), 7502 (formerly Lot 95), 7505 (formerly Lot 65), 7508 (formerly Lot 50), 7509 (formerly Lot 45), and 7511 (formerly Lot 25); and Portions of Streetbeds of Greenwich, North Moore, Harrison, and Route 9A/West Streets, New York, New York," prepared by AKRF, Inc and dated December 2024.

The LPC concurs with the report's recommendations that the areas shown in Figure Five are archaeologically sensitive and that they should be archaeologically monitored and that a work plan should be submitted to LPC and NYSHPO for review.

Cc: NYSHPO

12/10/2024

SIGNATURE DATE
Amanda Sutphin, Director of Archaeology

File Name: 36492_FSO_ALS_12102024.docx

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner Pro Tempore

April 14, 2025

Claudia Filomena
Battery Park City Authority
200 Liberty Street
New York, NY 10281

Re: USACE
North/West Battery Park City Resiliency Project
Manhattan, New York County, NY
22PR07165

Dear Claudia Filomena:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources.

The Archaeology Unit has reviewed the Memorandum entitled: *North/West Battery Park City Resiliency Project: Revised Archaeological Sensitivity Map*. The SHPO concurs with the continued recommendation of Phase 1B Archaeological Monitoring occurring within the revised areas of archaeological sensitivity as described in both the Memorandum and the Supplemental Phase IA.

If you have any questions concerning archaeology, I can be reached at Jessica.Vavrasek@parks.ny.gov.

Sincerely,

Jessica Vavrasek

Jessica Vavrasek, Ph.D.
Scientist – Archaeology/NAGPRA

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ARCHAEOLOGY

Project number: 106.M (US ARMY CORPS OF ENGINEERS)
Project: LOWER MANHATTAN COASTAL RESILIENCY BATTERY WHARF
Address: 10 BATTERY PARK **BBL:** 1000030001
Date Received: 4/14/2025

This document only contains Archaeological review findings. If your request also requires Architecture review, the findings from that review will come in a separate document.

[ ] No archaeological significance

[ ] Designated New York City Landmark or Within Designated Historic District

[ ] Listed on National Register of Historic Places

[ ] Appears to be eligible for National Register Listing and/or New York City Landmark Designation

[X**] May be archaeologically significant; requesting additional materials**

Comments: The LPC is in receipt of the memorandum from Elizabeth Meade, AKRF Inc and dated April 11, 2025. The memo details changes to the proposed limits of disturbance and includes a revised sensitivity determination map presented as figure 3. The LPC notes the changes and concurs with the revised recommendations.

cc: NYSHPO

4/15/2025

SIGNATURE DATE
Amanda Sutphin, Director of Archaeology

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