PHASE IA LITERATURE SEARCH AND ARCHAEOLOGICAL SENSITIVITY ASSESSMENT

WARD'S ISLAND WASTEWATER TREATMENT PLANT (WWTP) BOILER BUILDING GAS LINE INSTALLATION

Borough of Manhattan, City of New York,
New York County, New York OPRHP #: 18PR03199

PREPARED FOR:

New York Power Authority
123 Main Street
White Plains, New York 10601

March 2019

RGA
CULTURAL
RESOURCE
CONSULTANTS

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Date:
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Cover Image: View of the Ward's Island WWTP boiler building within the northeastern portion of the APE. Photographer: Michelle Davenport. Date: February 11, 2019

MANAGEMENT SUMMARY

OPRHP Project Review Number: 18PR03199

Involved State or Federal Agencies: New York Power Authority, New York State Department of Environmental Conservation

Phase of Survey: IA Literature Search and Archaeological Sensitivity Assessment

Location Information

Location: 105-107 2nd Drive, Ward's Island
Minor Civil Division: Borough of Manhattan
County: New York

Approximate Survey Area (Metric and English):

Length: 168.47 meters (552.72 feet)
Width: 65.19 meters (213.88 feet)
Number of Acres Surveyed: 0.52 hectares (1.28 acres)
Area of APE Previously Surveyed: 0 acres

U.S.G.S. 7.5 Minute Quadrangle Map: Central Park, NY-NJ

Cultural Resources Survey Overview

Pedestrian Surface Reconnaissance: Conducted on February 11, 2019 to examine the current conditions of the project area, to assess and document site disturbance, and to identify any areas of archaeological sensitivity.

Number and Size of Units: Not Applicable
Width of Plowed Strips: Not Applicable

Results of Phase IA Literature Search and Archaeological Sensitivity Assessment

Number and Name of Prehistoric Sites Identified: None
Number and Name of Historic Sites Identified: None

Conclusions and Recommendations

RGA, Inc. completed a Phase IA literature search and archaeological sensitivity assessment of the proposed gas line installation for the Ward's Island Wastewater Treatment Plant (WWTP) boiler building in the Borough of Manhattan, City of New York, New York County, New York. The Area of Potential Effects (APE) includes approximately 0.52 hectares (1.28 acres) within the western boundary of the National Register of Historic Places (NRHP)-eligible Ward's Island Waste Water Pollution Control Plant Building District (USN 06101.019283) and encompasses the Ward's Island WWTP Boiler Building (USN 06101.019282), an NRHP-eligible contributing element to the district. Historic maps and background research indicated that the APE was undeveloped agricultural fields prior to the twentieth century, although an early nineteenth-century road passed through the southwest corner of the APE. Historic maps, aerial images, and background research indicated that several episodes of building construction and various other ground disturbances occurred throughout the APE during the twentieth and twenty-first centuries, including construction of the Ward's Island Viaduct (USN 06101.007333) and the Ward's Island WWTP. A majority of the APE is covered by impermeable surfaces and is traversed by underground utilities. A small, triangular, unpaved area is situated within the southwestern corner of the APE, which is likely disturbed by underground utilities as well as by twentieth-century construction. No soil bores were taken within the APE, although a review of soil boring logs published in previous archaeological surveys confirmed the presence of deep, episodic fill deposits across Ward's Island that overlay pre-cultural glacial till or bedrock. It is likely that historic landscape modifications prior to filling episodes removed some prehistoric or historic cultural surfaces within the APE. Only one soil bore placed west of the APE documented the presence of a buried historic surface, indicating the possibility that buried historic strata may remain within the APE. Extensive construction, however, may have disturbed or graded some historic surfaces. No previously-identified archaeological sites are present within or adjacent to the APE, and only one archaeological site, containing unmarked early twentieth-century historic burials associated with the Manhattan State Hospital for the Insane, is documented on Ward's Island. The unmarked nineteenth-century Ward's Island potter's field is thought to be located on a rise at the southeast tip of the island, south of the APE. The early twentieth-century burials recovered from the former site of the Manhattan State Hospital for the Insane are not thought to be associated with the Ward's Island potter's field. Based on these considerations, the Phase IA literature review and archaeological sensitivity assessment concludes that paved portions of the APE possess low archaeological sensitivity for prehistoric and historic cultural resources due to existing utility disturbances. The unpaved section of the APE southwest of Gate

B is assessed with low to moderate sensitivity for prehistoric and historic resources, due to the presence of a buried, but disturbed, historic surface in a soil bore taken west of the APE and the map-documented presence of an early nineteenth-century roadway passing through this portion of the APE. Additionally, due to the discovery of unmarked historic burials south of the APE and the documented presence of an unmarked and unmapped potter's field on the island, the entire APE is assessed with a moderate sensitivity for the presence of human remains. Phase IB testing is recommended in the unpaved portion of the APE that is assessed with low to moderate prehistoric and historic archaeological sensitivity. Archaeological monitoring is recommended during any ground disturbing activities within the APE associated with the gas line installation, due to the moderate sensitivity for ground disturbance to encounter human remains.

Report Authors: Michelle L. Davenport, M.A., R.P.A.

Date of Report: March 14, 2019

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INTRODUCTION

Project Description

RGA, Inc. (RGA) completed a Phase IA literature search and archaeological sensitivity assessment for the proposed gas line installation to the Ward's Island Waste Water Treatment Plant's (WWTP) boiler building on Ward's Island in the Borough of Manhattan, City of New York, New York County, New York (Figures 1 and 2). The survey was performed for the New York Power Authority (NYPA) in compliance with State Environmental Quality Review Act (SEQRA) regulations (6NYCRR Part 617 of the New York State Environmental Conservation Law) and in anticipation of the necessity to acquire a permit from the New York State Department of Environmental Conservation (NYS DEC). The NYPA proposes to install an 8-inch gas line extending for approximately 565 linear feet between Gate B and the boiler building at the Ward's Island WWTP.

The limits of direct impact that comprise the 0.52-hectare (1.28-acre) Area of Potential Effects (APE) encompass the paved roads and parking area leading up to and surrounding the WWTP boiler building and includes a small 0.04-hectare (0.1-acre) area of manicured grass adjacent to the Gate B entrance (Figure 3). The proposed gas line will pass beneath C Road, 2nd Drive, and East Road within the WWTP to connect the boiler building to a gas main passing underneath Hell Gate Circle, west of the APE. The gas line will be monitored by a gas meter to be installed in the unpaved area southwest of Gate B.

The Phase IA literature search and archaeological sensitivity assessment was conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its corresponding regulations: 36 CFR 800. The project is also subject to the New York State Environmental Quality Review Act (SEQRA)-Article 8 of the New York State Environmental Conservation Law and its implementing regulations 6 NYCRR Part 617. Because of the federal and state regulations governing the project, RGA assumes that the New York Office of Parks, Recreation, and Historic Preservation (OPRHP) will act as the lead review agency for this survey.

The Phase IA literature search and archaeological sensitivity assessment was undertaken in compliance with the Phase I Archaeological Report Format Requirements (2005) of the OPRHP and the *Standards for Cultural Resource Investigations* devised by the New York Archaeological Council (1994). The Phase IA literature search and archaeological sensitivity assessment was completed and directed by an archaeologist meeting National Park Service standards set forth in 36 CFR 61 (Appendix A). Michelle L. Davenport, M.A., R.P.A. authored this report and served as Principal Investigator for the project. Archaeological surface reconnaissance fieldwork was conducted by Ms. Davenport. Michael J. Gall, Catherine Smyrski, and Richard Grubb edited the report, and Ms. Smyrski formatted the report. All project documents are on file at RGA headquarters in Cranbury, New Jersey.

Area of Potential Effects

The APE is defined in 36 CFR 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist." The APE for the project includes areas where ground disturbing activities, including excavation and grass and pavement restoration are proposed.

The APE for the project is situated entirely within the National Register of Historic Places (NRHP)-eligible Ward's Island Waste Water Pollution Control Plant Building District (USN 06101.019283). The APE includes C Road and 2nd Drive leading from Gate B to the boiler building; the boiler building and its surrounding pavement, including East Road, 1st Drive, and F Road; the designated contractor laydown area, situated on poured concrete at the corner of East Road and 1st Drive, west of the boiler building; and a small 0.04 hectare (0.1 acre) unpaved area southwest of Gate B. The total APE measures approximately 0.52 hectares (1.28 acres) in area (see Figures 1-3; Figure 4). The Ward's Island WWTP boiler building (USN 06106.019282), located within the APE, has been determined to be an NRHP-eligible contributing element to the Ward's Island Waste Water Pollution Control Plant Building District.

The APE is bounded by the Ward's Island Viaduct to the west and northwest; wastewater treatment facilities to the northeast, east, and southeast; and a roundabout and open green space to the south. Proposed construction activities within the APE include pavement removal, soil excavation, gas line installation, meter station installation, and pavement and grass restoration. The proposed depth of excavation for the gas line installation within the APE ranges between approximately 1.52 meters and 2.44 meters (5 and 8 feet) below grade.

Environmental/Physical Setting

The APE is located in the center of Ward's Island, also called Randall's and Ward's Island, in Manhattan Borough, located east of Manhattan, south of the Bronx, and west of Long Island. The island is bounded by the East River to the east, the Harlem River to the west, and the Bronx Kill to the north. The APE is situated within the western edge of the Ward's Island WWTP, which is surrounded by recreational fields to the north, west, and south. Government facilities, including a state police station, the Manhattan Psychiatric Center, the Kirby Forensic Psychiatric Center, and three homeless and social assistance shelters, are situated farther west and southwest of the APE. A fire department training facility is located

north of the WWTP property. The Ward's Island Viaduct for the New York Connecting Railroad passes adjacent to the west and northwest edges of the APE and, west of the viaduct, Interstate 278 passes through the island via the Robert F. Kennedy Bridge.

The APE sits approximately 7.3 meters (24 feet) above mean sea level on slightly westerly-sloping topography. It is considered to be part of the Manhattan Prong geologic projection of the New England Upland section of the New England physiographic province. The Manhattan Prong is characterized by a low relief plain formed by extended fluvial erosion, where relief is the product of low ridges and valleys cutting across the landscape. The section of the Manhattan Prong in which Ward's Island is situated is characterized by glacial till, alluvial deposits, and low-lying swamps, all of which are determined by irregularities in the bedrock surface across the landscape (Isachsen et al. 2000; NYDOT 2013). Local surficial geology of Ward's Island is characterized entirely as fill resulting from intensive historic modification of the landscape (Cadwell et al. 1989; New York City [NYC] Soil Survey Staff 2005). The pre-cultural and prehistoric landscape of the island can be inferred from the presence of residual patches of glacial till and residual shoreline that were identified in geological soil bores taken from multiple locations across the island (Historical Perspectives, Inc. 2012; Schuldenrein et al. 2011; Schuldenrein et al. 2012). Modern surface soils within the APE are Urban Land complex soils (NRCS 2019). In areas where till substratum is present, the glacial till is characterized by a mixture of heterolithic gravels, sands, and clays formed during glacial advances and retreats across the landscape during the Pleistocene. The bedrock under the APE is comprised of the Inwood Marble formation, characterized by calcareous schist, granulite, and quartzite overlain by dolomite calcific marble (Fisher et al. 1970; USGS 2019).

The APE is located 0.64 kilometers (0.4 miles) east of the Harlem River and 1.12 kilometers (0.7 miles) south-southwest of the Bronx Kill, both of which flow into the East River, approximately 0.49 kilometers (0.3 miles) east of the APE. The East River, a tidal estuary rather than a true river, connects to New York Bay, which empties into the Atlantic Ocean. The present-day Little Hell's Gate inlet and marsh, located approximately 200 meters (653 feet) northwest of the APE, is the former location of the natural waterway that originally separated Randall's Island, Sunken Meadow, and Ward's Island prior to historic infilling.

Soils mapped in the APE include Urban Land, till substratum, 0 to 3 percent slopes (UtA) and Greenbelt-Urban Land complex, 0 to 3 percent slopes (GUA) (Figure 5; NRCS 2019). Urban land occurs in areas that have been disturbed by human activity, including areas that have been excavated, filled, graded, paved over, or built upon. This disturbed or human-transported material is underlain by unsorted/unstratified glacial till (NYC Soil Survey Staff 2005:40). Urban land is often capped by an impervious surface, such as asphalt pavement or poured concrete. Characteristics of this soil series can vary substantially based on the extent of human activity in an area. Greenbelt-Urban Land complex soils are present in areas where these two soil series mix or co-occur within a soil mapping unit. The Greenbelt series includes well-drained soils formed in human-derived fill areas on urban till plains (NYC Soil Survey Staff 2005:27). Within the APE, Greenbelt-Urban Land complex soils are present along the western edge, adjacent to the viaduct (see Figure 5).

Background Research

Prehistoric Background

New York City's pre-colonial cultural history is divided into three broad time periods: Paleoindian (ca. 11,000-10,000 B.P.), Archaic (ca. 10,000-2,700 B.P.), and Woodland (ca. 2,700-400 B.P.) (Cantwell and Wall 2001). A number of statewide and regional syntheses document New York's history of Native American habitation prior to European colonization (Abel and Fuerst 1999; Beauchamp 1900; Cantwell and Wall 2001; Funk 1976; Funk and Hayes 1977; Parker 1922; Ritchie 1944, 1951, 1965; Ritchie and Funk 1973). Some generalized information on each of these periods is presented in Table 1. Early archaeological discoveries along the Bronx Kill, the East River, and the Harlem River document prehistoric occupation of the land around Ward's Island, including artifact caches, a Late Woodland village site, a Contact-period Reckgawawanc (Manhattan) Native American village site, and a Native American trail running through Manhattan Island (Finch 1909; Bolton 1920: 303, 1922; Grumet 1981; Ruttenber 1992 [1872]; Historical Perspectives Inc. 2000; Cantwell and Wall 2001). Prehistoric Native American groups would have been drawn to the rich environmental resources provided by the marshlands and estuary environment along the East River, Bronx Kill, and Harlem River as well as the small freshwater resources dispersed throughout Manhattan Island, the Bronx, and Long Island.

At the time of European colonization of the New World, the land around Ward's and Randall's islands was occupied by Munsee-speaking groups of the Lenape Indians. The Wiechquaesgeck occupied present-day areas in the Bronx, Upper Manhattan Island, and Westchester County, while the Reckgawawancs occupied central and lower Manhattan Island. Both the Weichquaesgeck and the Reckgawawancs were part of the Wappinger Federation and were later called the Manhattans. Western Long Island was occupied by a possible Lenape or Montauk group known as the Canarsee (Ruttenber 1992 [1872]; Historic Perspectives, Inc. 2000; Cantwell and Wall 2001).

While there is no archaeological evidence of prehistoric occupation of Randall's and Ward's islands, the intensive prehistoric and contact period occupation along the coasts of Manhattan, the Bronx, and Long Island proximate to the islands suggests that there was likely prehistoric and contact period activity on the islands. Early historic records indicate that local Native Americans regularly traversed the Hell Gate waterway south of Ward's Island and probably used the island as a temporary stop-off point during travel (Rusch and Porter 1980; Schuldenrein et al. 2018). Additionally, prehistoric peoples would have probably taken advantage of the resource-rich environments provided by tidal marshlands documented at the

Table 1: New York prehistory.

Dates	Period	Characteristics
ca. 11,000-10,000 B.P.	Paleoindian	· Earliest human occupation of New York · Game hunting supplemented by plant food gathering and exploitation of marine resources · Highly mobile band-level society · Toolkit includes: fluted projectile points, unifacial scrapers, gravers, knives
ca. 10,000-2,700 B.P.	Archaic	· Continued hunting-gathering with increased exploitation of marine and other resources marked by expansion of toolkits · Mortuary ceremonialism · Establishment of long-distance trade networks · Seasonal resource exploitation by small bands · Large and small encampments, sometimes re-occupied · Introduction of steatite vessels during the Late Archaic
ca. 2,700-400 B.P.	Woodland	· Transition from mobile hunting-gathering to semi-sedentary occupation of villages and hamlets · Increased sedentism, territorialization, and population growth · Established trade and exchange systems · Development of horticulture as a substantial subsistence strategy · Introduction of ceramic, bow-and-arrow technologies

southeast and northeast corners of Ward's Island (Viele 1865; Historical Perspectives Inc. 2012). Marine transgression over time, leading to changes in the shoreline of both Randall's and Ward's islands when they were separate landforms, however, may have affected the utility of the islands for extended prehistoric occupation or resource acquisition, in addition to impacting the preservation of potential sites on the coast (Historical Perspectives Inc. 2012). Furthermore, due to development, historic landscaping, and infilling of most of the surface of Randall's and Ward's islands, including their convergence into a single island, the potential to encounter intact prehistoric surfaces or deposits is low to moderate.

Historical Background

The first documented European contact with the local Native Americans around present-day New York City occurred in 1524, when Giovanni de Verrazano sailed into New York Harbor and anchored off the coast of Staten Island (Brodhead 1853; Cantwell and Wall 2001). In 1609, Henry Hudson explored the Hudson River under Dutch patronage. While profitable trade developed between European and local Native American groups as a result of Hudson's expedition, their encounters were not always peaceful. A skirmish between Hudson's crew and the Wiechquaesgeck broke out along the Hudson River near the Bronx on Hudson's return trip south to New York Bay in 1609 (Brodhead 1853: 28, 33). Subsequent to Hudson's exploration of the Hudson River and New York Bay, the Dutch East India Company and individual merchants continued to trade with the Wiechquaesgeck and other Native American groups in the area. Due to its accessibility by large trading vessels, the island of Manhattan became a staging area for shipping furs traded from Native Americans along the Hudson to Europe (Brodhead 1853: 47). Hell's Gate, the portion of the East River running south of Ward's Island, was the name originally given to the entire East River, which was considered dangerous for the large Dutch trading vessels to navigate (Brodhead 1853: 56).

The colony of New Netherland was chartered in 1614 by the States General to include all lands from Virginia to New France (Canada). In order to secure trade rights along the coast, particularly in the area surrounding Manhattan Island, the Dutch West India Company was formed in 1621. The company established a permanent trading post at the southern tip of Manhattan in 1624. Fort Amsterdam and the settlement of New Amsterdam were established at the location of the trading post in 1626, after Manhattan Island was purchased from the Lenape (Brodhead 1853: 97; Anonymous 1882:8). Dutch settlement spread throughout the area around Ward's Island during the remainder of the seventeenth century, including Manhattan, the Bronx, and western Long Island.

In 1637, the Dutch governor of New Amsterdam, Wouter Van Twiller, purchased Ward's and Randall's islands from the Canarsee people who occupied western Long Island (Anonymous 1882; Schuldenrein et al. 2008; New York City Board of Education 1968; Grumet 1981). The island is map-documented in 1639 as owned by Governor Van Twiller (Vinkeboons 1639). At this time, the islands were used only to graze livestock. Originally called *Tekenas* by the Canarsee, Ward's Island was re-named after the cowherd in charge of the livestock, Danish farmer Barent Jansen Blom. Ward's Island was called Great Barent Island, while Randall's Island was called Little Barent Island (American Scenic and Historic Preservation Society 1923; Schuldenrein et al. 2008).

Constant contact and competition for land and resources between local Wiechquaesgeck, Canarsee, and other Lenape groups and Europeans led to multiple conflicts throughout the seventeenth century. Kieft's War in the 1640s destroyed multiple Native and European settlements throughout New Netherland, including in western Long Island, across the river from the project location (Brodhead 1853; Anonymous 1882; Cantwell and Wall 2001). Documentary evidence suggests that a Native village, Rechewanis (USN: 06101.000542), approximately two kilometers (1.25 miles) southwest of the project location on Manhattan Island, was occupied by the Reckgawawancs until at least 1669 (Bolton 1922). Between martial hostilities, disease, and European encroachment of land, however, Native American populations declined and were forced to migrate out of present-day New York City. By the end of the seventeenth century, most Native American groups had left Manhattan, the Bronx, and Long Island.

In 1664, the Dutch-controlled colony surrendered to English rule. New Amsterdam was renamed New York, while Great Barent Island and Little Barent Island became Great Barn Island and Little Barn Island, respectively (Anonymous 1882:8; Stokes 1922; American Scenic Historic Preservation Society 1923; Historical Perspectives, Inc. 2000; Schuldenrein et al. 2008). The Mayor of New York, Thomas Delavall, was granted Ward's and Randall's islands in 1668 for livestock grazing (Stokes 1922). New York County was created in 1683 by an act of the General Assembly, by which both islands were included within the boundary of the county; when New York City was chartered in 1691, the islands became part of the city (Brodhead 1853; Hoffman 1862; Stokes 1922; Historic Perspectives, Inc. 2000). Thomas Parcell purchased Ward's Island in 1687 and in 1767, Thomas Bohanna purchased 140 acres of land on the southern half of the island, on which he constructed a house (Kelby n.d.; Rutsch and Porter 1980; Greenhouse Consultants, Inc. 1994; Schuldenrein et al. 2008). Bohanna's property was sold to Benjamin Hildreth in 1772. The northern half of the island, encompassing the project location, was purchased by John William Pinfold in 1772. At this time, the island contained farm buildings, residential structures, farmland and pastureland, and an orchard (Kelby n.d.; Schuldenrein et al. 2008).

Both Ward's Island and Randall's Island served as a base for British Troops during the Revolutionary War, from where they launched attacks on Continental forces (Gironcourt 1779; American Scenic and Historic Preservation Society 1923; Schuldenrein et al. 2008). When the war broke out, the Continental Army occupied both Ward's and Randall's islands in 1776, establishing smallpox quarantine on Randall's Island. By September of 1776, however, British forces had gained control of both islands, establishing an army hospital on Randall's Island and an army base on Ward's Island (Schuldenrein et al. 2008). The British army retained control of Ward's Island, Randall's Island, Manhattan, Brooklyn, and Staten Island for almost the entirety of the war, from 1776 through 1783; they occupied the Bronx until 1782 (Brodhead 1853).

Ward's Island remained in private ownership through the late eighteenth and early nineteenth centuries. American Army Captain William Lownds purchased the southern portion of Ward's Island from Benjamin Hildreth in 1785, after the end of the war. Lownds established a quarry on the island, in addition to maintaining the farmland and orchard that had been there previously (Kelby n.d.; Schuldenrein et al. 2008). The northern half of the island appears to have remained under the ownership of John Pinfold until 1806, when the entirety of Ward's Island was purchased by Jasper and Bartholomew Ward, after whom the island is named. The Ward brothers attempted to develop a farming community on the island, selling parcels of land off to potential farmers. In an effort to make the island more appealing, they established roads as well as a bridge in 1807 to connect the island to 114th Street in Manhattan (Kelby n.d.; Schuldenrein et al. 2008). Farming on the island did not take hold, however, and the Ward brothers instead established a cotton mill on the northwest side of the island in 1811 (Schuldenrein et al. 2008). The bridge was destroyed by a storm in 1821 and was not rebuilt; as a result, the cotton business, which had already been weakened by the economic impact of the War of 1812, failed and the island became largely abandoned until the mid-nineteenth century (J. H. Colton & Co. 1836; City of New York 2019).

The abandonment of Ward's Island after the 1820s opened the land up for the establishment of public institutions beginning in the mid-nineteenth century and continuing through the present-day. In 1848, the newly formed Commissioners of Emigration purchased 121 acres of land on the west side of Ward's Island to establish the State Emigrant Refuge, the Verplank State Hospital, and associated services, including a nursery, an insane asylum, chapels, and physician residences (Richmond 1872: 551-556). The Refuge and Hospital were formally opened in 1866. These institutions served immigrants landing in New York at Castle Garden (now Battery Park) who were refused entry into New York City because they were identified as requiring medical attention, psychiatric treatment, or were determined "likely to become a future charge" and required rehabilitation (Richmond 1872: 553). Able immigrants living in the Refuge worked in the farm fields and orchards that provided food for the institutions and was sold to the surrounding boroughs. As of 1872, approximately 14,000 immigrants per year were taken in on Ward's Island (Richmond 1872: 556).

During the 1850s, both Ward's Island and Randall's Island became the locations of two potter's field burial grounds, when the New York City Council decided to relocate remains from the overcrowded pauper's field in downtown Manhattan (Bahde 2006; Shuldenrein et al. 2008). Initially, a potter's field was established on Randall's Island, which was documented to be south of the nursery hospital and north of the current project location, across Little Hell Gate. The size and shallow soils of the site, however, were deemed inadequate to accommodate the anticipated number of burials that would be required over time (Governors of the Alms House 1850). As a result, 69 acres of land on Ward's Island were purchased by the City of New York in 1852 for the new potter's field, which was labeled as the City Cemetery (Governors of the Alms House 1853: xii). According to the Commissioners of Public Charities and Corrections and the Governors of the Alms House annual reports, between 1,000 and 4,000 individuals who died each year were buried at the City Cemetery on Ward's Island, and approximately 100,000 graves were transferred to the cemetery from the pauper's cemetery on 4th Avenue and

49th Street in downtown Manhattan (Governor of the Alms House 1853: 132; Governor of the Alms House 1854: 112; Governor of the Alms House 1859: 99; Lossing 1884: 668). The burial ground was likely in use until 1868, when Hart's Island was designated as the new location of the potter's field.

The potter's field on Ward's Island is not identified on historic maps; however, according to a historic description of the location, the potter's field was likely situated approximately 500 meters (1,640 feet) south of the project location on an elevated landform at the southeastern tip of the island. The potter's field may have been situated at or adjacent to the site of the mid- to late nineteenth-century Inebriate Asylum and Homeopathic Hospital buildings, near where the present-day Hell Gate Bridge connects Ward's Island and Long Island (New York Times 1855; Schuldenrein et al. 2008, 2012). A survey conducted at the possible location of the potter's field did not identify any evidence of the presence of individual grave shafts, larger grave trenches, human remains, or coffin hardware, but instead noted numerous episodes of historic fill deposition, landscape modification, and surface and subsurface disturbances related to nineteenth- and twentieth-century construction (Schuldenrein et al. 2012). As a result, the location of the nineteenth-century potter's field on Ward's Island has not been field verified and is only documented in contemporary written historic sources (Governors of the Alms House 1853, 1854, 1859; New York Times 1855; Lossing 1884).

Additional institutions were established on Ward's Island during the mid- to late nineteenth century. An inebriate asylum was constructed on the southeast side of Ward's Island between 1866 and 1868, south of the current project location. In 1872, the asylum was converted into a Homeopathic Hospital to serve as a rest home for disabled Civil War veterans (Schuldenrein et al. 2008). The separate lunatic asylum, established at the center of the island, became the location of the New York State Asylum for the Insane for male patients during the 1880s. After Ellis Island opened in 1892, the buildings and hospital of the State Emigrant Refuge became part of the New York State Asylum for the Insane. The asylum was taken over by the New York State Department of Mental Hygiene and became the Manhattan State Hospital for the Insane in 1899 (City of New York 2019). Construction on the NRHP-eligible Ward's Island Viaduct (USN 06101.007333), Little Hell Gate Bridge (USN 06101.007334), and Hell Gate Bridge (USN 06101.007332) were completed in 1917 (DOT FRA 1977).

Infrastructure developments on Ward's Island boomed during the twentieth century, catalyzed by New York City's Department of Parks and Recreation under the aegis of Robert Moses and funding by the Works Progress Administration (WPA). Construction of the NRHP-eligible Robert F. Kennedy (formerly Triborough) Bridge (USN 00501.000964, USN 06101.008523, and USN 08101.000051) to connect Manhattan, Queens, and the Bronx through Randall's Island and Ward's Island began in 1929. The bridge opened in 1936 (City of New York 2019; Historic Perspectives, Inc. 2000). In addition to constructing the bridge, the City Parks Department developed the islands during the 1930s to become a recreational park area, with a stadium on Randall's Island and multiple parks across both landforms (City of New York 2019; Historic Perspectives Inc. 2000). Infilling of Little Hell Gate, the waterway separating Randall's Island, Ward's Island, and Sunken Meadow, began during the 1930s as part of the recreational development project, eventually joining all three landforms into one island (City of New York 2019). Structures associated with the nineteenth-century Homeopathic Hospital were destroyed during development of land on the south side of Ward's Island by the City Parks Department through the WPA in 1938 (Schuldenrein et al. 2008).

The Ward's Island WWTP, encompassing the current project location, opened in 1937. While it was the second waste water treatment facility to open in New York City, it was the first large-scale sewage treatment facility in the city, operating at a capacity of 190 million gallons a day (OPRHP 2017). It was determined eligible for the NRHP as the Ward's Island Waste Water Pollution Control Plant Building District (USN 06101.019283) in 2017 (OPRHP 2017). The Ward's Island WWTP Boiler Building (USN 06101.019282), situated within the project location, was also constructed circa 1937 and is considered to be an NRHP eligible contributing element to the building district (OPRHP 2019).

The Manhattan State Hospital for the Insane was ordered to shut down in 1943, but was granted a 350 million dollar bond in 1954 to stay open and construct three new buildings on the west side of the island. By the 1950s and 1960s, most of the original buildings that were part of the Manhattan State Hospital for the Insane were torn down and rebuilt at their present-day locations (Schuldenrein et al. 2008). The original building of the late nineteenth-century New York State Asylum for the Insane, south of the current project location, was demolished and replaced by a rehabilitation center, homeless shelter, and multiple support facilities (Schuldenrein et al. 2008). The Manhattan State Hospital was renamed the Manhattan Psychiatric Center in 1979. The Ward's Island WWTP remains in use today, serving the western section of the Bronx and the upper east side of Manhattan. The WWTP boiler building was decommissioned in 1985 (AECOM 2009).

Historic Map Review

The proposed project location is situated in the center of Randall's and Ward's islands, approximately 0.4 kilometers (0.25 miles) northwest of the East River and 0.2 kilometers (0.13 miles) southeast of the Little Hell Gate salt marsh. A seventeenth-century historic map suggests that the vicinity of the project location was undeveloped at that time and that, if any structures were present on the island, they were located south of the APE (Vinkeboons 1639). Revolutionary War-era maps of the vicinity of New York City document British occupancy of Ward's Island, Harlem, the Bronx, and Long Island (Figures 6 and 7; Le Rouge 1776; von Ewald 1979 [n.d.]).

Throughout the nineteenth century, the project location appears to have been relatively undeveloped, although other parts of Ward's Island experienced development. By 1811, roads are depicted on the island, as well as three structures, and the

"Ward's Bridge," connecting it to Manhattan Island (Figure 8; Bridges and Maverick 1811). The three structures are located at the northwest corner, northeast edge, and southern edge of the island. The northeastern-most road passed through the southwest portion of the project location and appears to at least partially run along the current alignment of C Road (see Figure 8; Bridges and Maverick 1811). None of the documented structures are depicted within the vicinity of the project location. The Ward brothers' cotton factory is documented on the western side of the island on Randel's 1821 map of New York City, along with nine additional structures across the island (Figure 9). None of the 1821 map-documented structures appear in the vicinity of the project location. Although the Ward's Bridge was destroyed by a storm in 1821, it still appears on the map (see Figure 9; Randel 1821). The Ward's Bridge is no longer documented on the 1836 historic map of New York City (J.H. Colton & Co. 1836). The cotton factory building is still documented at this time, but many of the structures depicted across the island in 1821 are not depicted on the 1836 map (J.H. Colton & Co. 1836).

Structures related to the State Emigrant Refuge are documented on the west and the southwest side of the island on the 1851 coastal survey map of Hell's Gate (Figure 10; Survey of the Coast of the United States 1851). Seven structures, "Lyon's Dock," and what appears to be a farm or an orchard are depicted on the east coast of the island in 1851, within the present-day Ward's Island WWTP. None of these buildings, however, appear to be situated within the vicinity of the project location, which remained undeveloped land (see Figure 10; Survey of the Coast of the United States 1851). The J.H. Colton & Company's 1857 map and Lloyd's 1864 map of New York City do not depict structures in the vicinity of the project location on the east side of Ward's Island, but they do document additional development of the State Emigrant Refuge on the west side (J.H. Colton & Co. 1857; Lloyd 1864). One unlabeled structure, possibly a reservoir pond, is documented near the project location in 1867 and it appears that, compared to the 1851 coastal survey map, more of Ward's Island had been separated into individual parcels by 1867 (see Figures 10 and 11; Survey of the Coast of the United States 1851; Dripps 1867). By 1873, structures associated with the Inebriate Asylum and the Lunatic Asylum are documented in the southern and central portions of Ward's Island, respectively (Figure 12; Beers 1873). The structure documented proximate to the project location in 1867 is likely the reservoir pond that appears west of the project location in 1873 (see Figures 11 and 12; Dripps 1867; Beers 1873). The location of the Ward's Island potter's field or City Cemetery is not documented on any historic maps.

An 1879 birds eye view drawing of New York City documents multiple structures and additional roads across Ward's Island associated with the State Emigrant Refuge, hospital, and asylums, in addition to multiple smaller structures on the east side of the island, likely within the boundaries of the present-day WWTP (Galt & Hoy 1879). An 1879 map indicates that between 1873 and 1879, the Inebriate Asylum was renamed the Homeopathic Hospital and, by 1879, two reservoirs were present on the island, one west of the project location and one farther south (Figure 13; G.W. Bromley & Co. 1879). No changes are visible on 1879 and 1885 maps that document Ward's Island (see Figure 13; G.W. Bromley & Co. 1879; Robinson & Pidgeon 1885).

Early twentieth-century historic maps indicate that the only change to Ward's Island between 1885 and 1901 was the addition of more roads between institutional buildings and docks on the coastline of the island; the project location appears to still be relatively undeveloped at the turn of the twentieth century (Rand McNally & Co. 1901). By 1908, however, a surface car rail line between the Bronx and Long Island is documented passing adjacent to the western edge of the project location (Figure 14; Rand McNally & Co. 1908). This rail line coincides with the current alignment of the NHRP-eligible Ward's Island Viaduct and New York Connecting Railroad (USN 06101.007333) (see Figures 3 and 14; Rand McNally & Co. 1908). Additionally, the 1908 historic map depicts an expansion of the road system across the island, including at least three new roads within the present-day Ward's Island WWTP, two of which passed through the southwest corner of the project location along part of the current alignments of C Road and 2nd Drive (see Figure 14; Rand McNally & Co. 1908). The viaduct, roads, and structures associated with the Manhattan State Hospital, Homeopathic Hospital, and the old buildings associated with the State Emigrant Refuge are visible in a 1924 aerial photograph of Ward's Island (Figure 15; Tuttle 1924). No structures or development outside of roads and the viaduct are visible in the vicinity of the project location in the 1924 aerial photograph (see Figure 15; Tuttle 1924).

According to mid-twentieth-century aerial photographs, infilling activities north and east of the project location had connected Ward's Island to Sunken Meadow by 1954 (NETR 1954). The Robert F. Kennedy (formerly Triborough) Bridge, constructed between 1929 and 1936, is visible in mid-twentieth-century aerial photographs, passing west of the Manhattan State Hospital building in the center of the island and east of the former State Emigrant Refuge buildings on the west side of the island (NETR 1954). The building of the Homeopathic Hospital at the southeast corner of the island is no longer visible by this time. Furthermore, the Ward's Island WWTP and the boiler building within the project location, both of which were constructed between 1924 and 1937, are visible in a 1954 aerial photograph between the Ward's Island Viaduct and the East River (NETR 1954). The current alignments of 2nd Drive, 3rd Drive, C Road, F Road, and the roundabout at the intersection of C Road and 2nd Drive are visible within the project location in the 1954 aerial photograph. The areas adjacent to the project location that currently contain the electrical substation west of 2nd Drive and the circular tanks north of F Road, were open and grass-covered in 1954 (NETR 1954).

No changes are visible within the project location between 1954 and 1966, although more infilling between Sunken Meadow and Ward's Island is visible in the 1966 aerial photograph (NETR 1954, 1966). An aerial photograph from 1966 indicates that the Manhattan State Hospital building south of the project location had been demolished and the present-day structures of the Odyssey House George Rosenfeld Center for Recovery and the Clark Thomas Men's Shelter are visible (NETR 1966). Two newly constructed buildings associated with the Manhattan State Hospital are present east

of the Triborough Bridge in 1966, at the location of the former State Emigrant Refuge. By 1974, infilling was complete and Randall's Island, Ward's Island, and Sunken Meadow had all coalesced into the present-day Randall's and Ward's Island landform (NETR 1974). The wastewater treatment plant visibly expanded between 1966 and 1974, including the construction of the circular digester tanks north of the project location (NETR 1966, 1974). The Manhattan State Hospital complex west of the project location appears to be complete by 1974, as does the recovery facility, homeless shelter, and associated buildings south of the project location (NETR 1974).

According to aerial photographs, no visible changes occurred to the project location or the island between 1974 and 1980 (NETR 1974, 1980). East Road, which passes southwest of the boiler building within the project location, and the electrical substation currently situated between 2nd Drive and the Ward's Island Viaduct west of the project location, were constructed between 1980 and 1995 (NETR 1980, 1995). Open areas northeast of the project location appear to have become storage areas for the WWTP by 2006 (NETR 1995, 2004, 2006). Between 2011 and 2013, the fuel oil storage tanks located within the project location at the northeast corner of the WWTP boiler building were constructed (NETR 2011, 2012, 2013). Pedestrian sidewalks were constructed along 2nd Drive and C Road within the project location between 2013 and 2015 (NETR 2013, 2015).

Cultural Resources Surveys and Archaeological Site File Review

A review of OPRHP site files was conducted to identify registered archaeological sites in or adjacent to the APE that are listed in or eligible for listing in the NRHP. A one-mile search radius was used to identify registered archaeological sites and previously completed cultural resources surveys near the APE.

A review of OPRHP's Cultural Resource Information System (CRIS) indicated that no previously-identified archaeological sites are located within the APE. Six archaeological sites are located within a one-mile radius of the APE (Table 2). Three of the sites are prehistoric in nature, all of which had been documented during the late nineteenth and early twentieth centuries during the development of Manhattan (A06101.000541), Queens (A08101.000099), and the Triborough Bridge in the Bronx (A00501.000027). Two of the sites, A06101.000541 and A08101.000099, were described as shell middens, and a point cache was recovered from site A06101.00541. Site A06101.000027 was described as a possible Late Woodland to Historic period Native American campsite, containing multiple hearths with shell pits and prehistoric ceramics. Three of the sites are historic, two of which contained human remains. Site 06101.012137, the location of the Manhattan Psychiatric Center Historic Burials, is the closest archaeological site to the APE and the only archaeological site documented on Ward's Island. The remains of 20 individuals buried in coffins, dating to between circa 1900 and circa 1950, were found in what used to be the front lawn of the Manhattan State Hospital for the Insane, during installation of a water line. Site 06101.019103 (17NR00106) is the NRHP-listed site of the late seventeenth- through late eighteenth-century Harlem African Burial Ground. Site 06101.018571 is the documented historic cemetery site of the Second Reformed Low Dutch Church of Harlem, now the Second Collegiate Reformed Church located at Lenox Avenue and 123rd Street; this site was not documented to contain human remains.

Table 2: Archaeological sites within one mile of the APE.

NYSOPRHP #	Additional Site #	Distance and Direction from APE in Meters (m) and Feet (ft)	Time Period	Site Type
06101.012137	--	333 m (1,093 ft) SW	ca. 1900-1950	Historic Burials
A06101.000541	--	1,070 m (3,510 ft) NW	Unknown Prehistoric	Shell Midden; Point Cache
A00501.000027	NYSM# 5475	1,210 m (3,970 ft) NE	Late Woodland; Historic Native American	Campsite
06101.018571	--	1,430 m (4,692 ft) NW	Late 17th to Late 19th Centuries	Historic Church Cemetery Site
06101.019103	17NR00106	1,570 m (5,151 ft) NW	ca. 1667-1856	Historic with Human Remains
A08101.000099	--	1,627 m (5,338 ft) SW	Unknown Prehistoric	Shell Midden

APE - Area of Potential Effects
NYSOPRHP # - New York Office of Parks, Recreation, and Historic Preservation file number

A review of OPRHP's CRIS indicated that no cultural resources surveys have previously been conducted within or adjacent to the APE. Thirteen previous surveys have been completed within a one-mile radius of the APE. Eight of the surveys are identified on OPRHP's CRIS, while five additional surveys were found that are not recorded in CRIS, but pertain to Randall's and Ward's Island (Table 3).

Nine of these surveys were Phase IA or Stage IA assessments and did not involve subsurface testing (Bergoffen 2001a, 2001b; Geismar 1992; Historical Perspectives, Inc. 2005, 2012; Schuldenrein et a. 2008, 2012; TRC Garrow Associates 2000; AKRF, Inc. 2017). Three of the surveys were Phase IB or Stage IB surveys during which subsurface testing was

Table 3: Cultural resources surveys within one mile of the APE.

NYSOPRHP #	Survey Type	Project	Year	Company	Distance and Direction from APE m (ft)	Identified Archaeological Resources	Citation
92SR61535	Stage IA	Harlem River Yard Transportation and Distribution Center	1992	Joan H. Geismar, PhD	1,150 m (3,773 ft) N	None	Geismar 1992
--	Phase III	Archaeological Investigations of the Chilled Water Line, Manhattan Psychiatric Center, Ward's Island	1994	Greenhouse Consultants, Inc.	333 m (1,093 ft) SE	06101.012137	Greenhouse Consultants, Inc. 1994
00SR52297	Phase IA	Charles B. Poletti Power Project, Astoria	2000	TRC Garrow, Associates	1,375 m (4,511 ft) E	None	TRC Garrow Associates 2000
--	Phase IA	Randall's Island Cultural Resource Assessment	2000	Historical Perspectives, Inc.	253 m (830 ft) N	None	Historical Perspectives, Inc. 2000
--	Phase IA	Triborough Bridge Rehabilitation, Randall's and Ward's Island	2001	Celia J. Bergoffen, PhD	530 m (1,740 ft) SW	None	Bergoffen 2001b
--	Phase IA	Randall's Island Water Park	2001	Celia J. Bergoffen, PhD	1,193 m (3,914 ft) N	None	Bergoffen 2001a
03SR53309	Stage IB	East River Plaza, Manhattan, NY	2003	Historical Perspectives, Inc.	830 m (2,723 ft) NW	None	Historical Perspectives, Inc. 2003
05SR61050	Phase IA	Reconstruction for the Harlem River Drive Over Ramp	2005	Historical Perspectives, Inc.	1,380 m (4,528 ft) NW	None	Historical Perspectives, Inc. 2005
08SR61222	Phase IA	Randall's Island Sports Field Development	2008	Geoarchaeological Research Associates, Inc.	30 m (98 ft) W	None	Schuldenrein et al. 2008
11SR60888	Phase IB	Proposed Waterfront Pathway, Randall's Island	2011	Geoarchaeological Research Associates, Inc.	253 m (830 ft) N	None	Schuldenrein et al. 2011
12SR61080	Phase IA	Randall's Island Living Shoreline Recreation Area	2012	Historical Perspectives, Inc.	871 m (2,858 ft) N	None	Historical Perspectives, Inc. 2012
--	Phase IB	Randall's Island Sports Field Development	2012	Geoarchaeological Research Associates, Inc.	30 m (98 ft) W	None	Schuldenrein et al. 2012
17SR00898	Phase IA	Second Avenue Subway	2017	AKRF, Inc.	1,425 m (4,675 ft) W	None within one mile of APE	AKRF 2017

APE - Area of Potential Effects
-- Survey not listed on CRIS
NYSOPRHP # - New York Office of Parks, Recreation, and Historic Preservation file number

conducted (Historical Perspectives, Inc. 2003; Schuldenrein et al. 2011, 2012). One mitigation survey was conducted to remove the 20 burials identified at site 06101.012137, southeast of the current APE (Greenhouse Consultants, Inc. 1994). The only archaeological resources identified during the previous surveys were the burials in site 06101.012137.

Previous Disturbance

The soil series mapped within the APE includes both Urban Land and Greenbelt-Urban Land complex, both of which suggest previous disturbance of the natural, prehistoric, and historic ground surface. Unstratified, pre-cultural glacial till underlies the disturbed and human transported fill in a majority of the APE (see Figure 5; NRCS 2019). Soil bores taken at various locations on Randall's and Ward's Island indicate that the landscape of the island has experienced extensive landform manipulation, likely since the nineteenth century. Much of the area across the island and close to the APE is situated upon a fill cap that overlies pre-cultural glacial till or, occasionally, bedrock (Historical Perspectives Inc., 2012; Schuldenrein et al. 2011, 2012). Multiple, discrete episodes of historic and modern fill deposition were identified within the fill cap across the landscape, reaching depths ranging between 1.1 and 3.5 meters (3.6 and 11.5 feet) below grade in the vicinity of the APE. The depth of fill and lack of intact prehistoric or historic soils suggests that nineteenth- and twentieth-century infilling and landscape modification may have completely removed any previously existing prehistoric surfaces and removed or extensively disturbed historic surfaces in areas examined outside the APE (Schuldenrein et al. 2011, 2012). Only one of these soil bores was excavated close to the APE, approximately 75 meters (246 feet) to the west, and was the only soil bore to reveal a buried but disturbed historic surface, which lay below 1.1 meters (3.6 feet) of fill. The transition to the subsoil below the historic surface contained fill gravels, indicating disturbance of the historic surface and the subsoil (Schuldenrein et al. 2012). None of the documented soil bores were taken within the APE. The presence of a historic surface, albeit one that has been visibly disturbed, under multiple fill episodes in the vicinity of the APE indicates the potential for historic surfaces to be present at least one meter (3.3 feet) beneath the surface within the APE.

Historic maps indicate that aside from roadways, the landscape within and adjacent to the APE was relatively undeveloped until the early twentieth century. The only map-documented feature within or adjacent to the APE during the nineteenth century is a road depicted passing through the southwest corner of the project location along the current alignment of C Road beginning in 1811 (see Figures 8, 9, 11-15). Twentieth-century development within the APE associated with the Ward's Island WWTP, however, may have disturbed any historic sites associated with the early roadway or agricultural land within and around the APE.

Building and transportation construction associated with the Ward's Island WWTP and the Ward's Island Viaduct, documented by historic maps, aerial imagery, and NRHP eligibility assessment forms at the OPRHP, indicate that extensive ground disturbance occurred throughout the APE during the twentieth century. The concrete pilings for the Ward's Island Viaduct lie approximately 7 meters (23 feet) west and northwest of the APE, likely causing disturbance to the western edge of the APE (see Figures 3, 4, and 15). Construction of the boiler building, 1st Drive, 2nd Drive, C Road, East Road, and F Road within the APE and the pump and blower building, storage tanks, and electrical substation adjacent to the APE additionally serve to document disturbance within the APE (NETR 1954, 1966, 1974, 1980, 1995, 2004, 2006, 2011, 2012, 2013, 2015). Google Earth images of the APE along C Road and 2nd Drive indicate the presence of multiple buried utility lines passing beneath the pavement leading to the pump and blower building, crossing the proposed gas line installation route within the APE (Google Earth 2017). Furthermore, the WWTP's current steam heating system is supplied by the Manhattan Psychiatric Center boiler plant through two, 10-inch underground supply pipes that run to the WWTP administration building, then pass through the APE to reach the boiler building before being directed to the pump and blower building (AECOM 2009).

PHASE I FIELD INVESTIGATION

Research Goals and Design

The purpose of the Phase IA literature review and archaeological sensitivity assessment was to assess the APE's sensitivity for archaeological resources that are potentially eligible for listing in the NRHP that may be impacted by the proposed project.

Field Methods and Procedures

The Phase IA literature review and archaeological sensitivity assessment methods included background research, a site reconnaissance to examine existing conditions, examination of historic maps to assess previous ground disturbance, and an assessment of archaeological sensitivity. Pedestrian surface reconnaissance was conducted to assess the potential for significant archaeological resources within the APE, consistent with New York Archaeological Council standards (1994). The assessment of archaeological sensitivity considers environmental setting, background research, and prior disturbance within the APE to identify locations likely to contain prehistoric and historic archaeological sites.

Results and Sensitivity Assessment

Pedestrian surface reconnaissance was completed on February 11, 2019. The APE is located in an urban setting surrounded by transportation and industrial structures associated with the Ward's Island WWTP (Photographs 1-11; Figures 16 and 17). The Ward's Island WWTP boiler building is located within the northeastern portion of the APE and will be the

connection point for the proposed gas line installation (see Photographs 5, 10, and 12). Circular digester tanks are situated northeast of the APE (see Photographs 3, 7, and 11). The Ward's Island WWTP pump and blower building is situated approximately 7.6 meters (25 feet) southeast of the APE, the facilities of which extend deeper than six meters (20 feet) below grade (see Figure 16). An electrical substation is located adjacent to the northwest edge of the APE, southwest of the boiler house (Photograph 13). The Ward's Island Viaduct is situated approximately 7 meters (23 feet) west of the APE, paralleling the western edge of the APE (see Photographs 2, 4, and 6; see Figures 3 and 16).

A majority of the APE is covered by impervious surfaces: asphalt covers the APE along C Road, 2nd Drive, East Road, 1st Drive, F Road, and poured concrete covers the ground surface around the boiler house and west of 1st Drive, at the proposed location of the new contractor laydown area (see Photographs 1-11; see Figures 16 and 17). The proposed gas line installation begins at the WWTP entrance gate at the intersection of C Road and Hell Gate Circle, where it will tie in to a gas main passing west of the APE under Hell Gate Circle (Photographs 14-15). A proposed gas meter will be installed in the unpaved area southwest of the entrance gate, adjacent to the paved road and pedestrian walkway (Photograph 16). While the location of the proposed meter station is unpaved, electrical utility boxes and multiple man-holes are situated within the area, suggesting subsurface utility disturbances (see Photograph 16). From the entrance gate, the proposed gas line will travel southeast for approximately 28 meters (92 feet), then turn and travel east-northeast for approximately 27 meters (88.6 feet), then turn and travel northeast for approximately 68 meters (223 feet), before turning west-northwest and traveling for approximately 32.6 meters (107 feet) to reach the proposed gas connection along the southwest wall of the boiler building (see Photographs 1-5, 15, and 17). The proposed gas line installation will take place entirely beneath the pavement of C Road, 2nd Drive, and East Road. Multiple buried utilities were observed crossing the APE, denoted by linear patches in the pavement of 2nd Drive and C Road (see Photographs 1, 13, 18, and 19). The newly proposed contractor laydown area will be situated entirely on the pavement at the southwest corner of the boiler house and will not encroach on the unpaved, open area west of the electrical substation (Photographs 20-21).

The surface reconnaissance indicated that the majority of the APE is covered with asphalt and concrete, some of which overlays buried utility lines serving the WWTP pump and blower building. The currently inactive WWTP boiler house, an NRHP-eligible contributing structure to the Ward's Island Waste Water Pollution Control Plant Building District, is situated within the APE, and additional structures are situated adjacent to the APE. The only unpaved area within the APE, measuring approximately 0.04 hectares (0.1 acres) in area, is the location of the proposed metering station southwest of the entrance gate. Electrical utility boxes and multiple manholes were observed within the grassy area. According to nineteenth-century historic maps, the roadway passing through the APE was likely situated within or adjacent to this unpaved section. The proximity of the concrete pilings for the Ward's Island Viaduct to the western edge of the APE, including the proposed location of the gas meter station, may indicate early twentieth-century disturbance to the APE during construction of the viaduct. No prehistoric or historical artifacts were observed on the ground surface during the pedestrian survey, nor were there any depressions on the unpaved ground surface indicative of grave shafts or any other surface indications of the presence of buried human remains.

Based on the disturbance evidenced by the presence of pavement, visible utilities, and the presence of structures within and adjacent to the APE, paved sections of the APE are assessed with low sensitivity for the presence of prehistoric and historic archaeological remains. The unpaved section of the APE southwest of Gate B is assessed with low to moderate sensitivity for prehistoric and historic resources, due to the identification of a buried, but disturbed historic surface in a soil bore taken west of the APE, the map-documented presence of an early nineteenth-century roadway passing through the unpaved area, and the presence of an electrical utility box and manholes observed during the field visit. Additionally, due to the discovery of unmarked historic burials south of the APE and the historically documented presence of an unmarked and unmapped potter's field on the island, the entire APE is assessed with a moderate sensitivity for the presence of human remains (see Figures 16 and 17).

Conclusions and Recommendations

RGA, Inc. completed a Phase IA literature search and archaeological sensitivity assessment for the proposed gas line installation for the Ward's Island WWTP boiler building in the Borough of Manhattan, City of New York, New York County, New York. The APE includes approximately 0.52 hectares (1.28 acres) within the western boundary of the NRHP-eligible Ward's Island Waste Water Pollution Control Plant Building District (USN 06101.019283) and encompasses the Ward's Island WWTP boiler building (USN 06106.019282), an NRHP-eligible contributing element to the district. Historic maps and background research indicated that the APE was undeveloped agricultural fields prior to the twentieth century. Early nineteenth-century maps document that a road passed through the southwest corner of the APE, at the approximate current alignment of C Road within the WWTP. While the Ward's Island Viaduct (USN 06101.007333) was constructed proximate to the western edge of the APE in 1917, no structures are mapped within the APE or visible in aerial photographs prior to the opening of the WWTP in 1937. Historic maps, aerial images, and background research indicate that several episodes of building construction and various other ground disturbances occurred throughout the APE during the twentieth and twenty-first centuries.

A majority of the APE is covered by impermeable surfaces and is traversed by underground utility lines and steam pipes. A small, triangular, unpaved area is situated within the southwestern corner of the APE, southwest of Gate B. The area is likely disturbed by underground utilities associated with an above ground electrical box and manhole covers observed within the grass, as well as by the early twentieth-century construction of the Ward's Island Viaduct and the WWTP. No

soil bores were taken within the APE, although a review of soil boring logs published in previous archaeological surveys of the island confirm the presence of deep, episodic fill deposits across Randall's and Ward's Island, ranging between 1.1 and 3.5 meters (3.6 and 11.5 feet) below grade within the vicinity of the APE, that overlie pre-cultural glacial till or bedrock (Historical Perspectives, Inc. 2012; Schuldenrein et al. 2011, 2012). It is likely that historic landscape modification prior to filling episodes disturbed any prehistoric or historic cultural surfaces that may have been present. Only one soil bore, placed approximately 75 meters (246 feet) west of the APE, documented the presence of a buried but disturbed historic surface, indicating the possibility that historic strata are present below the APE; however, extensive disturbances related to construction within the APE would have likely damaged any intact surfaces. No previously-identified archaeological sites are present within or adjacent to the APE, and only one archaeological site, consisting of unmarked early twentieth-century historic burials associated with the Manhattan State Hospital for the Insane (06101.012137), is documented on Ward's Island. No prehistoric sites are recorded on the island. The unmarked nineteenth-century Ward's Island potter's field is thought to be located on a rise at the southeast tip of the island, approximately 500 meters (1,640 feet) south of the APE. The burials recovered from site 06101.012137 are not considered to be associated with the Ward's Island potter's field.

Based on these considerations, the Phase IA literature review and archaeological sensitivity assessment concludes that paved portions of the APE possess low archaeological sensitivity for prehistoric and historic cultural resources due to extensive twentieth- and twenty-first-century ground disturbance. The unpaved section of the APE southwest of Gate B is assessed with low to moderate sensitivity for prehistoric and historic resources, due to the presence of a buried, but disturbed historic surface in a soil bore taken west of the APE, the map-documented presence of an early nineteenth-century roadway that passed through the unpaved area, and the presence of an electrical utility box associated with buried utilities and multiple manholes observed in the grass during the field visit. Additionally, due to the discovery of unmarked historic burials south of the APE and the documented presence of an unmarked and unmapped potter's field on the island, the entire APE is assessed with a moderate sensitivity for the presence of human remains. Phase IB testing is recommended in the unpaved portion of the APE that is assessed with low to moderate prehistoric and historic archaeological sensitivity, away from the electrical utility box and buried utility lines. Archaeological monitoring is recommended during any ground disturbing activities within the APE associated with the gas line installation, due to the moderate sensitivity for ground disturbance to encounter human remains.

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FIGURES

Figure 1: U.S.G.S. Map
(from 2016 U.S.G.S. 7.5' Quadrangle: Central Park, NY-NJ).

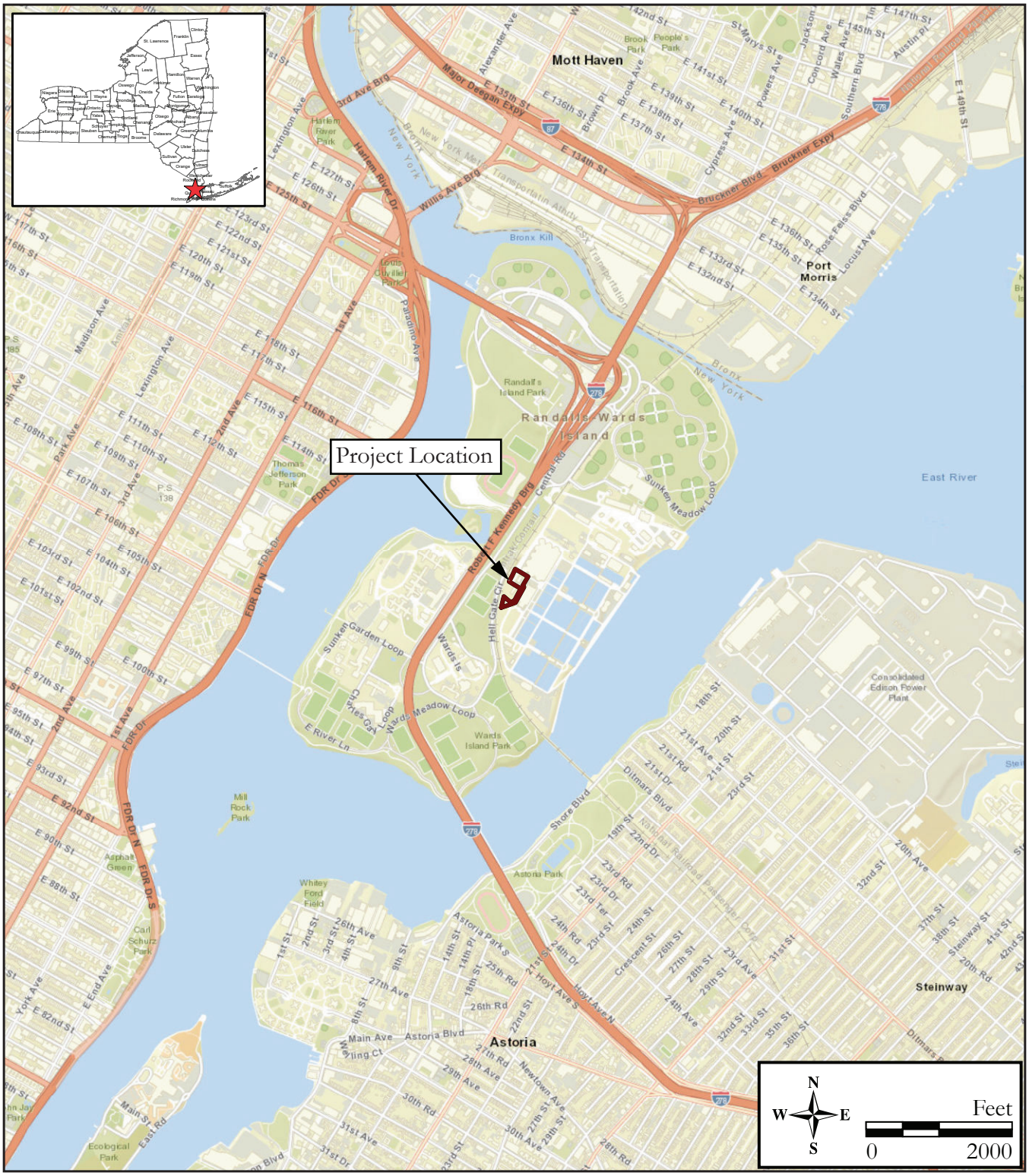

Figure 2: County Map
(World Street Map, ESRI 2013).

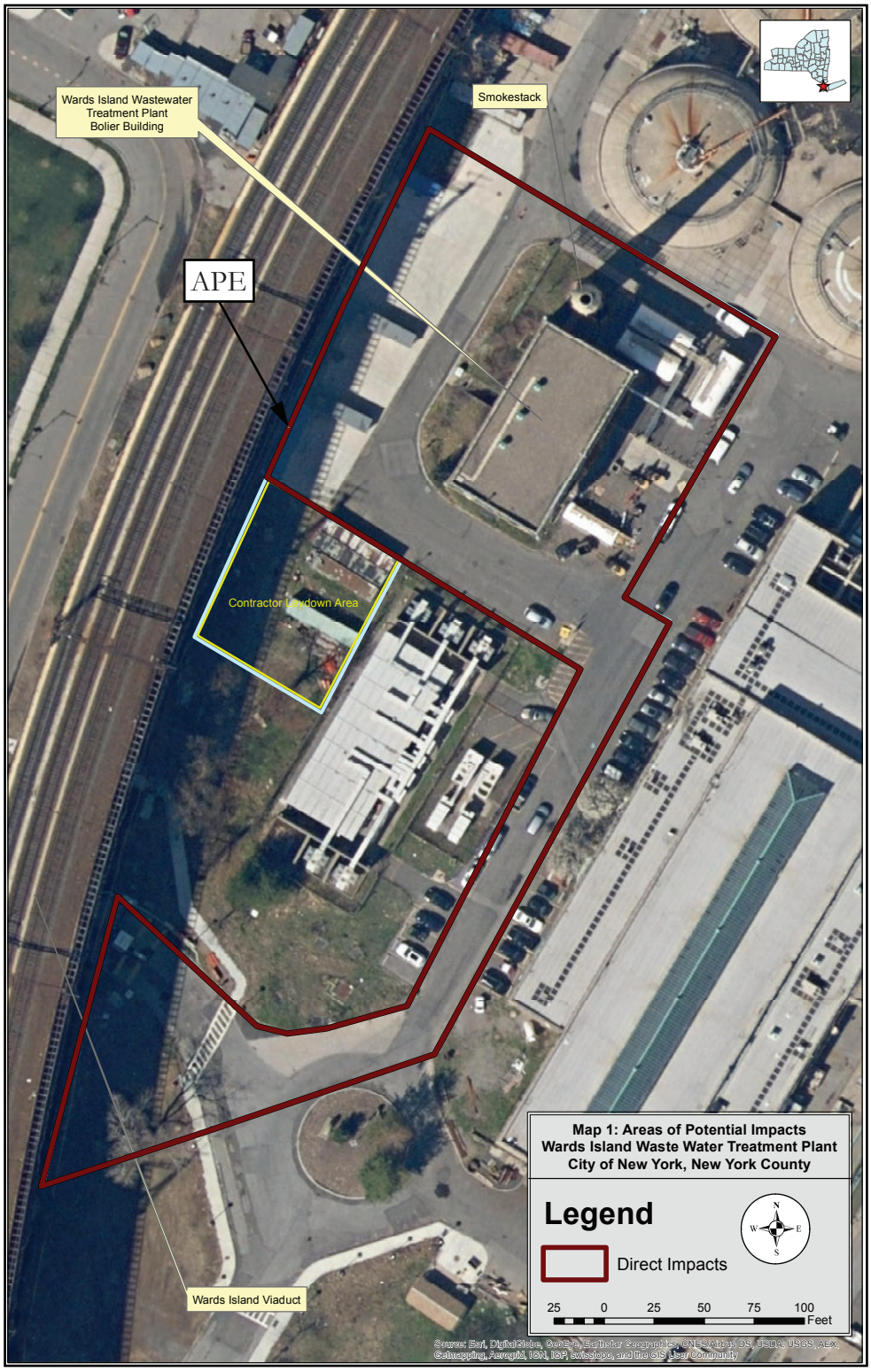

Figure 3: Area of Potential Effects, Ward's Island Waste Water Treatment Plant (NYPA 2018).

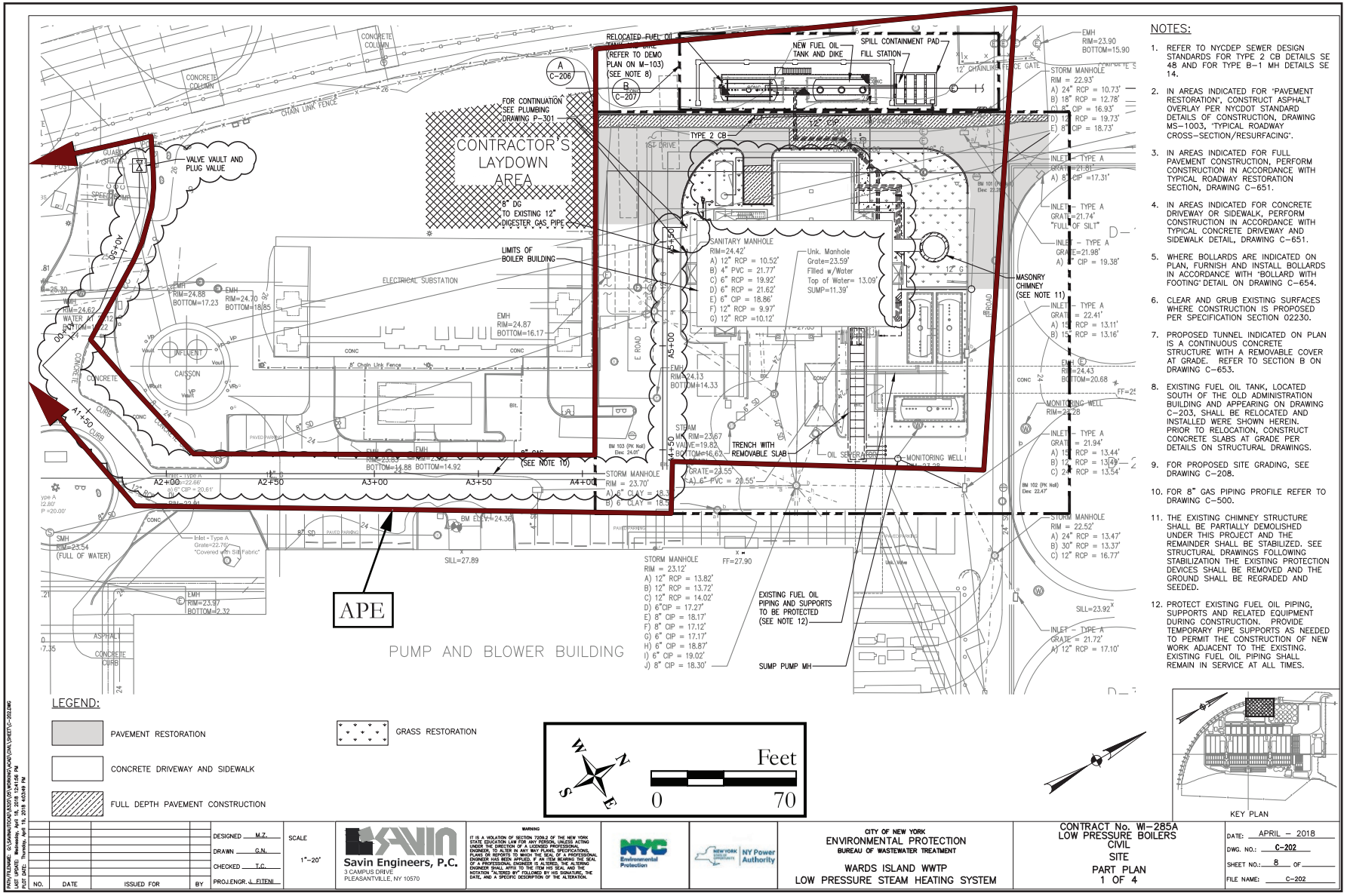

Figure 4: Ward's Island Waste Water Treatment Plant Low Pressure Steam Heating System showing the APE (Savin Engineers, P.C., 2018).

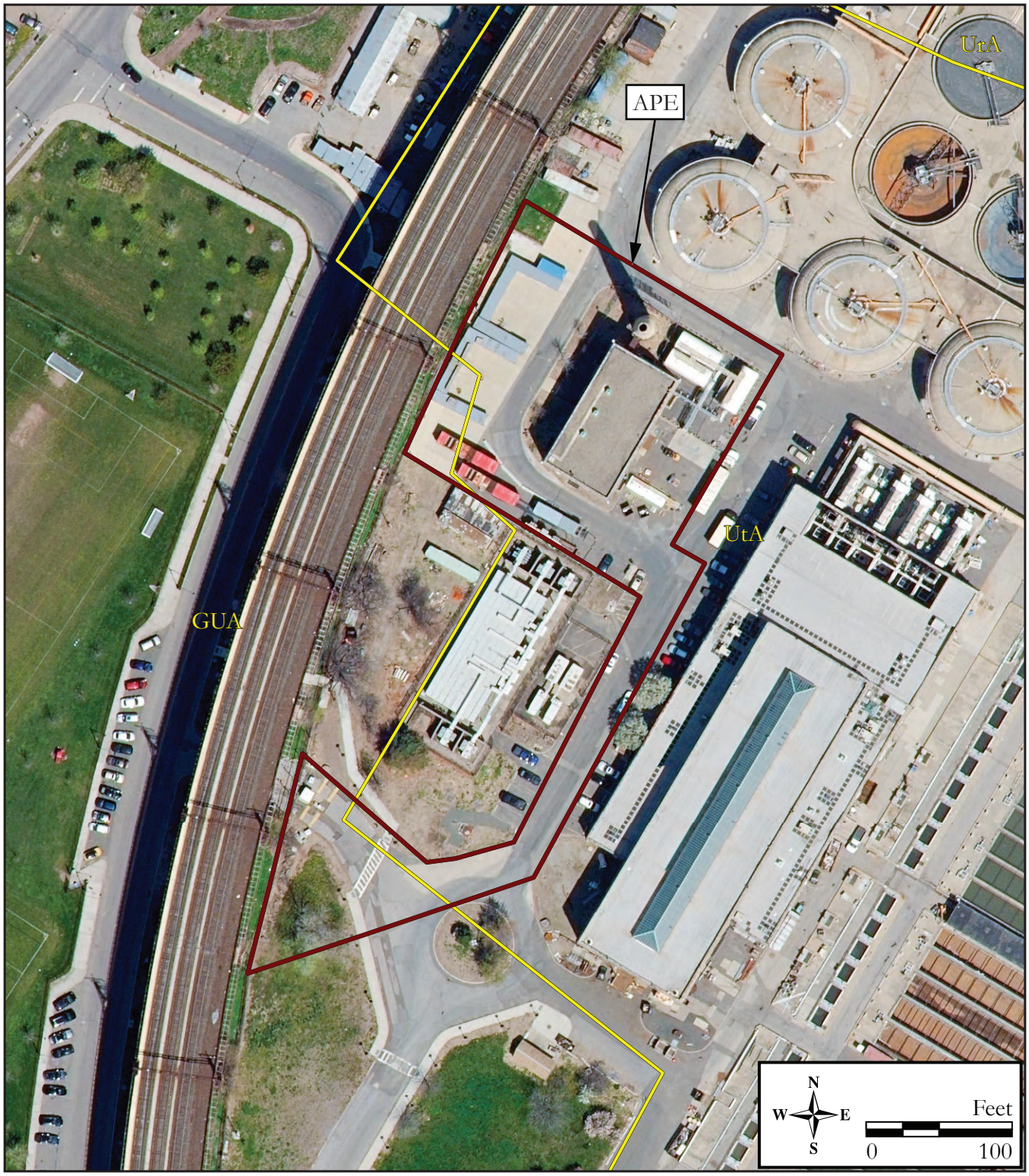

Figure 5: Soils Map
(from 2008 Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic [SSURGO]).

Figure 6: 1776 Georges-Louis Le Rouge, *Attaques de l'Armee des Provinciaux dans Long Island du 27 Aoust 1776; Dessine de l'Isle de New-York et des Etats.*

Figure 7: 1979 [n.d.] Johann von Ewald, *Plan of the Post at Harlem.*

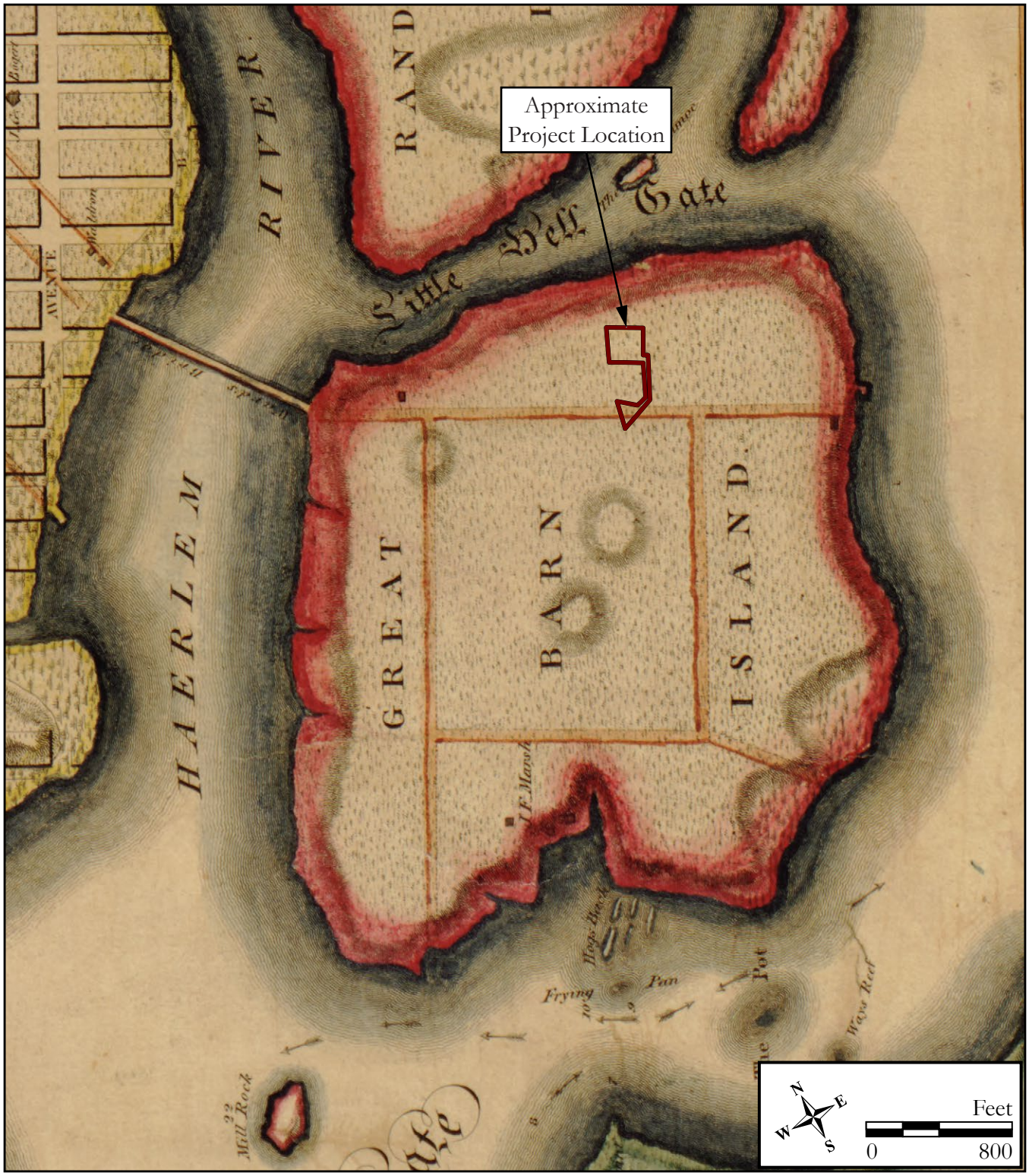

Figure 8: 1811 W. Bridges and P. Maverick, *Map of the City of New York and Island of Manhattan, as Laid out by the Commissioners Appointed by the Legislature, April 03, 1807.*

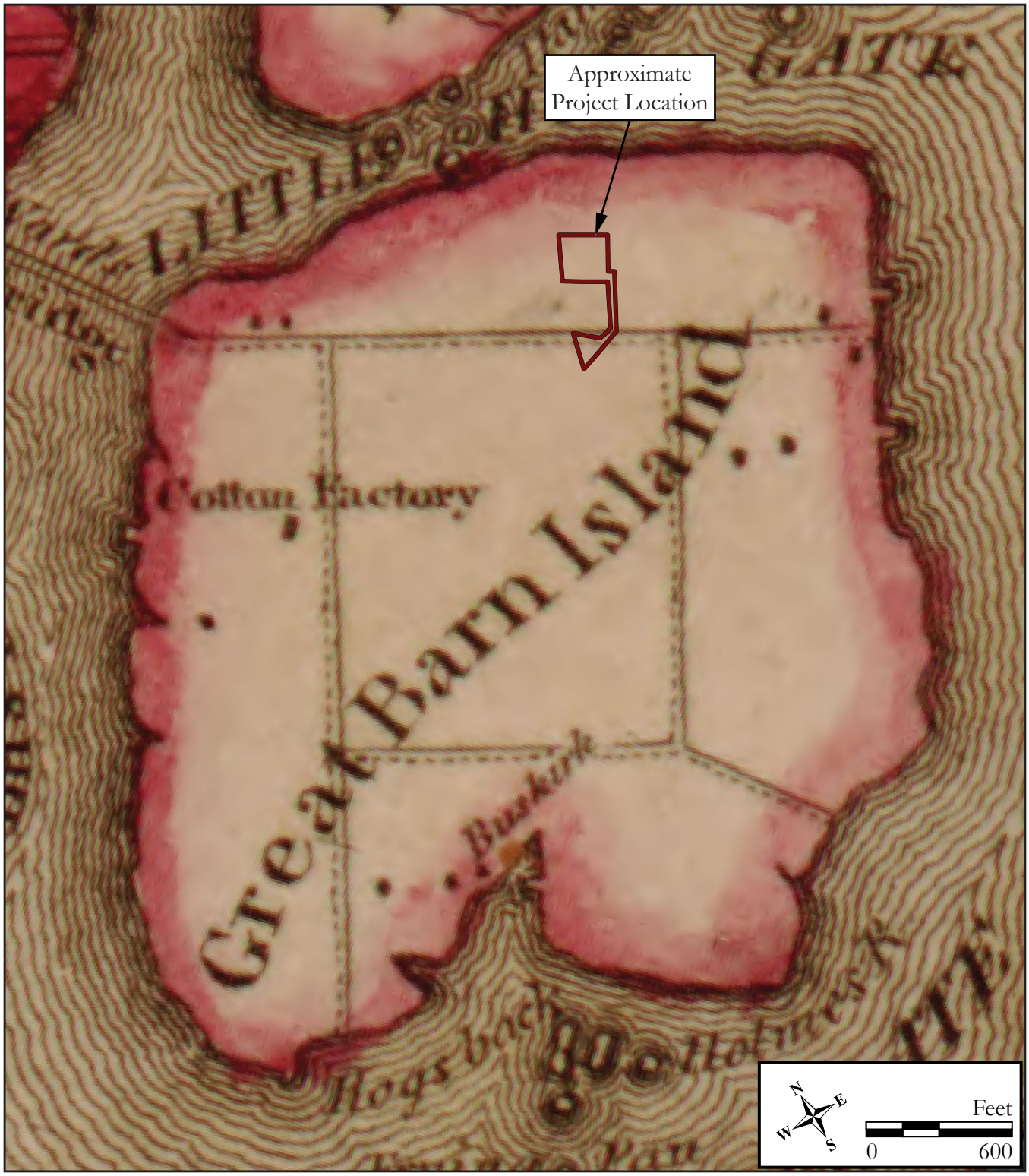

Figure 9: 1821 John Randel, *The City of New York as it is Laid out by the Commissioners with the Surrounding Country.*

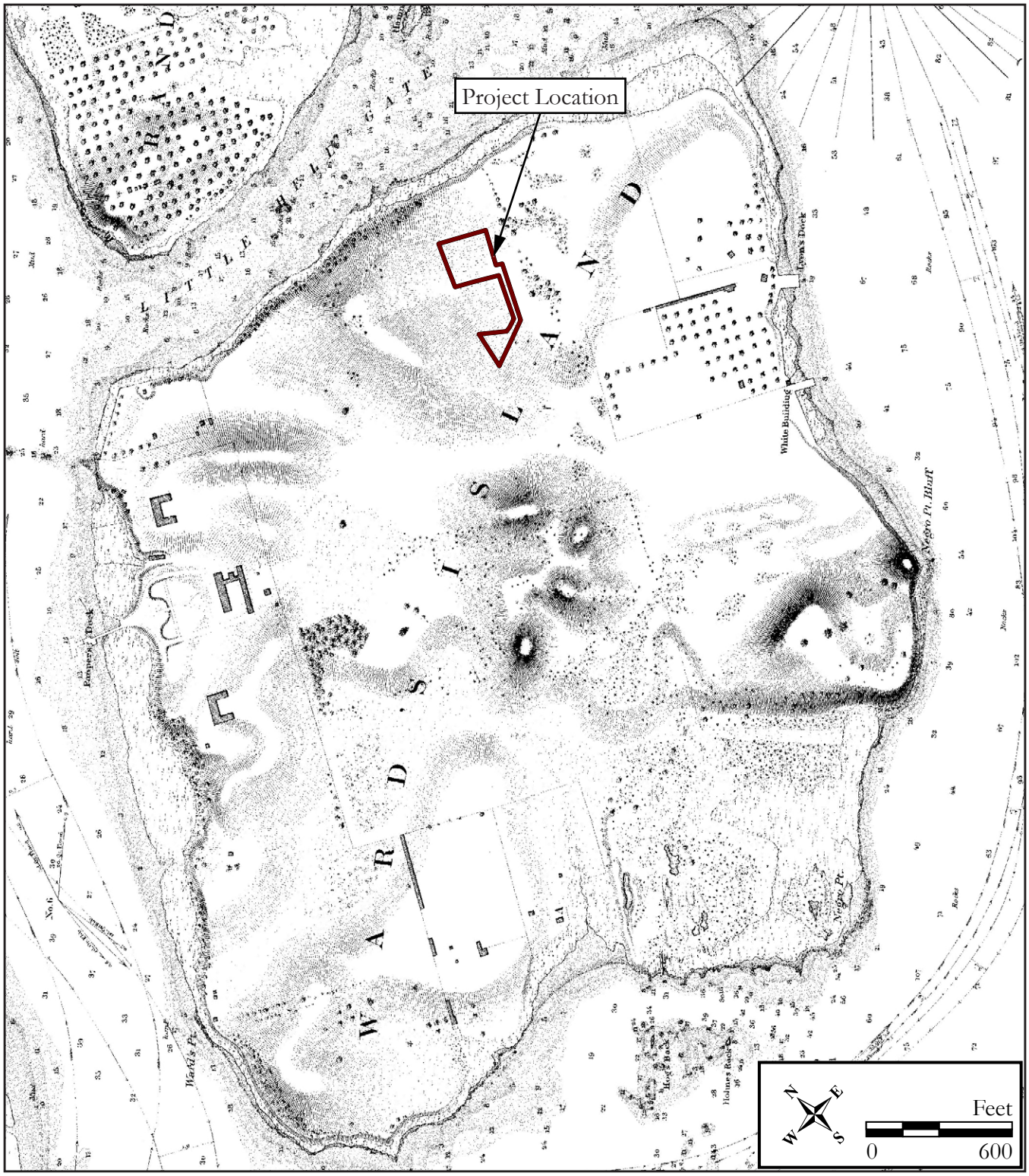

Figure 10: 1851 Survey of the Coast of the United States, *Hell Gate and its Approaches*.

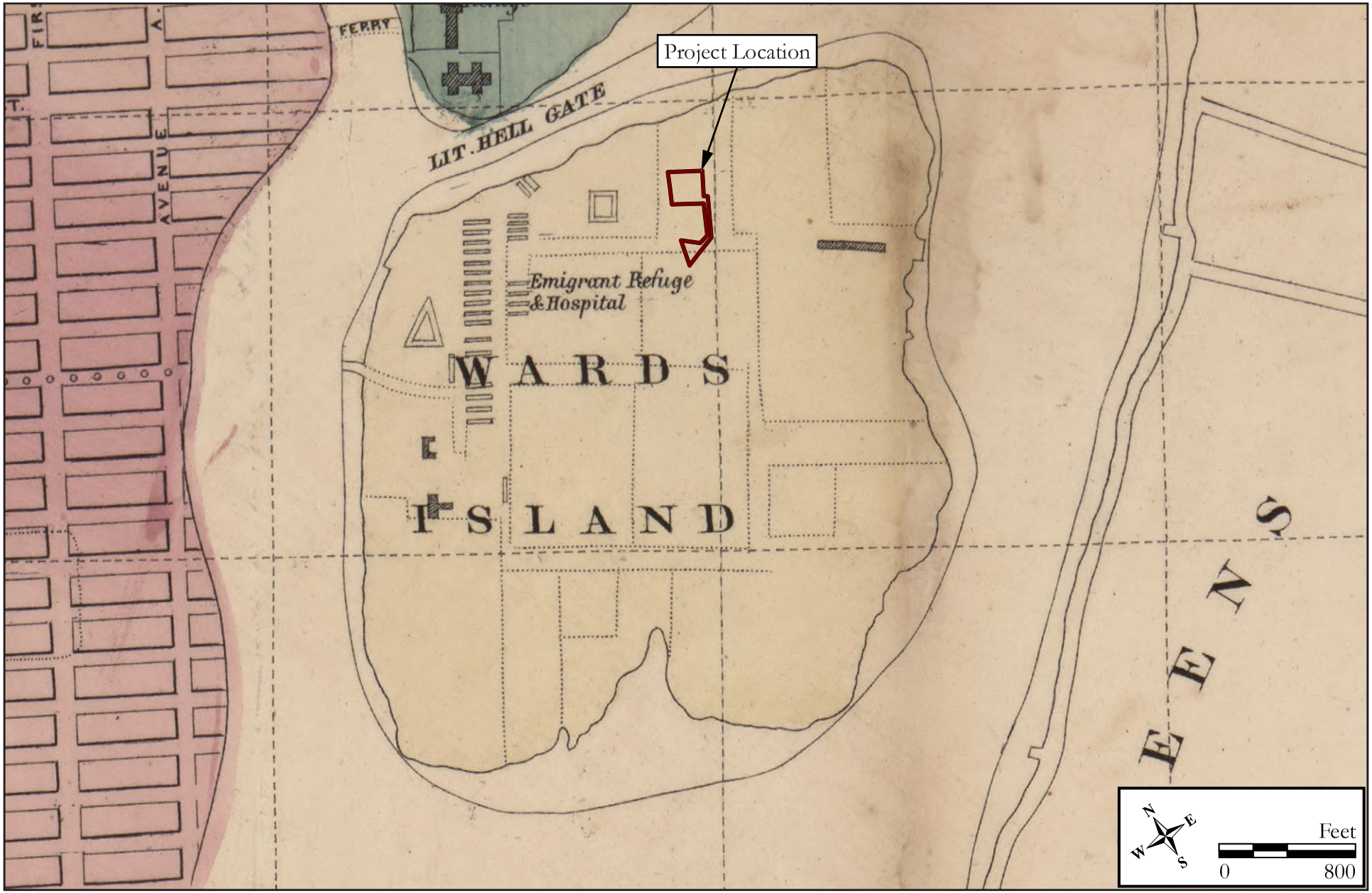

Figure 11: 1867 M. Dripps, *Map of New York and Vicinity*.

Figure 12: 1873 F.W. Beers, *Atlas of Long Island, New York.*

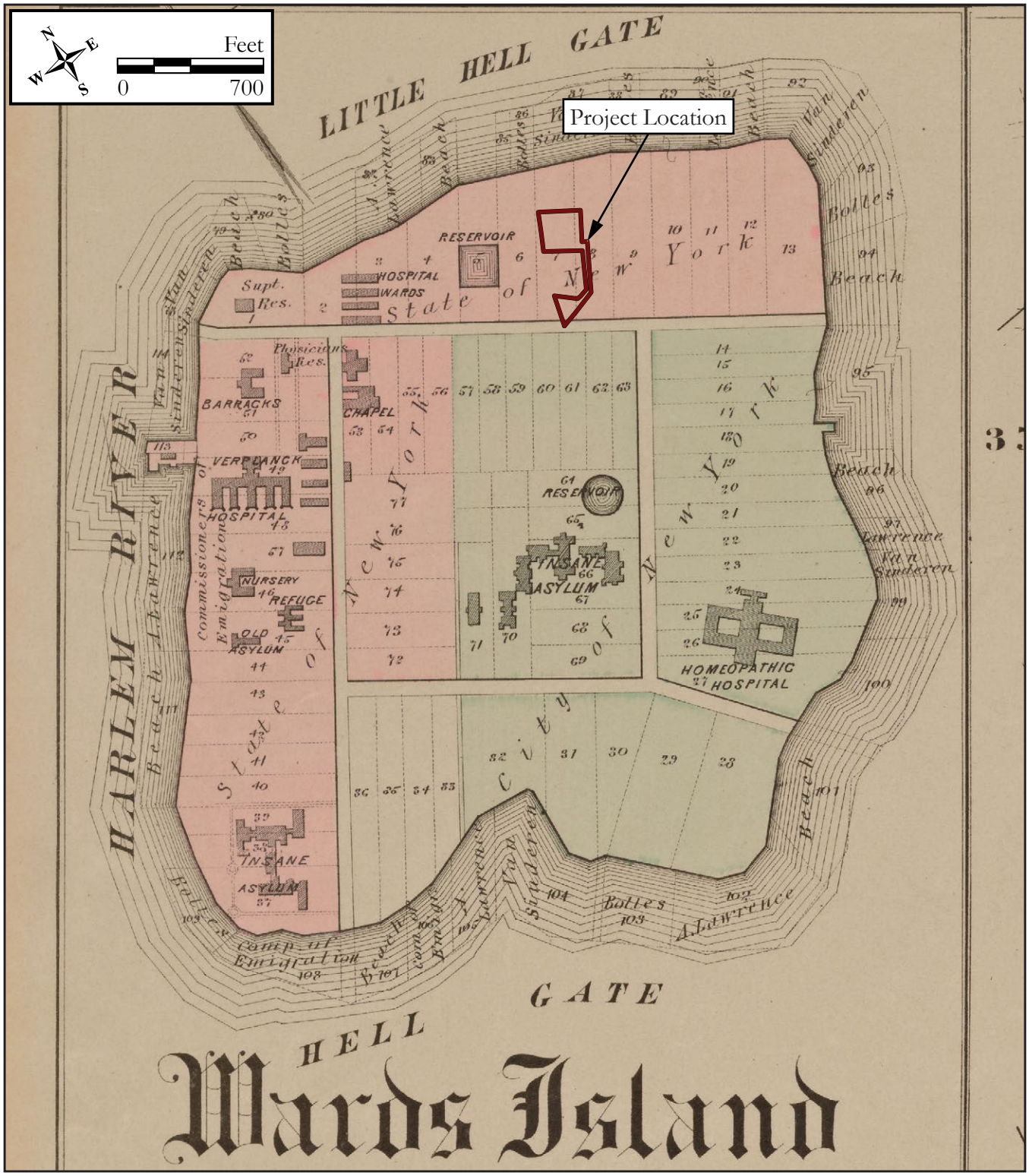

Figure 13: 1879 G.W. Bromley & Company, *Atlas of the Entire City of New York*.

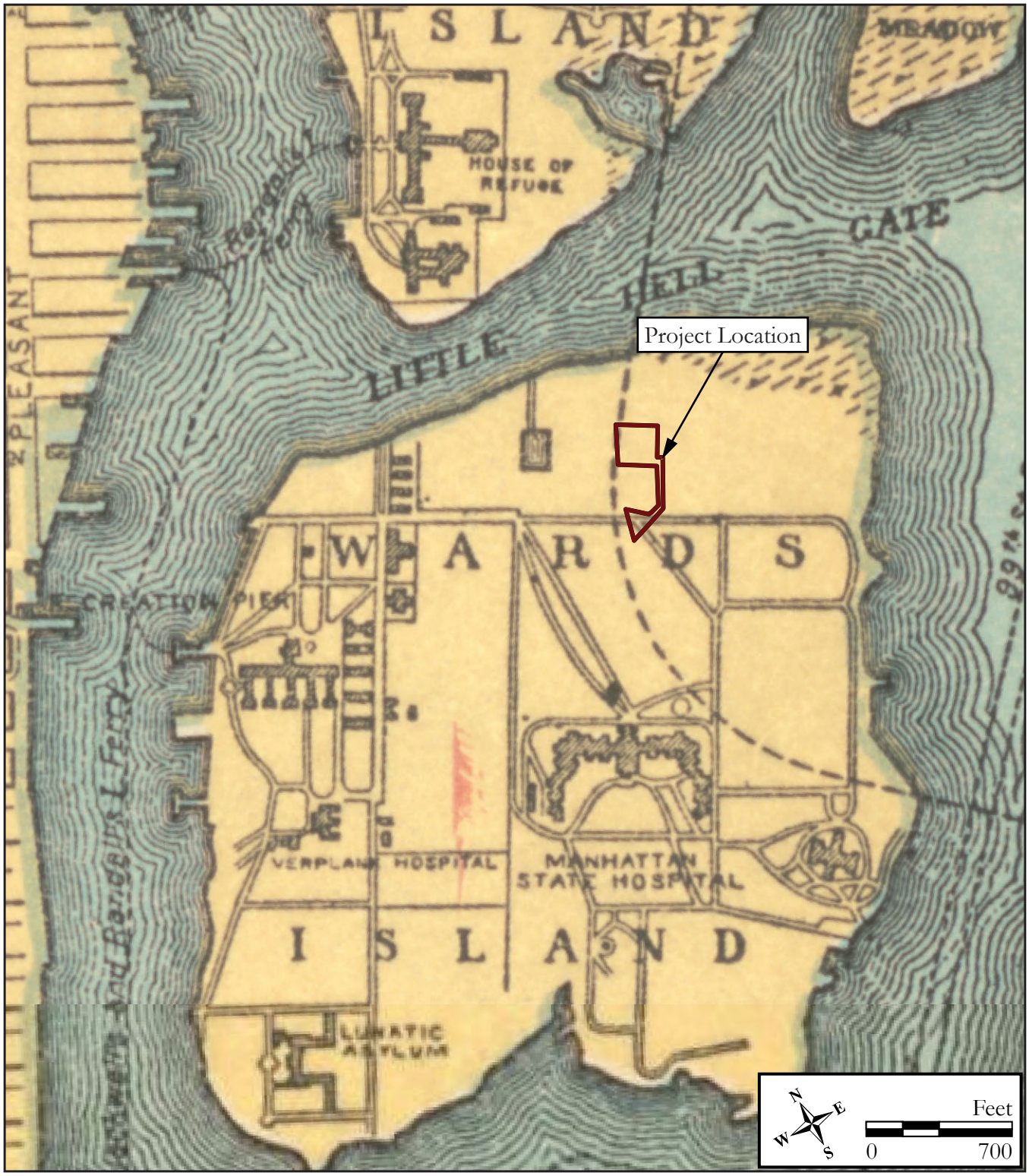

Figure 14: 1908 Rand McNally & Company, *Rapid Transit Map of Manhattan and Adjacent Districts of New York City*.

Figure 15: 1924 Arthur S. Tuttle, *Sectional Aerial Map of the City of New York*.

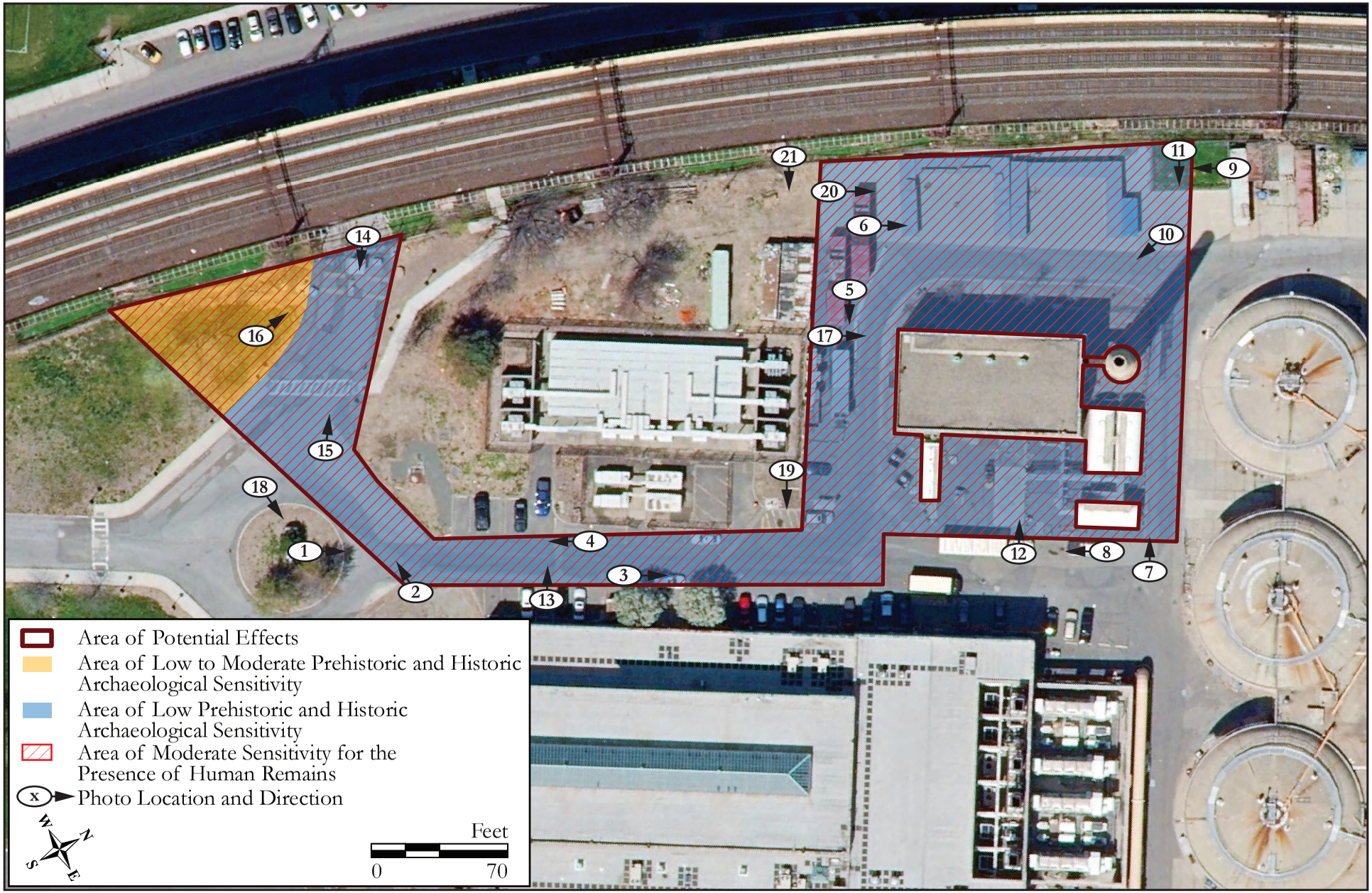

Figure 16: Aerial photograph showing the APE, archaeological sensitivity, and photograph locations and directions (NJGIS Digital Orthographic Imagery 2015; NJDEP Geographic Information Systems).

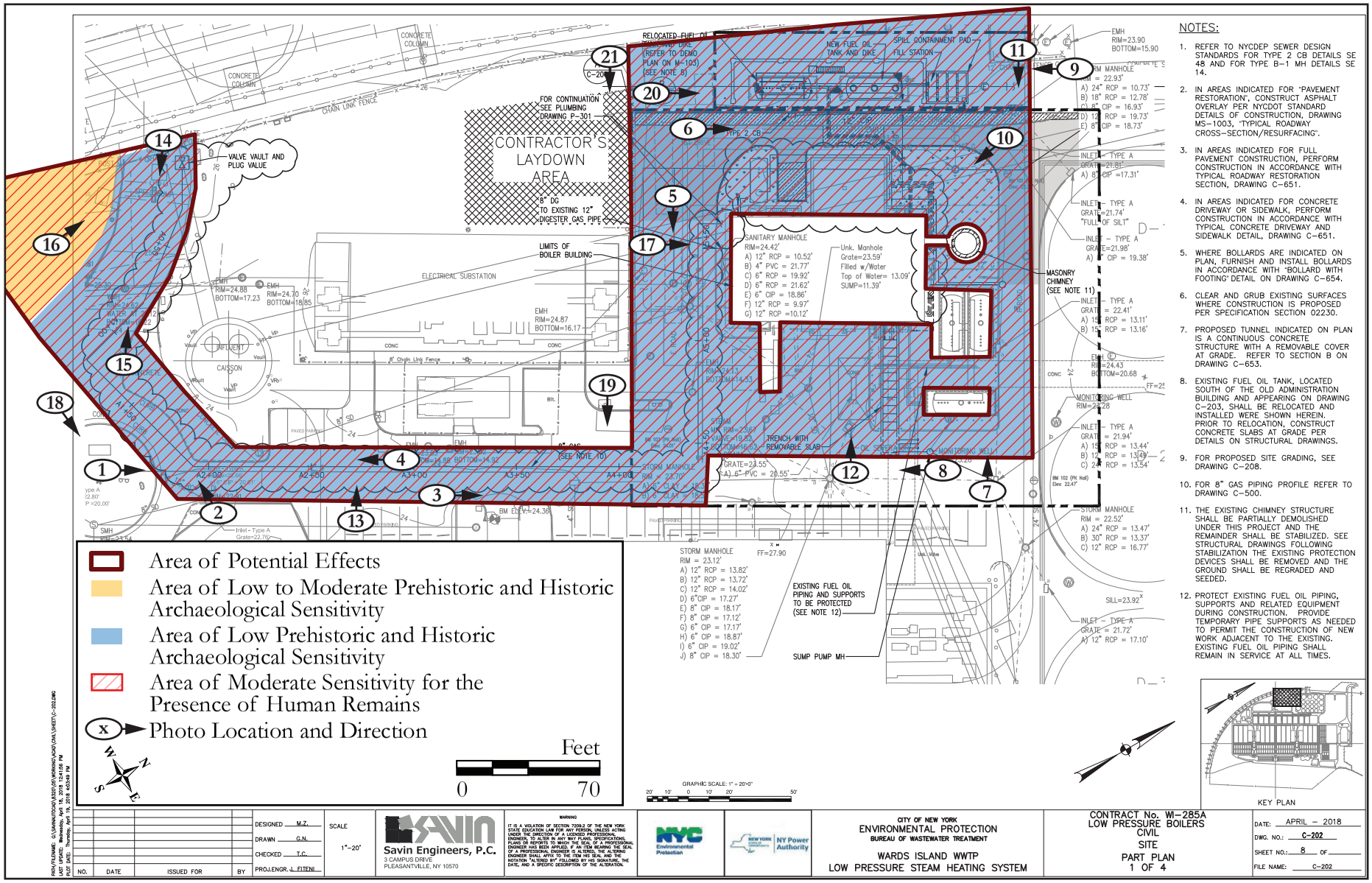

Figure 17: Project plans showing the APE, archaeological sensitivity, and photograph locations and directions (Savin Engineers, P.C., 2018).

PHOTOGRAPHS
(SEE FIGURES 16 AND 17 FOR PHOTOGRAPH LOCATIONS)

Photograph 1: Overview of the APE along 2nd Drive, showing pavement, buried utilities, the boiler building, the pump and blower building to the east of the APE, and the electrical substation to the west of the APE.

Photo view: Northeast

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 2: Overview of southern edge of the APE at the intersection of C Road and 2nd Drive, showing the Ward's Island Viaduct.

Photo view: West

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 3: View of the northeastern portion of the APE along 2nd Drive.
Photo view: Northeast
Photographer: Michelle Davenport
Date: February 11, 2019

Photograph 4: View of the southwestern portion of the APE along 2nd Drive, showing the Ward's Island Viaduct to the west of the APE.

Photo view: Southwest

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 5: View of the APE along East Road at the location where the gas line will connect to the boiler building.

Photo view: Southeast

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 6: View of the northwestern edge of the APE along 1st Drive, showing storage containers and pavement.

Photo view: Northeast

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 7: View of the northeastern edge of the APE along F Road, showing pavement, fuel oil storage tanks within the APE to the southwest and circular storage tanks to the northeast of the APE.

Photo view: Northwest

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 8: Overview of the southeastern edge of the APE along 2nd Drive.
Photo view: Southwest
Photographer: Michelle Davenport
Date: February 11, 2019

Photograph 9: View of the northwestern edge of the APE along 1st Drive, showing storage containers and pavement within the APE, and the Ward's Island Viaduct west of the APE.

Photo view: Southwest

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 10: View of the Ward's Island WWTP boiler building within the northeastern portion of the APE.

Photo view: South

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 11: View of the northeastern edge of the APE along F Road.
Photo view: Southeast
Photographer: Michelle Davenport
Date: February 11, 2019

Photograph 12: View of the Ward's Island WWTP boiler building within the northeastern portion of the APE.

Photo view: Northwest

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 13: View of a buried utility line crossing the APE at 2nd Drive, showing the electrical substation west of the APE.

Photo view: Northwest

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 14: Overview of the APE from Gate B, showing C Road.
Photo view: Southeast
Photographer: Michelle Davenport
Date: February 11, 2019

Photograph 15: View of the APE along C Road, showing Gate B and the unpaved section of the APE to the southwest.

Photo view: Northwest

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 16: View of the unpaved portion of the APE southwest of Gate B, at the proposed location of the gas meter, showing electrical utility box.

Photo view: North

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 17: View of the southwest wall of the WWTP boiler building, showing the proposed location of the gas line connection.

Photo view: Northeast

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 18: View of buried utilities beneath the pavement within the APE at the roundabout connecting C Road to 2nd Drive.

Photo view: East

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 19: View of buried utility line passing across 2nd Drive within the APE.
Photo view: Southeast
Photographer: Michelle Davenport
Date: February 11, 2019

Photograph 20: View of the proposed location of the contractor's laydown area, showing poured cement pavement, storage tanks, and truck parking.

Photo view: Northeast

Photographer: Michelle Davenport

Date: February 11, 2019

Photograph 21: View of the southwestern edge of the proposed contractor's laydown area, showing poured cement pavement, storage tanks, and truck parking.

Note, unpaved area is not part of the proposed laydown area.

Photo view: Southeast

Photographer: Michelle Davenport

Date: February 11, 2019

APPENDIX A: QUALIFICATIONS OF THE PRINCIPAL INVESTIGATOR

CULTURAL RESOURCE CONSULTANTS

MICHELLE L. DAVENPORT
PRINCIPAL INVESTIGATOR, ARCHAEOLOGIST (36 CFR 61)

YEARS OF EXPERIENCE:
With this firm:
2018-Present
With other firms: 5

EDUCATION:
MA 2017
Mississippi State University
Applied Anthropology

BA 2011
Whitman College
Anthropology

PROFESSIONAL TRAINING:
40-hour Hazardous Waste Operations and Emergency Response Supervisor (OSHA 29 CFR 1910.120), November 2018

PROFESSIONAL REGISTRATION:
Register of Professional Archaeologists

PROFESSIONAL SOCIETIES:
American Association of Physical Anthropology

Professional Experience Summary:

Michelle Davenport is an Archaeologist at RGA with experience conducting archaeological field investigations for Phase I-III archaeological surveys, archaeological monitoring, and cemetery delineations. Ms. Davenport has participated in cultural resources surveys prepared in accordance with Section 106 of the National Historic Preservation Act, NEPA, and various municipal and state cultural resource regulations. She has worked on archaeological projects in New York, Vermont, New Jersey, Wisconsin, Iowa, Missouri, Oklahoma, Louisiana, Texas, Arkansas, Kansas, South Carolina, and Mississippi.

Representative Project Experience:

Amboy Bank Old York Business Park Phase I, Bordentown and Mansfield Townships, Burlington County, NJ (Sponsor: GS Realty, Inc.) Principal Investigator for a Phase I survey for proposed commercial warehouse development. Background research identified nineteenth-century structures proximate to the APE. A total of 698 shovel test pits were excavated within the APE. No structural remains were identified. A light, dispersed scatter of historic artifacts were recovered from the plowzone and one prehistoric artifact was recovered from subsoil. The low frequency of historic artifacts and their scattered distribution suggest secondary deposition. Neither the historic scatter nor the prehistoric artifact were considered to be potentially significant archaeological resources. No further survey was recommended.

Allegro Senior Living, Township of Mount Laurel, Burlington County, NJ (Sponsor: Allegro Development Company) Principal Investigator for a Phase IA survey of a proposed assisted living facility. The project was situated adjacent to a nineteenth-century roadway, and contained twentieth-century residential structures. Disturbances and standing water were noted within the APE. Undisturbed areas of the APE were assessed with moderate to high sensitivity for prehistoric archaeological resources. Undisturbed areas within 300 feet of South Church Street were assessed with moderate sensitivity for historic archaeological resources. Phase IB survey was recommended.

Matrix New Brunswick Cemetery, City of New Brunswick, Middlesex County, NJ (Sponsor: City of New Brunswick) Principal Investigator for a Phase IA survey of Pittman Park prior to proposed improvements to the park. The project location encompasses the abandoned Pitman Methodist Episcopal Cemetery (1854-1930s). The site visit identified 12 headstones and one granite plaque associated with the former cemetery. Soil probes indicated that a layer of fill was placed over the cemetery when the park was constructed. A Ground Penetrating Radar survey of the park, avoidance of ground disturbing activities near locations of GPR identified graves, and archaeological monitoring was recommended.

Archaeological Monitoring of the Koch Burial Mounds, Town of Williamsburg, Dodge County, WI (Sponsor: Gold Star Memorial Trail Project) [Affiliation: Commonwealth Heritage Group, Inc.] As Project Archaeologist, monitored the construction of a bike path south of the cataloged boundary and within the uncatalogued boundary of the Koch Mound Group, a group of Late Woodland effigy and conical burial mounds. No disturbances to the mound features or previously unrecorded burials or cultural resources were identified within the uncatalogued portion of the burial site during monitoring. No changes to the cataloged boundary of the site were made.

APPENDIX B: NATIONAL REGISTER OF HISTORIC PLACES CRITERIA

Significant historic properties include districts, structures, objects, or sites that are at least 50 years of age and meet at least one National Register criterion. Criteria used in the evaluation process are specified in the Code of Federal Regulations, Title 36, Part 60, National Register of Historic Places (36 CFR 60.4). To be eligible for inclusion in the National Register of Historic Places, a historic property(s) must possess:

> the quality of significance in American History, architecture, archaeology, engineering, and culture [that] is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

a.) that are associated with events that have made a significant contribution to the broad patterns of our history, or

b.) that are associated with the lives of persons significant in our past, or

c.) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components lack individual distinction, or

d.) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

There are several criteria considerations. Ordinarily, cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register of Historic Places. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a.) a religious property deriving primary significance from architectural or artistic distinction or historical importance, or

b.) a building or structure removed from its original location but which is sig-nificant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or

c.) a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his/her productive life, or

d.) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

e.) a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

f.) a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historic significance, or

g.) a property achieving significance within the past 50 years if it is of exceptional importance. (36 CFR 60.4)

When conducting National Register evaluations, the physical characteristics and historic significance of the overall property are examined. While a property in its entirety may be considered eligible based on Criteria A, B, C, and/or D, specific data is also required for individual components therein based on date, function, history, and physical characteristics, and other information. Resources that do not relate in a significant way to the overall property may contribute if they independently meet the National Register criteria.

A contributing building, site, structure, or object adds to the historic architectural qualities, historic associations, or archeological values for which a property is significant because a) it was present during the period of significance, and possesses historic integrity reflecting its character at that time or is capable of yielding important information about the period, or b) it independently meets the National Register criteria. A non-contributing building, site, structure, or object does not add to the historic architectural qualities, historic associations, or archeological values for which a property is significant because a) it was not present during the period of significance, b) due to alterations, disturbances, additions, or other changes, it no longer possesses historic integrity reflecting its character at that time or is incapable of yielding important information about the period, or c) it does not independently meet the National Register criteria.

APPENDIX C: ANNOTATED BIBLIOGRAPHY

Author:	Michelle L. Davenport, M.A., R.P.A.
Title:	Phase IA Literature Search and Archaeological Sensitivity Assessment, Ward's Island Wastewater Treatment Plant (WWTP) Boiler Building Gas Line Installation, Borough of Manhattan, City of New York, New York County, New York
Date:	March 2019
RGA Database Title:	NYPA Ward's Island Boiler House Gas Line
RGA Project No:	2019-012NY
State:	New York
County:	New York
Municipalities:	Borough of Manhattan
U.S.G.S. Quad:	Central Park, NY-NJ
Drainage Basin:	East River, New York Bay, Atlantic Ocean
Regulation:	Section 106 of the National Historic Preservation Act, New York State Environmental Quality Review Act (SEQRA)
Project Type:	Public Utilities: Water & Sewer
Project Sponsor:	New York Power Authority
Client:	New York Power Authority
Level of Survey:	Phase IA Literature Search and Sensitivity Assessment
Cultural Resources:	Ward's Island Waste Water Pollution Control Plant Building District (USN 06101.019283); Ward's Island Waste Water Pollution Control Plant Boiler Building (USN 06106.019282)