

Phase IA - Documentary Study and Archaeological Assessment for the Hart Island, Bronx (Bronx County), New York – Shoreline Stabilization Project



Prepared for:

City of New York – Department of Corrections
New York

Greenman-Pedersen, Inc. New York,
Montebello, New York

New York State Office of Parks, Recreation and Historic Preservation
Albany, New York

City of New York – Landmarks Preservation Commission
New York, New York

Federal Emergency Management Agency
New York, New York

Prepared by:

Alyssa Loorya, M.A., R.P.A., and Eileen Kao,
Chrysalis Archaeological Consultants, Inc.

Edited by:

Christopher Ricciardi, Ph.D., R.P.A.,
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October 2017 (**REVISED April 2018**)

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MANAGEMENT SUMMARY TABLE

NY SHPO Project Review Number:	17PR02258
Involved City/State/Federal Agencies:	City of New York - Department of Corrections New York State Office of Parks, Recreation and Historic Preservation City of New York – Landmarks Preservation Commission Federal Emergency Management Agency
Phase of Survey:	Phase IA
Location Information:	Hart Island, Bronx, New York Latitude: 40.85303 - Longitude: -73.769415
Survey Area:	Approx. 101 acres (Approx. 1 mile by 0.5 miles)
USGS 7.5 Quad Map:	Flushing, Queens, New York Quadrangle
Archaeological Survey Overview:	Phase IA
Results of Archaeological Survey:	Potential for the recovery of human remain burials Potential for the recovery of nineteenth century features
Recommendation:	Pre-Construction Archaeological survey of North shoreline APE and monitoring along the North and West shoreline APE
Results of Architectural Survey:	
Buildings within Project Area:	0
Buildings adjacent to Project Area	0
Previous N/R Buildings:	0
Eligible N/R Buildings	0
Report Authors:	Alyssa Loorya, M.A., MPhil., R.P.A. Eileen Kao
Report Editor:	Christopher Ricciardi, Ph.D., R.P.A.
Date:	October 2017

MANAGEMENT SUMMARY

On behalf of The City of New York – Department of Corrections (NYC DOC), Greenman-Pedersen, Inc. (GPI), contracted Chrysalis Archaeological Consultants, Inc. (Chrysalis) to produce a Documentary Study and Archaeological Assessment for the Hart Island, New York – Shoreline Stabilization Project. The project area is an island located in Long Island Sound and is considered part of the Bronx (Bronx County), New York.

Currently Hart Island serves as a “Potter’s Field” for the City of New York and is managed through the NYC DOC. Public access is restricted to specific times and access to the Island is via approval of NYC DOC. It has served as a burial island since 1869. The Island was damaged during Superstorm Sandy in October 2012 and this shoreline stabilization project is part of a grant through the U.S. Department of Homeland Security – Federal Emergency Management Agency.

The purpose of this study is to provide a documentary history of the project area, and to assess the impacts of proposed activities within the Area of Potential Effect (APE) to potentially significant cultural resources. More specifically, the goal of this study is to identify the sensitivity of and impact to the APE regarding buried and/or extant cultural resources and human remains. The APE is defined as any area in which proposed construction activities related to the project have the potential to disturb ground surface and in turn possible cultural resources. This study will assess if the site has the potential to contain significant cultural resources that would be impacted by the proposed development of the APE as well as provide a recommendation for further study or mitigation should the potential for disturbance to potential buried cultural resources exist.

All work was conducted in accordance with the National Historic Preservation Act (NHPA) of 1966, as amended, the Advisory Council on Historic Preservation’s “Protection of Historic and Cultural Properties” (36 CFR 800), the New York State Historic Preservation Act (SHPA), New York State Office of Parks, Recreation and Historic Preservation (NY SHPO) guidelines (New York Archaeological Council [NYAC] 1994; 2000; 2002), the (New York) State Environmental Quality Review Act (SEQRA), the (New York) City Environmental Quality Review Act (CEQRA) and the City of New York – Landmarks Preservation Commission (LPC) regulations regarding archaeological investigations.

Based on the results of this study, it has been determined that the project, as currently developed, has the potential to impact human remains that have eroded out of the shoreline and the potential to impact unmarked human burials. It is recommended that a Pre-Construction Archaeological Survey and Archaeological Monitoring occur within portions the project area.

Alyssa Loorya, M.A., R.P.A., Principal Investigator and Eileen Kao authored this report. Matthew Brown, Ph.D., R.P.A., forensic anthropologist, participated in field visits and consulted on the assessment of the project APE. Christopher Ricciardi, Ph.D., R.P.A., edited, on behalf of Chrysalis.

TABLE OF CONTENTS

	<i>Page:</i>
Management Summary	iv
Table of Contents	v
List of Maps, Images, and Tables	vi
Acknowledgements	ix
I. Introduction	1
Project Description	3
Area of Potential Effect (APE)	4
II. Environmental and Geographic Setting	13
III. Historic Context	14
Pre-Contact Period	14
Contact Period	15
Historical Period	15
IV. Previous Cultural Resource Studies	28
V. Current Conditions	29
North APE	29
East APE	36
West APE	39
VI. Proposed Project Impacts	43
VII. Conclusions and Recommendations	45
VIII. References	48
Appendices	
A – Additional Maps	51
B – Additional Images	56
C – Resumes of Key Personnel	66
D – Archaeological Monitoring and Survey Plan, Unanticipated Discoveries Plan, Human Remains Protocols	73

LIST OF MAPS, FIGURES, IMAGES, and TABLES

<i>Title:</i>	<i>Page:</i>
Map 01. USGS New York Flushing Quad	02
Map 02. Area of Potential Effect, North	05
Map 03. Areas of Potential Effect, South	06
Map 04. Soil Map	13
Map 05. <i>Map of the County of Westchester</i> , David H. Burr 1829	16
Map 06. <i>Navigation Chart for Sachem's Head Harbor and Hart and City Island Harbor</i> , United States Coast Survey 1851.	17
Map 07. Hart Island Grave Section Location Map, North Half.	23
Map 08. Hart Island Grave Section Location Map, South Half	24
Map 09. 1884 map showing area to be filled along west shore of Hart Island	26
Map 10. Present-day footprint of Hart Island overlay on an 1836 Survey	27
Map 11. <i>Plans of East Chester, Pelham, and New Rochelle</i> , Frederick W. Beers 1867	52
Map 12. <i>Map of the Borough of the Bronx, City of New York</i> , E. Belcher Hyde Map Company 1900	53
Map 13. USGS New York Harlem Quadrangle (United States Geological Survey 1900).	54
Map 14. USGS New York Flushing Quad (United States Geological Survey 1947).	55
Figure 01. Engineering drawings describing stone revetment construction in the North APE.	07
Figure 02. Engineering drawings describing stone revetment construction in the North APE with mixed planting.	08
Figure 03. Engineering drawings describing repair of dry-laid stone seawall in the West APE.	09
Figure 04. Engineering drawings describing repair of mortared stone seawall In the West and East APE.	10
Figure 05. Engineering drawings describing stone revetment construction in the West APE.	11
Figure 06. Engineering drawings describing repair of mortared stone seawall In the East APE.	12

LIST OF MAPS, FIGURES, IMAGES, and TABLES (continued)

<i>Title:</i>	<i>Page:</i>
Image 01. “ <i>Hart Island, New York, A Station for the Disbandment of the Federal Army</i> ”	18
Image 02. Photograph (1890-1891) taken by Jacob Riis of prisoners conducting burials on Hart Island	21
Image 03. Photograph (1890-1891) taken by Jacob Riis of prisoners conducting burials on Hart Island	21
Image 04. Mass grave on Hart Island September 1990 by Claire Yaffa	22
Image 05. North APE shoreline which exhibits a rocky beach and eroding cliff bank.	29
Image 06. Overview of cliff bank in July 2013 (OCME 2013:2).	31
Image 07. North APE cliff bank, exhibiting steep eroded face.	31
Image 08. Area of North APE exhibiting areas where the face of the cliff has collapsed leaving tree roots exposed	32
Image 09. View of brick structure along north shore, facing south	32
Image 10. View of brick structure protruding from cliff bank, the upper portion of the feature is more than 90% exposed; facing west.	33
Image 11. Multiple disarticulated skeletal elements along the face of the North APE cliff bank	33
Image 12. Partial cranium along the shore of the North APE	34
Image 13. Disarticulated skeletal element and dentures along the North APE cliff bank.	34
Image 14. Partially articulated skeleton and disarticulated multiple skeletal elements along the North APE cliff bank.	35
Image 15. Multiple cranium immediately beneath the surface of the North APE cliff bank.	35
Image 16. Detail of multiple cranium immediately beneath the surface of the North APE cliff bank. One appears to exhibit autopsy marks.	36
Image 17. Debris and stones abutting shoreline, some constructed seawall visible; looking north.	37
Image 18. Loose stone and large debris between concrete wall and stone seawall; looking south.	38
Image 19. Damaged section of seawall in the northern portion of East APE; looking northeast.	38
Image 20. View of East APE, no beach in middle section; looking north.	39
Image 21. Areas of missing stone in dry-laid seawall; looking west.	40
Image 22. Seawall damage and large debris on slope abutting seawall; looking southwest	41
Image 23. Damaged seawall segment with mortared brick object visible in water; looking west	41
Image 24. North half of West APE, sections of wall visibly missing; looking northeast.	42

LIST OF MAPS, FIGURES, IMAGES, and TABLES (continued)

<i>Title:</i>	<i>Page:</i>
Image 25. Southern half of West APE, seawall observed as haphazard arrangement stones and large objects; looking south.	42
Image 26. West APE, dry-laid stone seawall; facing northwest.	57
Image 27. Chapel on Channel View Road; facing south.	57
Image 28. West APE damaged seawall; facing northwest.	58
Image 29. Side view of Chapel from Channel View Road; facing east.	58
Image 30. West APE damaged seawall; facing west.	59
Image 31. West APE damaged seawall; facing southwest	59
Image 32. East APE, damaged mortared stone seawall and surrounding debris; facing southwest.	60
Image 33. East APE, damaged seawall, large stones scattered on beach; facing northwest.	60
Image 34. East APE, damaged seawall and loose stone and debris obscuring beach; facing north.	61
Image 35. North APE, side view of exposed cistern from Soundview Road; facing north.	62
Image 36. North APE, archaeologists inspecting human remains on cliff bank, facing south.	62
Image 37. North APE, archaeologists inspecting human remains on cliff bank, facing south.	65
Image 38. North APE, side view of exposed cistern from beach; facing southwest	65
Image 39. North APE, view of exposed cistern from beach; facing west.	64
Image 40. North APE, side view of exposed cistern from beach; facing north	64
Image 41. North APE, eroded cliff bank; facing west.	65
 Table 01. USDA Soil Survey Data	 14
Table 02. NYSHPO Identified Resources within .5 miles of APE.	28
Table 03. Archaeological Resource Studies conducted within .5 miles of APE.	28

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Chrysalis Archaeological Consultants would like to thank Joseph G. Coffey and all of the member of Greenman-Pedersen, Inc. for the opportunity to work on this project.

I. INTRODUCTION

On behalf of The City of New York – Department of Correction (NYC DOC), Greenman-Pedersen, Inc. (GPI), retained Chrysalis Archaeological Consultants, Inc. (Chrysalis) to produce a Documentary Study and Archaeological Assessment for the Hart Island, New York – Shoreline Restoration Project (NY SHPO Project Number: 17PR02258). The project area consists of shoreline portions of Hart Island, located in Long Island Sound (Map 01); municipally it is part of Bronx County, New York.

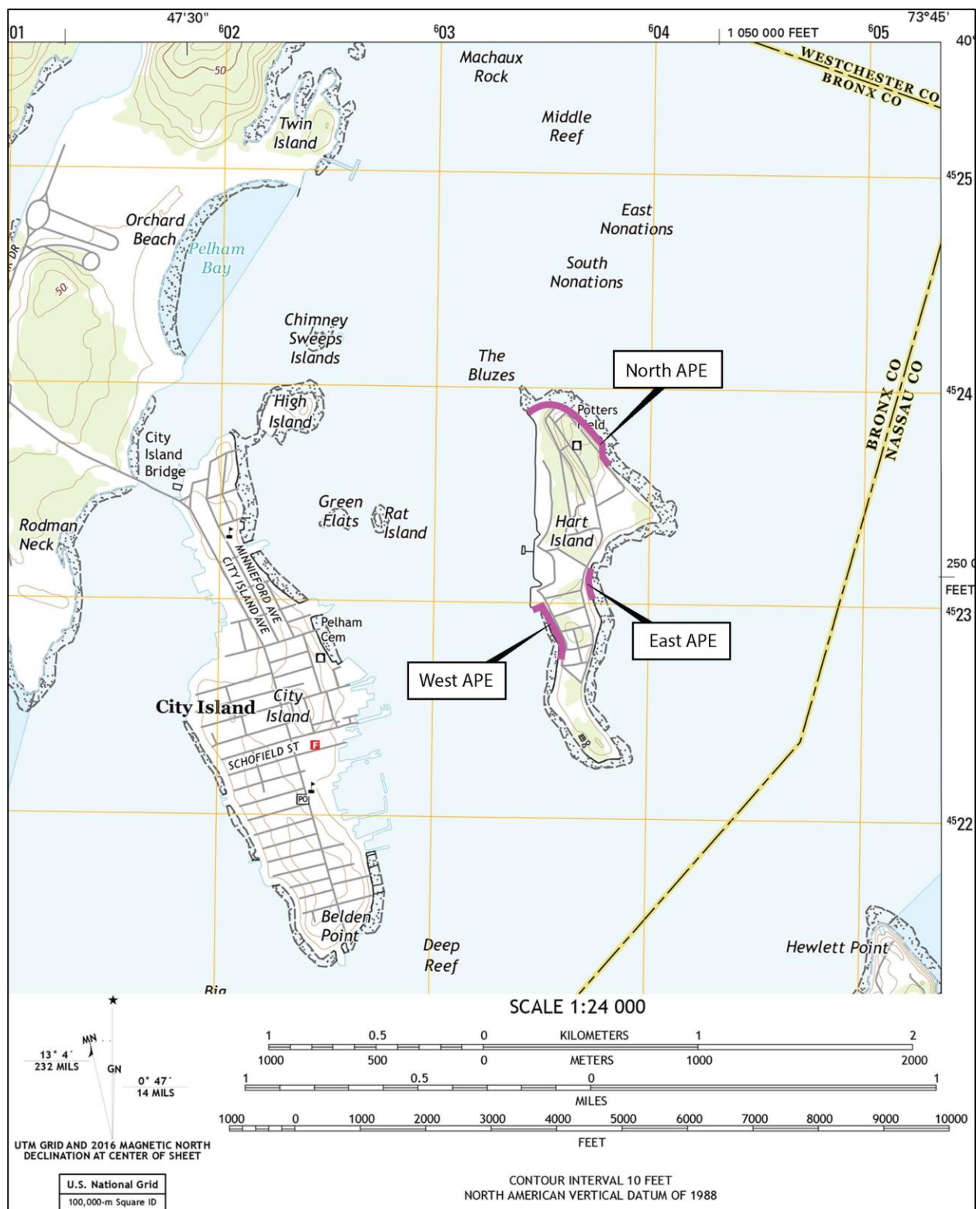
Hart Island actively serves as a public cemetery, a “Potter’s Field”, for the City of New York (New York City). The Island has served as New York City’s public cemetery since 1869. It is managed and maintained by NYC DOC. Interments occur four times a week for the homeless, poor and unidentified; for those whose families do not have funds to provide a burial. Public access is restricted to specific times and only via approval of NYC DOC. Though it is best known as the City Cemetery, Hart Island has served several functions beginning with its use as a Civil War training facility and prison for Confederate prisoners of war in 1865, as well as a range of public institutional functions during the late nineteenth through early twentieth century.

Superstorm Sandy in October 2012 damaged portions of the Island, including shoreline areas. This Hart Island Shoreline Restoration Project is being undertaken via a grant through the U.S. Department of Homeland Security – Federal Emergency Management Agency (FEMA).

The purpose of this is to provide a documentary history of the project area, and to assess the impacts of proposed activities within the Area of Potential Effect (APE) to potentially significant cultural resources. More specifically, the goal of this study is to identify the sensitivity of, and impact to, the APE regarding buried and/or extant cultural resources and exposed human remains. Hart Island is listed in the State and National Registers of Historic Places as a State/National Register eligible area with architectural and archaeological significance. The APE is defined as any area in which proposed construction activities related to the proposed project have the potential to disturb the ground surface and in turn potential cultural resources, and intact or disturbed human remains including disarticulated or fragmentary skeletal elements. This study will also provide recommendations for further study or mitigation.

All work was conducted in accordance with the National Historic Preservation Act (NHPA) of 1966, as amended, the Advisory Council on Historic Preservation’s “Protection of Historic and Cultural Properties” (36 CFR 800), the New York State Historic Preservation Act (SHPA), New York State Office of Parks, Recreation and Historic Preservation (NY SHPO) guidelines (New York Archaeological Council [NYAC] 1994; 2000; 2002), the (New York) State Environmental Quality Review Act (SEQRA), the (New York) City Environmental Quality Review Act (CEQRA) and the City of New York – Landmarks Preservation Commission (LPC) regulations regarding archaeological investigations.

Alyssa Loorya, M.A., R.P.A., Principal Investigator authored this report on behalf of Chrysalis. Matthew Brown, Ph.D., R.P.A., forensic anthropologist, participated in field visits and consulted on the assessment of the project APE. Eileen Kao provided maps and graphics, and Christopher Ricciardi, Ph.D. R.P.A assisted with editing and formatting (Appendix C).



Map 01: USGS New York Flushing Quad (United States Geological Survey 2016).

PROJECT DESCRIPTION

In addition to the widespread inundation, high tides and strong winds during Super Storm Sandy in October 2012 caused major damage to Hart Island. FEMA estimated that 8.5-foot high floodwaters swept over the island severely affecting three main areas: the eastern and western shorelines and the northern tip (Maps 02 and 03).

Specific damages include:

- Soil erosion caused by storm surges and wave action;
- Eastern shoreline – seawall damage in the form of missing concrete caps, sections of total seawall loss and debris accumulation, and areas of partial destruction;
- Western shoreline – seawall damage in the form of missing concrete caps, debris accumulation, and areas of partial destruction
- Northern tip (beginning of the Potter's Field burial ground) – slope erosion resulting in the exposure of human skeletal remains as confirmed by the NYC Medical Examiner.

To repair the damage caused by Sandy and prevent future impacts to the island's shoreline, the project aims to repair or rebuild 3,265 feet of the seawall and construct 1,550 feet of revetment.

- At the northern tip of the island (North APE), in areas along the north shoreline where seawall does not exist, project tasks involve constructing Stone Revetment Type 2. Where the top of slope is below or at elevation +20', stone revetment will be constructed on the embankment up to elevation +20' at a 50% slope (Figure 1). This will include an undetermined amount of excavation at the base of the embankment to install large natural stones as toe stones for the revetment. The slope will be cleared and grubbed but no root removal is planned. Ground disturbances are expected to be kept at a minimum, although backfilling will be necessary in some areas to meet grade. In areas where the top of embankment is above elevation +20', the procedures to construct the stone revetment on the embankment will be same as above up to +20', at which point the rest of the bank will be stabilized with mixed planting (Figure 2). Clearing and grubbing will take place prior to planting, but no root removal is planned and ground disturbances is expected to be kept to a minimum.
- On the western shoreline (West APE), project tasks involve Repair Types A and C, and Stone Revetment Type 1. Where miscellaneous debris has accumulated on the dry stone seawall and stones lost from the damaged wall are laying nearby, project tasks include removing the accumulated debris and re-setting the lost stones as needed (Figure 3). On the portions of seawall where the concrete cap is missing and wall loss is measured as 1' or greater, the project aims to remove the accumulated debris and backfill slope to grade, pour new concrete cap, remove loose and deteriorated mortar and stone, and rebuild the wall as needed (Figure 4). In areas of the shoreline where construction of a stone revetment is necessary to stabilize the slope, the project will leave the existing wall in place, remove miscellaneous debris, and excavate slope to proper shape before installing a thick layer of stone (Figure 5).

- On the eastern shore (East APE), project tasks involve Repair Types B and C. Where the portions of seawall loss are measured from 0' to 1', the project aims to remove the accumulated debris and pour new concrete cap (Figure 6). On the portions of seawall where the concrete cap is missing and wall loss is measured as 1' or greater, the project aims to remove the accumulated debris and backfill slope to grade, pour new concrete cap, remove loose and deteriorated mortar and stone, and rebuild the wall as needed (Figure 4).

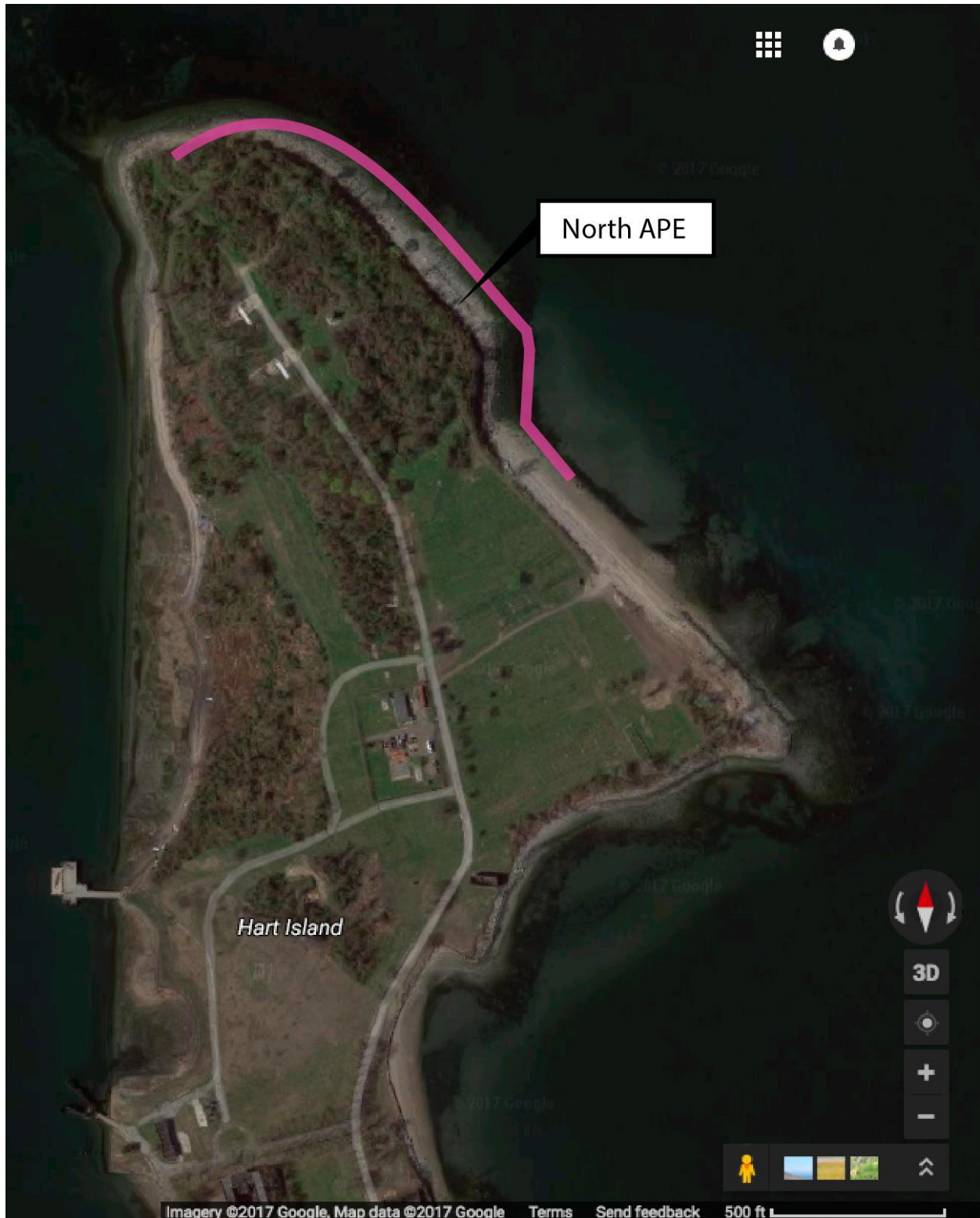
The proposed methodology for the project, as discussed with the design team is the least invasive means to conduct the necessary work.

AREA OF POTENTIAL EFFECT (APE)

The APE is defined as any area where project actions may impact cultural resources, and intact or disturbed human remains including disarticulated or fragmentary skeletal remains. While Superstorm Sandy likely impacted the entire Island, three areas of FEMA PA eligible damages, assessed and agreed upon by FEMA, DHSES, and DOC, have been identified. These are:

- 1) The northern shoreline of the island, which was the first area utilized as a Potter's Field, has no existing structures and no shoreline protection in place. As a result of shoreline erosion caused by tidal and storm action, there is the continued exposure of human remains; the APE begins at 40° 50' 35.2" N 73° 46' 18.6" W and ends at 40° 51' 25.7" N 73° 46' 5.7" W
- 2) The eastern shoreline adjacent to historic buildings on Soundview Road, beginning at the Carriage House and continuing south to the Doctor's House. Although there is 1800' of mortared wall along the shoreline, only approximately 320' is included in the APE, where the wall is in various states of deterioration. The damage ranges from just needing spot repairs to areas of total deterioration into a riprap revetment; the APE begins at 40° 51' 10.1" N 73° 46' 10" W and ends at 40° 51' 7.7" N 73° 46' 9" W
- 3) The western shoreline along Channel View Road, where the seawall is made up of approximately 550' of dry-laid stone wall and 950' of mortared wall. Only the first 350' of mortared stone wall is included in the APE; the APE begins at 40° 51' 6" N 73° 46' 19.6" W and ends at 40° 50' 58.5" N 73° 46' 15.2" W

Maps 02 and 03 outline the APE for the proposed project tasks and Figures 1 through 6 outline the current proposed plan of action for the area.



Map 02: Area of Potential Effect, North (Google Earth 2017).



Map 03: Areas of Potential Effect, South (Google Earth 2017).

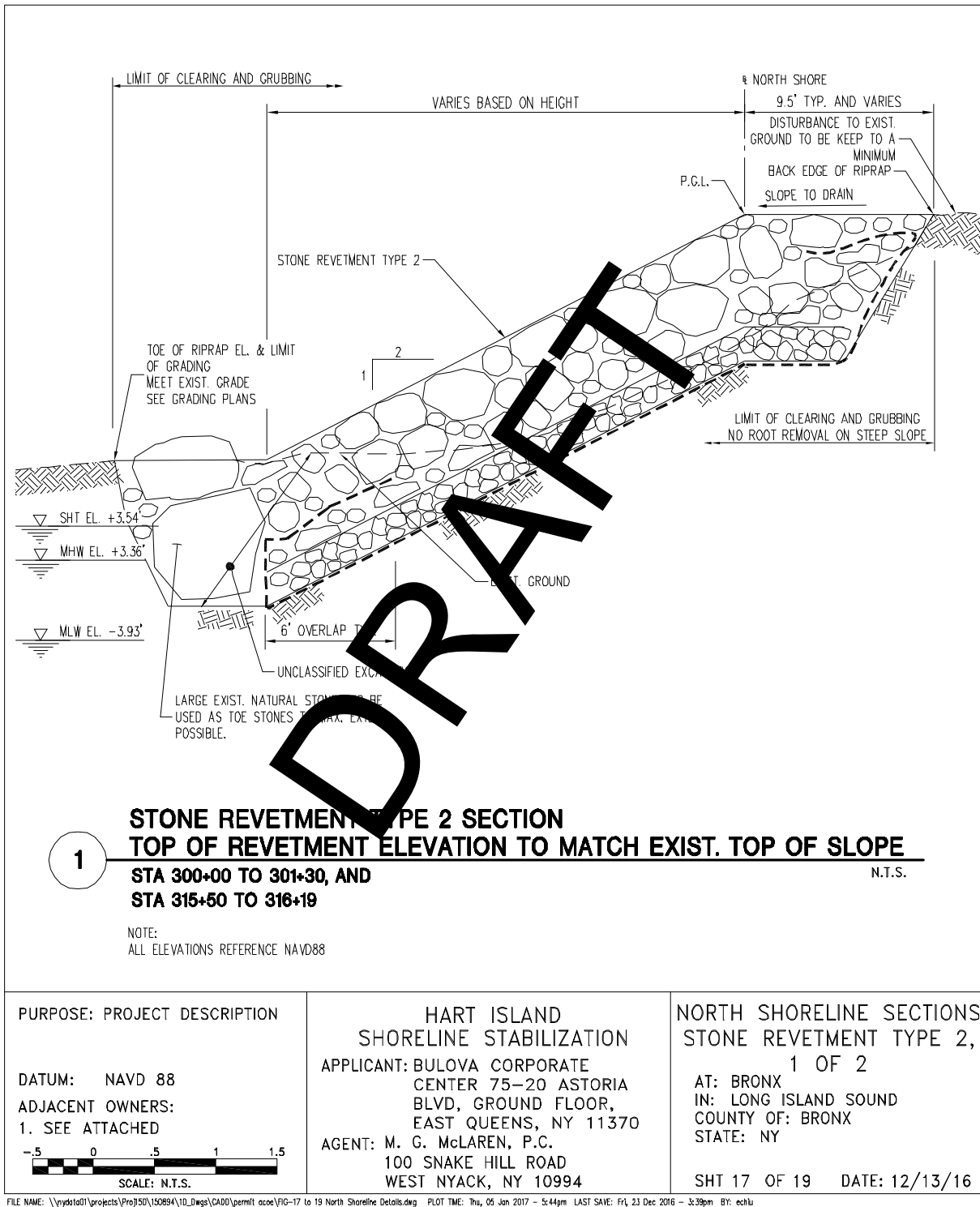


Figure 01: Engineering drawings describing stone revetment construction in the North APE.

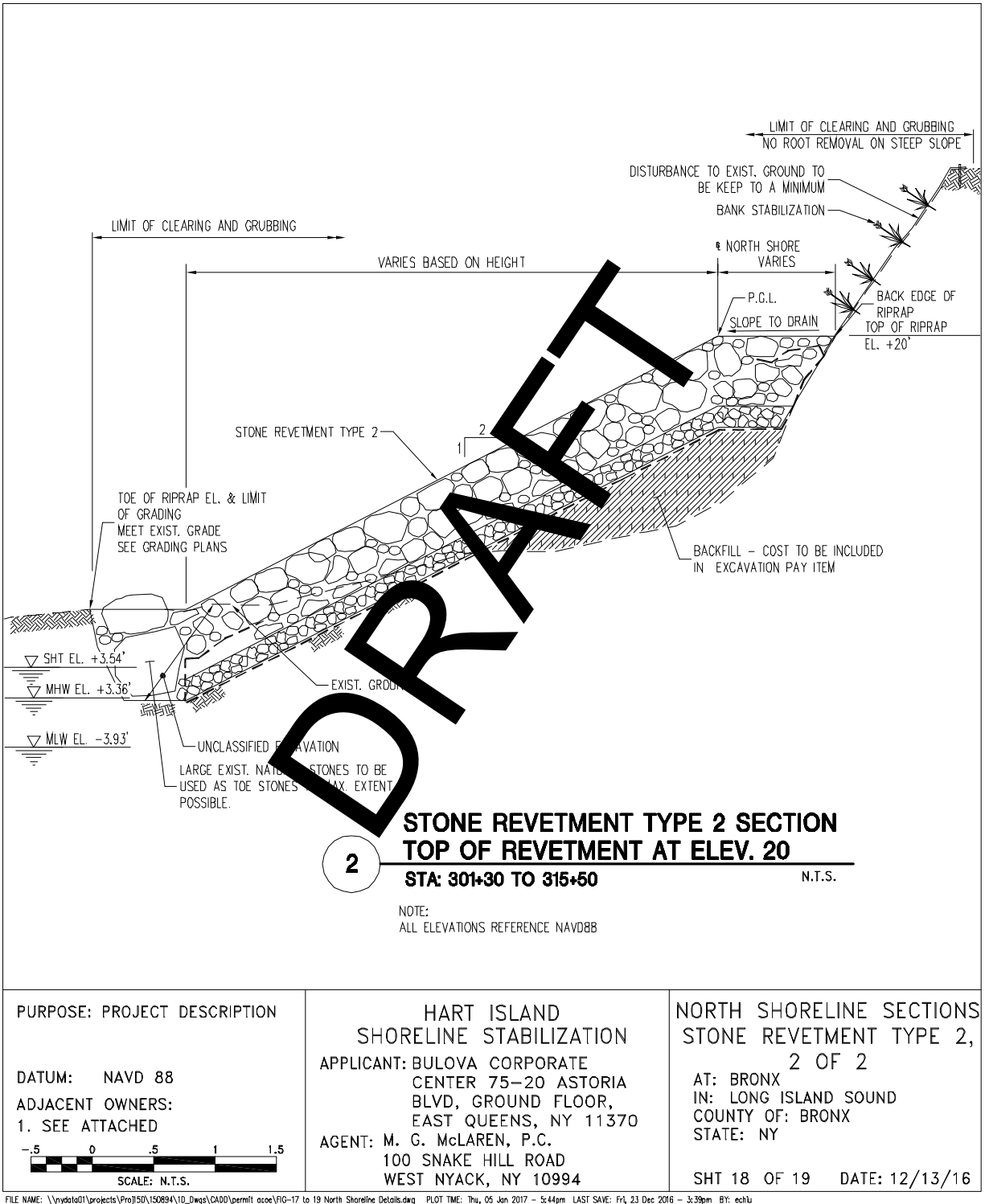


Figure 02: Engineering drawings describing stone revetment construction in the North APE with mixed planting.

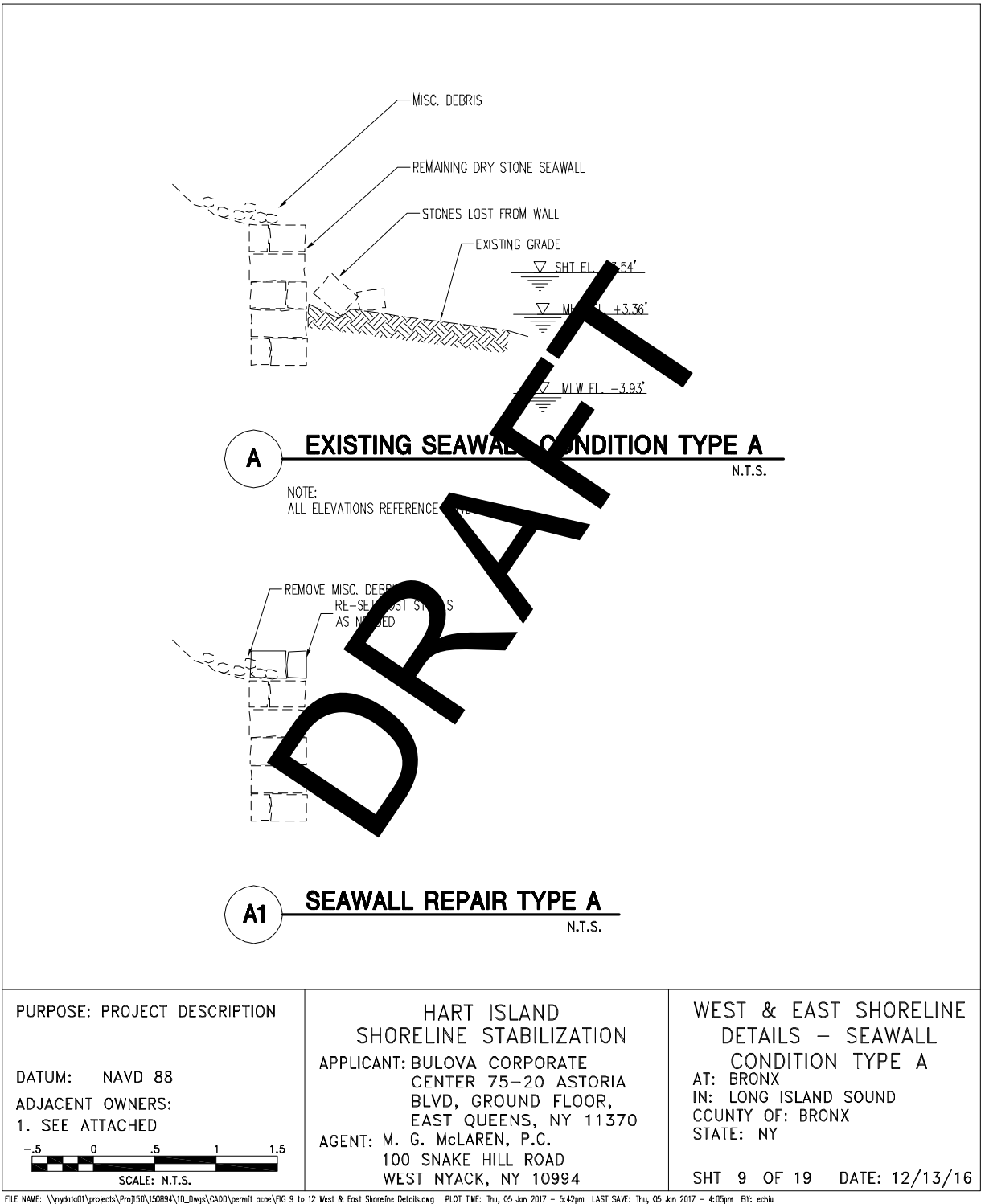


Figure 03: Engineering drawings describing repair of dry-laid stone seawall in the West APE.

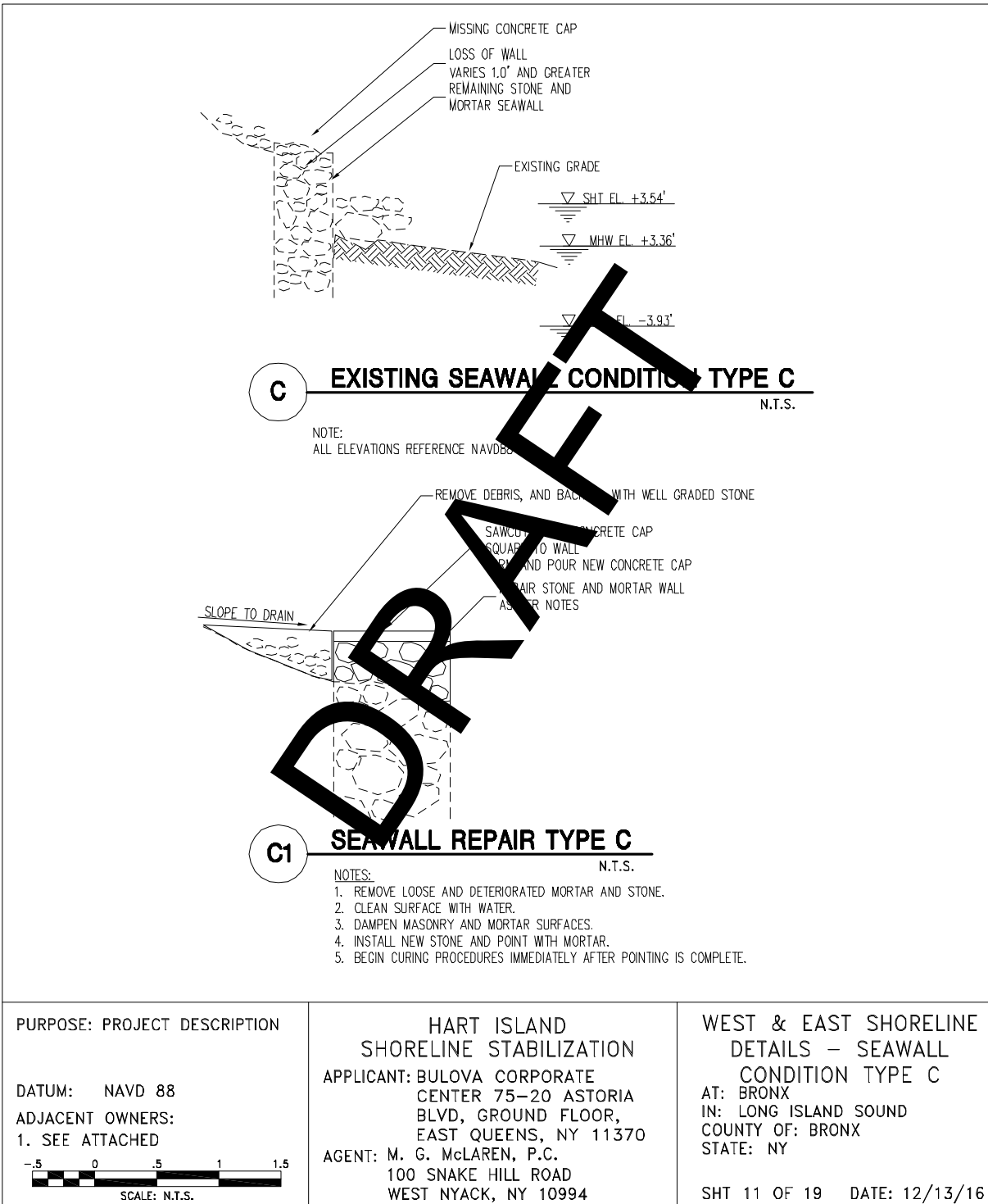
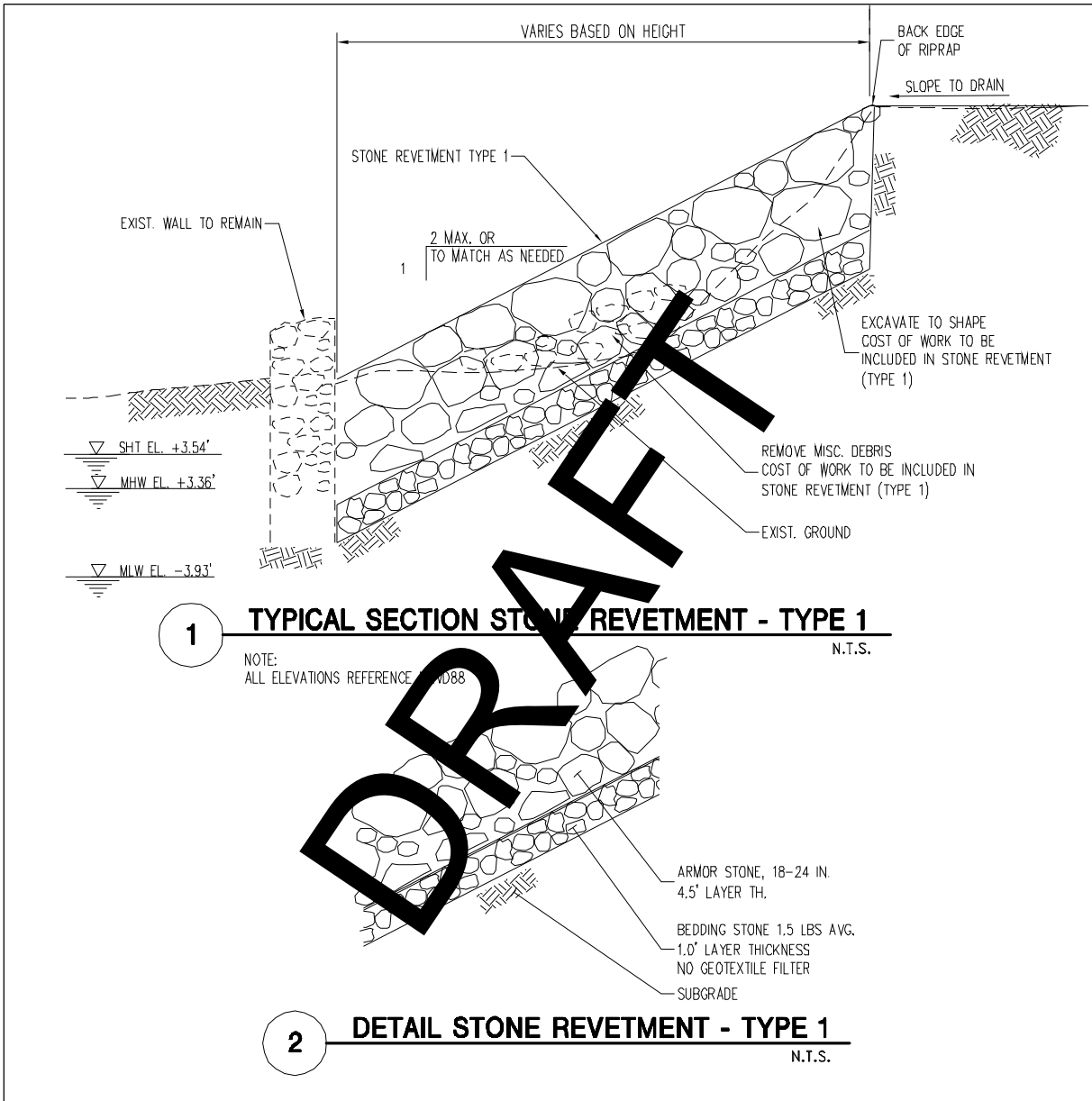


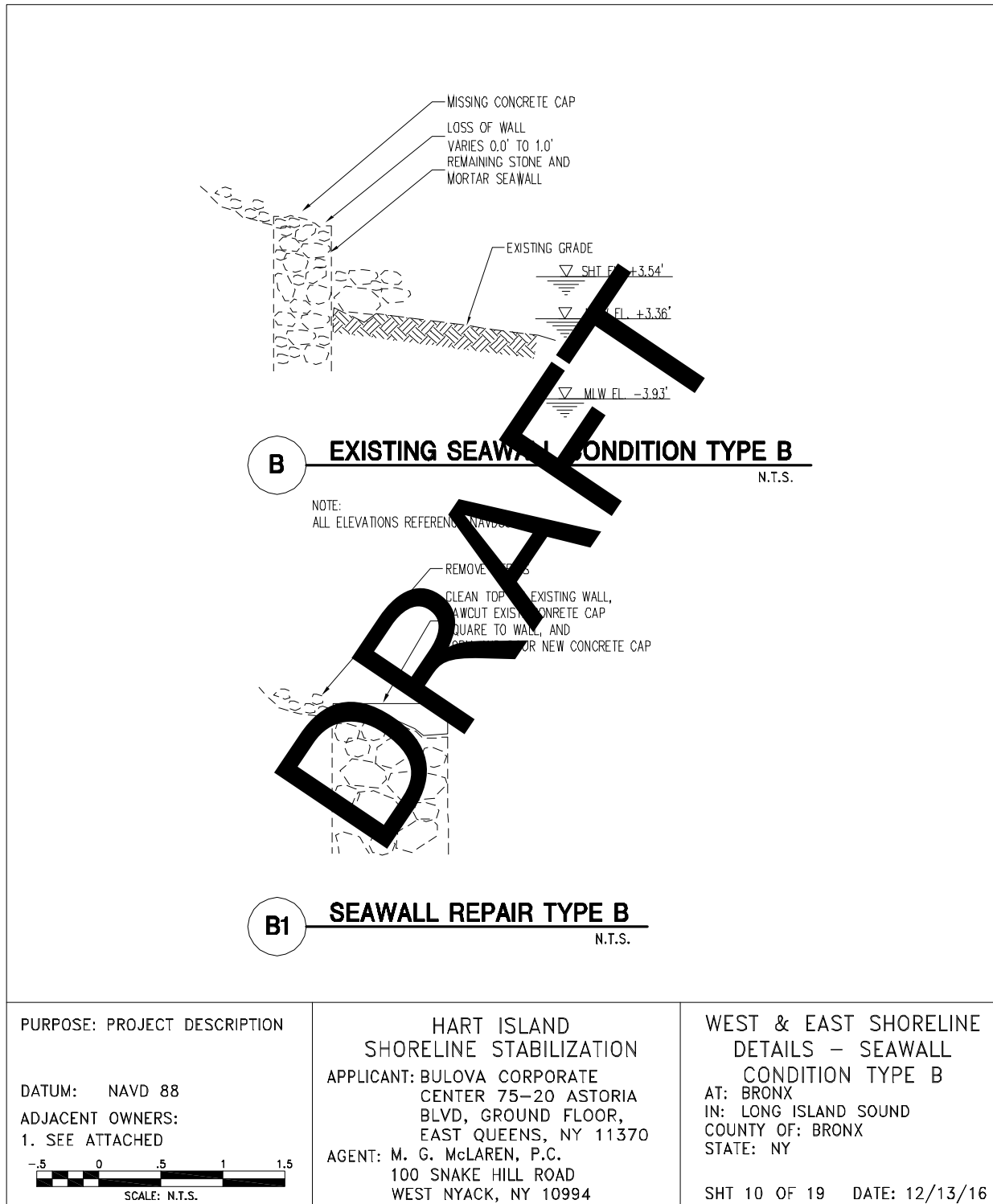
Figure 04: Engineering drawings describing repair of mortared stone seawall in the West and East APE.



<p>PURPOSE: PROJECT DESCRIPTION</p> <p>DATUM: NAVD 88</p> <p>ADJACENT OWNERS: 1. SEE ATTACHED</p> <p>SCALE: N.T.S.</p>	<p>HART ISLAND SHORELINE STABILIZATION</p> <p>APPLICANT: BULOVA CORPORATE CENTER 75-20 ASTORIA BLVD, GROUND FLOOR, EAST QUEENS, NY 11370</p> <p>AGENT: M. G. McLAREN, P.C. 100 SNAKE HILL ROAD WEST NYACK, NY 10994</p>	<p>WEST & EAST SHORELINE DETAILS - STONE REVETMENT TYPE 1</p> <p>AT: BRONX IN: LONG ISLAND SOUND COUNTY OF: BRONX STATE: NY</p> <p>SHT 12 OF 19 DATE: 12/13/16</p>
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FILE NAME: \\nydsd01\projects\Proj50\50894\10_Dwg\CAD0\permit\acoe\FIG 9 to 12 West & East Shoreline Details.dwg PLOT TIME: Thu, 05 Jun 2017 - 5:42pm LAST SAVE: Thu, 05 Jun 2017 - 4:05pm BY: echlu

Figure 05: Engineering drawings describing stone revetment construction in the West APE.



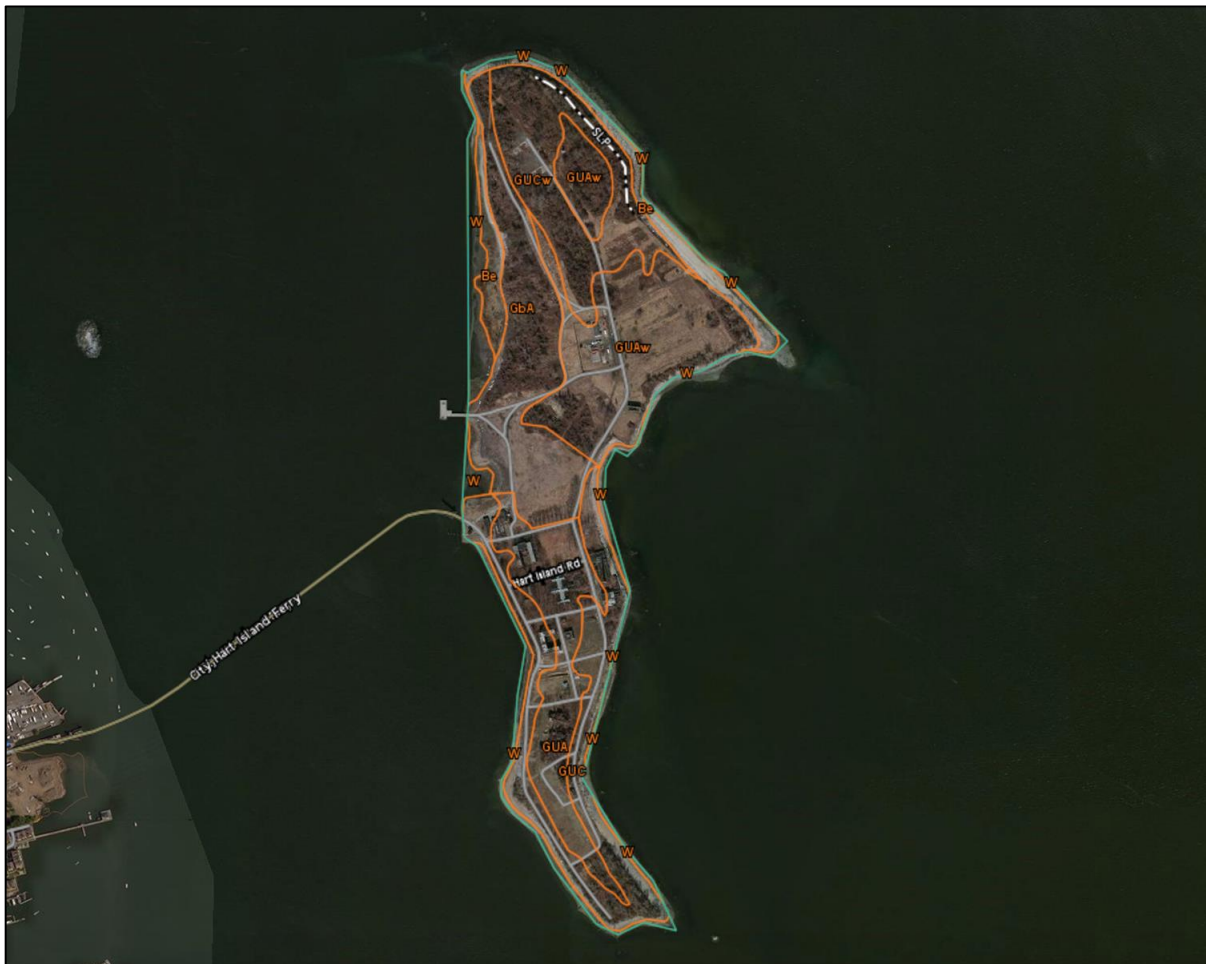
FILE NAME: \\pydata01\projects\Proj950\150894\10_Dwgs\CADD\permit\acoe\Fig 9 to 12 West & East Shoreline Details.dwg PLOT TIME: Thu, 05 Jan 2017 - 5:42pm LAST SAVE: Thu, 05 Jan 2017 - 4:05pm BY: echlu

Figure 06: Engineering drawings describing repair of mortared stone seawall in the East APE.

II. ENVIRONMENTAL AND GEOGRAPHIC SETTING

Hart Island is situated in the western portion of the Long Island Sound, part of the Pelham Islands group. It is located approximately .5 mile east of City Island (Map 01). The Long Island Sound is a tidal estuary between Bronx County and southern Westchester County to the north, and the north shore of Long Island on the south. From east to west the Sound stretches 110 miles. The Pelham Islands group consists of eleven islands. Essentially unpopulated, the 101 acre Hart Island is host to a variety of avian wildlife, raccoons and deer.

The United States Department of Agriculture (USDA) identifies six soil types on the island (Map 04) (Table 01). Greenbelt-Urban land complex of varying slopes accounts for 73.3% of the land area. Approximately 40% is represented as “cemetery”.



Map 04: Soil Map (United States Department of Agriculture 2017).

Table 01: USDA Soil Survey Data

MAP UNIT SYMBOL	MAP UNIT NAME	ACRES IN AOI	PERCENT OF AOI
Be	Beaches	7.5	7%
GbA	Greenbelt loam, 0 to 3 percent slopes	20.9	19.5%
GUA	Greenbelt-Urban land complex, 0 to 3 percent slopes	15.4	14.3%
GUAw	Greenbelt-Urban land complex, very deep water table, 0 to 3 percent slopes, cemetery	26.9	25.1%
GUC	Greenbelt-Urban land complex, 8 to 15 percent slopes	19.5	18.2%
GUCw	Greenbelt-Urban land complex, very deep water table, 8 to 15 percent slope, cemetery	16.9	15.7%
Totals for Area of Interest		107	100.0%

III. HISTORIC CONTEXT

PRE-CONTACT PERIOD

The project area, Hart Island, is situated within the Long Island Sound adjacent to documented Native American areas within the Bronx, specifically Pelham Bay Park. During the Woodland Period (circa 3,000 B.P.-A.D. 1600) Native American groups made use of the various small islands surrounding the mainland area for marine resources and wampum production.

The earliest date for human occupation in the northeastern United States is approximately 12,000 to 15,000 years before present (B.P.) following termination of the last ice age and the recession of the Wisconsin Ice sheet that once covered the area (Kraft 1986; Fagan 2004). Prehistoric occupation is divided into three major cultural periods: Paleo-Indian (circa 13,000 – 10,000 B.P.), Archaic (circa 10,000 - 3,000 B.P.), and Woodland. In most regions of the United States, the prehistoric era starts at the beginning of human occupation and terminates at first contact with European settlers. These cultural period divisions are recognized and identified through changes in climate and the archaeological record.

Several factors have help to reduce the degree of documented history and research potential regarding Native American activity in the New York City area. The majority of uncovered Native American sites within the area were either located on the highly disturbed fringes of the City or were excavated by amateurs and/or pot-hunters/looters at the turn of the twentieth century, thus destroying the Native American history of the area, without proper documentation (Cantwell and Wall 2001; Bolton 1922, 1934; Burrows and Wallace 1999).

CONTACT PERIOD

Henry Hudson's 1609 expedition up the Hudson River was likely the first-time Europeans laid eyes on the landscape that would one day be known as the Bronx. In 1639, the Dutch West India Company purchased land north of the Harlem River from the Weckquaesgeek tribe (Scharf 1886). The first European inhabitants of this land were a Swedish sea captain named Jonas Bronck, his family, and many indentured servants, who established a farm along the Harlem River in what is today the neighborhood of Mott Haven.

The village of Westchester was the first permanent European settlement in the area that would become the Bronx. Thomas Pell bought the deed from the local Siwanoy leader and founded Westchester in 1654. He and sixteen other families moved from Connecticut to the land east of the Broncks' farm, across the Broncks' (Bronx) River. When the New York Colony formed counties in 1683, the area to the north of New York was made Westchester County and the eponymous town served as the county seat until 1714. The village was granted a charter to become a borough in 1696 (Hermalyn and Ultan 1995).

HISTORICAL PERIOD

Hart Island was *purchased* by Thomas Pell from the local Native Americans in 1654. The island was part of the above-mentioned purchase of several thousand acres from the Siwanoy. The purchase included a significant portion of the present-day Bronx, the Pelham Islands group, and areas west in present day Westchester County. Pell's estate became known as Pelham Manor.

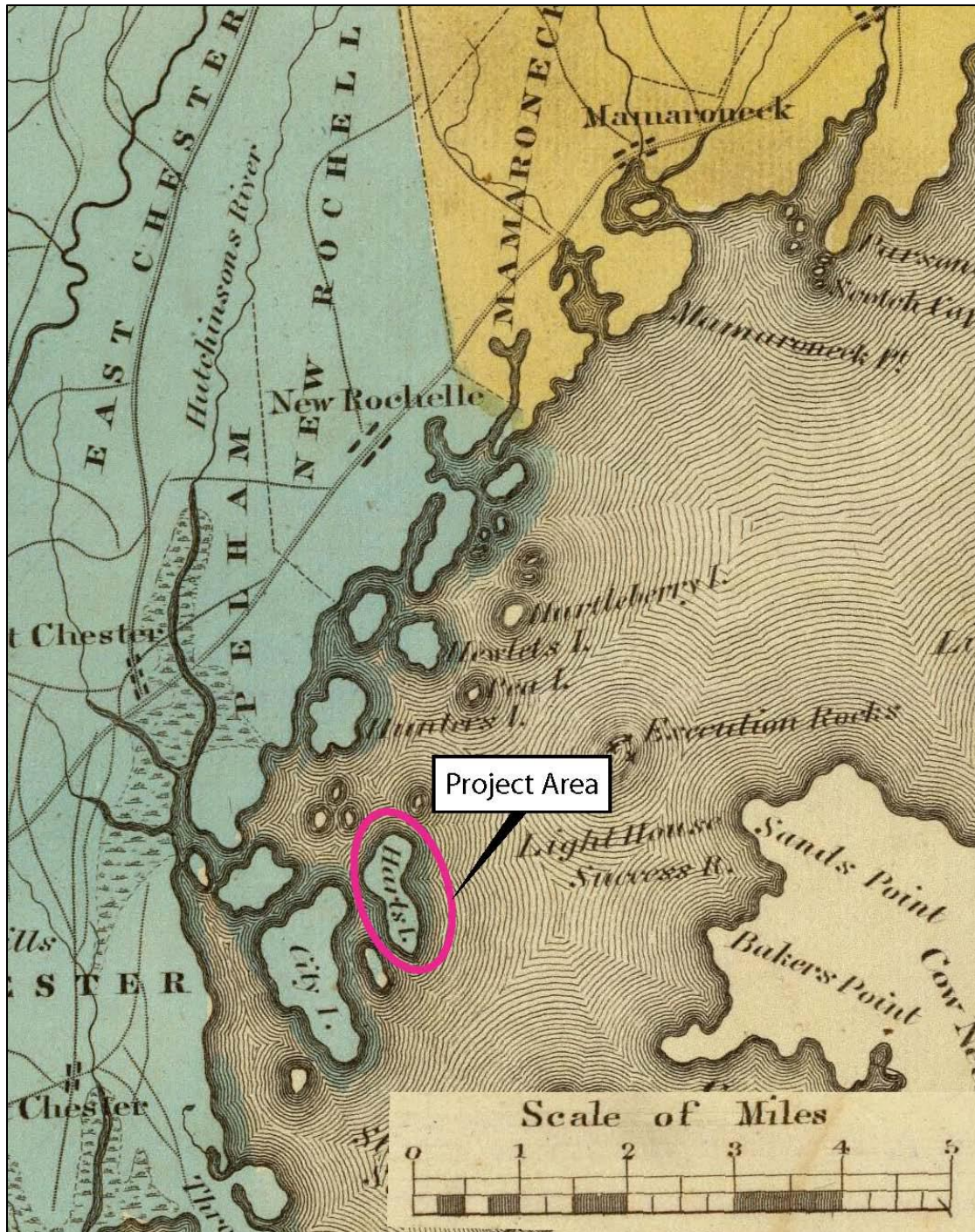
The earliest map located that depicts Hart Island with any clarity is the 1829 Burr *Map of the County of Westchester* (Map 05). The earliest map depicting any detail of, or on the island itself is the 1851 *Coast Survey* (Map 06). The 1851 *Coast Survey* depicts topographic features of the island. A prominent feature is the narrow land bridge at the center of the island forming a deep cove on the western side of the island. There are no roads or other development depicted on the map.¹

No information was found regarding use of the island prior to the mid-nineteenth century. Though there are multiple early nineteenth century newspaper accounts of ships anchoring or going ashore at Hart Island little other detail or activity could be identified. During this period, the island was owned by the Hunter family and was part of Westchester County.

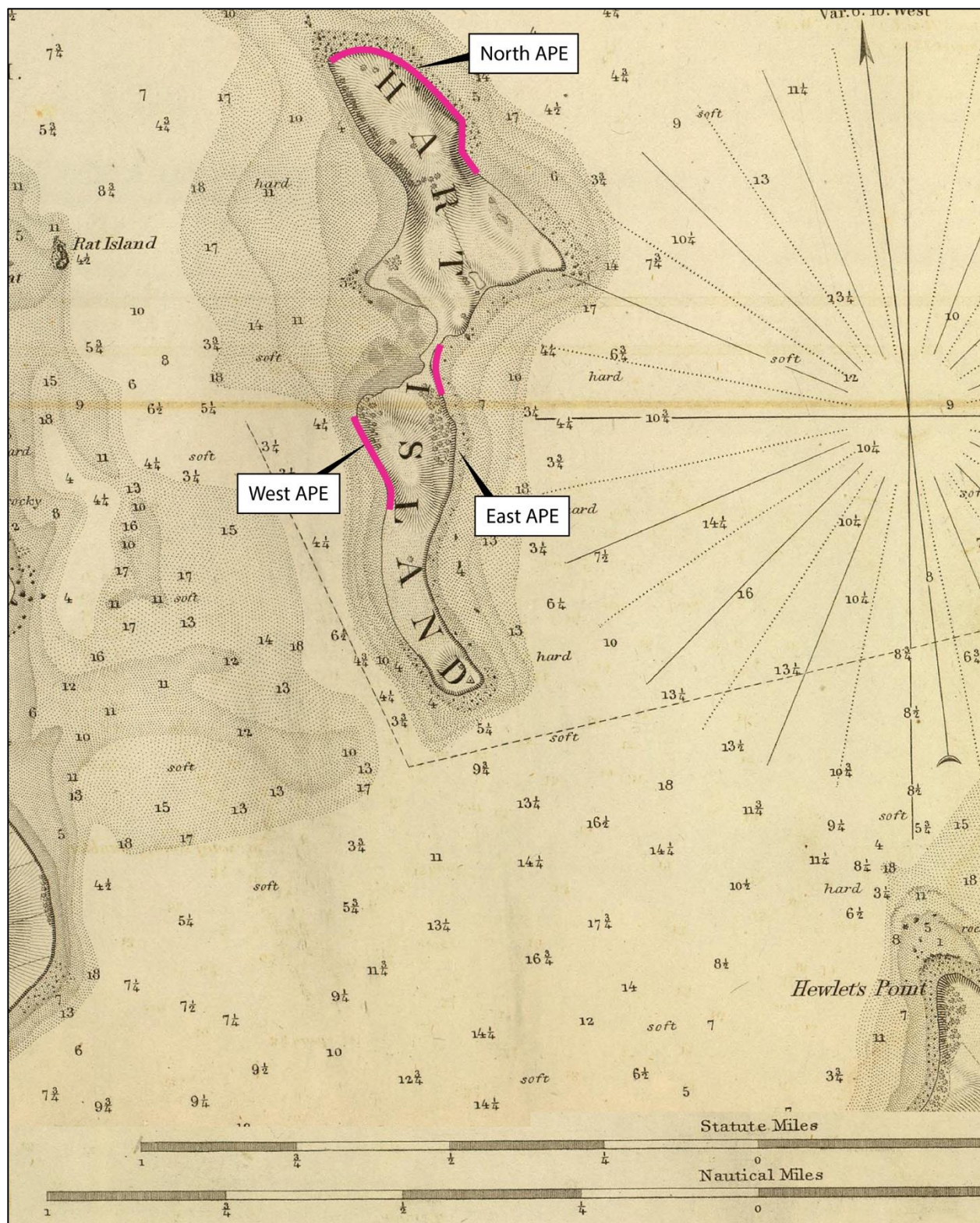
The documented active use of the island began in 1864 when a portion of Hart Island was used as a training area for the United States Colored Troops (USCT). The 31st regiment of the USCT was formed at Hart Island in April 1864 under the command of Colonel Henry C. Ward. In May 1864, the 30th Connecticut Colored Volunteers consolidated with the New York regiment. The 31st regiment departed for Virginia from Hart Island where they engaged in several battles during the Civil War, including the siege of Petersburg (New York Correction History Society 2017).

¹ Additional historic maps are presented in Appendix A.

During this period, the federal government constructed a series of wooden buildings to serve as barracks, training facilities, and a hospital (Image 01). In 1865, the island served as a prisoner-of-war camp when 3,413 captured Confederate soldiers were housed on the island (New York Correction History Society 2017).



Map 05: Map of the County of Westchester, David H. Burr 1829.



Map 06: Navigation Chart for Sachem's Head Harbor and Hart and City Island Harbor, United States Coast Survey 1851.



Image 01: *“Hart Island, New York, A Station for the Disbandment of the Federal Army”*
(The Illustrated London News August 12, 1865 volume 47, p. 128).

New York City purchased Hart Island from the Hunter family in May 1868 for \$75,000. According to a February 27, 1869 New York Times article the Department of Charities and Correction purchased the island from Mr. Edward Hunter (New York Times February 27, 1869 p. 8). However, the original document lists the seller as John Hunter Jr. Executor of the Last Will and Testament of John Hunter (Westchester County Records Liber 674 Page 447).

Hart Island has served many functions since its purchase by New York City. The City purchased the island with the intent of establishing an industrial school for destitute boys (New York Times February 27, 1869 p. 8). There would be several institutional activities established on Hart Island by the City. Several buildings were constructed to support these institutions and activities. Uses of Hart Island included a quarantine site during the 1870 Yellow Fever epidemic; a women’s insane asylum; a tuberculosis sanatorium; and a boys reformatory. The boys reformatory was a workhouse for older boys; it was an extension of the House of Refuge on Blackwell’s Island (present-day Randall’s Island). By the early twentieth century, Hart Island housed roughly 2,000 delinquent boys in what was known as a “reformatory for misdemeanants” (NYSHPO Determination of Eligibility 2016).

There is little detail about the various specific institutions housed on Hart Island, which continued into the early twentieth century. The main location for city funded institutional services during the late nineteenth and early twentieth centuries was Blackwell's Island; historical documentation focuses on that location. The last institution to operate on the island was Phoenix House, a drug rehabilitation facility that was active from 1966 - 1976.

There were also additional Federal military uses of the island in the twentieth century. During World War II, the Navy maintained a disciplinary barracks for Navy, Coast Guard and Marine personnel. Also, during WWII three German soldiers that surfaced in a U-Boat near Long Island were taken into custody and imprisoned on Hart Island. From 1955 to 1961, the United States Army maintained a NIKE missile base on a ten-acre portion of the Island.

In 1946 control and maintenance of Hart Island was turned over to the Department of Correction. They still maintain jurisdiction over the island.

Prison

One of Hart Island's two most noted, and sustained uses is as a prison. Its earliest use as a prison was during the Civil War, as noted above.

In 1904, a reformatory for male misdemeanants, ages 16 - 30 years old, was opened. When reformatory prisoners were transferred to another facility in 1914, the jail was used to house aged male prisoners and overflow from other City jails. The New York City Department of Welfare housed male derelicts on the island until the 1950s. During this period, there was a rising prisoner population in the City. The NYC DOC was given control of Hart Island to use as a facility for the overflow prisoner population from Rikers Island. The jail on Hart Island closed in 1966 though it was used again as a jail for a small number of prisoners from 1982 until 1991.

Cemetery

Hart Island is best known as a Potters Field, New York City's public cemetery. It is the largest public funded cemetery in the world, and is the second largest cemetery in the United States. It is estimated that close to, if not more than, one million people have been buried on Hart Island (Bernstein, Nina *New York Times* 15 May 2016). It is the final resting spot for New York City's unclaimed, unidentified or impoverished deceased.

The first burial in New York City's newly established City Cemetery occurred in April 1869. Louisa Van Slyke, age 24, died of tuberculosis at Blackwell's Island Charity Hospital on April 10, 1869 (NYC Records Death Certificate M31448). Having no family, she was interred in the City Cemetery on April 20, 1869. In its first year of operation the City Cemetery received over 1,800 persons (Hart Island Project 2017).

Inmates from Blackwell's Island Penitentiary were brought to Hart Island via ferry to conduct interments. Prisoners have conducted burials on the islands since its inception as a cemetery. In 1890 Jacob Riis photographed burials being conducted on Hart Island. These are some of the earliest photographs of the Hart Island public cemetery (Images 02 – 03).

Burials began at the northern tip of the Island and have since expanded to several locations. In 1875, the City began a system of mass burials. A numbered grid system is used to facilitate disinterment for later identification at the morgue. According to various media sources that have written about Hart Island over 40% the burials are infants in mass graves containing 1000 coffins each. Adult burials also occur in mass graves, accommodating 150 individuals per mass grave (Image 04) (Ellison, Michael *The Guardian*, 4 June 1999, and New York Historical Society 20 November 2013).

The deceased are interred in plain pine boxes, and there is no embalming of the bodies. This contributes to relative rapid decomposition. As a result, the grave sites could be reused within 25 to 50 years.

In the 1980s the City's earliest AIDS victims were buried on the island beneath 14 feet of soil. At the time, little was known about the disease and the deep burials were an act of precaution. Among these is the first child to die of AIDS in the City.

Hart Island remains the active location of New York City Potters Field. Interments are conducted by inmates from Rikers Island four times a week. It has been estimated that 8,000 to 10,000 burials occur each year (Ellison, Michael *The Guardian*, 4 June 1999 and Bernstein, Nina *New York Times* 15 May 2016).

Maps 07 and 08 show the location of known burials on Hart's Island.



Image 02: Photograph (1890-1891) taken by Jacob Riis of prisoners conducting burials on Hart Island (Jacob Riis Collection/Museum of the City of New York).

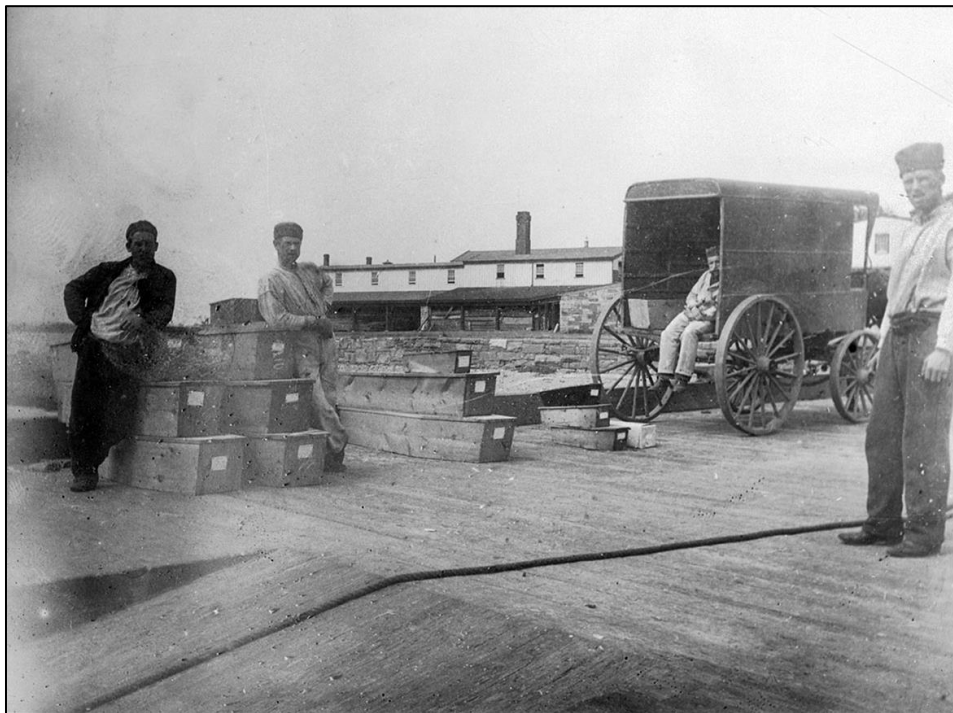
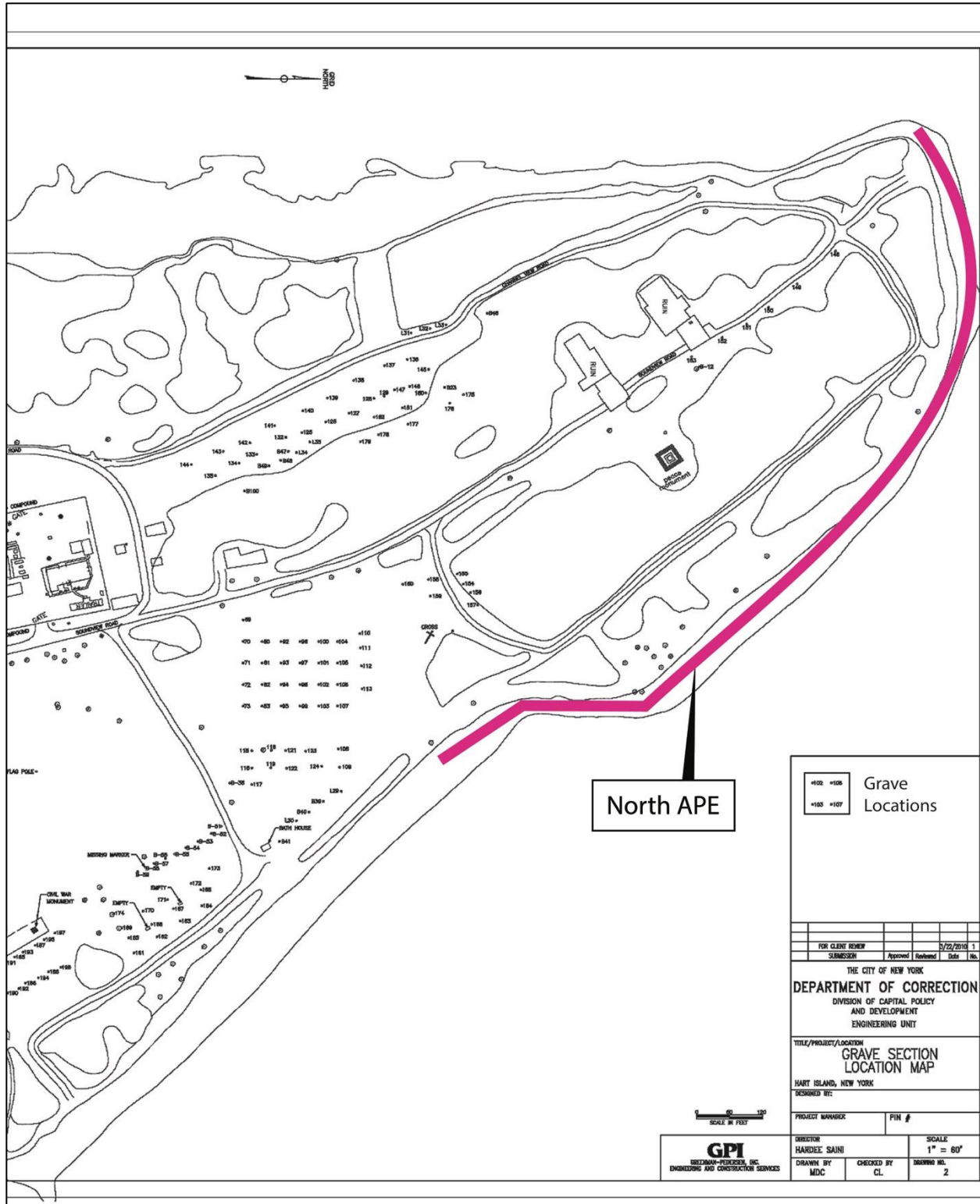


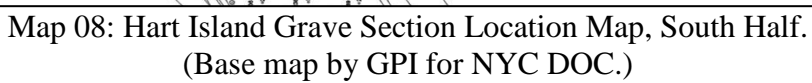
Image 03: Photograph (1890-1891) taken by Jacob Riis of prisoners conducting burials on Hart Island (Jacob Riis Collection/Museum of the City of New York).



Image 04: Mass grave on Hart Island September 1990
by Claire Yaffa (New York Historical Society PR 290).



Map 07: Hart Island Grave Section Location Map, North Half.
(Base map by GPI for NYC DOC.)



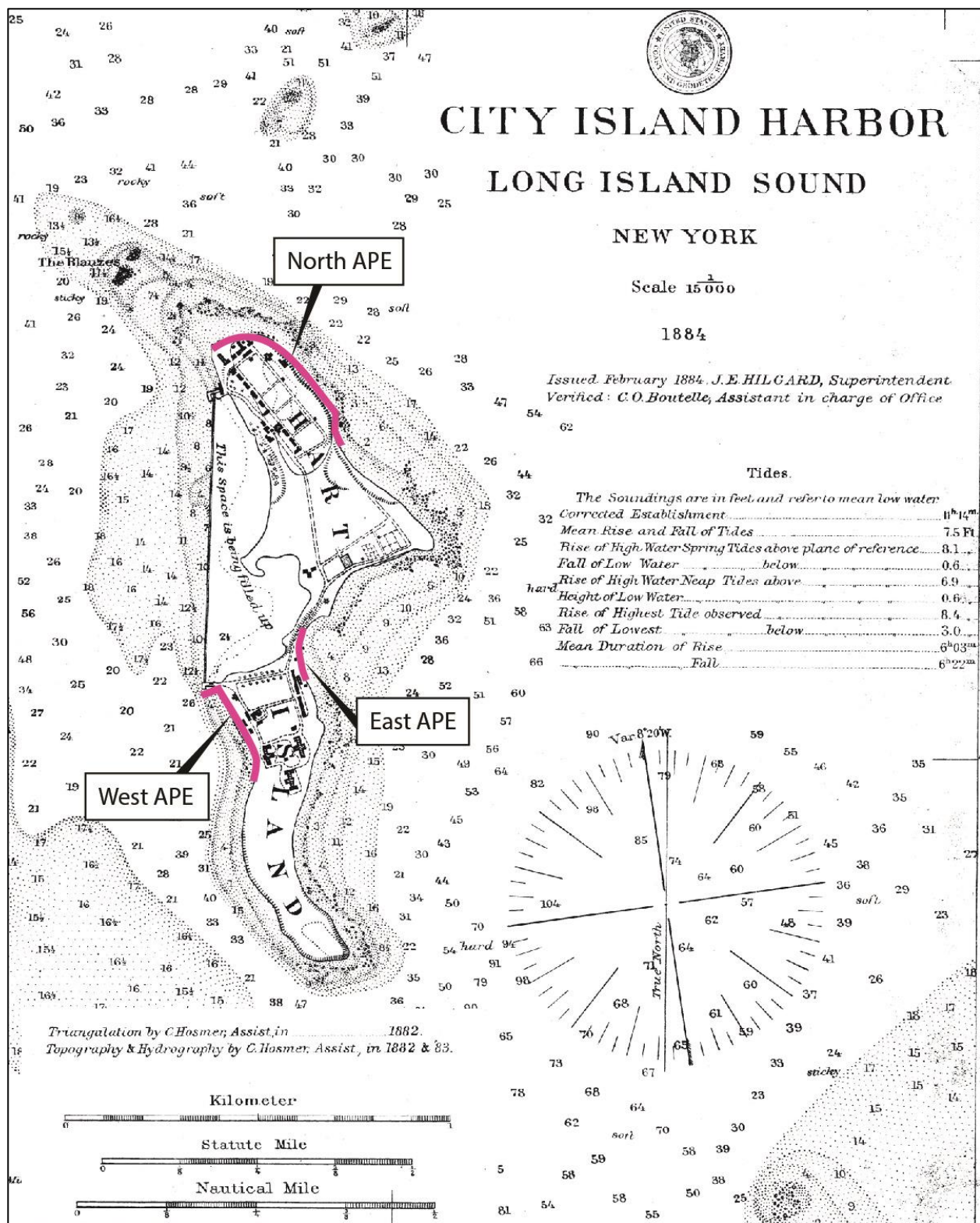
DEVELOPMENT OF HART ISLAND

Early maps of Hart Island show the island having a narrow strip of land connecting the north and south halves of the island (see Maps 06 and 11). The western shoreline of the island contained two deep coves. This contrasts with the present form of the island which has a fairly regular western shoreline.

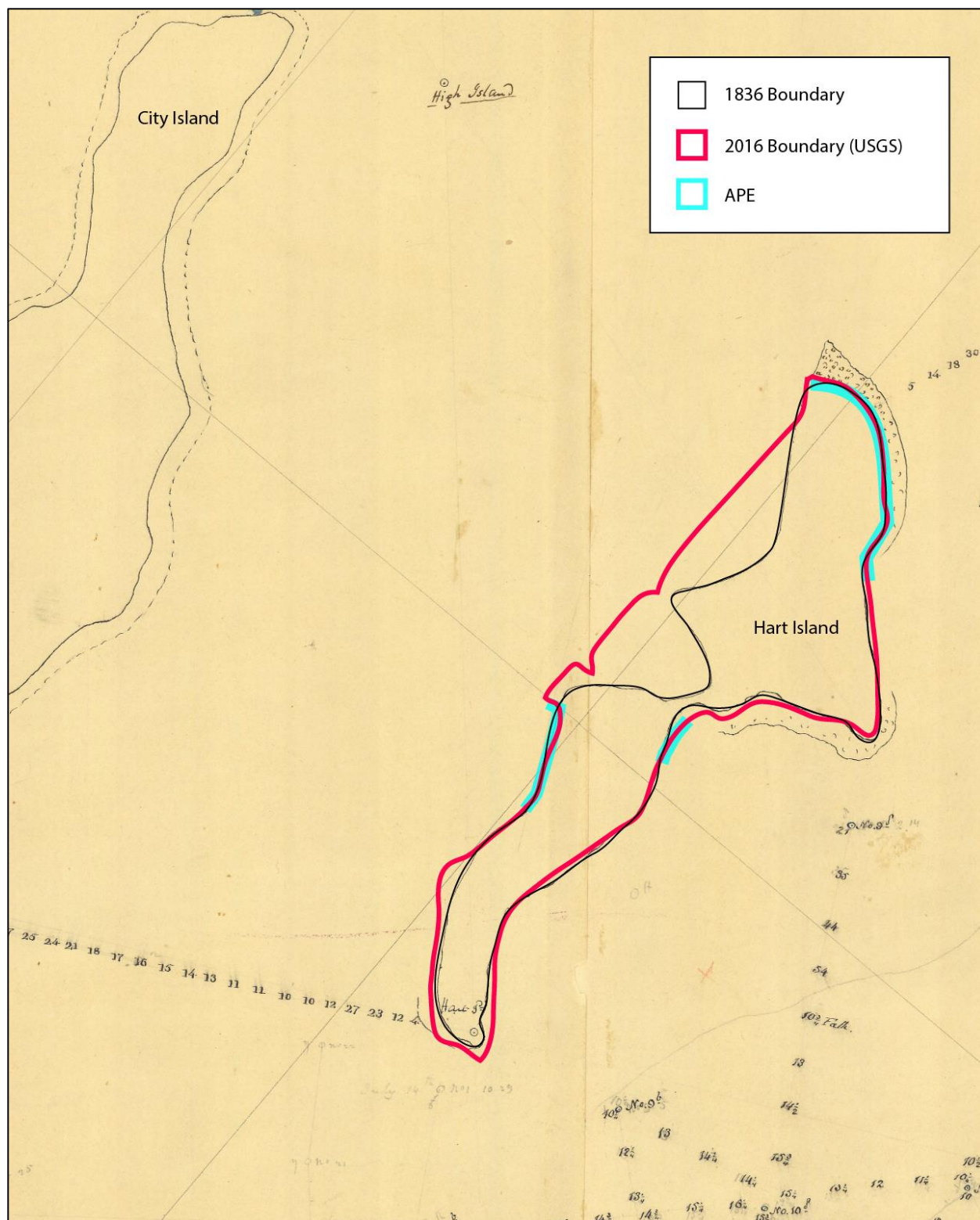
The 1884 United States Coast Guard Survey denotes the area of the present day western shoreline cove as “This area is being filled up” (Map 09). There is no reference as to what material was being used to fill the area. However, based on practices used elsewhere within New York City the area was likely filled with trash deposits from the institutions on the island and/or construction. Disposal of trash from the institutions is likely considering this would be a convenient means to dispose of what could be a large volume of trash from the multiple persons occupying the island and their associated activities. Further, it has been conveyed that pottery and glass is commonly seen along the western shore of the island (Thompson, personal communication April 2017). The presence of these materials further suggests the cove along the western shoreline was filled with refuse materials.

Based on other maps the area was partially filled by 1900 (USGS 1900) and entirely filled by 1947 (USGS 1947). Map 10 overlays the current footprint of Hart Island and the APEs onto the 1836 survey showing the original form of the island. This overlay demonstrates that the APEs fall outside the filled areas except for a small segment of the eastern shoreline. However, this may be due to map accuracies rather than representative of landfilling.

A large portion of the island is occupied by burials. Maps 07 and 08 (above) show the various burial locations throughout the island.



Map 09: 1884 map showing area to be filled along west shore of Hart Island
 (City Island Harbor Long Island Sound New York, United States Coast Survey, 1884).



IV. PREVIOUS CULTURAL RESOURCE STUDIES

NYSHPO has conducted a National Register eligibility assessment of Hart which determined that Hart Island, the Asylum, Prison and Potter's Field are State and National Register eligible resources (Table 02). The Nike Missile Battery has been deemed not eligible. There have been no previous archaeological studies of Hart Island, and only one is listed within a .5 mile radius (Table 03).

The Hart Island historic district includes both archaeological and architectural resources eligible for listing under Criteria A, C, and D. Areas of significance include archaeology, health/medicine, military, and social history (NY SHPO 2016). According to the NY SHPO resource evaluation "there are several extant but abandoned buildings, structures, and objects on Hart Island that speak to its institutional history starting in the second half of the nineteenth century, though none of the Civil War related buildings still stand" (NY SHPO 2016:3).

Table 02: NYSHPO Identified Resources within .5 miles of APE.

USN	RESOURCE	ELIGIBILITY
00501.001558	Hart Island Asylum, Prison and Potter's Field	Eligible
00501.002066	Hart Island	Eligible
00501.001856	Nike Missile Battery NY-15 Launch Area	Not Eligible

Table 03: Archaeological Resource Studies conducted within .5 miles of APE.

SURVEY NUMBER	NAME
09SR59409	Sea Breeze Estates, City Island, Bronx County, New York, IB Memo Report

OFFICE OF THE MEDICAL EXAMINER REPORT

In July 2013, the Office of the Chief Medical Examiner (OCME) conducted a pedestrian survey of the north shore of Hart Island at the request of the Department of Correction. Though not all areas could be assessed due to thick vegetation the report notes that human remains were eroding from the north embankment in several areas. The bones were determined to represent several individuals and both disarticulated and articulated remains were observed.

One nearly complete cranium and a partial maxilla were collected by the OCME for study. The cranium was hand sawn for autopsy and the maxilla exhibited gold foil filling dental work. The dental work and autopsy cuts were inconsistent with contemporary techniques suggesting these were older burials (OCME 2013). This is consistent with the historic information that the earliest burials conducted on the island occurred at the norther tip.

The determination of the OCME report stated that the human remains observed were from historic cemetery burials. The report further stated that human remains were actively eroding from areas of the embankment and would continue to do so unless preventative measures were taken (OCME 2013).

V. CURRENT CONDITIONS

In April 2017, a pedestrian survey of the project area was conducted. The northern shoreline project area was observed during a site meeting that included representatives from FEMA, NY SHPO and other involved parties. This site meeting was complimented with another survey that included representatives from NYC DOC and Chrysalis staff members Alyssa Loorya (Principal Investigator), Dr. Matthew Brown (Forensic Archaeologist) and Eileen Kao (Field Director). On this second visit all three project APEs, the north, east and west, were assessed and photographed.

This section presents the observed conditions of the three APE areas. A discussion of the proposed impacts follows later in this report.

NORTH APE

The northern tip of the Island has been deemed as an occupied facility, as it houses what is known as the beginning of the Potter's Field Burial Grounds (NY SHPO 2016). The North APE is characterized by a shoreline exhibiting a rocky surface of water worn rocks and large boulders (Image 05). The shore is currently met by an embankment. The walk-over began at the westernmost point of the North APE. The elevation of the embankment decreases proceeding east along the shoreline until it is relatively level. The high ground above the north shore is the location of the earliest known burials on Hart Island. The face of the embankment exhibits a significant degree of erosion.



Image 05: North APE shoreline which exhibits a rocky beach and eroding embankment.

There has been substantial erosion to this area, particularly following Superstorm Sandy in October 2012. Following the storm it was noted by NYC DOC that human remains were exposed along the face of the embankment. In July 2013, the OCME visited Hart Island to document the exposed skeletal remains (Image 06). The OCME has made subsequent visits, the most recent being spring 2016.

The recent pedestrian survey of the north shore, which was limited to the North APE (see Maps 01 and 02), noted substantial erosion of the embankment. Several areas exhibit uneven steeply sloping surfaces or sharp cuts where the above surface has completely collapsed (Images 07 and 08). Highlighting the degree of erosion that has occurred in this area is the exposure of a large brick structure, likely a cistern (Images 09 and 10). At one time the body of this feature would have been entirely buried beneath the surface, with only the top of the feature exposed. At present, more than 50% of the feature is exposed and soils at its base have collapsed in several areas. The brick structure is, at present, partially unsupported due to the erosion. It was noted that no human remains were observed in the immediate vicinity of the brick structure.

In several areas disarticulated human remains, in many states of preservation, were visible (Images 11, 12 and 13). Upper portions of the wall, i.e. below the surface within approximately 3' of the surface, exhibited evidence of multiple skeletons (Images 14, 15 and 16). Additional images of exposed human skeletal elements are presented in Appendix B. Human skeletal remains were observed along the rocky shore. These appear to have been washed down the shore by rain and further erosion.

During the one week between visits there were days of inclement weather². It was noted that additional skeletal remains had been exposed during that period. Therefore, it is likely to assume that skeletal remains will continue to be exposed, and additional areas of the embankment may collapse.

² It rained four days between site visits, rain occurred on April 19, 20, 21 and 22 (Weather Underground 2017).



Image 06: Overview of embankment in July 2013 (OCME 2013:2).



Image 07: North APE embankment, exhibiting steep eroded face.



Image 08: Area of North APE exhibiting areas where the face of the cliff has collapsed leaving tree roots exposed.



Image 09: View of brick structure along north shore, facing south.



Image 10: View of brick structure protruding from embankment, the upper portion of the feature is more than 90% exposed; facing west.



Image 11: Disarticulated skeletal elements along the face of the North APE embankment.



Image 12: Partial cranium along the shore of the North APE.



Image 13: Disarticulated skeletal element and dentures along the North APE embankment.



Image 14: Partially articulated skeleton and disarticulated multiple skeletal elements along the North APE embankment.



Image 15: Multiple cranium immediately beneath the surface of the North APE embankment.



Image 16: Detail of multiple cranium immediately beneath the surface of the North APE embankment. One appears to exhibit autopsy marks.

EAST APE

The APE along the eastern shoreline of Hart Island begins approximately at the Carriage House and extends southward along Soundview Road, ending at the Doctor's House (Map 08). Pedestrian survey began at the southern end of the island and continued north towards the APE. At the southern end of the eastern shoreline, there is no formal seawall. Serving as a barrier between the beach and Soundview Road is a line of debris made up of mortared brick and stone, large masses of concrete, large discarded metal objects, and miscellaneous garbage; as survey moved north, small sections of intact wall began to be visible behind the accumulation (Image 17).

As the survey continued north towards the abandoned structures (Dynamo Room, Butcher Shop, etc.), there was a section of seawall not composed of mortared stone. The segment abutting the structures was of cement construction. This area was subject to more recent stabilization efforts in order to secure the then-existing severely deteriorated conditions.

Between the cement seawall and the APE, it was observed that a gap existed. Large stones and debris lay on the beach. The debris was made up of scrap metal, accumulated garbage, and large masses of mortared stone, possibly belonging to the former seawall, which clearly had collapsed (Image 18).

The northern part of the eastern shoreline where the APE is located is characterized by beach and a mortared-stone seawall that spans the shoreline from the Carriage House to the Doctor's House (Map 08). The land abutting the seawall is mostly level with the top of the wall. The seawall is mostly intact with areas missing small sections of wall and the concrete cap; the missing stones are likely those scattered on the beach adjacent to the wall (Image 19). Along the midsection of this seawall there is no beach as an accumulation of large stones obscures the shoreline (Image 20).



Image 17: Debris and stones abutting shoreline, some constructed seawall visible; looking north.



Image 18: Loose stone and large debris between concrete wall and the stone seawall (beginning of APE); looking south.



Image 19: Damaged section of seawall in the APE; looking northeast.



Image 20: View of East APE, no beach in middle section; looking north.

WEST APE

The APE on the western shoreline begins approximately at the seawall in front of the Visit House and extends south along Channel View Road, ending at the area marked Next Designated Burial Site #1 (Map 08). This portion of the APE has the longest expanse of seawall in need of repair. The first approximately 550' of seawall is characterized by large dry-laid stones. This stretch of seawall was mostly intact. Scattered areas of the seawall were missing just a few stones from the uppermost courses of the wall (Image 21). It was high tide at the time of the survey but stones were observed tumbled into the water below. From the roadway, the land sloped down slightly towards the seawall. This slope was overgrown and had accumulated debris, including large concrete objects, scattered throughout (Image 22).

Pedestrian survey continued south along Channel View Road. Just past the Chapel and to the end of the APE, the remaining seawall was constructed with large mortared stone and had a concrete cap. This portion of seawall displayed the most damage. In many areas, whole sections of the seawall were missing, appearing to have tumbled into the water below (Image 23). In several other areas, the concrete cap and deep sections of wall were missing. Miscellaneous debris had also accumulated in the voids made by the missing stones and on the slope abutting the seawall. The debris consisted of large metal objects, discarded infrastructural objects, and accumulated garbage.

In one area along the seawall, it was observed that the debris also included masses of mortared brick (Image 24). The brick was arranged in a circular shape and was observed on the slope and in the water below. No additional information could be gathered from the visual inspection.

In the southernmost portion of the West APE, the seawall seems to have lost its integrity in that the wall face is not flat. Large stone and concrete were observed in a haphazard arrangement in the water (Images 25). Beyond the APE, in the southernmost portion of the western shoreline large stones and masses of structural debris serve as a border between the beach and roadway.



Image 21: Areas of missing stone in dry-laid seawall; looking west.



Image 22: Seawall damage and large debris on slope abutting seawall; looking southwest.



Image 23: Damaged seawall segment with mortared brick object visible in water; looking west.



Image 24: Northern portion of West APE, sections of wall visibly missing; looking northeast.



Image 25: Southern portion of West APE, seawall observed as haphazard arrangement stones and large objects; looking south.

VI. PROPOSED PROJECT IMPACTS

The proposed project has been designed to have as minimal impact as possible while still accomplishing the goals of the project. However, it should be noted that the construction methodology is still undetermined at this time. The construction contractor will be responsible for defining the methodology employed to accomplish the proposed work. It will be stipulated however that the construction must take place from the water, working toward the island but the full extent of any impacts will not be known until the construction methodology is detailed.

NORTH APE

Within the North APE, in areas along the north shoreline where seawall does not exist, project tasks involve constructing Stone Revetment Type 2. Where the top of slope is below or at elevation +20', stone revetment will be constructed on the embankment up to elevation +20' at a 50% slope. This will include an undetermined amount of excavation at the base of the embankment to install large natural stones as toe stones for the revetment.

Ground disturbances are expected to be kept at a minimum, and backfilling will be necessary in some areas to meet grade. In areas where the top of embankment is above elevation +20', the procedures to construct the stone revetment on the embankment will be same as above up to +20', at which point the rest of the bank will be stabilized with mixed planting. Clearing and grubbing will take place prior to planting, but no root removal is planned and ground disturbances is expected to be kept to a minimum.

The excavation at the base of the embankment will take the form of trenching along the rocky north shore. Though this area is outside the known historic cemetery human remains and historic dentures were observed among the rocks during site visits. The presence of these remains is likely the result of erosion of the embankment. Though their presence on the shore is not the result of a project action they will be impacted by project actions.

Other modern debris, washed ashore from the Long Island Sound was also noted along the north shoreline. These materials are not significant.

Numerous human skeletal elements, and historic dentures, were observed along the slope of the embankment. The skeletal elements were observed at various elevations along the slope. Though restoration plans are designed to be minimally invasive the methodology to set the revetment stones is undetermined. Additionally, setting stones against exposed or partially exposed human remains could compromise their stability.

Also undetermined is the level of excavation, if any, will be required for the proposed mixed planting that will be used to further stabilize the embankment. Exposed human remains, and associated cultural materials (e.g. dentures) may be impacted by the proposed activity of grubbing and planting.

The large brick circular feature observed along the North APE (Images 9 and 10) will remain in place. Project plans call to preserve this feature in place by replacing soils and stabilizing the surrounding area.

WEST APE

On the western shoreline (West APE), project tasks involve Repair Types A and C, and Stone Revetment Type 1. Where miscellaneous debris has accumulated on the dry stone seawall and stones lost from the damaged wall are laying nearby, project tasks include removing the accumulated debris and re-setting the lost stones as needed. On the portions of seawall where the concrete cap is missing and wall loss is measured as 1' or greater, the project aims to remove the accumulated debris and backfill slope to grade, and rebuild the wall as needed. In areas of the shoreline where construction of a stone revetment is necessary to stabilize the slope, the project will leave the existing wall in place, remove miscellaneous debris, and excavate slope to proper shape before installing a thick layer of stone.

The West APE is adjacent to burial areas, not all of which have been definitively delineated. Though map overlays demonstrate that the West APE is outside the historic landfill area they are in close proximity to these landfill deposits which likely contain materials from the nineteenth century institutions occupying the island. Though project impacts are designed to be minimal the plans note work will "excavate to shape" the slope. The amount of necessary excavation is not currently known. Therefore, work in this area may have the potential to impact cultural resources.

EAST APE

On the eastern shore (East APE), project tasks involve Repair Types B and C. Where the portions of seawall loss are measured from 0' to 1', the project aims to remove the accumulated debris and pour new concrete cap. On the portions of seawall where the concrete cap is missing and wall loss is measured as 1' or greater, the project aims to remove the accumulated debris and backfill slope to grade, and rebuild the wall as needed.

Work in the Eastern APE lies near recent and actively occurring burial areas. According to NYC DOC Captain Martin Thompson (Personnel Communications 2017), there has been no evidence of human remains being exposed due to erosion, nor were any observed during the site visit. Though the shoreline is littered with an array of debris, much of this is likely washed ashore from the Long Island Sound. Additionally, the ongoing burial project has been depositing materials along the shoreline to provide additional reinforcement. The proposed project plans, which call for no excavation, is anticipated to have no impact to any significant cultural resources that may be present in this area.

VII. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this document is to determine the potential for the further exposure and recovery of human remains and significant cultural resources as well as assess any impacts the proposed construction activities may have on such resources. Portions of the project area are known to contain exposed human skeletal remains that will be impacted by the proposed project.

PREHISTORIC SENSITIVITY

When determining prehistoric sensitivity of an area it is important to consider both environment and geography as well as the site development history that may have impacted archaeological resources. Native groups are known to have utilized the smaller islands surrounding the New York City area for marine resources. Hart Island could have been such a location. Native American resources have been found nearby along the shore areas of Pelham Bay Park.

Based upon the historic uses of the property, which includes significant mass excavation for approximately one million burials; shoreline areas that appear to be significantly modified by the construction of seawalls or the addition of fill materials; and the recent significant shoreline erosion; the project's APE is determined to have a low sensitivity for prehistoric resources.

HISTORIC SENSITIVITY

In addition to being National Register Eligible, Hart Island, and the APE, are considered to have a high sensitivity for the presence of human remains associated with the City's cemetery, established in 1869, as well as the other institutional uses of the property in the late nineteenth and early twentieth centuries.

The North APE specifically has a established presence of human skeletal remains. There is also the presence of a substantial historic feature within the North APE. Though no human remains were observed in the East and West APEs they are determined to have a high sensitivity due to their proximity to burials (Map 08).

RECOMMENDATIONS

Further archaeological work and considerations are recommended for the proposed project.

Based on the observed conditions it is recommended that an archaeological survey be undertaken throughout the North APE prior to the start of the construction project and archaeological monitoring during construction.

In consideration of the nature of the site the design team has proposed the least invasive method available to complete the necessary work. However, there will still be some impacts to the APE. Proposed project plans call for excavating a trench along the shore of the North APE to install a base for the new stone revetment. This work will adversely impact any skeletal remains that have washed down to the shore area. The new revetment construction is proposed to occur from the waterside, constructing the new revetment against the existing surface of the embankment. There

are multiple exposed human skeletal remains along the face of the embankment that would be impacted by this construction. Visual inspection also observed human remains entangled with various roots and plant material within approximately 18” of the upper surface of the embankment. Even if the new materials are simply set against the surface they will impact exposed skeletal remains. Any compaction processes will further impact existing skeletal remains, including those that are partially exposed.

The archaeological survey work should occur prior to the start of any construction activities. This should include a full extreme short interval walking survey of the North APE. During this survey, all exposed human remains should be documented and recovered by the archaeological team. Recovery of skeletal remains should include all skeletal elements that are more than 25% exposed. Any skeletal elements that are more than 75% *in situ* should be left in place unless it is the judgment of the archaeologist they may be adversely affected by construction. For example, if the exposed portion of the skeletal element is the lower portion of a mandible, the position of the element may place it at greater odds for being damaged as opposed to the lateral surface of a long bone.

It was noted during the walk-over that an area of the embankment along the North APE had collapsed and remained along the shore. This presented as a large irregularly shaped block of soil. It is likely that skeletal remains are present within. If this and/or any other similar blocks of collapsed surface are to be removed from the project area they should be excavated and screened by the archaeological team for the recovery of human skeletal remains prior to any disturbance or removal activity.

Archaeological Monitoring of all construction activities that will involve the excavation, movement, or displacement of soil must occur. Monitoring should occur even for minimal impacts along the sloped face of the embankment and the upper surface where grubbing is planned. In addition, the Unanticipated Discoveries Plan and Human Remains Protocol should be in place at all times.

Project plans for the Western APE call for the construction of revetments. While the existing seawall will be used as the retaining feature, plans note work will “excavate to shape” the slope. In consideration of this, the proximity of known burials in the vicinity, the knowledge that not all burial areas are determinately documented, and the proximity of the landfill deposits which likely contain materials from the nineteenth century institutions occupying the island; it is recommended that archaeological monitoring occur during construction of the western APE.

Work in the Eastern APE lies in the vicinity of the recent and actively occurring burial areas. According to NYC DOC Captain Martin Thompson (Personnel Communications 2017), and there has been no evidence of human remains being exposed due to erosion, nor were none were observed during the site visit. The shoreline is littered with debris, much of this is likely washed ashore from the Long Island Sound. Additionally, the ongoing burial project has been depositing materials along the shoreline to provide additional reinforcement. In consideration of the above and the proposed project plans, which calls for no excavation work in this area, no archaeological monitoring is recommended. However, this area should be subject to the Unanticipated Discoveries Plan should any human remain or cultural resource(s) be exposed.

Due to the sensitive nature of the project area it is strongly advised that the archaeological team conducting the work during construction be hired through the Project Management firm and not the construction contractor. This will allow for greater autonomy for the archaeological team conducting the work in that they are not hired by, and working for the construction company but are an equal team participant. Further it is strongly advised that all construction and project personnel participate in a Cultural Resources orientation to be designed and given by the project archaeologist. The nature of the project will place construction personnel in the direct vicinity and/or contact with human remains. In many instances, it will be the construction personnel that are the first to encounter human remains. All personnel must be informed of protocols concerning the care and handling of human remains as well as the role of the archaeological team on site.

As part of this project, an Archaeological Work Plan, Unanticipated Discoveries Plan and Human Remains Protocol was developed. The combined work plans will guide the future work in terms of size, scope and location. See Appendix D for the Archaeological Work Plan.

Finally, if project plans change, or are expanded for any of the above areas it may be necessary to reassess these recommendations.

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New York Historical Society

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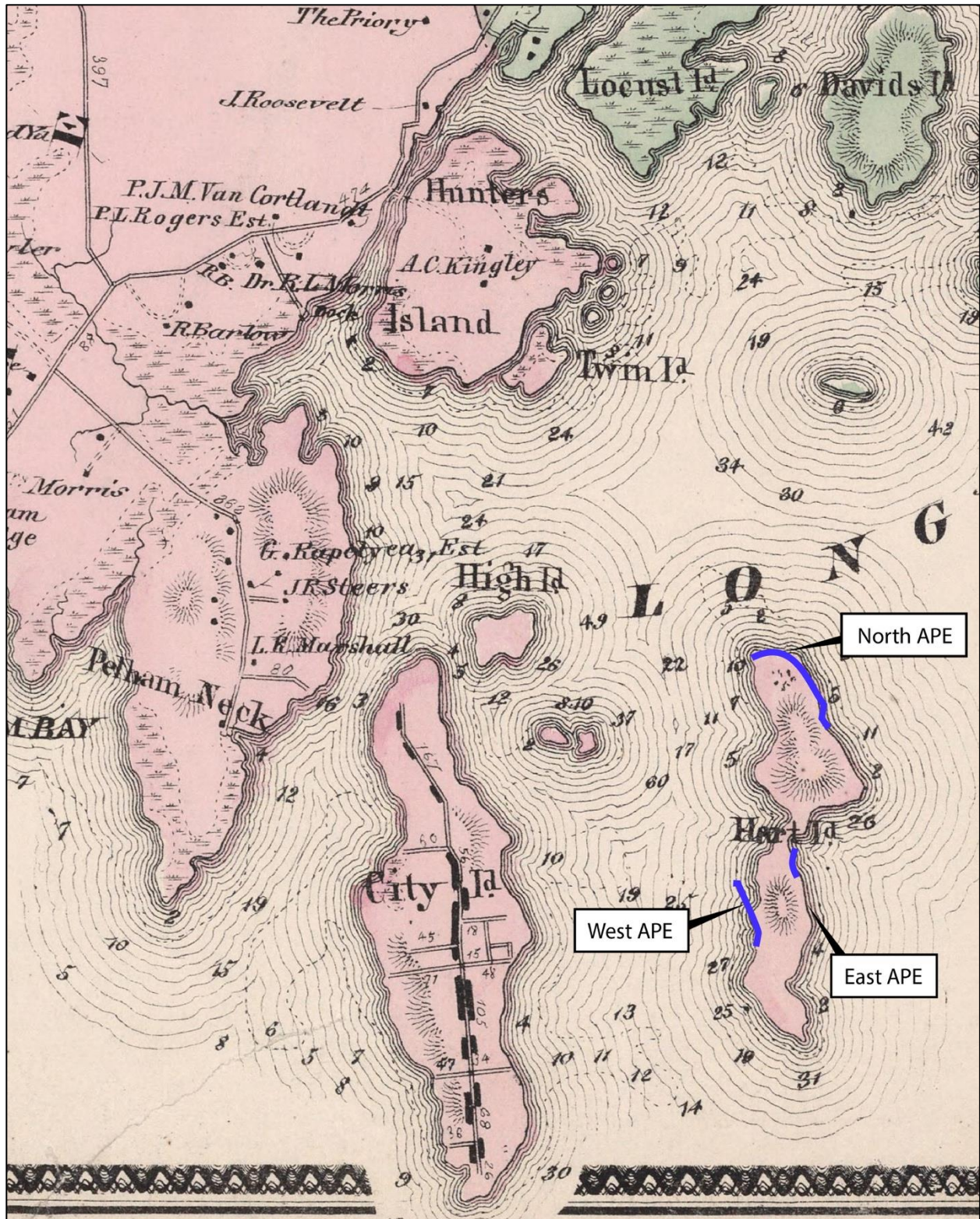
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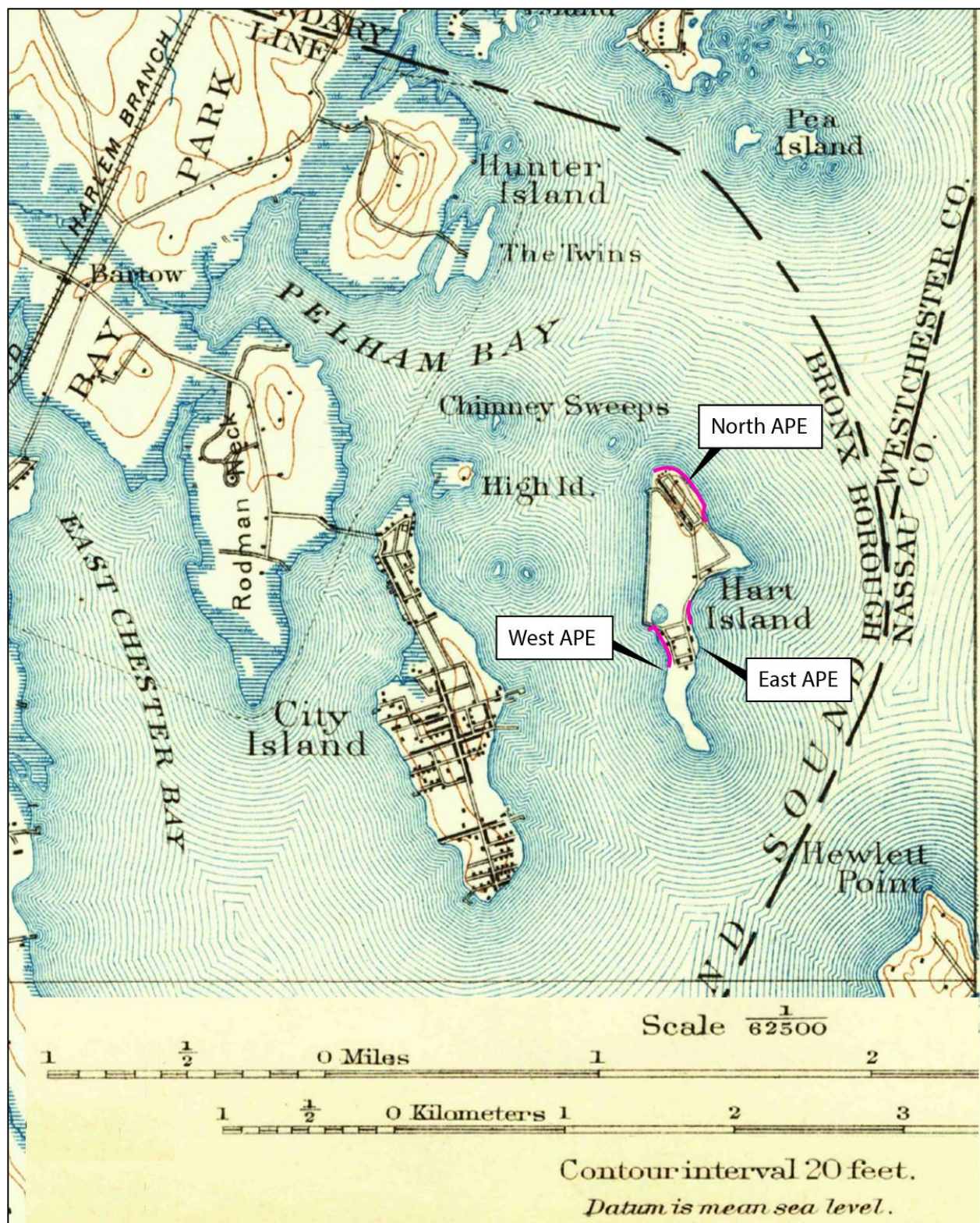
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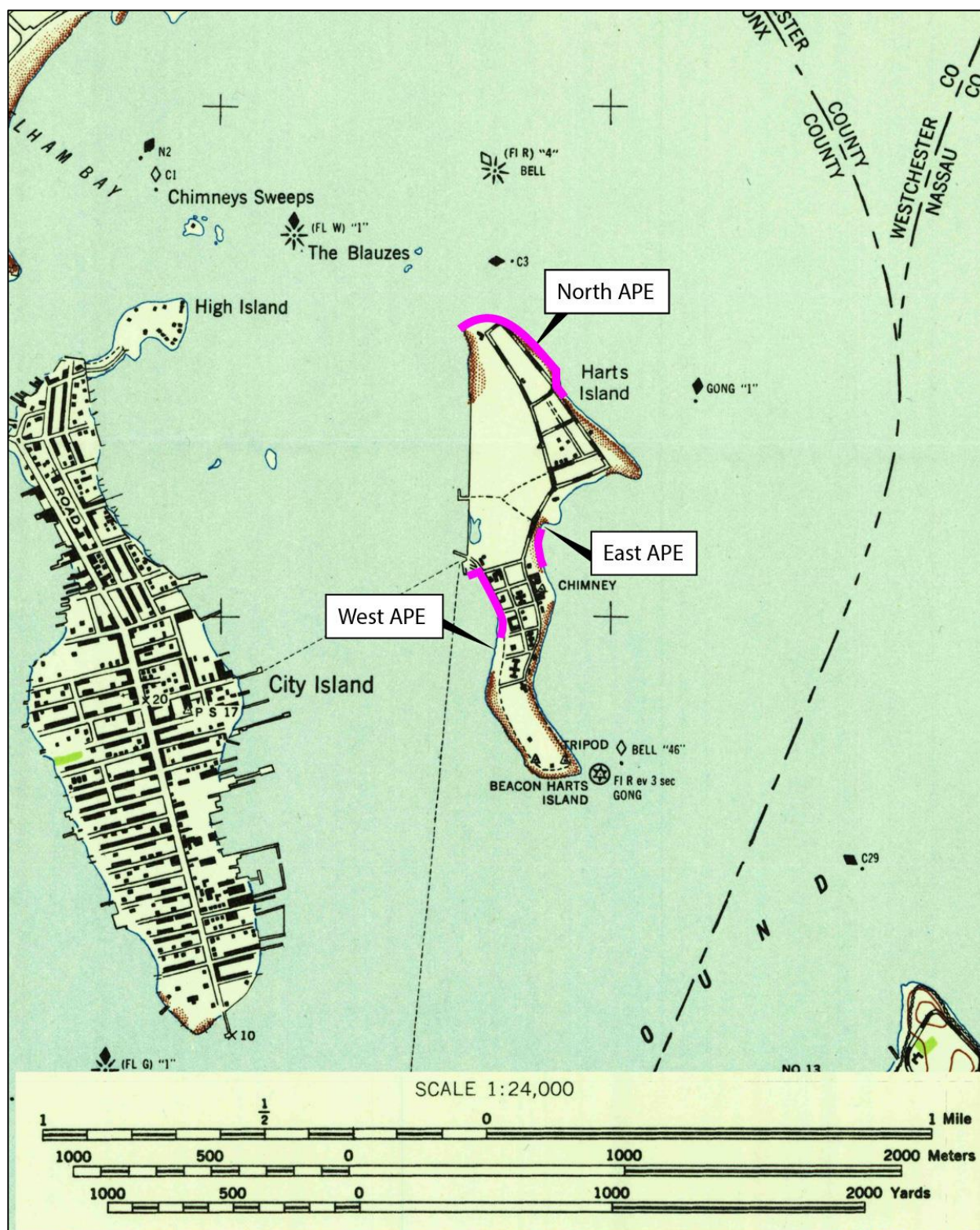
Appendix A:
Additional Maps



Map 11: Plans of East Chester, Pelham, and New Rochelle,
Frederick W. Beers 1867



Map 13: USGS New York Harlem Quadrangle (United States Geological Survey 1900).



Appendix B:
Additional Images



Image 26: West APE, dry-laid stone seawall; facing northwest.



Image 27: Chapel on Channel View Road; facing south.



Image 28: West APE damaged seawall; facing northwest.



Image 29: Side view of Chapel from Channel View Road; facing east.



Image 30: West APE damaged seawall; facing west.



Image 31: West APE damaged seawall; facing southwest



Image 32: East APE, damaged mortared stone seawall and surrounding debris; facing southwest.



Image 33: East APE, damaged seawall, large stones scattered on beach; facing northwest.



Image 34: East APE, damaged seawall and loose stone and debris obscuring beach; facing north.



Image 35: North APE, side view of exposed cistern from Soundview Road; facing north



Image 36: North APE, archaeologists inspecting human remains on embankment, facing south.



Image 37: North APE, archaeologists inspecting human remains on embankment, facing south.



Image 38: North APE, side view of exposed cistern from beach; facing southwest.



Image 39: North APE, view of exposed cistern from beach; facing west.



Image 40: North APE, side view of exposed cistern from beach; facing north.



Image 41: North APE, eroded embankment; facing west.

Appendix C:
Resumes of Key Personnel

Alyssa Loorya, M.Phil, M.A., R.P.A. | President, Principal Investigator



Ms. Loorya is founder and president of Chrysalis Archaeological Consultants. For nearly twenty years she has worked in cultural resource management and public education devoted to preserving cultural resources and communicating their value to local communities. She has completed over sixty technical and academic reports and has delivered dozens of presentations concerning preservation compliance, New York City historical development, and educational curricula. Her extensive experience lends itself to her roles in developing and executing research and excavation plans, project management, regulatory compliance and report production.

SELECTED PROJECTS

Project undertaken on behalf of the City of New York – Department of Design and Construction for infrastructure improvements have included:

Beekman Street, New York, NY, Phase IA, IB – 2005
City Hall Park, New York, NY, Phase IB, II – 2010-2013
Downtown Brooklyn Water Mains Project, Brooklyn, NY – Phase IB – 2011
Fulton Street Reconstruction, New York, NY – Phase IA, IB – 2009-2015
Peck Slip Reconstruction, New York, NY – Phase IA, IB – 2010-2015
The High Bridge, New York, NY, Phase IB – 2012-2015
Washington Square Park, New York, NY – Phase IB – 2015 to present
Worth Street Reconstruction – Phase I and II – 2016 to present

Projects undertaken on behalf of the City and State of New York – Department of Transportation for infrastructure improvements have included:

City Island Bridge, Bronx, New York – Phase IB – 2013 to present
Tappan Zee Bridge Replacement, Tarrytown, NY – Phase I – 2014 to present
Kosciuszko Bridge Replacement Project, Brooklyn/Queens, NY – Phase I – 2014 to present

AREAS OF EXPERTISE

National Historic Preservation Act
Section 106 Compliance
Material Collections Analysis
Archaeological Survey and Excavation
Public Outreach

EDUCATION

Ph.D candidate, Anthropology and
Archaeology: CUNY Graduate School.
Expected graduation 2016

M.Phil, 2000 Anthropology and
Archaeology: CUNY Graduate School

M.A., Anthropology: 1998, Hunter
College

CERTIFICATIONS

Register of Professional Archaeologists
10-Hour OSHA Construction Safety
30-Hour OSHA Construction Safety
40-Hour OSHA HAZWOPER
SWAC - Secure Worker Access
Consortium

PROFESSIONAL EXPERIENCE

2001-Present: Chrysalis Archaeological
Consultants

2006-2010: URS Corporation, Principal
Investigator

2007-2010: Gray & Pape, Supervisory
Consultant

CONTACT INFORMATION

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www.chrysalisarchaeology.com

Rhode Island Regional Office
One Richmond Square – Suite 121F
Providence, RI 02906-5139
Phone: 401.499.4354

Project's undertaken on behalf of the City of New York – Department of Parks and Recreation at historic houses have included:

Bartow-Pell Mansion; Bronx, NY, Phase IB, 1993, 2004, 2008, 2012

Chambers Street, New York, NY, Phase I, 2005

City Hall Park, Fuel Cell Project, New York, NY, Phase IB, 2013

City Hall Park, New York, NY, Phase IB, II, 2012

City Island Bridge, Bronx, NY, Phase IB, 2014

Columbus Park, New York, NY, Phase I, 2007

Dyckman Farmhouse; New York, NY, Phase IB, 2007

Gravesend Cemetery; Brooklyn, NY, Phase IB, 2002

Hendrick I. Lott House, Brooklyn, NY – Phase I, II, 2004, 2013

High Bridge, New York, NY, Phase IB, 2014

John Bowne House, Queens, NY, Phase IB, 2014

Pelham Bay Park, Bronx, NY, Phase IB, 2014-2015

Pieter Claesen Wyckoff House; Brooklyn, NY, Phase IB, 1997, 2004

Queens County Farm Museum; Queens, NY, Phase IB, 2004

Roger Morris Park, New York, NY, Phase IB, 2005

Rufus King Park, Queens, NY, Phase IB, 2006, 2007

Van Cortlandt Park, Bronx, NY, Phase IB, 1990-1993, 2005

Van Cortlandt Park, Bronx, NY (Dog Run), Phase IB, 2015

Eileen Kao | Field Supervisor



Ms. Kao has over six years of experience working in all phases of archaeological excavation and reporting. Her specializations include both prehistoric and historic contexts in the Middle Atlantic, New England, and Midwest regions. She has extensive knowledge of laboratory analysis and archival preparation techniques for prehistoric and historic artifacts, and has experience with in-field GPS devices.

PROJECT EXPERIENCE

Forth Wadsworth – Phase IB

Staten Island, NY

Monitored ongoing excavations for drainage and infrastructural improvements at a Revolutionary War era fort with the potential to yield pre-historic cultural resources due to its location adjacent to the historically rich waters of the New York Bay.

City Island Bridge Replacement – Monitoring

Bronx, NY

Monitored excavations in Pelham Bay Park and City Island in advance of the City Island Bridge replacement to mitigate any impacts to potential pre-historic or historic cultural resources in an area

50 Bowery – Phase IA

New York City, NY

Contributed to documentary research investigating the site use history of a former tavern structure with potential historic significance in the Bowery, Manhattan.

Hendrick I. Lott House – Phase IB/Monitoring

Brooklyn, NY

Participated in excavation of outdoor features associated with 19th century rural and farmland activities at one of the oldest remaining historic houses in New York City.

DEL-359 – Catskill and Delaware Interconnection Replacement – Phase IB

Gardiner, Ulster County, NY

Led shovel test to investigate potential prehistoric and historic cultural nature of an aqueduct water shaft station in the Hudson River Valley.

AREAS OF EXPERTISE

Archaeological Survey and Excavation

Laboratory Analysis

Industrial Archaeology

EDUCATION

M.A., Anthropology: In progress, Hunter College

B.A., Anthropology: 2007, University of Pittsburgh, Pittsburgh, PA

CERTIFICATIONS

8-Hour Annual HAZWOPER Refresher Course (2012)

10-Hour OSHA Construction Safety Training (2010)

40-Hour HAZWOPER Safety Training and Update (2009 & 2011)

PROFESSIONAL EXPERIENCE

2011-Present: Chrysalis Archaeological Consultants

2008-2011: URS Corporation

CONTACT INFORMATION

ekao@chrysalisarchaeology.com

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www.chrysalisarchaeology.com

Richmond, VT – Phase IB

Chittenden County, VT

Led shovel test survey to investigate the prehistoric and historic cultural sensitivity of upland rural farmland. Coordinated field investigations and prepared a final report summarizing the findings.

Weathersfield, VT – Phase IB

Windsor County, VT

Led shovel test survey to investigate possible prehistoric cultural resources associated Native American occupation of an area adjacent to a tributary of the Connecticut River. Coordinated field investigations and prepared a final report summarizing the findings.

John Bowne House – Phase IB/Monitoring

Queens, NY

Conducted Phase IB excavation of household features related to 18th and 19th century Dutch settlement landscape in this portion of Long Island. Monitored excavations for structural upgrades to the historic house.

Little Bay Park – Monitoring

Queens, NY

Conducted Phase II monitoring for infrastructural improvements at a park site with the potential for prehistoric and historic cultural resources related to turn of the century recreational usage by New York City's elite.

High Bridge Park – Monitoring

New York City, NY

Participated in identification of historic cultural resources beneath the High Bridge, which once housed the historic Croton Aqueduct. Catalogued potential cultural and architectural artifacts, the remnants of infrastructural development activities beneath the bridge.

Archaeological Field Test of 246 Front Street – Phase I

New York City, NY

Contributed to historic property background research and monitored test pit excavations in advance of construction on the property to assess any remaining historic cultural resources related to 18th and 19th century commercial activities. Documented findings and prepared a final report summarizing the results.

Fulton Street Reconstruction – Phase II

New York City, NY

Monitored excavations and investigated historic architecture and water supply features in advance of road reconstruction and utility replacements at Fulton Street in downtown Manhattan's South Street Seaport Historic District.

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Gowanus Canal – Phase IA

Brooklyn, NY

Completed an assessment of archaeological/historic sensitivity for the Gowanus Canal area of Brooklyn, NY as part of NY SHPO's investigation into expansion of the historic district. Developed map analysis to potentially locate the burial site of American Revolutionary War soldiers.

Southard Avenue, Howell Township – Phase IB

Howell, Ocean County, NJ

Served as crew chief for shovel test survey of a historic farm site with the potential to yield cultural historic resources. Conducted research, coordinated field efforts for survey and testing, and prepared a final report summarizing results.

Pleasant Grove, Jackson Mitigation Site – Phase IB

Jackson, Ocean County, NJ

Served as crew chief and led shovel test survey to investigate prehistoric and historic potential of 19th century farmland. Conducted research, coordinated field efforts for survey and testing of a 10 acre wetland mitigation area, and prepared a final report summarizing the results.

Oradell Reservoir Mitigation Bank – Phase I

Oradell, Bergen County, NJ

Contributed to Phase IA historic documentary research and led Phase IB ground survey of a wetland mitigation area within the Hackensack River valley. Coordinated field efforts to explore an area with the potential to yield prehistoric resources and prepared a final report summarizing the results.

Peck Slip Rehabilitation – Phase II

New York City, NY

Supplemented historic business and property background research. Conducted monitoring, mapping, and feature-specific excavations during road reconstruction and utility replacements at Peck Slip, an 18th and 19th century shipping area and Historic District in downtown Manhattan. Organized public outreach sessions incorporating collaborative lectures and didactic displays.

City Hall Reconstruction Project – Phase IB and II

New York City, NY

Performed monitoring and Phase II excavations at City Hall pinpointing historic architecture and features. Highlighted discoveries include a pre-revolution British jail, early water management features, and large scale refuse deposits. Performed in conjunction with URS.

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Christopher Ricciardi, Ph.D., RPA | Principal Investigator

With over 20 years of experience in the field, Dr. Ricciardi is an expert on Section 106 and Federal, State, and Local regulatory criteria for compliance. His research has focused on 18th and 19th century rural communities, highlighting the development of New York City's outer boroughs and its surrounding area. Dr. Ricciardi served as an archeologist for the U.S. Army Corps of Engineers New York District from 2001 - 2009. He has been President of the Professional Archaeologists of New York and the Metropolitan Chapter of the New York State Archaeological Association and is committed to local historic preservation.

PROJECTS BY STATE

Project's undertaken on behalf of the City of New York – Department of Parks and Recreation have included:

Bartow-Pell Mansion; Bronx, NY, Phase IB, 1993, 2004, 2008, 2012
Chambers Street, New York, NY, Phase I, 2005
City Hall Park, Fuel Cell Project, New York, NY, Phase IB, 2013
City Hall Park, New York, NY, Phase IB, II, 2012
City Island Bridge, Bronx, NY, Phase IB, 2014
Columbus Park, New York, NY, Phase I, 2007
Dyckman Farmhouse; New York, NY, Phase IB, 2007
Elmhurst Park; Queens, NY, Phase IB, 1997
Fulton Street Phase II, New York, NY, Phase I, II, 2014
Gravesend Cemetery; Brooklyn, NY, Phase IB, 2002
Hendrick I. Lott House, Brooklyn, NY – Phase I, II, 2004, 2013
High Bridge, New York, NY, Phase IB, 2014
John Bowne House, Queens, NY, Phase IB, 2014
John Street Reconstruction, New York, NY, Phase IB, 2011
Little Bay Park, Queens, NY, Phase I, 2013
Marine Park; Brooklyn, NY, Phase IB, 1997, 2003
Martin's Field Phase I Project, Queens, NY, Phase IB, 2006
Martin's Field Phase II Project, Queens, NY, Phase IB, 2006
Ocean Breeze Park; Staten Island, NY, Phase IA, 2008
Peck Slip, New York, NY, July 2011 to present
Pieter Claesen Wyckoff House; Brooklyn, NY, Phase IB, 1997, 2004
Queens County Farm Museum; Queens, NY, Phase IB, 2004
Roger Morris Park, New York, NY, Phase IB, 2005
Rufus King Park, Queens, NY, Phase IB, 2006, 2007
Wall Street Water Main Project, New York, NY, Phase I, 2007
Wayanda Park, Queens, NY, Phase IB, 2003



AREAS OF EXPERTISE

Archaeological Survey and Excavation
Public Outreach
Laboratory Preparation
Section 106-National Historic Preservation Act

EDUCATION

B.A., 1987, Brooklyn College, CUNY
(History and Anthropology and Archaeology)
M.A., 1997, Syracuse University
(Anthropology and Archaeology)
Ph.D., 2004, Syracuse University
(Anthropology and Archaeology)

CERTIFICATIONS

Register of Professional Archaeologists
10-Hour OSHA Construction Safety Training
SWAC -Secure Worker Access Consortium

PROFESSIONAL EXPERIENCE

2001-Present: Chrysalis Archaeological Consultants
2001-Present: U.S. Army Corps of Engineers
1990-2001: Field and Laboratory Director – Brooklyn College Archaeological Research Center, Brooklyn College, CUNY

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Appendix D:

Archaeological Monitoring and Archaeological Survey Plan, Unanticipated Discoveries Plan and Human Remains Protocol