JOINT APPLICATION FOR

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROTECTION OF WATERS
TIDAL WETLANDS
FRESHWATER WETLANDS
WATER QUALITY CERTIFICATE
COASTAL CONSISTENCY CONCURRENCE
AND

US ARMY CORPS OF ENGINEERS
APPLICATION No. NAN-2013-00259-EHA
SECTION 404 OF THE CLEAN WATER ACT AND
SECTION 10 OF THE RIVERS AND HARBORS ACT

SAW MILL CREEK PILOT WETLAND MITIGATION BANK

Borough of Staten Island, Richmond County, New York

Submitted by:
New York Econonmic Development Corporation

Submitted to:
New York State Department of Envrionmental Conservation
US Army Corps of Engineers, New York District
New York State Department of State
New York City Department of City Planning

November 15, 2013

NYCEDC

New York City Economic Development Corporation

November 15, 2013

1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101-5407
Attn: Mr. John Cryan

Re: Saw Mill Creek Pilot Wetland Mitigation Bank
Joint Application:
- **NYSDEC - Protection of Waters, Tidal Wetlands Permit, Freshwater Wetlands Permit, Water Quality Certificate**
- **US Army Corps of Engineers – Section 404 & 10 Permit**

Dear Mr. Cryan:

The New York City Economic Development Corporation (NYCEDC) hereby makes a Joint Application to the New York State Department of Environmental Conservation (NYSDEC) and the US Army Corps of Engineers (USACE) to construct the Saw Mill Creek Pilot Wetland Mitigation Bank (Bank) in the Borough of Staten Island, Richmond County, New York.

The primary purpose of the project is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance) and New York State ECL Article 25 (Tidal Wetlands). The NYCEDC anticipates that the construction period for the Bank would be approximately 6 months. The NYCDEC plans to initiate construction in 2014, with completion in 2015.

Enclosed please find a copy of the above-mentioned permit application. The NYCEDC is seeking to obtain the necessary permits to proceed with construction of the wetland mitigation bank. The Bank will provide a pilot program for wetland mitigation for projects in the New York City area where no bank currently exists.

This document contains information to support the request for the above cited permits. Part II of this application package includes a completed NYSDEC/USACE *Joint Application Form*. Part III contains the New York City Environmental Quality Review (CEQR) Environmental Assessment Short Form. Part IV includes additional information regarding this project, including the following sections:

- Alternatives Analysis for the No-Build and Build Alternatives;
- Construction Activities;
- Existing Conditions (geomorphology, soils, hydrology, vegetative communities, proposed impacts, soil contamination summary, cultural resources summary, and threatened and endangered species);
- Project Impacts associated with Proposed Project;
- Information regarding required Federal, State, and Local Permits and Approvals;
- Water Quality Certification; and
- Coastal Zone Management Consistency Determination

It should be noted that the Essential Fish Habitat (EFH) Assessment for the Proposed Project to be submitted to the National Marine Fisheries Service (NMFS) is being prepared based upon a response letter from NMFS dated August 7, 2013.

Consultation with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) pursuant to Section 106 of the National Historic Preservation Act, is ongoing.

At this point in time, preliminary stormwater management concepts have been discussed with NYSDEC, final plans for the Soil Erosion and Sediment Control Plan and the Stormwater Pollution Prevention Plan (SWPPP) will be further developed in coordination with the NYSDEC upon development of final design plans and prior to construction. Additionally the State Pollution Discharge Elimination System (SPDES) permit application will be submitted upon final design and prior to construction.

A signed 'Permission to Inspect Property Supplement' is included in this application.

Ms. Peg McBrien (Project Manager; Louis Berger & Assoc. P.C., 412 Mount Kemble Avenue, Morristown, NJ, 07962; Telephone: (973) 407-1465) should be contacted with respect to matters that arise with respect to this permit application and subsequent review.

Thank you for your time and attention to this project. We look forward to working with you to initiate construction of the Saw Mill Creek Pilot Wetland Mitigation Bank.

Sincerely,

NEW YORK CITY ECONOMIC DEVLOPMENT CORPORATION

Thomas McKnight,
Executive Vice President

NYCEDC
New York City Economic Development Corporation

November 15, 2013

U.S. Army Corps of Engineers, New York District
26 Federal Plaza, Room 1937
New York, NY 10278-0090
Attn: Ms. Naomi Handell

Re: Saw Mill Creek Pilot Wetland Mitigation Bank
Joint Application: • NYSDEC Application - Protection of Waters, Tidal Wetlands Permit, Freshwater Wetlands Permit, Water Quality Certificate
• US Army Corps of Engineers – Section 404
App. No. NAN-2013-00259-EHA

Dear Ms. Handell:

The New York City Economic Development Corporation (NYCEDC) hereby makes a Joint Application to the New York State Department of Environmental Conservation (NYSDEC) and the US Army Corps of Engineers (USACOE) to construct the Saw Mill Creek Pilot Wetland Mitigation Bank in the Borough of Staten Island, Richmond County, New York.

The primary purpose of the project is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance) and New York State ECL Article 25 (Tidal Wetlands). The NYCEDC anticipates that the construction period for the Bank would be approximately 6 months. The NYCDEC plans to initiate construction in 2014, with completion in 2015.

Enclosed please find a copy of the above-mentioned permit application. The NYCEDC is seeking to obtain the necessary permits to proceed with construction of the wetland mitigation bank. The Bank will provide a pilot program for wetland mitigation for projects in the New York City area where no bank currently exists.

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Thank you for your time and attention to this project. We look forward to working with you to initiate construction of the Saw Mill Creek Pilot Wetland Mitigation Bank.

Sincerely,

NEW YORK CITY ECONOMIC DEVLOPMENT CORPORATION

Thomas McKnight,
Executive Vice President

NYCEDC

New York City Economic Development Corporation

November 15, 2013

NYS Department of State
Division of Coastal Resources
Consistency Review Unit
One Commerce Plaza, 99 Washington Ave
Albany, NY 12231-0001
Attn: Jeffrey Zappier

Re: Saw Mill Creek Pilot Wetland Mitigation Bank
Joint Application:
- **NYSDEC - Protection of Waters, Tidal Wetlands Permit, Freshwater Wetlands Permit, Water Quality Certificate**
- **US Army Corps of Engineers – Section 404 & 10 Permit**

Dear Mr. Zappier:

The New York City Economic Development Corporation (NYCEDC) hereby makes a Joint Application to the New York State Department of Environmental Conservation (NYSDEC) and the US Army Corps of Engineers (USACE) to construct the Saw Mill Creek Pilot Wetland Mitigation Bank (Bank) in the Borough of Staten Island, Richmond County, New York.

The primary purpose of the project is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance) and New York State ECL Article 25 (Tidal Wetlands). The NYCEDC anticipates that the construction period for the Bank would be approximately 6 months. The NYCDEC plans to initiate construction in 2014, with completion in 2015.

Enclosed please find a copy of the above-mentioned permit application. The NYCEDC is seeking to obtain the necessary permits to proceed with construction of the wetland mitigation bank. The Bank will provide a pilot program for wetland mitigation for projects in the New York City area where no bank currently exists.

This document contains information to support the request for the above cited permits. Part II of this application package includes a completed NYSDEC/USACE *Joint Application Form*. Part III contains the New York City Environmental Quality Review (CEQR) Environmental Assessment Short Form. Part IV includes additional information regarding this project, including the following sections:

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Ms. Peg McBrien (Project Manager; Louis Berger & Assoc. P.C., 412 Mount Kemble Avenue, Morristown, NJ, 07962; Telephone: (973) 407-1465) should be contacted with respect to matters that arise with respect to this permit application and subsequent review.

Thank you for your time and attention to this project. We look forward to working with you to initiate construction of the Saw Mill Creek Pilot Wetland Mitigation Bank.

Sincerely,

NEW YORK CITY ECONOMIC DEVLOPMENT CORPORATION

Thomas McKnight,
Executive Vice President

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PART I - INTRODUCTION

PART I - INTRODUCTION

The New York City Economic Development Corporation (NYCEDC) has engaged in an initiative with the City and State of New York to protect and enhance the City's coastal resources. As part of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) initiative, NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The proposed project is referred to as the Saw Mill Creek Pilot Wetland Mitigation Bank (the Bank).

On behalf of NYCEDC, Louis Berger & Assoc., PC (Louis Berger), prepared a Prospectus for the Bank in accordance with the *Final Rule for Compensatory Mitigation for Losses of Aquatic Resources*; (Federal Register, Vol. 73, No. 70, April 10, 2008). This Prospectus has been submitted to the U.S. Army Corps of Engineers – New York District (USACE), Chair of the Interagency Review Team (IRT), to formally initiate the planning and agency review process for the Bank. Information provided in the Prospectus serves as the basis for developing the Mitigation Banking Instrument (MBI). The MBI will contain the Site Development Plan, location maps, summary of existing conditions and reference sites, hydrologic analysis, design criteria and success, and plans for construction, operation, monitoring and maintenance of the Bank.

The proposed Bank will be located on Staten Island in Richmond County, New York as shown on the U.S. Geologic Survey (USGS) topographic map of Arthur Kill, NY 7.5-minute quadrangle (Figure 1, Bank Location Map in Appendix A, Attachment 1). The Bank will be established within a portion of a 68.45 acre site that is bisected by Chelsea Road (oriented north to south) into a western section and an eastern section. The 14.60 acre western section is bounded by railroad tracks to the west, a Williams-Transco underground natural gas pipeline valve house access road to the north, Chelsea Road and privately-owned parcels to the east and by Saw Mill Creek to the south. The 53.85 acre eastern section is bounded by Chelsea Road and privately-owned parcels to the west, Edward Curry Avenue and associated right-of-way to the north, tidal marsh followed by Route 440 to the east, and Chelsea Road and an off-ramp from Route 440 to the south.

NYCEDC is a New York not-for-profit corporation that performs a variety of economic development, urban planning and other services for the City of New York pursuant to an agreement with the City. As a part of these services, NYCEDC is acting as the Sponsor of the Bank described in this permit application.

See Appendix B of this application for current photographs of the current project area and surrounding area.

The NYCEDC is seeking to obtain the necessary permits to proceed with construction of the wetland mitigation bank, including a New York State Department of Environmental Conservation (NYSDEC) Protection of Waters Permit, a Tidal Wetlands Permit, NYSDEC Freshwater Wetlands Permit, a Water Quality Certificate; with the New York State Department of State (NYSDOS) for a Coastal Zone Consistency certification concurrence; and the USACE for an Section 404 & 10 Individual Permit for the activities described herein. A Request for Jurisdictional Determination was submitted to the USACE on August 9, 2013 based on a wetland delineation of the project area.

The request for concurrence with the Coastal Zone Management Program (CZMP) Certification includes a consistency certification with New York City's Waterfront Revitalization Program (WRP) that will be filed with the New York City Department of City Planning, Waterfront Section.

Consultation with the State Historic Preservation Offices of New York (i.e., New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) pursuant to Section 106 of the National Historic Preservation Act is ongoing.

The remainder of this document contains information to support this request for a NYSDEC Protection of Waters Permit, Tidal Wetlands Permit, Freshwater Wetlands Permit, a Water Quality Certificate; with the NYSDOS, in consultation with the New York City Department of City Planning (NYCDCP) for a WRP Coastal Consistency Assessment; and with the USACE for an Section 404 & 10 permit. Part II of this application package includes a completed NYSDEC/USACE Joint Application Form and USACE Environmental Questionnaire. Part III presents additional information regarding this Project including: Project Description; Alternatives Analysis for the No-Build and Build Alternatives; Existing Conditions; Project Impacts; and Required Approvals.

PART II – JOINT APPLICATION FORM AND USACOE ENVIRONMENTAL QUESTIONNAIRE

JOINT APPLICATION FORM

For Permits/Determinations to undertake activities affecting streams, waterways, waterbodies, wetlands, coastal areas and sources of water withdrawal.

New York State

You must separately apply for and obtain separate Permits/Determinations from each involved agency prior to proceeding with work. Please read all instructions.

US Army Corps of Engineers (USACE)

APPLICATIONS TO

1. NYS Department of Environmental Conservation

Check all permits that apply:

- ☐ Stream Disturbance
- ☑ Excavation and Fill in Navigable Waters
- ☐ Docks, Moorings or Platforms
- ☐ Dams and Impoundment Structures
- ☑ 401 Water Quality Certification
- ☑ Freshwater Wetlands
- ☑ Tidal Wetlands
- ☐ Coastal Erosion Management
- ☐ Wild, Scenic and Recreational Rivers
- ☐ Water Withdrawal
- ☐ Long Island Well
- ☐ Aquatic Vegetation Control
- ☐ Aquatic Insect Control
- ☐ Fish Control
- ☐ Incidental Take of Endangered/Threatened Species

☑ I am sending this application to this agency.

2. US Army Corps of Engineers

Check all permits that apply:

- ☑ Section 404 Clean Water Act
- ☑ Section 10 Rivers and Harbors Act
- ☐ Nationwide Permit(s) - Identify Number(s):

Preconstruction Notification - ☐ Y / ☐ N

☑ I am sending this application to this agency.

3. NYS Office of General Services

Check all permits that apply:

- ☐ State Owned Lands Under Water
- ☐ Utility Easement (pipelines, conduits, cables, etc.)
- ☐ Docks, Moorings or Platforms

☐ I am sending this application to this agency.

4. NYS Department of State

Check if this applies:

- ☑ Coastal Consistency Concurrence

☑ I am sending this application to this agency.

5. Name of Applicant (use full name)

New York City Economic Development Corporation

Mailing Address: Attn: Katie Axt, 110 William Street

Post Office City: New York

State: NY Zip Code: 10037

Telephone (daytime): 212.312.3730

Email: kaxt@nycedc.com

Applicant must be:

- ☑ Owner
- ☑ Operator
- ☐ Lessee

(check all that apply)

Taxpayer ID (If applicant is NOT an individual):

6. Name of Facility or Property Owner (if different than Applicant) Department of Parks and Recreation

Mailing Address: Attn: Alyssa Cobb Konon, 830 5th Ave

Post Office City: New York

State: NY Zip Code: 10065

Telephone (daytime): (212) 360-3402

Email: Alyssa.Cobb@parks.nyc.gov

7. Contact/Agent Name

Peg McBrien, PE

Company Name: The Louis Berger Group, Inc.

Mailing Address: 412 Mount Kemble Avenue, P.O. Box 1946

Post Office City: Morristown

State: NJ Zip Code: 07962

Telephone (daytime): 973-407-1465

Email: mmcbrien@louisberger.com

8. Project / Facility Name

Saw Mill Creek Pilot Wetland Mitigation Bank

Property Tax Map Section / Block / Lot Number: see attached

Project Location - Provide directions and distances to roads, bridges and bodies of waters:

From Goethals Bridge on I-278, take Gulf Ave. south to intersection of Edward Curry Ave. Right on Edward Curry Ave, then left onto Chelsea Rd to bridge over Saw Mill Creek.

Street Address, if applicable: ~425 Chelsea Road

Post Office City: Staten Island State: NY Zip Code: 10314

Town / Village / City: Staten Island

County: Richmond

Name of USGS Quadrangle Map: Athur Kill

Stream/Water Body Name: Saw Mill Creek

Location Coordinates: Enter NYTMs in kilometers, **OR** Latitude/Longitude

NYTM-E	NYTM-N	Latitude	Longitude
		40.61006	-74.18869

For Agency Use Only DEC Application Number: USACE Number: NAN-2013-00259-EHA

JOINT APPLICATION FORM - PAGE 2 OF 2

Submit this completed page as part of your Application.

9. **Project Description and Purpose:** Provide a complete narrative description of the proposed work and its purpose. Attach additional page(s) if necessary. Include: description of current site conditions and how the site will be modified by the proposed project; structures and fill materials to be installed; type and quantity of materials to be used (i.e., square ft of coverage and cubic yds of fill material and/or structures below ordinary/mean high water) area of excavation or dredging, volumes of material to be removed and location of dredged material disposal or use; work methods and type of equipment to be used; pollution control methods and mitigation activities proposed to compensate for resource impacts; and where applicable, the phasing of activities. **ATTACH PLANS ON SEPARATE PAGES.**

The New York City Economic Development Corporation (NYCEDC) has engaged in an initiative with the City and State of New York to protect and enhance the City's coastal resources. As part of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative, NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable and efficient process to serve the mitigation needs of permit applicants. The project is referred to as the Saw Mill Creek Pilot Wetland Mitigation Bank. The objective of a mitigation bank is to provide for the replacement of the chemical, physical, and biological functions of wetlands and the other aquatic resources that are lost as a result of authorized impacts. Using appropriate methods, the newly established functions are quantified as mitigation credits that are available for use by the bank sponsors or by other parties to compensate for authorized impacts. If feasible and successful, this initiative will be part of a longer term program to enhance and protect coastal resources of the City.

Proposed Use: ☐ Private ☑ Public ☐ Commercial	Proposed Start Date: Fall 2014	Estimated Completion Date: Spring 2015
Has Work Begun on Project? ☐ Yes ☑ No If Yes, explain.		
Will Project Occupy Federal, State or Municipal Land? ☑ Yes ☐ No If Yes, please specify. New York City owned land.		

10. List Previous Permit / Application Numbers (if any) and Dates:
None.

11. Will this project require additional Federal, State, or Local Permits including zoning changes? ☑ Yes ☐ No If yes, please list:
New York State Coastal Zone Management compliance
SPDES, SWMPP, CEQR, SEQRA, DSBS Waterfront Construction, EFH

12. **Signatures.** If applicant is not the owner, both must sign the application.
I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than $10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Signature	Printed Name	Title	Date
Signature of Applicant	Thomas McKnight	Executive Vice President	11/13/2013
Signature of Owner	Alyssa Cobb Konon	Assistant Commissioner	11/14/13
Signature of Agent	Peg McBrien, PE	Project Mananger	

For Agency Use Only **DETERMINATION OF NO PERMIT REQUIRED**

_____ (Agency Name) has determined that No Permit is required from this Agency for the project described in this application. Agency Project Number _____

Agency Representative: Name (printed) _____ Title _____

Signature _____ Date _____

New York State
Department of Environmental Conservation

PERMISSION TO INSPECT PROPERTY

By signing this permission form for submission with an application for a permit(s) to the Department of Environmental Conservation ("DEC"), the signer consents to inspection by DEC staff of the project site or facility for which a permit is sought and, to the extent necessary, areas adjacent to the project site or facility. This consent allows DEC staff to enter upon and pass through such property in order to inspect the project site or facility, without prior notice, between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday. If DEC staff should wish to conduct an inspection at any other times, DEC staff will so notify the applicant and will obtain a separate consent for such an inspection.

Inspections may take place as part of the application review prior to a decision to grant or deny the permit(s) sought. By signing this consent form, the signer agrees that this consent remains in effect as long as the application is pending, and is effective regardless of whether the signer, applicant or an agent is present at the time of the inspection. In the event that the project site or facility is posted with any form of "posted" or "keep out" notices, or fenced in with an unlocked gate, this permission authorizes DEC staff to disregard such notices or unlocked gates at the time of inspection.

The signer further agrees that during an inspection, DEC staff may, among other things, take measurements, may analyze physical characteristics of the site including, but not limited to, soils and vegetation (taking samples for analysis), and may make drawings and take photographs.

Failure to grant consent for an inspection is grounds for, and may result in, denial of the permit(s) sought by the application.

Permission is granted for inspection of property located at the following address(es):

Saw Mill Creek Pilot Wetland Mitigation Bank

Chelsea Road, Staten Island, NY

*By signing this form, I affirm under penalty of perjury that I am authorized to give consent to entry by DEC staff as described above. I understand that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.**

Alyssa Cobb Konon
Assistant Commissioner
Department of Parks and Recreation — Alyssa Cobb — 11/14/13

Print Name and Title | Signature | Date

*The signer of this form must be an individual or authorized representative of a legal entity that:

- owns fee title and is in possession of the property identified above;
- maintains possessory interest in the property through a lease, rental agreement or other legally binding agreement; or
- is provided permission to act on behalf of an individual or legal entity possessing fee title or other possessory interest in the property for the purpose of consenting to inspection of such property.

`ENVIRONMENTAL QUESTIONNAIRE

This is intended to supplement ENG Form 4345, Application for Department of the Army Permit, or the Joint Application for Permit used in the State of New York. Please provide complete answers to all questions below which are relevant to your project. Any answers may be continued on separate sheet(s) of paper to be attached to this form.

PRIVACY ACT STATEMENT

The purpose of this form is to provide the Corps of Engineers with basic information regarding your project. This information will be used to facilitate evaluation of your permit application and for public dissemination as required by regulation. Failure to provide complete information may result in your application being declared incomplete for processing, thereby delaying processing of your application.

GENERAL - APPLICABLE TO ALL PROJECTS

1. ***Explain the need for, and purpose of, the proposed work.***

The New York City Economic Development Corporation (NYCEDC) has engaged in an initiative with the City and State of New York to protect and enhance the City's coastal resources. As part of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) initiative, NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The proposed project is referred to as the Saw Mill Creek Pilot Wetland Mitigation Bank (the Bank).

2. ***Provide the names and addresses of property owners adjacent to your work site (if not shown on the application form or project drawings).***

   (Please note that depending upon the nature and extent of your project, you may be requested to provide the names and addresses of additional property owners proximate to your project site to ensure proper coordination.)

   See spreadsheet provided in Appendix C of this application entitled, 'Adjoining Property Owners'.

3. ***Photographs of the project site should be submitted. For projects in tidal areas, photographs of the waterway vicinity should be taken at low tide. Using a separate copy of your plan view, indicate the location and direction of each photograph as well as the date and time at which the photograph was taken. Provide a sufficient number of photographs so as to provide a clear understanding of conditions on and proximate to your project site.***

   See photos located in Appendix A of this application.

4. ***Provide a copy of any environmental impact statement, or any other environmental report which was prepared for your project.***

   A New York City CEQR document was prepared. This document is provided as Part II of this application.

5. ***Provide a thorough discussion of alternatives to your proposal. This discussion should include, but***

not necessarily be limited to, the "no action" alternative and alternative(s) resulting in less disturbance to waters of the United States. For filling projects in waters of the United States, including wetlands, your alternatives discussion should demonstrate that there are no practicable alternatives to your proposed filling and that your project meets with current mitigation policy (i.e. avoidance, minimization and compensation).

The proposed project does not involve filling, and would result in creation of a wetland mitigation site for use by private and public entities. An alternatives analysis is provided in this application.

DREDGING PROJECTS

Answer the following if your project involves dredging.

1. ***Indicate the estimated volume of material to be dredged and the depth (below mean low water) to which dredging would occur. Would there be overdepth dredging?***

   There will be no dredging/excavation below the mean low water elevation (-2.84 feet NAVD88). Once fill is removed from the areas, the lowest elevation for excavation of the new channels will be to an elevation of -2.00 feet.

2. ***You can apply for a ten-year permit for maintenance dredging. If you wish to apply for a ten-year permit, please provide the number of additional dredging events during the ten-year life of the permit and the amount of material to be removed during future events.***

   No maintenance dredging is required for this Project.

3. ***Indicate of your drawings the dewatering area (if applicable) and disposal site for the dredged material (except landfill sites). Submit a sufficient number of photographs of the dewatering and disposal sites as applicable so as to provide a clear indication of existing conditions. For ten-year maintenance dredging permits, indicate the dewatering/disposal sites for future dredging events, if known.***

   The project does not involve dredging of an existing waterway. Excavated material will be tested and disposed of off-site. Disposal sites have not yet been identified. If material is tested as contaminated, the material will be placed at an approved off-site facility.

4. ***Describe the method of dredging (i.e. clamshell, dragline, etc.) and the expected duration of dredging.***

   The project does not involve dredging of an existing waterway. A bucket excavator shall be used to for excavating fill material from the project area. Excavation will be on the order of 3 months duration.

5. ***Indicate the physical nature of the material to be dredged (i.e. sand, silt, clay, etc.) and provide estimated percentages of the various constituents if available. For beach nourishment projects, grain size analysis data is required.***

   The project does not involve dredging of an existing waterway. Physical and chemical characterization of the fill material indicates that the soils are expected to consist primarily of fine grain silts and clays.

6. ***Describe the method of dredged material containment (i.e. hay bales, embankment, bulkhead, etc.) and whether return flow from the dewatering/disposal site would reenter any waterway. Also indicate if there would be any barge overflow.***

The project does not involve dredging of an existing waterway. Excavated material will be collected by excavators that scoop the material and place it into dump trucks to carry it off-site, based on the dewatering plans as well as contaminated materials handling/treatment/disposal plans, which will be developed by the contractor. Before excavation a temporary turbidity curtain will be used in the existing channels adjacent to proposed channels. Temporary silt fence is proposed around the project site boundary.

Excess water from de-watering will re-enter the adjacent wetlands through silt fence and turbidity curtains to remove sediment from the waters.

MOORING FACILITIES

Answer the following if your project includes the construction or rehabilitation of recreational mooring facilities.

The proposed project does not involve mooring facilities, thus these questions are not applicable.

1. ***It is generally recommended that any fixed piers and walk ramps be limited to four feet in width, and that floats be limited to eight feet in width and rest at least two feet above the waterway bottom at mean low water. Terminal floats at private, noncommercial facilities should be limited to 20 feet in length. If you do not believe your proposal can meet with these recommendations, please provide the reason(s).***

2. ***Using your plan view, show to scale the location(s), position(s) and size(s) (including length, beam and draft) of vessel(s) to be moored at the proposed facility, including those of transient vessel(s) if known.***

3. ***For commercial mooring sites such as marinas, indicate the capacity of the facility and indicate on the plan view the location(s) of any proposed fueling and/or sewage pumpout facilities. If pumpout facilities are not planned, please discuss the rationale below and indicate the distance to the nearest available pumpout station.***

4. ***Indicate on your plan view the distance to adjacent marine structures, if any are proximate and show the locations and dimensions of such structures.***

5. ***5. Discuss the need for wave protection at the proposed facility. Please be advised that if a permit is issued, you would be required to recognize that the mooring facility may be subject to wave action from wakes of passing vessels, whose operations would not be required to be modified. Issuance of a permit would not relieve you of ensuring the integrity of the authorized structure(s) and the United States would not be held responsible for damages to the structure(s) and vessel(s) moored thereto from wakes from passing vessels.***

BULKHEADING / BANK STABILIZATION / FILLING ACTIVITIES

Answer the following if your project includes construction of bulkheading (also retaining walls and seawalls) with backfill, filling of waters/wetlands, or any other bank stabilization fills such as riprap, revetments, gabions, etc.

1. ***Indicate the total volume of fill (including backfill behind a structure such as a bulkhead) as well as the volume of fill to be placed into waters of the United States. The amount of fill in waters of the United States can be determined by calculating the amount of fill to be placed below the plane of spring high tide in tidal areas and below ordinary high water in non-tidal areas.***

   No fill will be placed into wetlands or waters of the United States.

2. ***Indicate the source(s) and type(s) of fill material.***

   N/A

3. ***Indicate the method of fill placement (i.e. by hand, bulldozer, crane, etc.). Would any temporary fills be required in waterways or wetlands to provide access for construction equipment? If so, please indicate the area of such waters and/or wetlands to be filled, and show on the plan and sectional views.***

   N/A

PART III – ADDITIONAL INFORMATION

PART III – ADDITIONAL INFORMATION

1.0 DESCRIPTION OF THE PROJECT

1.1 Project Location

The Saw Mill Creek Pilot Wetland Mitigation Bank (Bank) is located on Staten Island in Richmond County, New York as shown on the U.S. Geologic Survey (USGS) topographic map of Arthur Kill, NY 7.5-minute quadrangle (Figure 1). The geographic location of the project area is:

* Latitude: 40.61006
* Longitude: -74.18869

The project area encompasses approximately 68.45 acres and is bisected by Chelsea Road (oriented north to south) into a western section (approximately 14.60 acres) and an eastern section (approximately 53.85 acres) as shown on Figure 1. The western section is bounded by a railroad to the west, a Williams-Transco underground natural gas pipeline valve house access road to the north, Chelsea Road and privately-owned parcels to the east and by Saw Mill Creek to the south. The eastern section is bounded by Chelsea Road and privately-owned parcels to the west, Edward Curry Avenue and associated right-of-way (ROW) to the north, followed by Route 440 to the east, and Chelsea Road and an off-ramp from Route 440 to the south.

The project area is comprised of 11 parcels owned by New York City as summarized in Table 1 and consists mainly of undeveloped tidal marsh and upland areas with some areas of fill and development from adjoining parcels.

TABLE 1.
PROJECT AREA PARCEL SUMMARY

Block	Lots
1780	1, 69, 210, 260, 275 and 300
1790	100
1815	74, 251, 300, 325

1.2 Historic and Existing Conditions

A review of historic aerials and topographic maps indicates that most of the site was originally tidal marsh, but the topography of the area has been significantly altered over the past century by filling and ditching. Chelsea Road appears on a 1857 map as running along the eastern side of a strip of land approximately 300 to 400 feet wide, north of Saw Mill Creek. Some mosquito control ditches are evident in eastern and western parcels in a 1924 aerial photo. In a 1943 aerial photo the marsh had been ditched to its current extent. Mosquito ditches are very straight, narrow channels that were dug to drain the upper

reaches of salt marshes, as it was formerly thought that ditching marshes would control mosquito breeding. The ditching often negatively impacted the hydrology and habitat of tidal marshes.

In the project area east of Chelsea Road, the marsh formerly extended beyond the area now occupied by Edward Curry Avenue. An island surrounded by salt marsh appears on a 1857 map and is visible in a 1924 aerial photo. This area was filled by 1943 and Edward Curry Avenue now crosses this area. Two large berms were constructed in this area south of Edward Curry Avenue between a 1966 and 1970 aerial photos, possibly to begin filling for development. This effort appears to have been abandoned, as only portions of the areas within the berms have been filled. The fill associated with construction of Route 440 is seen in a 1970 aerial photo. A human-made channel has been excavated to connect the wetlands east of Route 440 with wetlands in the eastern parcel. This channel flows through a large box culvert beneath Route 440. Some fill appears immediately south of Saw Mill Creek, along the east side of Chelsea Road in a 1943 and 1954 aerial photos. In a 1966 aerial photo, a much larger area has been filled, and by 1970, the portion of this area within the project boundary has been filled to its current extent.

In the project area west of Chelsea Road, railroad tracks were built on fill along the western parcel edge by 1957. There are no culverts under the railroad embankment along the project area boundary. The railroad tracks cross a bridge over Saw Mill Creek and over a tidal creek about 1,200 feet north of the northwest corner of the project boundary. The developed lots along the western side of Chelsea Road appear to remain confined to the original upland footprint until the 1960s. Available aerial imagery (Appendix A) indicates that these lots were progressively filled westward into the marsh.

Saw Mill Creek, a tidally influenced tributary of Pralls Creek and several tributaries and drainage ditches are located within the project area. The confluence of Saw Mill Creek and Pralls Creek is located approximately 600 feet west of the project area. Pralls Creek is a tributary of the Arthur Kill. The project area is connected to the Staten Island Sound through a series of smaller tidal channels. Part of the site experiences daily tidal inundation.

1.3 Project Description

NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable and efficient process to serve the mitigation needs of permit applicants. The restoration goals of the proposed bank are to: remove urban fill, improve tidal hydrology exchange, reestablish native plant species, control invasive species, increase fish and wildlife habitat and to minimize contamination risks.

This will be undertaken by site improvements and plantings that include:

- Wetland Restoration (reestablishment) - Remove existing debris (tires, cement, asphalt, etc.) and upland fill from former marshlands to create elevations that will support tidal salt marsh habitat. Grade the area to salt marsh elevations, excavate tidal creeks to restore tidal flow and circulation, and plant the marsh plain with native salt marsh grasses & shrubs (7.04 ac);
- Wetland Restoration (rehabilitation) - Remove existing debris, fill material and invasive vegetation from *Phragmites* dominated degraded wetlands to create elevations that will support tidal salt marsh habitat. Grade the area to salt marsh elevations, excavate tidal creeks to restore tidal flow and circulation, and plant the marsh plain with native salt marsh grasses & shrubs (16.63 ac);
- Forest Wetland Enhancement -Remove debris and invasive species from forest areas adjacent to tidal marshes, and preserve them to prevent further decline. Enhanced areas also benefit from adjacent marsh restoration and buffer rehabilitation (1.52 ac);

- Tidal Wetland Enhancement -Remove debris and invasive species from functioning marshes, and preserve them to prevent further decline. Enhanced areas also benefit from adjacent marsh restoration and buffer rehabilitation (33.72 ac);
- Buffer Rehabilitation/Upland Slope - Remove debris and invasive species from degraded upland forest buffers, plant/seed native vegetation, and install measures to discourage dumping in the forest buffers (9.54 ac).

1.4 Project Purpose and Need

The main objective of the Bank is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance), New York State ECL Article 25 (Tidal Wetlands); New York State ECL Article 24 (Freshwater Wetlands); New York Department of State Coastal Consistency Concurrence; New York State Environmental Quality Review Act (SEQRA); New York City Department of City Planning (NYCDCP) Uniform Land Use Review Procedure (ULURP); NYCDCP Local Waterfront Revitalization Plan Compliance; and City Environmental Quality Review (CEQR). The Bank would be established to compensate for wetland and other aquatic resource losses anticipated by such authorized development within the Bank Service Area in a manner that contributes to the long term ecological functioning of the Arthur Kill Drainage Basin, with an immediate goal of no-net-loss and a long-term goal of a net gain of wetlands functions and services. The goals of the Bank are the establishment of tidal wetlands, tidal creeks and mudflat communities to provide a positive contribution to water quality, plant and animal habitat, and erosion control.

The Bank primarily would be established to provide off-site compensatory mitigation for authorized unavoidable impacts to waters of the United States and/or State waters, including wetlands, occurring within the portions of the Lower Hudson River Basin, also known as Hydrologic Unit Code 06 (HUC06) 020301, that are within the New York City Municipal limits (Primary Service Area). This Primary Service Area includes portions of the following HUC08 subbasins: Lower Hudson River and Sandy Hook-Staten Island and excludes the HUC12 subwatershed region: Raritan Bay-Lower Bay Deep. As depicted on the excerpt of the USGS Hydrologic Unit Map in Appendix A, the Primary Service Area includes the Boroughs of Staten Island and Manhattan and portions of the Boroughs of the Bronx, Brooklyn and Queens.

The Bank secondarily would be established to provide off-site compensatory mitigation for authorized unavoidable impacts to waters of the United States and/or State waters, including wetlands, occurring within the portions of Long Island Basin, also known as Hydrologic Unit Code 06 (HUC06) 020302, that are within the New York City Municipal limits (Secondary Service Area). This Secondary Service Area includes portions of the following HUC08 subbasins: Bronx River, Long Island Sound, Northern Long Island and Southern Long Island and includes the HUC12 subwatershed region: Raritan Bay-Lower Bay Deep. As depicted on the excerpt of the USGS Hydrologic Unit Map in Appendix A, the Secondary Service Area includes portions of the Boroughs of the Bronx, Brooklyn and Queens.

Pursuant to the *Final Rule for Compensatory Mitigation for Losses of Aquatic Resources*; (Federal Register, Vol. 73, No. 70, April 10, 2008), wetland mitigation banking is the preferred alternative for providing compensatory wetland mitigation, when a Bank has been established, and when mitigation credits are available for purchase. Formal agency involvement, including participation from NYSDEC and NYSDOS, and review of the Bank has been on-going through an established IRT. The NYCEDC has presented design plans, conducted a site visit, submitted a Prospectus, and completed a Request for Jurisdictional Determination.

2.0 ALTERNATIVE ANALYSIS

2.1 Objective

The objective of this alternatives analysis is to demonstrate that the proposed Bank conforms to relevant laws, directives, regulations, and policies that govern such construction, especially as it affects wetland resources. Compliance with these regulations requires an assessment of reasonable alternatives to the proposed action that will avoid or minimize adverse effects.

In evaluating the alternatives, a set of assessment criteria was used to select the preferred alternative. These criteria specified that the preferred alternative must meet project goals, demonstrate utility, and represent a reasonable and practicable alternative, taking into consideration cost, existing technology and logistics, in light of project purposes. Alternatives were also evaluated to determine the environmental consequences associated with implementation. The selected preferred alternative was identified as the scheme that is practicable, meets project goals, and avoids and minimizes environmental impacts to the greatest extent practicable.

As presented in the Purpose and Need section, the Bank will provide compensatory mitigation for unavoidable impacts to waters of the US, including wetlands, that result from construction impacts including transportation, residential and commercial buildings, and utility-related activities authorized under the applicable state and federal rules and provided such use has met all applicable requirements. The need for the Bank is based on an understanding of mitigation demand by these entities in the New York City (NYC) area for the foreseeable future. At the current time, there are no wetland mitigation bank credits available within NYC, or within the USGS Hydrologic Unit Codes (HUCs) that could potentially be serviced by a wetland mitigation bank.

Part of the Saw Mill Creek project area is currently degraded and contains the invasive *Phragmites australis* (common reed) that has outcompeted native plant species. Sections of the site were historically altered from the tidal influence of Saw Mill Creek by the creation of multiple berms, and the construction of a human-made mosquito ditch network. All of these actions have severely degraded the site and have altered the functions and services provided by the wetlands and waterways of the Saw Mill Creek project area. The establishment of the Bank represents an opportunity to ecologically restore, enhance and preserve a large tract of land within NYC, while providing compensatory mitigation for public and private construction and transportation projects.

2.2 Regulatory Compliance

Prior to public and private entities utilizing the Bank, applicants will be required to obtain necessary permits, which may include: USACE Section 404 & 10 Permits for the placement of temporary fill materials into waters of the United States; NYSDEC Section 401 Water Quality Certification, Protection of Waters, Tidal Wetlands permits; and NYSDOS Coastal Consistency Concurrence. As part of this permitting process, these applicants will have to satisfy the requirements of and provide justification for the placement of fill materials into wetlands according to the Clean Water Act's Section 404(b)(1) Guidelines, in addition to satisfying state requirements. Therefore, the existence of the Bank will not diminish or lower the standards for fill placement under the Section 404(b)(1) Guidelines. Only when an applicant can satisfy the requirements of the Section 404(b)(1) Guidelines will that applicant have potential access to the Bank. Projects that satisfy the Section 404(b)(1) Guidelines should be permitted. Projects that do not satisfy the requirements of the Section 404(b)(1) Guidelines should not be permitted. The Bank offers a means of providing quality mitigation to public and private entities for unavoidable wetland losses, but only after an applicant satisfies the guidelines prepared for administering the Clean Water Act. As such, the Bank will

provide quality mitigation in the New York City including, Manhattan, Staten Island and portions of the Boroughs of the Bronx, Brooklyn and Queens.

Federal agencies involved with the environmental review and permit process include the USACE, U.S. Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), and USFWS, while the State agencies are the NYSDEC and the NYSDOS. In addition, each of these agencies has a wetland mitigation specialist representative on the IRT. The IRT is tasked with reviewing all wetland mitigation proposals located within the Lower Hudson River watershed.

Wetland mitigation bank development requiring discharges within waters of the U.S. is governed by a number of laws, directives, regulations and policies. Applicable regulations are described below. It is the intent of this section to demonstrate that the proposed Bank conforms with all existing relevant regulatory requirements.

2.2.1 Section 404(b)(1) Guidelines

EPA has developed criteria to be used in the evaluation of discharges of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act. *The Guidelines for Specification of Disposal Sites for Dredged or Fill Material* (40 CFR Part 230, December 24, 1980) are commonly known as the Section 404(b)(1) Guidelines. These guidelines indicate that dredged or fill material should not be discharged into the aquatic system unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact. Compliance with the guidelines requires an analysis of alternatives. Specifically, the guidelines state that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. An alternative is defined as practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

The USACE regulates the issuance of permits to fill waters of the United States, including wetlands, pursuant to Section 404 of the Clean Water Act. However, the issuance of a Section 404 permit must be done in compliance with the EPA guidelines described above, pursuant to Section 404(b)(1) of the Clean Water Act, unless the Corps concludes that the economics of navigation and anchorage warrant permit issuance.

Further elaboration and clarification of the application of the Section 404(b)(1) Guidelines was provided in the Memorandum of Agreement (MOA) between the EPA and the Corps on the Clean Water Act, Section 404(b)(1) Guidelines (55 FR 9211, March 12, 1990). This MOA indicates that the EPA and Corps will strive to achieve a goal of no overall net loss of functions and services for wetlands. To achieve this goal the EPA and the Corps have established a sequence by which proposed projects in wetlands are to be evaluated. First, it must be determined that potential impacts have been avoided to the maximum extent practicable. Remaining impacts are to be minimized through appropriate and practicable steps including project modifications, followed by mitigation.

2.3 Methodology

Alternatives investigated for the Bank include the No-Build Alternative and the Build Alternative, as discussed below. The No-Build Alternative was evaluated assuming the Bank would not be implemented. This alternative provides the baseline against which the Build Alternative was evaluated.

2.4 No-Build Alternative

Public and private entities and agencies have an acute need for mitigation of anticipated impacts to wetlands in the New York City area. Wetland mitigation is necessary to adhere to the no net loss of wetland functions and services provision. Although no wetland impacts would result from the No-Build Alternative, this alternative would not serve to meet an existing and projected demand for wetland mitigation.

The No-Build Alternative would result in no restoration of the existing degraded, *Phragmites* wetland complex and areas of previous fill resulting in historic berms and illegal dumping. The 68.45 acres of the Saw Mill Creek project area would remain in the same degraded condition. The *Phragmites* and fills would remain as relatively low quality habitat.

Therefore, due to the need for better mitigation options within New York City and the environmental benefits of wetland restoration, enhancement and preservation at the Bank site, it has been determined that the No-Build Alternative does not meet the Project Purpose and Need and has not been advanced for further consideration.

2.5 Build Alternative

The Bank Project is proposed within a parcel of land (Saw Mill Creek) owned by the City of New York. Based on the desired removal of *Phragmites* and fill, and to provide reestablishment of tidal flow to portions of the Bank area, it was determined that a channels would need to be established to provide tidal flooding of areas historically filled. For this reason, new channel locations were investigated. Suitable channel design was dependent upon the completion of several baseline studies including Hydrologic and Hydraulic analyses.

2.5.1 Channel Design

The channels are designed based on local data, including surveyed cross sections, from on-site functioning tidal wetlands (reference wetlands). The proposed channels are similar to the length, width, sinuosity, and density of channels within the reference wetlands. To ensure the proposed channels adequately convey tidal water to/from the proposed marsh, the cross-sectional area of the channels were designed in accordance with Design Guidelines For Tidal Channels In Coastal Wetlands (U.S. Army Corps of Engineers, Waterways Experiment Station, 1995)."

2.6 Conclusion

This Alternatives Analysis assessed the No-Build and the Build Alternative pursuant to Section 404 (b)(1) Guidelines. Each alternative was first assessed to determine whether the alternative met project objectives. If an alternative did not meet project objectives it was not advanced for further consideration. Each alternative assessed to meet project objectives was evaluated in terms of impacts to waters of the U.S. including wetlands.

Although the No-Build Alternative would not result in any temporary wetland impacts, it was determined that this alternative was not feasible and did not satisfy the project purpose and need. The No-Build Alternative would not result in restoration of the existing degraded, *Phragmites* dominated wetland complex, nor removal of the historic fill. The *Phragmites* monoculture would remain as relatively low quality habitat. The need for better mitigation options within NYC would not be met. Therefore, the No-Build Alternative was rejected.

In summary, the Build Alternative would allow for the establishment of the Bank, and provide NYC private and public agencies with a viable compensatory wetland mitigation option. Hydrologic and Hydraulic analyses indicated tidal influence from Saw Mill Creek, through new channels would be adequate to provide the appropriate tidal regime.

Removal of historic fill, and restoration of the existing degraded, *Phragmites* dominated wetland complex would occur, the *Phragmites* monoculture would be replaced with a thriving, healthy tidal marsh complex providing improved habitat, and private entities/public agencies would be provided with a viable compensatory wetland mitigation option.

Avoidance, minimization, and reduction components were incorporated into the Build Alternative to minimize wetland and open water impacts to the maximum extent practicable and feasible. It is anticipated that no permanent impacts to wetlands or open waters will occur. Temporary impacts to wetlands would result from construction equipment on timber mats or equivalent will be used to excavate the channels, and removal of historic fill.

In conclusion, the Build Alternative meets project objectives and achieves the intended purpose of meeting the existing and projected demand for compensatory mitigation in the New York City area. The design alternative avoids, minimizes, and reduces wetland impacts to the maximum extent practicable and feasible. Therefore, this alternatives analysis demonstrates that the proposed Bank conforms to relevant laws, directives, regulations, and policies that govern such actions, especially as it affects wetland resources. The Build Alternative was identified as the scheme that is practicable, meets project goals, and avoids and minimizes wetland and environmental impacts.

3.0 CONSTRUCTION ACTIVITIES

Construction will be undertaken with the following sequence:

- Clearing and Grubbing of upland areas that are designated as Wetland Restoration (reestablishment) on the Concept Plan.
- Temporary -Turbidity Curtain will be used in the existing channels adjacent to proposed channels.
- Temporary -Silt Fence is proposed around the project site boundary.
- Temporary -Construction Entrance - the placement of temporary construction entrances on the project site.
- Temporary Chain Link Fencing and Gates will be installed along the project site boundary.
- Unclassified Excavation & Disposal of non-contaminated soils.
- Laboratory Analysis for Hazardous Waste RCRA Toxicity Characteristic will involve all work to take site samples and test soils for hazardous materials in order to separate and properly dispose of contaminated soils.
- Segregation and Storage of Contaminated Soil involves the removal and stockpile of contaminated soils from non-contaminated soils during excavation.
- Disposal of Contaminated Hazardous Waste Soil involves the disposal of all excavation deemed as a contaminated soil and as hazardous material.
- Disposal of Contaminated Non-Hazardous Waste Soil involves the disposal of all excavation deemed as a contaminated soil and as hazardous material.
- Temporary Seed & Mulch is proposed during construction on the upland grass areas.
- Herbivory Fencing will be placed on areas designated as Wetland Restoration.
- Herbaceous Planting: *Spartina Alterniflora* (Smooth Cordgrass) *Distichlis Spicata* (Spike Grass) *Spartina Patens* (Saltmeadow Hay) *Juncus Gerardii* (Saltmeadow Rush) is proposed to be planted on 3-foot centers in the Wetland Restoration areas.
- Shrub Planting: *Baccharis Halimifolia* (Groundsel Tree) *Iva Frutescens* (Marsh Elder) is proposed to be planted on 5-foot centers in the Wetland Restoration areas.
- Herbaceous Seed Mix will be spread in the area designated as Buffer Rehabilitation. The seed mix is comprised of *Echinochloa Walteri* (Coast Cockspur Grass), *Andropogon gerardii* (Big Bluestem), *Hordeum Jubatum* (Foxtail Barley), *Lolium Multiflorum* (Ryegrass), and *Panicum Vigatum* (Switchgrass).
- Controlling Invasive Plant Species by Herbicide application following five annual growing seasons to control invasive plant species from encroaching into the project area.

3.1 Anticipated Construction Phases and Schedule

Assuming the longest construction schedule for the channel excavation and planting, construction activities would take approximately 8 months, from Fall 2014 to Spring 2015. At this time of preliminary design development, the anticipated timelines are outlined below, while detailed descriptions of each phase are provided thereafter:

October 2014

Construction Entrance - Temporary
Turbidity Curtain – Temporary
Silt Fence – Temporary
Clearing and Grubbing
Temporary Chain Link Fencing and Gates
Invasive Species Control

November 2014 – March 2015
Excavation & Disposal
Wetland Restoration (reestablishment)
Wetland Restoration (rehabilitation)
Tidal Channels

March 2015 - June 2015
Herbivory Fencing
Planting
Herbaceous Seed Mix

4.0 EXISTING CONDITIONS

The Existing Conditions section to follow has been prepared as a result of baseline studies conducted within the entire 68.45 acre Project Area.

4.1 Geology and Geomorphology

Duke Geological Laboratory, Trips on the Rocks, Guide 04: Staten Island and Vicinity, NY and NJ (Merguirian and Sanders, 2010) indicates the surficial geologic deposits beneath the organic material within the project area consist of glacial and Quaternary deposits of fine to coarse sand. These surficial deposits are underlain by the Newark Supergroup, a sequence of sedimentary rocks consisting of brownish and reddish shales and sandstones. Depth to bedrock in the vicinity of the project area is estimated to be approximately 30 to 50 feet below ground surface (bgs).

Much of the project area was originally tidal salt marsh, but the topography of the area has been significantly altered over the past century by filling and ditching. Chelsea Road appears on the 1857 map (based upon 1837 USGS Survey) as running along the eastern side of a strip of land approximately 300 to 400 feet wide, north of Saw Mill Creek. The road continues south, over a bridge and through bridged or filled marsh for about 500 feet to uplands located south of Saw Mill Creek. Some mosquito control ditches are evident in eastern and western parcels in the 1924 aerial photo. By the 1943 aerial photo the marsh had been ditched to its current extent. Mosquito ditches are very straight, narrow channels that were dug to drain the upper reaches of salt marshes, as it was formerly thought that ditching marshes would control mosquito breeding.

Project Area East of Chelsea Road

The marsh formerly extended beyond the area now occupied by Edward Curry Avenue. An island surrounded by salt marsh appears on the 1857 map and is visible in the 1924 aerial photo. This area was filled by 1943 and Edward Curry Avenue now crosses this area. Two large berms were constructed in this area between the 1966 and 1970 aerial photos, possibly to begin filling for development. This effort appears to have been abandoned, as only portions of the areas within the berms have been filled. The fill associated with construction of Route 440 is seen in the 1970 aerial photo. A man-made channel has been excavated to connect the wetlands east of Route 440 with wetlands in the eastern parcel. This channel flows through a large box culvert underneath Route 440 and its connecting ramps with Chelsea Road. Some fill appears immediately south of Saw Mill Creek, along the east side of Chelsea Road in the 1943 and 1954 aerial photos. By the 1966 aerial photo, a much larger area has been filled, and by 1970, the portion of this area within the project boundary has been filled to its current extent.

Project Area West of Chelsea Road

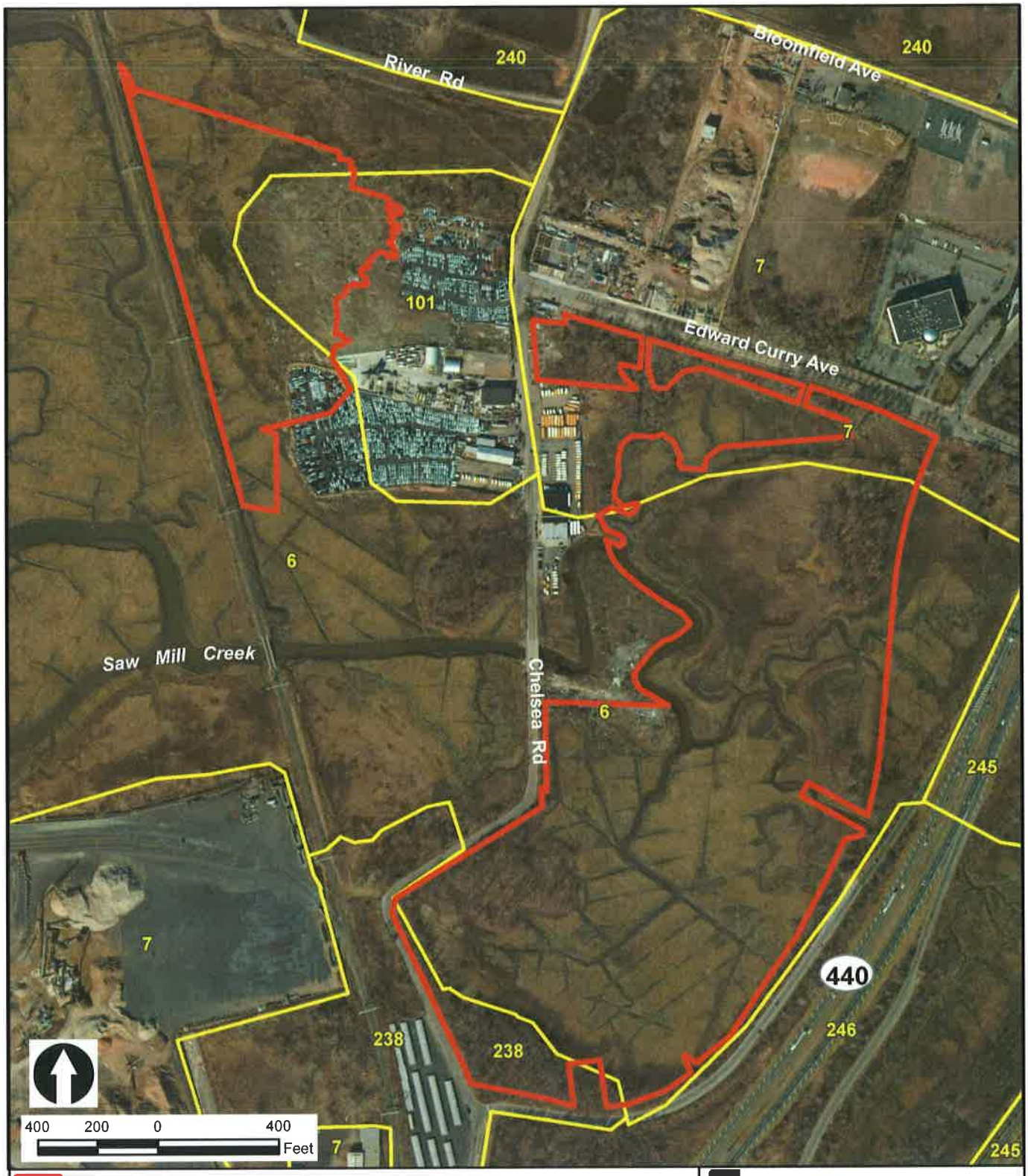
The forested area immediately north of Saw Mill Creek and east of Chelsea Road is portrayed as land on the 1857 and 1894 maps, though site inspection indicates that filling and dumping have also occurred there. By 1957, railroad tracks had been built on fill along the western parcel edge. There are no culverts under the railroad embankment along the project area boundary. The railroad tracks cross a bridge over Saw Mill Creek and over a tidal creek about 1,200 feet north of the northwest corner of the project boundary. The developed lots along the western side of Chelsea Road appear to remain confined to the original upland footprint until the 1960s. Available aerial imagery indicates that these lots were progressively filled westward into the marsh well into the 1980s.

4.2 Topography

The Proposed Project is located in the Piedmont physiographic province, near its intersection with the Atlantic Coastal Plain and the Manhattan Prong of the New England Uplift. The topography of the Project Area is low lying, with ground-surface elevations ranging from 3 to 10 feet above mean sea level. (see Figure 1 previously). The meandering courses of Saw Mill Creek indicate the low surface relief of the Small Mill Creek Study Area.

4.3 Soils

The U.S Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), New York City Reconnaissance Soil Survey (2005) indicates that soils within the project area consist of four soil mapping units: Ipswich-Pawcatuck-Matunuck mucky peats (mapping unit 6); Laguardia-Ebbets-Pavement & Buildings, wet substratum complex, 0 to 8 percent slopes (mapping unit 7); Pavement & Buildings, wet substratum-Laguardia-Ebbets complex, 0 to 8 percent slopes (mapping unit 101); and Windsor-Windsor, loamy substratum-Deerfield loamy sands, 0 to 8 percent slopes (mapping 238). Soil mapping units are described below and shown on Figure 1.



Project Site

Soils
6 - Ipswich-Pawcatuck-Matunuck mucky peats
7 - Laguardia-Ebbets-Pavement & buildings, wet substratum complex, 0 to 8 percent slopes
101 - Pavement & buildings, wet substratum-Laguardia-Ebbets complex, 0 to 8 percent slopes
238 - Windsor-Windsor, loamy substratum-Deerfield loamy sands, 0 to 8 percent slopes

Sources: Image courtesy of USGS, Microsoft Corporation 2013;
Reconnaissance Soil Survey of New York City - USDA, NRCS, 2005.

NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
Soils

Louis Berger & Assoc, PC

November 2013

Figure 1

Ipswich-Pawcatuck-Matunuck mucky peats (6): The majority of surficial soils throughout the project area consist of Ipswich-Pawcatuck-Matunuck mucky peat. These soils form in low-lying areas of tidal marsh that are inundated by salt water twice each day at high tide. These soils are a mixture of very poorly drained soils which vary in thickness of organic material over sand.

Laguardia-Ebbets-Pavement & buildings, wet substratum complex, 0 to 8 percent slopes (7): Surficial soils within the northern portion of the eastern project area consist of the Laguardia-Ebbets-Pavement & buildings, wet substratum complex. These soils form on nearly level to gently sloping areas filled with a mixture of natural soil materials and construction debris over swamp, tidal marsh, or water. This unit contains a mixture of anthropogenic soils which vary in coarse fragment content. At least 15 percent of the land surface is covered by impervious pavement and buildings.

Pavement & buildings, wet substratum-Laguardia-Ebbets complex, 0 to 8 percent slopes (101): Surficial soils within the eastern-central portion of the western project area consist of the Pavement & buildings, wet substratum-Laguardia-Ebbets complex. These soils are formed in nearly level to gently sloping urbanized areas filled with a mixture of natural soil materials and construction debris over swamp, tidal marsh, or water. This unit contains a mixture of anthropogenic soils which vary in coarse fragment content. Up to 80 percent of the land surface is covered by impervious pavement and buildings.

Windsor-Windsor, loamy substratum-Deerfield loamy sands, 0 to 8 percent slopes (238): Surficial soils in the southern-most portion of the eastern project area consist of Windsor-Windsor, loamy substratum-Deerfield loamy sands. These soils are formed in nearly level to gently sloping areas of sandy outwash plains and dunes that are relatively undisturbed and mostly wooded. This unit contains a mixture of excessively drained and moderately well drained sandy outwash soils.

Each mapping unit component includes soil series and miscellaneous areas. In general, soils in a series have the same parent material, drainage class, and sequence of major horizons. Characteristics of each soil series found within the project area mapping units are summarized below in Table 1. In addition to the soil series described below in Table 1, the miscellaneous area Pavement & Buildings is present with the project area (mapping units 7 and 101). Pavement & Buildings consist of those areas in which 80 percent or more of the surface is covered by asphalt, concrete, buildings or other impervious materials. The wet substratum and wet subsoil phases refers to areas of tidal marsh, swamp, or water that were filled for development and indicates a high probability of a water table between 40 and 80 inches

TABLE 1. PROJECT AREA SOIL SERIES CHARACTERISTICS

Soil Series (map unit)	Parent Material	Landform	Depth to Bedrock	Drainage Class	Permeability	Soil Texture	Range in Soil pH	Hydrologic Soil Group*
Deerfield (238)	Sandy glaciofluvial deposits		Very deep	Moderately well drained	Moderately rapid to rapid in the solum, rapid to very rapid in the substratum	Fine sandy loam or coarser in the surface and upper subsoil; loamy fine sand or coarser below	Extremely acid to strongly acid	B
Ebbets (7 and 101)	Loamy fill, greater than 40 inches deep, with construction debris	Anthropogenic urban fill plains	Very deep	Well drained	Moderate, moderately slow where the surface has been compacted	Silt loam, loam, or sandy loam throughout	Very strongly acid to moderately alkaline	B
Ipswich (6)	Organic deposits	Tidal marsh	Very deep	Very poorly drained	Moderate to rapid	Greater than 51 inches organic	Strongly acid to slightly alkaline	D
Laguardia (7 and 101)	Loamy fill, greater than 40 inches deep, with construction debris	Anthropogenic urban fill plains	Very deep	Well drained	Moderate	Silt loam, loam, or sandy loam throughout	Very strongly acid to neutral	B
Matunuck (6)	Organic deposits overlying sandy marine sediments	Tidal marsh	Very deep	Very poorly drained	Rapid in the organic surface to very rapid in the substratum	8 to 16 inches organic; loamy sand or coarser beneath	Strongly acid to slightly alkaline	D
Pawcatuck (6)	Organic deposits overlying sandy marine sediments	Tidal marsh	Very deep	Very poorly drained	Moderate to rapid in the organic layers; very rapid in the underlying sandy sediments	16 to 51 inches organic; with predominantly loamy sand or coarser beneath	Strongly acid to slightly alkaline	D
Windsor (238)	Sandy glacial outwash	Outwash plains	Very deep	Excessively drained	Rapid to very rapid	Loamy fine sand in the surface; loamy sand, in the subsoil; loamy fine sand, loamy sand, fine sand/sand in the substratum.	Very strongly acid to slightly acid	A

Source: Reconnaissance Soil Survey of New York City - USDA, NRCS, 2005.
New York City Soil Survey Staff. 2005. New York City Reconnaissance Soil Survey. USDA, NRCS, Staten Island, NY.

**Hydrologic Soil Group is a soil interpretation or rating system for runoff potential. The chief consideration is the inherent capacity of the bare soil to permit infiltration.*
A – Soils with low runoff potential and high infiltration rates even when thoroughly wet. Deep, well to excessively drained sand or gravel with very rapid and rapid permeability.
B – Soils with moderate infiltration rates when thoroughly wet; moderately deep to deep, moderately well drained to well drained soils with moderately fine to moderately coarse textures, and moderately rapid to moderate permeability.
C – Soils with low infiltration rates when thoroughly wet; soils with a layer that impedes downward movement of water and soils with moderately fine to fine textures and moderately slow and slow permeability. D – Soils with high runoff potential and very low infiltration rates when thoroughly wet. Clayey soils with a high swelling potential, soils with a high water table, soils with a claypan or clay layer near the surface, and shallow soils over nearly impermeable materials.

4.4 Hydrology

4.4.1 Surface Water Classification

Saw Mill Creek, a tidally influenced tributary of Pralls Creek and several tributaries and drainage ditches are located within the project area. Average annual rainfall/snowfall is 48.6 inches. The confluence of Saw Mill Creek and Pralls Creek is located approximately 600 feet west of the project area. Pralls Creek is a tributary of the Arthur Kill. The project is 0.8 aerial miles from the Arthur Kill (closest Traditional navigable Water [TNW]) to the Chelsea Road Bridge over Saw Mill Creek in the center of the project area. The project area is connected to the Staten Island Sound through a series of smaller tidal channels. Part of the site experiences daily tidal inundation. Groundwater within the project area is expected to be present within the glacial and overlying organic material at depths influenced by the tide. At high tide, the low-lying marsh is saturated and inundated in the lower lying areas. At low tide, groundwater is estimated to be present at less than 6 feet bgs. Groundwater flow is anticipated to be to the west towards Pralls Creek. Saw Mill creek and its tributaries can be classified as Relatively Permanent Waters (RPW) as they flood daily with the tide cycle.

4.4.2 Hydrology and Hydraulics

4.4.2.1 Tides and Tidal Circulations

The hydrology of Saw Mill Creek is dominated by semidiurnal tides from Newark Bay. Tides in the Arthur Kill generally flood from Raritan Bay to Newark Bay and ebb in the reverse direction. Mean high water level at the site is 2.39 feet (NAVD 88), with a mean higher high water level (spring high tidal) of 2.62 feet above MSL. Mean low water is -2.82 feet (NAVD88), with a mean lower low water level of -3.05 feet (NAVD88). Table 2 shows tide heights at the Saw Mill Creek gauge from tide gauges place on site during the summer of 2013.

TABLE 2.
SAW MILL CREEK TIDAL DATA

Mean High Water (MWH)	Mean Low Water (MLW)	Mean High High Water (MHHW)	Mean Low Low Water (MLLW)
2.39	-2.82	2.62	-3.05

Source: Tide elevations in feet developed by Louis Berger & Assoc., 2013 (NAVD 88)

4.5 Vegetation

Over the last 200 years, the vegetation of the Study Area has been altered by human activities, including upland clearing, wetland ditching and filling, residential and industrial development, introduction and spread of invasive species (including common reed, poison ivy, and Japanese knotweed), obstructions of surface water movement, and other less physically intrusive disturbances such as noise from airports and automobile traffic. Industrial development has increased the potential for spills of industrial fuels and chemicals and illegal dumping, which can damage the environment by causing destruction of habitat and loss of species. These actions have directly or indirectly changed and shaped the historical ecological communities to their present state. The defined community types, although influenced by human development and/or invasion by non-native plant species, support a variety of plant species and provide habitat for area wildlife. Each community type and its dominant vegetation, observed alterations, and dominant wildlife are depicted in Appendix A and described below for upland and wetland/open water areas.

4.5.1 Upland Areas

Successional upland forest habitat was observed throughout the project area along roadway embankments and previously filled areas that were not developed. Vegetation in these uplands consists of early successional non-native, disturbed plant communities. Dominant species include tree of heaven (*Ailanthus altissima*), mulberry (*Morus* sp.), red maple, black cherry (*Prunus serotina*), sassafrass (*Sassafras albidum*), poison ivy, oriental bittersweet (*Celastrus orbiculata*), Japanese honeysuckle (*Lonicera japonica*), mugwort (*Artemisia vulgaris*) and Japanese knotweed (*Polygonum cuspidatum*). Upland/wetland edges are dominated by common reed.

Mature hardwood forest is located south of Edward Curry Avenue and north of the Route 440 exit ramp in the southern portion of the project area. The upland forest south of Edward Curry Avenue is primarily dominated by invasive species, including Japanese knotweed, tree-of-heaven, black locust (*Robinia pseudoacacia*), mulberry, and oriental bittersweet. Black cherry, poison ivy, and grape (*Vitis* sp.) are also present. The upland just north of the Route 440 exit ramp is predominantly a white oak (*Quercus alba*), chestnut oak (*Quercus prinus*), red oak (*Quercus rubrum*) forest with some Japanese knotweed.

Forested upland on the east side of Chelsea Road, in the southwest corner of the project area, is reportedly the site of a previous restoration planting that took place in the 1990s. This area is a predominantly oak forest with some lowbush blueberry (*Vaccinium angustifolium*).

Remnant berms within the emergent marsh area on the east side of Chelsea Road are dominated by common reed, with some live and dead tree-of-heaven, pokeweed (*Phytolacca americana*), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy.

Two upland islands of high chroma sandy fill material exist just northwest of the Chelsea Road bridge over Saw Mill Creek and in the northeast portion of the project area south of Edward Curry Avenue. Dominant species on the island northwest of the Chelsea Road bridge include black cherry, tree of heaven, black locust, Japanese knotweed, Japanese honeysuckle, and oriental bittersweet. Other species present include pin oak, sassafrass, mulberry, bush honeysuckle (*Lonicera* sp.), poison ivy, Virginia creeper, and garlic mustard (*Alliaria petiolata*). The upland island south of Edward Curry Avenue contains predominantly grey birch (*Betula populifolia*), with some black cherry, tree-of-heaven and pin oaks. Highbush blueberry (*Vaccinium corymbosum*), northern bayberry (*Myrica pensylvanica*), groundsel tree, common reed, and Japanese knotweed are present along the edges of the island.

TABLE 3.
VEGETATION OBSERVED WITHIN THE PROJECT AREA

Scientific Name	Common Name	Indicator Status
Trees		
*Acer platanoides**	Norway maple	UPL
Acer rubrum	red maple	FAC
Ailanthus altissima	tree-of-heaven	UPL
Betula alba	white birch	UPL
Betula populifolia	gray birch	FAC
Liquidambar styraciflua	sweetgum	FAC
Morus sp.	mulberry	--
Prunus serotina	black cherry	FACU
Quercus alba	white oak	FACU
Quercus palustris	pin oak	FACW
Quercus prinus	chestnut oak	UPL
Quercus rubra	red oak	FACU
Rhus copallinum	winged sumac	UPL
*Robinia pseudoacacia**	black locust	FACU
Salix sp.	willow	--
Sassafras albidum	sassafras	FACU
Ulmus rubra	slippery elm	FAC
Shrubs/Vines		
*Ampelopsis brevipedunculata**	porcelainberry	UPL
Baccharis halimifolia	groundsel tree	FACW
*Berberis thunbergii**	Japanese barberry	FACU
*Celastrus orbiculata**	Oriental bittersweet	UPL
Clethra alnifolia	sweet pepperbush	FAC
Lonicera sp.	bush honeysuckle	--
Elaeagnus angustifolium	Russian olive	FACU
Iva frutescens	high tide bush	FACW
*Lonicera japonica**	Japanese honeysuckle	FAC
Myrica pensylvanica	northern bayberry	FAC
Parthenocissus quinquefolia	Virginia creeper	FACU
Rhus typhina	staghorn sumac	UPL
*Rosa multiflora**	multi-flora rose	FACU
Sambucus canadensis	elderberry	FACW
Smilax rotundifolia	greenbriar	FAC
Toxicodendron radicans	poison ivy	FAC
Vaccinium angustifolium	lowbush blueberry	FACU
Vaccinium corymbosum	highbush blueberry	FACW
Viburnum dentatum	northern arrowwood	FACW
Herbaceous		
*Alliaria petiolata**	garlic mustard	FACU
Allium vineale	field garlic	FACU
Schizachyrium scoparium	little bluestem	FACU
Andropogon virginicus	broomsedge	FACU
Apocynum cannabinum	dogbane	FACU
*Artemisia vulgaris**	mugwort	NI
Aster sp.	aster	--
Atriplex patula	common orach	FACW
Carex sp.	sedge	--
Coronilla varia	crown vetch	UPL

Dactylic glomerata	orchard grass	FACU
Digitaria sp.	crabgrass	--
Distichlis spicata	spike grass	FACW
Impatiens capsensis	jewelweed	FACW
Juncus gerardii	black grass	FACW
Lotus corniculatus	birdsfoot trefoil	FACU
Osmunda cinnamomea	cinnamon fern	FACW
Panicum virgatum	switchgrass	FAC
*Phragmites australis**	common reed	FACW
Phytolacca americana	pokeweed	FACU
Pluchea odorata	saltmarsh fleabane	OBL
Phleum pratense	timothy	FACU
*Polygonum cuspidatum**	Japanese knotweed	FACU
Rumex cripus	curly dock	FAC
Salicornia sp.	glasswort	OBL
Solidago sempervirens	seaside goldenrod	FACW
Solidago sp.	goldenrod	--
Spartina alterniflora	smooth cordgrass	OBL
Spartina patens	saltmeadow cordgrass	OBL
Symplocarpus foetidus	skunk cabbage	OBL
Taraxacum officinale	dandelion	FACU
Verbascum thapsus	common mullein	UPL
Vicia sp.	vetch	--
Xanthium pensylvanicum	cocklebur	FAC

** Invasive Species. Source: NYSDEC Revised Interim list of Invasive Plant Species in New York State, 14 May 2012; http://www.dec.ny.gov/docs/lands_forests_pdf/isplantlist.pdf*

Key to indicator categories

OBL: Obligate Wetland, occur almost always (estimated probability >99%) under natural conditions in wetlands.

FACW: Facultative Wetland, usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

FAC: Facultative, equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU: Facultative Upland, usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).

NI: No Indicator, on national listings of plants occurring in wetlands.

NA: Not Applicable, only vascular plants are assigned indicator statuses.

Sources: 2012 National Wetlands Plant List : Northcentral-Northeast, US Army Corps of Engineers.
Louis Berger & Associates, P.C. 2013.

4.5.2 Wetlands and Open Water Areas

Figure 4 depicts National Wetlands Inventory (NWI) mapping within the project area. Ten (10) different classes of wetlands/watercourses were identified within the project area, based upon *The Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979). These classes include:

Wetland A (West side of Chelsea Road):

- Estuarine, Subtidal, Unconsolidated Bottom, Subtidal water regime (E1UBL) – Saw Mill Creek
- Estuarine, Intertidal, Emergent, Persistent, Regularly Flooded (E2EM1N)
- Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded, partially drained/ditched (E2EM1Pd)
- Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded (E2EM1P)
- Estuarine, Intertidal, Emergent, Narrow-leaved Persistent (E2EM5P)
- Estuarine, Intertidal, Scrub-Shrub, Broad Leaved Deciduous, Irregularly Flooded (E2SS1P)
- Estuarine, Intertidal, Unconsolidated Shore, Mud, Irregularly Flooded, Hyperhaline (E2US3P1)

Wetland B (East side of Chelsea Road):

- Estuarine, Subtidal, Unconsolidated Bottom, Subtidal water regime (E1UBL) – Saw Mill Creek
- Estuarine, Intertidal, Emergent, Persistent, Regularly Flooded (E2EM1N)
- Estuarine, Intertidal, Emergent, Narrow-leaved Persistent (E2EM5P);
- Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded, partially drained/ditched (E2EM1Pd)
- Estuarine, Intertidal, Emergent, Persistent, Irregular Flooded (E2EM1P)
- Estuarine, Intertidal, Emergent, Narrow-leaved Persistent, Partially Drained/Ditched (E2EM5Pd)
- Estuarine, Intertidal, Scrub-Shrub, Broad Leaved Deciduous, Irregular Flooded (E2SS1P),
- Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded (PFO1C)
- Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded/Saturated (PFO1E)

Freshwater Wetlands – Freshwater wetlands exist as fringes and upper reaches beyond the tidal wetlands. As depicted in Appendix A, NYSDEC freshwater wetlands AR-48 and AR-49 are mapped within the project area. A NWI mapped palustrine forested freshwater wetland (PFO1C) is present between the upper tidal limits and upland area along the exit ramp of Route 440/West Shore Expressway in the southern section of the project area. This wetland is dominated by pin oak *(Quercus palustris*) and red maple (*Acer rubrum*). Other species observed include sweetgum (*Liquidambar styraciflua)*, skunk cabbage (*Symplocarpus foetidus)*, sweet pepperbush (*Clethra alnifolia*), poison ivy (*Toxicodendron radicans)*, northern arrowwood (*Viburnum recognitum*), and common reed.

NYSDEC Mapped Freshwater Wetlands

Within the Saw Mill Creek Pilot Wetland Mitigation Bank site, the NYSDEC has mapped both freshwater and tidal wetlands. The majority of this mapping was conducted in the 1970's via aerial photography, and has since been updated periodically. After decades of fill, erosion and climate change, some of these mapped freshwater wetlands have been filled, or naturally converted to tidal

wetlands. In review of each wetland mapping component in GIS (NYSDEC Freshwater Wetlands, 2008; NYSDEC Tidal Wetlands - NYC and Long Island, 1974), some areas of the project area are overlaid with both mapped freshwater and tidal wetlands. This is true for NYSDEC freshwater wetland AR-49 in the northeast corner and eastern side of the site, adjacent to Rt. 440 where most of the mapped freshwater wetland is a tidal wetland. Similar NYSDEC freshwater wetland AR-48 in the northwestern portion of the site contains tidal wetlands. It will become necessary at some point in time to have the NYSDEC freshwater wetlands mapping updated to reflect current site conditions in the project area.

Tidal Wetlands – NYSDEC tidal wetlands within the project area are depicted in Appendix A. Tidal wetlands occur within the project area in association with Saw Mill Creek and its tributaries, and consist primarily of a mixture of subtidal creeks and intertidal marsh. Industrial/commercial developments and transportation structures (railroad to the west, Route 440/West Shore Expressway to the east and south, and Edward Curry Avenue to the north) surround the tidal wetlands, with Chelsea Road bisecting the project area.

Saw Mill Creek is a steep-banked tidal creek that enters the project area from west of the CSX rail line at the western project area boundary, flows east under the Chelsea Road bridge, and meanders through the eastern portion of the project area towards Route 440. As per NWI mapping, Saw Mill Creek is classified as Estuarine, Subtidal, Unconsolidated Bottom, Subtidal water regime (E1UBL). Portions of the tidal marsh have been filled in the past for roadways and commercial properties, and the remaining tidal marsh habitat contains linear ditches and remnants of filled areas and related berms. The majority of the ditches are completely exposed at low tide, while the bed of Saw Mill Creek remains inundated. Remnants of former berms were located east of Chelsea Road. Portions of the remnant berms remain high enough in elevation that they have been delineated as upland. However, much of the remnant berms have reverted to disturbed wetlands.

Intertidal marsh constitutes most of the tidal wetlands located in the project area. The majority of the intertidal marsh is irregularly flooded high marsh habitat. Vegetation in the high marsh community includes spike grass *(Distichlis spicata)*, saltmeadow cordgrass *(Spartina patens)*, smooth cordgrass *(Spartina alterniflora)*, black grass (*Juncus gerardii*), and common reed. The low marsh community is dominated by smooth cordgrass along creek edges, in shallow ditches, and where lower elevations allow regular tidal flooding. Intertidal scrub-shrub habitat, consisting primarily of high tide bush (*Iva frutescens*), is scattered throughout the high marsh on both sides of Chelsea Road. Salt pannes are also present in depressions and pools of the high marsh surface. Vegetation associated with the pannes includes the short form of smooth cordgrass and glassworts (*Salicornia* spp.).

Common reed, high tide bush, and groundsel tree (*Baccharis halimifolia*) are common within transition areas between wetlands and uplands. Common reed is dominant in the upper reaches of the marsh adjacent to roadways, uplands, and freshwater wetlands, and in some areas forms a dense monoculture.

The two wetland areas delineated are composed of ten wetland classifications types. These wetlands are summarized below in Table 4.

TABLE 4.
SUMMARY OF DELINEATED WETLANDS

Wetland Line	Size (Acres)	Wetland Cover Type[1]	Comments
A	22.10	E1UBL, E2EM1N, E2EM5P, E2EM1Pd, E2EM1P, E2SS1P, E2US3P1	West of Chelsea Road
B	43.30	E1UBL, E2EM1N, E2EM5P, E2EM1Pd, E2EM1P, E2EM5Pd, E2SS1P, PFO1C, PFO1E	East of Chelsea Road

(1) Classification of wetlands based on field examination.
Classification under Cowardin 1979:

E1UBL	Estuarine, Subtidal, Unconsolidated Bottom, Subtidal
E2EM1N	Estuarine, Intertidal, Emergent, Persistent, Regularly flooded
E2EM1Pd	Estuarine, Intertidal, Emergent, Persistent, Irregularly flooded, partially drained/ditched
E2EM1P	Estuarine, Intertidal, Emergent, Persistent, Irregularly flooded
E2EM5P	Estuarine, Intertidal, Emergent, Narrow-leaved Persistent
E2SS1P	Estuarine, Intertidal, Scrub-Shrub, Broad Leaved Deciduous, Irregularly Flooded
E2US3P1	Estuarine, Intertidal, Unconsolidated Shore, Mud, Irregularly Flooded, Hyperhaline
E2EM5Pd	Estuarine, Intertidal, Emergent, Narrow-leaved Persistent, Partially Drained/Ditched
PFO1C	Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded
PFO1E	Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded/Saturated

5.0 PROJECT IMPACTS

5.1 Wetlands and Open Water Impacts

The Proposed Project will result in temporary impacts to jurisdictional wetlands and areas located below the MHW line. Following efforts to avoid and minimize impacts to jurisdictional areas, the Proposed Project will result in temporary impacts of 16.63 acres of wetlands. No permanent wetland or open water impacts are proposed by the project.

Table 5 presents the estimated area of temporary impacts to wetlands related to the project. These temporary impacts area related to removing fill from degraded wetlands so they can be restored. Impacts to jurisdictional areas are shown on the Plan Sheets included as Appendix E of this permit application.

Excavations for the proposed restored tidal marsh and channels will be performed by excavators that scoop the material and place it into dump trucks to carry it off-site, based on the dewatering plans as well as materials handling/treatment/disposal plans, which will be developed by the contractor as discussed in Section 6.2 below. No material will be removed below mean low low water.

TABLE 5.
TEMPORARY IMPACTS BY TYPE AND SOURCE

Habitat Areas	Acres		
	West	East	Total
Wetland Restoration (Rehabilitation)	1.02	15.51	16.63

Source: Plan sheets in Appendix E of this permit application.

5.2 Soil and Sediment Contamination Screening

The proposed restoration activities may include, but are not limited to, modifications to existing Site topography and the construction of meandering channels. These activities will require excavation of on-Site soils. In accordance with Louis Berger's Preliminary Site Screening Work Plan dated June 2013, soil, sediment and groundwater sampling was performed at areas of historic fill and widespread dumping, as identified in Louis Berger's May 2013 Draft *Phase I Environmental Site Assessment Report*, as well as in areas of undisturbed sediments which may have been impacted from nearby filling and dumping. The purpose of the Site Screening was to investigate and identify the extent, depth and physical characteristics of the historic fill material. In accordance with the June 2013 work plan, the following tasks were conducted from July to September 2013:

- Soil and Sediment Borings;
- Soil, Sediment and Groundwater Sampling and Analysis;
- Soil and Sediment Logging; and
- Sieve analysis (grain size distribution) analysis.

Soil sampling was targeted to two distinct environmental conditions; areas of historic fill and widespread dumping. The sediment samples were targeted to areas of anticipated excavation and areas with direct exposure to dumping. Soil analysis for samples located within the historic fill included Total Petroleum Hydrocarbon Content (TPHC), Target Analyte List (TAL) Metals, Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs) on 25% of samples exhibiting the highest TPHC results, and Target Compound List (TCL) Volatile Organic Compounds (VOC+15) at any location where readings from a properly calibrated photoionization detector (PID) were in excess of 5 times background levels (5 ppm). In addition, Total Organic Carbon (TOC), grain size distribution and pH analyses were performed on deeper samples collected from the native material at each location.

Soil analysis for samples collected within the areas of widespread dumping associated with a specific AOC as indicated above, included sampling for TPHC and TCL+30/TAL. Grain Size Distribution, TOC and pH analyses were performed on deeper samples collected from the native material at each location.
The analytical results for the soil samples collected were compared to the Soil Cleanup Objectives as per the NYSDEC Regulations 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (December 14, 2006) (SCOs) for Unrestricted Use (Track 1) and Protection of Ecological Resources (Track 2). It should be noted that these guidelines are not cleanup standards, but screening guidelines.

Sediment analysis included sampling for TPHC, TCL+30/TAL, grain size distribution, TOC and pH analysis at each location. The analytical results for the sediment samples collected were compared to the Salt Water Sediment Criteria, Technical Guidance for Screening Contaminated Sediment, NYSDEC, January 1999 for Human Health (bioaccumulation), Benthic Aquatic Life (acute toxicity and chronic toxicity), and Wildlife (bioaccumulation) (SCSs). Furthermore, the sediment results were also compared to the Effects Range-Low (ERL) and the Effects Range-Median (ERM) in accordance with the Technical Guidance for Screening Contaminated Sediment, NYSDEC, January 1999.

Soil and sediment borings were visually classified in the field using the Burmister Classification System (Burmister, 1949) and Unified Soil Classification System (USCS). Munsell® Rock-Color Charts (GSA, 1995) were used for the color identification. All borings were backfilled with on-Site soil or sediment.

Eastern Section
Some areas of fill are located within the Eastern Section, primarily concentrated along Chelsea Road and Edward Curry Avenue around the perimeter of the Site. In general, storm-driven debris consisting of, but not limited to, plastic materials, tires and household garbage is located throughout the Site, primarily

concentrated along the areas of topographic highs. Purposeful dumping of a variety of items including construction and demolition debris, scrap metal, tires, garbage, drums and vehicle parts are also prevalent throughout the Site, primarily within the areas of fill.

Nine soil boring locations were advanced to investigate historic fill and widespread dumping within the eastern section of the Site. Each soil boring was advanced to a depth great enough to reach the native material below the fill (if present) or to the maximum depth that could be achieved. From each soil boring, two samples were collected (an A-interval sample and a B-interval sample). The A-interval sample was collected at the 6-inch interval most representative of the fill material and the deeper B-interval sample was collected from the first 6-inches of native material. Fill material encountered at the Site consisted of brick, concrete, glass, metal, porcelain, fabric, coal, wood. Native soils were found to consist of greenish black to dark yellowish brown organic clays and silty clays with some organic root material. In addition, medium to fine sand exhibiting a mottled texture was observed underlying the organic clays at one location. Groundwater was encountered between 0.5 and 4.5 feet below ground surface (bgs).

Three sediment borings were completed to investigate sediments within the eastern section of the Site. Sediments were found to consist of gray to black to dark yellowish orange organic clays and silt with trace amounts of sand. At each sediment location, groundwater was encountered at the surface or within 1 foot of the surface. An A-interval sample was collected at 0.0 to 0.5 feet bgs and a deeper B-interval sample was collected from 2.0 to 2.5 feet bgs.

Based on the results of analytical sampling at the Saw Mill Creek Pilot Wetland Mitigation Bank (eastern section), the preliminary conclusions and recommendations are as follows:

- Fill material was placed in wetlands and uplands throughout many areas of the Site, mostly adjacent to privately held parcels of land. Fill material consist of brick, concrete, glass, metal, porcelain, fabric, coal, wood.
- Contaminants identified with the fill material include various metals, PCBs, pesticides, VOCs and SVOCs. With the exception of the PCBs, the contaminants detected are typically associated with fill material.
- In most cases contaminant concentrations are found to decrease with depth.
- Due to the presence of PCBs greater than (>) 50 ppm in soils near the discarded electrical transformer at one location (SB-14), requirements of the Toxic Substances Control Act (TSCA) are triggered. Disposal of soils with PCBs > 50 ppm will need to be in accordance with applicable TSCA regulations. The area shall be restored to existing elevations by the placement of clean sand. The proposed TSCA remediation measures are expected to remove the contaminants of ecological concern at this location.

Western Section

Significant areas of fill are located within this area, primarily concentrated along roadways and around the perimeter of the privately-owned parcels that abut the Site. However, filling has occurred outside of the privately held parcels. In general, storm-driven debris consisting of, but not limited to, plastic materials, tires and household garbage is located throughout Site, primarily concentrated along the areas of topographic highs. Purposeful dumping of a variety of items including construction and demolition debris, scrap metal, tires, garbage, and drums is also prevalent throughout the Site, primarily within the areas of fill.

Twelve soil boring locations were sampled to investigate historic fill and widespread dumping within the western section of the Site. Each soil boring was advanced to a depth great enough to reach the native material below the fill (if present) or to the maximum depth that could be achieved. From each soil boring, an A-interval sample was collected at the 6-inch interval most representative of the fill material

and the deeper B-interval sample was collected from the first 6-inches of native material. Fill material encountered at the Site consisted of brick, wood, concrete, fiberglass, floor tile, stone (schist block fragments), metal, glass, plastic, rope and plywood. Native soils were found to consist of dark yellowish brown coarse to fine sand exhibiting a mottled texture overlain in some places by black to greenish black organic silt with roots. Based on this lithology it is possible that the majority of the filled areas may have been an upland dune environment. Groundwater was encountered at a minimum depth of 1 foot bgs and always within 6 feet of the ground surface at each of the soil boring locations.

Four sediment boring locations were completed to investigate sediments within the western section of the Site. Sediment borings were advanced to a depth of 2.5 feet bgs. Sediments were found to consist of black to dark yellowish orange sands and organic clayey silty sands. At each sediment location, groundwater was encountered at the surface or within 1 foot of the surface.

Based on the results of analytical sampling at the Saw Mill Creek Pilot Wetland Mitigation Bank (western section), the preliminary conclusions and recommendations are as follows:

- Fill material was placed in historic wetlands and uplands throughout many areas of the Site, mostly adjacent to privately held parcels of land. Fill material consist of brick, wood, concrete, fiberglass, floor tile, stone (schist block fragments), metal, glass, plastic, rope and plywood.
- Metals and PCBs are the primary contaminant within the western section, with pesticide, VOC and SVOC contaminants also present.
- In almost all cases contaminant concentrations are found to decrease with depth.
- While soil PCB concentrations > 50 ppm were not identified, detections approaching this concentration were identified within two soil samples. If PCB concentrations > 50 ppm are present, those soils will be managed in accordance with TCSA regulations.
- Soil lead concentrations at four locations were significantly high where it may be need to be managed as hazardous material.
- Excavated soils containing greater than 50 ppm PCB soils must be disposed of in accordance with TSCA disposal and reporting regulations. All other excavated soils must be handled and disposed of in accordance with 6 NYCRR PART 375 Environmental Remediation Programs

5.3 Cultural Resource Summary

For the proposed Bank and following the 2012 CEQR technical manual (Section 9.320), Louis Berger submitted a written description of the project to the New York City Landmarks Preservation Commission (LPC). LPC has completed an initial environmental review of the proposed project area's lots and indicated that all lots possess archaeological significance and will require the completion of an archaeological documentary study for the proposed wetland mitigation bank site. LPC states that the project area's lots possess the potential for the recovery of archaeological deposits from the 19th century and Native American occupation along with prior knowledge of human burials from the project site. NYCEDC's consultants conducted an archaeological documentary study to determine whether intact archaeological resources might exist on the site and what they inform about the past. The documentary study's findings provides a basis for deciding whether archaeological field work was conducted. Coordination with the New York State Office of Parks, Recreation, and Historic Preservation office is ongoing.

5.4 Wildlife

The majority of the project area is tidal wetland containing a mixture of intertidal creeks and marsh. The existing intertidal marsh is predominantly irregularly flooded high marsh habitat. Smaller areas of low marsh, intertidal scrub-shrub, and salt panne habitat are present within the project area. A small palustrine

forested freshwater wetland is also present in the southern section of the project area. Upland forest habitat is also present along roadway embankments and previously filled areas that were not developed. The primary habitat available to fish and wildlife within the project area consists of estuarine tidal wetland habitat associated with Saw Mill Creek and its tributaries. Species expected to utilize the estuarine tidal wetland habitats present within the project area listed in Table 6.

TABLE 6.
ANTICIPATED WILDLIFE UTILIZATION IN TIDAL WETLAND COMMUNITIES

Tidal Wetland Community	Common Name	Scientific Name
High marsh	salt marsh mosquitoes	*Aedes* spp.
	greenhead flies	*Tabanidae*
	grasshoppers	Suborder Caelifera
	spiders	Order Araneae
	salt marsh snail	*Melampus bidentatus*
	clapper rail	*Rallus longirostris*
	sharp-tailed sparrow	*Ammodramus caudacutus*
	marsh wren	*Cistothorus palustris*
	eastern meadowlark	*Sturnella magna*
	American black duck	*Anas rubripes*
	Northern harrier	*Circus cyaneus*
	muskrat	*Ondatra zibethicus*
Low marsh	clapper rail	*Rallus longirostris*
	willet	*Catoptrophorus semipalmatus*
	marsh wren	*Cistothorus palustris*
	seaside sparrow	*Ammodramus maritimus*
	Wading birds (egrets, herons)	Family Ardeidae
	fiddler crabs	*Uca* spp.
	ribbed mussel	*Geukensia demissa*
	mummichog	*Fundulus heteroclitus*
	sheepshead minnow	*Cyprinodon variegatus*
	Atlantic silverside	*Menidia menidia*
	Winter flounder (juvenile and larvae)	*Pleuronectes americanus*
	Bluefish (juvenile and larvae)	*Pomatomus saltatrix*
Salt shrub	marsh wren	*Cistothorus palustris*
Salt panne	mummichog	*Fundulus heteroclitus*
	sheepshead minnow	*Cyprinodon variegatus*
	Wading birds (egrets, herons)	Family Ardeidae

Source: Edinger, et al., 2002.; Niedowski 2000. Louis Berger & Assoc., P.C., 2013

Wildlife species observed at the project area during field investigations include fish, most likely mummichog, marsh snail, ribbed mussel, fiddler crabs, and diamondback terrapin (*Malaclemys terrapin*) within the tidal marsh habitat.

Feral cats (*Felis cattus*) were observed within upland areas of the project area. White-tailed deer (*Odocoileus virginianus*) were observed within upland and wetland areas of the project area.

Dragonflies (Order Odonata) and mosquitos, including the tiger mosquito (*Aedes albopictus*) were present within the project area. Spicebush swallowtail butterflies were observed in upland areas of the project area.

Bird species observed within the project area included snowy egret (*Egretta thula*), great egret (*Ardea alba*), marsh wren (*Cistothorus palustris*), swamp sparrow (*Melospiza georgiana*), belted kingfisher (*Ceryle alcyon*), red-winged blackbird (*Agelaius phoeniceus*), red-tailed hawk (*Buteo jamaicensis*), glossy ibis (*Plegadis falcinellus*), Canada goose (*Branta canadensis*), osprey (*Pandion haliaetus),* mallard *(Anas platyrhynchos*), and turkey vulture (*Cathartes aura).*

Historical fill, ditching, dumping, and invasion by nuisance plant species has degraded existing habitat quality within the project area, limiting habitat diversity and, therefore, decreasing wildlife species diversity. The goal of the Bank is to maximize the wetlands functions and services within the project area, particularly for wildlife habitat and water quality improvement. The project area's location designates it as an oasis for wildlife in a predominantly urban landscape, offering natural habitat in an area limited with such resources. The project area also serves as part of the Atlantic Flyway, providing a crucial stopover site for birds during their southbound migration in late summer and fall. The proposed wetland restoration/enhancement concept plan proposes to restore tidal hydrology to previously filled, hydrologically impaired, and *Phragmites*-dominated areas of the project area. In portions of the project area *Phragmites* has replaced native marsh plants species and its dense cover has adversely affected hydrology and, therefore, the use of open water and marsh surface by aquatic species. Implementation of Bank objectives would increase the heterogeneity of habitats, thereby allowing wildlife species diversity the opportunity to increase. Avian species, in particular, are found to be attracted to a variety of habitats in comparison to a single habitat type. The combination of mud flat, open water, low marsh, high marsh, and scrub-shrub proposed for the site would provide the diversity of habitat types needed to support a variety of wildlife species, whether on a migratory stopover or as a resident. Restoring the tidal flow to previously filled or degraded areas would allow fish, shellfish, and aquatic invertebrate species to use the tidal channels and provide valuable foraging opportunities for bird species along mudflats during low tide.

5.5 Threatened and Endangered Species

Louis Berger conducted a literature review and Natural Heritage Program database records search to identify the existence or potential occurrence of special status species and significant communities on or in the vicinity of the project area. Louis Berger requested information from NYSDEC Natural Heritage Program (DEC NHP) and the United States Fish and Wildlife Service (USFWS) regarding the potential presence of any federal and/or state threatened, endangered, proposed or candidate species in the vicinity of the project area, as well as any other species or habitats of special concern. Agency correspondence is included in Appendix A. Species information received from DEC NHP and USFWS is summarized in Table 7.

TABLE 7.
SUMMARY OF STATE AND FEDERAL LISTED SPECIES

DEC NHP	Common Name	Scientific Name	NY State Listing	Heritage Conservation Status
T&E documented at or near the site, generally within 0.5 mile	Least bittern	*Ixobrychus exilis*	Threatened	
	Pied-billed grebe	*Podilymbus podiceps*	Threatened	
Rare animals documented at or in vicinity of site	Cattle egret	*Bubulcus ibis*	Protected bird	Imperiled in NYS
	Glossy ibis	*Plegadis falcinellus*	Protected bird	Imperiled in NYS
	Little blue heron	*Egretta caerulea*	Protected bird	Imperiled in NYS
	Snowy egret	*Egretta thula*	Protected bird	Imperiled in NYS
	Yellow-crowned night-heron	*Nyctanassa violacea*	Protected bird	Imperiled in NYS
	Southern leopard frog	*Lithobates sphenocephalus*	Special concern	Critically imperiled in NYS
Plants listed as Endangered or Threatened	Nantucket juneberry	*Amelanchier nantucketensis*	Endangered	Critically imperiled in NYS
	Persimmon	*Diospyros virginiana*	Threatened	Imperiled in NYS
	Rose pink	*Sabatia angularis*	Endangered	Critically imperiled in NYS
	Sweetbay magnolia	*Magnolia virginiana*	Endangered	Critically imperiled in NYS
Rare species with historical records at the site or in the vicinity	Eastern mud turtle	*Kinosternum subrubrum*	Endangered	Critically imperiled in NYS
	Log fern	*Dryopteris celsa*	Endangered	Critically imperiled in NYS
	Orange fringed orchid	*Platanthera ciliaris*	Endangered	Critically imperiled in NYS
USFWS	**Common Name**	**Scientific Name**	**Federal Listing**	
Species may occur within the project boundary and/or may be affected by project	Piping plover	*Charadrius melodus*	Threatened	
	Roseate tern	*Sterna dougallii dougalli*	Endangered	

The USFWS Long Island Ecological Services Office was contacted through the Information, Planning, and Conservation System (IPac) regarding the potential presence of species under the jurisdiction of the USFWS within the project area. The USFWS list indicates that the following threatened and endangered species may occur within the project area: piping plover (*Charadrius melodus* – threatened) and roseate tern (*Sterna dougallii dougallii* – endangered).

Piping plover: The piping plover is a small shorebird weighing 1.5 to 2.25 ounces and is 5.5 inches long. The piping plover is light beige with orange legs. In spring and summer, it has a single black neck band and a narrow black band across its forehead. The rump is white and the bill is yellowish with a black tip. Piping plover forage on beaches, dunes and in tidal wrack. Piping plovers breed on dry sandy beaches or in areas that have been filled with dredged sand, often near dunes in areas with little or no beach grass. They occur along the Atlantic Coast from southwestern Newfoundland and southeastern Quebec south to North Carolina. In New York, this species breeds on Long Island's sandy beaches, from Queens to the Hamptons, in the eastern bays

and in the harbors of northern Suffolk County. Habitat is only found at the shoreline, on barrier islands, sandy beaches and dredged material disposal islands. Potential suitable habitat for piping plover was not observed within the project area.

Roseate tern: The roseate tern is 14 to 17 inches long, with a wingspan of about 30 inches. Its back and upper wings are a light pearly-grey, while its underparts are white. The tip of the white tail extends well beyond its wing tips when at rest. In the summer it has a black cap, nape and bill. Roseate terns feed primarily on American sand lance, a small marine fish. In New York, roseate terns are found nesting with common terns. The nest may be only a depression in sand, shell or gravel, and may be lined with bits of grass and other debris. The roseate tern breeds along the coasts of the Atlantic, Pacific and Indian Oceans on salt marsh islands and beaches with sparse vegetation. In eastern North America, it breeds from the Canadian Maritime Provinces south to Long Island. In New York, this species breeds only at a few Long Island colonies. Potential suitable habitat for roseate tern was not observed within the project area.

The NYSDEC Natural Heritage Program (DEC NHP) regarding the potential presence of rare or state-listed animals and plant species and significant natural communitieswithin the project area. DEC NHP indicates that the following threatened species have been documented at or near the project site, generally within 0.5 miles: Least Bittern *(Ixobrychus exilis*-state threatened*)* and Pied-billed grebe *(Podilymbus podiceps*-state threatened*).*

The **Least Bittern** is the smallest member of the *Ardeidae* (heron) family in North America at just 13 inches in length, a wingspan of 17 inches, and an average weight of just three ounces. It has yellow eyes and a thin yellow bill placed atop a long, chestnut and buff-striped throat. The slightly-crested crown, nape, back, and tail are blackish-green and the neck, sides, and undersides are chestnut and white. The wings are black, chestnut, and buff which when folded against the body appear as light-colored streaks along the back. They are extremely secretive birds. Least bitterns initiate nesting in New York in late May to early June. In prime marsh habitat, least bitterns may nest in small groups of up to 15 pairs per hectare (≈ 2.5 acres). Least bitterns feed primarily on small fish, such as minnows, sunfish and perch. Additionally, they rely upon insects (such as dragonflies and beetles), snakes, frogs, tadpoles, salamanders, crayfish and some small mammals. Least bitterns occur in freshwater and brackish marshes with tall, dense emergent vegetation such as cattails, sedges, and rushes that are interspersed with clumps of woody shrubs and open water. In New York, least bitterns thrive in the large, expansive cattail marshes associated with the Great Lakes, the Finger Lakes, Lake Champlain, and the St. Lawrence and Hudson River Valleys. There is potential habitat for the least bittern in the project area.

The **pied-billed grebe** is a small waterbird measuring approximately 11 to 15 inches in total length, with a 20 to 22.5 inch wingspan and average weight of just 0.75 to 1.0 pound. Their name comes from their most distinguishing characteristic: the pied, or two-colored, bill which is bluish-white with a distinct black vertical bar on either side. The bill is short, laterally compressed, and slightly hooked downward. They return to New York between late March and mid-April. In New York, pied-billed grebe breeding records are scattered across the state but are most abundant in marshes associated with the St. Lawrence River Valley and Lake Ontario. Pied-billed grebes nest in freshwater marshes associated with ponds, bogs, lakes, reservoirs, or slow-moving rivers. Breeding sites typically contain fairly deep open water at depths 0.8 – 6.6 ft interspersed with submerged or floating aquatic vegetation and dense emergent vegetation. Pied-billed grebes occupy a greater diversity of habitats during the non-breeding season including freshwater ponds, impoundments, lakes, rivers, brackish marshes, estuaries, inlets and coastal bays. There is potential non-breeding habitat for the pied billed grebe in the project area, but breeding habitat is not found in the project area.

According to NYSDEC Environmental Resource Mapper, old or potential records exist of rare plants and animals within 0.5 mile of the project area. Rare plant species recorded include orange fringed orchid (*Platanthera ciliaris*), Hyssop-skullcap (*Scutellaria integrifolia*), slender crabgrass (*Digitaria filiformis*), wild comfrey (*Cynoglossum virginianum var. virginianum*), Collin's sedge (*Carex collinsii*), and log fern (*Dryopteris celsa*). Rare animal species recorded include the eastern mud turtle (*Kinosternon subrubrum*), northern cricket frog (*Acris crepitans*), the American burying beetle (*Nicrophorus americanus*), and the three following species of dragonfly: the mocha emerald (*Somatochlora linearis*); the Rambur's forktail (*Ischnura ramburii*); and the Needham's skimmer (*Libellula needhami*). The records listed are only potential areas for rare animals or rare plants. For these historical records, it is not known whether the rare plant or animal still exists at these locations. However, the rare plant or animal listed in the record may still occur in the area if habitat and site conditions are favorable. NYSDEC rare species records are provided in Appendix A.

Louis Berger conducted biological field surveys on to determine the presence of any special status species and conducted habitat suitability assessments to determine the potential for special status flora and fauna to occur within the project area. Special attention was focused on special status flora and fauna identified through the literature review conducted prior to the field surveys. No special status flora and fauna were encountered or detected by sign within the project area.

Essential Fish Habitat

Coordination with the NOAA National Marine Fisheries Service (NMFS) regarding potential Essential Fish Habitat (EFH) in the Site has been initiated. The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all federal agencies to consult with NMFS on all actions, or proposed actions (i.e., permitted, funded, or undertaken by the agency), that may adversely impact EFH. EFH is defined as waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. NMFS is required to make EFH conservation recommendations to both state and federal agencies whose actions may adversely affect EFH. The Site may contain EFH for 17 EFH-designated species and their forage species. The USACE is continuing consultation with NMFS to identify any EFH-designated species that may be present and whether the project may impact EFH for these species.

Significant Natural Communities

The New York Natural Heritage Program tracks locations of significant natural communities because they serve as habitat for a wide range of plants and animals, both rare and common, and because community occurrences in good condition support intact ecological processes and provide ecological value and services. Significant natural communities include rare or high-quality wetlands, forests, grasslands, ponds, streams, and other types of habitats, ecosystems, and natural areas. Two significant natural communities within the vicinity of the project area are recorded in the New York Natural Heritage Program's Biodiversity Database. A red maple-sweetgum swamp is located approximately 0.25 mile east of the project area and a maritime post oak forest is located approximately 0.5 mile north east of the project area.

6.0 PROPOSED CONDITIONS

The restoration design plan strives to protect and restore the 68.45 acre property and maximize ecological restoration of extant habitats. As a result, the proposed design incorporates hydrologic modifications that work within the limitations and site constraints occurring on-site.

As part of the design process, technical studies were undertaken to assess topography, and tidal elevations for the entirety of the 68.45 acre property. A licensed land surveyor conducted a ground survey to develop a surface topography map which was used as the basis of the design plans. Louis Berger conducted bio-benchmark surveys of key vegetative communities to aid in setting design grades and elevations. Several hydrologic and hydraulic analyses were also conducted to assess and design the Project. Final design elevations and optimal habitat ranges were then determined through an analysis of the bio-benchmark and hydrology data.

The plan set has been included in Appendix E and is described below. Resultant acres of habitat by type are presented below in Table 8.

TABLE .8
PROPOSED TIDAL HABITAT TYPES AND AREAS

Proposed Habitat Areas	ACRES		
	West	East	Total
Tidal Marsh/Wetland Restoration (reestablishment)	5.17	1.87	7.04
Tidal Marsh/Wetland Restoration (rehabilitation)	1.02	15.61	16.63
Forested Wetland Enhancement	0.00	1.52	1.52
Tidal Wetland Enhancement	7.69	26.03	33.72
Upland Buffer Rehabilitation	0.72	8.82	9.54
Total	**14.60**	**53.85**	**68.45**

6.1 Hydrology

The 68.45 acre parcel provides a tidal wetland restoration opportunity in the New York City area. Currently, tidal water is segregated from potions of the site via historic berms and fill.

The first goal for restoration of this area is to ***restore and maintain targeted tidal hydrology***. NYCEDC proposes to remove the historic berms and fill within the project area and to create new tidal creeks and support tidal marsh habitat that would connect to Saw Mill Creek. These tidal creeks will be constructed to convey tidal flows within the parcel to support tidal marsh habitat.

The second goal for the restoration design is to provide the correct site topography to support the desired tidal marsh vegetation and features. Once appropriate tidal hydrology and topography are established on the site, the next goal is to establish native vegetation and habitat. To encourage native plants, an invasive species control plan will be implemented, followed by the planting of native saltmarsh species. In addition to the proposed plantings, additional native species, such as salt marsh fleabane (Pluchea odorata, P. purpurescens), are anticipated to colonize the site. The growth of these native species will be encouraged, while the growth of invasive species, such as Phragmites australis (common reed), will be discouraged by the select application of an EPA-approved herbicide and by establishing a more natural tidal hydrology.

The final goal for the restoration design is to maximize wetland functions and services, particularly for wildlife habitat and water quality improvement. The site's location designates it as part of the Atlantic Flyway, providing a crucial stopover site for birds during their southbound migration in late summer and fall. It also serves as an oasis for wildlife in a predominantly urban watershed, offering natural habitat in a watershed limited with such resources. The dominance of Phragmites throughout portions of the site has created a monoculture of habitat, which limits habitat and decreases wildlife species diversity. Phragmites has replaced native plant species and its dense cover has adversely affected hydrology and the use of open water and marsh surface by aquatic species. By restoring the marsh to contain heterogeneity of habitats, wildlife species diversity will improve. Avian species, in particular, are found to be attracted to a variety of habitats in comparison to a single habitat type. The combination of mud flat, open water, low marsh, high marsh, and scrub-shrub proposed for the site would provide the diversity of habitat types needed to support a variety of wildlife species, whether on a migratory stopover or as a resident. Restoring tidal flow allows fish, shellfish, and aquatic invertebrate species to use the tidal channels and provide valuable foraging opportunities for bird species along mudflats during low tide.

6.2 Vegetation

6.2.1 Uplands

Existing upland areas will be treated to remove invasive plants; and monitored/maintained to prevent re-establishment of invasive species, including common reed (*Phragmites australis),* Japanese Knotweed *(Fallopia japonica)* and tree of heaven (*Ailanthus altissima).* These areas will also be monitored yearly for recruitment of new species and survival of planted species.

6.2.2 Wetlands

Planting Plans for each proposed community type are provided in Appendix E, Sheets 12 and 13. The primary wetland system within the tidally influenced emergent marsh habitats (approximately elevations between 1.5 and 2.5 feet NAGVD88) will be comprised of *Spartina alterniflora* dominated low marsh plant communities. Areas (2.5 and 2.8 feet NGVD88) between the high marsh and uplands will be planted primarily with salt meadow hay *(Spartina patens),* spike grass (*Distichlis spicata*), and saltmeadow rush (*Juncus gerardii*) on 3 foot centers. Additionally, target vegetative species include native volunteers that are anticipated to colonize the emergent marsh, such as salt marsh fleabane (*Pluchea purpurascens*), dwarf spike rush (*Eleocharis parvula*), water hemp (*Amaranthus cannabinus*), and marsh orach (*Atriplex patula*). It is also anticipated that dwarf spike rush will colonize portions of the mudflat community. Scrub-shrub areas (5.0 to 6.0 feet NGVD88) will be planted with groundsel tree and marsh elder (*Iva frutescens*) on 5 foot centers.

7.0 REQUIRED ENVIRONMENTAL PERMITS AND APPROVALS

Implementation of the Proposed Project will require the acquisition of a number of permits and approvals. In addition to the NYSDEC Permit, the following major federal, state, city environmental permits, certifications or approvals will be required:

- Federal Permits, Approvals, and/or Consultations:
  - Section 404 Permit (Discharge Dredged and Fill Material)
  - Section 10 Permit
  - Section 106 Consultation, National Historic Preservation Act
  - Section 7 Consultation, Endangered Species Act
  - Fish and Wildlife Coordination Act Consultation
  - Essential Fish Habitat Consultation, Magnuson-Steven Fishery Conservation and Management Act

- New York State Permits, Approvals, and/or Consultations:
  - New York State Environmental Quality Review Act (in lieu of the New York City Environmental Quality Review)
  - New York State Coastal Zone Consistency Certification Concurrence (in lieu of the New York City Waterfront Revitalization Program Certificate Consistency)
  - Section 401 Water Quality Certification
  - Article 15 Protection of Waters Permit
  - Article 25 Tidal Wetlands Permit
  - Article 24 Freshwater Wetlands Permit
  - State Pollutant Discharge Elimination System Permit (SPDES)

- New York City Permits, Approvals, and/or Consultations:
  - City Environmental Quality Review (CEQR)
  - NYC Local Waterfront Revitalization Program (WRP) Certification Concurrence
  - Department of Small Business Services Waterfront Permit

8.0 WATER QUALITY CERTIFICATION

As discussed in Section 6 of this application, proposed projects involving the placement of dredged or fill materials into waters of the United States, including wetlands, require State Water Quality Certification. . With this application, NYCEDC is applying for water quality certification from the NYSDEC for this project as part of the Joint Application for Permit.

9.0 COASTAL ZONE MANAGEMENT

The Coastal Zone Management Act of 1972 (16 U.S.C. §§1451-1464) was enacted by Congress to balance the competing demands of growth and development with the need to protect coastal resources. Its stated purpose is to "preserve, protect, develop, and, where possible, to restore or enhance, the resources of the Nation's coastal zone..." The primary means of achieving this balance is through coastal a zone management plan (CZMP) developed and adopted by each state and designed to regulate land use activities that could affect coastal waters.

As the Proposed Project is within the coastal zone boundaries New York State, it will be required to comply with the respective CZM programs of the State of New York. As New York City has a Waterfront Revitalization Program (WRP), the state will determine, based on consultation with the New York City Department of City Planning, Waterfront Section, if the proposed project is in compliance with the WRP. If the project is in compliance with the WRP, the state will then determine if the project is in compliance with its CZMP, and issue a concurrence to the NYCEDC's certification of compliance (Appendix A).

In New York, the CZM Consistency Determination will be led by NYSDOS-DCR and in consultation with NYCDCP because the City of New York has an approved Local Waterfront Revitalization Program (LWRP) under the NY State Coastal Management Program. The application/review process with NYSDOS-DCR/NYCDCP will be done independently of other environmental permits.

As the project is within New York City, the City has its own coastal consistency program. This project will submit a New York City Waterfront Revitalization Program (WRP) Certificate Consistency Assessment in lieu of the state form. Refer to Appendix A for the completed WRP Consistency Assessment Form for review by the New York City Department of Planning for concurrence with the city and state Coastal Management Program.

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11.0 ACRONYMS

Acronym	Description
bgs	below ground surface
CEQR	New York City Environmental Quality Review
CZM	Coastal Zone Management
EPA	Environmental Protection Agency
EFH	Essential Fish Habitat
HUC	USGS Hydrologic Unit Code
IRT	Interagency Review Team
MBI	Mitigation Banking Instrument
MARSHES	Mitigation and Restoration Strategies for Habitat and Ecological Sustainability
MOA	Memorandum of Agreement
NMFS	National Marine Fisheries Service
NYC	New York City
NYCDCP	New York City Department of City Planning
NYCEDC	New York City Economic Development Corporation
NYSDEC	New York State Department of Environmental Conservation
NYSOPRHP	New York State Parks Recreation & Historic Preservation
NRCS	Natural Resources Conservation Service
ROW	Right of Way
RPW	Relative Permanent Water
SEQRA	New York's State Environmental Quality Review Act
TNW	Traditional navigable Water
ULURP	New York City's Uniform Land Use Review Procedure
USACE	U.S. Army Corps of Engineers
USDA	U.S Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geology Service
WRP	Waterfront Revitalization Program

12.0 LIST OF PREPARERS

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APPENDICES

APPENDIX A:
NYC CEQR – ENVIRONMENTAL ASSESSMENT STATEMENT (ESA)
SHORT FORM

CITY ENVIRONMENTAL QUALITY REVIEW (CEQR)

Environmental Assessment Statement

Short Form

for the

Saw Mill Creek Pilot Wetland Mitigation Bank Project

Borough of Staten Island, Richmond County, New York

Prepared for Lead Agency:

New York City Economic Development Corporation
110 William Street
New York, New York 10038

Prepared by:

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November 2013

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CITY ENVIRONMENTAL QUALITY REVIEW
ENVIRONMENTAL ASSESSMENT STATEMENT SHORT FORM

City Environmental Quality Review
ENVIRONMENTAL ASSESSMENT STATEMENT (EAS) SHORT FORM

FOR UNLISTED ACTIONS ONLY • *Please fill out and submit to the appropriate agency* (see instructions)

Part I: GENERAL INFORMATION

1. *Does the Action Exceed Any Type I Threshold in 6 NYCRR Part 617.4 or 43 RCNY §6-15(A) (Executive Order 91 of 1977, as amended)?* ☐ YES ☒ NO

If "yes," **STOP** and **complete the FULL EAS FORM**.

2. *Project Name* Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island

3. *Reference Numbers*

CEQR REFERENCE NUMBER (to be assigned by lead agency)	BSA REFERENCE NUMBER (if applicable)
TBD	
ULURP REFERENCE NUMBER (if applicable)	OTHER REFERENCE NUMBER(S) (if applicable) (*e.g.*, legislative intro, CAPA)

4a. *Lead Agency Information*			**4b. *Applicant Information***		
NAME OF LEAD AGENCY New York City Economic Development Corporation (NYCEDC)			NAME OF APPLICANT		
NAME OF LEAD AGENCY CONTACT PERSON Katie Axt, Assistant Vice President, New York City Economic Development Corporation			NAME OF APPLICANT'S REPRESENTATIVE OR CONTACT PERSON		
ADDRESS 110 William Street, 6th Floor			ADDRESS		
CITY New York	STATE NY	ZIP 10038	CITY	STATE	ZIP
TELEPHONE 212-312-3730	EMAIL kaxt@nycedc.com		TELEPHONE	EMAIL	

5. *Project Description*

The New York City Economic Development Corporation (NYCEDC) has engaged in an initiative with the City and State of New York to protect and enhance the City's coastal resources. As part of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) initiative, NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The proposed project is referred to as the Saw Mill Creek Pilot Wetland Mitigation Bank (the Bank). The proposed Bank will be located on the western shore of Staten Island in the Bloomfield area. The Bank will be established within a portion of an approximately 68.45-acre site (project site) that is bisected by Chelsea Road (oriented north to south) into a western section and an eastern section. The projects site is composed of (portions of) 11 city-owned parcels, several of which are designated as public open space (Saw Mill Creek Marsh).

The primary purpose of the project is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance) and New York State ECL Article 25 (Tidal Wetlands).

The restoration goals of the proposed bank are to: remove urban fill, improve tidal hydrology exchange, reestablish native plant species, control invasive species, increase fish and wildlife habitat and to minimize contamination risks. This will be undertaken by site improvements and plantings that include:

- Wetland Restoration (reestablishment) - converting upland fill to tidal marsh and tidal creeks (7.04 acres);
- Wetland Restoration (rehabilitation) - improving degraded wetlands by removing debris, fill and invasive species, restoring tidal flow and circulation, and planting native vegetation (17.19 acres);
- Forested and Tidal Wetland Enhancement -removing debris and invasive species from functioning marshes and enhancing them (34.68 acres); and
- Upland Buffer Rehabilitation - improving degraded upland forest buffers by removing debris and invasive species, planting native vegetation, and installing measures to discourage dumping in the area (9.54 acres).

The NYCEDC anticipates that the construction period for the proposed project would be approximately 6 months, beginning in Fall 2014 with completion in Spring 2015. Please refer to Attachment A, Part I, for a more detailed project

description.

Project Location

BOROUGH Richmond	COMMUNITY DISTRICT(S) 2	STREET ADDRESS N/A
TAX BLOCK(S) AND LOT(S) Block 1780, Lots: 1, 69, 210, 260, 275 and 300; Block 1790, Lot 100; Block 1815, Lots 74, 251, 300, and 325		ZIP CODE 10314

DESCRIPTION OF PROPERTY BY BOUNDING OR CROSS STREETS The project site is generally bound by Edward Curry Avenue and associated right-of-way to the north, railroad tracks/ Bloomfield Road to the west, West Shore Expressway (Route 440) exit ramp to the south and east.

EXISTING ZONING DISTRICT, INCLUDING SPECIAL ZONING DISTRICT DESIGNATION, IF ANY Park, M3-1, M2-1	ZONING SECTIONAL MAP NUMBER 20b and 26a

6. *Required Actions or Approvals* (check all that apply)

City Planning Commission: ☐ YES ☒ NO ☐ UNIFORM LAND USE REVIEW PROCEDURE (ULURP)

☐ CITY MAP AMENDMENT	☐ ZONING CERTIFICATION	☐ CONCESSION
☐ ZONING MAP AMENDMENT	☐ ZONING AUTHORIZATION	☐ UDAAP
☐ ZONING TEXT AMENDMENT	☐ ACQUISITION—REAL PROPERTY	☐ REVOCABLE CONSENT
☐ SITE SELECTION—PUBLIC FACILITY	☐ DISPOSITION—REAL PROPERTY	☐ FRANCHISE
☐ HOUSING PLAN & PROJECT	☐ OTHER, explain:	

☐ SPECIAL PERMIT (if appropriate, specify type: ☐ modification; ☐ renewal; ☐ other); EXPIRATION DATE:
SPECIFY AFFECTED SECTIONS OF THE ZONING RESOLUTION

Board of Standards and Appeals: ☐ YES ☒ NO

☐ VARIANCE (use)
☐ VARIANCE (bulk)
☐ SPECIAL PERMIT (if appropriate, specify type: ☐ modification; ☐ renewal; ☐ other); EXPIRATION DATE:
SPECIFY AFFECTED SECTIONS OF THE ZONING RESOLUTION

Department of Environmental Protection: ☐ YES ☒ NO If "yes," specify:

Other City Approvals Subject to CEQR (check all that apply)

☐ LEGISLATION	☒ FUNDING OF CONSTRUCTION, specify:
☐ RULEMAKING	☐ POLICY OR PLAN, specify:
☐ CONSTRUCTION OF PUBLIC FACILITIES	☐ FUNDING OF PROGRAMS, specify:
☐ 384(b)(4) APPROVAL	☐ PERMITS, specify:
☐ OTHER, explain:	

Other City Approvals Not Subject to CEQR (check all that apply)

☐ PERMITS FROM DOT'S OFFICE OF CONSTRUCTION MITIGATION AND COORDINATION (OCMC)
☒ LANDMARKS PRESERVATION COMMISSION APPROVAL
☐ OTHER, explain:

State or Federal Actions/Approvals/Funding: ☒ YES ☐ NO If "yes," specify: United States Army Corps of Engineers (USACE) Section 404 & 10 Permit; New York State Department of Environmental Conservation (NYSDEC) Section 401 Water Quality Certification, Protection of Waters, Tidal and Freshwater Wetlands permits; NYSDEC State Pollutant Discharge Elimination System (SPDES) Permit; New York State Department of State (NYSDOS) Coastal Consistency Concurrence; Empire State Development (ESD) Reginal Economic Development Council funds ($500,000) will be used to help finance the project.

7. *Site Description:* *The directly affected area consists of the project site and the area subject to any change in regulatory controls. Except where otherwise indicated, provide the following information with regard to the directly affected area.*

Graphics: *The following graphics must be attached and each box must be checked off before the EAS is complete. Each map must clearly depict the boundaries of the directly affected area or areas and indicate a 400-foot radius drawn from the outer boundaries of the project site. Maps may not exceed 11 x 17 inches in size and, for paper filings, must be folded to 8.5 x 11 inches.*

☒ SITE LOCATION MAP ☒ ZONING MAP ☒ SANBORN OR OTHER LAND USE MAP
☒ TAX MAP ☐ FOR LARGE AREAS OR MULTIPLE SITES, A GIS SHAPE FILE THAT DEFINES THE PROJECT SITE(S)
☒ PHOTOGRAPHS OF THE PROJECT SITE TAKEN WITHIN 6 MONTHS OF EAS SUBMISSION AND KEYED TO THE SITE LOCATION MAP

Physical Setting (both developed and undeveloped areas)

Total directly affected area (sq. ft.): +/- 2,981,612 Waterbody area (sq. ft) and type: +/- 2,186,061 - surface

water and wetlands

Roads, buildings, and other paved surfaces (sq. ft.): +/- 59,437 Other, describe (sq. ft.): +/- 736,114 - undeveloped land

8. *Physical Dimensions and Scale of Project* (if the project affects multiple sites, provide the total development facilitated by the action)

SIZE OF PROJECT TO BE DEVELOPED (gross square feet): N\A

NUMBER OF BUILDINGS: 0 GROSS FLOOR AREA OF EACH BUILDING (sq. ft.):

HEIGHT OF EACH BUILDING (ft.): NUMBER OF STORIES OF EACH BUILDING:

Does the proposed project involve changes in zoning on one or more sites? ☐ YES ☒ NO

If "yes," specify: The total square feet owned or controlled by the applicant:

The total square feet not owned or controlled by the applicant:

Does the proposed project involve in-ground excavation or subsurface disturbance, including, but not limited to foundation work, pilings, utility lines, or grading? ☒ YES ☐ NO

If "yes," indicate the estimated area and volume dimensions of subsurface permanent and temporary disturbance (if known):

AREA OF TEMPORARY DISTURBANCE: 115,982 sq. ft. (width x length) VOLUME OF DISTURBANCE: +/- 66,164 cubic ft. (width x length x depth)

AREA OF PERMANENT DISTURBANCE: 1,004,138. sq. ft. (width x length)

Description of Proposed Uses (please complete the following information as appropriate)

	Residential	*Commercial*	*Community Facility*	*Industrial/Manufacturing*
Size (in gross sq. ft.)	0	0	0	0
Type (*e.g.*, retail, office, school)	units			

Does the proposed project increase the population of residents and/or on-site workers? ☐ YES ☒ NO

If "yes," please specify: NUMBER OF ADDITIONAL RESIDENTS: NUMBER OF ADDITIONAL WORKERS:

Provide a brief explanation of how these numbers were determined:

Does the proposed project create new open space? ☐ YES ☒ NO If "yes," specify size of project-created open space: sq. ft.

Has a No-Action scenario been defined for this project that differs from the existing condition? ☐ YES ☒ NO

If "yes," see Chapter 2, "Establishing the Analysis Framework" and describe briefly:

9. *Analysis Year* CEQR Technical Manual Chapter 2

ANTICIPATED BUILD YEAR (date the project would be completed and operational): 2015

ANTICIPATED PERIOD OF CONSTRUCTION IN MONTHS: Approximaetly 6 months

WOULD THE PROJECT BE IMPLEMENTED IN A SINGLE PHASE? ☒ YES ☐ NO IF MULTIPLE PHASES, HOW MANY?

BRIEFLY DESCRIBE PHASES AND CONSTRUCTION SCHEDULE:

10. *Predominant Land Use in the Vicinity of the Project* (check all that apply)

☐ RESIDENTIAL ☒ MANUFACTURING ☐ COMMERCIAL ☒ PARK/FOREST/OPEN SPACE ☒ OTHER, specify: vacant land

Part II: TECHNICAL ANALYSIS

INSTRUCTIONS: For each of the analysis categories listed in this section, assess the proposed project's impacts based on the thresholds and criteria presented in the CEQR Technical Manual. Check each box that applies.

- If the proposed project can be demonstrated not to meet or exceed the threshold, check the "no" box.
- If the proposed project will meet or exceed the threshold, or if this cannot be determined, check the "yes" box.
- For each "yes" response, provide additional analyses (and, if needed, attach supporting information) based on guidance in the CEQR Technical Manual to determine whether the potential for significant impacts exists. Please note that a "yes" answer does not mean that an EIS must be prepared—it means that more information may be required for the lead agency to make a determination of significance.
- The lead agency, upon reviewing Part II, may require an applicant to provide additional information to support the Short EAS Form. For example, if a question is answered "no," an agency may request a short explanation for this response.

	YES	NO
1. *LAND USE, ZONING, AND PUBLIC POLICY*: CEQR Technical Manual Chapter 4		
(a) Would the proposed project result in a change in land use different from surrounding land uses?	☐	☒
(b) Would the proposed project result in a change in zoning different from surrounding zoning?	☐	☒
(c) Is there the potential to affect an applicable public policy?	☐	☒
(d) If "yes," to (a), (b), and/or (c), complete a preliminary assessment and attach.		
(e) Is the project a large, publicly sponsored project?	☒	☐
o If "yes," complete a PlaNYC assessment and attach. See Attachment A.		
(f) Is any part of the directly affected area within the City's Waterfront Revitalization Program boundaries?	☒	☐
o If "yes," complete the Consistency Assessment Form. See Attachment B.		
2. *SOCIOECONOMIC CONDITIONS*: CEQR Technical Manual Chapter 5		
(a) Would the proposed project:		
o Generate a net increase of 200 or more residential units?	☐	☒
o Generate a net increase of 200,000 or more square feet of commercial space?	☐	☒
o Directly displace more than 500 residents?	☐	☒
o Directly displace more than 100 employees?	☐	☒
o Affect conditions in a specific industry?	☐	☒
3. *COMMUNITY FACILITIES*: CEQR Technical Manual Chapter 6		
(a) Direct Effects		
o Would the project directly eliminate, displace, or alter public or publicly funded community facilities such as educational facilities, libraries, hospitals and other health care facilities, day care centers, police stations, or fire stations?	☐	☒
(b) Indirect Effects		
o **Child Care Centers:** Would the project result in 20 or more eligible children under age 6, based on the number of low or low/moderate income residential units? (See Table 6-1 in Chapter 6)	☐	☒
o **Libraries:** Would the project result in a 5 percent or more increase in the ratio of residential units to library branches? (See Table 6-1 in Chapter 6)	☐	☒
o **Public Schools:** Would the project result in 50 or more elementary or middle school students, or 150 or more high school students based on number of residential units? (See Table 6-1 in Chapter 6)	☐	☒
o **Health Care Facilities and Fire/Police Protection:** Would the project result in the introduction of a sizeable new neighborhood?	☐	☒
4. *OPEN SPACE*: CEQR Technical Manual Chapter 7		
(a) Would the proposed project change or eliminate existing open space?	☒	☐
(b) Is the project located within an under-served area in the Bronx, Brooklyn, Manhattan, Queens, or Staten Island?	☐	☒
o If "yes," would the proposed project generate more than 50 additional residents or 125 additional employees?	☐	☐
(c) Is the project located within a well-served area in the Bronx, Brooklyn, Manhattan, Queens, or Staten Island?	☐	☒
o If "yes," would the proposed project generate more than 350 additional residents or 750 additional employees?	☐	☐
(d) If the project in located an area that is neither under-served nor well-served, would it generate more than 200 additional residents or 500 additional employees?	☐	☒

	YES	NO
5. *SHADOWS*: CEQR Technical Manual Chapter 8		
(a) Would the proposed project result in a net height increase of any structure of 50 feet or more?	☐	☒
(b) Would the proposed project result in any increase in structure height and be located adjacent to or across the street from a sunlight-sensitive resource?	☐	☒
6. *HISTORIC AND CULTURAL RESOURCES*: CEQR Technical Manual Chapter 9		
(a) Does the proposed project site or an adjacent site contain any architectural and/or archaeological resource that is eligible for or has been designated (or is calendared for consideration) as a New York City Landmark, Interior Landmark or Scenic Landmark; that is listed or eligible for listing on the New York State or National Register of Historic Places; or that is within a designated or eligible New York City, New York State or National Register Historic District? (See the GIS System for Archaeology and National Register to confirm)	☐	☒
(b) Would the proposed project involve construction resulting in in-ground disturbance to an area not previously excavated?	☒	☐
(c) If "yes" to either of the above, list any identified architectural and/or archaeological resources and attach supporting information on whether the proposed project would potentially affect any architectural or archeological resources. See Attachment A, Part II.		
7. *URBAN DESIGN AND VISUAL RESOURCES*: CEQR Technical Manual Chapter 10		
(a) Would the proposed project introduce a new building, a new building height, or result in any substantial physical alteration to the streetscape or public space in the vicinity of the proposed project that is not currently allowed by existing zoning?	☐	☒
(b) Would the proposed project result in obstruction of publicly accessible views to visual resources not currently allowed by existing zoning?	☐	☒
8. *NATURAL RESOURCES*: CEQR Technical Manual Chapter 11		
(a) Does the proposed project site or a site adjacent to the project contain natural resources as defined in Section 100 of Chapter 11?	☒	☐
○ If "yes," list the resources and attach supporting information on whether the proposed project would affect any of these resources.		
(b) Is any part of the directly affected area within the Jamaica Bay Watershed?	☐	☒
○ If "yes," complete the Jamaica Bay Watershed Form, and submit according to its instructions.		
9. *HAZARDOUS MATERIALS*: CEQR Technical Manual Chapter 12		
(a) Would the proposed project allow commercial or residential uses in an area that is currently, or was historically, a manufacturing area that involved hazardous materials?	☐	☒
(b) Does the proposed project site have existing institutional controls (*e.g.*, (E) designation or Restrictive Declaration) relating to hazardous materials that preclude the potential for significant adverse impacts?	☐	☒
(c) Would the project require soil disturbance in a manufacturing area or any development on or near a manufacturing area or existing/historic facilities listed in Appendix 1 (including nonconforming uses)?	☒	☐
(d) Would the project result in the development of a site where there is reason to suspect the presence of hazardous materials, contamination, illegal dumping or fill, or fill material of unknown origin?	☒	☐
(e) Would the project result in development on or near a site that has or had underground and/or aboveground storage tanks (*e.g.*, gas stations, oil storage facilities, heating oil storage)?	☐	☒
(f) Would the project result in renovation of interior existing space on a site with the potential for compromised air quality; vapor intrusion from either on-site or off-site sources; or the presence of asbestos, PCBs, mercury or lead-based paint?	☐	☒
(g) Would the project result in development on or near a site with potential hazardous materials issues such as government-listed voluntary cleanup/brownfield site, current or former power generation/transmission facilities, coal gasification or gas storage sites, railroad tracks or rights-of-way, or municipal incinerators?	☐	☒
(h) Has a Phase I Environmental Site Assessment been performed for the site?	☒	☐
○ If "yes," were Recognized Environmental Conditions (RECs) identified? Briefly identify: See Attachment A, Part II.	☒	☐
10. *WATER AND SEWER INFRASTRUCTURE*: CEQR Technical Manual Chapter 13		
(a) Would the project result in water demand of more than one million gallons per day?	☐	☒
(b) If the proposed project located in a combined sewer area, would it result in at least 1,000 residential units or 250,000 square feet or more of commercial space in Manhattan, or at least 400 residential units or 150,000 square feet or more of commercial space in the Bronx, Brooklyn, Staten Island, or Queens?	☐	☒
(c) If the proposed project located in a separately sewered area, would it result in the same or greater development than the amounts listed in Table 13-1 in Chapter 13?	☐	☒
(d) Would the proposed project involve development on a site that is 5 acres or larger where the amount of impervious surface would increase?	☐	☒
(e) If the project is located within the Jamaica Bay Watershed or in certain specific drainage areas, including Bronx River, Coney Island Creek, Flushing Bay and Creek, Gowanus Canal, Hutchinson River, Newtown Creek, or Westchester Creek, would it involve development on a site that is 1 acre or larger where the amount of impervious surface would increase?	☐	☒

	YES	NO
(f) Would the proposed project be located in an area that is partially sewered or currently unsewered?	☒	☐
(g) Is the project proposing an industrial facility or activity that would contribute industrial discharges to a Wastewater Treatment Plant and/or generate contaminated stormwater in a separate storm sewer system?	☐	☒
(h) Would the project involve construction of a new stormwater outfall that requires federal and/or state permits?	☐	☒
11. *SOLID WASTE AND SANITATION SERVICES*: CEQR Technical Manual Chapter 14		
(a) Using Table 14-1 in Chapter 14, the project's projected operational solid waste generation is estimated to be (pounds per week): 0		
o Would the proposed project have the potential to generate 100,000 pounds (50 tons) or more of solid waste per week?	☐	☒
(b) Would the proposed project involve a reduction in capacity at a solid waste management facility used for refuse or recyclables generated within the City?	☐	☒
12. *ENERGY*: CEQR Technical Manual Chapter 15		
(a) Using energy modeling or Table 15-1 in Chapter 15, the project's projected energy use is estimated to be (annual BTUs): 0		
(b) Would the proposed project affect the transmission or generation of energy?	☐	☒
13. *TRANSPORTATION*: CEQR Technical Manual Chapter 16		
(a) Would the proposed project exceed any threshold identified in Table 16-1 in Chapter 16?	☐	☒
(b) If "yes," conduct the screening analyses, attach appropriate back up data as needed for each stage and answer the following questions:		
o Would the proposed project result in 50 or more Passenger Car Equivalents (PCEs) per project peak hour?	☐	☒
If "yes," would the proposed project result in 50 or more vehicle trips per project peak hour at any given intersection? ***It should be noted that the lead agency may require further analysis of intersections of concern even when a project generates fewer than 50 vehicles in the peak hour. See Subsection 313 of Chapter 16 for more information.*	☐	☐
o Would the proposed project result in more than 200 subway/rail or bus trips per project peak hour?	☐	☒
If "yes," would the proposed project result, per project peak hour, in 50 or more bus trips on a single line (in one direction) or 200 subway trips per station or line?	☐	☐
o Would the proposed project result in more than 200 pedestrian trips per project peak hour?	☐	☒
If "yes," would the proposed project result in more than 200 pedestrian trips per project peak hour to any given pedestrian or transit element, crosswalk, subway stair, or bus stop?	☐	☐
14. *AIR QUALITY*: CEQR Technical Manual Chapter 17		
(a) *Mobile Sources*: Would the proposed project result in the conditions outlined in Section 210 in Chapter 17?	☐	☒
(b) *Stationary Sources*: Would the proposed project result in the conditions outlined in Section 220 in Chapter 17?	☐	☒
o If "yes," would the proposed project exceed the thresholds in Figure 17-3, Stationary Source Screen Graph in Chapter 17? (Attach graph as needed)	☐	☒
(c) Does the proposed project involve multiple buildings on the project site?	☐	☒
(d) Does the proposed project require federal approvals, support, licensing, or permits subject to conformity requirements?	☐	☒
(e) Does the proposed project site have existing institutional controls (*e.g.*, (E) designation or Restrictive Declaration) relating to air quality that preclude the potential for significant adverse impacts?	☐	☒
15. *GREENHOUSE GAS EMISSIONS*: CEQR Technical Manual Chapter 18		
(a) Is the proposed project a city capital project or a power generation plant?	☐	☒
(b) Would the proposed project fundamentally change the City's solid waste management system?	☐	☒
(c) If "yes" to any of the above, would the project require a GHG emissions assessment based on the guidance in Chapter 18?	☐	☐
16. *NOISE*: CEQR Technical Manual Chapter 19		
(a) Would the proposed project generate or reroute vehicular traffic?	☐	☒
(b) Would the proposed project introduce new or additional receptors (see Section 124 in Chapter 19) near heavily trafficked roadways, within one horizontal mile of an existing or proposed flight path, or within 1,500 feet of an existing or proposed rail line with a direct line of site to that rail line?	☐	☒
(c) Would the proposed project cause a stationary noise source to operate within 1,500 feet of a receptor with a direct line of sight to that receptor or introduce receptors into an area with high ambient stationary noise?	☐	☒
(d) Does the proposed project site have existing institutional controls (*e.g.*, (E) designation or Restrictive Declaration) relating to noise that preclude the potential for significant adverse impacts?	☐	☒
17. *PUBLIC HEALTH*: CEQR Technical Manual Chapter 20		
(a) Based upon the analyses conducted, do any of the following technical areas require a detailed analysis: Air Quality;	☐	☒

	YES	NO
Hazardous Materials; Noise?		
(b) If "yes," explain why an assessment of public health is or is not warranted based on the guidance in Chapter 20, "Public Health." Attach a preliminary analysis, if necessary.		
18. *NEIGHBORHOOD CHARACTER*: CEQR Technical Manual Chapter 21		
(a) Based upon the analyses conducted, do any of the following technical areas require a detailed analysis: Land Use, Zoning, and Public Policy; Socioeconomic Conditions; Open Space; Historic and Cultural Resources; Urban Design and Visual Resources; Shadows; Transportation; Noise?	☐	☒
(b) If "yes," explain why an assessment of neighborhood character is or is not warranted based on the guidance in Chapter 21, "Neighborhood Character." Attach a preliminary analysis, if necessary.		
19. *CONSTRUCTION*: CEQR Technical Manual Chapter 22		
(a) Would the project's construction activities involve:		
o Construction activities lasting longer than two years?	☐	☒
o Construction activities within a Central Business District or along an arterial highway or major thoroughfare?	☐	☒
o Closing, narrowing, or otherwise impeding traffic, transit, or pedestrian elements (roadways, parking spaces, bicycle routes, sidewalks, crosswalks, corners, *etc.*)?	☐	☒
o Construction of multiple buildings where there is a potential for on-site receptors on buildings completed before the final build-out?	☐	☒
o The operation of several pieces of diesel equipment in a single location at peak construction?	☒	☐
o Closure of a community facility or disruption in its services?	☐	☒
o Activities within 400 feet of a historic or cultural resource?	☒	☐
o Disturbance of a site containing or adjacent to a site containing natural resources?	☒	☐
o Construction on multiple development sites in the same geographic area, such that there is the potential for several construction timelines to overlap or last for more than two years overall?	☐	☒
(b) If any boxes are checked "yes," explain why a preliminary construction assessment is or is not warranted based on the guidance in Chapter 22, "Construction." It should be noted that the nature and extent of any commitment to use the Best Available Technology for construction equipment or Best Management Practices for construction activities should be considered when making this determination. See Attachment A.		

20. *APPLICANT'S CERTIFICATION*

I swear or affirm under oath and subject to the penalties for perjury that the information provided in this Environmental Assessment Statement (EAS) is true and accurate to the best of my knowledge and belief, based upon my personal knowledge and familiarity with the information described herein and after examination of the pertinent books and records and/or after inquiry of persons who have personal knowledge of such information or who have examined pertinent books and records.

Still under oath, I further swear or affirm that I make this statement in my capacity as the applicant or representative of the entity that seeks the permits, approvals, funding, or other governmental action(s) described in this EAS.

APPLICANT/REPRESENTATIVE NAME	DATE
Thomas McKnight	November 13, 2013

SIGNATURE

PLEASE NOTE THAT APPLICANTS MAY BE REQUIRED TO SUBSTANTIATE RESPONSES IN THIS FORM AT THE DISCRETION OF THE LEAD AGENCY SO THAT IT MAY SUPPORT ITS DETERMINATION OF SIGNIFICANCE.

Part III: DETERMINATION OF SIGNIFICANCE (To Be Completed by Lead Agency)

INSTRUCTIONS: In completing Part III, the lead agency should consult 6 NYCRR 617.7 and 43 RCNY § 6-06 (Executive Order 91 or 1977, as amended), which contain the State and City criteria for determining significance.

1. For each of the impact categories listed below, consider whether the project may have a significant adverse effect on the environment, taking into account its (a) location; (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude.

IMPACT CATEGORY	Potentially Significant Adverse Impact YES	NO
Land Use, Zoning, and Public Policy	☐	☐
Socioeconomic Conditions	☐	☐
Community Facilities and Services	☐	☐
Open Space	☐	☐
Shadows	☐	☐
Historic and Cultural Resources	☐	☐
Urban Design/Visual Resources	☐	☐
Natural Resources	☐	☐
Hazardous Materials	☐	☐
Water and Sewer Infrastructure	☐	☐
Solid Waste and Sanitation Services	☐	☐
Energy	☐	☐
Transportation	☐	☐
Air Quality	☐	☐
Greenhouse Gas Emissions	☐	☐
Noise	☐	☐
Public Health	☐	☐
Neighborhood Character	☐	☐
Construction	☐	☐

2. Are there any aspects of the project relevant to the determination of whether the project may have a significant impact on the environment, such as combined or cumulative impacts, that were not fully covered by other responses and supporting materials? ☐ YES ☐ NO

If there are such impacts, attach an explanation stating whether, as a result of them, the project may have a significant impact on the environment.

3. Check determination to be issued by the lead agency:

☐ **Positive Declaration**: If the lead agency has determined that the project may have a significant impact on the environment, and if a Conditional Negative Declaration is not appropriate, then the lead agency issues a *Positive Declaration* and prepares a draft Scope of Work for the Environmental Impact Statement (EIS).

☐ **Conditional Negative Declaration:** A *Conditional Negative Declaration* (CND) may be appropriate if there is a private applicant for an Unlisted action AND when conditions imposed by the lead agency will modify the proposed project so that no significant adverse environmental impacts would result. The CND is prepared as a separate document and is subject to the requirements of 6 NYCRR Part 617.

☐ **Negative Declaration:** If the lead agency has determined that the project would not result in potentially significant adverse environmental impacts, then the lead agency issues a *Negative Declaration*. The *Negative Declaration* may be prepared as a separate document (see template) or using the embedded Negative Declaration on the next page.

4. ***LEAD AGENCY'S CERTIFICATION***

TITLE	LEAD AGENCY
NAME	DATE
SIGNATURE	

NEGATIVE DECLARATION (Use of this form is optional)

Statement of No Significant Effect

Pursuant to Executive Order 91 of 1977, as amended, and the Rules of Procedure for City Environmental Quality Review, found at Title 62, Chapter 5 of the Rules of the City of New York and 6 NYCRR, Part 617, State Environmental Quality Review, assumed the role of lead agency for the environmental review of the proposed project. Based on a review of information about the project contained in this environmental assessment statement and any attachments hereto, which are incorporated by reference herein, the lead agency has determined that the proposed project would not have a significant adverse impact on the environment.

Reasons Supporting this Determination

The above determination is based on information contained in this EAS, which finds that the proposed project:

No other significant effects upon the environment that would require the preparation of a Draft Environmental Impact Statement are foreseeable. This Negative Declaration has been prepared in accordance with Article 8 of the New York State Environmental Conservation Law (SEQRA).

TITLE	LEAD AGENCY
NAME	DATE
SIGNATURE	

FIGURES

Rail

Project Site

400-Foot Radius of Project Site

Sources: Landbase, NYCDoITT; MapPLUTO, NYCDCP; Bing Maps Aerial (c) 2010 Microsoft Corporation and its data suppliers.

NYCEDC
New York City Economic Development Corporation

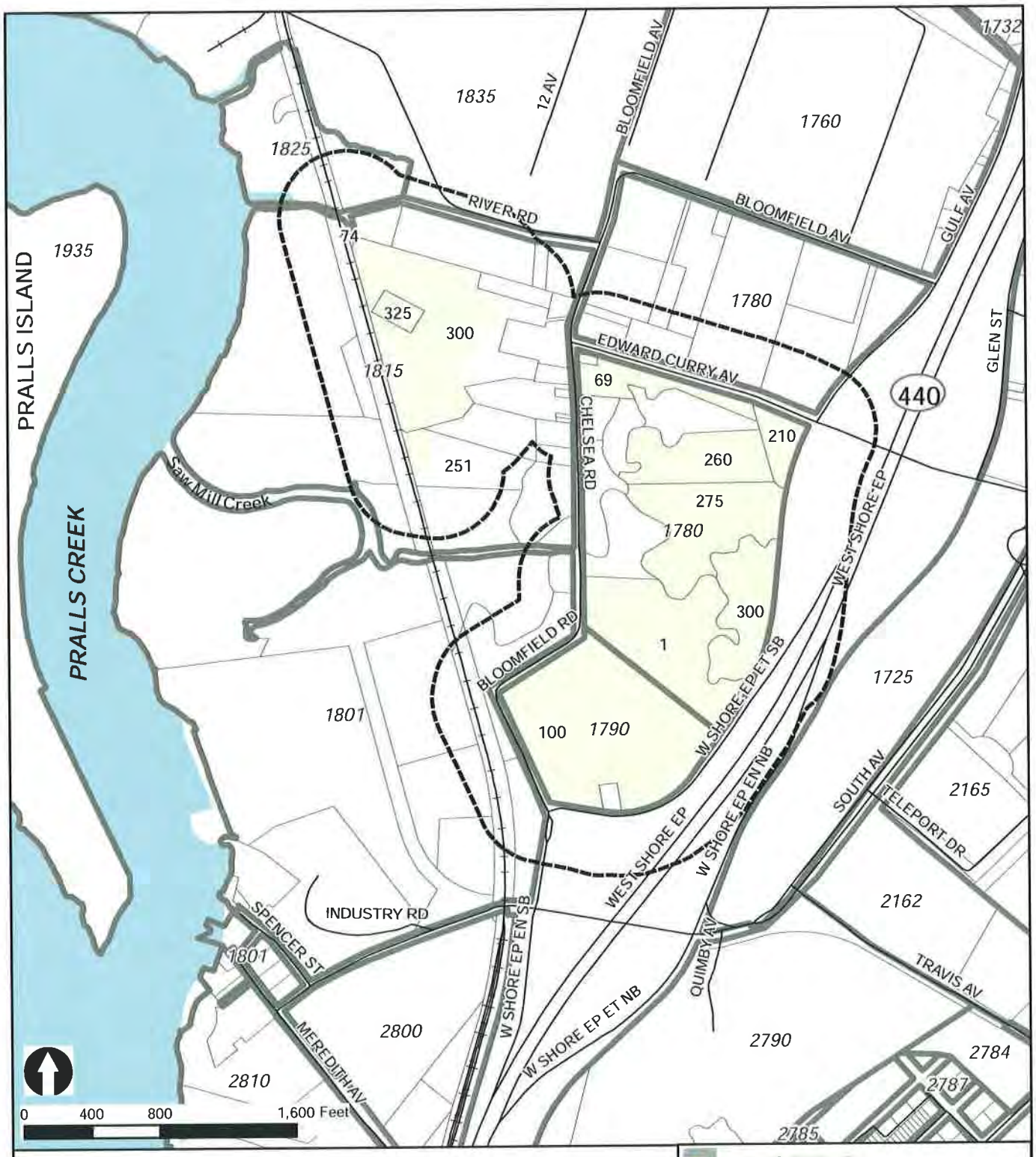
Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York

Site Location

Louis Berger & Assoc, PC

November 2013

Figure 1



12 Project Site (with tax lot labels)

400-Foot Radius of Project Site

Tax Lots

1234 Tax Blocks (with tax block labels)

Sources: Landbase, NYC DoITT; MapPLUTO, NYC DCP.

NYCEDC
New York City Economic Development Corporation

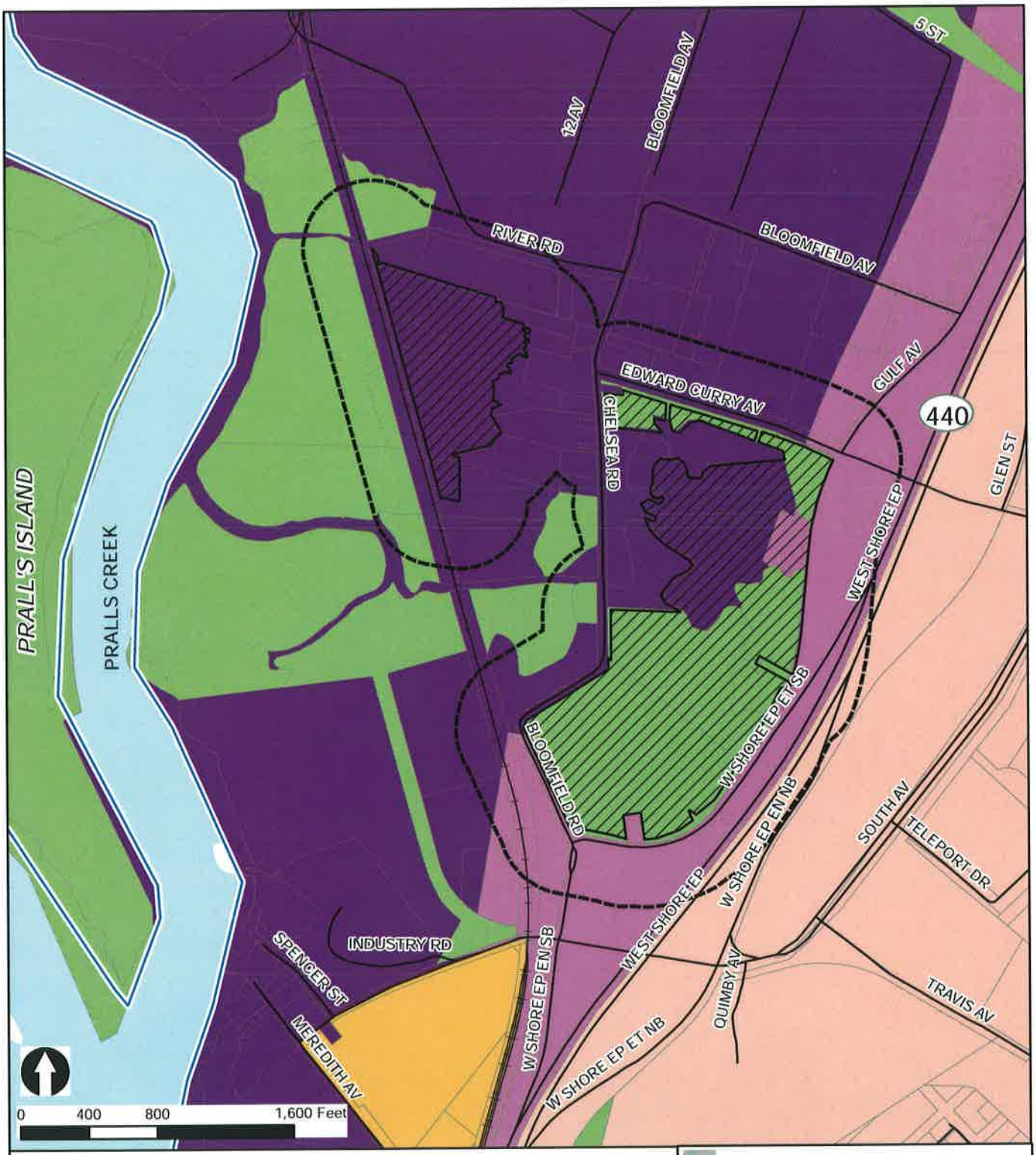
Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York

Tax Lots and Blocks

Louis Berger & Assoc, PC

November 2013

Figure 2



Zoning Designation

- C4-3
- M1-1
- M2-1
- M3-1
- PARK

- Parcel
- Project Site
- 400-Foot Radius of Project Site
- New York State Coastal Zone Boundary
- Streets
- Rail

Sources: Landbase, NYCDoITT; MapPLUTO and NYC Zoning features, NYCDCP.

NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York

Zoning

Louis Berger & Assoc, PC

November 2013

Figure 3

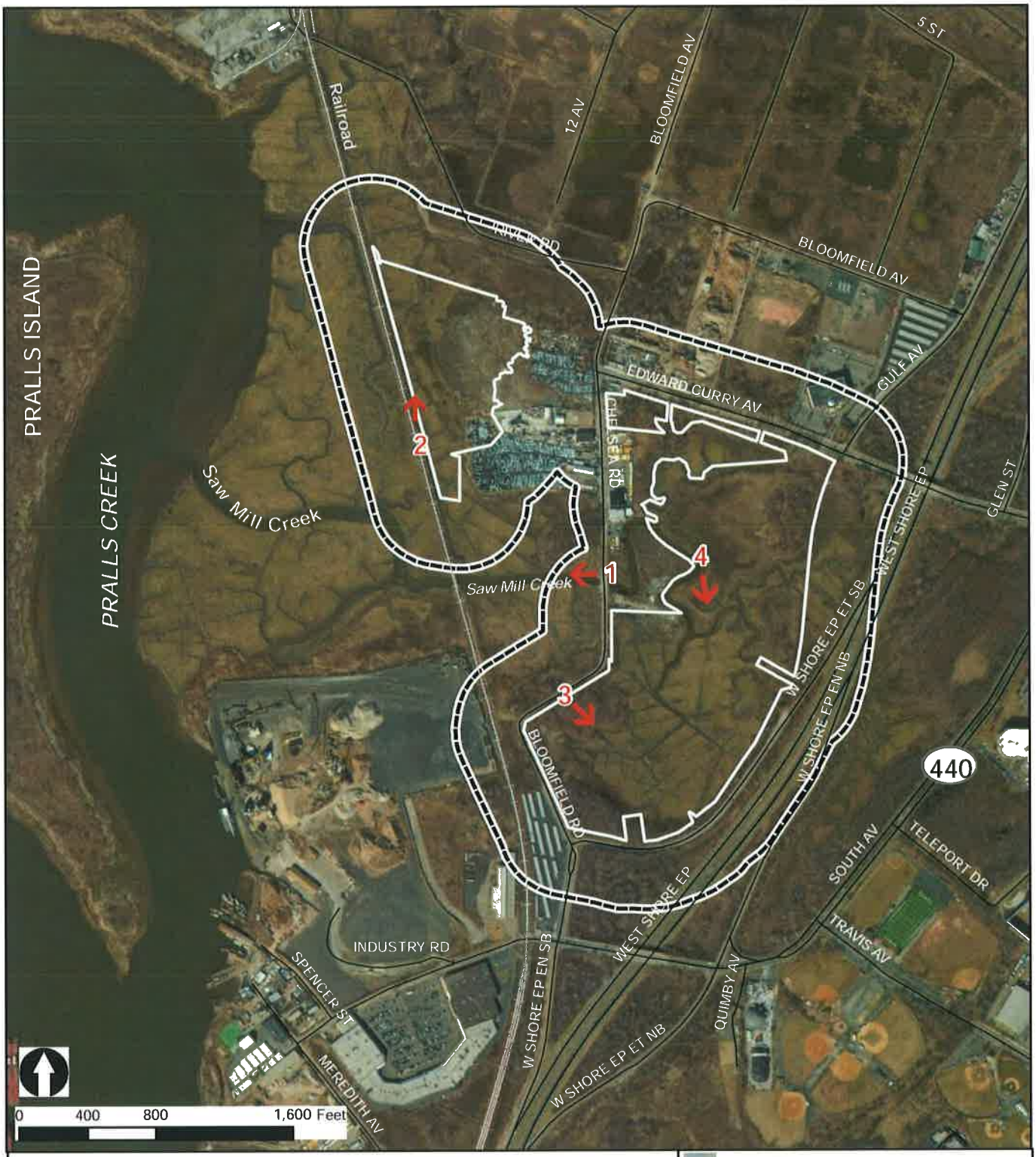

PRALLS ISLAND
PRALLS CREEK
Railroad
12 AV
BLOOMFIELD AV
5 ST
NEW DORP RD
BLOOMFIELD AV
EDWARD CURRY AV
GULF AV
CHELSEA RD
GLEN ST
WEST SHORE EP
Saw Mill Creek
Saw Mill Creek
1
2
3
4
W SHORE EP ET SB
W SHORE EP EN NB
BLOOMFIELD RD
440
SOUTH AV
TELEPORT DR
TRAVIS AV
WEST SHORE EP
INDUSTRY RD
SPENCER ST
W SHORE EP EN SB
QUIMBY AV
MEREDITH AV
W SHORE EP ET NB
0
400
800
1,600 Feet
Rail
Streets
Project Site
400-Foot Radius of Project Site
Sources: Landbase, NYCDoITT; Bing Maps Aerial (c) 2010 Microsoft Corporation and its data suppliers.
NYCEDC
New York City Economic Development Corporation
Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
Key Map: Project Site Photos
Louis Berger & Assoc, PC
November 2013
Figure 4a

Photo 1: View of Saw Mill Creek, facing west from Chelsea Road.

Photo 2: Photo of wetland area at the western boundary of the project site facing north along the railroad tracks.

NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York

Project Site Photos

Louis Berger & Assoc, PC

November 2013

Figure 4b

Photo 3: Representative view of nonindigenous fill area (resulting from illegal filling and dumping activity) in the southwestern portion of the eastern section of the project area.

Photo 4: View of the eastern section of the project area looking south towards the large tidal marsh area.

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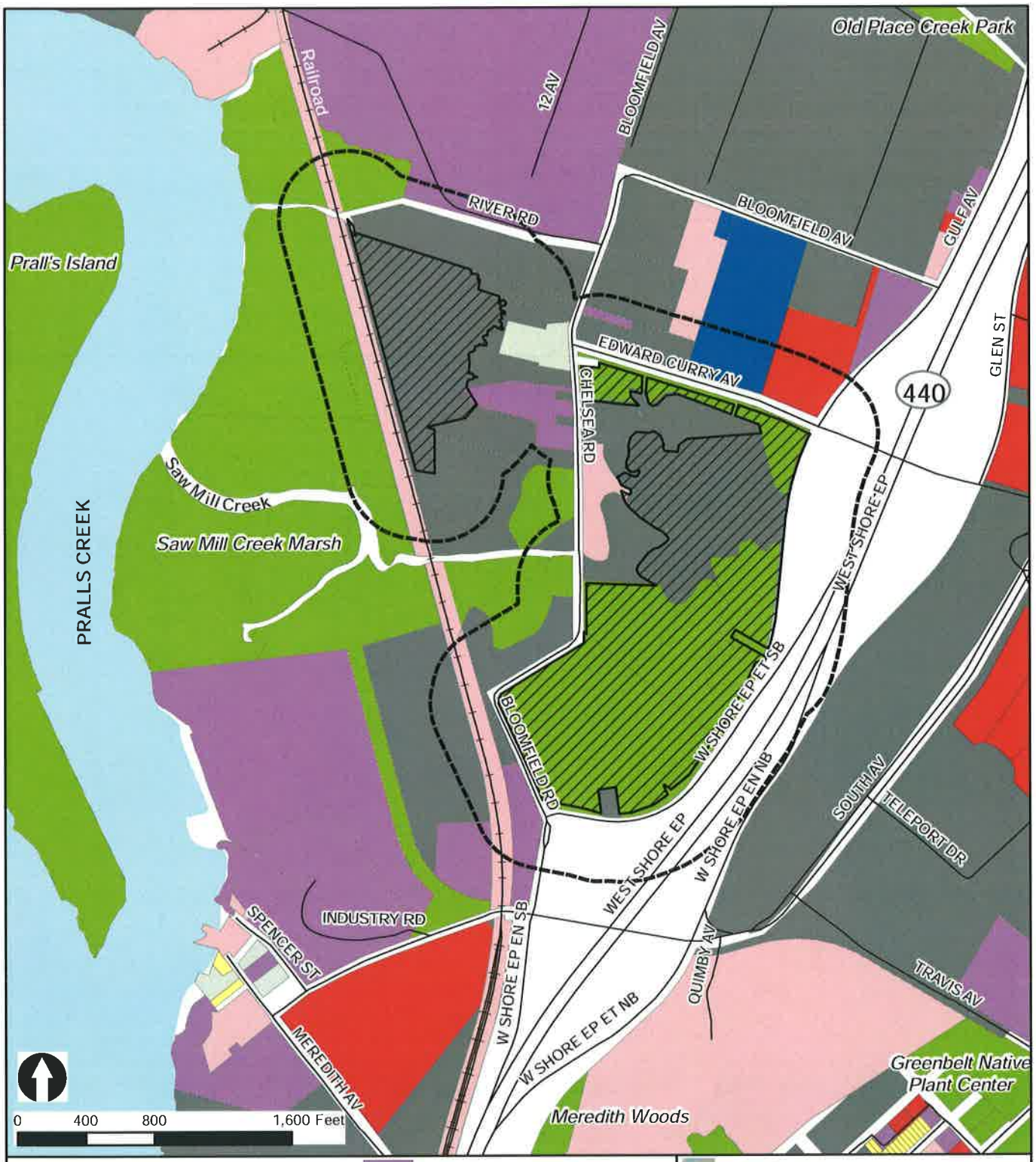
Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York

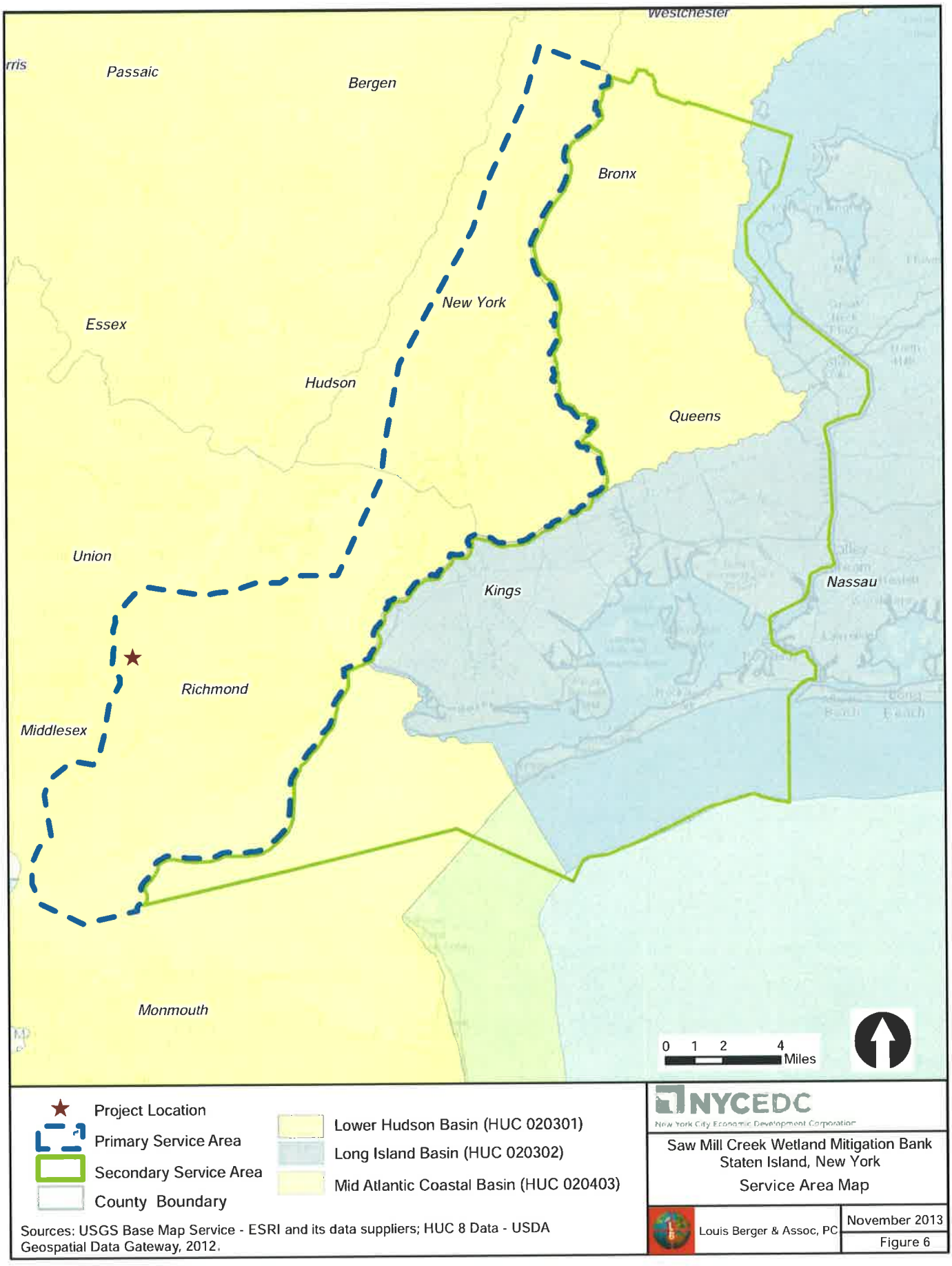
Project Site Photos

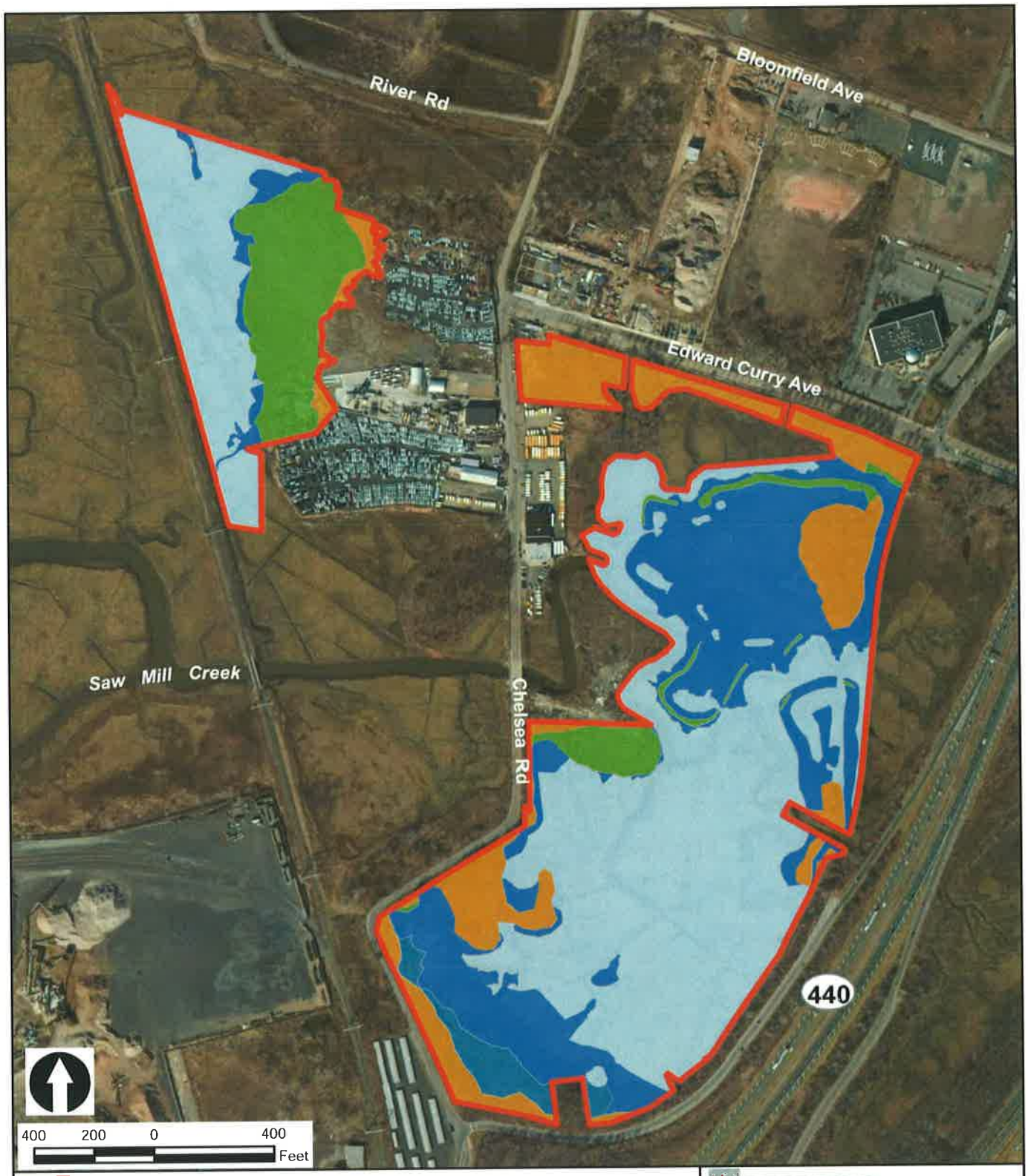
Louis Berger & Assoc, PC

November 2013

Figure 4c


Old Place Creek Park
Railroad
12 AV
BLOOMFIELD AV
RIVER RD
BLOOMFIELD AV
CULE AV
Prall's Island
EDWARD CURRY AV
GLEN ST
440
CHELSEA RD
Saw Mill Creek
Saw Mill Creek Marsh
PRALLS CREEK
WEST SHORE EP
BLOOMFIELD RD
W SHORE EP ET SB
W SHORE EP EN NB
SOUTH AV
TELEPORT DR
WEST SHORE EP
INDUSTRY RD
SPENCER ST
W SHORE EP EN SB
QUIMBY AV
TRAVIS AV
W SHORE EP ET NB
MEREDITH AV
Greenbelt Native Plant Center
Meredith Woods
0 400 800 1,600 Feet
Project Site
400-Foot Radius of Project Site
Primary Land Use, by Parcel
Residential
Mixed Residential & Commercial
Commercial
Industrial/ Manufacturing
Transportation/ Utility
Public Facilities/ Institutions
Open Space & Recreation
Parking
Vacant Land
Unclassified
Sources: Landbase, NYC DoITT; MapPLUTO, NYC DCP.
NYCEDC
New York City Economic Development Corporation
Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
Land Use
Louis Berger & Assoc, PC
November 2013
Figure 5


Westchester
rris
Passaic
Bergen
Bronx
New York
Essex
Hudson
Queens
Union
Kings
Nassau
Richmond
Middlesex
Monmouth
0 1 2 4
Miles
Project Location
Primary Service Area
Secondary Service Area
County Boundary
Lower Hudson Basin (HUC 020301)
Long Island Basin (HUC 020302)
Mid Atlantic Coastal Basin (HUC 020403)
Sources: USGS Base Map Service - ESRI and its data suppliers; HUC 8 Data - USDA Geospatial Data Gateway, 2012.
NYCEDC
New York City Economic Development Corporation
Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
Service Area Map
Louis Berger & Assoc, PC
November 2013
Figure 6



Project Site

Proposed Habitat Areas

- Forested Wetland Enhancement
- Upland Buffer Rehabilitation
- Tidal Wetlands Enhancement
- Tidal Marsh/Wetland Restoration (Rehabilitation)
- Tidal Marsh/Wetland Restoration (Re-Establishment)

Sources: Image courtesy of USGS, Microsoft Corporation 2013; Concept Plan, Louis Berger & Assoc, PC, 2013.

NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
Concept Plan

Louis Berger & Assoc, PC

November 2013

Figure 7

Project Site

NWI Wetlands

Sources: Image courtesy of USGS, Microsoft Corporation 2013; National Wetlands Inventory, 2012.

NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
NWI Wetlands

Louis Berger & Assoc, PC

November 2013

Figure 8

Project Site

NYSDEC Freshwater Wetlands

Sources: Image courtesy of USGS, Microsoft Corporation 2013; NYSDEC FWW Wetlands, 2008.

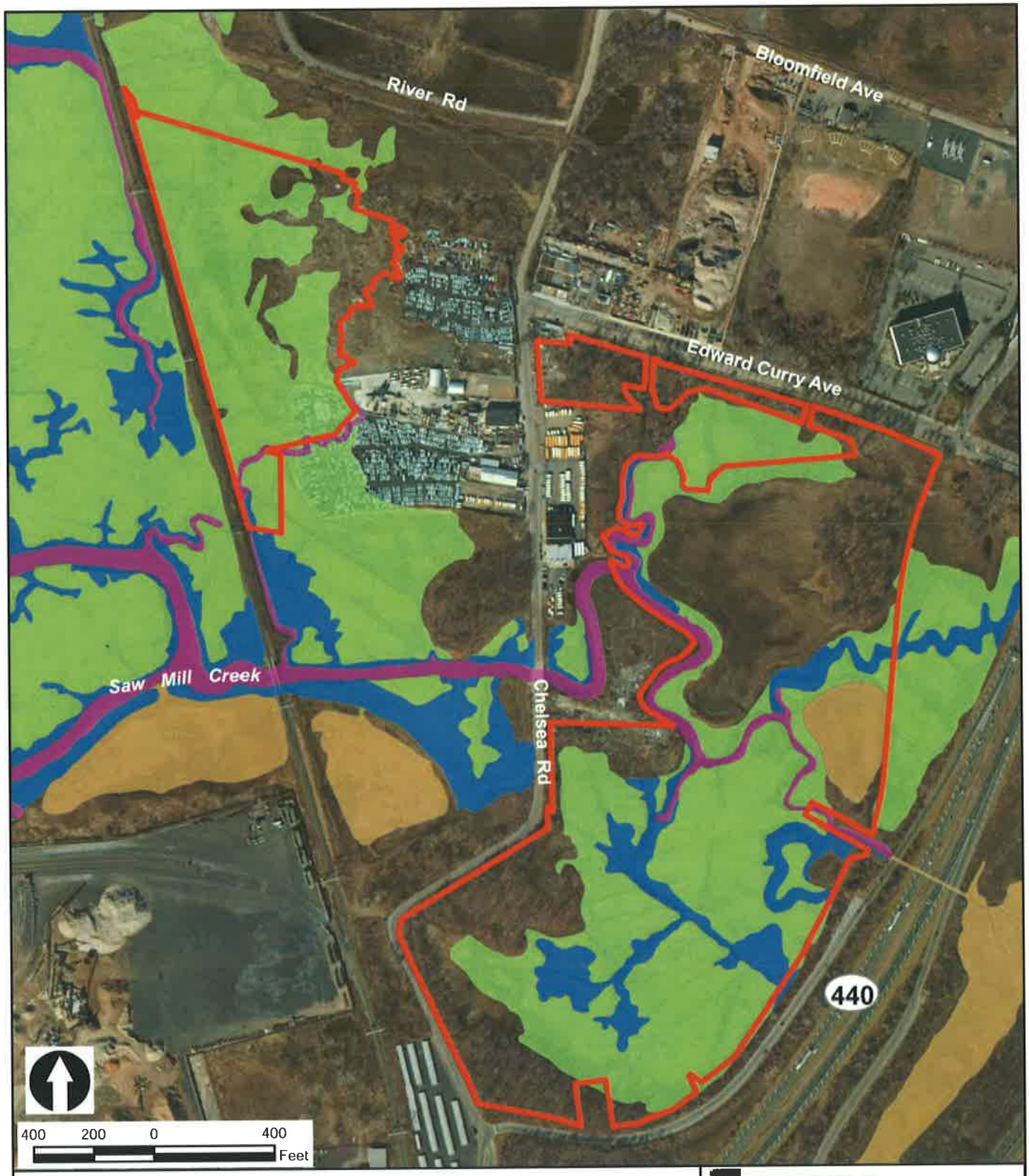
NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
NYSDEC Freshwater Wetlands

Louis Berger & Assoc, PC

November 2013

Figure 9



Project Site

NYSDEC Tidal Wetlands

FC - Formerly Connected

IM - Intertidal Marsh

HM - High Marsh

LZ - Littoral Zone

Sources: Image courtesy of USGS, Microsoft Corporation 2013; NYSDEC Tidal Wetlands - NYC and Long Island, 1974.

NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
NYSDEC Tidal Wetlands

Louis Berger & Assoc, PC

November 2013

Figure 10

- Project Site
- Delineated Wetland
- Remnant Berm
- Tidal marsh
- Red maple-sweetgum swamp
- Phragmites wetland
- Panne
- Successional shrubland
- Successional southern hardwood
- Chestnut oak forest
- Phragmites upland
- Urban vacant lot

Sources: Image courtesy of USGS, Microsoft Corporation 2013; Approximate Delineation and Cover Types, Louis Berger & Assoc, PC, 2013.

NYCEDC
New York City Economic Development Corporation

Saw Mill Creek Wetland Mitigation Bank
Staten Island, New York
Wetland Delineation &
Habitat Cover Types

Louis Berger & Assoc, PC

November 2013

Figure 11

ATTACHMENT A

PART I: GENERAL INFORMATION

1.0 Project Description

The New York City Economic Development Corporation (NYCEDC) has engaged in an initiative with the City and State of New York to protect and enhance the City's coastal resources. As part of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) initiative, NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The proposed project is referred to as the Saw Mill Creek Pilot Wetland Mitigation Bank (the Bank).

The proposed Bank will be located on the western shore of Staten Island in the Bloomfield area and within Community District 2. The Bank will be established within a portion of an approximately 68.45-acre site (project site) that is bisected by Chelsea Road (oriented north to south) into a western section and an eastern section (see Figure 1). The approximately 14.60-acre western section is generally bounded by railroad tracks to the west, a Williams-Transco underground natural gas pipeline valve house access road to the north, Chelsea Road and privately-owned parcels to the east and by Saw Mill Creek to the south. The approximately 53.86-acre eastern section is generally bounded by Chelsea Road and privately-owned parcels to the west, Edward Curry Avenue and associated right-of-way to the north, tidal marsh followed by Route 440 to the east, and Chelsea Road and an off-ramp from Route 440 to the south.

The project site is composed of (portions of) 12 city-owned parcels, several of which are designated as public open space (Saw Mill Creek Marsh). The remainder of the site is zoned for manufacturing uses (zoning districts M3-1 and M2-1). As discussed in greater detail below, the project site consists mainly of undeveloped tidal marsh and upland areas with some areas of fill and development from adjoining parcels. Refer to Figure 2 for a tax map and Figure 3 for a zoning map. Figures 4a and 4b include photographs of the project site. As shown in Figure 5, the surrounding area is largely composed of open space, vacant land, and industrial land uses. Note that Figures 1 through 5 are required attachments to the CEQR Environmental Assessment Statement (EAS), and as such they include the 400-foot radius of the project site. Construction of the proposed project is expected to last six months, beginning in Fall 2014 and ending in Spring 2015.

The western section of the project site is bounded to the west by railroad tracks with overhead electrical lines and buried high voltage cables. Beyond the rail road is additional tidal marsh, followed by Pralls Creek and the Arthur Kill. To the north of the western section is an access road to an underground natural gas line valve station, followed by River Road. Beyond River Road is vacant land that was formerly the GATX facility, a high-capacity petroleum storage tank field and transfer station that handled petroleum products for decades. A Con Edison electrical substation (100 River Road) is located approximately 0.18 miles to the northwest of the project site, at the terminus of River Road on the

Arthur Kill. Saw Mill Creek is the southern boundary of the western section of the project site, beyond which is open tidal marsh.[1]

The western section of the project site is bounded to the east by Chelsea Road and privately-owned commercial and industrial parcels. The property at 365 Chelsea Road is used for school bus parking by Cheryl & Sons, Inc., a school bus dealer located at 337 Chelsea Road. The property at 335 Chelsea Road is utilized as a parking lot for temporary staging of new cars. A large garage-type building is located on this property. Master Mix, LLC, a concrete production plant, is located at 333 Chelsea Road. North of 333 Chelsea Road are vehicle storage yards and metal buildings with no identifiable address. Based on a review of the New York City Department of Finance (NYCDOF) online records, the tax lots are identified as 291-295 Chelsea Road. A large fence along Chelsea Road obscures the view of these properties. Additionally, view of these properties from the project site is limited due to vegetative overgrowth along an approximate 10-foot high berm.

The eastern section of the project site is bounded by open tidal marsh to the east, followed by Route 440 (West Shore Expressway). The southern boundary consists of Chelsea Road and an off-ramp from Route 440 to Chelsea Road. Beyond Chelsea Road is a self-storage facility and beyond the off-ramp is wooded land. The northern boundary comprises Edward Curry Avenue and its right-of-way, beyond which is Flagstone Landscape and Garden Supply, Faztec Industries (an apparent recycling and materials business), a sportsmen's club, and an office building. Chelsea Road and Chelsea Playground (400 Chelsea Road), Island Charter (380 Chelsea Road) (a bus rental company), private parking lots and Cambridge Paving Stones storage comprise the western boundary (of the eastern section of the project site).

The project site would be restored in order to serve as the proposed Bank. Former and degraded wetlands would be restored to natural/historic functions. Restoration of ditched, filled, and/or degraded wetland and upland areas to a high level of function would be accomplished by a combination of practices, including removal of remnant berms and other fill material, regrading to suitable tidal marsh elevations, restoration of tidal creeks, treating non-native invasive species with an EPA-approved herbicide for use in aquatic habitats, and replanting with native vegetation. Tidal wetlands, tidal creeks and mudflat communities will be reestablished to provide a positive contribution to water quality, plant and animal habitat, and erosion control.

As much of the project site will be included in the Bank as practical and cost-effective; however, it is expected that portions of the site will be excluded from the Bank. There are four alternatives currently under consideration:

1. Development of the entire project site.
2. Development of the eastern section of the project site (east of Chelsea Road)
3. Development of the western section of the project site (west of Chelsea Road
4. A combination of alternatives 2 and 3; or the development of select portions of the eastern and western sections of the project site.

[1] *Draft Phase I Environmental Site Assessment Report for The Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative Saw Mill Creek Pilot Wetland Mitigation Bank Blocks 1780, 1790, and 1815, Multiple Lots Staten Island, NY*, prepared for the New York City Economic Development Corporation by Louis Berger & Assoc., P.C., May 2013.

A conceptual design plan has been developed for the Bank site, as discussed in detail below in Section 3.0, Conceptual Restoration Design Plan. The conceptual design plan depicts the future with-action condition, or the future with the proposed project constructed and in operation. Part II of this environmental assessment examines the incremental differences between the future without the proposed project in place (2015 future no-action condition) and the future with the proposed project in operation (2015 future with-action condition).

2.0 Project Purpose

The purpose of the Saw Mill Creek Pilot Wetland Mitigation Bank is to pilot a Wetland Mitigation Bank (Bank) in New York City. As the Bank Sponsor, NYCEDC, on behalf of the City of New York will restore, enhance, and maintain a portion of 68.45 acres of emergent wetlands, scrub shrub wetlands, forested wetlands, open water channels/pools, mudflat habitat, and uplands on Staten Island in accordance with the provisions of a MBI (to be developed) and regulatory permits.

The main objective of the Bank is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance) and New York State ECL Article 25 (Tidal Wetlands). The Bank will be established to compensate for wetland and other aquatic resource losses anticipated by such authorized development within the Bank Service Area in a manner that contributes to the long term ecological functioning of the Arthur Kill Drainage Basin, with an immediate goal of no net loss and a long term goal of a net gain of wetlands functions and services. The goals of the Bank are the establishment of tidal wetlands, tidal creeks and mudflat communities to provide a positive contribution to water quality, plant and animal habitat, and erosion control.

The Bank primarily would be established to provide off-site compensatory mitigation for authorized unavoidable impacts to waters of the United States and/or State waters, including wetlands, occurring within the portions of the Lower Hudson River Basin, also known as Hydrologic Unit Code 06 (HUC06) 020301, that are within the New York City Municipal limits (Primary Service Area). This Primary Service Area includes portions of the following HUC08 subbasins: Lower Hudson River and Sandy Hook-Staten Island and excludes the HUC12 subwatershed region: Raritan Bay-Lower Bay Deep. The Primary Service Area includes the Boroughs of Staten Island and Manhattan and portions of the Boroughs of the Bronx, Brooklyn and Queens.

The Bank secondarily would be established to provide off-site compensatory mitigation for authorized unavoidable impacts to waters of the United States and/or State waters, including wetlands, occurring within the portions of Long Island Basin, also known as Hydrologic Unit Code 06 (HUC06) 020302, that are within the New York City Municipal limits (Secondary Service Area). The Secondary Service Area includes portions of the following HUC08 subbasins: Bronx River, Long Island Sound, Northern Long Island and Southern Long Island, and includes the HUC12 subwatershed region: Raritan Bay-Lower Bay Deep. The Secondary Service Area includes portions of the Boroughs of the Bronx, Brooklyn and Queens. Refer to Figure 6 for a graphic illustration of the primary and secondary service areas.

The City has developed a preliminary concept plan for the Bank, as described below. The design plan will be further developed once the ongoing site studies are completed. As noted above, the City may elect to exclude portions of the project site in the Bank, but will include as much of the area as practical

and cost-effective. Thus the following discussion focuses on the approach to improving/ restoring the entire project site with the understanding that some parts of the site may not be included in the Bank. No buildings, structures and other built features are expected to remain on the Bank site subsequent to its construction.

It is anticipated that the Bank will provide the following wetland functions and services:

- Improved water quality,
- Improved flood attenuation;
- Improved sediment quality,
- Increased plant diversity, and
- Increased wildlife species abundance and diversity.

The restoration is expected to be comprised of the elements described below, with the understanding that the final restoration design will be dependent on the results of the ongoing field studies and agency comments. The first goal is to restore and maintain targeted tidal hydrology by restoring tidal flow with new tidal creeks. The second goal for the restoration design is to provide the correct site topography to support the desired tidal marsh vegetation and features. Once appropriate tidal hydrology and topography are established on the site, the next goal is to establish native vegetation and habitat. To encourage native plants, an invasive species control plan will be implemented, followed by the planting of native saltmarsh species. In addition to the proposed plantings, additional native species, such as salt marsh fleabane (*Pluchea odorata, P. purpurescens)*, are anticipated to colonize the site. The growth of these native species will be encouraged, while the growth of invasive species, such as *Phragmites australis* (common reed), will be discouraged by the select application of an EPA-approved herbicide and by establishing a more natural tidal hydrology.

The final goal for the restoration design is to maximize wetland functions and services, particularly for wildlife habitat and water quality improvement. The site's location designates it as part of the Atlantic Flyway, providing a crucial stopover site for birds during their southbound migration in late summer and fall. It also serves as an oasis for wildlife in a predominantly urban watershed, offering natural habitat in a watershed limited with such resources. The dominance of *Phragmites* throughout portions of the site has created a monoculture of habitat, which limits habitat and decreases wildlife species diversity. *Phragmites* has replaced native plant species and its dense cover has adversely affected hydrology and the use of open water and marsh surface by aquatic species. By restoring the marsh to contain heterogeneity of habitats, wildlife species diversity will improve. Avian species, in particular, are found to be attracted to a variety of habitats in comparison to a single habitat type. The combination of mud flat, open water, low marsh, high marsh, and scrub-shrub proposed for the site would provide the diversity of habitat types needed to support a variety of wildlife species, whether on a migratory stopover or as a resident. Restoring tidal flow allows fish, shellfish, and aquatic invertebrate species to use the tidal channels and provide valuable foraging opportunities for bird species along mudflats during low tide.

3.0 Conceptual Restoration Design Plan

The proposed Bank will restore former and degraded wetlands to natural/historic functions. The wetland concept plan proposes to restore tidal hydrology to previously-filled, hydrologically-impaired, and *Phragmites*-dominated areas of the project site. The restoration design strives to maximize

ecological restoration while avoiding indirect impacts to adjacent properties. As part of the design process, technical studies were undertaken to assess topography, tidal elevations, and other features. A New York State licensed land surveyor conducted a survey to develop a surface topographic map that will be used as the basis of the design plans. Bio-benchmark surveys of key vegetative communities were performed to aid in determining target wetland planting elevations, which dictate design grades. Hydrologic and hydraulic analyses have been initiated and are ongoing. Final design elevations and optimal habitat ranges will be determined through integration of the bio-benchmark and hydrology data and incorporation of project goals and site/constructability constraints.

Restoration of ditched, filled, and/or degraded wetland and upland areas to a high level of function shall be accomplished by a combination of practices, including removal of remnant berms and other fill material, regrading to suitable tidal marsh elevations, restoration of tidal creeks, treating non-native invasive species with an EPA-approved herbicide for use in aquatic habitats, and replanting with native vegetation. The design will be conducted in accordance with the *New York State Salt Marsh Restoration and Monitoring Guidelines* and the *Native Species Planting Guide for New York City and Vicinity*. Additional tidal creeks will be constructed to convey tidal flows to support native low and high marsh vegetation and to serve as a barrier to *Phragmites* invasion from surrounding areas.

Portions of the project site will also be enhanced. The concept plan, which is considered the future with-action condition for the purposes of this CEQR EAS, is described below and exhibited in Figure 7.

3.1 Project Area West of Chelsea Road

Wetland Restoration (Re-establishment)
Much of the central portion of the western section consists of construction/demolition debris and other fill material over former marshlands. This material will be removed and the area graded to low and high marsh elevations, tidal creeks will be excavated to restore tidal flow and circulation, and the marsh plain will be planted with appropriate native salt marsh grasses and shrubs. Sampling studies are being conducted to determine if the fill material in this area is contaminated. If the soil and groundwater sampling indicates an area of concern, the area will be over-excavated and backfilled with a clean sand cap to create a clean substrate for the marsh plain. The area will then be planted with native salt marsh species.

Wetland Restoration (Rehabilitation)
The northeast and southern portions of the western parcel are dominated by fill and invasive *Phragmites*. Survey data indicate that elevations in this area are too high to support salt marsh species and this area will be excavated to achieve suitable elevations to support a tidal salt marsh. Debris and fill material will be removed and the area graded to low and high marsh elevations, tidal creeks will be excavated to restore tidal flow and circulation, and the marsh plain will be planted with appropriate native salt marsh grasses and shrubs. Sampling studies are being conducted to determine if the fill material in this area is contaminated. At this time, it is assumed that the area does not contain contaminated material and over excavation and backfilling with sand will not be required. If the sediment sampling indicates an area of concern, the area will be over-excavated, backfilled with a clean sand cap and planted with native salt marsh species.

Wetland Enhancement

Much of the project site consists of high quality low and high marsh, as well as several pannes. Based on conditions within the proposed Bank boundary, it is expected that *Phragmites* will continue to be the primary invasive species threatening wetland habitats. To prevent the decline of these aquatic resources, *Phragmites* would be managed during the life of the Bank in low and high marsh habitats through spot applications of an EPA-approved herbicide. In addition, these marshes are threatened by the pervasive dumping in the area. Existing debris in these areas will be removed. By including and enhancing these wetlands as part of a mitigation bank, the threat of illegal filling and dumping is minimized. The design will include impediments to dumping to the maximum extent possible. Subsequent to site construction and planting, the site will be posted and frequently inspected.

Buffer Rehabilitation

The forested buffer within the western section adjacent to Saw Mill Creek and Chelsea Road is currently dominated by invasive species and debris. This area contains Hurricane Sandy storm surge-driven debris as well as historic debris such as tires, plastic containers, and other floatable debris. This forest will be rehabilitated through removal of debris and non-native, invasive species that compromise native diversity and wildlife usage. Target invasive species include, but are not limited to, *Polygonum cuspidatum* (Japanese knotweed), *Celastrus orbiculatus* (Oriental bittersweet), and tree-of-heaven. These and other dominant non-native invasive species will be managed through the application of an EPA-approved herbicide for use in aquatic habitats and by the seeding and/or planting of select native species. Subsequent to site construction and planting, the site will be posted and frequently inspected to discourage dumping.

3.2 Project Area East of Chelsea Road

Wetland Restoration (Re-establishment)

The concept plan for the former junkyard area located south of Saw Mill Creek and east of Chelsea Road (urban vacant lot) consists of removing existing debris (tires, cement, asphalt, etc.) and excavating the fill to a target elevation that will support low and high marsh. Sampling studies are being conducted to determine if the fill material in this area is contaminated. If the soil and groundwater sampling indicates an area of concern, the area will be over-excavated, backfilled with a clean sand cap and planted with native salt marsh species. Portions of remnant berms located in this area consist of *Phragmites* and *Ailanthus altissima* - (tree of heaven) dominated uplands. These berms will be removed and the area will be graded to an appropriate marsh plain elevation and planted with native salt marsh species.

Wetland Restoration (Rehabilitation)

This area consists of *Phragmites*-dominated remnant berms and elevations that are too high to support salt marsh species. Restoration of this area will consist of excavating and grading the area to achieve proper tidal marsh elevations and excavating tidal creeks to provide hydrology. Sampling studies are being conducted to determine if the fill material in this area is contaminated. At this time, it is assumed that the area does not contain contaminated material and over excavation and backfilling with sand will not be required. If the sediment sampling indicates an area of concern, the area will be over-excavated, backfilled with a clean sand cap and planted with native salt marsh species. The marsh plain will be planted with appropriate native salt marsh grasses and shrubs.

A barren panne located east of an island in the northeast corner of the eastern section only holds water at its western extremity. The Concept Plan includes improvements to the habitat and function of this

area by excavating and grading the area to establish appropriate depth for fish species occurring in pannes (i.e., mummichogs) and establishing connections with tidal creeks at elevations that would allow flooding of the panne only during spring tides.

Areas dominated by *Phragmites* in the southern portion of the eastern section will be graded to proper salt marsh elevations and natural creeks reestablished, and the marsh plain planted with appropriate native salt marsh grasses and shrubs. This area will be managed for any reinvasion by *Phragmites* through select application of an EPA-approved herbicide for use in aquatic habitats.

Wetland Enhancement

Much of the project site consists of high quality low and high marsh, as well as several pannes. Based on conditions within the proposed Bank boundary, it is expected that *Phragmites* will continue to be the primary invasive species threatening wetland habitats, especially in the eastern section where there are several freshwater inputs. To prevent the decline of these aquatic resources, *Phragmites* will be managed during the life of the Bank in low and high marsh habitats by spot applications of an EPA-approved herbicide. Existing debris will be removed.

A red maple-sweetgum swamp area located within the southern portion of the eastern section contains some storm surge debris that will be removed to enhance habitat quality and function. Additionally, *Phragmites* encroachment into this area will be managed through select application of an EPA-approved herbicide.

In addition, these marshes are threatened by the pervasive dumping in the area. By including and enhancing these wetlands as part of a mitigation bank, the threat of illegal filling and dumping is minimized. The design will include impediments to dumping to the maximum extent possible. Subsequent to site construction and planting, the site will be posted and frequently inspected.

Buffer Rehabilitation

Forested buffers within the eastern section will be enhanced through removal of debris and non-native, invasive species that compromise native diversity and wildlife usage. Target invasive species in areas identified for upland rehabilitation include, but are not limited to, *Polygonum cuspidatum* (Japanese knotweed), *Celastrus orbiculatus* (Oriental bittersweet), and tree-of-heaven. These and other dominant non-native invasive species will be managed through the application of an EPA-approved herbicide for use in aquatic habitats and by the seeding and/or planting of select native species. Subsequent to site construction and planting, the site will be posted and frequently inspected to discourage dumping.

4.0 Construction Activities

Construction duration is expected to be approximately six months. Construction will be undertaken with the following sequence:

- Clearing and Grubbing of upland areas that are designated as Wetland Restoration on the Concept Plan.
- Temporary-Turbidity Curtain will be used in the existing channels adjacent to proposed channels.
- Temporary-Silt Fence is proposed around the project site boundary.
- Temporary-Construction Entrance - the placement of temporary construction entrances on the project site.

- Chain Link Fencing and Gates will be installed along portions of the project site boundary.
- Unclassified Excavation and Disposal of non-contaminated soils.
- Laboratory Analysis for Hazardous Waste RCRA Toxicity Characteristic will involve all work to take site samples and test soils for hazardous materials in order to separate and properly dispose of contaminated soils.
- Segregation and Storage of Contaminated Soil involves the removal and stockpile of contaminated soils from non-contaminated soils during excavation.
- Disposal of Contaminated Hazardous Waste Soil involves the disposal of all excavation deemed as a contaminated soil and as hazardous material.
- Disposal of Contaminated Non-Hazardous Waste Soil involves the disposal of all excavation deemed as a contaminated soil and as hazardous material.
- Herbivory Fencing will be placed on areas designated as Wetland Restoration.
- Herbaceous Planting: *Spartina Alterniflora* (Smooth Cordgrass) *Distichlis Spicata* (Spike Grass) *Spartina Patens* (Saltmeadow Hay) *Juncus Gerardii* (Saltmeadow Rush) is proposed to be planted on 3-foot centers in the Wetland Restoration areas.
- Shrub Planting: *Baccharis Halimifolia* (Groundsel Tree) *Iva Frutescens* (Marsh Elder) is proposed to be planted on 5-foot centers in the Wetland Restoration areas.
- Herbaceous Seed Mix will be spread in the area designated as Buffer Rehabilitation.

5.0 Federal and State Regulatory Requirements

Implementation of the proposed project will require a number of federal and state permits and approvals, as summarized below.

- Joint Application for Permit:
  Combined application for authorization under Sections 404 and 401 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (US Army Corp of Engineers [USACE]); Section 401 of the Clean Water Act (Water Quality Certification) (New York State Department of Environmental Conservation [NYSDEC]); NYS ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance) (NYSDEC); NYS ECL Article 25 Tidal Wetlands (NYSDEC); NYS ECL Article 24 Freshwater Wetlands (NYSEDC); and Coastal Zone Consistency Concurrence (New York State Department of State [NYSDOS].

  Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act – The USACE regulates activities below ordinary high water elevations of navigable waters of the US. Saw Mill Creek within the project site is a tributary of the Arthur Kill (a navigable water), thus the creek would be classified by the USACE as a navigable water, and require a Section 10 permit.

  Section 401 of the Clean Water Act (Water Quality Certification) – The NYSDEC oversees this permit/certification that maintains the integrity of the state's waters. The Section 401 application to NYSDEC will demonstrate that the proposed project will not release contaminants into state and federal waters.

  NYS ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance) – The policy of New York is to preserve and protect the state's water resources from adverse effects and potential impairment due to human activities. The permit application will demonstrate that the proposed

project will not result in adverse effect to the water resources and will comply with the protection of waters regulatory program.

NYS ECL Article 24, Freshwater Wetlands – This regulation is designed to preserve and protect freshwater wetlands. The Article 24 application will reflect that the proposed project has been designed to restore and improve existing freshwater wetlands.

NYS ECL Article 25, Tidal Wetlands – This regulation is designed to preserve and protect tidal wetlands. As the proposed project is designed to restore existing wetlands, the Article 25 application to NYSDEC will show this tidal community improvement.

Coastal Consistency Concurrence – To certify that the proposed activity is consistent with New York State's Coastal Zone Management Policy as required by U.S. Department of Commerce regulations (15 CFR 930.57), a Coastal Consistency document will be prepared and submitted to the NYSDOS.

- Mitigation Banking Instrument Interagency Review Team (USACE/NYSDEC):
  The Mitigation Banking Instrument (MBI) establishes the wetland mitigation bank and must be signed by the Interagency Review Team (IRT) and Bank Sponsor. The executed MBI will be an attachment to the USACE permit.

- State Pollutant Discharge Elimination System (SPDES) Permit (NYSDEC):
  Discharge of stormwater from construction sites require a SPDES permit (which complies with the National [NPDES] program). The SPDES application will include an Erosion and Sediment Control Plan, a Stormwater Pollution Prevention Plan (SWMPP), and a post-construction Stormwater Management Plan (SWMP).

PART II: Technical Analyses

The following sections include additional information to supplement Part II, Technical Analysis, of the EAS short form. Additional information is only provided for those technical areas that include a "yes" response.

For two of the technical areas where the proposed Bank has the potential to result in an impact (i.e., Natural Resources and Construction Impacts), analyses are included that assess the incremental differences between the future without the proposed project in place (2015 future no-action condition) and the future with the proposed project in operation (2015 future with-action condition). The future no-action condition assumes that no wetland restoration or enhancement activity would occur. Thus conditions would be similar to the current scenario, where wetland functions and wildlife habitat will continue to degrade, invasive species and filled wetlands will remain, Hurricane Sandy storm surge-driven debris as well as historic debris will not be removed, potential subsurface contamination will not be cleaned up, and the threat of illegal filling and dumping will persist.

1.0 Land Use

This publicly-sponsored project is consistent with and supportive of the City's sustainability policies and goals, as encouraged through PlaNYC. In May 2012, the City released its Wetlands Strategy as part of the PlaNYC 2030 initiative. The strategy builds upon past planning efforts to address challenges facing the City's remaining wetland areas, and provides a framework for strengthening these critical areas in New York City. The strategy establishes a goal of no net loss of wetlands, but also recognizes the insufficiency of solely focusing on the quantity of wetlands. Thus the strategy also incorporates objectives to improve the quality of the remaining wetland areas and maximize their ecological functions. Initiatives to achieve these goals are addressed in four key areas:

1. Protection: To enhance wetlands protection, strengthen protection of vulnerable wetland parcels, increase wetlands acquisition efforts, and update the Waterfront Revitalization Program.
2. Mitigation: Work with State and Federal partners to revise wetlands mitigation guidance, and create a wetlands mitigation banking or in-lieu fee mechanism for public projects.
3. Restoration: Complete City-funded restoration projects, create a natural areas conservancy, and work with State and Federal partners to complete and implement the Comprehensive Restoration Plan.
4. Assessment: Improve wetlands mapping in New York City; monitor tidal wetlands and analyze the potential impacts of sea level rise; assess the conditions and functions of New York City wetlands; and develop a research agenda to address wetlands challenges.

The City seeks to improve wetlands protection, restore the functions of important wetlands, and improve the mitigation process via implementation of its Wetlands Strategy. Since the proposed project entails the development of a pilot wetlands mitigation bank, it directly supports the wetlands strategy and PlaNYC objectives related to wetlands.

The proposed project includes wetland restoration, enhancement and rehabilitation; and upland buffer rehabilitation. As such, it is consistent with PlaNYC's overall water quality goal of improving the quality

of New York City's waterways to increase opportunities for recreation and restore coastal ecosystems; with PlaNYC's natural resources objective of protecting and enhancing natural resources; and with PlaNYC's open space goal of protecting and promoting nature. The proposed project will facilitate the overall sustainability of the City and will not adversely affect land use, zoning or public policy.

As the project site is located within the boundary of the Waterfront Revitalization Program, a Consistency Assessment Form is required and included as Attachment B.

2.0 Open Space

Portions of the project site include open space (see Figure 3, Zoning Map and Figure 5, Land Use Map). As the proposed project entails the restoration of wetlands and native habitat across the project site, it will result in positive changes to open space. The proposed project will not change the overall size of any mapped open space and does include the transfer of land ownership, nor will it generate residential or employee populations. The proposed project will result in beneficial impacts to public open space.

3.0 Historic and Cultural Resources

In accordance with the *2012 CEQR Technical Manual,*[2] a written description of the proposed project was submitted New York City Landmarks Preservation Commission (LPC). LPC completed an initial environmental review of the project area lots and indicated that all lots possess archaeological significance and will require the completion of an archaeological documentary study for the proposed wetland mitigation bank site. The project area's lots possess the potential for the recovery of archaeological deposits from the 19th century and Native American occupation along with prior knowledge of human burials from the project site. An archaeological documentary study was completed for the project site in order to determine whether intact archaeological resources might exist on the project site. LPC is currently reviewing the documentary study and will make a determination as to whether archaeological field work is necessary in order to rule out the potential for adverse impacts. If archaeological resources are encountered, mitigation measures would be coordinated with the regulatory agencies (such as data recovery) and no significant adverse impacts would occur.

4.0 Natural Resources

The project site contains the following types of natural resources: surface water hydrology, wetland resources (both tidal and freshwater), and upland resources (vegetation, wildlife and special status species, and significant natural communities). Impact assessments for surface water hydrology, vegetation, wetlands and open water areas, wildlife and special status species, and significant natural communities are discussed individually in the following subsections.

4.1 Surface Water Hydrology

Existing Conditions – Saw Mill Creek, a tidally influenced tributary of Pralls Creek, and several tributaries and drainage ditches are located within the project site. Average annual rainfall/snowfall is 48.6 inches.

[2] *City Environmental Quality Review (CEQR) Technical Manual,* New York City Mayor's Office of Environmental Coordination, January 2012, revised 6/5/2013, Chapter 9, Section 330.

The confluence of Saw Mill Creek and Pralls Creek is located approximately 600 feet west of the project site. Pralls Creek is a tributary of the Arthur Kill. The proposed project is 0.8 aerial miles from the Arthur Kill (closest Traditional Navigable Water [TNW]) to the Chelsea Road Bridge over Saw Mill Creek in the center of the project area. The project site is connected to the Staten Island Sound through a series of smaller tidal channels. Part of the site experiences daily tidal inundation. Groundwater within the project site is expected to be present within the glacial and overlying organic material at depths influenced by the tide. At high tide, the low-lying marsh is saturated and inundated in the lower lying areas. At low tide, groundwater is estimated to be present at less than 6 feet below ground surface (bgs). Groundwater flow is anticipated to be to the west towards Pralls Creek. Saw Mill Creek and its tributaries can be classified as Relatively Permanent Waters (RPW) as they flood daily with the tide cycle. According to the environmental database report,[3] the project site is located within the Federal Emergency Management Agency (FEMA) 100-year flood zone, but outside of the 500-year flood zone.

In May 2013, Louis Berger installed four levelloggers and one barologger on-site to measure site specific tidal fluctuations and atmospheric pressure within the project area. Data collection is ongoing. In addition to the tide data monitoring, Louis Berger obtained the surveyed the tide gauge elevations and transformed the tide stages measured by the levelloggers into vertical elevation datum. This allows for a direct comparison of the monitored tide elevation to the site topography that has been surveyed and referenced to NAVD88 in feet.

Future No-Action Condition – In the future without the proposed Bank, no restoration or enhancement work would occur at the project site. New channels that connect to Saw Mill Creek would not be constructed and the targeted tidal hydrology would not be restored or maintained. Tidal water would continue to be separated from portions of the project site and existing remnant berms and other fill material would remain on site.

Future With-Action Condition – The project site provides a tidal wetland restoration opportunity in the New York City area. Currently, tidal water is segregated from portions of the site via historic berms and fill in the Saw Mill Creek marsh. One of the primary objectives of the proposed Bank is to restore and maintain targeted tidal hydrology by restoring tidal flow with new tidal creeks. Proposed restoration work includes the removal of historic berms and fill within the project site, and the creation of new tidal creeks that connect to Saw Mill Creek. These tidal creeks will be constructed to convey tidal flows within the parcel to support tidal marsh habitat.

Proposed restoration activities at the project site also include providing the correct site topography/elevations to support the desired tidal marsh vegetation and features. The existing topographic data for the site indicates that the majority of the site is at a relatively low elevation (approximately 2.0 to 3.0 feet NAVD88). Based on extensive hydrologic data and vegetative biobenchmark data collected in the adjacent marsh, the desirable elevations for *Spartina alterniflora* low marsh in the surrounding tidal marsh is between 1.64 and 2.7 feet NAVD88. (The biobenchmark studies involved establishing precise vertical elevations within nearby reference wetlands and coupling these elevations with observations of key vegetative, soil and hydrological characteristics).

[3] Environmental Data Resources, Inc. Radius Map Report with Geocheck, Saw Mill Creek Marsh, River Road, Staten Island, NY 10314, April 26, 2013.

Conclusion – The project proposes to restore tidal hydrology to previously filled, hydrologically impaired areas of the project site via construction of new tidal creeks and regrading to suitable tidal marsh elevations, in an effort to maximize ecological restoration. As the existing hydrology would be altered to accommodate the restoration objectives of the proposed project, the impacts are considered beneficial.

4.2 Vegetation

Existing Conditions – Over the last 200 years, the vegetation in the vicinity of the project area has been altered by human activities, including upland clearing, wetland ditching and filling, residential and industrial development, introduction and spread of invasive species (including common reed, poison ivy, and Japanese knotweed), obstructions of surface water movement, and other less physically intrusive disturbances such as noise from airports and automobile traffic. Industrial development has increased the potential for spills of industrial fuels and chemicals and illegal dumping, which can damage the environment by causing destruction of habitat and loss of species. These actions have directly or indirectly changed and shaped the historical ecological communities to their present state. The defined community types, although influenced by human development and/or invasion by non-native plant species, support a variety of plant species and provide habitat for area wildlife.

Louis Berger & Assoc., P.C. (Louis Berger) performed dedicated field survey work on July 23 and 24, 2013, though some project site information and observations were collected during the performance other field tasks.[4] The majority of the project site consists of wetland habitats. The presence of wetland indicators (i.e., hydric soils, prevalence of hydrophytic vegetation, and hydrologic regime) was verified during field studies, including during performance of a wetland Jurisdictional Determination.[5] Table 1 provides the approximate acreages of existing habitat cover type within the project site, as illustrated in Figure 11, Wetland Delineation and Habitat Cover Types.

Table 1: Existing Habitat Acreages

Project Site	Approximate Acreage
Chestnut oak forest	3.14
Panne	0.82
Phragmites upland	0.64
Phragmites wetland	13.81
Red maple-sweetgum swamp	1.55
Successional southern hardwood	5.20
Tidal marsh	35.72
Urban vacant lot	7.37

[4] Louis Berger conducted a Biological Resources Survey of the project site and a nearby reference site (*Draft Biological Resources Survey Report*, MARSHES Imitative, Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island, New York, August 2013; prepared for NYCEDC). The approximately 7-acre reference site is located north of the project site, bounded by the Williams-Transco underground natural gas pipeline to the south, railroad tracks to the west, and River Road to the north and east. The reference site was selected because it is near the project site as well as hydrologically and ecologically similar; however, it is functionally superior to the project site as it generally lacks historic fill and non-native vegetation.

[5] Application for Department of the Army Jurisdictional Determination (Application No. NAN-2013-02059-FHA), MARSHES Initiatives, Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island, Richmond County, New York. August 2013.

Successional shrubland	0.20
Total	**68.45**

Vegetation observed within the project area site listed below in Table 2, and described below for upland and wetland/open water areas.

Table 2: Vegetation Observed within the Project Area

Scientific Name	Common Name	Indicator Status
Trees		
*Acer platanoides**	Norway maple	UPL
Acer rubrum	red maple	FAC
Ailanthus altissima	tree-of-heaven	UPL
Betula populifolia	gray birch	FAC
Carya sp.	hickory	--
Liquidambar styraciflua	sweetgum	FAC
Morus alba	white mulberry	FACU
Nyssa sylvatica	black gum	FAC
Prunus serotina	black cherry	FACU
Quercus alba	white oak	FACU
Quercus bicolor	swamp white oak	FACW
Quercus michauxii	swamp chestnut oak	FACW
Quercus palustris	pin oak	FACW
Quercus prinus	chestnut oak	UPL
Quercus rubra	red oak	FACU
Rhus copallinum	winged sumac	UPL
*Robinia pseudoacacia**	black locust	FACU
Salix sp.	willow	--
Sassafras albidum	sassafras	FACU
Ulmus rubra	slippery elm	FAC
Shrubs/Vines		
*Ampelopsis brevipedunculata**	porcelainberry	UPL
Baccharis halimifolia	sea myrtle	FACW
*Berberis thunbergii**	Japanese barberry	FACU
*Celastrus orbiculata**	Oriental bittersweet	UPL
Clethra alnifolia	sweet pepperbush	FAC
Lonicera sp.	bush honeysuckle	--
Elaeagnus angustifolium	Russian olive	FACU
Iva frutescens	high tide bush	FACW
*Lonicera japonica**	Japanese honeysuckle	FAC
Myrica pensylvanica	northern bayberry	FAC
Parthenocissus quinquefolia	Virginia creeper	FACU
Rhus typhina	staghorn sumac	UPL

*Rosa multiflora**	multi-flora rose	FACU
Sambucus canadensis	elderberry	FACW
Smilax rotundifolia	greenbriar	FAC
Toxicodendron radicans	poison ivy	FAC
Vaccinium angustifolium	lowbush blueberry	FACU
Vaccinium corymbosum	highbush blueberry	FACW
Viburnum dentatum	northern arrowwood	FACW
Herbaceous		
*Alliaria petiolata**	garlic mustard	FACU
Allium vineale	field garlic	FACU
Schizachyrium scoparium	little bluestem	FACU
Andropogon virginicus	broomsedge	FACU
Apocynum cannabinum	dogbane	FACU
*Artemisia vulgaris**	mugwort	NI
Aster sp.	aster	--
Atriplex patula	common orach	FACW
Carex sp.	sedge	--
Chenopodium album	lambsquarters	FACU
Coronilla varia	crown vetch	UPL
Dactylic glomerata	orchard grass	FACU
Danthonia spicata	poverty grass	NI
Digitaria sp.	crabgrass	--
Distichlis spicata	spike grass	FACW
Echinochloa crus-galli	barnyard grass	FAC
Erechtites hieraciifolia	American burnweed	FACU
Impatiens capsensis	jewelweed	FACW
Juncus gerardii	black grass	FACW
Juncus tenuis lesser	poverty grass	FAC
Lotus corniculatus	birdsfoot trefoil	FACU
Matteuccia struthiopteris	ostrich fern	FAC
Osmunda cinnamomea	cinnamon fern	FACW
Panicum virgatum	switchgrass	FAC
Parathelypteris noveboracensis	New York fern	FAC
*Phragmites australis**	common reed	FACW
Phytolacca americana	pokeweed	FACU
Pluchea odorata	saltmarsh fleabane	OBL
Phleum pratense	timothy	FACU
*Polygonum cuspidatum**	Japanese knotweed	FACU
Rhododendron arborescens	Smooth azalea	FAC
Rumex cripus	curly dock	FAC
Salicornia sp.	glasswort	OBL
Solidago sempervirens	seaside goldenrod	FACW
Solidago sp.	goldenrod	--
Spartina alterniflora	smooth cordgrass	OBL
Spartina patens	saltmeadow cordgrass	OBL

Symplocarpus foetidus	skunk cabbage	OBL
Taraxacum officinale	dandelion	FACU
Verbascum thapsus	common mullein	UPL
Vicia sativa	crown vetch	FACU
Xanthium pensylvanicum	cocklebur	FAC

** Invasive Species. Source: NYSDEC Revised Interim list of Invasive Plant Species in New York State, 14 May 2012; http://www.dec.ny.gov/docs/lands_forests_pdf/isplantlist.pdf*

Key to indicator categories

OBL: Obligate Wetland, occur almost always (estimated probability >99%) under natural conditions in wetlands.

FACW: Facultative Wetland, usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

FAC: Facultative, equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU: Facultative Upland, usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).

NI: No Indicator, on national listings of plants occurring in wetlands.

NA: Not Applicable, only vascular plants are assigned indicator statuses.

Sources: 2012 National Wetlands Plant List: Northcentral-Northeast, US Army Corps of Engineers. Louis Berger & Assoc, P.C. 2013.

The majority of the project site and the adjacent area west of the railroad tracks consist of estuarine tidal wetland associated with Saw Mill Creek and its tributaries. The project site tidal wetlands consist primarily of a mixture of intertidal creeks and marsh. Portions of Saw Mill Creek are subtidal. The majority of the intertidal marsh is irregularly flooded high marsh habitat. Smaller areas of low marsh, intertidal scrub-shrub, and salt panne habitat are present within the Site. Vegetation in the high marsh community includes spike grass (*Distichlis spicata*), saltmeadow cordgrass (*Spartina patens*), smooth cordgrass (*Spartina alterniflora*), and to a much lesser extent black grass (*Juncus gerardii*) and common reed (*Phragmites australis*). The low marsh community is dominated by smooth cordgrass located along creek edges, in shallow ditches, and where sufficiently low elevations allow regular tidal flooding. Intertidal scrub-shrub habitat, consisting primarily of high tide bush (*Iva frutescens*), is scattered throughout the high marsh on both sides of Chelsea Road. Salt pannes are also present in depressions located within the high marsh. Vegetation associated with pannes includes the short form of smooth cordgrass and glasswort (*Salicornia europa*).

Freshwater wetlands exist as fringes and upper reaches above the tidal wetlands. A 1.6-acre palustrine forested freshwater wetland is present between the upper tidal limits and upland area along the exit ramp of Route 440/West Shore Expressway in the southern section of the project site. This wetland is dominated by pin oak (*Quercus palustris*) and red maple (*Acer rubrum*). Other species observed include sweetgum (*Liquidambar styraciflua)*, sweet pepperbush (*Clethra alnifolia*), poison ivy (*Toxicodendron radicans)*, northern arrowwood (*Viburnum recognitum*), skunk cabbage (*Symplocarpus foetidus*) and common reed.

Common reed, high tide bush, and sea myrtle (*Baccharis halimifolia*) are common within transition areas between wetlands and uplands. Common reed is dominant in the upper reaches of the marsh adjacent to roadways, uplands, and freshwater wetlands, and in some areas forms a dense monoculture.

Successional upland forest habitat is present at the project site along roadway embankments and previously filled areas that were not developed. Vegetation in these uplands consists largely of early successional non-native, disturbed plant communities. Dominant species include tree of heaven *(Ailanthus altissima)*, white mulberry (*Morus alba*), red maple, black cherry (*Prunus serotina*), sassafrass (*Sassafras albidum*), poison ivy, oriental bittersweet (*Celastrus orbiculata*), Japanese honeysuckle (*Lonicera japonica*), mugwort (*Artemisia vulgaris*) and Japanese knotweed (*Polygonum cuspidatum*). Upland/wetland edges are dominated by common reed.

A disturbed hardwood forest is located immediately adjacent to Edward Curry Avenue. This upland forested area is primarily dominated by invasive species, including Japanese knotweed, tree-of-heaven, black locust (*Robinia pseudoacacia*), white mulberry, and oriental bittersweet. Black cherry, poison ivy, and grape (*Vitis* sp.) are also present. Another upland hardwood forest area is located along Chelsea Road and the Route 440 exit ramp in the extreme southern part of the project site and is predominantly a white oak (*Quercus alba)*, chestnut oak (*Quercus prinus*), and red oak (*Quercus rubrum*) forest with some Japanese knotweed. A portion of the forested upland in this area, essentially a narrow peninsula projecting out into the marsh, is reportedly the site of a previous restoration planting that took place in the 1990s. This area is a predominantly oak forest with some lowbush blueberry (*Vaccinium angustifolium*).

A forested upland area occurs adjacent to the west side of Chelsea Road by Saw Mill Creek. Historic maps indicate that this area was originally uplands, though some filling/dumping has taken place. Dominant species include black cherry, tree of heaven, black locust, Japanese knotweed, Japanese honeysuckle, and oriental bittersweet. Other species present include pin oak, sassafrass, mulberry, bush honeysuckle *(Lonicera* sp.), poison ivy, Virginia creeper, and garlic mustard (*Alliaria petiolata*).

Three "island" areas are located along the eastern margin of the eastern side of the project site. Historic maps and imagery indicate that these upland areas are filled wetlands. These areas are dominated by grey birch (*Betula populifolia*), with some black cherry, tree-of-heaven and pin oaks. Highbush blueberry (*Vaccinium corymbosum*), northern bayberry (*Myrica pensylvanica*), sea myrtle, common reed, and Japanese knotweed are present along the edges of these areas. These upland areas are encircled by a remnant berm, apparently as part of an abandoned effort to fill large portions of the eastern side of the project site. Portions of the berms are uplands dominated by common reed, with some live and dead tree-of-heaven, pokeweed (*Phytolacca americana*), Virginia creeper *(Parthenocissus quinquefolia*), and poison ivy.

Future No-Action Condition – In the future without construction of the Bank, project site vegetative communities would be similar to current conditions described above. Existing upland and wetland/open water area vegetation would not be modified or improved, intrusive plant species would not be removed controlled for, etc. Historic illegal dumping would likely continue, as would the potential for upland clearing, wetland ditching and filling, and contamination of the project site from spills associated with industrial fuels/chemicals and illegal dumping; all of which could further damage the environment and negatively affect vegetative communities.

Future With-Action Condition – Construction of the Bank will have beneficial effects on vegetative communities. Debris and non-native, invasive species that compromise native diversity and wildlife usage will be removed from the existing forest buffer and upland areas, thereby enhancing these areas. Native vegetation will be replanted and additional tidal creeks to convey tidal flows will be constructed,

which would support native low and high marsh vegetation. Upland areas will be monitored/ maintained to prevent re-establishment of invasive species, including *P. australis, Fallopia japonica* and *Ailanthus altissima*. These areas will also be monitored yearly for recruitment of new species and survival of planted species. The design of the Bank will comply with state and city guidelines regarding salt marsh restoration and native species planting. Refer to Table 3 for the proposed planting zones and anticipated species, as presented in the Conceptual Restoration Design Plan.

Table 3: Proposed Planting Zones and Anticipated Species

Planting Zone	Size (acres)	Scientific Name (Common Name)
Open water/ Mudflat	3.1	N/A
Low Marsh	6.3	*Spartina alterniflora* (smooth cordgrass)
High Marsh	11.4	*Distichlis spicata* (spike grass)
		Spartina patens (saltmeadow cordgrass)
		Spartina alterniflora (smooth cordgrass)
		Juncus gerardii (black grass)
Scrub-Shrub Wetland	3.5	*Baccharis halimifolia* (groundsel tree)
		Hibiscus moscheutos (swamp rose-mallow)
		Iva frutescens (high tide bush)
Upland Slope	1.0	*Baccharis halimifolia* (groundsel tree)
		Myrica pensylvanica (bayberry)
		Hibiscus moscheutos (swamp rose-mallow)
		Rhus copallinum (shining sumac)
		Prunus maritime (beach plum)
		Sambucus candensis (common elderberry)

The primary wetland system within the tidally influenced emergent marsh habitats (elevations 1.5 to 2.5 feet NAVD88) will be comprised of *Spartina alterniflora* dominated low marsh plant communities. High marsh areas (2.5 to 3.5 feet NAVD88) will be planted primarily with salt meadow hay *(Spartina patens),* spike grass (*Distichlis spicata*), big cordgrass (*Spartina cynosuroides*), and saltmeadow rush (*Juncus gerardii*) on 3 foot centers. Additionally, target vegetative species include native volunteers that are anticipated to colonize the emergent marsh, such as salt marsh fleabane (*Pluchea purpurascens*), dwarf spike rush (*Eleocharis parvula*), water hemp (*Amaranthus cannabinus*), and marsh orach (*Atriplex patula*). It is also anticipated that dwarf spike rush will colonize portions of the mudflat community. Scrub-shrub areas (3.5 to 5.0 feet NAVD88) will be planted with groundsel tree and marsh elder (*Iva frutescens*) on 5 foot centers.

Conclusion – The existing vegetative communities would be altered to accommodate the restoration objectives of the proposed project, including replanting of native vegetation and control of invasive species. The construction of additional tidal creeks to convey tidal flows would support native low and high marsh vegetation and serve as a barrier to *Phragmites* invasion from surrounding areas. Increased plant diversity is expected as a result of the proposed project. As discussed above, the proposed Bank's effects on vegetative communities are considered beneficial.

4.3 Wetlands and Open Water Areas

Existing Conditions – A National Wetlands Inventory (NWI) map for the project area is included as Figure 8. Ten different classes of wetlands/watercourses were identified within the project area, based upon *The Classification of Wetlands and Deepwater Habitats of the United States*.[6] These classes are listed below for the two wetland areas that have been delineated.

Wetland A (West side of Chelsea Road):

- Estuarine, Subtidal, Unconsolidated Bottom, Subtidal water regime (E1UBL) – Saw Mill Creek
- Estuarine, Intertidal, Emergent, Persistent, Regularly Flooded (E2EM1N)
- Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded, partially drained/ditched (E2EM1Pd)
- Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded (E2EM1P)
- Estuarine, Intertidal, Emergent, Narrow-leaved Persistent (E2EM5P)
- Estuarine, Intertidal, Scrub-Shrub, Broad Leaved Deciduous, Irregularly Flooded (E2SS1P)
- Estuarine, Intertidal, Unconsolidated Shore, Mud, Irregularly Flooded, Hyperhaline (E2US3P1)

Wetland B (East side of Chelsea Road):

- Estuarine, Subtidal, Unconsolidated Bottom, Subtidal water regime (E1UBL) – Saw Mill Creek
- Estuarine, Intertidal, Emergent, Persistent, Regularly Flooded (E2EM1N)
- Estuarine, Intertidal, Emergent, Narrow-leaved Persistent (E2EM5P);
- Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded, partially drained/ditched (E2EM1Pd)
- Estuarine, Intertidal, Emergent, Persistent, Irregular Flooded (E2EM1P)
- Estuarine, Intertidal, Emergent, Narrow-leaved Persistent, Partially Drained/Ditched (E2EM5Pd)
- Estuarine, Intertidal, Scrub-Shrub, Broad Leaved Deciduous, Irregular Flooded (E2SS1P),
- Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded (PFO1C)
- Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded/Saturated (PFO1E)

Freshwater Wetlands – Freshwater wetlands exist as fringes and upper reaches beyond the tidal wetlands. NYSDEC freshwater wetlands AR-48 and AR-49 are mapped within the project site, as exhibited in Figure 9. A NWI mapped palustrine forested freshwater wetland (PFO1C) is present between the upper tidal limits and upland area along the exit ramp of Route 440/West Shore Expressway in the southern section of the project area. This wetland is dominated by pin oak *(Quercus palustris*) and red maple (*Acer rubrum*). Other species observed include sweetgum (*Liquidambar styraciflua)*, skunk cabbage (*Symplocarpus foetidus)*, sweet pepperbush (*Clethra alnifolia*), poison ivy (*Toxicodendron radicans)*, northern arrowwood (*Viburnum recognitum*), and common reed.

Tidal Wetlands – As shown in Figure 10, NYSDEC tidal wetlands are within the project area. Tidal wetlands occur within the project area in association with Saw Mill Creek and its tributaries, and consist primarily of a mixture of subtidal creeks and intertidal marsh. Industrial/commercial developments and transportation structures (railroad to the west, Route 440/West Shore Expressway to the east and

[6] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *The Classification of Wetlands and Deepwater Habitats of the United States*. US Fish and Wildlife Service, Washington, D.C. FWS/OBS-79/31.

south, and Edward Curry Avenue to the north) surround the tidal wetlands, with Chelsea Road bisecting the project area.

Saw Mill Creek is a steep-banked tidal creek that enters the project area from west of the rail line at the western project area boundary, flows east under the Chelsea Road bridge, and meanders through the eastern portion of the project area towards Route 440. As per NWI mapping, Saw Mill Creek is classified as Estuarine, Subtidal, Unconsolidated Bottom, Subtidal water regime (E1UBL). Portions of the tidal marsh have been filled in the past for roadways and commercial properties, and the remaining tidal marsh habitat contains linear ditches and remnants of filled areas and related berms. The majority of the ditches are completely exposed at low tide, while the bed of Saw Mill Creek remains inundated. Remnants of former berms were located east of Chelsea Road. Portions of the remnant berms remain high enough in elevation that they have been delineated as upland. However, much of the remnant berms have reverted to disturbed wetlands.

Intertidal marsh constitutes most of the tidal wetlands located in the project area. The majority of the intertidal marsh is irregularly flooded high marsh habitat. Vegetation in the high marsh community includes spike grass *(Distichlis spicata*), saltmeadow cordgrass *(Spartina patens)*, smooth cordgrass *(Spartina alterniflora*), black grass (*Juncus gerardii*), and common reed. The low marsh community is dominated by smooth cordgrass along creek edges, in shallow ditches, and where lower elevations allow regular tidal flooding. Intertidal scrub-shrub habitat, consisting primarily of high tide bush (*Iva frutescens*), is scattered throughout the high marsh on both sides of Chelsea Road. Salt pannes are also present in depressions and pools of the high marsh surface. Vegetation associated with the pannes includes the short form of smooth cordgrass and glassworts (*Salicornia* spp.).

Common reed, high tide bush, and groundsel tree (*Baccharis halimifolia*) are common within transition areas between wetlands and uplands. Common reed is dominant in the upper reaches of the marsh adjacent to roadways, uplands, and freshwater wetlands, and in some areas forms a dense monoculture.

A wetland delineation was performed to determine the jurisdictional boundaries of all wetlands and open waters within the project area. Wetlands were delineated in May 2013 by Louis Berger in accordance with the procedures outlined in relevant USACE wetland delineation manuals.[7, 8] The two wetland areas delineated are composed of ten wetland classifications types. These wetlands are summarized below in Table 4 and depicted in Figure 11.

[7] Environmental Laboratory. 1987. *U.S. Corps of Engineers Wetland Delineation Manua*l. Tech. Rpt. Y-87-1, U.S. Army Corps of Engineer Waterways Experiment Station, Vicksburg, MS.
[8] US Army Corps of Engineers . *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region.*

Table 4: Summary of Delineated Wetlands

Wetland Line	Size (Acres)	Wetland Cover Type[1]	Comments
A	22.10	E1UBL, E2EM1N, E2EM5P, E2EM1Pd, E2EM1P, E2SS1P, E2US3P1	West of Chelsea Road
B	43.30	E1UBL, E2EM1N, E2EM5P, E2EM1Pd, E2EM1P, E2EM5Pd, E2SS1P, PFO1C, PFO1E	East of Chelsea Road

(1) Classification of wetlands based on field examination.
Classification under Cowardin 1979:

E1UBL	Estuarine, Subtidal, Unconsolidated Bottom, Subtidal
E2EM1N	Estuarine, Intertidal, Emergent, Persistent, Regularly flooded
E2EM1Pd	Estuarine, Intertidal, Emergent, Persistent, Irregularly flooded, partially drained/ditched
E2EM1P	Estuarine, Intertidal, Emergent, Persistent, Irregularly flooded
E2EM5P	Estuarine, Intertidal, Emergent, Narrow-leaved Persistent
E2SS1P	Estuarine, Intertidal, Scrub-Shrub, Broad Leaved Deciduous, Irregularly Flooded
E2US3P1	Estuarine, Intertidal, Unconsolidated Shore, Mud, Irregularly Flooded, Hyperhaline
E2EM5Pd	Estuarine, Intertidal, Emergent, Narrow-leaved Persistent, Partially Drained/Ditched
PFO1C	Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded
PFO1E	Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded/Saturated

Future No-Action Condition – In the future without the proposed Bank, wetland conditions would be similar to existing conditions, as described above. Wetland restoration or enhancement activities would not be undertaken; conditions of the existing degraded, Phragmites-dominated wetland complex would be expected to continue to decline and existing high-quality marsh and pannes areas may decline due to existing debris and invasive species. New tidal creeks that connect to Saw Mill Creek to enable restoration of tidal flow and circulation would not be constructed. The threat of illegal filling and dumping would remain unchecked and potential subsurface contamination would not be remediated. Thus the future no-action condition could lead to the accelerated deterioration of existing wetland areas.

Future With-Action Condition and Conclusion – Wetland restoration activities that will occur in the future with-action condition include re-establishment and rehabilitation of wetland areas, as well as wetland enhancement. As per the concept restoration design plan, wetland re-establishment in the western portion of the project site (west of Chelsea Road) will include removal of debris and other fill material over former marshlands, regrading of the area to low and high marsh elevations, excavation of tidal creeks, and replanting of the marsh plain with appropriate native salt marsh grasses and shrub. If sampling data indicate that the fill material is contaminated, then the area will be over-excavated and backfilled with clean sand cap prior to planting of appropriate species. Proposed wetland enhancement work in this area includes removal of existing debris and management of invasive species (i.e., *Phragmites*) through the use of spot applications of an EPA-approved herbicide in order to prevent decline of existing, high-quality low and high marsh and pannes areas. The threat of illegal filling and dumping will be minimized by the including and enhancing these wetlands as part of the Bank, and through impediments that will be integrated into the Bank design (to the extent practicable).

East of Chelsea Road, proposed wetland re-establishment work includes removal of existing debris excavation of fill to an elevation suitable for low and high marsh; in addition to removal of portions of remnant berms, regrading of the area to a suitable marsh plain elevation, and the planting of native salt marsh species. Proposed wetland rehabilitation activity involves excavating tidal creeks to restore tidal hydrology, and excavating and grading the *Phragmites*-dominated remnant berm area to appropriate tidal marsh elevations, followed by planting of native salt marsh species. If warranted by soil and groundwater sampling results, areas of potential contamination would be over-excavated and backfilled with clean sand cap prior to planting. The area will be managed for any reinvasion by Phragmites through select application of an EPA-approved herbicide for use in aquatic habitats. Additionally, an existing barren panne area will be excavated and graded to an appropriate depth necessary to support fish species occurring in pannes (e.g., mummichogs) and to establish connections with tidal creeks at elevations that would allow flooding of the panne only during spring tides. Proposed wetland enhancement work will be similar to that proposed for the western portion of the project site (e.g., invasive species control, removal of existing debris and implementation of measures to minimize the threat of illegal filling and dumping, including site posting and frequent site inspections).

Excavation would be necessary to remove fill/ regrade areas to appropriate elevations and to construct new tidal creeks. As indicated in the project draft design documents, approximately 66,164 cubic yards (cy) of existing fill material/soils will be excavated from the project site.[9] Material excavated for creation of intertidal channels, mudflat, and emergent marsh, and from removal of the existing fill and remnant berms, will be removed from the site and disposed of at a licensed upland facility in accordance with all applicable local, state and federal regulations.

Tidal flow is the most critical factor contributing to the biological productivity of an estuary. In the future with-action condition, complete tidal flushing will be reintroduced to areas historically subject to tidal inundation, resulting in long-term, major benefits to wetland function and structure. Increased tidal fluctuation will improve water quality, tidal flood storage and conveyance capability, and improve fish and benthic habitat. Restoring tidal flow will promote the establishment of native plant species in areas currently dominated by invasive species.

Implementation of the proposed project involves the removal of construction/demolition debris and other fill material over former marshlands. This material will be removed and the area graded to tidal marsh elevations, restoring approximately 24.27 acres of wetlands.[10] Table 5 presents the acreage of habitat type that is expected to occupy the project site in the future with-action condition, as a result of construction of the proposed Bank. The proposed project will result in improvements to a combined total of almost 70 acres of land, as noted in Table 5.

[9] Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island New York, Draft 60% Design Submission (Not for Construction), prepared by Louis Berger & Assoc., P.C., for the New York City Economic Development Corporation, October 2013.
[10] *Draft Essential Fish Habitat Assessment, MARSHES Initiative, Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island,* prepared by the Louis Berger Group, Inc. on behalf of the New York City Economic Development Corporation, for US Army Corps of Engineers, New York District, October 2013.

Table 5: Habitat Type – Future With-Action Condition

Habitat Type	Acreage		
	Western Section of Project Site	Eastern Section of Project Site	Total
Wetland Restoration (Re-Establishment)	5.17	1.87	7.04
Wetland Restoration (Rehabilitation)	1.02	15.61	16.63
Forested Wetland Enhancement	0.00	1.52	1.52
Tidal Wetland Enhancement	7.68	26.03	33.72
Upland Buffer Rehabilitation	0.72	8.82	9.54
Total	14.60	53.86	68.45

Source: Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island New York, Draft 60% Design Submission (Not for Construction), prepared by Louis Berger & Assoc., P.C., for the New York City Economic Development Corporation, October 2013.

Marsh restoration at the proposed Bank will have several long-term beneficial effects on water quality in the Arthur Kill systems. Increased tidal flushing would reduce the retention times of organic, oxygen-demanding substances and increase the flow of well-oxygenated water, thereby improving dissolved oxygen concentrations in the marsh. Increased flushing would also increase the abilities of the marsh to function in trapping nutrients, which could improve water quality in the Arthur Kill system, and in exporting detritus, which would increase food supply to organisms in the system.

As discussed above, major long-term beneficial effects to water and sediment quality, and fish and benthic habitat are expected as a result of the project. Refer to the Construction Impacts section for information on temporary wetland impacts and mitigation.

4.4 Wildlife and Special Status Species

Existing Conditions – As presented in Table 1 and Figure 11, the majority of the project area is tidal wetland containing a mixture of intertidal creeks and marsh. The existing intertidal marsh is predominantly irregularly flooded high marsh habitat. Smaller areas of low marsh, intertidal scrub-shrub, and salt panne habitat are present within the project site, and a small palustrine forested freshwater wetland is also present in the southern section of the project site. Upland forest habitat is also present along roadway embankments and previously filled areas that were not developed.

As described in the Draft Biological Resources Survey Report that has been prepared for the project site, the primary habitat available to fish and wildlife within the project area consists of estuarine tidal

wetland habitat associated with Saw Mill Creek and its tributaries.[11] Species expected to utilize the estuarine tidal wetland habitats present within the project site are listed in Table 6.

Table 6: Anticipated Wildlife Utilization in Tidal Wetland Communities

Tidal Wetland Community	Common Name	Scientific Name	Observed at Project Site*
High marsh	salt marsh mosquitoes	*Aedes* spp.	X
	greenhead flies	*Tabanidae*	
	grasshoppers	Suborder Caelifera	
	spiders	Order Araneae	X
	salt marsh snail	*Melampus bidentatus*	X
	clapper rail	*Rallus longirostris*	
	sharp-tailed sparrow	*Ammodramus caudacutus*	
	marsh wren	*Cistothorus palustris*	X
	eastern meadowlark	*Sturnella magna*	
	American black duck	*Anas rubripes*	
	northern harrier	*Circus cyaneus*	
	raccoon	*Procyon lotor*	
	meadow vole	*Microtus pennsylvanicus*	
	muskrat	*Ondatra zibethicus*	
Low marsh	clapper rail	*Rallus longirostris*	
	alewife (juvenile and larvae)	*Alosa pseudoharengus*	
	willet	*Catoptrophorus semipalmatus*	
	marsh wren	*Cistothorus palustris*	
	seaside sparrow	*Ammodramus maritimus*	
	wading birds (egrets, herons)	Family Ardeidae	X
	fiddler crabs	*Uca* spp.	X
	blue crab	*Callinectis sapidus*	X
	ribbed mussel	*Geukensia demissa*	X
	mummichog	*Fundulus heteroclitus*	X
	sheepshead minnow	*Cyprinodon variegatus*	
	Atlantic silverside	*Menidia menidia*	
	Winter flounder (juvenile and larvae)	*Pleuronectes americanus*	
	Bluefish (juvenile and larvae)	*Pomatomus saltatrix*	
Intertidal	microinvertebrate infauna		

[11] *Draft Biological Resources Survey Report*, MARSHES Imitative, Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island, New York, August 2013; prepared for the New York City Economic Development Corporation.

flats/creeks	salt marsh snail	*Melampus bidentatus*	X
	mud snail	*Nassarius obsoletus*	X
	fiddler crabs	*Uca* spp.	X
	mud crabs	*Panopeus* spp.	
	blue crab	*Callinectes sapidus*	X
	bluefish	*Pomatomus saltatrix*	
	striped bass	*Morone saxatilis*	
	Atlantic menhaden	*Brevoortia tyrannus*	
	bay anchovy	*Anchoa mitchilli*	
	Atlantic silverside	*Menidia menidia*	
	alewife	*Alosa pseudoharengus*	
	winter flounder	*Pleuronectes americanus*	
	bluefish	*Pomatomus saltatrix*	
	great egret	*Casmerodius albus*	X
	snowy egret	*Egretta thula*	X
	cattle egret	*Bubulcus ibis*	
	tricolor heron	*Egretta tricolor*	
	little blue heron	*Egretta caerulea*	
	green heron	*Butorides striatus*	
	willet	*Catoptrophorus semipalmatus*	
	greater yellowlegs	Tringa melanoleuca	
Salt shrub	marsh wren	*Cistothorus palustris*	X
Salt panne	mummichog	*Fundulus heteroclitus*	X
	sheepshead minnow	*Cyprinodon variegatus*	
	Wading birds (egrets, herons)	Family Ardeidae	X

* Observed by Berger & Assoc., P.C. during 2013 field studies

Source: Edinger, et al., 2002;[12] Niedowski 2000;[13] NMFS letter dated August 7, 2013; Louis Berger & Assoc., P.C., 2013.

Common waterbirds that use salt marshes for feeding and roosting include great blue herons (*Ardea herodias*), great egrets (*Ardea alba*), belted kingfishers (*Ceryle alcyon*), and Canada geese (*Branta canadensis*).[14] The salt marsh and tidal creek habitats at the project site provide critical foraging habitat

[12] Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. *Ecological Communities of New York State*. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

[13] Niedowski, Nancy. 2000. *New York State Salt Marsh Restoration and Monitoring Guidelines*. National Oceanic and Atmospheric Administration, prepared for the New York State Department of State & New York State Department of Environmental Conservation.

[14] Kiviat, E. and E.A. Johnson. 2013. *Biodiversity assessment handbook for New York City.* American Museum of Natural History, Center for Biodiversity and Conservation, New York, NY, and Hudsonia Ltd., Annandale, NY.

for long-legged wading bird species (herons, egrets, ibises) that make up the population known as the New York City Harbor Herons. Within the Arthur Kill/Staten Island wetland complex, Prall's Island, Shooter's Island, and the Isle of Meadows had previously been popular breeding areas for wading bird species .[15] No wader-nesting activity has been observed on these islands since the late 1990s, but they are still used by a wide variety of bird guilds including waterfowl, birds of prey, songbirds, crows and blackbirds.[16, 17]

Resident birds that nest in the salt marsh include saltmarsh sparrows (*Ammodramus caudacutus*), seaside sparrows (*Ammodramus maritimus*), clapper rails (*Rallus longirostris*), and willets (*Tringa semipalmata*). Saltmarsh sparrows are limited to breeding in the high tidal salt marsh where they nest in the upper reaches of the low marsh. Seaside sparrow nests are found in expanses of medium-sized smooth cordgrass with a mixture of salt meadow cordgrass, spike grass, and black grass. The nests ideally are located near creek edges or pools in which the birds can forage. [18] Clapper rails are found almost exclusively in coastal salt marshes and prefer to run through thick marsh grass rather than fly.[19] Clapper rails prefer to feed in the low salt marsh but build their nests on the high salt marsh.[20] Willets nest on the ground, preferably within high marshes vegetation and forage in tidal ponds, creeks, and flats.

Meadow voles (*Microtus pennsylvanicus*) and muskrats (*Ondatra zibethicus*) may occur in high salt marsh habitats. Muskrats occur in marshes where salinity is not too high.[21] Meadow voles are voracious herbivores that feed in the high marsh.

Fiddler crabs (*Uca* spp.) and ribbed mussels (*Geukensia demissa*) are typically present in low marsh habitats. Fiddler crabs prefer the structural habitat in low marshes provided by smooth cordgrass roots. Fiddler crab burrows aerate the low marsh peat which facilitates nutrient absorption by smooth cordgrass roots. Ribbed mussels anchor to smooth cordgrass roots in the low marsh peat. The mussel is a filter feeder that derives nourishment from detritus and plankton. The mussels' waste is excreted in the form of packets of nitrogen which fertilize the smooth cordgrass. [22]

According to correspondence from National Marine Fisheries Service (see Attachment C), the project site provides habitat for a variety of resident, migratory, and forage species such as bluefish (*Pomatomus saltatrix*), striped bass (*Morone saxatalis*), menhaden (*Brevoortia tyrannus),* killifish (*Fundulus* spp.), bay anchovies (*Anchoa mitchilli*), and blue crabs (*Callinectes sapidus*).

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[15] Craig, E. 2010. *New York City Audubon's Harbor Herons Project: 2010 Nesting Survey – 25th Annual Report.* New York City Audubon, New York, NY.
[16] *Ibid.*
[17] Harbor Herons Subcommittee. 2010. H*arbor Herons Conservation Plan- NY/NJ Harbor Region*. S.B. Elbin and N.K. Tsipoura (Editors). NY-NJ Harbor Estuary Program.
[18] Kiviat, E. and E.A. Johnson. 2013. *Biodiversity assessment handbook for New York City.* American Museum of Natural History, Center for Biodiversity and Conservation, New York, NY, and Hudsonia Ltd., Annandale, NY.
[19] North Carolina Wildlife Resources Commission. 2011. *Clapper Rail Wildlife Profile.* http://www.ncwildlife.org/portals/0/learning/documents/profiles/clapperrail091411.pdf.
[20] Luttenberg, Danielle, Deborah Lev, and Michael Feller. 1993. *Native Species Planting Guide for New York City and Vicinity.* Natural Resources Group, City of New York Parks & Recreation.
[21] Kiviat, E. and E.A. Johnson. 2013. *Biodiversity assessment handbook for New York City.* American Museum of Natural History, Center for Biodiversity and Conservation, New York, NY, and Hudsonia Ltd., Annandale, NY.
[22] Luttenberg, Danielle, Deborah Lev, and Michael Feller. 1993. *Native Species Planting Guide for New York City and Vicinity.* Natural Resources Group, City of New York Parks & Recreation.

Successional shrubland is present in both the project site. Wildlife that typically utilize this habitat type includes willow flycatcher (*Empidonax traillii*), yellow warbler (*Setophaga petechia*), common yellowthroat (*Geothlypis trichas*), brown thrasher (*Toxostoma rufum*), rufous-sided towhee (*Pipilo erythrophthalmus)*, song sparrow (*Melospiza melodia*) and eastern cottontail (*Sylvilagus floridanus*).[23]

Species expected to use the upland forested habitat found in the project site include invertebrates found in or on the leaf litter such as spiders, mites, worms, and beetles. Vertebrates include the eastern red-backed salamander (*Plethodon cinereus*), eastern chipmunk (*Tamias striatus*), northern short-tailed shrew (*Blarina brevicauda*), white-footed mouse (*Peromyscus leucopus*), and eastern cottontail. The northern cardinal (*Cardinalis cardinalis*), gray catbird (*Dumetella carolinensis*), and wood thrush (*Hylocichla mustelina*) may inhabit the shrub layer. Cavities in larger, older canopy trees serve as nest sites for the raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), eastern gray squirrel (*Sciurus carolinensis*), and great horned owl (*Bubo virginianus*) Birds found on upper tree trunks and limbs include northern flicker (*Colaptes auratus*), red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), black-capped chickadee (*Poecile atricapillus*), and tufted titmouse (*Baeolophus bicolor*). Birds high in the canopy include the eastern wood-pewee (*Contopus virens*), red-eyed vireo (*Vireo olivaceus*).[24]

Forested wetland habitat, such as is located in the southern portion of the Project Site, provides habitat from bird species such as common yellowthroat (*Geothlypis trichas*), yellow warbler (*Setophaga* [*Dendroica*] *petechia*), swamp sparrow (*Melospiza georgiana*), blue-winged warbler (*Vermivora cyanoptera*), Baltimore oriole (*Icterus galbula*), and American woodcock (*Scolopax minor*). Small pools are found occasionally within forested wetlands and serve as vital breeding grounds for woodland amphibians such as the spotted salamander (*Ambystoma maculatum*) and spring peeper (*Pseudacris crucifer*).[25]

Common reed dominated wetland habitats like those found within the Project Site are usually considered to have low wildlife and waterfowl value because they can form dense, impenetrable monocultures. These areas contain minimal or no surface water for aquatic species. Utilization of these areas by waterfowl and wading birds is limited due to the dense stands of common reed that cannot be traversed by these groups of birds.

Wildlife species observed at the project site during field investigations are noted in Table6 and include fish, most likely mummichog (*Fundulus heteroclitus*), marsh snail (*Melampus bidentatus*), mud snail (*Ilyanassa obsoletus*), ribbed mussel (*Geukensia demissa),* fiddler crabs (*Uca minax* and *Uca pugnax*), and diamondback terrapin (*Malaclemys terrapin*) within the tidal marsh habitat. Feral cats (*Felis cattus*) were observed within the high marsh and the upland areas of the project site; white-tailed deer (*Odocoileus virginianus*) were observed within upland and wetland areas. Dragonflies (Order Odonata) and mosquitoes, including the tiger mosquito (*Aedes albopictus*), were present at the project site. Spicebush swallowtail butterflies were observed in upland areas of the project site.

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[23] *Ibid.*
[24] Kiviat, E. and E.A. Johnson. 2013. *Biodiversity assessment handbook for New York City.* American Museum of Natural History, Center for Biodiversity and Conservation, New York, NY, and Hudsonia Ltd., Annandale, NY.
[25] *Ibid.*

Bird species observed during field investigation within the project site included great egret (*Ardea alba*), marsh wren (*Cistothorus palustris*), swamp sparrow (*Melospiza georgiana*), red-winged blackbird (*Agelaius phoeniceus*), red-tailed hawk (*Buteo jamaicensis*), Canada goose (*Branta canadensis*), osprey (*Pandion haliaetus),* yellow crowned night heron (*Nyctanassa violacea*), mallard (*Anas platyrhynchos*), and turkey vulture (*Cathartes aura).*

A dedicated avian survey was also conducted by Louis Berger biologists at the project site (and reference site) on July 23, 2013. The sites were traversed and all visual and audial bird observations recorded. A total of 39 bird species were observed between all surveyed areas, as presented in Table 7.

Table 7: Bird Species Observed During July 2013 Avian Survey

Scientific Name	Common Name	Project Site - East	Project Site - West
Agelaius phoeniceus	red-winged blackbird	X	X
Anas platyrhynchos	mallard		X
Ardea alba	great egret	X	X
Branta canadensis	Canada goose	X	
Buteo jamaicensis	red-tailed hawk		X
Cardinalis cardinalis	northern cardinal		X
Carduelis tristis	American goldfinch	X	X
Cathartes aura	turkey vulture		X
Ceryle alcyon	belted kingfisher	X	
Charadrius vociferus	killdeer		X
Cistothorus palustris	marsh wren	X	X
Cyanocitta cristata	blue jay	X	X
Dendroica petechia	yellow warbler	X	
Dumetella carolinensis	gray catbird	X	X
Egretta thula	snowy egret		X
Empidonax minimus	least flycatcher	X	
Empidonax traillii	willow flycatcher	X	
Geothlypis trichas	common yellowthroat	X	X
Hirundo rustica	barn swallow	X	X
Larus argentatus	herring gull	X	X
Larus marinus	great black-backed gull		X
Melospiza georgiana	swamp sparrow	X	X
Melospiza melodia	song sparrow	X	X
Mimus polyglottos	northern mockingbird		X
Molothrus ater	brown-headed cowbird	X	
Pandion haliaetus	osprey		x
Picoides pubescens	downy woodpecker	X	X

Plegadis falcinellus	glossy ibis	X	
Poecile atricapilla	black-capped chickadee	X	
Quiscalus quiscula	common grackle		
Sayornis phoebe	eastern phoebe		X
Sphyrapicus varius	yellow-bellied sapsucker	X	
Sturnus vulgaris	European starling	X	X
Troglodytes aedon	house wren	X	X
Turdus migratorius	American robin	X	
Tyrannus tyrannus	eastern kingbird		X
Thryothorus ludovicianus	Carolina wren		
Vireo gilvus	warbling vireo	X	
Zenaida macroura	mourning dove		

Source: Louis Berger & Assoc., P.C. 2013.

Common salt marsh species including marsh wren (*Cistothorus palustris*), swamp sparrow (*Melospiza georgiana*), red-winged blackbird (*Agelaius phoeniceus*), and great egret (*Ardea alba*) were observed at the project site. A flock of glossy ibis (12 individuals) was observed flying over the eastern section of the project site. An osprey was heard adjacent to the eastern section of the project site and observed using a nest platform outside of the project site property.

Late 20th century bird surveys within Saw Mill Creek Marsh, including the project site, observed small, but stable numbers of saltmarsh sharp-tailed sparrow (*Ammodramus caudacutus*) and seaside sparrow (*Ammodramus maritimus*). Although these species were not observed during the July 2013 survey, the high and low marsh habitats for these species are prevalent at the project site. Twelve species of breeding birds were observed during the 1993 survey within general project area including mallard, marsh wren, swamp sparrow, seaside sparrow, saltmarsh sharp-tailed sparrow, song sparrow, clapper rail, red-winged blackbird, American black duck (*Anas rubripes*), fish crow (*Corvus ossifragus*), common yellowthroat, and American goldfinch.[26] During the winter months, various species have been observed using the project site for foraging, including waterfowl species, such as snow goose (*Chen caerulescens*) and common merganser (*Mergus merganser*) and birds of prey, such as rough-legged hawk (*Buteo lagopus*), and northern harrier (*Circus cyaneus*).[27]

A literature review and Natural Heritage Program database records search was completed in order to identify the existence or potential occurrence of special status species and significant communities on or in the vicinity of the project site. Information was requested from the NYSDEC Natural Heritage Program (DEC NHP), the United States Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) regarding the potential presence of any federal and/or state threatened, endangered, proposed or candidate species in the vicinity of the project site, as well as any other species

[26] Aquila, C.D.. *Results of the Breeding Bird Census' at Saw Mill Creek Marsh and Old Place Creek Mars*h. New York City Department of Parks and Recreation, Salt Marsh Restoration Team. 1994; *Results of the Breeding Bird Census' at Saw Mill Creek Marsh and Old Place Creek Marsh*. New York City Department of Parks and Recreation, Salt Marsh Restoration Team, 1995.
[27] Aquila, C.D. *Winter Bird Inventory at Saw Mill Creek, and Old Place Creek Marsh*. New York City Department of Parks and Recreation, Salt Marsh Restoration Team, 1994.

or habitats of special concern. Species information received from DEC NHP and USFWS is summarized in Table 8 and agency correspondence is included as Attachment C.

Biological field surveys were conducted July 23 and 24 2013 to determine the presence of any special status species and conducted habitat suitability assessments to determine the potential for special status flora and fauna to occur within the project site as well the reference site. Special attention was focused on special status flora and fauna identified through the literature review conducted prior to the field surveys. The USFWS Long Island Ecological Services Office was contacted through the Information, Planning, and Conservation System regarding the potential presence of species under the jurisdiction of the USFWS within the project area. The USFWS list indicates that the following threatened and endangered species may occur within the project site vicinity: piping plover (*Charadrius melodus* – threatened) and roseate tern (*Sterna dougallii dougallii* – endangered).

Piping plover: The piping plover is a small shorebird weighing 1.5 to 2.25 ounces and is 5.5 inches long. The piping plover is light beige with orange legs. In spring and summer, it has a single black neck band and a narrow black band across its forehead. The rump is white and the bill is yellowish with a black tip. Piping plover forage on beaches, dunes and in tidal wrack. Piping plovers breed on dry sandy beaches or in areas that have been filled with dredged sand, often near dunes in areas with little or no beach grass. They occur along the Atlantic Coast from southwestern Newfoundland and southeastern Quebec south to North Carolina. In New York, this species breeds on Long Island's sandy beaches, from Queens to the Hamptons, in the eastern bays and in the harbors of northern Suffolk County. Habitat is only found at the shoreline, on barrier islands, sandy beaches and dredged material disposal islands. Potential suitable habitat for piping plover was not observed within the project site.

Roseate tern: The roseate tern is 14 to 17 inches long, with a wingspan of about 30 inches. Its back and upper wings are a light pearly-grey, while its underparts are white. The tip of the white tail extends well beyond its wing tips when at rest. In the summer it has a black cap, nape and bill. Roseate terns feed primarily on American sand lance, a small marine fish. In New York, roseate terns are found nesting with common terns. The nest may be only a depression in sand, shell or gravel, and may be lined with bits of grass and other debris. The roseate tern breeds along the coasts of the Atlantic, Pacific and Indian Oceans on salt marsh islands and beaches with sparse vegetation. In eastern North America, it breeds from the Canadian Maritime Provinces south to Long Island. In New York, this species breeds only at a few Long Island colonies. Potential suitable habitat for roseate tern was not observed within the project site.

Table 8: Summary of State and Federal Listed Species

DEC NHP	Common Name	Scientific Name	NY State Listing	Heritage Conservation Status	Type of Use
Threatened and Endangered Species documented at or near the site, generally within 0.5 mile	Least bittern	*Ixobrychus exilis*	Threatened		
	Pied-billed grebe	*Podilymbus podiceps*	Threatened		
Rare animals documented at or in vicinity of site	Cattle egret	*Bubulcus ibis*	Protected bird	Imperiled in NYS	Breeding
	Glossy ibis	*Plegadis falcinellus*	Protected bird	Imperiled in NYS	Breeding
	Little blue heron	*Egretta caerulea*	Protected bird	Imperiled in NYS	Breeding
	Snowy egret	*Egretta thula*	Protected bird	Imperiled in NYS	Breeding
	Yellow-crowned night-heron	*Nyctanassa violacea*	Protected bird	Imperiled in NYS	Breeding
	Southern leopard frog	*Lithobates sphenocephalus*	Special concern	Critically imperiled in NYS	Breeding
Plants listed as Endangered or Threatened	Nantucket juneberry	*Amelanchier nantucketensis*	Endangered	Critically imperiled in NYS	
	Persimmon	*Diospyros virginiana*	Threatened	Imperiled in NYS	
	Rose pink	*Sabatia angularis*	Endangered	Critically imperiled in NYS	
	Sweetbay magnolia	*Magnolia virginiana*	Endangered	Critically imperiled in NYS	
Rare species with historical records at the site or in the vicinity.	Eastern mud turtle	*Kinosternum subrubrum*	Endangered	Critically imperiled in NYS	
	Log fern	*Dryopteris celsa*	Endangered	Critically imperiled in NYS	
	Orange fringed orchid	*Platanthera ciliaris*	Endangered	Critically imperiled in NYS	
USFWS	**Common Name**	**Scientific Name**	**Federal**		
Species may occur within the project boundary and/or may be affected by project	Piping plover	*Charadrius melodus*	Threatened		
	Roseate tern	*Sterna dougallii dougalli*	Endangered		

Source: NYSDEC Natural Heritage Program, letter dated June 17, 2013; USFWS Long Island Ecological Services Office, letter dated May 27, 2013.

The DEC NHP was contacted regarding the potential presence of rare or state-listed animals and plant species and significant natural communities within the project area. DEC NHP indicates that the following threatened species have been documented at or near the project site, generally within 0.5 miles: Least Bittern (*Ixobrychus exilis* – state threatened) and Pied-billed grebe (*Podilymbus podiceps* – state threatened).

Least Bittern: The least bittern is the smallest member of the *Ardeidae* (heron) family in North America at just 13 inches in length, a wingspan of 17 inches, and an average weight of just three ounces. It has yellow eyes and a thin yellow bill placed atop a long, chestnut and buff-striped throat. The slightly-crested crown, nape, back, and tail are blackish-green and the neck, sides, and undersides are chestnut and white. The wings are black, chestnut, and buff which when folded against the body appear as light-colored streaks along the back. They are extremely secretive birds. Least bitterns initiate nesting in New York in late May to early June. In prime marsh habitat, least bitterns may nest in small groups of up to 15 pairs per hectare (approximately 2.5 acres). Least bitterns feed primarily on small fish, such as minnows, sunfish and perch. Additionally, they rely upon insects (such as dragonflies and beetles), snakes, frogs, tadpoles, salamanders, crayfish and some small mammals. Least bitterns occur in freshwater and brackish marshes with tall, dense emergent vegetation such as cattails, sedges, and rushes that are interspersed with clumps of woody shrubs and open water. In New York, least bitterns thrive in the large, expansive cattail marshes associated with the Great Lakes, the Finger Lakes, Lake Champlain, and the St. Lawrence and Hudson River Valleys. There is potential habitat for the least bittern in the project area.

Pied-Billed Grebe: The pied-billed grebe is a small waterbird measuring approximately 11 to 15 inches in total length, with a 20 to 22.5 inch wingspan and average weight of just 0.75 to 1.0 pound. Their name comes from their most distinguishing characteristic: the pied, or two-colored, bill which is bluish-white with a distinct black vertical bar on either side. The bill is short, laterally compressed, and slightly hooked downward. They return to New York between late March and mid-April. In New York, pied-billed grebe breeding records are scattered across the state but are most abundant in marshes associated with the St. Lawrence River Valley and Lake Ontario. Pied-billed grebes nest in freshwater marshes associated with ponds, bogs, lakes, reservoirs, or slow-moving rivers. Breeding sites typically contain fairly deep open water at depths 0.8 – 6.6 feet interspersed with submerged or floating aquatic vegetation and dense emergent vegetation. Pied-billed grebes occupy a greater diversity of habitats during the non-breeding season including freshwater ponds, impoundments, lakes, rivers, brackish marshes, estuaries, inlets and coastal bays. There is potential non-breeding habitat for the pied billed grebe in the project area, but breeding habitat is not found in the project area.

DEC NHP also reported that the following animals, while not listed by New York State as Endangered or Threatened, are of conservation concern to the state, and are considered rare by DEC NHP: cattle egret (*Bubulcus ibis*), glossy ibis (*Plegadis falcinellus*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), yellow-crowned night-heron (*Nyctanassa violacea*), and southern leopard frog (*Lithobates sphenocephalus).* As previously noted, three of the birds species were observed during the July 2013 field surveys: glossy ibis, snowy egret, and yellow-crowned night-heron. Neither cattle egret nor southern leopard frog were observed during field surveys.

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by DEC NHP: Nantucket juneberry (*Amelanchier nantucketensis*), rose-pink (*Sabatia angularis*), and sweetbay magnolia (*Magnolia virginiana*) are listed as Endangered; and persimmon (*Diospyros virginiana*) is listed as Threatened. According to DEC NHP, persimmon was documented in 1997 within the southwestern portion of the project site in the red maple swamp along Chelsea Road. However, none of these species, including persimmon, were identified in the project site in field surveys.

DEC NHP reports that the eastern mud turtle (*Kinosternon subrubrum*), and two vascular plants, log fern (*Dryopteris celsa*) and orange fringed orchid (*Platanthera ciliaris*), all listed as Endangered in New York State, have been documented in the vicinity of the project area at one time, but have not been documented since 1979 or earlier, and/or there is uncertainty regarding their continued presence. None of these species were identified in the project area in field surveys.

According to NYSDEC Environmental Resource Mapper (see Attachment C), old or potential records exist of rare plants and animals within 0.5 mile of the project area. Rare plant species recorded include orange fringed orchid (*Platanthera ciliaris*), Hyssop-skullcap (*Scutellaria integrifolia*), slender crabgrass (*Digitaria filiformis*), wild comfrey (*Cynoglossum virginianum var. virginianum*), Collin's sedge (*Carex collinsii*), and log fern (*Dryopteris celsa*). Rare animal species recorded include the eastern mud turtle (*Kinosternon subrubrum*), northern cricket frog (*Acris crepitans*), the American burying beetle (*Nicrophorus americanus*), and the three following species of dragonfly: the mocha emerald (*Somatochlora linearis*); the Rambur's forktail (*Ischnura ramburii*); and the Needham's skimmer (*Libellula needhami*). The records listed are only potential areas for rare animals or rare plants. For these historical records, it is not known whether the rare plant or animal still exists at these locations. However, the rare plant or animal listed in the record may still occur in the area if habitat and site conditions are favorable.

NMFS reported that no threatened or endangered species under their jurisdiction are known to occur within the project area. However, NMFS correspondence indicates that Essential Fish Habitat (EFH) for 17 federally-managed fish species have been designated in the area. Thus a draft EFH assessment has been completed for the project.[28] EFH is defined as waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Based on water quality parameters, sediment types, and habitats present in the project area under existing conditions, three EFH-designated species have potential to occur in the project area: winter flounder, windowpane flounder, and bluefish. The project area also supports prey items for EFH-designated species.

> **Winter Flounder**: The winter flounder, a small-mouthed, right-eyed flounder, is a valuable commercial and recreational species. This fish can be found from Labrador to North Carolina, but most commonly in estuaries from the Gulf of St. Lawrence to the Chesapeake Bay. Except for the Georges Bank population, adult winter flounder migrate inshore in the autumn and early winter, and spawn in late winter and early spring throughout most of their range. Winter flounder spawn at night, in shallow inshore waters. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, adult and spawning adult winter flounder.

[28] *Draft Essential Fish Habitat Assessment, MARSHES Initiative, Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island,* prepared by the Louis Berger Group, Inc. on behalf of the New York City Economic Development Corporation, for US Army Corps of Engineers, New York District, October 2013.

The eggs of winter flounder are demersal, adhesive, and stick together in clusters. Winter flounder eggs are generally present in very shallow waters, less than about 5 meters (16 feet), at water temperatures of 10°C (50°F) or less, and salinities ranging from 10 to 30 parts per trillion (ppt).[29] These shallow, nearshore habitats are of critical importance, because they are most likely to be impacted by human activities. The type of substrate where eggs are found varies, having been reported as sand, muddy sand, mud and gravel, although sand seems to be the most common.

Larvae are initially planktonic, but become increasingly bottom-oriented as metamorphosis approaches. Spawning areas and nursery areas are believed to be close together, and for the first summer, young-of-the-year winter flounder remain in shallow waters of bays and estuaries where they were spawned. Larvae are most abundant at temperatures of 2 to 15°C (36 to 64°F) and at salinities of 3.2 to 30 ppt.[30] Preferred larval habitat consists of fine sand or gravel bottoms in inshore waters shallower than 5 meters (16 feet). As winter flounder grow, they appear to prefer cooler, more saline waters. Winter flounder young-of-the-year are generally found in water temperatures below 28°C (82.4°F), depths from 0.1 to 10 meters (0.3 to 33 feet), and salinities between 5 and 33 ppt. Young-of-the-year have been captured in pile field areas and in open water in the Lower Hudson River.[31] Juvenile winter flounder are generally found in conditions that include water temperatures below 25°C (77°F), depths from 1 to 50 meters (3 to 164 feet), and salinities between 10 and 30 ppt.

Winter flounder adults are generally found in conditions consisting of water temperatures below 25°C (77°F), depths from 1 to 100 meters (3 to 328 feet), and salinities between 15 and 33 ppt. Adult winter flounder migrate inshore in the autumn and early winter, and spawn in shallow coastal bays and estuaries in late winter and early spring. In the Hudson Raritan Estuary, most adults were captured at water temperatures of 4 to 12°C (39 to 54°F).[32] Adult winter flounder are common on muddy or clean sand, pebbly, or gravelly bottom. Since adults prefer to live in cooler waters than juveniles, they do not often encounter low-oxygen events.

Winter flounder are sight feeders, using their dorsal fins to raise their heads off the bottom with eye turrets extended for a better view. Prey is then taken in a 10 to 15 centimeter (0.3 to 0.5 feet) lunge. The importance of adequate light for feeding in flounder has been demonstrated in recent studies, where growth rates for young-of-the-year flounder held in cages underneath piers in the Lower Hudson River were significantly lower than that of fish caged in pile fields and open water areas.[33] The USACE has mandated work windows for some dredging projects in the

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[29] Pereira, J.J., R. Goldberg, and J.J. Ziskowski. 1998. Essential Fish Habitat Source Document: Winter Flounder, *Pseudopleuronectes americanus* (Walbaum), Life History and Habitat Characteristics. National Marine Fisheries Service, Milford, CT. 39 pp.

[30] *Ibid.*

[31] Able, K.W., J.P. Manderson, and A.L. Studholme. 1999. Habitat quality for shallow water fishes in an urban estuary: the effects of man-made structures on growth. Marine Ecology Progress Series 187:227-235.

[32] Pereira, J.J., R. Goldberg, and J.J. Ziskowski. 1998. Essential Fish Habitat Source Document: Winter Flounder, *Pseudopleuronectes americanus* (Walbaum), Life History and Habitat Characteristics. National Marine Fisheries Service, Milford, CT. 39 pp.

[33] Able, K.W., J.P. Manderson, and A.L. Studholme. 1999. Habitat quality for shallow water fishes in an urban estuary: the effects of man-made structures on growth. Marine Ecology Progress Series 187:227-235.

New York District during the winter and spring months, to avoid disturbance to spawning winter flounder.

Windowpane Flounder: The windowpane flounder is a thin-bodied flatfish inhabiting estuaries, near-shore waters, and the continental shelf from the Gulf of St. Lawrence to South Carolina. This species is most abundant from Georges Bank to the Chesapeake Bay area, with maximum abundance in the New York Bight. Windowpane flounder are generally found on sandy bottoms in waters less than 80 meters (262 feet) deep. They aggregate in warm shoal waters in the summer and early autumn, and move offshore during the winter and early spring when temperatures decrease. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, adult and spawning adult windowpane flounder.

Windowpane flounder generally spawn in the Middle Atlantic Bight from spring to autumn in inshore waters at temperatures ranging from 8.5 to 13.5°C (47 to 56°F).[34] Windowpane flounder spawning peaks occur in May and September off of New Jersey and New York. Windowpane eggs are buoyant, and typically occur in surface waters less than 20°C (68°F) and water depths less than 70 meters (230 feet). Eggs hatch in about eight days, so the pelagic larvae are found in the same water conditions and within the same time period. Settlement of spring-spawned individuals occurs in estuaries and on the shelf, while settlement of autumn-spawned individuals occurs primarily on the shelf.

Juvenile and adult habitat generally consists of bottom habitats, with a substrate of mud or fine-grained sand. In the Hudson Raritan Estuary, juveniles were found to be fairly evenly distributed throughout the estuary, but juveniles were found to be most abundant in the deeper channels in winter and summer. Juvenile windowpane were most abundant at bottom water temperatures of 5 to 23°C (41 to 73°F), at depths of 7 to 17 meters (23 to 56 feet), at salinities of 22 to 30 ppt, and dissolved oxygen (DO) levels of 7 to 11 mg/l.[35] Adults were also fairly evenly distributed throughout the estuary, but were more abundant in deeper channels in the summer. For the seasons combined, adults were collected at bottom temperatures of 0 to 24°C (32 to 75°F), at depths less than 25 meters (83 feet), at salinities of 15 to 33 ppt, and DO levels of 2 to 13 mg/l.

Bluefish: Bluefish are carnivorous pelagic fish that occur in temperate and tropical waters of the continental shelf and estuarine habitats around the world. In North America, bluefish live along most of the Atlantic coastal waters from Nova Scotia south, around the tip of Florida, and along the Gulf Coast to Mexico. Bluefish travel in schools of like-sized individuals, and complete seasonal migrations, generally moving north in spring-summer to centers of abundance in the New York Bight and southern New England, and south in autumn-winter to waters as far as southeastern Florida. The Arthur Kill is designated as EFH for juvenile and adult bluefish.

Bluefish spawn over the outer portion of the continental shelf, and eggs and larvae occur in oceanic waters. Juveniles in the Middle Atlantic Bight inhabit inshore waters and estuaries from

[34] Chang, S., P.L. Berrien, D.L. Johnson, and W.W. Morse. 1999. Essential Fish Habitat Source Document: Windowpane flounder, *Scophthalmus aquosus*, Life History and Habitat Characteristics. National Marine Fisheries Service. NOAA Technical Memorandum NMFS-NE 137.
[35] *Ibid.*

May to October, preferring temperatures between 15 and 30°C (59 and 86°F) and salinities between 23 to 33 ppt, but can ascend well into estuaries to salinities as low as 3 ppt.[36] Juveniles use estuaries as nursery areas, and can be found in sand, mud, silt, or clay substrates, as well as vegetation including rockweed, sea lettuce, eelgrass, and Spartina. Most bluefish collected in NEFSC Hudson Raritan Estuary trawl surveys were found to be juveniles.

Adult bluefish occur in the open ocean, large embayments, and most estuarine systems within their range. They are highly migratory, with a seasonal occurrence in Mid-Atlantic estuaries from April to October. They prefer salinities greater than 25 ppt and warm temperatures, and are not found in the Middle Atlantic Bight when temperatures drop below 14 to16°C (57 to 61°F).[37]

Future No-Action Condition – In the future without the project, habitat for wildlife and special status species would be similar to existing conditions. The Bank would not be constructed and substantial changes to wildlife habitat or EFH would not be expected to occur.

Future With-Action Condition and Conclusion – According to the EFH assessment, restoration of salt marsh habitat at the project site will have long-term, major beneficial effects on fish communities and fish habitat in the Arthur Kill system. The increase in marsh areas and the creation of tidal channels would physically allow more fish movement in and out of the marshes. The increased volume of water and improved water quality in the marshes would increase the availability and quality of habitat for all trophic levels of aquatic organisms. In particular, these improvements would benefit forage fish for EFH-designated species, as many of these forage fish spend most or all of their life in salt marshes. Larger numbers of small, resident forage fish in the marshes would provide an increased food source for larger predatory EFH-designated species that would also be able to move more easily into and out of the marshes because of the presence of tidal channels and removal of tidal restrictions. Improved water and sediment quality will result in more expansive benthic habitat required for demersal fish species, including EFH-designated species. The project is not expected to significantly impact EFH for any life stage of winter flounder, windowpane flounder, or bluefish

Winter Flounder: Water quality and substrate characteristics of the Arthur Kill area are typical for each life stage of winter flounder. Temporary increases in suspended sediment could adversely affect the ability of winter flounder to feed because of its dependence on sight and light. Eggs, post-settled larvae, juveniles, and adults are demersal, and could be subjected to increased turbidity. However, this demersal species occurs in the often turbid conditions of estuaries and can avoid temporary increases in suspended sediments. Thus the project is not expected to significantly impact EFH for any life stage of winter flounder.

Windowpane Flounder: Water quality and substrate characteristics of the Arthur Kill area are typical for each life stage of windowpane flounder. Temporary increases in suspended sediment could adversely affect the ability of windowpane flounder to feed because of its dependence on sight and light. Since the eggs of this species are buoyant, they would not be exposed to

[36] Fahay, M.P., P.L. Berrien, D.L. Johnson, and W.W. Morse. 1999. Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics. National Marine Fisheries Service. NOAA Technical Memorandum NMFS-NE 144.
[37] *Ibid.*

appreciable sedimentation. Post-settled larvae, juveniles, and adults are demersal, and could be subjected to increased turbidity. However, this demersal species occurs in the often turbid conditions of estuaries and can avoid temporary increases in suspended sediments. Therefore, the project is not expected to significantly impact EFH for any life stage of windowpane flounder.

Bluefish: Juvenile and adult bluefish may be seasonally present within the Arthur Kill system and the project site from late spring through the fall. Since bluefish are pelagic and highly migratory, their presence in any particular area is seasonal and short-lived. In addition, bluefish are fast moving and feed high in the water column, so they would not be affected by increased sedimentation. Therefore, the project is not expected to impact EFH for any life stage of bluefish.

Construction of the proposed Bank includes rehabilitation of upland buffer areas. Hurricane Sandy storm surge-driven debris and debris from illegal dumping activity will be removed from the forested buffer areas in the eastern and western sections of the project site. The dominant invasive species that occur in these areas (e.g., Japanese knotweed, Oriental bittersweet, tree-of-heaven) compromise native diversity and wildlife usage, and will be managed through the application of an EPA-approved herbicide for use in aquatic habitats and by the seeding and/or planting of select native species.

Historical fill, ditching, dumping, and invasion by nuisance plant species has degraded existing habitat quality within the project area, limiting habitat diversity and, therefore, decreasing wildlife species diversity. The goal of the Bank is to maximize the wetlands functions and services within the project area, particularly for wildlife habitat and water quality improvement. The project site location designates it as an oasis for wildlife in a predominantly urban landscape, offering natural habitat in an area limited with such resources. The project area also serves as part of the Atlantic Flyway, providing a crucial stopover site for birds during their southbound migration in late summer and fall. The proposed wetland restoration/enhancement concept plan proposes to restore tidal hydrology to previously filled, hydrologically impaired, and *Phragmites*-dominated areas of the project area. In portions of the project area *Phragmites* has replaced native marsh plants species and its dense cover has adversely affected hydrology and, therefore, the use of open water and marsh surface by aquatic species. Implementation of Bank objectives would increase the heterogeneity of habitats, thereby allowing wildlife species diversity the opportunity to increase. Avian species, in particular, are found to be attracted to a variety of habitats in comparison to a single habitat type. The combination of mud flat, open water, low marsh, high marsh, and scrub-shrub proposed for the project site would provide the diversity of habitat types needed to support a variety of wildlife species, whether on a migratory stopover or as a resident. Restoring the tidal flow to previously filled or degraded areas would allow fish, shellfish, and aquatic invertebrate species to use the tidal channels and provide valuable foraging opportunities for bird species along mudflats during low tide.

The project would have beneficial effects on wildlife diversity and abundance. Biological field surveys were conducted to determine the presence of any special status species and conducted habitat suitability assessments to determine the potential for special status flora and fauna to occur within the project area. Three birds species designated as rare by the NYSDEC were observed during the field survey. With the exception of the three rare bird species, no special status flora and or fauna were encountered or detected by sign within the project site; therefore no significant adverse impacts to such species are anticipated. The project would have positive impacts on the habitat for state-listed rare

such as the least bittern, glossy ibis, snowy egret, and yellow-crowned night-heron. Suitable habitat for federally listed species is not present on the project site.

4.5 Significant Natural Communities

Existing Conditions – The New York Natural Heritage Program tracks locations of significant natural communities because they serve as habitat for a wide range of plants and animals, both rare and common, and because community occurrences in good condition support intact ecological processes and provide ecological value and services. Significant natural communities include rare or high-quality wetlands, forests, grasslands, ponds, streams, and other types of habitats, ecosystems, and natural areas. Two significant natural communities within the vicinity of the project area are recorded in the New York Natural Heritage Program's Biodiversity Database. A red maple-sweetgum swamp is located approximately 0.25 mile east of the project area and a maritime post oak forest is located approximately 0.5 mile north east of the project area.

The red maple-sweetgum swamp's NHP conservation status is "High Quality Occurrence of Rare Community Type" and is described as moderate size, mature, with a minimally disturbed core and less than one percent cover of exotic plants. It is considered vulnerable in its urban setting and has little connectivity to natural landscape.

The maritime post oak forest's NHP conservation status is "Rare Community Type" and is described as a small, but unusual mature occurrence with a minimally disturbed core. It is considered vulnerable in its urban setting with connectivity to only small forested landscape.

Future No-Action Condition – In the future with the proposed Bank, the conditions of the significant natural communities would be similar to the current conditions.

Future With-Action Condition and Conclusion – The proposed Bank would have no direct effect on the significant natural communities at the locations identified in the DEC NHP biodiversity database. Although not noted in the database, 1.55 acres of red maple sweetgum swamp habitat are located in the southern portion of the eastern section of the project site (see Table 1 and Figure 11). The proposed project includes the removal of Hurricane Sandy storm surge debris from this swamp area, as well as invasive species management, which will enhance habitat quality and function of this significant natural community. The project site's red maple sweetgum swamp is also threatened by pervasive dumping practices. The proposed project will incorporate impediments to dumping, including project site posting and frequent inspections, which would further improve this swamp. Thus the proposed project will not directly affect the significant natural community locations listed in the DEC NHP database, and will have beneficial impacts to the red maple sweetgum swamp found within the project site.

5.0 Hazardous Materials

The site and adjacent areas contains nonindigenous fill material placed over the last 80 years to create upland areas. As part of this filling and illegal dumping the following discarded items were observed:

- Electrical equipment
- Storage tanks
- Battery casings

- 55-gallon drums
- Construction debris

In the areas to the north at the former GATX facility (situated north of western portion of the project site, north of River Road and west of Bloomfield Road), pesticides have been detected in the ground water.[38]

A Phase I Environmental Site Assessment (ESA) was conducted for the proposed project.[39] This Phase I ESA was conducted in general conformance with ASTM Standards related to the Phase I ESA process. The Phase I ESA was based on a project area inspection of the project area, interviews with persons familiar with the project area, review of historical documents and reports and the findings of an environmental database report and environmental lien search report. The purpose of the Phase I ESA was to identify potential RECs at the project area and the implications of those RECs for the proposed restoration and/or conservation of saltwater marsh at the project area.

Based on the data obtained during the project area inspection, interviews, historical resources review and regulatory agency records review, several recognized environmental conditions (RECs) were identified within the project area. Each REC is identified below, followed by a general recommendation.

- Nonindigenous Fill Material

  All nonindigenous fill material should be removed from the project area and properly disposed of at an off-site location in accordance with all applicable laws and regulations during marsh restoration and conservation activities. It is recommended that prior to and/or during removal activities, an investigation of the fill material should be conducted in order to identify the extent, depth and physical characteristics of the fill. Investigation should be done in accordance with the DER-10, which may include a geophysical investigation, test pits, and/or soil borings.[40] If, during the course of removal or investigative activities, a release is encountered, additional investigation in accordance with the DER-10 may be warranted.

- Widespread dumping was observed at the Project area, some of which consisted of:
  - General Dumping
  - Bulk Storage Tank
  - Suspected Bulk Storage Tank
  - Discarded Electrical Equipment
  - Discarded Vehicle Battery Casings
  - 55-gallon Drum Dump Area
  - Discarded 55-gallon Drum and Approximate 30-gallon Drum (Eastern Section)
  - Discarded 55-gallon Drum and Approximate 30-gallon Drum (Western Section)

[38] Application for Department of the Army Jurisdictional Determination (Application No. NAN-2013-02059-FHA), MARSHES Initiatives, Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island, Richmond County, New York. August 2013.
[39] *Draft Phase I Environmental Site Assessment Report for The Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative Saw Mill Creek Pilot Wetland Mitigation Bank Blocks 1780, 1790, and 1815, Multiple Lots Staten Island, NY*, prepared for the New York City Economic Development Corporation by Louis Berger & Assoc., P.C., May 2013.
[40] http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf

- Discarded 55-gallon Drums in Fill Berm (Western Section)
- Discarded 55-gallon Drum in Fill Area (Western Section)
- Discarded 1-gallon Pails of Petroleum Product (Western Section)

All discarded and dumped items and project area-wide debris should be removed from the project area and properly disposed of at an off-site location, in accordance with all applicable laws and regulations, during marsh restoration and conservation activities.

- Other RECs that were noted in the project area and require action and/or further investigation are:

  - potential off-site impacts
  - suspected pesticide application
  - rail line along western project site boundary

  A project area-wide characterization plan should be developed and implemented at the project area in order to investigate potential off-site impacts caused by adjacent property uses, recent and/or historic spills, suspected wide-spread pesticide application during the early- and mid-20th century to reduce mosquito populations, and any potential impacts caused by the adjacent active rail road. The project area-wide sampling plan should be prepared in accordance with the DER-10 and may involve soil, groundwater, surface water and sediment sampling.

Conclusion – There is the potential for contaminated materials to be encountered in the project area. It is expected that the proposed project will follow the recommendations presented in the Phase I ESA. Through further site characterization and handling of contaminated materials in accordance with applicable regulatory requirements, no significant adverse impacts related to contaminated materials would occur.

Overall, the proposed project will have a beneficial effect with respect to hazardous materials as it will remove nonindigenous fill material and address the additional identified RECs.

6.0 Water and Sewer Infrastructure

The project site is located in an unsewered portion of Staten Island. In general, the project site is not served by local sanitary and storm sewer utilities. The project does not include development and would not generate sanitary flow, nor would the project result in an increase in impervious surface. On the contrary, the project is expected to convert existing upland area to wetland, and therefore will result in additional storage and treatment of stormwater. The project will not generate demand for water and will not adversely affect water or sewer infrastructure.

7.0 Construction Impacts and Mitigation

The estimated six-month construction period for the proposed Bank is expected to begin in Fall 2014 and end in Spring 2015. Potential construction impacts are discussed below.

7.1 Transportation

A construction transportation impact assessment is not necessary based on *2012 CEQR Technical Manual* screening criteria. Specifically, the proposed project does not involve:

- Construction in a Central Business District
- Closing, narrowing, or otherwise impeding moving lanes, roadways, key pedestrian facilities, parking lanes and/or parking spaces in on-site or nearby parking lots and garages, bicycle routes and facilities, bus lanes or routes, or access points to transit.
- Overlapping construction and last for more than two years overall

7.2 Air Quality and Noise

According to the *2012 CEQR Technical Manual,* if a transportation analysis is not needed with regard to construction activities, an air quality or noise assessment of construction vehicles is likely not warranted. In addition, the project meets all the screening criteria below, indicating an analysis of construction air quality and noise is not necessary.

- Impacts are considered short-term;
- There are no nearby sensitive receptors;
- Does not involve construction of multiple buildings where there is a potential for on-site receptors on buildings to be completed before the final build-out;
- The pieces of diesel equipment that would operate in a single location at peak construction are limited in number.

Facilities used by the Staten Island Boys Football League (1475 South Avenue) are located over 900 feet from project site. The John Lavelle Preparatory Charter School is located 1,000 feet east of the project site (1 Teleport Drive). The nearest residential area is over 3,000 feet from the project area (east of Victory Boulevard, north of Signs Road). The proposed construction does not require pile driving. This information further supports the conclusion a construction air quality and noise analysis is not necessary.

7.3 Cultural Resources

As noted above, the project site has the potential to contain archaeological resources and is being coordinated with LPC. In accordance with 2012 *CEQR Technical Manual* methodology, Louis Berger submitted a written description of the proposed project to LPC. LPC completed an initial environmental review of the project area and found that all lots have the potential for archaeological significance. LPC indicated that project area lots possess the potential for the recovery of archaeological deposits from the 19th century and Native American occupation along with prior knowledge of human burials from the project site. Accordingly, an archaeological documentary study was completed for the project site. This study, currently underway, will determine whether intact archaeological resources might exist on the site, what they inform about the past, and provide a basis for deciding whether archaeological field work is needed.

A Phase IA Archaeological Survey has been completed on the site and under LPC review. Coordination with the New York State Office of Parks, Recreation, and Historic Preservation office is ongoing.

As necessary, mitigation measures would be developed in coordination with regulatory agencies to rule out the potential for significant adverse impacts to archaeological resources as a result of the proposed project.

7.4 Natural Resources

A preliminary assessment of natural resource impacts was prepared because these resources are present in the project area.

Temporary Project Impacts to Wetlands and Open Water – The proposed project will result in temporary impacts to jurisdictional wetlands and areas located below the MHW line. Following efforts to avoid and minimize impacts to jurisdictional areas, the Proposed Project will result in temporary impacts of 17.19 acres.

Table 9 presents the estimated area of temporary impacts to wetlands and open water areas related to the project. These areas would be restored following completion of construction and represent a small fraction of the wetland resources in the area. Therefore, no significant adverse impacts to wetlands would occur.

Materials excavated for the proposed tidal creeks, fill removal and regrading will be performed by excavators that scoop the material and place it into dump trucks to carry it off-site, based on the dewatering plans as well as contaminated materials handling/treatment/disposal plans that will be developed by the contractor. The estimated amount of material that will be removed from the project site is approximately 66,164 cy.[41] Excavated materials would be handled, treated and disposed of in accordance with applicable local, state and federal regulations.

Table 9: Temporary Wetland Impacts by Type and Source

Open Water Impacts (acres)		Tidal Wetland Impacts (acres)		
Temporary (>6 months)	Temporary (<6 months)	Temporary (>6 months)	Temporary (<6 months)	Totals (acres)
0.00	0.00	0.00	17.19	**17.19**

Source: Plan sheets in Appendix E of the Saw Mill Creek Pilot Wetland Mitigation Bank USACE-NYSDEC Joint Permit Application.

Water Quality – Construction of the project will involve temporary soil and sediment disturbances through excavation and grading activities. These disturbances have the potential to result in erosion and delivery of sediment to adjacent water bodies and wetlands, creating temporary increases in turbidity. Increases in turbidity can clog fish gills, bury benthic prey items, and displace fish from

[41] Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island New York, Draft 60% Design Submission (Not for Construction), prepared by Louis Berger & Assoc., P.C., for the New York City Economic Development Corporation, October 2013.

affected areas. Increased turbidity also reduces sunlight penetration in the water and could affect foraging by fish which rely on vision for feeding.

Best management practices will be employed to insure that erosion and delivery of sediment to Saw Mill Creek and the Arthur Kill and associated wetlands are prevented or minimized. These measures will include performing in-water work during periods of low tide, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed. In addition, a State Pollution Discharge Elimination System (SPDES) permit from the NYSDEC will be obtained for the project. SPDES permit requirements include a Soil Erosion and Sediment Control Plan, a Stormwater Pollution Prevention Plan (SWPPP), and a post-construction Stormwater Management Plan (SWMP). Preliminary stormwater management concepts have been discussed with NYSDEC. Final stormwater plans will be further developed in coordination with the NYSDEC once project design plans are finalized and prior to any construction activity. Implementation of these control measures will minimize potential impacts. Construction of the project will not result in significant adverse water quality impacts.

Wildlife Habitat and Special-Status Species – Restoration activities that will occur during construction of the proposed Bank include noise-generating activities such as excavation and grading. Wildlife (including special-status species) utilizing the project site and adjacent areas during construction of the Bank could be temporarily affected by construction noise. For example, bird species could be temporarily displaced to other marsh habitats in the region. In addition, habitat potentially suitable for state-listed species would be temporarily impacted, but would be restored following construction. Thus no significant adverse impacts to wildlife or special status species would be expected due to construction of the proposed Bank.

Construction of the project will involve excavation and grading work. These activities have the potential to temporarily increase sediment discharge to wetlands and waterways, with resultant adverse impacts to EFH-designated species, their habitat, and prey items. Best management practices will be employed to insure that erosion and delivery of sediment to Saw Mill Creek and the Arthur Kill and associated wetlands are prevented or minimized. These measures will include performing in-water work during periods of low tide, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed.[42] All construction work will comply with the Soil Erosion and Sediment Control Plan that is a required component of the SPDES permit.

Within the USACE New York District, in-water work may be restricted from January through June to protect overwintering or spawning habitat for fish, including striped bass, American shad, Atlantic tomcod, and winter flounder. By limiting in-water work to periods where sensitive life stages of these species are unlikely to occur, impacts to these species and their habitats will be minimized.

Construction activities involve the use of fuel which could create a potential contamination hazard to wetlands and surface waters. In addition, construction activities could result in the discharge of litter and debris into the river. These impacts would be minimized or avoided by employing a Pollution, Prevention and Control Plan, which would include restricting the location of refueling activities and

[42] *Draft Essential Fish Habitat Assessment, MARSHES Initiative, Saw Mill Creek Pilot Wetland Mitigation Bank, Staten Island,* prepared by the Louis Berger Group, Inc. on behalf of the New York City Economic Development Corporation, for US Army Corps of Engineers, New York District, October 2013.

requiring immediate cleanup of spills and leaks of materials, and regularly maintaining construction equipment to identify and repair any source of leaks.

7.5 Open Space

Open space resources would be temporarily impacted by construction activity. Impacts would not be significant because of the short duration of construction (approximately six months) and the long-term beneficial effects of the restoration activities.

7.6 Hazardous Materials

As discussed above, there is the potential for contaminated materials to be encountered in the project area during construction of the proposed Bank. However, as recommended in the Phase I ESA, the proposed project will incorporate further site characterization in accordance with the DER 10. All contaminated and potentially hazardous materials will be handled, stored and treated in accordance with applicable regulatory requirements, and disposed of at an off-site facility. Thus construction of the project will include the removal of potential subsurface contamination and potentially contaminated debris, and will not result in significant adverse impacts with respect to hazardous materials.

7.6 Other Topics

There would be no construction impacts to other resources such as community facilities, land use, neighborhood character, and infrastructure.

ATTACHMENT B

New York City Waterfront Revitalization Program Consistency Assessment Attachment

This section provides an assessment of the effects of the proposed project on relevant New York City Waterfront Revitalization Program (WRP) policies (i.e., Policy Questions on the WRP Consistency Assessment Form with a "yes" response).

Policy 1: Support and facilitate commercial and residential redevelopment in areas well-suited to such development.

The project site is primarily composed of open space and undeveloped land (marshland) and it not suitable for residential or commercial development. It currently contains former degraded wetlands areas and has been subject to illegal filling and dumping activities. The proposed project involves restoration of the project site in order to serve as the proposed Bank, a pilot wetland mitigation bank that will positively contribute to water quality, plant and animal habitat, and erosion control. A portion of 91.1 acres of emergent wetlands, scrub shrub wetlands, forested wetlands, open water channels/pools, mudflat habitat, and uplands on Staten Island (the project site) will be restored, persevered and maintained in accordance with the provisions of a Mitigation Banking Instrument (MBI) and regulatory permits.

The primary purpose of the pilot wetland mitigation bank is to provide compensatory mitigation for unavoidable impacts to waters of the U.S. (including wetlands) that result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 and New York State ECL Article 25. As such, the proposed Bank will facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The proposed project entails the "redevelopment" of an existing, degraded coastal environment in an area well-suited to such development; and therefore is consistent with WRP Policy 1.

Policy 2.0 Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

Policy 2.3: Provide infrastructure improvements necessary to support working waterfront uses.

The proposed project entails the construction of new tidal creeks to proper depths in order to restore proper tidal hydrology. All solid waste and hazardous substances encountered during excavation or any construction activity will be stored, handled and transported in accordance with the contaminated materials handling/treatment/disposal plan and all applicable local, state and federal regulations. All potentially contaminated material will be disposed of at an appropriate upland location. Excavated material deemed appropriate for beneficial reuse, such as wetland creation or beach nourishment, will be given priority.[43]

[43] The adjacent former GATX site, which is located north of the project site, may be a suitable candidate with respect to the potential beneficial reuse of excavated material. Depending on the contamination screening/ site characterization results, beneficial reuse of such project site material may be considered in the redevelopment of the former GATX property.

The proposed project entails the restoration of an existing waterfront open space use. Although it is water-dependent, it is not a working waterfront use and is appropriately sited outside of any significant maritime and industrial areas (SMIA). Construction of the proposed project will require construction vehicles and trucks; however the site is currently accessible from the existing transportation network and public transportation improvements will not needed.
The proposed project does not require infrastructure improvements and will be consistent with Policy 2.3.

Policy 3.0: Promote use of New York City's waterways for commercial and recreational boating and water-dependent transportation centers.

Policy 3.1: Support and encourage recreational and commercial boating in New York City's maritime centers.

The waterfront in the vicinity of the project site is outside of the City's maritime centers and is not appropriate for commercial or recreational boating. The proposed project does not involve or encourage recreational or commercial boating and is consistent with Policy 3.1.

Policy 4: Protect and restore the quality and function of ecological systems within the New York City coastal area.

As part of the wetland restoration process, the proposed project will reestablish native plant species, control invasive species, and create new tidal creeks. The new tidal creeks will allow for the reintroduction of complete tidal flushing which will improve water quality, tidal flood storage and conveyance capability, as well as fish and benthic habitat. The proposed project does not include activities that may cause or cumulatively contribute to permanent adverse changes to the ecological complexes and their natural processes, will avoid fragmentation of natural ecological communities, and will maintain/ expand existing corridors to facilitate the free exchange of biological resources within and among these communities. Thus the proposed Bank will be consistent with and supportive of WRP Policy 4.

Policy 4.1: Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas, Recognized Ecological Complexes, and Significant Coastal Fish and Wildlife Habitats.

The proposed project will positively affect water quality, plant and animal habitat, and erosion control. The project site is located in the Northwestern Staten Island Harbor Herons Special Natural Waterfront Area (SNWA), as well as a designated Significant Coastal Fish and Wildlife Habitat area. The existing habitat quality of the project site has been degraded due to historical fill, ditching, dumping, and invasion by nuisance plant species such as *Phragmites*; which has led to a decrease in wildlife species diversity. The project's wetland concept plan seeks to restore tidal hydrology to previously-filled or degraded areas, which will enable fish, shellfish, and aquatic invertebrate species to use the tidal channels and provide valuable foraging opportunities for bird species along mudflats during low tide. The combination of mud flat, open water, low marsh, high marsh, and scrub-shrub proposed for the site will provide the diversity of habitat types needed to support a variety of wildlife species. Thus the proposed project will protect and ultimately enhance the SNWA and Significant Coastal Fish and Wildlife Habitat area.

Policy 4.2: Protect and restore tidal and freshwater wetlands.

The proposed project proposes to use a combination of practices in order to restore former and degraded wetlands to their natural/ historic functions. In order to reestablish tidal flow to portions of the Bank area, it was determined that channels would need to be established to provide tidal flooding of areas historically filled. Hydrologic and hydraulic analyses were conducted as well as an assessment of alternative channel locations. The analyses indicate that tidal influence from Saw Mill Creek, through new channels, would be adequate to provide the appropriate tidal regime.

Avoidance, minimization, and reduction components were incorporated into proposed project concept plan, to minimize wetland and open water impacts to the maximum extent practicable and feasible. Temporary impacts to wetlands would result from construction equipment on timber mats used to excavate the channels, and remove historic fill.

Implementation of the project involves the removal of construction/demolition debris and other fill material over former marshlands. This material will be removed and the area graded to tidal marsh elevations, restoring approximately 24.23 acres of wetlands on the project site. The proposed project is consistent with WRP Policy 4.2 as it will protect and restore wetland and upland areas to a high level of function.

Policy 4.3: Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.

A key objective of the Bank is to maximize the wetlands functions and services within the project area, particularly for wildlife habitat and water quality improvement. Historic fill will be removed and the existing degraded, Phragmites-dominated wetland complex will be restored and enhanced. The Phragmites monoculture will be replaced with a thriving, healthy tidal marsh complex providing improved habitat for wildlife, plant and fish species, including vulnerable species and rare ecological communities. As noted above in the Policy 4.1 discussion, implementation of the proposed project wetland concept plan will provide the diversity of habitat types needed to support a variety of wildlife species. The proposed project seeks to maximize the ecological enhancement of extant habitats and will result in an increase the heterogeneity of habitats, thereby allowing wildlife species diversity the opportunity to increase. The proposed project will avoid harming vulnerable fish and wildlife species, and is consistent with Policy 4.3.

Policy 5: Protect and improve water quality in the New York City coastal area.

Policy 5.3: Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.

Construction of the proposed project requires excavation in wetland areas. Excavated material will be carted off-site and disposed of based on the dewatering plans as well as contaminated materials handling/treatment/disposal plan. The material will be handled, treated and disposed of in accordance with applicable local, state and federal regulations.

Best management practices will be employed to ensure that erosion and delivery of sediment to Saw Mill Creek and the Arthur Kill and associated wetlands are prevented or minimized. These measures will include performing in-water work during periods of low tide, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed. All construction work will comply with the Soil Erosion and Sediment Control Plan, Stormwater Pollution Prevention Plan (SWPPP), and post-construction Stormwater Management Plan (SWMP) that are required components of the State Pollution Discharge Elimination System (SPDES) permit. In addition, the proposed project would be constructed in accordance with a Pollution, Prevention and Control Plan.

Construction of the proposed Bank project also requires a Water Quality Certification from the NYSDEC, which will be obtained as part of the Joint NYSEDEC/USACE Application. Compliance with regulatory permits will ensure that excavation and potential fill operations will meet state standards and will minimize the potential for adverse impacts on aquatic life during such activities. Marsh restoration at the proposed Bank will result in improved water quality; therefore, the proposed project will be consistent with WPR Policy 5.3.

Policy 5.4: Protect the quality and quantity of groundwater, streams, and the sources of water for wetlands.

As construction of the proposed project includes excavation, it has the potential to affect surface and ground water supplies. Compliance with the Soil Erosion and Sediment Control Plan, the SWPPP, SWMP, etc., and the use of best management practices described above, would minimize the potential for such impacts.

Once constructed, the Bank will positively contribute to water quality and increase the area's capacity to store and treat stormwater. The proposed project will reintroduce complete tidal flushing to areas historically subject to tidal inundation, resulting in long-term, major benefits to wetland function and structure, as well as water quality in the Arthur Kill systems. Increased tidal flushing will reduce the retention times of organic, oxygen-demanding substances and increase the flow of well-oxygenated water, thus improving dissolved oxygen concentrations in the marsh. Increased flushing can also be expected to contribute to improved water quality in the Arthur Kill system. Therefore the proposed project will be consistent with Policy 5.4.

Policy 6: Minimize loss of life, structures and natural resources caused by flooding and erosion.

The project site is within a federally-designated flood hazard area (100-year flood zone). Since construction of the bank entails excavation, it has the potential to lead to erosion. As noted above, the proposed project will comply with the Soil Erosion and Sediment Control Plan. Implementation of control measures required by this plan will minimize the potential for erosion, and the proposed project will improve erosion control once constructed. In addition, the proposed project will result in improved flood attenuation. Thus the proposed project will be consistent with Policy 6.

Policy 6.3: Protect and preserve non-renewable sources of sand for beach nourishment.

The proposed project will prioritize the reuse of excavated material based results of contamination testing. Construction of the proposed Bank includes the removal and remediation of existing subsurface contamination (e.g., if the soil and groundwater sampling indicates an area of concern, the area will be over-excavated and backfilled with a clean sand cap to create a clean substrate prior to

planting/seeding). Therefore the proposed project will protect sources of beach nourishment sand from exposure to hazardous materials and will be consistent with Policy 6.3.

Policy 7: Minimize environmental degradation from solid waste and hazardous substances.

The proposed project has the potential to encounter contaminated/hazardous materials. It is expected that the proposed project will follow the recommendations presented in the Phase I ESA.[44] Recommendations include:

- Removal of nonindigenous fill material from the project area, disposal at an off-site location in accordance with all applicable laws and regulations, investigation of fill material and any follow up investigation that may be warranted in accordance with the DER-10.[45]
- Removal of all discarded and dumped items from the project area, and disposal at an off-site location in accordance with all applicable laws and regulations. If, during the course of removal, a release is encountered, additional investigation in accordance with the DER-10 may be warranted.
- Development and implementation of a project area-wide characterization plan, in accordance with the DER 10, in order to investigate potential off-site impacts caused by adjacent property uses, recent and/or historic spills, suspected wide-spread pesticide application during the early- and mid-20th century to reduce mosquito populations, and any potential impacts caused by the adjacent active rail road.

Further site characterization and handling of contaminated materials in accordance with applicable regulatory requirements will minimize the potential for hazardous material impacts. In addition, the proposed project will not generate solid waste once constructed. Therefore, the proposed project will be consistent with Policy 7.

Policy 7.2: Prevent and remediate discharge of petroleum products.

The proposed project will not include the handling or storage of petroleum. However, as discussed above, the proposed project has the potential to encounter contaminated/hazardous materials. The proposed project is expected to adhere to recommendations included the Phase I ESA and will comply with applicable hazardous materials-related regulations. In addition, construction of the proposed project will comply with a Pollution, Prevention and Control Plan that will include restricting the location of refueling activities and requiring immediate cleanup of spills and leaks of materials; and regularly maintaining construction equipment to identify and repair any source of leaks. Thus no significant adverse impacts related to contaminated materials will occur and the proposed project will be consistent with Policy 7.2.

Policy 7.3: Transport solid waste and hazardous substances and site solid and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.

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[44] *Draft Phase I Environmental Site Assessment Report for The Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative Saw Mill Creek Pilot Wetland Mitigation Bank Blocks 1780, 1790, and 1815, Multiple Lots Staten Island, NY*, prepared for the New York City Economic Development Corporation by Louis Berger & Assoc., PC., May 2013.
[45] http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf

Once operational, the proposed project will not generate hazardous substances or waste. During construction of the proposed Bank, a Pollution, Prevention and Control Plan will be implemented. In addition, all solid waste and hazardous substances encountered during construction will be stored, handled and transported in accordance with the contaminated materials handling/treatment/disposal plan and all applicable local, state and federal regulations. Therefore the proposed project will be consistent with Policy 7.3.

Policy 8: Provide public access to and along New York City's coastal waters.

Parts of the project site (primarily the section east of Chelsea Road) include portions of Saw Mill Creek Marsh, a public open space that does not include any facilities as it is marshland. The proposed project will not alter the overall nature or use of this open space and will restore former/degraded wetland areas, thereby enhancing the environmental quality of the project area and open space. The proposed project will be consistent with WRP Policy 8.

Policy 8.4 Preserve and develop waterfront open space and recreation on publicly owned land at suitable locations.

The proposed project will result improve the environmental quality of public open space. Given that the project area is mainly composed of Saw Mill Creek, wetlands and marshland, it is not suitable for development of recreational facilities. As such, the proposed project would be consistent with Policy 8.4.

Policy 8.5 Preserve the public interest in and use of lands and waters held in public trust by the state and city.

The project site is city-owned land and includes parcels designated as public open space (Saw Mill Creek Marsh). The proposed project will improve the project site and have beneficial impacts on water quality, in addition to wildlife and plant habitat and diversity. The proposed project does not involve the transfer of interest in public trust lands, will not result in the loss of public interest in public trust lands, and will not impede the accessibility of public land. Therefore the proposed project will be consistent with WRP Policy 8.5.

Policy 9: Protect scenic resources that contribute to the visual quality of the New York City coastal area.

The project site itself is a scenic resource that contributes to the visual quality of this coastal area. The proposed project will restore and enhance this currently degraded resource. Accordingly, the proposed project is consistent with WRP Policy 9.

Policy 9.1 Protect and improve visual quality associated with New York City's urban context and the historic and working waterfront.

As the proposed project will not introduce new buildings or substantial structures, it will be compatible with existing scenic elements. Construction of the proposed Bank will have a beneficial effect on vegetative communities, including the restoration of native vegetation and invasive species management and an increase in plant and wildlife diversity. The proposed project also will remove existing debris from the project site and incorporate preventative measures to discourage future

dumping at the site. The proposed project involves the overall enhancement of a 68.45-acre portion of the Saw Mill Creek natural area, which will result in an improvement in the visual quality of this scenic waterfront area. Therefore, the proposed project will be consistent with Policy 9.1.

Policy 9.2 Protect scenic values associated with natural resources.

The project site is part of the Northwest Staten Island Special Natural Waterfront Area. The proposed project entails the restoration of ditched, filled, and/or degraded wetland and upland areas to a high level of function. It also includes the construction of additional tidal creeks to convey tidal flows that support native low and high marsh vegetation and serve as a barrier to *Phragmites* invasion from surrounding areas. As a result, the proposed project will also improve the scenic character of the project area's natural resource and will be consistent with WRP Policy 9.2.

ATTACHMENT C
Agency Correspondence

Landmarks Preservation Commission

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

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

ENVIRONMENTAL REVIEW

Project number: ECONOMIC DEVELOPMENT CORP. / LA-CEQR-R
Project: SAW MILL CREEK WETLAND MITIGATION BANK
Date received: 6/20/2013

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

Properties with Archaeological significance:

1) ADDRESS: GULF AVENUE, BBL: 5017800001
2) ADDRESS: BLOOMFIELD AVENUE, BBL: 5017800069
3) ADDRESS: GULF AVENUE, BBL: 5017800210
4) ADDRESS: BLOOMFIELD AVENUE, BBL: 5017800275
5) ADDRESS: BLOOMFIELD AVENUE, BBL: 5017800260
6) ADDRESS: GULF AVENUE, BBL: 5017800300
7) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150075
8) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150085
9) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150125
10) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150135
11) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150150
12) ADDRESS: BLOOMFIELD AVENUE, BBL: 5018150204
13) ADDRESS: BLOOMFIELD AVENUE, BBL: 5018150220
14) ADDRESS: BLOOMFIELD AVENUE, BBL: 5018150235
15) ADDRESS: BLOOMFIELD AVENUE, BBL: 5018150251
16) ADDRESS: BLOOMFIELD AVENUE, BBL: 5018150300
17) ADDRESS: BLOOMFIELD AVENUE, BBL: 5018150325
18) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150375
19) ADDRESS: GULF AVENUE, BBL: 5017900100

Comments: LPC review of archaeological sensitivity models and historic maps indicates that there is potential for the recovery of remains from 19th Century and Native American occupation and human burials on the project site. Accordingly, the Commission recommends that in the event that the project will involve ground disturbance that an archaeological documentary study be performed for this site to clarify these initial findings and provide the threshold for the next level of review, if such review is necessary (see CEQR Technical Manual 2012).

Properties with no Architectural significance:

1) ADDRESS: GULF AVENUE, BBL: 5017800001
2) ADDRESS: BLOOMFIELD AVENUE, BBL: 5017800069
3) ADDRESS: GULF AVENUE, BBL: 5017800210
4) ADDRESS: BLOOMFIELD AVENUE, BBL: 5017800275
5) ADDRESS: BLOOMFIELD AVENUE, BBL: 5017800260
6) ADDRESS: GULF AVENUE, BBL: 5017800300
7) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150075

Landmarks Preservation Commission

1 Centre Street
9th Floor North
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18) ADDRESS: BLOOMFIELD ROAD, BBL: 5018150375
19) ADDRESS: GULF AVENUE, BBL: 5017900100

Gina Santucci [AS AMENDED] 7/17/2013

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 28633_FSO_GS_DNP_07172013.doc

8/8/13

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
James J. Howard Marine Sciences Laboratory
74 Magruder Road
Highlands, New Jersey, 07732

FAX #: 732-872-3077

TO: Thomas Shinskey

FAX: 973 267 6468

FROM: Karen Greene

PHONE: 732 872 3023

PAGES: 1 Plus header

Please call if you do not receive the entire document.

Marshes project, NY

Species Request response

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
James J. Howard Marine Sciences Laboratory
74 Magruder Road
Highlands, New Jersey 07732

August 7, 2013

TO: Thomas Shinskey
The Louis Berger Group, Inc.
P.O. Box 1946
412 Mount Kemble Avenue
Morristown, NJ 07962

SUBJECT: Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES), Staten Island, NY

Karen Greene
(Reviewing Biologist)

We have reviewed the information provided to us regarding the above subject project. We offer the following preliminary comments pursuant to the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act:

Endangered Species Act

No threatened or endangered species under the jurisdiction of the NMFS are known to occur in within the project area. As a result, further consultation by the federal action agency is not required. However should project plans change that would alter the basis for determination, or if new species or critical habitat is designated, consultation should be reinitiated.

Fish and Wildlife Coordination Act

The project site provides habitat for a variety of NOAA trust resources including resident, migratory and forage species such as bluefish, striped bass, menhaden, killifish, bay anchovies, blue crabs and others.

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat

Essential fish habitat (EFH) has been designated in project area. As a result, further EFH consultation by the federal action agency may be necessary as part of the federal permit process. Should project plans change that would alter the basis for determination, or if new species or EFH is designated, consultation should be reinitiated. For a listing of EFH and further information, please go to our website at: http://www.nero.noaa.gov/hcd. If you wish to discuss this further, please e-mail me at karen.greene@noaa.gov

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

June 17, 2013

Tara Stewart
Louis Berger Group
412 Mt. Kkemble Ave, Bx 1946
Morristown, NJ 07962

Dear Ms. Stewart:

In response to your recent request, we have reviewed the New York Natural Heritage Database with respect to an Environmental Assessment for the Proposed Wetland Mitigation Bank – Saw Mill Creek Marsh – (CKB 1176), area as indicated on the map you enclosed, located in Staten Island, Richmond County.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities, which our database indicates occur, or may occur, on your site or in the immediate vicinity of your site. For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

The enclosed report may be included in documents that will be available to the public. However, any maps displaying locations of rare species are considered sensitive information, and should not be included in any document that will be made available to the public, without permission from the New York Natural Heritage Program.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,

Jean Pietrusiak, Information Services
NYS Department Environmental Conservation
505

Enc.
cc: Reg. 2, Wildlife Mgr.

The following state-listed animals have been documented at your project site, or in its vicinity.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing. The list may also include significant natural communities that can serve as habitat for Endangered or Threatened animals, and/or other rare animals and rare plants found at these habitats.

For information about potential impacts of your project on these populations, how to avoid, minimize, or mitigate any impacts, and any permit considerations, contact the Wildlife Manager or the Fisheries Manager at the NYSDEC Regional Office for the region where the project is located. A listing of Regional Offices is at http://www.dec.ny.gov/about/558.html.

The following species and habitats have been documented at or near the project site, generally within 0.5 mile. Potential onsite and offsite impacts from the project may need to be addressed.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Least Bittern *Breeding*	*Ixobrychus exilis*	Threatened		281
Pied-billed Grebe *Breeding*	*Podilymbus podiceps*	Threatened		4852

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NYSDEC at http://www.dec.ny.gov/animals/7494.html.

Information about many of the rare plants and animals, and natural community types, in New York are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NatureServe Explorer at http://www.natureserve.org/explorer.

New York Natural Heritage Program

Report on Rare Animals, Rare Plants, and Significant Natural Communities

The following rare plants, rare animals, and significant natural communities have been documented at your project site, or in its vicinity.

We recommend that potential onsite and offsite impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may still contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following animals, while not listed by New York State as Endangered or Threatened, are of conservation concern to the state, and are considered rare by the New York Natural Heritage Program.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Birds			
Cattle Egret	*Bubulcus ibis*	Protected Bird	Imperiled in NYS

Breeding

Pralls Island, 1997-sp: The birds were observed on a non-barrier island in the Arthur Kill. Channelization of the Arthur Kill during the 1910s resulted in significant deposition of dredge spoil. Extensive diking also occurred at this time which created low areas of trapped fresh and brackish water. These marsh areas support thick stands of Phragmites. The physiognomy of the island is heterogeneous due to the spoil deposition and diking. Upland areas are separated by marshes and extensive areas of panic grass. There are a dozen or more isolated colony sites. Grey birch is the dominant upland species, reaching heights of 4-6 meters; the birds nest mostly in these trees. In early 2007, approximately 3,000 trees were removed due to an Asian longhorned beetle infestation. 8130

Glossy Ibis	*Plegadis falcinellus*	Protected Bird	Imperiled in NYS

Breeding

Pralls Island, 1997-sp: The birds were observed on a non-barrier island in the Arthur Kill. Channelization of the Arthur Kill during the 1910s resulted in significant deposition of dredge spoil. Extensive diking also occurred at this time which created low areas of trapped fresh and brackish water. These marsh areas support thick stands of Phragmites. The physiognomy of the island is heterogeneous due to the spoil deposition and diking. Upland areas are separated by marshes and extensive areas of panic grass. There are a dozen or more isolated colony sites. Grey birch is the dominant upland species, reaching heights of 4-6 meters; the birds nest mostly in these trees. In early 2007, approximately 3,000 trees were removed due to an Asian longhorned beetle infestation. 573

Little Blue Heron	*Egretta caerulea*	Protected Bird	Imperiled in NYS

Breeding

Pralls Island, 1997-sp: The birds were observed on a non-barrier island in the Arthur Kill. Channelization of the Arthur Kill during the 1910s resulted in significant deposition of dredge spoil. Extensive diking also occurred at this time which created low areas of trapped fresh and brackish water. These marsh areas support thick stands of Phragmites. The physiognomy of the island is heterogeneous due to the spoil deposition and diking. Upland areas are separated by marshes and extensive areas of panic grass. There are a dozen or more isolated colony sites. Grey birch is the dominant upland species, reaching heights of 4-6 meters; the birds nest mostly in these trees. In early 2007, approximately 3,000 trees were removed due to an Asian longhorned beetle infestation. 10227

Snowy Egret	*Egretta thula*	Protected Bird	Imperiled in NYS

Breeding

Pralls Island, 1997-sp: The birds were observed on a non-barrier island in the Arthur Kill. Channelization of the Arthur Kill during the 1910s resulted in significant deposition of dredge spoil. Extensive diking also occurred at this time which created low areas of trapped fresh and brackish water. These marsh areas support thick stands of Phragmites. The physiognomy of the island is heterogeneous due to the spoil deposition and diking. Upland areas are separated by marshes and extensive areas of panic grass. There are a dozen or more isolated colony sites. Grey birch is the dominant upland species, reaching heights of 4-6 meters; the birds nest mostly in these trees. In early 2007, approximately 3,000 trees were removed due to an Asian longhorned beetle infestation. 8960

Yellow-crowned Night-Heron *Breeding*	*Nyctanassa violacea*	Protected Bird	Imperiled in NYS

Pralls Island, 1997-sp: The birds were observed on a non-barrier island in the Arthur Kill. Channelization of the Arthur Kill during the 1910s resulted in significant deposition of dredge spoil. Extensive diking also occurred at this time which created low areas of trapped fresh and brackish water. These marsh areas support thick stands of Phragmites. The physiognomy of the island is heterogeneous due to the spoil deposition and diking. Upland areas are separated by marshes and extensive areas of panic grass. There are a dozen or more isolated colony sites. Grey birch is the dominant upland species, reaching heights of 4-6 meters; the birds nest mostly in these trees. In early 2007, approximately 3,000 trees were removed due to an Asian longhorned beetle infestation. 4043

Amphibians

Southern Leopard Frog *Breeding*	*Lithobates sphenocephalus*	Special Concern	Critically Imperiled in NYS

Bloomfield Wetlands, 2008-wi-sp: 1984: The frogs occur in a ditch 3 feet wide and 150 yards long and 1 feet deep bordering a Phragmites marsh and a fenced, graded industrial storage facility. 2008: The area where the frogs still occur is an old, flat industrial wetland area. There are no houses and little human presence overall, as the area is fairly deserted at present and dominated by a few office parks, warehouses, and junk yards. The primary habitat area is extremely unique because it is a vast open meadow of dozens of wet pans (tank beds) that are completely open and shallow. It seems that anthropogenic activity on the former gas tank site (earth moving, scraping, and current remediation work) is keeping this site open, free of Phragmites, and thus supporting this population. If 4106

The following significant natural communities are considered significant from a statewide perspective by the NY Natural Heritage Program. They are either occurrences of a community type that is rare in the state, or a high quality example of a more common community type. By meeting specific, documented criteria, the NY Natural Heritage Program considers these community occurrences to have high ecological and conservation value.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*

Wetland/Aquatic Communities

Red Maple-Sweetgum Swamp		High Quality Occurrence of Rare Community Type

Magnolia Swamp: This is a moderate size, mature example with minimally disturbed core and <1% cover of exotic plants. Vulnerable in an urban setting with little connectivity to natural landscape. 5987

Upland/Terrestrial Communities

Maritime Post Oak Forest		Rare Community Type

Magnolia Swamp: Small, but unusual, mature occurrence with a minimally disturbed core. Vulnerable in an urban setting with connectivity to only small forested landscape. Needs more critical evaluation of viability. 1041

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and so are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*

Vascular Plants

Nantucket Juneberry	*Amelanchier nantucketensis*	Endangered	Critically Imperiled in NYS

Magnolia Swamp, 1997-07-29: On the edge of a sandy disturbed area in a maritime post-oak forest. 306

Persimmon	*Diospyros virginiana*	Threatened	Imperiled in NYS

Magnolia Swamp, 1997-05-06: Small woodlot in old developed area. Landscaped on either side of woods 8280

Rose-pink	*Sabatia angularis*	Endangered	Critically Imperiled in NYS

Magnolia Swamp, 1997-07-29: Successional old field varying into successional shrublands; area only about 10 acres surrounded by busy highways. Ground relatively flat with scattered tussocks. Soil somewhat sandy and well-drained. It may be wet at times, but is dry at this time due to drought. 7053

Sweetbay Magnolia	*Magnolia virginiana*	Endangered	Critically Imperiled in NYS

Magnolia Swamp, 1997-05-06: Sweetgum swamp with sweetgum, red maple, red oak, Nyssa and swamp white oak as dominants. Also present are grey and black birch. The understory is predominantly Vaccinium corymbosum with Smilax glauca. Skunk cabbage and trout lily in the herbaceous layer. 5109

Persimmon	*Diospyros virginiana*	Threatened	Imperiled in NYS

Sawmill Creek Woods, 1997-05-06: Group 1: A red maple swamp with pin oak, red maple, and Polygonum cuspidatum along the road. Sandy hummocks and depressions with water in the woods. The herbaceous layer consists of mayflower, cinnamon fern, and marsh fern. Group 2: The woods are drier than Group 1. 1562

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

Information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org. For descriptions of all community types, go to http://www.dec.ny.gov/animals/29384.html and click on Draft Ecological Communities of New York State.

New York Natural Heritage Program

Report on Historical Records of Rare Animals, Rare Plants, and Natural Communities

The following rare plants and rare animals have historical records at your project site, or in its vicinity.

The following rare plants and animals were documented in the vicinity of the project site at one time, but have not been documented there since 1979 or earlier, and/or there is uncertainty regarding their continued presence. There is no recent information on these plants and animals in the vicinity of the project site and their current status there is unknown. In most cases the precise location of the plant or animal in this vicinity at the time it was last documented is also unknown.

If suitable habitat for these plants or animals is present in the vicinity of the project site, it is possible that they may still occur there. We recommend that any field surveys to the site should include a search for these species, particularly for sites that are currently undeveloped and may still contain suitable habitat.

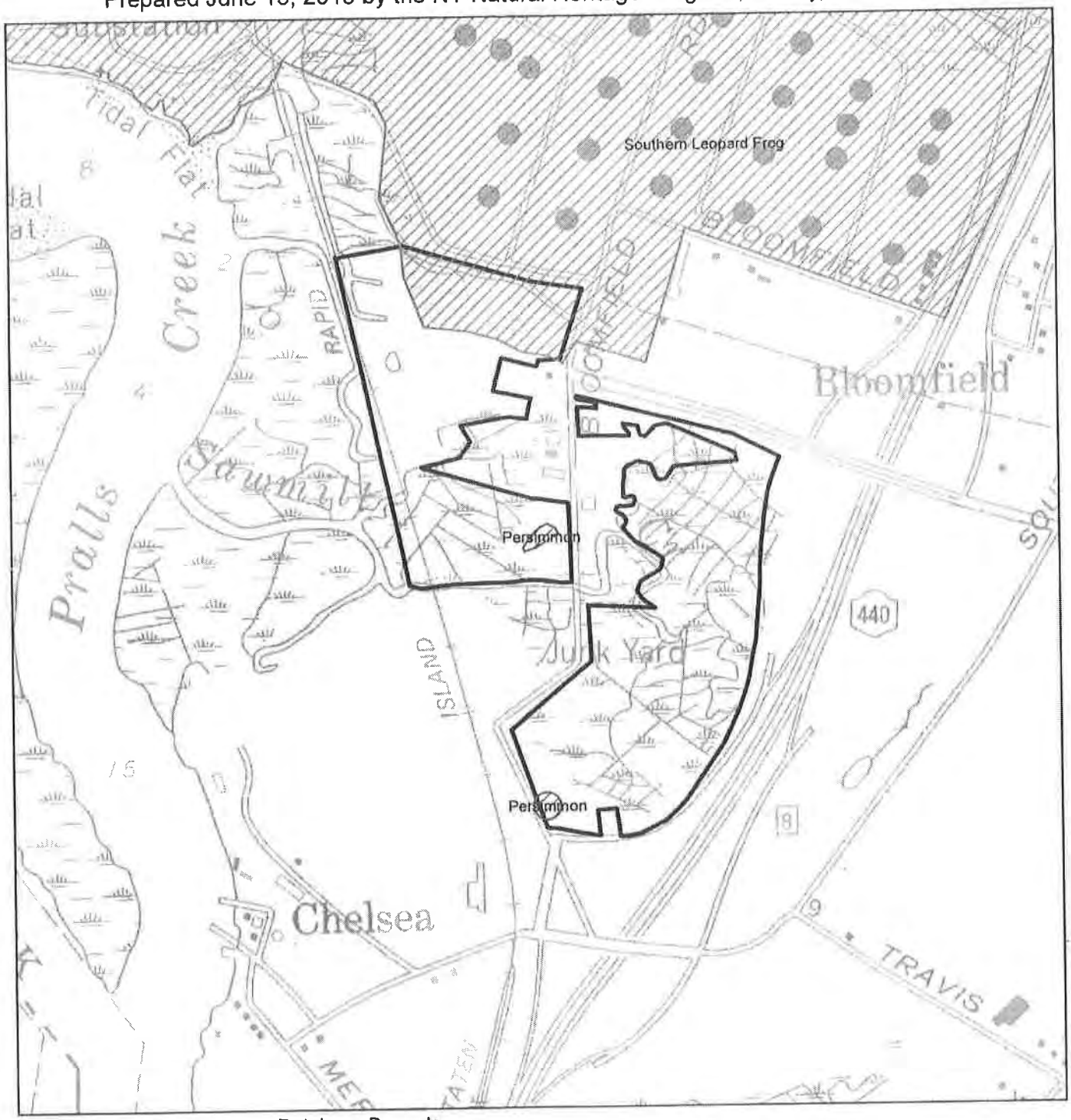
COMMON NAME	*SCIENTIFIC NAME*	*NYS LISTING*	*HERITAGE CONSERVATION STATUS*
Reptiles			
Eastern Mud Turtle	*Kinosternon subrubrum*	Endangered	Critically Imperiled in NYS
1900-05-06:			1480
Vascular Plants			
Log Fern	*Dryopteris celsa*	Endangered	Critically Imperiled in NYS
1907-07-17: Magnolia Swamp. Rich woods.			660
Orange Fringed Orchid	*Platanthera ciliaris*	Endangered	Critically Imperiled in NYS
1905-07-28:			640

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

Natural Heritage Map of Rare Species and Ecological Communities
Prepared June 13, 2013 by the NY Natural Heritage Program, Albany, NY



NY Natural Heritage Program Database Records

Legend

Onsite_plants_and_animals_unlisted

ELEM_GROUP

- Vertebrate Animal
- Vascular Plant
- 2013_projects

1:10,000

0 0.05 0.1 0.2 0.3 0.4 Miles

N W E S

This map, and the locations that are displayed, are considered sensitive information, and are intended for the internal use of the recipient; they should not be included in any document that will be made available to the public, without permission from NY Natural Heritage. Least Bitterns and Pied-billed Grebes have also been found on the subject property. Some records listed in the accompanying report may not be shown on this map. Please see the report for details.

[print page] [close window]

The Coordinates of the point you clicked on are:

NYTM	E : 568881	Longitude/Latitude	W : 74.185
	N : 4495742		N : 40.609

State-Regulated Freshwater Wetlands

Wetland ID	Wetland Class	Wetland Size (Acres)
	0	0
AR-49	2	49.8

Rare Plants and Rare Animals

This location is in the vicinity of one or more
Rare Animals and Rare Plants

Natural Communities Near This Location:

Natural Community Name	Location	Ecological System
Red maple-sweetgum swamp	Magnolia Swamp	Freshwater Nontidal Wetlands

Old or Potential Records (these records are not displayed on the map)

Common Name	Scientific Name	Date Last Documented	Location	Habitat Where Last Seen	Animal, Plant, or other	NYS Protected Status
Orange Fringed Orchid	Platanthera ciliaris	1905-07-28	Magnolia Swamp		Rare Plant	Endangered
Mocha Emerald	Somatochlora linearis	1926-pre	Staten Island	The dragonfly was captured on a very large island.	Rare Animal	Not Listed
Eastern Mud Turtle	Kinosternon subrubrum	1900-05-06	Old Place Creek		Rare Animal	Endangered
Hyssop-skullcap	Scutellaria integrifolia	1879-07-01	Staten Island		Rare Plant	Endangered
Northern Cricket Frog	Acris crepitans	1908-04-12	Richmond		Rare Animal	Endangered
Rambur's Forktail	Ischnura ramburii	1913-pre	Staten Island	The dragonfly was found on a very large island.	Rare Animal	Not Listed
Slender Crabgrass	Digitaria filiformis	1878-08	Staten Island		Rare Plant	Threatened
Needham's Skimmer	Libellula needhami	1913-pre	Staten Island	The dragonfly was found on a very large island.	Rare Animal	Not Listed
Wild Comfrey	Cynoglossum virginianum var.	1914-06-10	Staten Island	Woods.	Rare Plant	Endangered

	virginianum					
Collins' Sedge	Carex collinsii	1870	Staten Island	Magnolia swamps.	Rare Plant	Endangered
Log Fern	Dryopteris celsa	1907-07-17	Magnolia Swamp	Rich woods.	Rare Plant	Endangered
American Burying Beetle	Nicrophorus americanus	no date	Staten Island		Rare Animal	Endangered

USGS Quadrangle

USGS Quadrangle Name
ARTHUR KILL

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

If your project or action is within or near an area with rare plants and/or significant natural communities, the environmental impacts may need to be addressed.

The presence of a unique geological feature or landform near a project, unto itself, does not trigger a requirement for a NYS DEC permit. Readers are advised, however, that there is the chance that a unique feature may also show in another data layer (ie. a wetland) and thus be subject to permit jurisdiction.

Please refer to the "Need a Permit?" tab for permit information or other authorizations regarding these natural resources.

Disclaimer:If you are considering a project or action in, or near, a wetland or a stream, a NYS DEC permit may be required. The Environmental Resources Mapper does not show all natural resources which are regulated by NYS DEC, and for which permits from NYS DEC are required. For example, Regulated Tidal Wetlands, and Wild, Scenic, and Recreational Rivers, are currently not included on the maps.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
LONG ISLAND ECOLOGICAL SERVICES FIELD OFFICE
340 SMITH ROAD
SHIRLEY, NY 11967
PHONE: (631)286-0485 FAX: (631)286-4003

Consultation Tracking Number: 05E1LI00-2013-SLI-0120 May 27, 2013
Project Name: Saw Mill Creek Mitigation Bank

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project.

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Saw Mill Creek Mitigation Bank

Official Species List

Provided by:

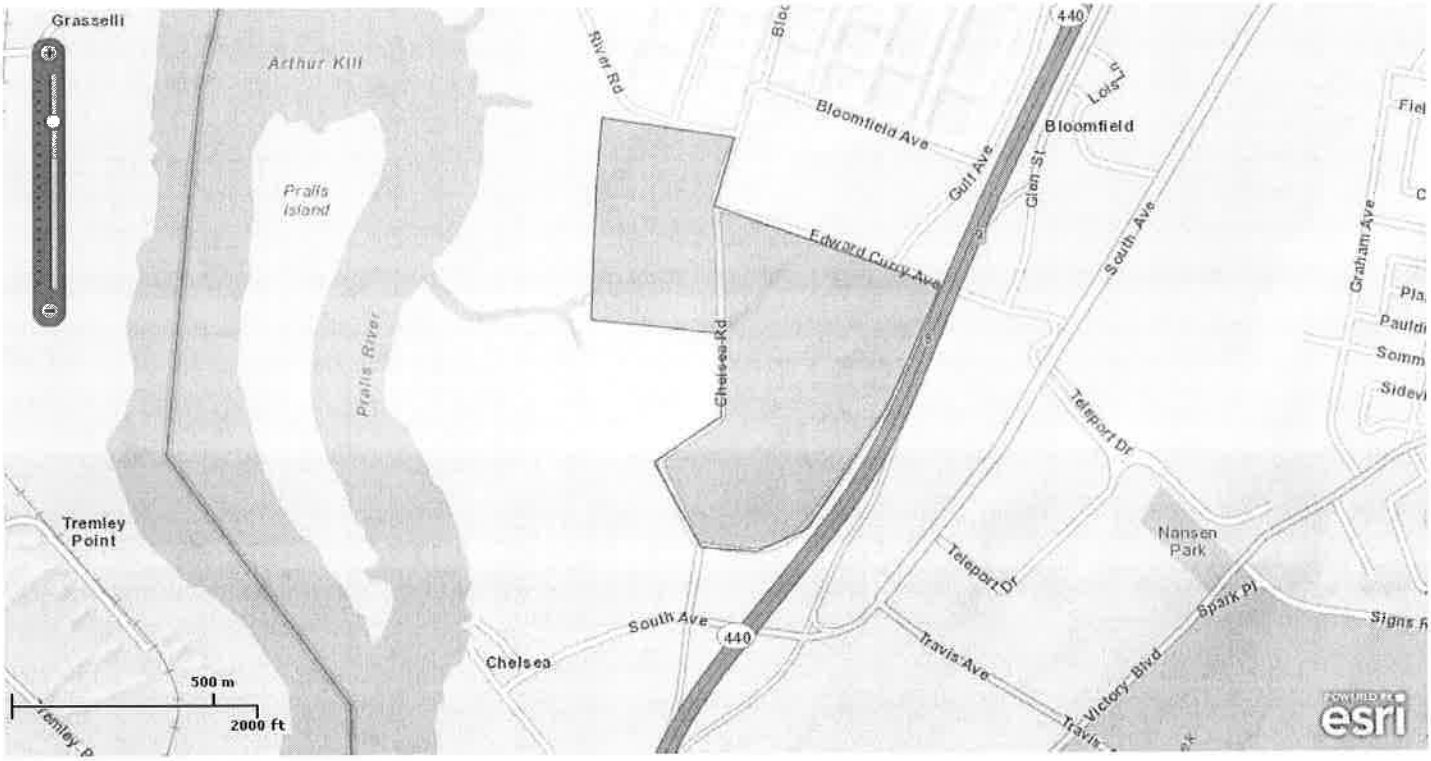
LONG ISLAND ECOLOGICAL SERVICES FIELD OFFICE
340 SMITH ROAD
SHIRLEY, NY 11967
(631) 286-0485

Consultation Tracking Number: 05E1LI00-2013-SLI-0120
Project Type: Land - Restoration / Enhancement
Project Description: Proposed wetland mitigation bank on NYC-owned property in the Saw Mill Creek Marsh system, located on the western shore of Staten Island in Richmond County, New York. Existing tidal wetlands and fill areas within the potential bank would be preserved, enhanced, or restored, as appropriate based on their current condition. The site is located within the Saw Mill Creek Marsh.

United States Department of Interior
Fish and Wildlife Service

Project name: Saw Mill Creek Mitigation Bank

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-74.1881814 40.6131006, -74.1887822 40.6115694, -74.1821733 40.609745, -74.1837611 40.6070083, -74.1860786 40.6043366, -74.1875806 40.6038153, -74.1892114 40.603913, -74.1905847 40.6058353, -74.1886106 40.6068454, -74.1885677 40.6087025, -74.1924066 40.6090271, -74.1922392 40.6121417, -74.1920718 40.6135621, -74.1881814 40.6131006)))

Project Counties: Richmond, NY

United States Department of Interior
Fish and Wildlife Service

Project name: Saw Mill Creek Mitigation Bank

Endangered Species Act Species List

Species lists are not entirely based upon the current range of a species but may also take into consideration actions that affect a species that exists in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Please contact the designated FWS office if you have questions.

Piping Plover *(Charadrius melodus)*

Population: except Great Lakes watershed

Listing Status: Threatened

Roseate tern *(Sterna dougallii dougallii)*

Population: northeast U.S. nesting pop.

Listing Status: Endangered

For Internal Use Only:
Date Received: _____

WRP no. _____
DOS no. _____

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM
Consistency Assessment Form

Proposed actions that are subject to CEQR, ULURP or other local, state or federal discretionary review procedures, and that are within New York City's designated coastal zone, must be reviewed and assessed for their consistency with the *New York City Waterfront Revitalization Program (WRP)*. The WRP was adopted as a 197-a Plan by the Council of the City of New York on October 13, 1999, and subsequently approved by the New York State Department of State with the concurrence of the United States Department of Commerce pursuant to applicable state and federal law, including the Waterfront Revitalization of Coastal Areas and Inland Waterways Act. As a result of these approvals, state and federal discretionary actions within the city's coastal zone must be consistent to the maximum extent practicable with the WRP policies and the city must be given the opportunity to comment on all state and federal projects within its coastal zone.

This form is intended to assist an applicant in certifying that the proposed activity is consistent with the WRP. It should be completed when the local, state, or federal application is prepared. The completed form and accompanying information will be used by the New York State Department of State, other state agencies or the New York City Department of City Planning in their review of the applicant's certification of consistency.

A. APPLICANT

1. Name: Katie Axe, Assistant Vice President, New York City Economic Development Corporation (NYCEDC)
2. Address: 110 William Street, 6th Floor, New York, New York 10038
3. Telephone: 212.312.3730 Fax: _____ E-mail: kaxt@nycedc.com
4. Project site owner: City of New York (NYCEDC, NYC Department of Parks and Recreation, NYC Department of Small Business, NYCTransit Authority)

B. PROPOSED ACTIVITY

1. Brief description of activity:

The proposed Saw Mill Creek Pilot Wetland Mitigation Bank will be located on the western shore of Staten Island, and will be established within a portion of an approximately 68.45-acre site (project site) in northwest Staten Island. The project site will be restored and enhanced in order to serve as the proposed Wetland Mitigation Bank. Former and degraded wetlands will be restored to natural/historic functions. Restoration and enhancement of ditched, filled, and/or degraded wetland and upland areas to a high level of function shall be accomplished by a combination of practices, including removal of remnant berms and other fill material, regrading to suitable tidal marsh elevations, restoration of tidal creeks, treating non-native invasive species with an EPA-approved herbicide for use in aquatic habitats, and replanting with native vegetation. The goals of the Bank are the establishment of tidal wetlands, tidal creeks and mudflat communities to provide a positive contribution to water quality, plant and animal habitat, and erosion control.

2. Purpose of activity:

As part of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) initiative, NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate the long term improvement and protection of critical coastal resources, and to provide a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The primary purpose of the project is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Seclions 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 and New York State ECL Article 25. The Bank will be established to compensate for wetland and other aquatic resource losses anticipated by such authorized development within the Bank Service Area in a manner that contributes to the long term ecological functioning of the Arthur Kill Drainage Basin, with an immediate goal of no net loss and a long term goal of a net gain of wetlands funclions and services.

3. Location of activity: (street address/borough or site description):

The approximately 68 45-acre project site is located in Saw Mill Creek in western Staten Island, east of Pralls Island and Pralls Creek. It is bisected by Chelsea Road in to a western and eastern portion, and is generally bound by Edward Curry Avenue and associated right-of-way to north, railroad tracks/ Bloomfield Road to west, and West Shore Expressway (Route 440) exit ramp to the south and east

Proposed Activity Cont'd

4. If a federal or state permit or license was issued or is required for the proposed activity, identify the permit type(s), the authorizing agency and provide the application or permit number(s), if known:

   Joint Application for Permit - USACE/NYSDEC/NYSDOS - USACE: App No. NAN-2013-00259-EHA;
   Mitigation Banking Instrument - Interagency Review Team, led by USACE/NYSDEC;
   State Pollutant Discharge Elimination System (SPDES) Permit - NYSDEC

5. Is federal or state funding being used to finance the project? If so, please identify the funding source(s).

   $500,000 of Empire State Development (ESD) Regional Economic Development Council funds will be used to help finance the project. No federal funding will be used.

6. Will the proposed project require the preparation of an environmental impact statement?
   Yes _____ No ✓ If yes, identify Lead Agency:

7. Identify **city** discretionary actions, such as a zoning amendment or adoption of an urban renewal plan, required for the proposed project.

   No city discretionary actions are required.

C. COASTAL ASSESSMENT

Location Questions:	**Yes**	**No**
1. Is the project site on the waterfront or at the water's edge?	✓	
2. Does the proposed project require a waterfront site?	✓	
3. Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land underwater, or coastal waters?	✓	

Policy Questions	**Yes**	**No**

The following questions represent, in a broad sense, the policies of the WRP. Numbers in parentheses after each question indicate the policy or policies addressed by the question. The new Waterfront Revitalization Program offers detailed explanations of the policies, including criteria for consistency determinations.

Check either "Yes" or "No" for each of the following questions. For all "yes" responses, provide an attachment assessing the effects of the proposed activity on the relevant policies or standards. Explain how the action would be consistent with the goals of those policies and standards.

4. Will the proposed project result in revitalization or redevelopment of a deteriorated or under-used waterfront site? (1)	✓	
5. Is the project site appropriate for residential or commercial redevelopment? (1.1)		✓
6. Will the action result in a change in scale or character of a neighborhood? (1.2)		✓

Policy Questions cont'd	Yes	No
7. Will the proposed activity require provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (1.3)		✓
8. Is the action located in one of the designated Significant Maritime and Industrial Areas (SMIA): South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park, or Staten Island? (2)		✓
9. Are there any waterfront structures, such as piers, docks, bulkheads or wharves, located on the project sites? (2)		✓
10. Would the action involve the siting or construction of a facility essential to the generation or transmission of energy, or a natural gas facility, or would it develop new energy resources? (2.1)		✓
11. Does the action involve the siting of a working waterfront use outside of a SMIA? (2.2)		✓
12. Does the proposed project involve infrastructure improvement, such as construction or repair of piers, docks, or bulkheads? (2.3, 3.2)		✓
13. Would the action involve mining, dredging, or dredge disposal, or placement of dredged or fill materials in coastal waters? (2.3, 3.1, 4, 5.3, 6.3)	✓	
14. Would the action be located in a commercial or recreational boating center, such as City Island, Sheepshead Bay or Great Kills or an area devoted to water-dependent transportation? (3)		✓
15. Would the proposed project have an adverse effect upon the land or water uses within a commercial or recreation boating center or water-dependent transportation center? (3.1)		✓
16. Would the proposed project create any conflicts between commercial and recreational boating? (3.2)		✓
17. Does the proposed project involve any boating activity that would have an impact on the aquatic environment or surrounding land and water uses? (3.3)		✓
18. Is the action located in one of the designated Special Natural Waterfront Areas (SNWA): Long Island Sound- East River, Jamaica Bay, or Northwest Staten Island? (4 and 9.2)	✓	
19. Is the project site in or adjacent to a Significant Coastal Fish and Wildlife Habitat? (4.1)	✓	
20. Is the site located within or adjacent to a Recognized Ecological Complex: South Shore of Staten Island or Riverdale Natural Area District? (4.1and 9.2)		✓
21. Would the action involve any activity in or near a tidal or freshwater wetland? (4.2)	✓	
22. Does the project site contain a rare ecological community or would the proposed project affect a vulnerable plant, fish, or wildlife species? (4.3)	✓	
23. Would the action have any effects on commercial or recreational use of fish resources? (4.4)		✓
24. Would the proposed project in any way affect the water quality classification of nearby waters or be unable to be consistent with that classification? (5)		✓
25. Would the action result in any direct or indirect discharges, including toxins, hazardous substances, or other pollutants, effluent, or waste, into any waterbody? (5.1)		✓
26. Would the action result in the draining of stormwater runoff or sewer overflows into coastal waters? (5.1)		✓
27. Will any activity associated with the project generate nonpoint source pollution? (5.2)		✓
28. Would the action cause violations of the National or State air quality standards? (5.2)		✓

Policy Questions cont'd	Yes	No
29. Would the action result in significant amounts of acid rain precursors (nitrates and sulfates)? (5.2C)		✓
30. Will the project involve the excavation or placing of fill in or near navigable waters, marshes, estuaries, tidal marshes or other wetlands? (5.3)	✓	
31. Would the proposed action have any effects on surface or ground water supplies? (5.4)	✓	
32. Would the action result in any activities within a federally designated flood hazard area or state-designated erosion hazards area? (6)	✓	
33. Would the action result in any construction activities that would lead to erosion? (6)	✓	
34. Would the action involve construction or reconstruction of a flood or erosion control structure? (6.1)		✓
35. Would the action involve any new or increased activity on or near any beach, dune, barrier island, or bluff? (6.1)		✓
36. Does the proposed project involve use of public funds for flood prevention or erosion control? (6.2)		✓
37. Would the proposed project affect a non-renewable source of sand ? (6.3)		✓
38. Would the action result in shipping, handling, or storing of solid wastes, hazardous materials, or other pollutants? (7)	✓	
39. Would the action affect any sites that have been used as landfills? (7.1)		✓
40. Would the action result in development of a site that may contain contamination or that has a history of underground fuel tanks, oil spills, or other form or petroleum product use or storage? (7.2)	✓	
41. Will the proposed activity result in any transport, storage, treatment, or disposal of solid wastes or hazardous materials, or the siting of a solid or hazardous waste facility? (7.3)	✓	
42. Would the action result in a reduction of existing or required access to or along coastal waters, public access areas, or public parks or open spaces? (8)		✓
43. Will the proposed project affect or be located in, on, or adjacent to any federal, state, or city park or other land in public ownership protected for open space preservation? (8)	✓	
44. Would the action result in the provision of open space without provision for its maintenance? (8.1)		✓
45. Would the action result in any development along the shoreline but NOT include new water-enhanced or water-dependent recreational space? (8.2)		✓
46. Will the proposed project impede visual access to coastal lands, waters and open space? (8.3)		✓
47. Does the proposed project involve publicly owned or acquired land that could accommodate waterfront open space or recreation? (8.4)	✓	
48. Does the project site involve lands or waters held in public trust by the state or city? (8.5)	✓	
49. Would the action affect natural or built resources that contribute to the scenic quality of a coastal area? (9)	✓	
50. Does the site currently include elements that degrade the area's scenic quality or block views to the water? (9.1)	✓	

Policy Questions cont'd	Yes	No
51. Would the proposed action have a significant adverse impact on historic, archeological, or cultural resources? (10)		✓
52. Will the proposed activity affect or be located in, on, or adjacent to an historic resource listed on the National or State Register of Historic Places, or designated as a landmark by the City of New York? (10)		✓

D. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with New York City's Waterfront Revitalization Program, pursuant to the New York State Coastal Management Program. If this certification cannot be made, the proposed activity shall not be undertaken. If the certification can be made, complete this section.

"The proposed activity complies with New York State's Coastal Management Program as expressed in New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program, and will be conducted in a manner consistent with such program."

Applicant/Agent Name: Peg Mc Brian Louis Berger Group Inc.

Address: 412 Mount kemble Ave

Morristown NJ 07932 Telephone 973 407-1000

Applicant/Agent Signature: Cindy P. Hanlon For Peg McBrien Date: 11-15-13

New York City Waterfront Revitalization Program Consistency Assessment Attachment

This section provides an assessment of the effects of the proposed project on relevant New York City Waterfront Revitalization Program (WRP) policies (i.e., Policy Questions on the WRP Consistency Assessment Form with a "yes" response).

Policy 1: Support and facilitate commercial and residential redevelopment in areas well-suited to such development.

The project site is primarily composed of open space and undeveloped land (marshland) and it not suitable for residential or commercial development. It currently contains former degraded wetlands areas and has been subject to illegal filling and dumping activities. The proposed project involves restoration of the project site in order to serve as the proposed Bank, a pilot wetland mitigation bank that will positively contribute to water quality, plant and animal habitat, and erosion control. A portion of 91.1 acres of emergent wetlands, scrub shrub wetlands, forested wetlands, open water channels/pools, mudflat habitat, and uplands on Staten Island (the project site) will be restored, enhanced persevered and maintained in accordance with the provisions of a Mitigation Banking Instrument (MBI) and regulatory permits (to be obtained).

The primary purpose of the pilot wetland mitigation bank is to provide compensatory mitigation for unavoidable impacts to waters of the U.S. (including wetlands) that result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 and New York State ECL Article 25. As such, the proposed Bank will facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The proposed project entails the "redevelopment" of an existing, degraded coastal environment in an area well-suited to such development; and therefore is consistent with WRP Policy 1.

Policy 2.0 Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

Policy 2.3: Provide infrastructure improvements necessary to support working waterfront uses.

The proposed project entails the restoration of an existing waterfront open space use. Although it is water-dependent, it is not a working waterfront use and is appropriately sited outside of a significant maritime and industrial area (SMIA). Construction of the proposed project will require construction vehicles and trucks; however the site is currently accessible from the existing transportation network and public transportation improvements will not needed. The proposed project entails the construction of new tidal creeks to proper depths in order to restore proper tidal hydrology. All solid waste and hazardous substances encountered during excavation or any construction activity will be stored, handled and transported in accordance with the contaminated materials handling/treatment/disposal plan and all applicable local, state and federal regulations. All potentially contaminated material will be disposed of at an appropriate upland location. Excavated material deemed appropriate for beneficial reuse, such as wetland creation or beach nourishment, will be given priority. The adjacent former GATX site may be a suitable candidate with respect to beneficial reuse of excavated material. Depending on

the contamination screening/ characterization results site, beneficial reuse of such material may be considered as part of the redevelopment of the former GATX property. The proposed project does not require infrastructure improvements and will be consistent with Policy 2.3.

Policy 3.0: Promote use of New York City's waterways for commercial and recreational boating and water-dependent transportation centers.

Policy 3.1: Support and encourage recreational and commercial boating in New York City's maritime centers.

The waterfront in the vicinity of the project site is outside of the City's maritime centers and is not appropriate for commercial or recreational boating. The proposed project does not involve or encourage recreational or commercial boating and is consistent with Policy 3.1.

Policy 4: Protect and restore the quality and function of ecological systems within the New York City coastal area.

As part of the wetland restoration process, the proposed project will reestablish native plant species, control invasive species, and create new tidal creeks. The new tidal creeks will allow for the reintroduction of complete tidal flushing which will improve water quality, tidal flood storage and conveyance capability, as well as fish and benthic habitat. The proposed project does not include activities that may cause or cumulatively contribute to permanent adverse changes to the ecological complexes and their natural processes, will avoid fragmentation of natural ecological communities, and will maintain/ expand existing corridors to facilitate the free exchange of biological resources within and among these communities. Thus the proposed Bank will be consistent with and supportive of WRP Policy 4.

Policy 4.1: Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas, Recognized Ecological Complexes, and Significant Coastal Fish and Wildlife Habitats.

The proposed project will positively affect water quality, plant and animal habitat, and erosion control. The project site is located in the Northwestern Staten Island Harbor Herons Special Natural Waterfront Area (SNWA), as well as a designated Significant Coastal Fish and Wildlife Habitat area. The existing habitat quality of the project site has been degraded due to historical fill, ditching, dumping, and invasion by nuisance plant species such as *Phragmities*; which has led to a decrease in wildlife species diversity. The project's wetland concept plan seeks to restore tidal hydrology to previously-filled or degraded areas, which will enable fish, shellfish, and aquatic invertebrate species to use the tidal channels and provide valuable foraging opportunities for bird species along mudflats during low tide. The combination of mud flat, open water, low marsh, high marsh, and scrub-shrub proposed for the site will provide the diversity of habitat types needed to support a variety of wildlife species. Thus the proposed project will protect and ultimately enhance the SNWA and Significant Coastal Fish and Wildlife Habitat area.

Policy 4.2: Protect and restore tidal and freshwater wetlands.

The proposed project proposes to use a combination of practices in order to restore former and degraded wetlands to their natural/ historic functions. In order to reestablish tidal flow to portions of the Bank area, it was determined that a channels would need to be established to provide tidal flooding

of areas historically filled. Hydrologic and hydraulic analyses were conducted as well as an assessment of alternative channel locations. The analyses indicate that tidal influence from Saw Mill Creek, through new channels, would be adequate to provide the appropriate tidal regime.

Avoidance, minimization, and reduction components were incorporated into proposed project concept plan, to minimize wetland and open water impacts to the maximum extent practicable and feasible. Temporary impacts to wetlands would result from construction equipment on timber mats used to excavate the channels, and remove historic fill.

Implementation of the project involves the removal of construction/demolition debris and other fill material over former marshlands. This material will be removed and the area graded to tidal marsh elevations, restoring approximately 13.65 acres of wetlands on the project site. The proposed project is consistent with WRP Policy 4.2 as it will protect and restore wetland and upland areas to a high level of function.

Policy 4.3: Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.

A key objective of the Bank is to maximize the wetlands functions and services within the project area, particularly for wildlife habitat and water quality improvement. Historic fill will be removed and the existing degraded, Phragmites-dominated wetland complex will be restored and enhanced. The Phragmites monoculture will be replaced with a thriving, healthy tidal marsh complex providing improved habitat for wildlife, plant and fish species, including vulnerable species and rare ecological communities. As noted above in the Policy 4.1 discussion, implementation of the proposed project wetland concept plan will provide the diversity of habitat types needed to support a variety of wildlife species. The proposed project seeks to maximize the ecological enhancement of extant habitats and will result in an increase the heterogeneity of habitats, thereby allowing wildlife species diversity the opportunity to increase. The proposed project will avoid harming vulnerable fish and wildlife species, and is consistent with Policy 4.3.

Policy 5: Protect and improve water quality in the New York City coastal area.

Policy 5.1: Manage direct or indirect discharges to waterbodies.

The proposed project will not increase the amount of impervious surface at the project site; no buildings, structures and other built features are expected to remain on the Bank site after construction. Since the proposed project will restore former/degraded wetland areas, it will increase the project area's capacity to store and treat stromwater and improve water quality.

The proposed project will not input large quantities of freshwater into tidal or brackish waterbodies. Once the design of the proposed project is finalized, a State Pollution Discharge Elimination System (SPDES) permit will be obtained, which will include a Soil Erosion and Sediment Control Plan, a Stormwater Pollution Prevention Plan (SWPPP), and a post-construction Stormwater Management Plan (SWMP) will be developed in coordination with the NYSDEC. In addition, construction will comply with a Pollution, Prevention and Control Plan that will include restricting the location of refueling activities and requiring immediate cleanup of spills and leaks of materials; and regularly maintaining construction equipment to identify and repair any source of leaks. Direct or indirect discharges to waterbodies will

be managed by implementing these control measures and by adhering to the terms of the required plans and permits, thus the proposed project will be consistent with Policy 5.1.

Policy 5.3: Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.

Construction of the proposed project requires excavation in wetland areas, and also has the potential to involve the placement of clean fill materials into waters of the United States.[1] Excavated material will be carted off-site and disposed of based on the dewatering plans as well as contaminated materials handling/treatment/disposal plan. The material will be handled, treated and disposed of in accordance with applicable local, state and federal regulations.

Best management practices will be employed to insure that erosion and delivery of sediment to Saw Mill Creek and the Arthur Kill and associated wetlands are prevented or minimized. These measures will include performing in-water work during periods of low tide, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed. All construction work will comply with the Soil Erosion and Sediment Control Plan that is a required component of the SPDES permit.

Construction of the proposed Bank project also requires a Water Quality Certification from the NYSDEC, which will be obtained as part of the Joint NYSEDEC/USACE Application. Compliance with regulatory permits will ensure that excavation and potential fill operations will meet state standards and will minimize the potential for adverse impacts on aquatic life during such activities. Furthermore, improved water quality is one of the primary objectives of the proposed project. Thus the proposed project will be consistent with WPR Policy 5.3.

Policy 5.4: Protect the quality and quantity of groundwater, streams, and the sources of water for wetlands.

As construction of the proposed project includes excavation, it has the potential to affect surface and ground water supplies. Compliance with the Soil Erosion and Sediment Control Plan, the SWPPP, SWMP, etc., and the use of best management practices described above, would minimize the potential for such impacts.

Once constructed, the Bank will positively contribute to water quality and increase the area's capacity to store and treat stormwater. The proposed project will reintroduce complete tidal flushing to areas historically subject to tidal inundation, resulting in long-term, major benefits to wetland function and structure, as well as water quality in the Arthur Kill systems. Increased tidal flushing will reduce the retention times of organic, oxygen-demanding substances and increase the flow of well-oxygenated water, thus improving dissolved oxygen concentrations in the marsh. Increased flushing can also be expected to contribute to improved water quality in the Arthur Kill system. Therefore the proposed project will be consistent with Policy 5.4.

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[1] As per the Conceptual Restoration Design Plan discussion (see Attachment A, Part I, Section 3.0), sampling studies are being conducted to determine if the fill materials in certain areas of the project site area are contaminated. If the soil and groundwater sampling indicates an area of concern, some areas will be over-excavated and backfilled with a clean sand cap to create a clean substrate.

Policy 6: Minimize loss of life, structures and natural resources caused by flooding and erosion.

The project site is within a federally-designated flood hazard area (100-year flood zone). Since construction of the bank entails excavation, it has the potential to lead to erosion. As noted above, the proposed project will comply with the Soil Erosion and Sediment Control Plan. Implementation of control measures required by this plan will minimize the potential for erosion, and the proposed project will improve erosion control once constructed. In addition, the proposed project will result in improved flood attenuation. Thus the proposed project will be consistent with Policy 6.

Policy 6.3: Protect and preserve non-renewable sources of sand for beach nourishment.

The proposed project will prioritize the reuse of excavated material based results of contamination testing. Construction of the proposed Bank includes the removal and remediation of existing subsurface contamination (e.g., if the soil and groundwater sampling indicates an area of concern, the area will be over-excavated and backfilled with a clean sand cap to create a clean substrate prior to planting/seeding). Therefore the proposed project will protect sources of beach nourishment sand from exposure to hazardous materials and will be consistent with Policy 6.3.

Policy 7: Minimize environmental degradation from solid waste and hazardous substances.

The proposed project has the potential to encounter contaminated/hazardous materials. It is expected that the proposed project will follow the recommendations presented in the Phase I ESA.[2] Recommendations include:

- Removal of nonindigenous fill material from the project area, disposal at an off-site location in accordance with all applicable laws and regulations, investigation of fill material and any follow up investigation that may be warranted in accordance with the DER-10.[3]
- Removal of all discarded and dumped items from the project area, and disposal at an off-site location in accordance with all applicable laws and regulations If, during the course of removal, a release is encountered, additional investigation in accordance with the DER-10 may be warranted.
- Development and implementation of a project area-wide characterization plan, in accordance with the DER 10, in order to investigate potential off-site impacts caused by adjacent property uses, recent and/or historic spills, suspected wide-spread pesticide application during the early- and mid-20th century to reduce mosquito populations, and any potential impacts caused by the adjacent active rail road.

Further site characterization and handling of contaminated materials in accordance with applicable regulatory requirements will minimize the potential for hazardous material impacts. In addition, the proposed project will not generate solid waste once constructed. Therefore, the proposed project will be consistent with Policy 7.

Policy 7.2: Prevent and remediate discharge of petroleum products.

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[2] *Draft Phase I Environmental Site Assessment Report for The Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative Saw Mill Creek Pilot Wetland Mitigation Bank Blocks 1780, 1790, and 1815, Multiple Lots Staten Island, NY*, prepared for the New York City Economic Development Corporation by Louis Berger & Assoc., PC., May 2013.

[3] http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf

The proposed project will not include the handling or storage of petroleum. However, as discussed above, the proposed project has the potential to encounter contaminated/hazardous materials. The proposed project is expected to adhere to recommendations included the Phase I ESA and will comply with applicable hazardous materials-related regulations. In addition, construction of the proposed project will comply with a Pollution, Prevention and Control Plan that will include restricting the location of refueling activities and requiring immediate cleanup of spills and leaks of materials; and regularly maintaining construction equipment to identify and repair any source of leaks. Thus no significant adverse impacts related to contaminated materials will occur and the proposed project will be consistent with Policy 7.2.

Policy 7.3: Transport solid waste and hazardous substances and site solid and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.

Once operational, the proposed project will not generate hazardous substances or waste. During construction of the proposed Bank, a Pollution, Prevention and Control Plan will be implemented. In addition, all solid waste and hazardous substances encountered during construction will be stored, handled and transported in accordance with the contaminated materials handling/treatment/disposal plan and all applicable local, state and federal regulations. Therefore the proposed project will be consistent with Policy 7.3.

Policy 8: Provide public access to and along New York City's coastal waters.

Parts of the project area (primarily the section east of Chelsea Road) include portions of Saw Mill Creek Marsh, a public open space that does not include any facilities as it is marshland. The proposed project will not alter the overall nature or use of this open space and will restore former/degraded wetland areas, thereby enhancing the environmental quality of the project area and open space. The proposed project will be consistent with WRP Policy 8.

Policy 8.4 Preserve and develop waterfront open space and recreation on publicly owned land at suitable locations.

The proposed project will result improve the environmental quality of public open space. Given that the project area is mainly composed of Saw Mill Creek, wetlands and marshland, it is not suitable for development of recreational facilities. As such, the proposed project would be consistent with Policy 8.4.

Policy 9: Protect scenic resources that contribute to the visual quality of the New York City coastal area.

The project area itself is a scenic resource that contributes to the visual quality of this coastal area. The proposed project will restore and enhance this currently degraded resource. Accordingly, the proposed project is consistent with WRP Policy 9.

Policy 9.2 Protect scenic values associated with natural resources.

The project area is part of the Northwest Staten Island Special Natural Waterfront Area. The proposed project entails the restoration of ditched, filled, and/or degraded wetland and upland areas to a high level of function. It also includes the construction of additional tidal creeks to convey tidal flows that support native low and high marsh vegetation and serve as a barrier to *Phragmites* invasion from surrounding areas. As a result, the proposed project will also improve the scenic character of the project area's natural resource and will be consistent with WRP Policy 9.2.

Policy 10: Protect, preserve and enhance resources significant to the historical, archaeological, and cultural legacy of the New York City coastal area.

There are no historic architectural resources within the vicinity of the project area. However, based on correspondence with the New York City Landmarks Preservation Commission (LPC), the project site potentially possesses archaeological significance. Accordingly, the proposed project requires the completion of an archaeological documentary study (currently in progress). The study will help to determine whether intact archaeological resources might exist on the project site, and whether archaeological field work is necessary in order to rule out the potential for adverse impacts. If archaeological resources are encountered, mitigation measures would be coordinated with the regulatory agencies (such as data recovery) and no significant adverse impacts would occur. Therefore, the proposed project will be consistent with Policy 10.

APPENDIX B:
SITE PHOTOGRAPHS

Photo 1: View of Saw Mill Creek, facing west from Chelsea Road.

Photo 2: Wetland Flag CH-A25, facing north along the CSX railroad tracks.

Photo 3: Wetland Flag CH-A46, facing south along the CSX railroad tracks.

Photo 4: Wetland Flag CH-A79, facing north along upland edge at Chelsea Road.

Photo 5: Wetland Flag CH-A122, facing west.

Photo 6: Wetland Flag CH-A127, facing west.

Photo 7: Salt panne near Wetland Flag CH-A136, facing northwest.

Photo 8: Upland fill area, facing east from Wetland Flag CH-A148.

Photo 9: Wetland Flag CH-B50, facing Edward Curry Ave.

Photo 10: Wetland Flag CH-B95, along remnant berm, facing northeast.

Photo 11: Wetland Flag CH-B111, facing south.

Photo 12: Wetland Flag CH-B99, upland forested area, facing east.

Photo 13: Wetland Flag CH-C43, facing toward Route 440.

Photo 14: Wetland Flag CH-E13, facing north.

Photo 15: Wetland Flag CH-J4, facing south.

Photo 16: Wetland Flag CH-I1, facing east at culvert under Rt. 440.

APPENDIX C:
ADJACENT PRPOERTY OWNERS LIST

Saw Mill Creek Pilot Mitigation Bank
Adjoining Property Owners

Block, Lot	Owner	Address
Route 440	New York Department of Transportation	50 Wolf Road, Albany, NY 12232
1780, 22	I.C. Properties, LLC	380 Chelsea Road, Staten Island, NY 10314
	Helen De Santis	2326 East 2nd Street, Brooklyn, NY 10305
1780, 57	I.C. Properties, LLC	380 Chelsea Road, Staten Island, NY 10314
	Helen De Santis	2326 East 2nd Street, Brooklyn, NY 10305
1780, 80	NYC Dept of Highways	55 Water Street, 9th Floor New York, NY 10041
	Ronald Fanelli	298 Chelsea Road, Staten Island, NY 10314
1780, 85	NYC Dept of Highways	55 Water Street, 9th Floor New York, NY 10041
	Ronald Fanelli	298 Chelsea Road, Staten Island, NY 10314
1780, 164	Buck Eye P L	Hughes Avenue, Staten Island, NY 10314
	NYC Dept of Highways	55 Water Street, 9th Floor New York, NY 10041
	S I Sportsmens Club	170 Bloomfield Avenue, Staten Island, NY 10314
	Trans P L	Hughes Avenue, Staten Island, NY 10314
1780, 200	Transcontinental Gas Pipeline Co. LLC	2800 Post Oak Blvd, Houston, TX 77056
1780, 240	Degarlia Holdings LLC	38 Kinsey Place, Staten Island, NY 10303
	Degarlia Holdings LLC	1259 Richmond Avenue, Staten Island, NY 10314
1780, 250	I.C. Properties, LLC	380 Chelsea Road, Staten Island, NY 10314
1780, 270	I.C. Properties, LLC	380 Chelsea Road, Staten Island, NY 10314
	Helen De Santis	2326 East 2nd Street, Brooklyn, NY 10305
1790, 120	Bank of New York	101 Barclay Street, New York, NY 10286
1801, 50	NYC Parks and Recreation	830 Fifth Avenue New York, NY 10065
1801, 55	NYC Dept of Small Business	110 William Street, 7th Floor New York, NY 10038
1801, 100	Chelsea South Association	625 Chelsea Road, Staten Island, NY 10314
	NYC Dept of Highways	55 Water Street, 9th Floor New York, NY 10041
1801, 125	NYC Dept of Environmental	59-17 Junction Boulevard, 13th Floor Flushing, NY 11373
1801, 135	NYC Parks and Recreation	830 Fifth Avenue New York, NY 10065
1835, 1	Texas Eastern Transmission, L.P.	150 Warren St, Suite 201, Jersey City, NJ 07302
	SI Gateway Development Partners LLC	60 Columbus Circle, New York, NY 10023
	380 Development, LLC	1801 W International Speedway Blvd, Daytona Beach, FL 32114
1815, 70	NYC Dept of Small Business	110 William Street, 7th Floor New York, NY 10038
1815, 160	Emerson Investors, LLC	291 Chelsea Road, Staten Island, NY 10314
1815, 175	Chelsea Road Realty II LLC	237 Holdridge Avenue, Staten Island, NY 10312
1815, 180	Chelsea Road Realty	1000 Clove Road, Staten Island, NY 10314
1815, 181	Chelsea Road Realty, LLC	1001 Clove Road, Staten Island, NY 10314

1815, 190	South Shore Enterprises	335 CHELSEA RD STATEN ISLAND, NY 10314-7112
1815, 191	South Shore Enterprises	335 CHELSEA RD STATEN ISLAND, NY 10314-7112
1815, 192	South Shore Enterprises	335 CHELSEA RD STATEN ISLAND, NY 10314-7112
1815, 199	I C Land, LLC	380 Chelsea Road, Staten Island, NY 10314
1815, 260	South Shore Enterprise, LLC	331 Chelsea Road, Staten Island, NY 10314

Property data was obtained from New York City Department of Finance, Office of the City Register at the following web site: http://a836-acris.nyc.gov/DS/DocumentSearch/BBL on August 7, 2013.

APPENDIX D:
ESSENTIAL FISH HABITAT ASSESSMENT

MITIGATION AND RESTORATION STRATEGIES FOR HABITAT AND ECOLOGICAL SUSTAINABILITY (MARSHES) INITIATIVE

SAW MILL CREEK PILOT WETLAND MITIGATION BANK STATEN ISLAND

ESSENTIAL FISH HABITAT ASSESSMENT

Submitted to:
U.S. Army Corps of Engineers
New York District, New York, New York

Submitted by:
New York City Economic Development Corporation
New York, New York

NYCEDC
New York City Economic Development Corporation

Prepared by:
The Louis Berger Group, Inc.
Morristown, New Jersey

November 2013

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EXECUTIVE SUMMARY

The Arthur Kill region is designated as providing Essential Fish Habitat (EFH) for 17 federally managed fish species. Based on the water quality parameters, sediment types present, and habitats present in the Saw Mill Creek Pilot Wetland Mitigation Bank project area, three EFH-designated species have potential to occur in the project area: winter flounder, windowpane flounder, and bluefish. The project area also supports prey items for EFH-designated species.

Construction of the Saw Mill Creek Pilot Wetland Mitigation Bank will result in primarily beneficial impacts to habitat for aquatic biota in the Arthur Kill region. Construction activities may result in short-term increases in erosion and delivery of sediment to nearby wetlands and waters. Most EFH-designated species likely to occur in the Arthur Kill region are typically found in the often turbid conditions of estuaries and can avoid temporary increases in suspended sediments. Impacts will be mitigated by measures including performing the majority of earthwork during low tide, avoiding in-water work from January through June to protect winter flounder and anadromous fish, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed. Additionally, best management practices for soil erosion and sediment control will be used to minimize sediment entering waterways.

For these reasons, no long-term adverse impacts to EFH-designated species or habitat, or forage species are expected from construction and operation of the Saw Mill Creek Pilot Wetland Mitigation Bank.

Saw Mill Creek Pilot Wetland Mitigation Bank Essential Fish Habitat (EFH) Assessment

1.0 PROJECT OVERVIEW

The New York City Economic Development Corporation (NYCEDC) has engaged in an initiative with the City and State of New York to protect and enhance the City's coastal resources while fostering sustainable waterfront development. As part of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) initiative, NYCEDC is pursuing the first Mitigation Banking Instrument (MBI) in New York City as a means to facilitate both the long term improvement and protection of critical coastal resources, and providing a predictable, efficient and environmentally responsible process to serve the mitigation needs of permit applicants in the geographical service area. The proposed project is referred to as the Saw Mill Creek Pilot Wetland Mitigation Bank (the Bank). If undertaken, the proposed Bank will be located on Staten Island in Richmond County, New York as shown on the U.S. Geologic Survey (USGS) topographic map of Arthur Kill, NY 7.5-minute quadrangle. The proposed Bank location is presented in Figure 1.

The main objective of the Bank is to provide compensatory mitigation for unavoidable impacts to waters of the U.S., including wetlands, which result from activities authorized under Sections 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, New York State ECL Article 15, Title 5 (Protection of Waters/Stream Disturbance), New York State ECL Article 25 (Tidal Wetlands); New York Department of State Coastal Consistency Concurrence; New York State Environmental Quality Review Act (SEQRA); New York City Department of City Planning (NYCDCP) Uniform Land Use Review Procedure (ULURP); NYCDCP Local Waterfront Revitalization Plan Compliance; and/or City Environmental Quality Review (CEQR) provided such activities have met all applicable requirements and are authorized by the appropriate authorities.

In furtherance of this main objective, NYCEDC seeks to provide economically efficient, environmentally sustainable, and flexible off-site compensatory mitigation opportunities for public agencies and private property owners seeking to develop in accordance with all relevant Federal, State and local regulations. The Bank would be established to compensate for wetland and other aquatic resource losses anticipated by such authorized development within the Bank Service Area. The goals of the Bank are the restoration and preservation of tidal wetlands and streams to provide a positive contribution to water quality, fish and wildlife habitat, flood attenuation, and erosion control.

2.0 STUDY AREA DESCRIPTION

The Bank will be established within a portion of a 91.1-acre site that is bisected by Chelsea Road (oriented north to south) into a western section and an eastern section. The 37.4-acre western section is bounded by railroad tracks to the west, a Williams-Transco underground natural gas pipeline valve house access road to the north, Chelsea Road and privately-owned parcels to the east and by Saw Mill Creek to the south. The 53.7-acre eastern section is bounded by Chelsea Road and privately-owned parcels to the west, Edward Curry Avenue and associated right-of-way to the north, tidal marsh followed by Route 440 to the east, and Chelsea Road and an off-ramp

Figure 1

from Route 440 to the south. The proposed bank site is located at Latitude 40.61006 and Longitude -74.18869 within the NYSDEC Atlantic Ocean/Long Island Sound Watershed and the 8-digit Hydrologic Unit Code (HUC08) Sandy Hook-Staten Island subbasin (02030104).

Saw Mill Creek is a tidally influenced tributary of Pralls Creek and the Arthur Kill. The Arthur Kill is a tidal strait connecting the Kill Van Kull and Newark Bay to the north with Raritan Bay and the Raritan River to the south. It is bordered to the east by Staten Island and to the west by New Jersey. The Arthur Kill is approximately thirteen miles long, extending from Wards Point to the south and Newark Bay to the north, and having a width ranging from about 800 to 2,800 feet. The shoreline type along the Arthur Kill varies, consisting of bulkheads or riprap at the north end and largely wetlands to the south. Aquatic or estuarine habitats in the Arthur Kill include deep channels, shallows, intertidal mudflats, salt marshes, and freshwater (non-tidal) marshes and swamps. Several islands within the Arthur Kill have historically supported large colonial waterbird rookeries. Although the Arthur Kill is highly developed and industrialized, some 55% of the total shoreline (including island shores) remains as natural mudflats and marshes.

The tidal wetlands within the Bank consist primarily of a mixture of intertidal creeks and marsh. The majority of the intertidal marsh is irregularly flooded high marsh habitat. Smaller areas of low marsh, intertidal scrub-shrub, and salt panne habitat are present within the Site. Vegetation in the high marsh community includes spike grass (*Distichlis spicata*), saltmeadow cordgrass (*Spartina patens*), smooth cordgrass (*Spartina alterniflora*), with small areas of black grass (*Juncus gerardii*). Large areas have become dominated by the invasive common reed (*Phragmites australis*). The low marsh community is dominated by smooth cordgrass located along creek edges, in shallow ditches, and where sufficiently low elevations allow regular tidal flooding. Intertidal scrub-shrub habitat, consisting primarily of high tide bush (*Iva frutescens*), is scattered throughout the high marsh on both sides of Chelsea Road. Salt pannes are also present in depressions located within the high marsh. Vegetation associated with pannes includes the short form of smooth cordgrass and glasswort (*Salicornia europa*). Portions of Saw Mill Creek are subtidal.

Characteristic invertebrates of the Arthur Kill's intertidal and shallow aquatic habitats include fiddler crabs (*Uca* spp.) and ribbed mussels (*Geukensia demissus*) (USFWS, 1997). The common mummichog (*Fundulus heteroclitus*) and dagger-blade grass shrimp (*Palaemonetes pugio*) provide an abundant forage base for resident and transient estuarine predators. A variety of epifaunal invertebrates (e.g., sponges, barnacles, tunicates) utilize the surfaces of submerged structures, bulkheads, piers, and pilings as habitat. The intertidal mudflats support a variety of benthic organisms, including amphipods, isopods, worms, and mollusks; however, pollution–tolerant species dominate (USFWS, 1997).

The Bank region has undergone intense coastal development and urbanization. The region contains landfills, container ports, railroad yards, bulkheads, docks, extensive highway infrastructure and industrial and commercial development. However, the area still consists of tidal and non-tidal marshes, mudflats, creeks and ponds typical of a natural setting. A variety of urban, industrial inputs and modifications to the nearshore zone of the Arthur Kill has modified flow conditions, decreased water quality and altered biotic communities. Over the years, many acres of intertidal salt marsh have been degraded or lost as a result of filling and mosquito control measures; however, some of the remaining tidal marshes and mudflats are among the most valuable fish and wildlife habitats on Staten Island.

At present, large portions of the Bank are degraded due to physical disturbances including dumping, filling and alterations to natural hydrologic connections and the prevalence of the

invasive *Phragmites australis*. Numerous point sources such as stormwater runoff from developed areas and highways and other non-point sources have severely degraded water and sediment quality in the Bank area. Despite the impaired condition of the Bank, its remaining wetlands and waterways are significant habitats for fish and benthic invertebrates and the higher trophic levels that they support.

3.0 WATER QUALITY AND SEDIMENTS

3.1 Water Quality

The New York State Department of Environmental Conservation (NYSDEC) has classified the Arthur Kill and its minor tributaries in the Saw Mill Creek area as Class SD saline surface water. This classification is given to waters that, because of natural or man-made conditions, cannot meet the requirements for primary and secondary contact recreation and fish propagation. Sources of water pollution in the Arthur Kill include combined sewer overflows (CSOs), storm water and other runoff, commercial and industrial discharges, and landfill leachate and contaminated groundwater. The Arthur Kill and its minor tributaries in the Saw Mill Creek area are listed as impaired due to floatables and oxygen demand (NYSDEC 2012).

The New York State Department of Health advises no consumption of American eel, gizzard shad, striped bass, white perch or crab or lobster tomalley from the Arthur Kill, as well as extremely limited consumption of blue crab meat, Atlantic needlefish, bluefish, and rainbow smelt due to PCBs, dioxin, and cadmium (NYSDOH, 2013). Women under the age of 50 and children under the age of 15 are advised not to eat any crabs, lobster or fish from the Arthur Kill.

The project area is surrounded by roadways and developed properties that result in stormwater discharges to the Saw Mill Creek wetland complex. The eastern parcel has several apparent freshwater input sources. A storm drain along Edward Curry Avenue discharges stormwater directly into the system through a storm drain. Also, a channel passing through a large box culvert under Route 440 connects the brackish marsh between Route 440 and South Avenue within the project area.

In May and June of 2013, Louis Berger conducted surface water salinity monitoring in areas of known or suspected freshwater surface water inputs into the Saw Mill Creek system within the project area and at four onsite tide gauge locations. Monitoring was performed during ebb tide when freshwater inputs were most apparent. Salinities in the western portion of the site ranged from 4 ppt to 20 ppt, while salinities in the eastern portion of the site ranged from 0 ppt to 19 ppt, owing to several freshwater inputs into this area. Additionally, in June 2013, Louis Berger monitored the salinity of groundwater in areas of the project site dominated by common reed (*Phragmites australis*) to determine any effect of fresh groundwater in these areas. Groundwater salinity in these areas ranged from 3 ppt to 11 ppt.

3.2 Sediments

The New York Harbor Estuary and its tributaries have had a long history of industrialization along its shores. This legacy of pollution continues to affect water quality as pollutants residing mostly in the sediments are dissolved and redistributed. Many area sediments contain low

concentrations of contaminants such as heavy metals, PCB's, PAHs, and other organic compounds. Sediments nearest former (or active) industrial sites may exhibit much higher local concentrations, and can result in localized areas of high contaminant concentrations colloquially as "hot spots". Landfills (either active or closed) abut many of the region's waterways, and also may leach contaminants into the waters. In addition, many former wetlands throughout the region have been filled with a mixture of materials including municipal waste and incinerator ash. Lastly, combined sewer outfalls (CSOs) can contribute significantly to regional pollution by introducing fecal coliform bacteria, floatable debris, and other contaminants.

In May 2013, a Phase I Environmental Site Assessment (ESA) for the 19 parcels comprising the project area was conducted. Based on the data obtained during the inspection, interviews, historical resources review and regulatory agency records review, additional investigation of the Recognized Environmental Conditions (RECs) identified at the Project Area was undertaken. This investigation included sampling to investigate and identify the extent, depth and physical characteristics of the RECs associated with the Project Areas identified during the Phase I ESA.

Soil and sediment sampling was conducted as part of Site Screening investigations. Soil sample locations targeted areas of historic fill and widespread dumping. Sediment sample locations targeted areas of observed dumping and areas where excavation is proposed to achieve tidal hydrology. Analytical results for the soil and sediment samples were analyzed to determine if contaminant of ecological concern are present within the project area. Contaminants of ecological concern include those that exceed available criteria recommended by the NYSDEC, U.S. Environmental Protection Agency, or other Federal natural resource agencies for use in conducting ecological assessments. The analytical results for the soil samples collected were compared to the Soil Cleanup Objectives as per the NYSDEC Regulations 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (December 14, 2006) (SCOs) for Protection of Ecological Resources (Track 2). The analytical results for the sediment samples collected were compared to the *NYSDEC Technical Guidance for Screening Contaminated Sediments* (1999). A review of the analytical results indicates that the following known contaminants of ecological concern occur within soils and sediments within the project area:

- metals (arsenic, barium, cadmium, chromium, copper, lead, nickel, mercury, selenium, silver, and zinc);
- pesticides (4,4-DDD, 4,4-DDE, 4,4-DDT);
- PCB's
- VOC's (xylene); and
- SVOC's (benzo[a]pyrene).

The Arthur Kill receives suspended sediment loads from a variety of sources. These sources include the Hackensack and Passaic Rivers, which discharge into Newark Bay, and the Rahway and Elizabeth Rivers, Morses Creek and small tributaries which discharge directly to the Arthur Kill. Anthropogenic sediment sources include municipal waste treatment facilities, industrial discharges and CSOs. Other portions of the interconnected Newark Bay system including Newark Bay and Kill Van Kull, as well as shoreline erosion and resuspension of bottom sediments, also contribute to suspended sediment loads in the Arthur Kill.

Sediment loadings from the various sources are difficult to isolate because of the complexity of the estuarine system. Surface sediments within the New York Harbor estuary are usually dominated by muddy (<63 micrometer (μm) diameter) small particulates, with sand (>63 μm diameter) generally making up less than 15 percent (by weight) of the surface sediment (Olsen et

al., 1984). The Newark Bay area is generally composed of silt-sized (0.005 0.05 mm) sediments. However, coarser material from relict or reworked deposits is found in regions where current scour exceeds over deposition, such as in the lower portion of Newark Bay and the Kill Van Kull (Suszkowski, 1978 in Olsen et al., 1984).

The 1987 USACE dredging feasibility studies reported sediments within the Arthur Kill channel as very soft, dark gray silts underlain by weathered and distressed red shale. This weathered shale was underlain by bedrock (sound and unweathered shale) of the Passaic Formation. Channel sides were steep and composed primarily of black silt.

4.0 POTENTIAL IMPACTS TO THE AQUATIC ENVIRONMENT

The re-establishment of tidal flow from the Arthur Kill to the Saw Mill Creek Pilot Wetland Mitigation Bank will require removal of fill and remnant berms, and grading to tie the elevations of the proposed meandering tidal channels to Saw Mill Creek. This work will require the excavation of approximately 3.3 acres of fill material. Material excavated for creation of intertidal channels, mudflat, and emergent marsh, and from removal of the existing fill and remnant berms will be removed from the site and disposed of. Where applicable, excavated material will be managed in accordance with Toxic Substances Control Act (TSCA) regulations.

The primary wetland system within the tidally influenced emergent marsh habitats will be comprised of *Spartina alterniflora* dominated low marsh plant communities (approximately elevations 1.5 to 2.5 feet NAVD88). High marsh areas (2.5 to 3.0 feet NGVD29) will be planted primarily with salt meadow hay *(Spartina patens),* spike grass (*Distichlis spicata*), common threesquare (*Scirpus pungens*), and saltmeadow rush (*Juncus gerardii*). Additionally, target vegetative species include native volunteers that are anticipated to colonize the emergent marsh, such as salt marsh fleabane (*Pluchea purpurascens*), dwarf spike rush (*Eleocharis parvula*), marsh orach (*Atriplex patula*). It is also anticipated that dwarf spike rush will colonize portions of the mudflat community. Scrub-shrub areas (3.0 to 5.0 feet NGVD29) will be planted with groundsel tree (*Baccharis hamilifolia*), swamp rose-mallow (*Hibiscus moscheutos)* and marsh elder (*Iva frutescens*).

Construction of the Saw Mill Creek Pilot Wetland Mitigation Bank will involve temporary soil and sediment disturbances through excavation, filling, and grading activities. These disturbances have the potential to result in erosion and delivery of sediment to adjacent water bodies and wetlands, creating temporary increases in turbidity. Increases in turbidity can clog fish gills, bury benthic prey items, and displace fish from affected areas. Increased turbidity also reduces sunlight penetration in the water and could affect foraging by fish which rely on vision for feeding.

Best management practices will be employed to insure that erosion and delivery of sediment to Saw Mill Creek and the Arthur Kill and associated wetlands are prevented or minimized. These measures will include performing in-water work during periods of low tide, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed. An erosion and sediment control plan will be submitted to NYSDEC for approval before construction commences.

Tidal flow is the most critical factor contributing to the biological productivity of an estuary. Construction of the Saw Mill Creek Pilot Wetland Mitigation Bank will reintroduce complete tidal flushing to areas historically subject to tidal inundation, resulting in long-term, major

benefits to wetland function and structure. Increased tidal fluctuation will improve water quality, tidal flood storage and conveyance capability, and improve fish and benthic habitat. Restoring tidal flow will promote the establishment of native plant species in areas currently dominated by the invasive species *Phragmites australis*.

Implementation of the Bank project involves the removal of construction/demolition debris and other fill material over former marshlands. This material will be removed and the area graded to tidal marsh elevations, restoring approximately 7.08 acres of wetlands.

Marsh restoration at the Saw Mill Creek Pilot Wetland Mitigation Bank will have several long-term beneficial effects on water quality in the Arthur Kill systems. Increased tidal flushing would reduce the retention times of organic, oxygen-demanding substances and increase the flow of well-oxygenated water, thereby improving dissolved oxygen concentrations in the marsh. Increased flushing would also increase the abilities of the marsh to function in trapping nutrients, which could improve water quality in the Arthur Kill system, and in exporting detritus, which would increase food supply to organisms in the system.

The restoration of salt marsh habitat at the Saw Mill Creek Pilot Wetland Mitigation Bank will have long-term, major beneficial effects on fish communities and fish habitat in the Arthur Kill system. The increase in marsh areas and the creation of tidal channels would physically allow more fish movement in and out of the marshes. The increased volume of water and improved water quality in the marshes would increase the availability and quality of habitat for all trophic levels of aquatic organisms. In particular, these improvements would benefit forage fish for EFH-designated species, as many of these forage fish spend most or all of their life in salt marshes. Larger numbers of small, resident forage fish in the marshes would provide an increased food source for larger predatory EFH-designated species that would also be able to move more easily into and out of the marshes because of the presence of tidal channels and removal of tidal restrictions. Improved water and sediment quality will result in more expansive benthic habitat required for demersal fish species, including EFH-designated species.

Therefore, adverse effects to the aquatic environment from construction of the Saw Mill Creek Pilot Wetland Mitigation Bank are expected to be minor and temporary, limited to the immediate period of construction. Major, long-term beneficial effects to water and sediment quality, and fish and benthic habitat are expected as a result of the project.

5.0 EFH DESIGNATION AND ASSESSMENT

5.1 EFH DESIGNATION

The 1996 Sustainable Fishery Act amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth EFH provisions to identify and protect important habitats of federally-managed marine and anadromous fish species. Under these provisions, Federal agencies that fund, permit, or undertake activities that may adversely affect EFH are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on EFH.

Congress defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH is further defined by regulation. "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish, where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

Current fishery management plans (FMPs) of the Mid-Atlantic Fishery Management Council (MAFMC) and the New England Fishery Management Council (NEFMC) designate EFH for the vast majority of federally-regulated species occurring within the New York harbor area. The Sustainable Fisheries Act of 1996 (SFA) requires the appropriate fishery councils to identify these EFHs within their jurisdiction to better manage and conserve each species. For the New England and Mid-Atlantic regions, EFH has been identified for a total of 59 federally-managed species covered by 14 FMPs, under the auspices of the NEFMC, MAFMC, South Atlantic Fishery Management Council, or NMFS.

NMFS designates EFH for many species in association with a mapped grid of 10- by 10-minute squares covering marine habitat along the U.S. coast. Table 1 contains a summary of the species and life stages of the 17 species for which EFH has been designated within the 10 minute square encompassing the Saw Mill Creek area with a southwest corner at 40°30' N, 74°10' W, and for the Hudson River/Raritan/Sandy Hook Bays. This information was obtained from the NOAA Fisheries Service's *Guide to Essential Fish Habitat Designations for the Northeastern United States*, specifically the EFH designation tables http://www.nero.noaa.gov/hcd/STATES4/new_jersey/40307410.html and http://www.nero.nmfs.gov/ro/doc/ny3.html. Table 1 also includes the species and life stages of skates for which EFH has been designated in the study area.

EFH designations emphasize the importance of habitat protection to healthy fisheries and serve to protect and conserve the habitat of marine, estuarine, and anadromous finfish and turtles. EFH includes both the water column (including its physical, chemical, and biological growth properties) and the underlying substrate (including sediment, hard bottom, and other submerged structures). Under the EFH definition, necessary habitat is that which is required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. EFH is designated for a species' complete life cycle, including spawning, feeding, and growth to maturity, and may be specific for each life stage (e.g., eggs, larvae).

EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, may also be identified by Fisheries Management Councils (FMC) and NMFS as habitat areas of particular concern (HAPC). Areas of EFH considered HAPC must be proven by NOAA Fisheries Service to be important to the ecological function provided by the habitat for managed species. The extent to which the habitat is sensitive to human-induced environmental degradation, including development activities that stress the habitat and the rarity of the habitat, are considered in designating HAPC (NMFS, 2003).

In NY/NJ Harbor, the only managed species for which HAPC has been identified is summer flounder. NOAA Fisheries Service identifies HAPC for juvenile and adult summer flounder across its entire range as "all native species of macro-algae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer

flounder EFH." Seagrasses are not present in the Arthur Kill; however, macroalage (primarily sea lettuce, *Ulva lactuca*) occurs in shallow areas where hard substrate is present, and *Spartina alterniflora* marshes are present in the Saw Mill Creek area. Therefore, HAPC for summer flounder is present in the vicinity of the proposed action.

Table 1. EFH-designated Species and Life History Stages in the Arthur Kill Region

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Red hake (*Urophycis tenuis*)	X	M,S	M,S	M,S	
Winter flounder (*Pleuronectes americanus*)	M,S	M,S	M,S	M,S	M,S
Windowpane flounder (*Scopthalmus aquosus*)	M,S	M,S	M,S	M,S	M,S
Atlantic sea herring (*Clupea harengus*)		M,S	M,S	M,S	
Bluefish (*Pomatomus saltatrix*)			M,S	M,S	
Butterfish (*Peprilus triacanthus*)		M	M,S	M,S	
Atlantic mackerel (*Scomber scombrus*)			S	S	
Summer flounder (*Paralicthys dentatus*)		F,M,S	M,S	M,S	
Scup (*Stenotomus chrysops*)	S	S	S	S	
Black sea bass (*Centropristius striata*)			M,S	M,S	
King mackerel (*Scomberomorus cavalla*)	X	X	X	X	
Spanish mackerel (*Scomberomorus maculatus*)	X	X	X	X	
Cobia (*Rachycentron canadum*)	X	X	X	X	
Sandbar shark (*Charcharinus plumbeus*)		X		X	
Winter skate (*Raja ocellata*)			X	X	
Little skate (*Raja erinacea*)			X	X	
Clearnose skate (*Raja eglanteria*)			X	X	

Source: *National Marine Fisheries Service (NMFS). "Summary of Essential Fish Habitat (EFH) Designation" at www.nero.noaa.gov/hcd/STATES4/new_jersey/40307410.html , http://www.nero.noaa.gov/hcd/ny3.html; and "Guide to Essential Fish Habitat Descriptions" at www.nero.noaa.gov/hcd/skateefhmaps.htm.*

Keys:
X = EFH has been designated for this species and life stage.
F= The EFH designation for this species includes the tidal fresh zone of this bay or estuary (0.0 to 0.5 ppt).
M= The EFH designation for this species includes the mixing water/ brackish salinity zone of this bay or estuary (salinity 0.5 to 25.0 ppt).
S= The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity 25.0 ppt or greater).

Site-specific fish community data for the Saw Mill Creek system are lacking. According to correspondence from National Marine Fisheries Service (NMFS, 2013 include as Appendix A), the Site provides habitat for a variety of resident, migratory, and forage species such as bluefish (*Pomatomus saltatrix*), striped bass (*Morone saxatalis*), menhaden (*Brevoortia tyrannus),* killifish (*Fundulus* spp.), bay anchovies (*Anchoa mitchilli*), and blue crabs (*Callinectes sapidus*). Aquatic fauna observed at the Site during field investigations in 2013 include mummichog (*Fundulus heteroclitus*), marsh snail (*Melampus bidentatus*), mud snail (*Ilyanassa obsoletus*), ribbed mussel (*Geukensia demissa),* fiddler crabs (*Uca minax* and *Uca pugnax*), and diamondback terrapin (*Malaclemys terrapin*).

5.2 ASSESSMENT OF EFH SPECIES

An analysis of the likelihood of each EFH-designated species and life stage to occur in the Saw Mill Creek project site and the potential for adverse impacts to these species and life stages from the project is discussed in this section. The probability for various life stages of each species to occur at the site was evaluated, based on their preferences for water quality parameters (i.e. temperature, salinity, DO), habitat preferences (shelter, structure, sediment type), seasonal migrations, and geographic ranges described in the NMFS EFH Source Documents for each species, as well as other sources. Discussion of the life history requirements of each of the EFH-designated species in Table 1 is presented below.

Red Hake

Red hake is a demersal (bottom-dwelling) fish that lives on sand and mud bottoms along the continental shelf from southern Nova Scotia to North Carolina, with a major concentration from the southwestern part of Georges Bank to New Jersey. Red hake complete extensive seasonal, depth- and temperature-related migrations. In the Middle Atlantic Bight, red hake occur most frequently in coastal waters in the spring and autumn, moving offshore to avoid the warm summer temperatures, although juveniles are found in deep holes and channels in coastal bays during the summer. In the winter, most of the population is located offshore, returning inshore during the spring. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, and adult red hake.

Red hake eggs are pelagic, and occur from the Middle Atlantic Bight to the Gulf of Maine. Spawning occurs from May to June in the New York Bight. Eggs are found on the edge of the continental shelf during the cooler months and across the continental shelf during the warmer months. The characteristics of the habitat in which red hake eggs are commonly found are not well understood, because red hake eggs co-occur with, and are indistinguishable from, the eggs of other hake species (Steimle et al., 1999a).

The typical habitat for red hake larvae is sea surface temperatures between 8 and 23°C (46 to 73°F), depths between 10 and 200 meters (33 to 660 feet), and salinities greater than 0.5 ppt (Steimle et al., 1999a). The larvae are most often observed from May through December, with peaks in September and October. Although larvae have been reported from the Hudson River Estuary, they are most abundant at the middle and outer continental shelf throughout the Middle Atlantic Bight.

Shelter is a critical habitat requirement for red hake. In the autumn, young juveniles descend from the water column to the bottom, and seek sheltering habitat in depressions in the sea floor. Juveniles are found on shelly substrates, and prefer water temperatures below 16°C (61°F), depths of less than 100 meters (328 feet) and a salinity range of 31 to 33 ppt (Steimle et al., 1999a). During their first year, red hake are sensitive to DO levels below 4.2 mg/l; in laboratory experiments, they left their bottom shelter and ascended into the water column.

Adults are found in bottom habitats of sand and mud, and prefer water temperatures below 14°C (57°F), depths from 15 to 365 meters (490 to 1,197 feet), and salinities between 31 and 34 ppt (Steimle et al., 1999a). In the Hudson Raritan Estuary, adults prefer DO concentrations greater than 6 mg/l.

Potential Project Impacts to Red Hake: Red hake may be present within the Arthur Kill area. However, the frequency of their occurrence would be limited by water quality and habitat preferences. Larvae are most abundant at mid- and outer continental shelf areas; thus, it is

unlikely that they would be common in the project area. The shelly substrate preferred by juveniles for shelter is lacking in the project area. Juveniles and adults prefer relatively high salinities that are not typical of the Arthur Kill, and both life stages avoid low DO levels that can occur near the bottom during the summer. The proposed project is not expected to impact EFH for any life stage of red hake.

Winter Flounder

The winter flounder, a small-mouthed, right-eyed flounder, is a valuable commercial and recreational species. This fish can be found from Labrador to North Carolina, but most commonly in estuaries from the Gulf of St. Lawrence to the Chesapeake Bay. Except for the Georges Bank population, adult winter flounder migrate inshore in the autumn and early winter, and spawn in late winter and early spring throughout most of their range. Winter flounder spawn at night, in shallow inshore waters. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, adult and spawning adult winter flounder.

The eggs of winter flounder are demersal, adhesive, and stick together in clusters. Winter flounder eggs are generally present in very shallow waters, less than about 5 meters (16 feet), at water temperatures of 10°C (50°F) or less, and salinities ranging from 10 to 30 ppt (Pereira et al., 1998). These shallow, nearshore habitats are of critical importance, because they are most likely to be impacted by human activities. The type of substrate where eggs are found varies, having been reported as sand, muddy sand, mud and gravel, although sand seems to be the most common.

Larvae are initially planktonic, but become increasingly bottom-oriented as metamorphosis approaches. Spawning areas and nursery areas are believed to be close together, and for the first summer, young-of-the-year winter flounder remain in shallow waters of bays and estuaries where they were spawned. Larvae are most abundant at temperatures of 2 to 15°C (36 to 64°F) and at salinities of 3.2 to 30 ppt (Pereira et al., 1998). Preferred larval habitat consists of fine sand or gravel bottoms in inshore waters shallower than 5 meters (16 feet). As winter flounder grow, they appear to prefer cooler, more saline waters. Winter flounder young-of-the-year are generally found in water temperatures below 28°C (82.4°F), depths from 0.1 to 10 meters (0.3 to 33 feet), and salinities between 5 and 33 ppt. Young-of-the-year have been captured in pile field areas and in open water in the Lower Hudson River (Able et al. 1999). Juvenile winter flounder are generally found in conditions that include water temperatures below 25°C (77°F), depths from 1 to 50 meters (3 to 164 feet), and salinities between 10 and 30 ppt.

Winter flounder adults are generally found in conditions consisting of water temperatures below 25°□C (77°F), depths from 1 to 100 meters (3 to 328 feet), and salinities between 15 and 33 ppt. Adult winter flounder migrate inshore in the autumn and early winter, and spawn in shallow coastal bays and estuaries in late winter and early spring. In the Hudson Raritan Estuary, most adults were captured at water temperatures of 4 to 12°C (39 to 54°F) (Pereira et al., 1998). Adult winter flounder are common on muddy or clean sand, pebbly, or gravelly bottom. Since adults prefer to live in cooler waters than juveniles, they do not often encounter low-oxygen events.

Winter flounder are sight feeders, using their dorsal fins to raise their heads off the bottom with eye turrets extended for a better view. Prey is then taken in a 10 to 15 centimeter (0.3 to 0.5 feet) lunge. The importance of adequate light for feeding in flounder has been demonstrated in recent studies, where growth rates for young-of-the-year flounder held in cages underneath piers in the Lower Hudson River were significantly lower than that of fish caged in pile fields and open water areas (Able et al., 1999). The U.S. Army Corps of Engineers (USACE) has mandated work

windows for some dredging projects in the New York District during the winter and spring months, to avoid disturbance to spawning winter flounder.

Potential Project Impacts to Winter Flounder: Water quality and substrate characteristics of the Arthur Kill area are typical for each life stage of winter flounder. Temporary increases in suspended sediment could adversely affect the ability of winter flounder to feed because of its dependence on sight and light. Eggs, post-settled larvae, juveniles, and adults are demersal, and could be subjected to increased turbidity. However, this demersal species occurs in the often turbid conditions of estuaries and can avoid temporary increases in suspended sediments. Therefore, the proposed project is not expected to significantly impact EFH for any life stage of winter flounder.

Windowpane Flounder

The windowpane flounder is a thin-bodied flatfish inhabiting estuaries, near-shore waters, and the continental shelf from the Gulf of St. Lawrence to South Carolina. This species is most abundant from Georges Bank to the Chesapeake Bay area, with maximum abundance in the New York Bight. Windowpane flounder are generally found on sandy bottoms in waters less than 80 meters (262 feet) deep. They aggregate in warm shoal waters in the summer and early autumn, and move offshore during the winter and early spring when temperatures decrease. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, adult and spawning adult windowpane flounder.

Windowpane flounder generally spawn in the Middle Atlantic Bight from spring to autumn in inshore waters at temperatures ranging from 8.5 to 13.5°C (47 to 56°F) (Chang et al., 1999). Windowpane flounder spawning peaks occur in May and September off of New Jersey and New York. Windowpane eggs are buoyant, and typically occur in surface waters less than 20°C (68°F) and water depths less than 70 meters (230 feet). Eggs hatch in about eight days, so the pelagic larvae are found in the same water conditions and within the same time period. Settlement of spring-spawned individuals occurs in estuaries and on the shelf, while settlement of autumn-spawned individuals occurs primarily on the shelf.

Juvenile and adult habitat generally consists of bottom habitats, with a substrate of mud or fine-grained sand. In the Hudson Raritan Estuary, juveniles were found to be fairly evenly distributed throughout the estuary, but juveniles were found to be most abundant in the deeper channels in winter and summer (Chang et al., 1999). Juvenile windowpane were most abundant at bottom water temperatures of 5 to 23°C (41 to 73°F), at depths of 7 to 17 meters (23 to 56 feet), at salinities of 22 to 30 ppt, and DO levels of 7 to 11 mg/l (Chang et al., 1999). Adults were also fairly evenly distributed throughout the estuary, but were more abundant in deeper channels in the summer. For the seasons combined, adults were collected at bottom temperatures of 0 to 24°C (32 to 75°F), at depths less than 25 meters (83 feet), at salinities of 15 to 33 ppt, and DO levels of 2 to 13 mg/l.

Potential Project Impacts to Windowpane Flounder: Water quality and substrate characteristics of the Arthur Kill area are typical for each life stage of windowpane flounder. Temporary increases in suspended sediment could adversely affect the ability of windowpane flounder to feed because of its dependence on sight and light. Since the eggs of this species are buoyant, they would not be exposed to appreciable sedimentation. Post-settled larvae, juveniles, and adults are demersal, and could be subjected to increased turbidity. However, this demersal species occurs in the often turbid conditions of estuaries and can avoid temporary increases in suspended sediments. Therefore, the proposed project is not expected to significantly impact EFH for any life stage of windowpane flounder.

Atlantic Herring

The Atlantic herring is a schooling, coastal pelagic species that occurs in Northwestern Atlantic waters from Labrador to North Carolina. Juveniles and adults undergo complex north-south and inshore-offshore migrations for feeding, spawning, and overwintering. They are most abundant off Cape Cod, and are relatively scarce south of New Jersey. The Arthur Kill is designated as EFH for larvae, juvenile, and adult Atlantic herring.

Spawning occurs once a year in late August to November, in the coastal ocean waters of the Gulf of Maine and Georges Bank. Atlantic herring spawn in waters with salinities of 32 to 33 ppt, typically over gravel, sand, cobble, shell, and algae, in depths of 10 to 100 meters (33 to 328 feet) (Reid et al., 1999). The eggs are demersal, stick to the seabed or algae on the ocean floor, and hatch in 10 to 15 days. Larvae are generally found in pelagic waters with temperatures below 16°C (61°F), water depths from 50 to 90 meters (164 to 295 feet), and salinities of about 32 ppt.

After spawning, adults migrate to the New York Bight area to overwinter from December through April. Fish that move through the Middle Atlantic Bight are mostly mature, age four or older. Juveniles overwinter in deep bays. Juveniles and adults prefer pelagic waters and bottom habitats with water temperatures below 10°C (50°F), at water depths of approximately 15 to 135 meters (49 and 443 feet), and salinities greater than 26 ppt (Reid et al., 1999).

Potential Project Impacts to Atlantic Herring: Atlantic Herring may be present in the Arthur Kill area, although larvae are typically found in deeper water and higher salinities than occur in this area. Juveniles and adults also prefer deep, cool waters of high salinity. Water quality parameters of the Lower Bay provide more favorable conditions for this species. Therefore, the proposed project is not expected to impact EFH for any life stage of Atlantic herring.

Bluefish

Bluefish are carnivorous pelagic fish that occur in temperate and tropical waters of the continental shelf and estuarine habitats around the world. In North America, bluefish live along most of the Atlantic coastal waters from Nova Scotia south, around the tip of Florida, and along the Gulf Coast to Mexico. Bluefish travel in schools of like-sized individuals, and complete seasonal migrations, generally moving north in spring-summer to centers of abundance in the New York Bight and southern New England, and south in autumn-winter to waters as far as southeastern Florida. The Arthur Kill is designated as EFH for juvenile and adult bluefish.

Bluefish spawn over the outer portion of the continental shelf, and eggs and larvae occur in oceanic waters. Juveniles in the Middle Atlantic Bight inhabit inshore waters and estuaries from May to October, preferring temperatures between 15 and 30°C (59 and 86°F) and salinities between 23 to 33 ppt, but can ascend well into estuaries to salinities as low as 3 ppt (Fahay et al., 1999). Juveniles use estuaries as nursery areas, and can be found in sand, mud, silt, or clay substrates, as well as vegetation including rockweed, sea lettuce, eelgrass, and *Spartina.* Most bluefish collected in NEFSC Hudson Raritan Estuary trawl surveys were found to be juveniles.

Adult bluefish occur in the open ocean, large embayments, and most estuarine systems within their range. They are highly migratory, with a seasonal occurrence in Mid-Atlantic estuaries from April to October. They prefer salinities greater than 25 ppt and warm temperatures, and are not found in the Middle Atlantic Bight when temperatures drop below 14 to16°C (57 to 61°F) (Fahay et al., 1999).

Potential Project Impacts to Bluefish: Juvenile and adult bluefish may be seasonally present within the Arthur Kill system and the project site from late spring through the fall. Since bluefish

are pelagic and highly migratory, their presence in any particular area is seasonal and short-lived. In addition, bluefish are fast moving and feed high in the water column, so they would not be affected by increased sedimentation. Therefore, the proposed project is not expected to impact EFH for any life stage of bluefish.

Atlantic Butterfish

Butterfish occur from Newfoundland to Florida, but are most abundant between New England and Cape Hatteras. They overwinter near the edge of the continental shelf in the Middle Atlantic Bight, and migrate inshore in the spring into southern New England and Gulf of Maine waters. During the summer, butterfish occur over the entire mid-Atlantic shelf from sheltered bays and estuaries out to about 200 meters (656 feet) (Cross et al., 1999). In late autumn, butterfish move southward and offshore in response to falling water temperatures. The Arthur Kill is designated as EFH for larvae, juvenile, and adult butterfish.

Butterfish spawn in the Middle Atlantic Bight between June and August on the continental shelf, inshore areas, and in bays and estuaries. Butterfish larvae are found at the surface or in the shelter of jellyfish tentacles, *Sargassum*, or flotsam. Larvae are found at depths less than 120 meters (394 feet) and temperatures ranging from 7 to 26°C (45 to 79°F), but are most abundant at 9 to 19°C (48 to 66°F) (Cross et al., 1999). Larvae are common in the high salinity zones of some estuaries in southern New England and the Middle Atlantic Bight and in the mixing zone of the Chesapeake Bay.

Juveniles and adults have similar habitat characteristics. Both tolerate a wide range of temperatures and salinities, and are common near the surface in sheltered bays and estuaries from spring to autumn. Juvenile and adult butterfish schools are found over sandy, sandy-silt, and muddy substrates, and prefer temperatures from 3 to 28°C (37 to 82°F) (Cross et al., 1999). In the Hudson Raritan Estuary trawl survey, juveniles and adults were caught in trawls from spring through autumn. Both juveniles and adults were found at depths from 3 to 23 meters (9.8 to 75.4 feet), water temperatures of 8 to 26°C (46 to 79°F), salinities from 19 to 32 ppt, and DO from 3 to 10 mg/l.

Potential Project Impacts to Atlantic Butterfish: Butterfish larvae, juveniles and adults may occur within the Arthur Kill area from the spring to autumn. However, these life stages are typically found in higher salinity waters than occur in the project area. Water quality parameters of the Lower Bay provide more favorable conditions for this species. In addition, butterfish are not closely associated with bottom habitats, and feed in the water column, so would not be affected by increased sedimentation. Therefore, the proposed project is not expected to impact EFH for any life stage of butterfish.

Atlantic Mackerel

Atlantic mackerel is a fast-swimming, pelagic-schooling species distributed in the western North Atlantic, from Labrador to North Carolina. It sustains fisheries from the Gulf of St. Lawrence and Nova Scotia to the Cape Hatteras area. Two populations may occur: one occurring in the northern Atlantic and associated with the New England and Maritime Canadian coast, and a more southerly population inhabiting the mid-Atlantic coast. Both populations overwinter in the deep waters at the edge of the continental shelf, generally moving inshore during the spring as water temperature increases, and reversing this migration in autumn. The Arthur Kill is designated EFH for juvenile and adult Atlantic mackerel.

Most spawning occurs in the shoreward half of the shelf, in waters from 7 to 14°C (45 to 57°F) (Studholme et al., 1999). The peak spawn for the southern population occurs off New Jersey and New York in April and May. In the Hudson Raritan Estuary, juveniles may be present from April to December, although few were collected in NEFSC otter trawl surveys in the estuary between 1992 and 1997. Juveniles were found in the summer at depths ranging from 5 to 10 meters (16 to 33 feet), salinity ranges from 26 to 28.9 ppt, and temperatures from 17.6 to 21.7°C (64 to 71°F) (Studholme et al., 1999).

NEFSC trawl surveys show that in the spring, adults were found at temperature ranges from 5 to 13°C, dispersed from the surface to 380 meters (1,247 feet), but were most abundant at 160 to 170 meters (525 to 558 feet). In the summer, adults were found at temperatures ranging from 4 to 14°C (39 to 57°F), at depths of 10 to 180 meters (33 to 591 feet), with greatest abundance at 50 to 70 meters (164 to 230 feet). Adults prefer salinities of 25 ppt or greater (Studholme et al., 1999). Adults may be present in the Hudson Raritan Estuary during the warmer months, although none were collected in NEFSC trawl surveys of the estuary from 1992 to 1997.

Potential Project Impacts to Atlantic Mackerel: Juvenile and adult Atlantic mackerel occur seasonally in the Hudson Raritan Estuary, but are not likely to occur in the project area due to their water quality preferences. The average salinity levels of waters in the Arthur Kill area are below the preferred ranges for both juveniles and adults, and high water temperatures during the summer exceed the tolerances of these life stages. In addition, mackerel are fast moving and feed high in the water column, so would not be affected by increases in sedimentation. Therefore, the proposed project is not expected to impact EFH for any stage of Atlantic mackerel.

Summer Flounder

The summer flounder is a commercially valuable flatfish found in estuarine and shelf waters of the Atlantic Ocean between Nova Scotia and Florida, and is most common from Cape Cod, Massachusetts, to Cape Hatteras, North Carolina. Summer flounder exhibit strong seasonal inshore-offshore movements. Adults normally inhabit shallow coastal and estuarine waters during the warmer months of the year, and remain offshore during colder months on the outer continental shelf, while juveniles often remain in deeper portions of bays and estuaries. The Arthur Kill is designated as EFH for larvae, juvenile, and adult summer flounder.

Spawning begins in September in the inshore waters of the Mid-Atlantic, and continues through December. The pelagic larvae are found over the inner and outer continental shelf, and are transported to estuarine nursery areas by currents. Larvae occur across a wide range of salinities, but are most often captured in the higher salinity portions of estuaries. Larvae occur in water from 0 to 23°C (32 to 73°F), but are most abundant between 9 and 18°C (48 and 64°F). In the Middle Atlantic Bight, larvae are found at depths from 10 to 70 meters (33 to 231 feet). Greater densities of young fish were found in or near inlets (Packer et al., 1999). After metamorphosis, they become demersal, and are capable swimmers.

Young summer flounder move into shallow bays and estuaries for the spring, summer and autumn months, usually found in depths of 0.5 to 5.0 meters (1.6 to 16 feet), using these areas as nursery habitat. Some juveniles may remain in their estuarine habitat for about 10 to 12 months, before migrating offshore for their second autumn and winter. Offshore-migrating juveniles return to coastal waters and bays in the spring, and generally stay for the entire summer. Juveniles can be found on mud and sand substrates in flats, channels, salt marsh creeks, and eelgrass beds. Juvenile summer flounder are tolerant of the wide ranges of temperature and salinity of estuarine habitats, and can withstand temperatures from 3 to 27°C (37 to 81°F) and salinities from 10 to 30 ppt (Packer et al., 1999). In the NEFSC Hudson Raritan Estuary surveys

(1992 to 1997), juveniles were present in small numbers throughout the upper and lower bays in each season, with slightly higher numbers seen in the spring.

Adult summer flounder are found offshore during colder months on the outer continental shelf. Adults usually return inshore to coastal waters of the New York Bight in April, and reach their peak abundance during the warm summer months of July and August (Packer et al., 1999). They are often found in the high salinity portions of estuaries, and have been reported as preferring sandy habitats, but can be found in a variety of habitats with both mud and sand substrates, including marsh creeks, seagrass beds, and sand flats. Similar to juveniles, adults can tolerate a wide range of temperatures. The 1992 to 1997 NEFSC Hudson Raritan surveys showed adults to be present in moderate numbers throughout the upper and lower bays in each season except winter. Summer flounder can camouflage themselves to match the surrounding substrate, to avoid predation and conceal themselves from prey. They feed by sight and are most active during daylight hours.

Potential Project Impacts to Summer Flounder: Juvenile and adult summer flounder may occur in the Arthur Kill area on a seasonal basis. Summer flounder generally prefer more saline waters than those of Saw Mill Creek, such as the upper and lower bays. Also, this species prefers sandy bottom, while the Saw Mill Creek system is dominated by silty substrates. Temporary increases in suspended sediment could adversely affect the ability of summer flounder to feed because of its dependence on sight and light. However, this demersal species occurs in the often turbid conditions of estuaries and can avoid temporary increases in suspended sediments. Therefore, the proposed project is not expected to significantly impact EFH for any life stage of summer flounder.

Scup

Scup is a temperate species that occurs primarily on the continental shelf from Massachusetts to South Carolina. This species is demersal, and feeds on a variety of small benthic invertebrates in open and structured habitats, such as mussel beds, rock rubble, or reefs. Scup spend the summer in coastal waters and estuaries, migrating to offshore winter grounds along the outer continental shelf, as inshore water temperatures decline in the autumn. Scup return to coastal waters off New Jersey and New York by early May. During the summer months, older fish tend to stay in the inshore waters of the bays, while the younger fish are found in the more saline waters of estuaries, including the Hudson Raritan Estuary. The Arthur Kill is designated as EFH for eggs, larvae, juvenile and adult scup.

Spawning begins in the spring during the inshore migration, and takes place from May through August, with a peak in June. Spawning occurs principally in the estuaries of New Jersey and New York. Scup eggs are buoyant, and hatch in about 2 to 3 days, depending on temperature. In general, scup eggs are found from May through August in southern New England to coastal Virginia, in waters between 13 and 23°C (55 and 73°F), and in salinities greater than 15 ppt (Steimle et al., 1999b). Scup eggs have been found in the higher salinity parts of coastal bays from southern Cape Cod to Long Island Sound, and the Hudson Raritan Estuary.

Newly-hatched larval scup are pelagic, but become demersal after several days. Larvae are found throughout the water column, and occur in coastal waters during warmer months, often in depths less than 50 meters. Larvae were collected in the more saline parts of Long Island Sound and eastern Long Island bays, Narragansett Bay, Buzzards Bay, Vineyard Sound, and Cape Cod Bay from May through September at water temperatures of 14 to 22°C (57 to 72°F) (Steimle et al., 1999b). Stone et al. (1994) reported scup larvae in the same areas as eggs: from southern Cape Cod to Long Island Sound and in the Hudson Raritan Estuary.

During the spring and summer, juvenile scup are found in estuaries and bays between Virginia and Massachusetts, particularly in areas with sand and mud substrates or mussel and eelgrass beds. Juveniles prefer temperatures from about 9 to 27°C (48 to 81°F) and salinities greater than 15 ppt (Steimle et al., 1999b). Juveniles grow quickly and migrate with the rest of the population to offshore wintering grounds starting in late October, and are absent from inshore waters by the end of November. The more saline areas of Narragansett Bay, Long Island Sound, Raritan Bay, and Delaware Bay are important nursery areas. In Raritan Bay, juvenile scup were most commonly collected at depths between about 5 and 12 meters (16 to 39 feet).

EFH for adult scup includes a variety of habitats, including soft, sandy bottoms and on or near submerged structures, rocky ledges, or mussel beds (MAFMC 1998). Smaller size adults inhabit estuaries and bays and larger adults prefer more depth (Steimle et al. 1999). Habitat preferences vary with season. Adult scup use coastal habitats until water temperature falls below 7.5 to 10°C (46 to 50°F) (MAFMC 1998). During warmer seasons, preferred temperatures range from 7 to 25°C (45 to 77°F) and depths range from 2 to 38 meters (7 to 125 feet). Wintering adults, from January to March, favor temperatures above 7°C (45°F) and depth from 38 to 185 meters (125 to 607 feet) along the mid- and outer- continental shelf. In the Hudson-Raritan estuary, adults have been found at salinities ranging from 20 to 31 ppt and DO levels 4mg/L or greater (Steimle et al. 1999). Adult scup feeding habits vary greatly, and include small crustaceans, polychaetes, mollusks, insect larvae, sand dollars and small fish (Steimle et al. 1999).

Potential Project Impacts to Scup: Scup eggs, larvae, and juveniles may be present in the Arthur Kill area between May and November. If present, these life stages are not likely to be common, since they are typically found in the high salinity portions of estuaries and bays. More favorable habitat for scup occurs throughout much of the lower bay. Since scup eggs are buoyant, they would not be affected by increased sedimentation. Larval and juvenile scup are demersal, but would likely avoid areas of increased turbidity. Therefore, the proposed project is not expected to significantly impact EFH for any life stage of scup.

Black Sea Bass

Black sea bass is a warm-temperate species that occurs in the northwest Atlantic Ocean from Cape Cod to southern Florida. This fish is associated with structured habitats, such as shellfish beds, rocky areas, shipwrecks, and artificial reefs, and is usually the most common fish on structured habitats in the Middle Atlantic Bight. Black sea bass are bottom feeders, consuming crabs, shrimp, mollusks, small fish, and squid. In the Middle Atlantic Bight, black sea bass populations migrate from coastal areas to the outer continental shelf between central New Jersey and North Carolina as water temperatures decline in the autumn, and return to coastal areas and bays as water temperatures rise in the spring. The Arthur Kill is designated as EFH for juvenile and adult black sea bass.

The eggs and larvae are generally collected from late spring to late summer from mid-shelf to coastal waters. Larvae are believed to settle in coastal waters, and move into estuarine or sheltered coastal nursery areas as early juveniles. Young-of-the-year have been captured in pile field areas and in open water in the Lower Hudson River (Able et al. 1999).

The estuarine nursery habitat of black sea bass is shallow rough bottom, with structure that provides shelter. In the mid-Atlantic region, these habitats include oyster and mussel beds, sponge, amphipod tubes, and seagrass beds, as well as wharves, pilings, wrecks, artificial reefs, and crab and conch pots. Juveniles can be found in water temperatures ranging from 6 to 30°C (43 to 86°F) and salinities ranging from 8 to 38 ppt (but most prefer 18 to 20 ppt) (Steimle et al., 1999c). During the Hudson Raritan Estuary trawl surveys (1992–1997), juveniles were collected

at 6 to 23°C (43 to 73°F), around 10 meters (33 feet), at salinities greater than 20 ppt, and DO levels generally exceeding 4 mg/l. Juveniles were collected from spring through autumn in the estuary, but were nearly absent during the winter.

Adult black sea bass tend to prefer deeper bays and coastal waters over estuaries and are typically found in offshore areas in depths of 10 to 120 meters (33 to 394 feet) (Steimle et al., 1999c). Adults were found to be uncommon in the Hudson Raritan Estuary and were not caught in the winter in the Hudson Raritan Estuary trawl surveys. Black sea bass adults collected in the Hudson Raritan Estuary had similar temperature and depth ranges as juveniles and were collected at DO levels greater than 5 mg/l.

The importance of adequate light for feeding in black sea bass has been demonstrated in recent studies, where growth rates for young-of-the-year held in cages beneath piers in the Lower Hudson River were significantly lower than that of fish caged in pile fields and open water areas (Able et al., 1999).

Potential Project Impacts to Black Sea Bass: Black sea bass juveniles and adults may be present in the Arthur Kill area during the spring, summer, and autumn. If present, these life stages are not likely to be abundant, since black sea bass juveniles and adults are typically found in close association with hard bottom and vertical structure, and the species is more common in the high-salinity portions of estuaries and bays. Vertical structure is lacking in the Saw Mill Creek system, where the substrate is predominately flat, and comprised of silt. More favorable habitat for this species is found in the lower bay, where old oyster beds and other hard bottom and structured habitat occur. Therefore, the proposed project is not expected to significantly impact EFH for any life stage of black sea bass.

King Mackerel

King mackerel is a highly migratory marine fish that inhabits Atlantic coastal waters from the Gulf of Maine to Brazil, including the Gulf of Mexico and Caribbean Sea. Of the two distinct populations of king mackerel, one group migrates between waters near Cape Canaveral, Florida and the Gulf of Mexico. The other group migrates from southern Florida in the spring to waters off of the Carolinas in the summer, and continues to the northern extent of the range in the autumn. EFH for coastal migratory pelagic species, including king mackerel, is the pelagic waters around sandy shoals of capes and offshore bars, high profile rocky bottoms, and the oceanside of barrier islands in the south Atlantic and Middle Atlantic Bights. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, and adult king mackerel.

King mackerel spawn in the northern Gulf of Mexico and off the southern Atlantic coast. Larvae have been collected from May to October, in surface water temperatures from 26 to 31°C (80 to 88°F) and salinities of 26 to 37 ppt (Godcharles and Murphy, 1986). Temperature and salinity are the most important factors controlling the distribution of king mackerel. Juvenile and adult king mackerel are highly migratory and seldom enter waters below 20°C (68°F). King mackerel can occasionally be caught in the Gulf of Maine, but the northern extent of its range is typically the 20°C (68°F) isotherm and the 18-meter contour, near Block Island, Rhode Island.

Potential Project Impacts to King Mackerel: If present in the New York/New Jersey Harbor Estuary system, king mackerel would most likely occur only as occasional transient individuals in areas of high salinity in the Lower Bay. The relatively low salinities of waters in the Saw Mill Creek system are generally well below the range of preferences for king mackerel. Also, water temperatures in the Arthur Kill area are frequently below the preference for king mackerel. Therefore, the proposed project is not expected to impact EFH for any life stage of king mackerel.

Spanish Mackerel

Spanish mackerel is a marine species that occurs in the Atlantic Ocean from Florida to the Gulf of Maine, and in the Gulf of Mexico. This species is migratory, generally moving northward in the spring, spending summer in the northern part of its range, and migrating south in the autumn, overwintering in the waters off Florida. EFH for coastal migratory pelagic species, including Spanish mackerel, is the pelagic waters around sandy shoals of capes and offshore bars, high profile rocky bottoms, and the oceanside of barrier islands in the south Atlantic and Middle Atlantic Bights. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, and adult Spanish mackerel.

Each life stage of Spanish mackerel is primarily found in waters over 17.7°C (64°F) and within a salinity range of 32 to 36 ppt (Godcharles and Murphy, 1986). Spanish mackerel spawn in the northern portions of their ranges, along the northern Gulf Coast, and along the Atlantic Coast from the Carolinas northward. Spawning progresses from south to north, generally as waters warm in the spring and summer to above 26°C (79°F). The buoyant larvae are generally found in surface water temperatures of 19.6 to 29.8°C (67 to 86°F) and in salinities above 28 ppt. Most juveniles stay in nearshore ocean waters, although some use estuaries as nursery grounds, but avoid waters surrounding the mouths of freshwater rivers. Similar to king mackerel, Spanish mackerel are highly temperature-dependent, and typically range north only to the 20°C (68°F) isotherm off Rhode Island.

Potential Project Impacts to Spanish Mackerel: Due to the affinity of Spanish mackerel for warm waters of high salinity, it is unlikely that this species will occur in the Saw Mill Creek area. Salinities and temperatures of the project area are generally well outside the narrow range of preferences of this species for these parameters. Therefore, the proposed project is not expected to impact EFH for any life stage of Spanish mackerel.

Cobia

Cobia is a large, migratory, coastal pelagic fish that occurs in the Western Atlantic from Massachusetts to Argentina, but is most common along the south Atlantic coast of the United States and in the northern Gulf of Mexico. Information on the life history of cobia from the Gulf and the Atlantic Coast of the United States is somewhat limited. Cobia undergo extensive migrations from overwintering grounds near the Florida Keys to northerly spawning and feeding grounds in the spring and summer. EFH for coastal migratory pelagic species, including cobia, is the pelagic waters around sandy shoals of capes and offshore bars, high profile rocky bottoms, and the oceanside of barrier islands in the south Atlantic and Middle Atlantic Bights. For cobia, EFH also includes high salinity bays, estuaries, and seagrass habitat. The Arthur Kill is designated as EFH for eggs, larvae, juvenile, and adult cobia.

In the Atlantic, spawning occurs from late June to mid-August, and most cobia eggs and larvae have been found in offshore waters adjacent to the mouth of the Chesapeake Bay and south to Virginia (Shaffer and Nakamura 1989). Early juvenile cobia move inshore and inhabit coastal areas, near beaches, river mouths, barrier islands, lower reaches of bays and inlets, or bays of relatively high salinity. Juveniles are primarily found in the southeastern U.S. and in the Gulf of Mexico. Cobia prefer temperatures greater than 20°C (68°F) and salinities greater than 25 ppt.

Potential Project Impacts to Cobia: Since cobia prefer warm waters of high salinity, it is unlikely that this species will occur in the Arthur Kill area. Salinities and temperatures of the Saw Mill Creek system are generally below the lower limits tolerated by this species. Therefore, the proposed project is not expected to impact EFH for any life stage of cobia.

Sandbar Shark

The sandbar shark is a relatively small shark and has a cosmopolitan distribution in subtropical and warm temperate waters. This bottom-dwelling species is found in many coastal habitats, most commonly at depths of 20 to 55 meters (66 to 180 feet). The sandbar shark is a slow-growing species, reaching sexual maturity at approximately 15 years. Its gestation period lasts up to a year, and reproduction is every other year. This shark is live-bearing, and the young are born from March to July, in litters typically numbering 6 to 13 pups. The Arthur Kill is designated as EFH for sandbar shark larvae (neonates) and adults.

In the western Atlantic, EFH for sandbar shark neonates and early juveniles is shallow coastal areas out to the 25 meter (82 feet) isobath from Montauk, New York to Cape Canaveral, Florida. Nursery areas include shallow coastal waters from Great Bay, New Jersey to Cape Canaveral, Florida, especially Delaware and Chesapeake Bays during the summer (NOAA, n.d.). Neonates and early juveniles require salinity greater than 22 ppt and temperatures greater than 21°C (69.8°F). EFH for late juveniles/subadults is coastal and pelagic waters off of southern New England and Long Island, and shallow coastal areas to the 25 meter (82 feet) isobath from Barnegat Inlet, New Jersey to Cape Canaveral, Florida. In the winter, the EFH is in the Middle Atlantic Bight from 39° N to 36° N and, benthic areas between the 100 meter (328 feet) and 200 meter (656 feet) isobaths. EFH for adult sandbar sharks includes shallow coastal areas from the coast to the 50 meter (164 feet) isobath from Nantucket, Massachusetts south to Miami, Florida.

Potential Project Impacts to Sandbar Shark: The preference of this species for warm waters of high salinity suggests that it is unlikely that this species will occur within the Saw Mill Creek area, except as occasional transient individuals. Therefore, the proposed project is not expected to impact EFH for any life stage of sandbar shark.

Winter Skate

The winter skate occurs from the south coast of Newfoundland and the southern Gulf of St. Lawrence to Cape Hatteras, most commonly on sandy and gravelly bottom (Bigelow and Schroeder, 1953). Juveniles are fairly well distributed throughout the Hudson Raritan Estuary in winter, spring and autumn, but are generally absent from the estuary during the summer. Adults are much less common in the estuary than juveniles, and appear to be confined to the deeper channels. The Arthur Kill is designated as EFH for juvenile and adult winter skates.

The 1992 to 1997 NEFSC trawl surveys of the Hudson Raritan Estuary found that juveniles mostly occur at depths of 5 to 8 meters (16.4 to 26.2 feet), temperatures between 4 and 17°C (39.2 to 62.6°F), DO levels from 7 to 12 mg/l, and salinities ranging from 23 to 32 ppt (Packer et al., 2003c). Too few adults were found in the Hudson Raritan Estuary to plot their distributions relative to habitat parameters.

Potential Project Impacts to Winter Skate: Winter skate prefer waters of relatively high salinity, so it is unlikely that this species will occur in the Arthur Kill area. The average salinity of the Saw Mill Creek system is well below the preferred salinity range of this species in the Hudson Raritan Estuary. Adult winter skates are not very common in the Hudson Raritan Estuary. Therefore, the proposed project is not expected to impact EFH for juvenile or adult winter skate.

Little Skate

The little skate occurs from Nova Scotia to Cape Hatteras and is one of the dominant members of the demersal fish community of the northwest Atlantic (Packer et al., 2003b). Little skates make no extensive migrations, although where they occur inshore, they move onshore and offshore with seasonal temperature changes (Bigelow and Schroeder, 1953). Little skate are generally

found on sandy or gravelly bottoms, but also occur on mud. Juvenile little skate are well distributed in the Hudson Raritan Estuary during autumn, winter, and spring, but are generally absent during the summer months. Adult little skate are less common in the estuary than juveniles, and are only present in autumn and winter. The Arthur Kill is designated as EFH for juvenile and adult little skates.

The 1992 to 1997 NEFSC trawl surveys of the Hudson Raritan Estuary found that juveniles mostly occur at depths of 5 to 8 meters (16.4 to 26.2 feet), temperatures between 4 and 22°C (39.2 to 71.6°F), DO levels from 6 to 12 mg/l, and salinities ranging from 25 to 32 ppt (Packer et al., 2003b). Most adults in the estuary were found at depths of 6 to 9 meters (19.7 to 29.5 feet), temperatures between 3 and 17°C (37.4 to 62.6°F), DO levels from 8 to 12 mg/l, and salinities ranging from 25 to 32 ppt.

Potential Project Impacts to Little Skate: Little skates prefer waters of relatively high salinity, so it is unlikely that this species will occur in the Arthur Kill area. The average salinity of the Saw Mill Creek system is well below the preferred salinity range of this species in the Hudson Raritan Estuary. Therefore, the proposed project is not expected to impact EFH for juvenile or adult little skate.

Clearnose Skate

The clearnose skate occurs along the eastern United States coast from the Nova Scotian Shelf to northeastern Florida, as well as in the northern Gulf of Mexico (Packer et al., 2003a). Clearnose skates prefer soft bottom habitats, but can also be found on rocky or gravelly bottoms. Juveniles and adults are most abundant inshore in the summer months and less abundant in the cooler months of autumn, winter and spring. The Arthur Kill is designated as EFH for juvenile and adult clearnose skates.

Bigelow and Schroeder (1953) reported clearnose skate occurring off New Jersey and New York from late April-May to October-November. The 1992 to 1997 NEFSC trawl surveys of the Hudson Raritan Estuary found that juveniles mostly occur at depths of 5 to 7 meters (16.4 to 22.9 feet), temperatures between 13 and 24°C (55.4 to 75.2°F), DO levels from 6 to 10 mg/l, and salinities ranging from 21 to 31 ppt (Packer et al., 2003a). Adults in the estuary mostly occur at depths of 5 to 8 meters (16.4 to 26.2 feet), temperatures between 9 and 24°C (48.2 to 75.2°F), DO levels from 6 to 9 mg/l, and salinities ranging from 25 to 30 ppt.

Potential Project Impacts to Clearnose Skate: Since clearnose skate prefer waters of relatively high salinity, it is unlikely that this species will occur in the Arthur Kill area. The average salinity of the Sawmill Creek system is well below the preferred salinity range of this species in the Hudson Raritan Estuary. Therefore, the proposed project is not expected to impact EFH for juvenile or adult clearnose skate.

6.0 MITIGATION AND CONCLUSIONS

6.1 Mitigation

Restoration activities will involve excavation, filling, and grading, which could potentially cause increased sediment discharge to wetlands and waterways, with resultant adverse impacts to EFH-

designated species, their habitat, and prey items. Best management practices will be employed to insure that erosion and delivery of sediment to Saw Mill Creek and the Arthur Kill and associated wetlands are prevented or minimized. These measures will include performing in-water work during periods of low tide, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed. An erosion and sediment control plan has been prepared and the project will be reviewed by NYSDEC.

Within the USACE New York District, in-water work may be restricted from January through June to protect overwintering or spawning habitat for fish, including striped bass, American shad, Atlantic tomcod, and winter flounder. By limiting in-water work to periods where sensitive life stages of these species are unlikely to occur, impacts to these species and their habitats will be minimized.

Construction activities involve the use of fuel which could create a potential contamination hazard to wetlands and surface waters. In addition, construction activities could result in the discharge of litter and debris into the river. These impacts would be minimized or avoided by employing a Pollution, Prevention and Control Plan, which would include: restricting the location of refueling activities and requiring immediate cleanup of spills and leaks of materials; and regularly maintaining construction equipment to identify and repair any source of leaks.

6.2 Conclusions

The Arthur Kill area is designated as providing EFH for 17 federally managed species. Based on the water quality parameters and sediment types present in the vicinity of the Saw Mill Creek Pilot Wetland Mitigation Bank, three of these species have potential to occur within the project area: winter flounder, windowpane flounder, and bluefish. The project area also supports forage species which are an important resource for EFH-designated fish species.

Construction of the Saw Mill Creek Pilot Wetland Mitigation Bank will result in primarily beneficial impacts to the environment. Construction activities may result in short-term increases in erosion and delivery of sediment to nearby wetlands and waters. Most EFH-designated species likely to occur in the Saw Mill Creek system are typically found in the often turbid conditions of estuaries and can avoid temporary increases in suspended sediments. Impacts will be mitigated by measures including performing in-water work during low tide, avoiding in-water work from January through June to protect winter flounder and anadromous fish, employing turbidity barriers to minimize migration of turbidity offsite, and re-stabilizing soils with plants after construction is completed. Additionally, best management practices for soil erosion and sediment control will be used to minimize sediment entering waterways.

For these reasons, no long-term adverse impacts to EFH-designated species or habitat, or forage species are expected from construction and operation of the Saw Mill Creek Pilot Wetland Mitigation Bank.

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APPENDIX A

National Marine Fisheries Service Correspondence

2/8/13

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
James J. Howard Marine Sciences Laboratory
74 Magruder Road
Highlands, New Jersey, 07732

FAX #: 732-872-3077

TO: Thomas Shinskey

FAX: 973 267 6468

FROM: Karen Greene

PHONE: 732 872 3023

PAGES: 1 Plus header

Please call if you do not receive the entire document.

Marshes project, NY

Species Request response

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
James J. Howard Marine Sciences Laboratory
74 Magruder Road
Highlands, New Jersey 07732

August 7, 2013

TO: Thomas Shinskey
The Louis Berger Group, Inc.
P.O. Box 1946
412 Mount Kemble Avenue
Morristown, NJ 07962

SUBJECT: Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES), Staten Island, NY

Karen Greene
(Reviewing Biologist)

We have reviewed the information provided to us regarding the above subject project. We offer the following preliminary comments pursuant to the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act:

Endangered Species Act

No threatened or endangered species under the jurisdiction of the NMFS are known to occur in within the project area. As a result, further consultation by the federal action agency is not required. However should project plans change that would alter the basis for determination, or if new species or critical habitat is designated, consultation should be reinitiated.

Fish and Wildlife Coordination Act

The project site provides habitat for a variety of NOAA trust resources including resident, migratory and forage species such as bluefish, striped bass, menhaden, killifish, bay anchovies, blue crabs and others.

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat

Essential fish habitat (EFH) has been designated in project area. As a result, further EFH consultation by the federal action agency may be necessary as part of the federal permit process. Should project plans change that would alter the basis for determination, or if new species or EFH is designated, consultation should be reinitiated. For a listing of EFH and further information, please go to our website at: http://www.nero.noaa.gov/hcd. If you wish to discuss this further, please e-mail me at karen.greene@noaa.gov