

**Coastal and Social Resiliency Initiatives for Tottenville Shoreline,  
Staten Island, NY**  
**Environmental Impact Statement Draft Scope of Work**

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**A. INTRODUCTION**

On behalf of Grantee the State of New York, the Governor's Office of Storm Recovery (GOSR), serving under the auspices of the New York State Homes and Community Renewal's Housing Trust Fund Corporation, and acting under authority of the U.S. Department of Housing and Urban Development's (HUD) regulations at 24 CFR Part 58, and in cooperation with other involved, cooperating, interested agencies, will prepare an environmental impact statement (EIS) to analyze potential impacts of one or more proposed initiatives (Proposed Actions) intended to enhance coastal and social resiliency along the Tottenville shoreline of the South Shore of Staten Island, NY. These initiatives include the Living Breakwaters Project (Breakwaters Project) and Tottenville Dune Project (Dune Project). While the Living Breakwaters and Tottenville Dune Projects each have independent utility, both projects would be funded through New York State's Community Development Block Grant-Disaster Recovery (CDBG-DR) grant and would be located in the same geographic region. Additionally, the projects share certain synergies in terms of design, as well as purpose and need, and combine to create a layered approach to shoreline resilience within the study area. Thus, there is strong rationale for designing and implementing the Breakwaters and Dune Projects through one integrated planning process to improve coastal resiliency along Staten Island's south shoreline. To facilitate a thorough examination of cumulative effects and synergies between the projects, GOSR has determined that they should be analyzed as part of the same environmental review. Additionally, in the EIS, the Breakwaters and Dune Projects will be weighed against other alternative actions that may also advance some of the same coastal resiliency goals and objectives. This analysis will ensure that the actions undertaken will minimize the potential for adverse environmental impacts, to the extent practicable.

**B. PROJECT PURPOSE AND NEED**

**BACKGROUND**

On October 29, 2012, Superstorm Sandy approached New York City with tropical-storm-force winds. The resultant waves and storm surge battered the city's coastline, causing 44 deaths in New York City—23 of which occurred in Staten Island—the destruction of homes and other buildings, and damage to critical infrastructure. Sandy's effects—including powerful waves and large volumes of water—were particularly intense in neighborhoods across Southern Queens, Southern Brooklyn, and the East and South Shores of Staten Island. According to the New York City Department of Buildings (NYCDOB), these neighborhoods accounted for over 70 percent of the buildings in Sandy-inundated areas that had been seriously damaged or destroyed as of December 2012.

Winds out of the northeast generated powerful waves along the South Shore of Staten Island (which adjoins the waters of Raritan Bay), resulting in significant erosion, including at the area's

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protective bluffs and along the shoreline areas with already narrow beach conditions. The peak storm tides in Tottenville measured approximately 16 feet, almost five feet higher than at the Battery in Manhattan. Many of the homes that were hit around Tottenville Beach were destroyed. Tottenville businesses also sustained structural damage, with some emerging from the storm with only wall studs remaining on the first floors.<sup>1</sup>

### *REBUILDING AND RESILIENCY PLANNING*

Following the storm, the City formed the Special Initiative for Rebuilding and Resiliency (SIRR) to analyze the impacts of the storm on the city's buildings, infrastructure, and people; assess climate change risks in the medium term (2020s) and long term (2050s); and outline strategies for increasing resiliency citywide. *PlaNYC—A Stronger, More Resilient New York*, June 2013, was the result of that effort, and contains Community Rebuilding Resiliency Plans for five particularly vulnerable neighborhoods in NYC, one of which is the East and South Shores of Staten Island. In developing the plan for the East and South Shores, two task forces met regularly and numerous formal and informal working sessions were held, including two public workshops in March 2013. These sessions provided an opportunity to the affected communities to inform SIRR staff of specific priorities and challenges that needed to be addressed. Two key priorities identified were developing coastal and shoreline protections, and ensuring public access to the waterfront.

The Community Rebuilding Resiliency Plan for the East and South Shores of Staten Island outlines specific initiatives to address coastal protection, buildings, critical infrastructure and community and economic recovery. With respect to coastal protection, the City's proposals were based on a multi-faceted analysis which considered the nature and likelihood of coastal hazards, the potential impact of these hazards on the built environment and critical infrastructure, and the likely effectiveness of the proposed measures. In addition, the coastal protection measures were informed by the NYC Department of City Planning's (NYCDCP's) *Urban Waterfront Adaptive Strategies (UWAS)* study, June 2013 (funded by a HUD Sustainable Communities Regional Planning Grant), which examined the underlying geomorphology of the various regions. The study demonstrated that the South Shore of Staten Island is particularly vulnerable to erosion during extreme events, as well as on an everyday basis. As described in the *New York City Hazard Mitigation Plan (2014)*, "Coastal erosion can cause extensive damage to public and private property because it brings structures closer to the water's edge. If erosion is not mitigated, the structures will become inundated with water, resulting in damage or destruction." This report also notes that along the South Shore of Staten Island, 415 acres and 96 building "centroids" are located within the New York State Department of Environmental Conservation (NYSDEC)-mapped Coastal Erosion Hazard Areas (CEHAs)<sup>2</sup>.

Based on an evaluation of the entirety of the City's shoreline, which categorizes each coastal reach by geomorphology type, the UWAS study provides an assessment of the coastal resiliency measures that would be appropriate for the different types of areas evaluated. This study categorizes the Tottenville Shoreline as "Oceanfront Slopes," characterized by glacial till plains and hills, low fetch, medium elevation/medium slopes, unreinforced shorelines, and a mix of sediment types. For this type of reach, strategies that were identified with high "likely

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<sup>1</sup> *PlaNYC—A Stronger, More Resilient New York*, June 2013.

<sup>2</sup> Identification of a building's "centroid" indicates that the majority of the building is located within the CEHA.

applicability” included: upland waterfront parks, and in-water breakwaters, artificial reefs, and constructed breakwater islands. Shoreline seawalls were also found to have likely applicability, however the study notes that seawalls may disrupt sediment transport and lead to the erosion of beaches.

Based on the work described above, coastal protection initiatives were recommended in the Community Rebuilding Resiliency Plan for the East and South Shores of Staten Island, including along the Tottenville reach. In particular, Coastal Protection Initiative 15 calls for the implementation of a “living shoreline project—likely to consist of oyster reef breakwaters, beach nourishment, and maritime forest enhancements—in areas adjacent to Conference House Park in Tottenville.”

Also included in the Plan are other initiatives proposed for Tottenville, which are in various stages of progress. For example, Coastal Protection Initiative 24 calls for USACE to work with the City to complete its longstanding study for the East and South Shores of Staten Island, Phase 2 of which includes developing a plan for ongoing beach nourishment to restore sand rapidly after extreme weather events.

#### *HARBOR ESTUARY AND RARITAN BAY PLANNING*

Any coastal resiliency strategy proposed for Tottenville should be considered in the context of its location and its consistency with other plans or policies relevant to the area. As described above, the South Shore of Staten Island adjoins the waters of Raritan Bay, which supports a diverse community of aquatic biota, but has also been impacted by upland development and discharges that have resulted in degraded water and habitat quality, as well as sediment contamination. A Comprehensive Restoration Plan has been developed for the Hudson-Raritan Estuary (HRE CRP)—through a collaboration of the Harbor Estuary Program, the USACE, U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), the Port Authority of New York and New Jersey (PANYNJ), Hudson River Foundation, NY/NJ Baykeeper, NYSDEC, and other state and city agencies as well as non-governmental organizations—to restore and protect habitat within the Hudson-Raritan Estuary. The Plan identifies 11 Target Ecosystem Characteristics (TECs), which are used to outline strategies for ecological restoration within the Hudson-River Estuary. These TECs include coastal wetlands, islands for waterbirds, coastal and maritime forests, oyster reefs, eelgrass beds, shorelines and shallows, habitat for fish, crab and lobsters, tributary connections, enclosed and confined waters, sediment contamination, and public access. The HRE CRP specifically identifies restoration opportunities in many of the TEC categories for the study area.

NYCDCP’s *New York City Vision 2020: New York City Comprehensive Waterfront Plan* (2011) is another study that provides context for resiliency planning along the Tottenville shoreline. Among its many goals are expanded public access to the waterfront and waterways; enhancement of the public experience of the waterways that surround New York—including promoting water recreation and creating the waterfront infrastructure needed for events, cultural activities and educational programs; and identification of strategies to increase the City’s resilience to climate change and sea level rise.

Providing public access along the City’s coastline is also the intent of Policy 8 of the City’s Waterfront Revitalization Program. This policy, along with the goals of Vision 2020, is consistent with the priorities identified by the South Shore community during its engagement with the City following Superstorm Sandy.

### *REBUILD BY DESIGN AND NY RISING COMMUNITY RECONSTRUCTION PROGRAM*

In June 2013, HUD launched Rebuild by Design, a competition to respond to Superstorm Sandy's devastation in the northeast region of the United States. The winning proposals would be implemented using CDBG-DR funding as well as other public and private-sector funding sources. In June 2014, following a year-long community-based design process during which the design teams met regional experts, including government entities, elected officials, issue-based organizations, local groups and individuals, HUD announced the winning proposals. The Staten Island Living Breakwaters Project, which proposed a layered resiliency approach to promote risk reduction through erosion prevention, wave energy attenuation, and enhancement of ecosystems and social resiliency, was one of the selected projects. As a result, New York State has been allocated \$60 million of CDGB-DR program funds to implement the project along the Tottenville shoreline of the South Shore of Staten Island. With an ecologically enhanced breakwater system to address wave energy and shoreline erosion at Tottenville, this proposal responds to the City's Coastal Protection Initiative 15.

In addition to the HUD-sponsored Rebuild by Design process described above, the NY Rising Community Reconstruction Program was established by New York State to provide rebuilding and revitalization assistance to communities severely damaged by Superstorm Sandy, Hurricane Irene and Tropical Storm Lee. The Tottenville Dune Project was conceived through the NY Rising planning process, and proposes new dunes and dune plantings as a coastal resiliency strategy for the Tottenville area. New York State proposes to use approximately \$6,350,000 of CDBG-DR program funds to implement a stone-core dune with plantings along the Tottenville shoreline from approximately Brighton Street to Joline Avenue.

### *COORDINATION AMONG CITY, STATE AND FEDERAL AGENCIES*

As noted in the City's PlaNYC Progress Report 2014:

*In addition to moving forward its own projects, New York City took formal steps to establish a leadership role in advancing coastal protection initiatives. This involved a high level of coordination with federal and state funding and regulatory agencies including USACE, HUD, FEMA and New York State DEC. Leadership has also been established on the City level through the Coastal Protection Working Group, which brings senior level agency designees together to coordinate protection initiatives. In addition, the City has worked closely with the several federal HUD-sponsored Rebuild by Design teams and the State's New York Rising Community Reconstruction Program to ensure federal and state funded projects through these programs are aligned with and advance the City's coastal protection priorities.*

Finally, in March 2015, NYSDEC released its *Coastal Green Infrastructure Plan for New York City*, intended to help decision-makers as they evaluate future strategies for New York Harbor. Jointly managed with the New York City Mayor's office of Recovery and Resiliency, the plan is intended to increase resiliency along the Hudson River estuary shoreline and coastal areas of New York City. The research plan examined six coastal green infrastructure strategies—including constructed breakwaters—summarizes the latest scientific understanding of the ecological and risk reduction benefits of these strategies, and describes research needs moving forward. The overall plan is intended to help protect coastal communities, provide habitat to sustain fisheries, and provide opportunities to connect New Yorkers to their local waterfront.

## **PURPOSE AND NEED**

Staten Island is exposed to extreme wave action and coastal flooding during hurricanes and other severe storm events due to its location at the mouth of the New York Bight, which funnels and increases the intensity of storm-driven waves into New York Harbor, Raritan Bay, and the shoreline of Staten Island. As described above, the South Shore of Staten Island is also vulnerable to event-based and gradual coastal erosion and land loss. Consistent with the City's Coastal Protection Initiatives and planning studies for the Tottenville area, the goal of the Proposed Actions is to reduce wave action and coastal erosion along the shoreline in Tottenville, while enhancing ecosystems and shoreline access and use. This goal would be achieved using a layered approach that would address wave action, impacts of coastal flooding and event-based (i.e., short-term/storm-related) and gradual (long-term) shoreline erosion, while restoring and enhancing ecosystems, improving waterfront access and engaging with the community through educational programs directly related to the coastal resiliency actions. In other words, it is highly important that the actions both provide coastal protection and ecological enhancement, and at the same time serve as a destination that can be used in educating the public on, and increasing awareness of, local ecosystems and innovative coastal resiliency strategies in an era increasingly affected by climate change.

Specifically, the goals and objectives related to the Proposed Actions' purpose and need are listed below:

### *RISK REDUCTION*

- Attenuate wave energy
- Address both event-based and long-term shoreline erosion / preserve beach width
- Address the impacts of coastal flooding

### *ECOLOGICAL ENHANCEMENT*

- Increase diversity of aquatic habitats consistent with the Hudson~Raritan Estuary plan priorities (e.g., oyster reefs and fish and shellfish habitat).

### *SOCIAL RESILIENCY*

- Foster community education on coastal resiliency directly tied to and building off the structural components of this resiliency initiative
- Increase physical and visual access to the water's edge
- Enhance community stewardship of on-shore and in-water ecosystems
- Increase access to recreational opportunities

## **C. PROJECT ALTERNATIVES**

The EIS will identify a reasonable range of alternatives, discuss those that can be eliminated from further consideration because they do not meet the Proposed Actions' purpose and need, and identify those that will be further analyzed. At this time, it is anticipated that the following alternatives will be analyzed.

### **ALTERNATIVE 1—NO ACTION ALTERNATIVE**

The No Action alternative assumes that no new structural risk reduction projects will be implemented in the project area. This alternative also assumes that current trends with respect to coastal conditions at Tottenville—i.e., relating to erosion, wave action, ecosystems, and water quality—will continue. The No Action alternative also presumes that existing strategies to

educate New Yorkers and the general public on the risks posed by climate change will remain the same in the study area.

**ALTERNATIVE 2 (PREFERRED ALTERNATIVE)—THE LAYERED TOTTENVILLE SHORELINE RESILIENCY STRATEGY: LIVING BREAKWATERS AND TOTTENVILLE DUNE PROJECTS (LAYERED STRATEGY)**

The Layered Strategy consists of the implementation of two individual projects that, when integrated as one initiative, may provide greater overall coastal risk reduction and promote social resilience (see **Figure 1**). These projects were developed through separate, but related, planning initiatives arising out of the Hurricane Sandy recovery efforts. Implemented together, the projects would be planned and designed as a single, integrated coastal resiliency strategy for this area. By providing two layers of coastal risk reduction, these components, as further described below, are intended to improve current shoreline erosion conditions, serve to further reduce wave action, provide for ecological enhancement and promote social resiliency. The individual components of the Layered Strategy are discussed below.

*LIVING BREAKWATERS PROJECT (REBUILD-BY-DESIGN)*

*In-Water Components*

One of the key components of the Breakwaters Project is an ecologically enhanced breakwater system that would reduce wave energy at the shoreline, and prevent or reverse shoreline erosion. The proposed location of the breakwaters is expected to curtail shoreline erosion, which would support on-going efforts to replenish the protective beaches along the shore. The proposed breakwaters would span an approximately 13,000 linear foot stretch off the Tottenville shoreline of Staten Island and would be located and designed to optimize wave height reduction and reduce coastal erosion. Final siting considerations would include maximizing reductions in wave heights and shoreline erosion, avoiding or minimizing habitat displacement, avoiding navigational impacts, and identifying favorable geotechnical conditions.

The proposed breakwater system would increase habitat diversity through the establishment of structural habitat, which is currently limited within Raritan Bay. The breakwaters would likely provide a combination of exposed, intertidal and subtidal reef habitat, and the incorporation of “reef streets” (pockets of complexity within the structure) would further increase habitat diversity within Raritan Bay, by providing shelter for juvenile fish and increasing biological recruitment of filter-feeding organisms such as mussels and oysters, furthering opportunities for shellfish restoration within Raritan Bay. The breakwaters would also protect the proposed on-shore dune system described below. The draft operation and maintenance plan for the proposed breakwater system will be described in the EIS.

*On-Shore Community Water Hub/ Landscape Elements*

With the goal of promoting social resiliency, a proposed community Water Hub would provide a place for access to the waterfront, orientation, education, information on shoreline resiliency, gathering space and equipment storage. In particular, the Water Hub programming could include classrooms and labs, engaging schools in waterfront education, oyster restoration and reef building, and cultivating long-term estuary stewardship. The educational programming for the Water Hub will directly tie to the in water components, as well as to any shoreline resiliency component. In addition to ecological engagement, the Water Hub facilities and programs are intended to educate residents on the risks and benefits of living in the coastal environment and build awareness and preparedness within the community. The Tottenville Water Hub may also include other elements, such as recreation lounges, exhibition space, a local restaurant,



-  Proposed Living Breakwaters - Potential Configuration
-  Proposed Water Hub (location to be determined)
-  Proposed Dunes
-  Zone of Potential Breakwater Alignment

FOR ILLUSTRATIVE PURPOSES ONLY

0  2,000 FEET

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Project Location  
**Figure 1**

maintenance-related storage space and offices, bird watching stations and nature observation decks.

The Water Hub would potentially be located on the waterfront within or near Conference House Park, although alternate locations will be considered during the EIS process. Siting considerations would include access to existing infrastructure, Coastal Erosion Hazard Area (CEHA) sensitivity, wetlands and other natural resources, coastal construction permitting, archaeological sensitivity, proximity to the breakwater system, proximity to local schools and public transportation, and neighborhood traffic patterns and parking. The draft operation and maintenance plan for the proposed Water Hub will be described in the EIS.

The Breakwaters Project would also include several on-shore and near-shore landscape elements in the area of the Water Hub as educational landscapes, including living shorelines (high and low marsh), oyster revetments, maritime forest and dune plantings.

*TOTTENVILLE DUNE PROJECT (NY RISING COMMUNITY RECONSTRUCTION PROGRAM)*

The Tottenville Dune Project is proposed as a hardened dune system that would consist of constructed dunes having a stone core with a sand cap, and is the primary shoreline component of the layered approach to risk reduction in Tottenville. Once constructed, the dunes would be planted with appropriate vegetation, which through root growth would serve to stabilize the dunes to withstand wind and water erosion, while promoting enlargement of the dunes by accretion.

The proposed dune system would be located along the Tottenville shoreline from approximately Brighton Street to Joline Avenue. Temporary dunes, constructed by the New York City Department of Parks and Recreation (NYCDPR) as interim protective measures post-Sandy, are currently in place from approximately Brighton Street to Sprague Avenue. These temporary dunes would be replaced with the larger, hardened dune system. New dunes would also be constructed from Sprague Avenue to Joline Avenue. Americans with Disabilities Act (ADA) accessible access points to the beach would also be constructed along the new dune system and would be considered and designed in tandem with the Water Hub and living shoreline project components. The draft operation and maintenance plan for the proposed dune system will be described in the EIS.

**ALTERNATIVE 3— BREAKWATERS WITHOUT A DUNE SYSTEM**

This alternative will evaluate conditions with the proposed breakwaters in place (including the on-shore community Water Hub and landscape elements), but without a proposed hardened dune system between Brighton Avenue and Joline Avenue.

**ALTERNATIVE 4—DUNE SYSTEM WITHOUT BREAKWATERS**

This alternative will evaluate conditions with the proposed hardened dune system in place, but without the proposed breakwaters, Water Hub, or on-shore landscape elements.

**OTHER ALTERNATIVES**

Other alternatives may be developed in consultation with USACE, NOAA-NMFS, USEPA, NYSDEC, NYCDPR and other involved agencies during the EIS preparation process, as well as in response to suggestions made by project stakeholders and the general public during the EIS scoping process. Notably, GOSR intends for the alternatives analysis to fulfill the requirements for the specification of disposal sites for dredged or fill material, as set forth in 40 CFR Part 230.

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These may include non-structural coastal resilience strategies, but only to the extent that they meet the purposes and need for both enhanced shoreline protection and increased social resiliency. The alternatives may also include coastal resiliency strategies proposed by other governmental stakeholders, to the extent that these strategies are made available to GOSR during development of the DEIS. Additionally, alternatives may also include alternate designs or sizes of both the dune and breakwaters.

### **POTENTIAL REGULATORY APPROVALS**

Implementation of the Proposed Actions may involve federal, state and local approvals, and is subject to NEPA and SEQRA and their implementing regulations. The Federal, State and City agencies that may potentially be involved in the environmental review and permitting process for the Proposed Actions include:

#### *FEDERAL*

- United States Department of Housing and Urban Development—Disbursement of funds, administration of CDBG-DR grant to the State of New York; review of Action Plan Amendments.
- United States Army Corps of Engineers—Issuance of permits for discharges of dredged or fill material into Waters of the U.S. (Section 404 of the Clean Water Act [33 USC 1344]); issuance of permits for structures and work within navigable waters (Section 10 of the Rivers and Harbors Act [33 USC 403]); and permission for the temporary or permanent alteration, occupation, or use of any federally authorized civil works project (e.g., federal navigation channel, Section 14 of the Rivers and Harbors Act of 1899 [33 USC 408]).
- Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service—Advisory agencies to Army Corps of Engineers during permit review focusing on activities that affect wetlands, protected species and Essential Fish Habitat. Biological Opinion needed if a take is identified.
- United States Coast Guard—Coordination and authorization regarding marking/lighting for new in-water structures, and placement of construction barges.
- Federal Emergency Management Agency— Review of breakwater and dune design and potential changes to Flood Insurance Rate Maps.

#### *STATE OF NEW YORK*

- Governor's Office of Storm Recovery— Acting on behalf of Grantee the State of New York, and under the auspices of the Homes and Community Renewal's Housing Trust Fund Corporation, funding decisions for Proposed Actions and responsibility for environmental review, decision-making, and action under 42 U.S.C. § 5304(g).
- Department of Environmental Conservation—Permits related to activities in tidal wetlands or adjacent areas (Article 25), freshwater wetlands or buffer areas (Article 24), or protection of waters (Article 15), Water Quality Certification (Section 401); permit related to endangered species if incidental take is determined; potential coastal erosion management permit for structures in the Coastal Erosion Hazard Area (CEHA, Article 34).
- Department of State—Coastal Zone Consistency for Federal direct and funding actions, as well as actions requiring Federal permits.

- Office of General Services— Review of actions involving use of State-owned submerged lands or payment of royalties for materials removed from such lands, as well as possible issuance of a lease, license and/or easement.
- Office of Parks, Recreation and Historic Preservation— Advisory role in federal permit review process pursuant to Section 106 of the National Historic Preservation Act (NHPA) with respect to designated and protected properties on the State and National Register and Eligible buildings and places. Assessment of potential submerged cultural resources. Interested party with respect to secondary impacts to natural resources on State-owned lands.

#### *CITY OF NEW YORK*

- Department of Parks and Recreation— Jurisdiction for land under water along project area shoreline; as well as review of plans and designs for modifications to parkland, including permits and natural resources oversight in connection with forest/tree protection and protection/restoration of aquatic resources and adjacent wetland maritime shrubland resources.
- Department of Environmental Protection—Possible stormwater management, water and sewer infrastructure, natural resources.
- New York City Planning Commission/Planning Department—Planning and Coastal Zone Consistency decision-making.
- New York City Public Design Commission—Review of art, architecture and landscape features proposed for City-owned property and capital projects.
- Landmarks Preservation Commission—Advisory agency for activities on or near sites of historic or archeological value.
- New York City Department of Buildings—Construction permits.
- New York City Department of Transportation – Possible street and traffic oversight.

#### **PRELIMINARY CONSULTATION AND SCOPING EFFORTS**

Since the October 2014 notice, GOSR has engaged in a series of meetings and consultations with federal, state, and local agencies concerning the alternatives described in this draft scoping document. Many of these consultations have been coordinated by the Sandy Regional Infrastructure Resiliency Coordination group (SRIRC). The SRIRC was created by the federal Sandy Recovery Office and serves as the primary facilitator for federal agency coordination on recovery/resiliency projects. Specifically, the alternatives described in this scoping document have been discussed before the New York City Technical Coordination Team (TCT) and the Coastal Resiliency TCT. In addition, in February 2015, GOSR received initial feedback on its technical approach and scoping document from the Federal Review and Permitting panel, which is also coordinated by the SRIRC. The SRIRC process has been, and will continue to be, an integral component of the planning, review, permitting, and implementation of the alternatives described in this document.

Further, on January 30, 2015, GOSR circulated a lead agency/cooperating agency letter to involved and interested federal, state, and local agencies, along with a preliminary version of the draft scoping document. GOSR received verbal or written comments on the draft scope from, among others, USACE, DEC, DOS, and New York City agencies, including the New York City Parks Department.

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To date, the following federal agencies, have agreed to participate, to the extent possible, as cooperating agencies under NEPA:

- USACE
- EPA
- NOAA/NMFS

HUD, which grants GOSR the authority under 24 CFR Part 58, to serve as the responsible entity under NEPA, will also be deeply engaged in the EIS process.

GOSR also expected to closely coordinate with State and local involved agencies under SEQRA, including NYSDEC, NYSDOS, OPHRP, and the New York City agencies, including DPR, DEP, the Mayor's Office of Sustainability, and the New York City Landmarks Preservation Commission.

Comments and correspondence thus far received from federal, state, and local agencies shall be available on the GOSR website ([www.stormrecovery.ny.gov](http://www.stormrecovery.ny.gov)). To the extent feasible, comments thus far received have been incorporated into this draft scope, and other comments will be further addressed in the analytical chapters of the DEIS.

### **D. ENVIRONMENTAL REVIEW PROCESS**

On behalf of the State of New York, GOSR, acting under the auspices of New York State Homes and Community Renewal's Housing Trust Fund Corporation (HTFC), as the Responsible Entity in accordance with 24 CFR 58.2(a)(7) and as the lead agency responsible for environmental review, decision-making, and action under 42 U.S.C. § 5304(g), has determined that the Proposed Actions have the potential to result in significant adverse environmental impacts. Therefore, at GOSR's request, HUD has issued a Notice of Intent to Prepare an EIS to satisfy NEPA procedural requirements in accordance with 24 CFR Part 1502. The EIS will also satisfy the requirements of the State Environmental Quality Review Act (SEQRA), and GOSR shall serve as lead agency for purposes of SEQRA. Once GOSR has determined that the Draft EIS (DEIS) is complete, a Notice of Availability (pursuant to NEPA) will be prepared and distributed/published in accordance with applicable regulations. The DEIS will then be subject to additional public review, in accordance with NEPA procedures, including a public hearing and a period for public comment. After the public comment period on the DEIS closes, a Final EIS (FEIS) will be prepared, including a summary of the comments and responses on the DEIS and any necessary revisions to the DEIS to address the comments. No sooner than 30 days after publishing the FEIS, GOSR, as lead agency, will prepare a Record of Decision and Statement of Findings that describe the preferred alternative for the project, its environmental impacts, and any required mitigation.

### **E. SCOPE OF WORK**

As the recipient of HUD CDBG-DR funds, GOSR will conduct the environmental review for the Proposed Actions in accordance with 24 Code of Federal Regulations (CFR) Part 58, 40 CFR Parts 1500-1508 and 6 NYCRR Part 617. Because the Proposed Actions are located in New York City, the *City Environmental Quality Review (CEQR) Technical Manual* will serve as a guide with respect to methodologies and impact criteria for evaluating the Proposed Actions' impacts. Accordingly, the environmental review will be prepared in accordance with NEPA, the State Environmental Quality Review Act (SEQRA), and in consideration of CEQR guidance. In addition, review of the Proposed Actions will be coordinated with review pursuant to other

applicable State and local laws and regulations, such as Section 106 of the National Historic Preservation Act of 1966 (NHPA).

The environmental review process provides a means for decision-makers to systematically consider environmental effects along with other aspects of project planning and design, to evaluate reasonable alternatives, and to identify, and mitigate where practicable, any significant adverse environmental impacts.

The first step in preparing the EIS document is the public scoping process. Scoping, or creating the scope of work, is the process of focusing the environmental impact analysis on the key issues relevant to the proposed project. As described above, the scope of work and the proposed impact assessment criteria to be used in the EIS will be largely based on the methodologies and guidance set forth in the *CEQR Technical Manual*.

The Proposed Actions would not physically alter directly displace an existing community facility, and would not increase residential population so as to increase demand for community facilities. Similarly, the Proposed Actions would not increase demand for existing open space facilities. Finally, the Proposed Actions are not anticipated to cause a substantial increase in solid waste production that may overburden available waste management capacity, and are not anticipated to affect the transmission or generation of energy. Accordingly, it is expected that the following impact categories would not warrant analysis in the EIS: community facilities, indirect open space<sup>1</sup>, solid waste and sanitation services, and energy. The proposed scope of work for each of the technical areas to be analyzed in the EIS is described below.

Each analytical chapter of the EIS shall provide a comparative analysis of the alternatives described in this document, as well as any other feasible alternative identified during the scoping process that merit consideration in the EIS.

## **DESIGN AND ANALYSIS FRAMEWORK**

This chapter will discuss the performance requirements and design methodology for the project alternatives, including the hydrodynamic and sediment transport models that would be used—e.g., GENESIS, SBEACH, REFDIF and/or DELFT3D—as well as other aspects of the design process.

The chapter will also describe the framework for the EIS analyses, identify the analysis years and describe future development conditions without and with the Proposed Actions (No Build and Build). The EIS will consider both short-term (construction) and long-term (operational) impacts. The operational effects of the Proposed Actions will be evaluated for the Build year, 2019, by which time the full build-out associated with the Proposed Actions are expected to be complete.

Each impact category will discuss the existing conditions and conditions in the future No Build and Build conditions. The technical analysis and identification of potential significant adverse impacts will be focused on the incremental change to the environmental setting that the Proposed Actions would create as compared to the future No Build condition. Consequently, this chapter will outline how the various EIS chapters will address cumulative impacts by

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<sup>1</sup> Components of the Proposed Actions would alter the existing Conference House Park. Therefore, the current features and operations of Conference House Park and the effects of the Proposed Actions on this resource (during construction and after completion) will be discussed in the Analysis Framework, Land Use and Construction sections of the EIS.

comprehensively defining the environmental setting expected in the No Build condition, including a discussion of projects expected to be completed independent of the Proposed Actions (No Build projects), and the baseline growth in the No Build condition that will be analyzed in all the technical areas.

### **LAND USE, ZONING, AND PUBLIC POLICY**

This chapter will discuss the existing land uses surrounding the project site, and the relationship of the Proposed Actions to those uses, including Conference House Park and other adjacent park resources. Because the Proposed Actions would be considered a large, publicly sponsored project, a PlaNYC assessment will be conducted to assess the Proposed Actions' consistency with relevant sustainability goals or initiatives. In addition, as outlined in the *CEQR Technical Manual*:

...using the foundation built through PlaNYC, the Special Initiative for Rebuilding and Resiliency (SIRR) released a report titled "A Stronger, More Resilient New York" in June 2013. The SIRR report outlines recommendations to protect neighborhoods and infrastructure from future climate events. Discussion and consistency with the initiatives set forth in the SIRR Report may be appropriate for projects implementing or effecting the implementation of an initiative outlined in the SIRR Report.

The EIS will evaluate the Proposed Actions' consistency with this and other initiatives in the surrounding area.

In addition, the project site is located within the City's coastal zone boundaries (see **Figure 2**). Therefore, the Land Use, Zoning, and Public Policy chapter will also include an assessment of the Proposed Actions' consistency with the City's Waterfront Revitalization Program (WRP), based on the 10 policies approved by New York State Department of State (NYSDOS), and as revised in the Draft NYC WRP Amendment, and used as the basis for evaluating discretionary actions within the City's designated coastal zone. The City's WRP Consistency Assessment Form (CAF) will be prepared.

### **SOCIOECONOMIC CONDITIONS**

Principal issues of concern with respect to socioeconomic conditions are whether a proposed action could result in significant adverse environmental impacts due to: (1) direct displacement of a residential population; (2) direct displacement of businesses and employment associated with those businesses; (3) indirect displacement of a residential population due to project-generated changes in market conditions that, in turn, lead to increased residential rents; (4) indirect displacement of businesses due to changes in market conditions that lead to increased commercial rents; and (5) adverse effects on a specific industry.

Indirect effects also may include consideration of growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

The EIS will succinctly present the demographic and economic conditions in the area(s) to be affected by the alternatives under consideration under both existing conditions and in the future without the Proposed Actions, and will describe whether the Proposed Actions would not adversely affect socioeconomic conditions.



- Proposed Living Breakwaters - Potential Configuration
- Proposed Water Hub (location to be determined)
- - - - - Proposed Dunes
- ////// Zone of Potential Breakwater Alignment

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### *COST-BENEFIT ANALYSIS*

A cost-benefit analysis will be provided for the Proposed Actions which, to the extent necessary will be consistent with the guidance set forth in the October 2014 RBD notice and other regulatory review requirements. The analysis of benefits will include estimates of the direct and indirect employment, wages and salaries, and total economic output associated with the construction and operation of the Proposed Actions, and will address the social, ecological, and risk-reduction benefits.

### **ENVIRONMENTAL JUSTICE**

Executive Order 12898 requires federal agencies to consider whether actions they might fund or approve may have any disproportionately high and adverse environmental or human health effects on low-income or minority populations. Since the Proposed Actions will require federal approval from HUD subject to review under NEPA, the EIS will consider the Proposed Actions' potential for disproportionately high and adverse effects on minority and low-income populations following the guidance and methodologies outlined in the Council on Environmental Quality's *Environmental Justice Guidance under the National Environmental Policy Act* (December 1997). The environmental justice analysis will also be used by the New York State Department of Environmental Conservation (NYSDEC) in its environmental permit review process associated with the proposed permit actions and its application of SEQRA, and is required under CP-29, "Environmental Justice and Permitting," which is the NYSDEC's policy on environmental justice. The assessment of environmental justice for the Proposed Actions will involve five basic steps:

1. Identify the area where the Proposed Actions may cause significant and adverse effects (i.e., the study area);
2. Compile race and ethnicity and poverty status data for the study area and identify minority or low-income communities;
3. Identify the Proposed Actions' potential significant adverse effects on minority and low-income communities; and
4. Evaluate the Proposed Actions' potential significant adverse effects on minority and low-income communities relative to its overall effects to determine whether any potential significant adverse effects on those communities would be disproportionate and, therefore, disproportionately high and adverse.
5. Summarize the Proposed Actions' public participation program and, specifically, any targeted outreach to minority or low-income populations.

To identify minority and low-income populations in the study area, data will be gathered from the U.S. Census Bureau's *Census 2010* and *2009–2013 American Community Survey (ACS)*, respectively, for all census block groups substantially within the study area. For comparison purposes, data will be aggregated for the study area as a whole, and compiled for Staten Island and New York City. This analysis will also rely on the other technical analyses included in the EIS for a determination of impacts, recognizing that the impacts within minority or low-income populations may be different from impacts on the general population.

### **CULTURAL RESOURCES**

Cultural resources include both archaeological and architectural resources. These include National Historic Landmarks (NHLs); properties listed on the State and National Registers of

## **Coastal and Social Resiliency Initiatives for Tottenville Shoreline**

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Historic Places (S/NR) or formally determined eligible for S/NR listing (S/NR-eligible), or properties contained within a S/NR listed or eligible historic district; properties recommended by the New York State Board for listing on the S/NR; designated New York City Landmarks (NYCLs) and Historic Districts; properties calendared for consideration as NYCLs by the New York City Landmarks Preservation Commission (LPC) or determined eligible for NYCL designation (NYCL-eligible); and potential historic resources (i.e., properties not identified by one of the programs listed above, but that appear to meet their eligibility requirements).

The Proposed Actions would affect an area at the southeastern end of Staten Island, and may involve work in or in the immediate vicinity of Conference House Park, which has played an important role in American history. Located within Conference House Park are the Conference House and the Wards Point Archaeological Site, both of which are NHLs and listed on the S/NR. In addition, the Biddle House, which is also located within Conference House Park, is a NYCL; and Prince's Bay Lightkeepers House, near the northern limits of the project area, is S/NR eligible and has been heard by LPC for designation. Therefore, the Proposed Actions have the potential to affect cultural resources.

The cultural resources assessment will be prepared in accordance with Section 106 of the NHPA of 1966 because the Proposed Actions require a permit from the USACE and the project is also seeking CDBG-DR funding that will be disbursed through GOSR. Section 106 mandates that federal agencies consider the effect of their actions on any properties listed on or meeting the criteria for listing on the National Register of Historic Places (NR). Compliance under Section 106 fulfills the requirements of Section 14.09 of the New York State Historic Preservation Act. City actions may also be required. As such, the cultural resources analysis will be prepared in consultation with the New York State Historic Preservation Office (SHPO) and LPC, as appropriate.

### *ARCHAEOLOGICAL RESOURCES*

In addition to the Ward's Point site, additional Native American sites have been identified in the immediate vicinity of the project site. The project site was also occupied during the historic period. Both the LPC and SHPO have included the project site within an area of generalized archaeological sensitivity. The archaeological sensitivity of Conference House Park was previously analyzed in an archaeological assessment that was prepared by archaeologist Arnold Pickman in 1997. That assessment identified areas of archaeological sensitivity throughout the park's boundaries.

LPC and SHPO will be consulted in order to request their preliminary determination of the potential archaeological sensitivity of the project site. Supporting information including historical maps and information from previous archaeological investigations will be submitted to the reviewing agencies as necessary as part of the initial consultation. While the majority of the site has been analyzed as part of a previous archaeological assessment, LPC and/or SHPO may request supplemental analysis.

Any additional study of the site's archaeological resources could be in the form of a supplemental Phase 1A Archaeological Documentary Study or a Topic Intensive Archaeological Documentary Study designed to supplement the 1997 archaeological assessment and confirm that its conclusions are still valid with respect to the specific impacts of the Proposed Actions. An investigation of the bay floor may also be necessary to ensure that the construction of the proposed breakwater would not impact any maritime archaeological resources (e.g., shipwrecks). It is also possible that LPC and/or SHPO may request a Phase 1B archaeological investigation of areas with potential archaeological sensitivity. As necessary, any additional

archaeological analysis of the project site will include information from previous and on-going archaeological investigations of the park and its surrounding vicinity.

### *ARCHITECTURAL RESOURCES*

The architectural resources analysis will consider whether construction of the Proposed Actions would be likely to affect any historic architectural resources either directly through construction activities or indirectly through alteration of the context or visual environment of these resources.

The following tasks will be undertaken as part of the architectural resources analysis:

- Define and map the Area of Potential Effect (APE) for architectural resources. This includes the area in which the Proposed Actions may directly or indirectly affect architectural resources. Identify and describe any designated architectural resources within the APE. Historic resources include any NYCLs, properties pending NYCL designation, S/NR-listed sites and sites determined eligible for listing, and NHLs.
- Conduct a field survey of the APE by an architectural historian of standing structures in the APE to identify any potential architectural resources that could be affected by the Proposed Actions. Potential architectural resources include properties that appear to meet S/NR eligibility criteria as set forth in 36 CFR Part 63 and NYCL criteria according to the New York City Landmarks Law. Map and briefly describe any potential architectural resources within the APE.
- Assess the effects on architectural resources of planned development projects expected to be built in the future without the Proposed Actions.
- Assess any potential physical, contextual, or visual impacts on architectural resources that would result from the Proposed Actions in consultation with SHPO and LPC.
- Where appropriate, develop measures to avoid, minimize, or mitigate any adverse effects on historic architectural in consultation with SHPO and LPC, as appropriate.
- Implement the Section 106 process in coordination with involved federal agencies and any appropriate outreach with the public and consulting parties.

### **VISUAL CHARACTER**

As the Proposed Actions would involve actions by NYSDEC, a visual character assessment will be undertaken in accordance with NYSDEC's methodologies for assessing and mitigating visual impacts. According to DEP-00-2, certain variables can affect a viewer's perception of an object or project and the visibility of that object or project in the overall viewshed; these variables include the character of the landscape (existing vegetation, buildings, and topography), size perspective (reduction of apparent size of objects as distance increases), and atmospheric perspective. These factors will be considered in the visual character assessment and a determination of significance will be made.

The visual character analysis will establish a study area, provide a description of existing conditions within the area, include photographs of existing conditions from several vantage points, and identify visual resources such as Conference House Park and its associated features. The analysis will consider conditions in the future without the Proposed Actions and will describe the effects of the Proposed Actions on the visual character of the study area including the project's visibility from different vantage points. Photographs and illustrative figures showing the project components of the Proposed Actions will be included in the analysis. The

vantage points to be considered will be determined following field studies and identification of sensitive visual resources.

### **SHADOWS**

The *CEQR Technical Manual* requires a shadows assessment for proposed actions that would result in new structures greater than 50 feet in height or located adjacent to, or across the street from, a sunlight-sensitive resource. Sunlight-sensitive resources include publicly accessible open spaces, sunlight-dependent features of historic resources, and natural resources such as wetlands or upland areas where the introduction of new shadows may alter the resource's condition or microclimate.

The Proposed Actions would include the development of a Water Hub building at a location to be determined within Conference House Park near the shoreline. If the maximum height of the proposed building is greater than 50 feet, or if it is adjacent to a sunlight-sensitive resource—very likely given its anticipated location within parkland and near the shore—a shadows assessment will be required to examine how project-generated shadows might affect nearby sunlight-sensitive resources. The assessment will also include an analysis of potential shadow effects resulting from the proposed dunes, which would not be taller than 50 feet but would be adjacent to public recreation areas and areas containing natural resources. The assessment will follow the methodology described in the 2014 *CEQR Technical Manual* and will include the following tasks:

- Develop a base map illustrating the proposed Water Hub site and the proposed dunes in relation to publicly accessible open spaces, historic resources with sunlight-dependent features, and natural resources in the area.
- Determine the longest possible shadow that could result from the Proposed Actions to determine the longest shadow study area.
- Develop a three-dimensional representation of the Proposed Actions.
- Develop a three-dimensional computer model of the elements of the base map developed in the preliminary assessment, and the existing and future No-Action buildings in the study area.
- Using three-dimensional computer modeling software, determine the extent and duration of new shadows that would be cast on sunlight-sensitive resources as a result of the Proposed Actions on four representative days of the year.
- Document the analysis with graphics comparing shadows resulting from the No Action condition with shadows resulting from the Proposed Actions, with incremental shadow highlighted in a contrasting color. Include a summary table listing the entry and exit times and total duration of incremental shadow on each applicable representative day for each affected resource.

### **HAZARDOUS MATERIALS**

At this time, it is anticipated that at most, minimal subsurface disturbance would be associated with the Proposed Actions. Specifically it is anticipated that no dredging would be required for the proposed breakwater system, and no excavation would be required for the proposed dune system. While construction of the Water Hub could require limited excavation (e.g., for foundations and utilities), if located within the beach or park area of Conference House Park it would be unlikely that significant hazardous materials would be present, based on current or historical land uses. However, as the design of the Proposed Actions progresses and the

locations and construction requirements for the project elements are further defined through the EIS process, the need for a hazardous materials analysis will be determined. In addition, as noted below under “Natural Resources,” sediments collected as part of the data collection effort will be analyzed for contaminants.

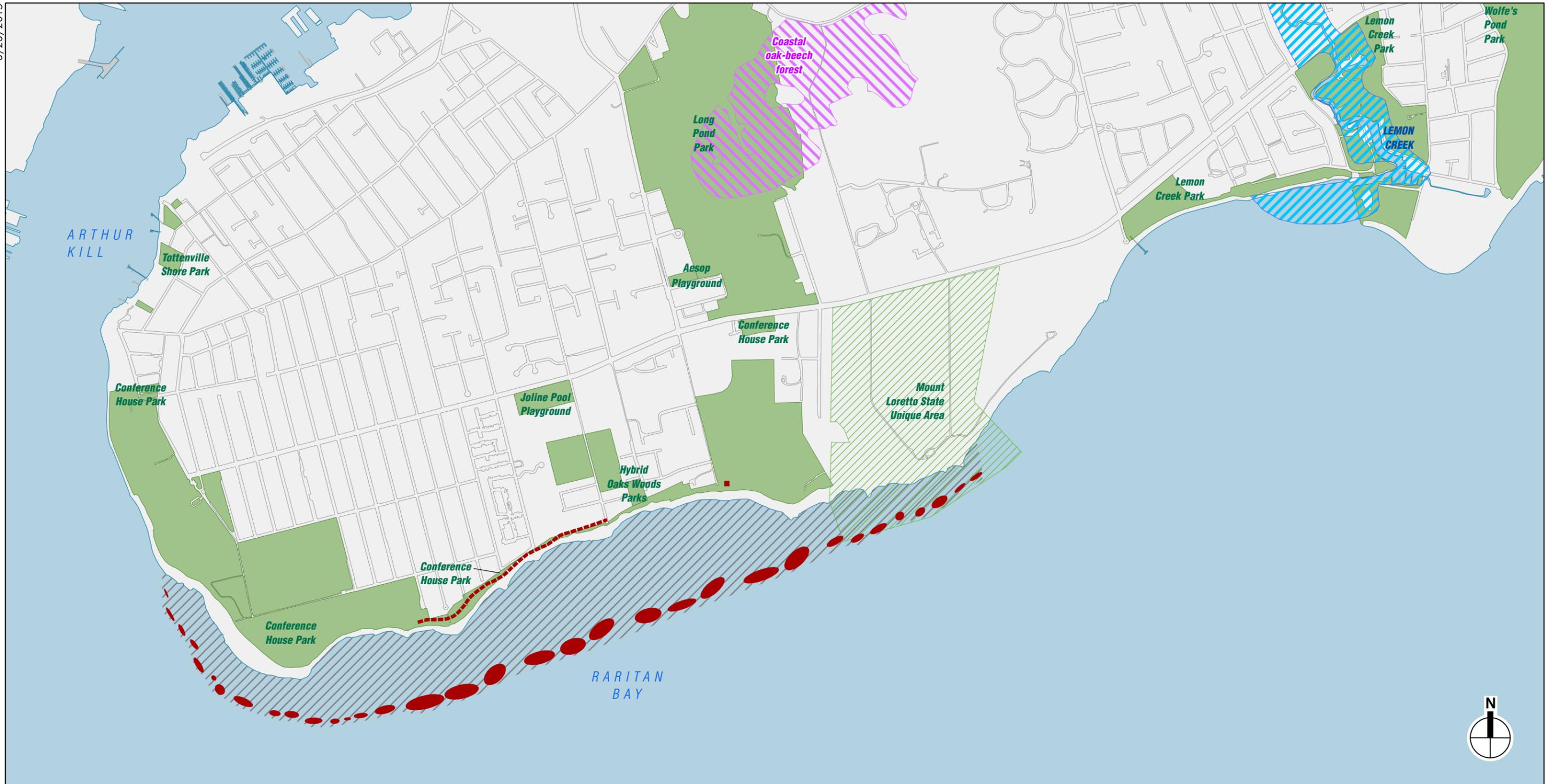
## NATURAL RESOURCES

The project site is located on the South Shore of Staten Island and in the adjacent waters of Raritan Bay. This portion of Staten Island contains large areas of natural open space comprising city- and state-owned areas such as Conference House Park, Hybrid Oaks Woods Park, and the Mount Loretto Unique Area comprising Butler Manor Woods and Cunningham Pond (see **Figure 3**). These open space areas contain a variety of upland, estuarine and freshwater wetland ecological communities (see **Figures 4 and 5**) that support numerous species of birds, reptiles and amphibians, mammals and insects. The shoreline is fringed by a sand and cobble beach. The beach area and adjacent shoreline are eroding and portions were bolstered with temporary shoreline stabilization measures following Superstorm Sandy.

Raritan Bay off the South Shore of Staten Island is a shallow estuary that contains significant habitat for shellfish, and marine, estuarine and anadromous fish. It supports commercial fisheries that include American shad, American eel, and American lobster. Blue crab and horseshoe crab are also harvested. It includes an NYSDEC-designated hard clam transplant zone. Recreationally important fish species include bluefish, striped bass, weakfish, and winter flounder. The open water areas provide important habitat for overwintering and migratory waterfowl. Because of where it is located within the New York Bight, Raritan Bay and the South Shore of Staten Island are subject to tropical storms, nor'easters and periodic hurricanes. With projected sea level rise, the vulnerability of the South Shore of Staten Island to flooding and erosion during storm events will increase, and loss of habitats along the shoreline will continue.

While Raritan Bay supports a diverse community of aquatic biota, it is an urban estuary that has been impacted by development and discharges to the bay and its tributaries that have resulted in degraded water and habitat quality, including sediment contamination. A Comprehensive Restoration Plan has been developed for the Hudson-Raritan Estuary through a collaboration of the Harbor Estuary Program, the USACE, U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), the Port Authority of New York and New Jersey (PANYNJ), Hudson River Foundation, NY/NJ Baykeeper, NYSDEC, and other state and city agencies, and non-government organizations, to restore and protect habitat within the Hudson-Raritan Estuary. Restoration needs identified within the Lower Bay, which includes the Raritan Bay, include restoration of benthic habitats, and the restoration of shellfish and reef habitat. The Hudson-Raritan Estuary historically contained nearly 35 square miles of oyster reef. The open water areas of Raritan Bay offer substantial opportunity for meeting the goal of restoring 200 acres of Eastern Oyster reef within the Hudson-Raritan Estuary identified in the Comprehensive Restoration Plan.

The Proposed Actions would integrate the goal of increasing habitat diversity through the establishment of structural habitat and productive oyster reefs and other aquatic habitat within the estuary, with the proven protection against storm-induced shoreline erosion provided by breakwater structures, and layered shoreline protection provided by the proposed dune structure. The proposed living breakwater would increase habitat diversity for benthic invertebrates, increase diversity of forage and shelter habitat for fish, and provide opportunity for oyster restoration. Breakwater structures protect shorelines by reducing wave energy; creating

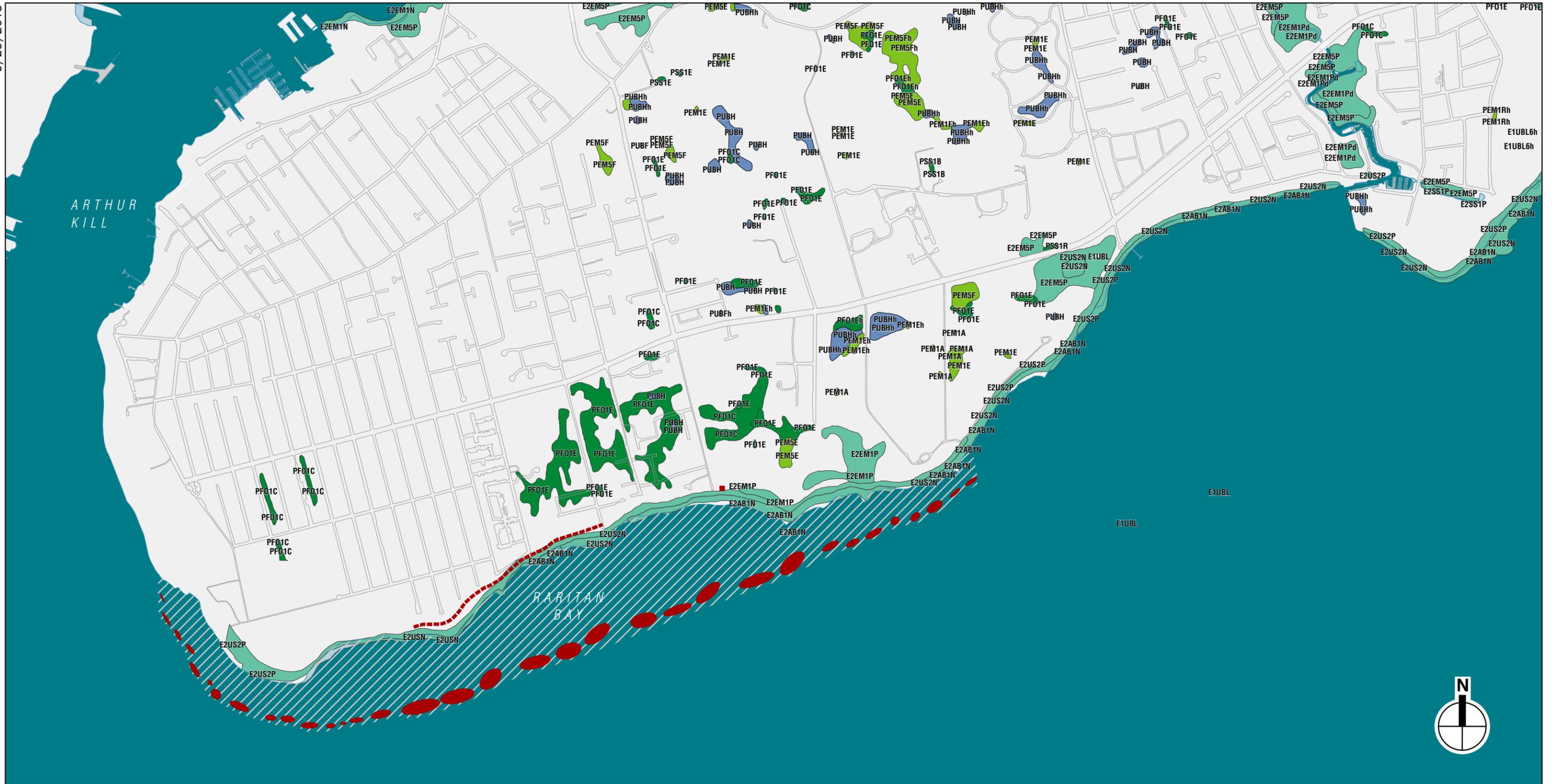


- Proposed Living Breakwaters - Potential Configuration
- Proposed Water Hub (location to be determined)
- Proposed Dunes
- Zone of Potential Breakwater Alignment
- NYS Significant Natural Communities
- NYC Significant Coastal Fish and Wildlife Habitat

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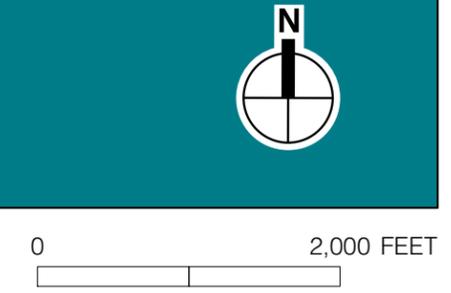


3/23/2015



- Proposed Living Breakwaters - Potential Configuration
- Proposed Water Hub (location to be determined)
- Proposed Dunes
- Zone of Potential Breakwater Alignment
- Freshwater Forested/Shrub Wetland
- Freshwater Emergent Wetland
- Freshwater Pond
- Estuarine and Marine Wetland
- Riverine
- Lakes
- Other Freshwater Wetland
- Estuarine and Marine Deepwater

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3/23/2015



-  Proposed Living Breakwaters - Potential Configuration
-  Proposed Water Hub (location to be determined)
-  Proposed Dunes
-  Zone of Potential Breakwater Alignment

-  State-regulated freshwater wetlands
-  Wetlands checkzone

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depositional areas on their landward side. The replacement of some soft bottom habitat with hard structure of the breakwater has generally been viewed as a beneficial impact where increased diversity is desired, provided the placement of the breakwater does not adversely affect highly productive habitats such as seagrass beds, coral reefs or spawning areas. But they can also result in long-term changes in circulation, flushing and sediment transport that can affect water quality and shoreline habitats, as well as have the potential to affect fish movement. These possible effects will be considered in the design of the breakwater (e.g., elevation of the breakwater, distance from the shoreline, and separation between the breakwater segments) and will be evaluated in the EIS.

Existing natural resources within or in the vicinity of the proposed project area will be characterized for the environmental review. These resources will include upland and wetland habitats, ecological communities, and wildlife in the vicinity of the shorelines that would be protected through the living breakwater and dune system; resources that have the potential to be affected by the proposed Water Hub and other upland and shoreline project components; and the aquatic resources of the Raritan Bay and in the vicinity of the proposed breakwater (e.g., water quality, sediment characteristics, and aquatic biota). The Proposed Actions' potential impacts on natural resources will be assessed, including short-term upland and in-water construction effects such as temporary increases in suspended sediment during breakwater construction, noise and other construction-related disturbances (e.g., vessel movement, upland construction vehicles, construction worker activity); temporary loss of fish habitat; loss of macroinvertebrates within the footprint of the breakwater; long-term effects such as changes in water circulation, water quality, sediment transport and erosion; and beneficial effects from increased habitat diversity for benthic macroinvertebrates and fish, stabilized dune habitat for wildlife, as well as potential water quality improvements resulting from the establishment of a sustainable mollusk population on the breakwater. A discussion of any related permits that may be required will be provided.

The analysis will include the following tasks:

- On the basis of existing regional and site-specific water quality information (e.g., Department of Environmental Protection (DEP) Harbor Survey, USACE, USEPA, etc.), and water quality data collected for the Proposed Actions, characterize water quality conditions of Raritan Bay in the vicinity of the project site. This section will also describe the general hydrodynamic characteristics of the Raritan Bay, including information on currents, tidal range, water quality classification, and overall pollutant loads and chemical and biological conditions.
- Characterize the existing aquatic resources of Raritan Bay and within the vicinity of the project site (e.g., shoreline to the navigation channel adjacent to the breakwater structures), and the terrestrial resources within the potential areas of disturbance for the Proposed Actions, using site reconnaissance site specific data collection—i.e., benthic macroinvertebrates; clam density and tissue contaminants; sediment grain size, total organic carbon, and contaminants; fish, and terrestrial ecological communities (including wetlands and wildlife); and existing information on aquatic and terrestrial resources in the vicinity of the project site—including floodplains (see **Figure 6**), essential fish habitats, wetlands, terrestrial resources, and threatened or endangered species from resource agencies such as USFWS, National Marine Fisheries Service (NMFS), and NYSDEC, Sources of existing information include the USACE, NOAA, USEPA, NYSDEC, and the Harbor Estuary Program.

3/23/2015



-  Proposed Living Breakwaters - Potential Configuration
-  Proposed Water Hub (location to be determined)
-  Proposed Dunes
-  Zone of Potential Breakwater Alignment
-  Special Flood Hazard Areas (100-Year Flood)
-  Other Flood Areas (500-Year Flood)
-  1% Annual Chance Floodplain Boundary
-  0.2% Annual Chance Floodplain Boundary
-  Boundary dividing Special Flood Hazard Area Zones and areas of different Base Flood Elevations, flood depths, and flood velocities

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0 2,000 FEET

- Assess potential effects to natural resources and water quality in the future without the Proposed Actions, accounting for any changes in the study area, such as shoreline stabilization, or other resiliency measures that would occur in the future without the Proposed Actions, which may alter natural resources or water quality; and public initiatives intended to improve the natural habitat and water quality of the Hudson-Raritan Estuary.
- Assess potential effects to terrestrial and aquatic resources from the Proposed Actions, considering short-term changes due to construction (e.g., increases in suspended sediment, and underwater noise, loss of macroinvertebrates within the footprint of the breakwater structure, vessel movement, and construction worker activity); and long-term upland, on-shore and in-water changes due to the Proposed Actions; changes in circulation, flushing and sediment transport, including the encouragement of sediment deposition to enhance shoreline protection assessed on the basis of modeling results (e.g., SBEACH and GENESIS); potential impacts to aquatic habitats and aquatic biota adjacent to the living breakwater, dune and on-shore components, and within the study area established for the evaluation of aquatic biota; and beneficial impacts to aquatic biota from establishing a sustainable oyster or other mollusk population on the breakwater, and increasing habitat diversity for fish and benthic macroinvertebrates. Potential impacts to terrestrial resources will be assessed by considering any clearing activities that would result from the Proposed Actions, visual and noise disturbances to wildlife during construction activities, and benefits to wildlife—such as waterfowl and shorebirds—from the Proposed Actions. The need for state or federal approvals will be identified.
- Review the Proposed Actions for compliance with the Endangered Species Act of 1973, as amended, and HUD’s implementing regulations at 50 CFR Part 402. The Proposed Actions will include consultation and coordination with USACE, USFWS and NMFS, as required, so that the EIS process will comply with the Fish and Wildlife Coordination Act, 16 U.S.C. § 661 *et seq.* and the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265, as amended).
- Review the project area for the presence of wetlands. Executive Order 11990 (Protection of Wetlands) requires federal activities to avoid adverse impacts to wetlands where practicable. The potential for the Proposed Actions to result in any short- or long-term adverse impacts associated with both on- and off-site wetlands will be assessed.
- Assess the Proposed Actions for consistency with other NEPA environmental review requirements related to natural resources, such as the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 *et seq.*), as amended, particularly Sections 7(b) and (c).
- Mitigation measures to avoid or reduce potential significant adverse impacts will be identified. Measures to reduce potential impacts to aquatic biota would include:
  - siting the breakwater to avoid sensitive habitat (e.g., clam beds);
  - providing sufficient spacing between the breakwater sections to allow fish movement and tidal exchange;
  - designing the breakwater and dune structures to achieve shoreline protection and habitat restoration goals, while minimizing potential impacts to aquatic resources due to the resulting habitat modification; and
  - pre- and post-monitoring to ensure that the breakwaters are installed and performing as designed with respect to shoreline protection, oyster and other mollusk production, macroinvertebrate composition, and fish utilization.

Additional measures may include; adaptive management measures should the breakwaters not perform as designed or anticipated.

### **FLOODPLAINS**

The project site is located within the 100-year floodplain (see **Figure 6**), as identified on the Federal Emergency Management Agency (FEMA) Preliminary Flood Insurance Rate Maps (Preliminary FIRMs). The flood zones will be identified for all project elements located within the 100-year floodplain. Projects located within a floodplain are subject to Executive Order 11988 (Floodplain Management). To comply with HUD's implementing regulations at 24 CFR Part 55, a §55.20 analysis (the 8-step process) will be completed to document noticing compliance, any alternatives to locating the Proposed Actions in the floodplain, and any potential impacts associated with occupying the floodplain, along with proposed mitigation measures, as necessary. The analysis will also note that the Flood Disaster Protection Act of 1973, as amended, requires that property owners purchase flood insurance for buildings located within SFHAs when Federal financial assistance is used to acquire, repair, improve, or construct a building. It is anticipated that the 8-step process will be carried out as part of the environmental review process to allow for proper noticing and public comment on the findings. The EIS will also discuss stormwater drainage with respect to all components of the Proposed Actions.

### **SEWER AND WATER INFRASTRUCTURE**

As mentioned above under Floodplains, the EIS will also discuss stormwater drainage with respect to all components of the Proposed Actions (including the proposed dunes and proposed Water Hub) and will consider effect to the existing storm sewer network and full build-out of that network according to existing drainage plans. The proposed Water Hub would potentially be located on the waterfront within Conference House Park, although alternate locations will be considered during the EIS process. One of the siting considerations for the proposed Water Hub would be access to existing infrastructure, as operations at the Water Hub would require a water supply and would produce wastewater. As the potential location of the Water Hub is further defined through the EIS process, the need for a sewer and water infrastructure analysis will be determined.

### **TRANSPORTATION**

The Tottenville beachfront is accessible regionally via Route 440 and the Korean War Veterans Parkway. Locally, it is accessible via Page Avenue, Hylan Boulevard, and other local streets. With transit access available only via the S59 and S78 or transfer to these local bus routes from the Staten Island Railway (SIR), most trip-making to the beachfront is expected to be made via auto. Peak visitation would occur during good weather days during the summer months. The level of visitation for the beachfront and adjacent parkland may increase as a result of the Proposed Actions, as an improved shoreline could make the beachfront more attractive for recreational use. In addition, the programming associated with the proposed Water Hub would be expected to generate trips beyond general visitation to the beachfront area.

In accordance with the *CEQR Technical Manual*, a preliminary assessment involving Level 1 (trip generation) and/or Level 2 (trip assignment) screening analyses will be conducted to determine if further detailed analyses are warranted. Because the proposed Water Hub contains very unique uses, more details on the specific programming, employment, and anticipated visitation would be needed to develop the related trip estimates. Relevant projections from prior studies for similar uses, information provided by NYCDPR, as well as standard references such

as the *ITE Trip Generation Manual* will be consulted to estimate trip-making associated with different components of the Water Hub. Where applicable, linkages with general baseline beachfront visitations will be taken into account for the trip estimates. If necessary, original travel surveys will be conducted for similar uses at comparable settings to develop the necessary trip projections.

If the Level 1 trip generation estimates yield 50 or more peak hour vehicle trips, Level 2 trip assignments will be performed to identify specific intersections expected to incur 50 or more peak hour vehicle trips, for which a detailed analysis considering existing, future No-Action, and future With-Action conditions will be prepared to identify potential significant adverse traffic impacts. Together with the traffic analysis, parking and vehicular and pedestrian safety assessments will be conducted. As stated above, since most trips to the beachfront and the water hub are expected to be made via auto, a detailed analysis of potential transit and pedestrian impacts is not anticipated to be warranted.

For the proposed dunes, modified access to the beachfront may result in some localized changes in vehicular and pedestrian access and circulation. A field visit will be conducted to document baseline access options, including where beach visitation parking is prevalent and where nearby transit stops are located. The proposed design will then be reviewed against this baseline to identify potential changes in vehicular and pedestrian access and circulation. Based on this review, preliminary findings will be made on the level of analyses warranted to assess potential transportation-related impacts. This work could include the collection of summer baseline traffic and pedestrian data to establish baseline travel patterns in the area. Using the collected data, vehicular and pedestrian trip estimates will then be prepared to determine the need for further analysis of affected transportation facilities (i.e., traffic intersections and pedestrian space).

Based on preliminary findings made individually for the Water Hub, improved use of the beachfront, and traffic pattern changes created by the beachfront dunes, the required transportation data collection and analyses will be tailored to address the potential collective impacts associated with the Proposed Actions.

## **AIR QUALITY**

NEPA requires an assessment of potential impacts on air quality to demonstrate compliance with the Clean Air Act (CAA), including State Implementation Plans (SIPs). The air quality analysis will follow guidance from the USEPA and the *CEQR Technical Manual*. The analysis will consider the potential impacts and benefits of the Proposed Actions on air quality and examine whether the Proposed Actions could result in any new exceedances of or any exacerbation in any existing exceedances of National Ambient Air Quality Standards (NAAQS).

The Proposed Actions would generate emissions from both direct and indirect sources. Direct sources of emissions would primarily be from natural gas and/or oil fired heating, ventilation and air conditioning systems (HVAC) associated with the Proposed Actions. Potential indirect air quality impacts of the Proposed Actions would stem from increases in vehicular traffic.

Existing and background ambient air quality data will be collected and summarized for the study area. Specifically, ambient air quality monitoring data published by the NYSDEC will be compiled for the analysis of existing and future conditions.

## **MOBILE SOURCE ANALYSIS**

The vehicle trips generated by the Proposed Actions would likely be below the *CEQR Technical Manual* carbon monoxide (CO) screening threshold of 170 vehicles in a peak hour at any

## **Coastal and Social Resiliency Initiatives for Tottenville Shoreline**

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intersection, and is also unlikely to exceed the particulate matter (PM) emission screening threshold discussed in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual*. Therefore, it is anticipated that an analysis of Proposed Actions' generated traffic (mobile sources) on air quality would not be required.

If it is determined that a mobile source analysis is required, a detailed microscale analysis of mobile source impacts will be performed. The USEPA Motor Vehicle Emission Simulator (MOVES) model will be used to calculate emissions. The USEPA CAL3QHC intersection model will be used to predict 1-hour and 8-hour average CO concentrations, and the CAL3QHCR model will be used to PM<sub>2.5</sub> concentrations. The increase in pollutant concentrations from the Proposed Actions will be compared with applicable *de minimis* criteria and standards.

### *PARKING ANALYSIS*

If the Proposed Actions would also provide new parking facilities, an analysis of associated air quality impacts will be conducted.

### *STATIONARY SOURCE ANALYSIS*

The effects of emissions from stationary sources associated with the Proposed Actions will be analyzed. Potential impacts from the proposed Water Hub's heating and hot water system exhaust on surrounding uses will be assessed using the *CEQR Technical Manual* screening analyses.

If the Proposed Actions fails the screening analyses, a refined stationary source analysis will be performed using the USEPA/American Meteorological Society (AMS) Regulatory Model (AERMOD) dispersion model with five years of meteorological data, project specific information regarding the heating and hot water system size, operation, exhaust location and exhaust stack parameters.

### *GENERAL CONFORMITY (MESOSCALE ANALYSIS)*

A conformity determination will be performed if the action would result in pollutant emissions exceeding the established screening criteria (*de minimis*) emission rates or exceeding 10 percent of the area-wide emissions. Actions that would not result in emissions exceeding the above criteria would conform to the SIPs. Emissions for CO<sub>2</sub>, ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> will be compared to the applicable *de minimis* threshold.

## **CLIMATE CHANGE ADAPTATION AND RESILIENCE**

The Proposed Actions would be located in a flood hazard zone, and would be designed to mitigate coastal storm impacts as its primary objective. The discussion will focus on sea level rise and changes in storm frequency projected to result from global climate change, and on the potential future benefits the proposed infrastructure would introduce.

The potential effects of climate change in the project area will be evaluated based on the best available information (including the 2015 New York City Panel on Climate Change Report [NPCC 2015]). The evaluation will focus on the range and likelihood of potential future sea and storm levels and the interaction with project infrastructure and uses. The discussion will focus on integration of climate change considerations into the project design to ensure that the resiliency provided by the Proposed Actions' design would allow for uncertainties regarding future conditions resulting from climate change.

## GREENHOUSE GAS EMISSIONS

In accordance with NYSDEC's policy guidance<sup>1</sup> and the *CEQR Technical Manual*, project-generated greenhouse gas (GHG) emissions generated by the Proposed Actions will be quantified, and an assessment of consistency with the City and State's established GHG reduction goals will be prepared. Emissions will be estimated for the analysis year for operational and total for construction. Emissions will be reported as carbon dioxide equivalent (CO<sub>2</sub>e) metric tons per year. GHG emissions other than carbon dioxide (CO<sub>2</sub>) will be included if they would account for a substantial portion of overall emissions, adjusted to account for the global warming potential. While operational energy use and associated GHG emissions would be minimal, construction efforts may require substantial resources and would therefore also represent an opportunity for low-carbon options. Therefore, the analysis will include construction activities as well as operational energy use.

Relevant measures to reduce energy consumption and GHG emissions that could be incorporated into the projects will be discussed, and the potential for those measures to reduce GHG emissions from the Proposed Actions will be assessed to the extent practicable.

The analysis will consist of the following subtasks:

- A. Operational GHG emissions will be quantified based on available project-specific information regarding the expected fuel use or carbon intensity factors specified in the *CEQR Technical Manual* if project-specific data is not available, including—
  - 1. Direct Emissions—Operational GHG emissions from boilers used for heat and hot water at the Water Hub will be quantified.
  - 2. Indirect Emissions—GHG emissions from purchased electricity generated off-site and consumed at the Water Hub during operation of the Proposed Actions will be estimated.
  - 3. Indirect Mobile Source Emissions—GHG emissions from vehicle trips to and from the Water Hub will be quantified using trip distances and vehicle emission factors provided in the *CEQR Technical Manual*.
- B. Emissions from project construction (on-site engines and delivery of materials) and indirect emissions associated with the extraction or production of construction materials will be quantified. Opportunities for reducing GHG emissions associated with construction will be considered.
- C. Consistency with the City and State's GHG reduction goals will be assessed. While the City's overall goal is to reduce GHG emissions by 30 percent below 2005 level by 2030 and 80 percent by 2050, individual project consistency is evaluated based on building energy efficiency, proximity to transit, on-site renewable power and distributed generation, efforts to reduce on-road vehicle trips and/or to reduce the carbon fuel intensity or improve vehicle efficiency for project-generated vehicle trips, and other efforts to reduce the Proposed Actions' carbon footprint.

## NOISE

A noise study will be conducted to address whether the Proposed Actions would result in a significant increase in noise levels—particularly at sensitive land uses such as residences; as

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<sup>1</sup> NYSDEC, Guide for Assessing Energy Use and Greenhouse Gas Emissions in an Environmental Impact Statement, July 15, 2009.

well as what level of building attenuation is necessary to provide acceptable interior noise levels within the proposed Water Hub.

The Proposed Actions will generate vehicular trips, but given the background conditions and the anticipated project-generated traffic, it is not expected that significant adverse mobile source noise impacts would result. It is assumed that outdoor mechanical equipment associated with the proposed Water Hub would be designed to meet applicable regulations and that no detailed analysis of potential noise impacts due to building HVAC equipment will be necessary. Consequently, the noise analysis will examine the level of building attenuation necessary for the Water Hub to meet interior noise level requirements prescribed by the New York City *CEQR Technical Manual* and HUD guidelines. The building attenuation study will be an assessment of noise levels in the surrounding area associated primarily with traffic and nearby uses and their potential effect on the Proposed Actions.

Specifically, the noise analysis will include the following tasks:

### *SELECT APPROPRIATE NOISE DESCRIPTORS*

Appropriate noise descriptors to characterize the existing noise environment will be selected. The  $L_{dn}$  and  $L_{10}$  levels will be the primary noise descriptors used for the noise analysis. Other noise descriptors, including the  $L_{eq}$ ,  $L_1$ ,  $L_{50}$ ,  $L_{90}$ ,  $L_{min}$ , and  $L_{max}$  levels will be examined as appropriate.

### *TRAFFIC NOISE SCREENING ASSESSMENT*

Based on the traffic studies, a screening analysis will be conducted to determine whether there are any locations at which the Proposed Actions would have the potential to result in significant noise impacts (i.e., doubling of noise passenger car equivalents [PCEs]) due to project-generated traffic.

If the results of the screening analysis indicate that a doubling of noise PCEs would occur at any sensitive noise receptor locations, a detailed mobile source noise analysis will be performed using either proportional modeling or the Traffic Noise Model (TNM), as appropriate.

### *CONDUCT NOISE SURVEY*

One noise survey location will be selected for building attenuation purposes, in the immediate vicinity of the proposed Water Hub where noise levels would be measured continuously for a 24-hour period. The results of the noise measurement program will be analyzed, and maximum  $L_{dn}$  and  $L_{10}$  levels for the proposed Water Hub site will be determined.

### *DETERMINE THE LEVEL OF ATTENUATION NECESSARY TO SATISFY CEQR AND HUD CRITERIA.*

The level of building attenuation necessary for the proposed Water Hub to satisfy CEQR or HUD requirements is a function of exterior noise levels. These levels will be measured and compared to relevant standards and guideline levels, in order to determine the noise attenuation measures required to achieve acceptable interior noise levels at the proposed Water Hub. The building would likely require acoustically rated windows and alternate ventilation that does not degrade the acoustical performance of the façade in order to achieve acceptable interior noise levels. Noise exposure guidelines and attenuation requirements will apply to any noise sensitive spaces proposed within the Water Hub.

## CONSTRUCTION

Construction impacts, though temporary, can have a noticeable and disruptive effect on surrounding communities. The construction analysis will be based on assumptions made in consultation with the design team and will discuss the anticipated construction activities associated with all project elements. The construction chapter will describe the conceptual construction methods, materials, schedule and logistics, and provide an assessment of the potential impacts of the Proposed Actions' construction activities with respect to natural resources, transportation, air quality, noise, and cultural resources. Measures to avoid, minimize and/or mitigate potential impacts will also be discussed.

### *NATURAL RESOURCES*

The effects of the Proposed Actions' construction activities on natural resources will be assessed, including temporary increases in suspended sediment during breakwater installation, noise and other construction-related disturbances, and temporary loss of benthic habitat; and long-term effects such as changes in water circulation, water quality, sediment transport and erosion, and beneficial effects from increased habitat diversity for benthic macroinvertebrates and fish, as well as the water quality improvements that would result from the establishment of a sustainable oyster population on the breakwater. Potential impacts to terrestrial resources will be assessed by considering any clearing activities that would be required for the Proposed Actions, visual and noise disturbances to wildlife during construction activities, and benefits to wildlife—such as waterfowl and shorebirds—from the Proposed Actions. A detailed technical approach to assess the effects of construction activities on natural resources is included above in “Natural Resources.”

### *TRANSPORTATION*

This section will consider temporary/partial closures of vehicular travel lanes, sidewalks, etc. during the various stages of construction of the Proposed Actions; identify the increase in person and vehicle trips due to construction activities; describe and assess any temporary modifications to street operations if required; and analyze potential temporary impacts to the transportation systems serving the project area. Construction worker parking and truck delivery staging will also be addressed. It is expected that a significant portion of materials for the proposed breakwaters will be delivered by barge and the majority of construction work would occur in water. However, the Proposed Actions could also include construction of the dune system along the shoreline in Tottenville (from approximately Brighton Street to Joline Avenue). In accordance with the *CEQR Technical Manual*, a preliminary assessment involving Level 1 (trip generation) and/or Level 2 (trip assignment) screening analyses will be conducted for the construction of the Proposed Actions to determine if further detailed analyses are warranted. If so, the detailed analyses will consider future without construction and future with construction conditions to identify any potential significant adverse traffic impacts. This section will also describe the number of barges/tugs/boats expected and discuss the effect of construction activities on marine traffic on the Lower New York Bay.

### *AIR QUALITY*

Emissions from on-site construction equipment and on-road construction vehicles, as well as dust-generating construction activities, all have the potential to affect air quality. In general, much of the heavy equipment used in construction is powered by diesel engines—including those on marine vessels such as barge cranes and tug boats— and produces relatively high levels of nitrogen oxides (NO<sub>x</sub>) and PM. Fugitive dust generated by construction activities also

contains PM. Finally, gasoline engines produce relatively high levels of CO. As a result, the primary air pollutants of concern for construction activities include nitrogen dioxide (NO<sub>2</sub>), PM with an aerodynamic diameter less than or equal to 10 micrometers and 2.5 micrometers ((PM<sub>10</sub> and PM<sub>2.5</sub>), and CO.

Most of the construction activities under the Proposed Actions are anticipated to occur in water and more than 1,000 feet from the nearest residences in Tottenville. However, the Proposed Actions would also include construction of a dune system and other activities on land. Depending on the intensity of activities during the peak construction period, the construction air quality impact assessment will either contain a detailed qualitative discussion of emissions or a quantitative analysis (i.e., predicted concentrations calculated using the AERMOD dispersion model).

The detailed qualitative analysis would estimate fugitive dust emissions and the emissions from construction equipment including marine engines such as barge cranes and tug boats, worker and delivery vehicles. The analysis would then qualitatively review the projected activity and equipment in the context of emissions intensity, duration, and location relative to nearby sensitive locations; and identify any project-specific control measures (beyond those required by any applicable State or local laws or regulations) required to further reduce the effects of construction and to eliminate any significant adverse air quality impacts. Strategies to reduce impacts may include: diesel equipment reduction; clean fuel; best available tailpipe reduction technologies; utilization of equipment that meets specified emission standards; and fugitive dust control measures.

For the quantitative analysis, concentrations would be predicted using AERMOD to determine the potential for air quality impacts during on-site construction activities and due to construction-generated traffic on local roadways. Concentrations for each pollutant of concern (CO, PM, and NO<sub>2</sub>) due to construction activities at each sensitive receptor would be predicted during the most representative worst-case time period(s). The potential for significant adverse impacts would be determined by comparing modeled concentrations to NAAQS, and modeled increments to applicable *de minimis* thresholds.

In addition, the CAA (42 U.S.C. 7401 et seq.), and in particular sections 176 (c) and (d), prohibits federal assistance to projects that are not in conformance with the SIP. Therefore, this section will include a conformity analysis to determine the consistency of the proposed construction activities with the strategies contained in the SIP for the area. At any receptor sites where violations of standards occur, further analyses will be performed to determine what mitigation measures would be required to attain standards.

### *NOISE*

The construction noise assessment will include a detailed qualitative discussion of noise levels from construction equipment, including marine engines such as barge cranes and tug boats as well as mobile sources. The analysis will include a conservative estimate of intensity, duration, and location of noise emissions relative to nearby sensitive locations, based on projected construction activity and equipment. Estimated noise levels will be compared to existing levels measured at up to two locations on the shore during the expected hours of construction work. If necessary, the analysis will identify project-specific control measures required to reduce the effects of construction and avoid or minimize any significant adverse impacts. Such measures may include noise barriers, equipment curtains or enclosures, quieter equipment, relocation of equipment, acoustically rated windows, and alternate means of ventilation.

If the detailed qualitative construction assessment indicates the need for further analysis, a quantitative analysis (i.e., modeling of noise levels using the Federal Highway Administration’s [FHWA’s] Roadway Construction Noise Model [RCNM] and CadnaA model) will be conducted to determine the potential for noise impacts during on-site construction activities and due to construction-generated traffic on local roadways. During the most representative worst-case time period(s), noise levels due to construction activities at each sensitive receptor will be modeled, and the feasibility, practicability, and effectiveness of measures to avoid or minimize any significant adverse construction noise impacts will be examined, as needed.

#### *CULTURAL RESOURCES*

The cultural resources analysis will assess whether the proposed construction activities would affect any archaeological or architectural resources in the project area. A detailed technical approach is provided above in “Cultural Resources.”

#### *SOCIOECONOMIC CONDITIONS*

This section will evaluate potential socioeconomic impacts, both adverse and beneficial, that would result from construction of the Proposed Actions. A detailed technical approach is provided above in “Socioeconomics.”

#### *OTHER ANALYSIS AREAS*

The construction impacts assessment will include discussion of other areas—e.g., Parklands and Recreational Resources, Visual Resources, Land Use and Neighborhood Character, and Community Facilities, etc., as needed.

### **PUBLIC HEALTH**

According to the *CEQR Technical Manual*, public health is the organized effort of society to protect and improve the health and well-being of the general population through monitoring; assessment and surveillance; health promotion; prevention of disease, injury, disorder, disability and premature death; and reduction of inequalities in health status. The goal of CEQR with respect to public health is to determine whether adverse impacts may occur as a result of a Proposed Action, and if so, to identify measures to mitigate them.

According to the *CEQR Technical Manual*, a public health assessment may be warranted if an unmitigated significant adverse impact is identified in the areas of air quality, water quality, hazardous materials, or noise. If unmitigated significant adverse impacts are identified in any of these areas and the lead agency determines that a public health assessment is warranted, an analysis will be provided for that specific technical area.

### **NEIGHBORHOOD CHARACTER**

As defined in the *CEQR Technical Manual*, neighborhood character is an amalgam of the various elements that define a neighborhood’s personality. These elements may include a neighborhood’s land use, urban design and visual resources, cultural resources, socioeconomic, traffic, and noise. A preliminary neighborhood character assessment will be prepared to identify the defining features of the neighborhood and determine whether the Proposed Actions would have the potential to affect these defining features, either through the potential for a significant adverse impact or a combination of moderate effects in relevant technical areas. If the Proposed Actions has the potential to affect the defining features of the neighborhood, a detailed

## **Coastal and Social Resiliency Initiatives for Tottenville Shoreline**

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assessment of neighborhood character will be prepared consistent with the methodologies of the *CEQR Technical Manual*.

### **MITIGATION**

If significant project impacts are identified in the analyses discussed above, measures will be identified and assessed to mitigate those impacts. Where impacts cannot be mitigated, they will be described as unavoidable. Examples of potential mitigation measures are identified in the discussions of natural resources and construction noise in this Scope of Work.

### **CUMULATIVE EFFECTS**

The cumulative effects of the Proposed Actions, considered in conjunction with other projects being constructed and/or operated within the same vicinity and time frame, will be assessed in this section of the EIS.

### **OTHER CHAPTERS**

Additional chapters for the EIS may include the following (as appropriate):

- Unavoidable significant adverse impacts
- Growth-inducing aspects of the Proposed Actions
- Irreversible and irretrievable commitment of resources \*