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

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 Shoreline Protection Project (Shoreline Project). While the Living Breakwaters and Tottenville Shoreline 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 will be leveraged—as required by the HUD-sponsored Rebuild By Design (RBD) process—through additional funding sources) 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 Shoreline 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 Shoreline 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.

The Draft Scope of Work (Draft Scope) for this project was issued on April 1, 2015. Oral and written comments were received during the public scoping session held on April 30, 2015. Written comments were accepted from issuance of the Draft Scope through the public comment period which ended June 15, 2015. This Final Scope of Work (Final Scope) reflects modifications due to certain design advancements since the issuance of the Draft Scope as well as changes made in response to relevant public comments on the Draft Scope (see attached Response to Comments).

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 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.[1]

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

[1] *PlaNYC—A Stronger, More Resilient New York,* June 2013.

"centroids" are located within the New York State Department of Environmental Conservation (NYSDEC)-mapped Coastal Erosion Hazard Areas (CEHAs)[1].

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 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.

[1] Identification of a building's "centroid" indicates that the majority of the building is located within the CEHA.

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 Shoreline Protection Project was conceived through the NY Rising planning process, and proposes new shoreline protection features as a coastal resiliency strategy for the Tottenville area. New York State proposes to use approximately $6,750,000 of CDBG-DR program funds to implement this project along the Tottenville shoreline from approximately Carteret Street to Page Avenue.

RAISE SHORELINES CITYWIDE STUDY

In 2014 the New York City Economic Development Corporation (NYCEDC) announced its intention to study and identify high risk shorelines citywide that are most vulnerable to sea level rise and erosion then prioritize those shorelines for future design and construction. This study is currently being undertaken and analyzes approximately 43 miles of at-risk shoreline across the five boroughs (including the South Shore of Staten Island) with a goal to evaluate localized measures to reduce coastal risk, make recommendations for resiliency investments, and coordinate with other local coastal protection actions. This on-going study includes evaluation of the Tottenville shoreline, which to the extent relevant, could inform elements of the Tottenville Shoreline Protection Project described above.

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.*

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 examines 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; and
- 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; and
- 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 SHORELINE PROTECTION PROJECT (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

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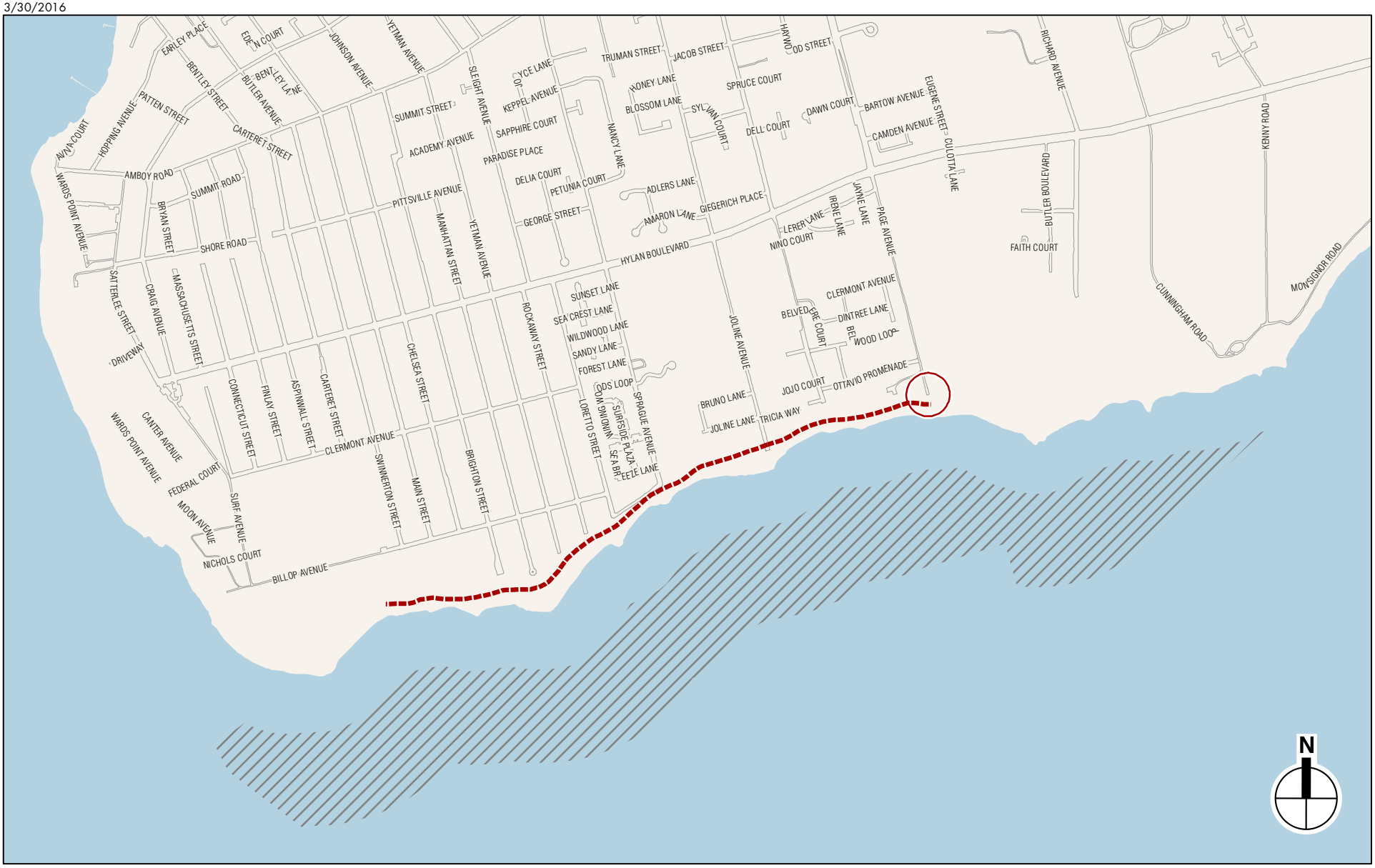

Zone of Potential Breakwater Alignment

Approximate Location of Proposed Water Hub (exact location to be determined)

Proposed Shoreline Project Elements

FOR ILLUSTRATIVE PURPOSES ONLY

0 2,000 FEET

Coastal and Social Resiliency Initiatives for Tottenville Shoreline

Project Location

Figure 1

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 protection 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, 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 SHORELINE PROTECTION PROJECT (NY RISING COMMUNITY RECONSTRUCTION PROGRAM)

As the primary shoreline component of the Layered Strategy, the Shoreline Project would consist of a series of measures—including wetland enhancement, shoreline plantings, maritime forest restorations, berms, revetments, and hardened dune systems—from approximately Carteret Street to Page Avenue. Based on the existing topography of the area, the proposed protection measures would be tailored to the changing character of the shoreline along this stretch.

As proposed in the current design concept, the area between Carteret Street and Brighton Street would include an earthen berm that would serve as a tie-in to a hardened dune system proposed from approximately Brighton Street to Loretto Street. The dune system would be constructed

with a stone core and sand cap. 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.

At approximately Loretto Street, the proposed dune system would transition to an eco-revetment along Surf Avenue out to approximately Sprague Avenue. The proposed eco-revetment would then tie-in to another stretch of proposed dune that would gradually taper to existing grade within the area of Hybrid Oak Woods Park. As mentioned above, various shoreline treatments including wetland enhancement, shoreline plantings, and maritime forest restorations may be proposed in locations along the entire stretch of shoreline from approximately Carteret Street to approximately Page 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 shoreline elements proposed along this stretch.

Americans with Disabilities Act (ADA) accessible access points to the beach would be constructed along the shoreline protection system and would be considered and designed in tandem with the Water Hub project component. The draft operation and maintenance plan for the proposed shoreline protection system will be described in the EIS.

ALTERNATIVE 3— BREAKWATERS WITHOUT SHORELINE PROTECTION SYSTEM

This alternative will evaluate conditions with the proposed breakwaters in place (including the on-shore community Water Hub and associated landscape elements), but without a proposed shoreline protection system between approximately Carteret Street and Page Avenue.

ALTERNATIVE 4—SHORELINE PROTECTION SYSTEM WITHOUT BREAKWATERS

This alternative will evaluate conditions with the proposed shoreline protection system in place, but without the proposed breakwaters and Water Hub.

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. 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 shoreline protection elements 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 shoreline protection system 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), License to Collect, Possess, or Sell for shell fish placement and post-construction biological monitoring.
- 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 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.

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

- USACE;
- EPA; and
- 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 is 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.

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[1], 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 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*:

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[1] 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.

> …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). 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.

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*

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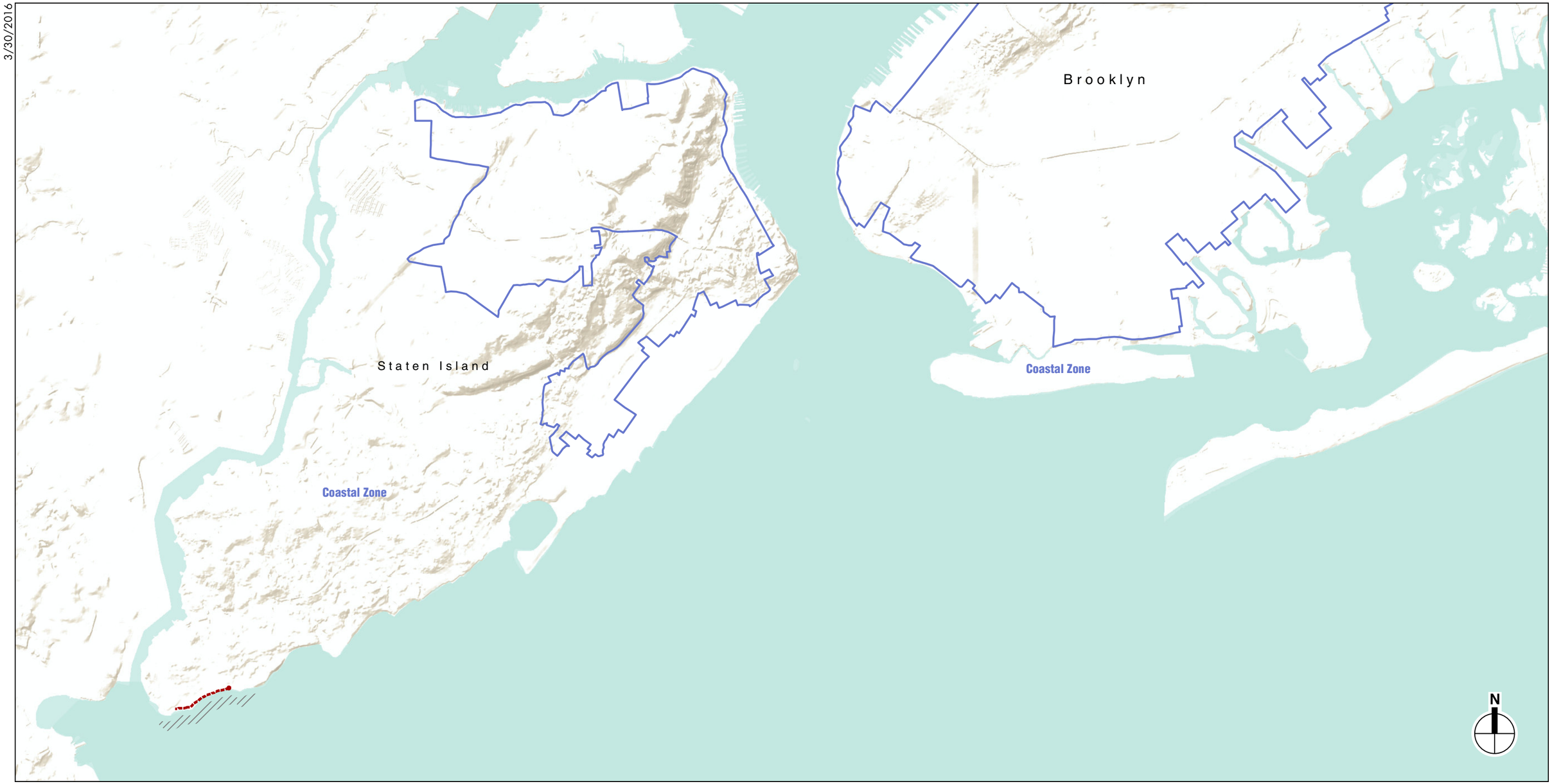

Zone of Potential Breakwater Alignment

Approximate Location of Proposed Water Hub (exact location to be determined)

Proposed Shoreline Project Elements

FOR ILLUSTRATIVE PURPOSES ONLY

0 2 MILES

Coastal and Social Resiliency Initiatives for Tottenville Shoreline

Landward Coastal Zone Boundary

Figure 2

(December 1997). The environmental justice analysis will also be used by 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 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) or undisturbed prehistoric landforms with the potential to contain archaeological resources. 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 elements of the proposed Shoreline Project, 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 Shoreline Project elements 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 Shoreline Project elements. 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

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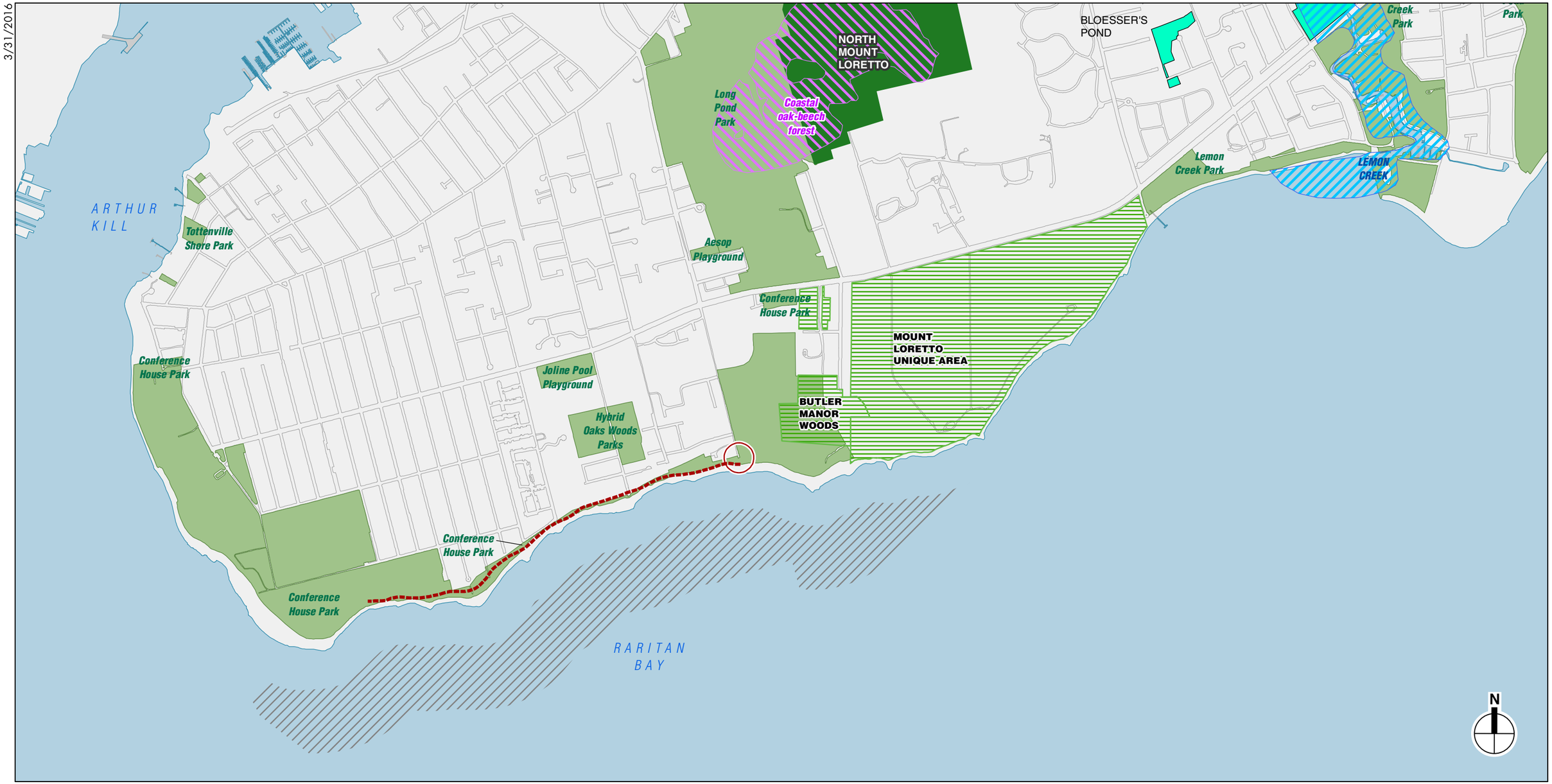

Zone of Potential Breakwater Alignment

Approximate Location of Proposed Water Hub (exact location to be determined)

Proposed Shoreline Project Elements

NYS Significant Natural Communities

NYC Significant Coastal Fish and Wildlife Habitat

NY State Forest

NYS Tidal Wetland

NYS Unique Area

Parks and open space

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0 2,000 FEET

Coastal and Social Resiliency Initiatives for Tottenville Shoreline

NYS Significant Habitats and Natural Communities

Figure 3

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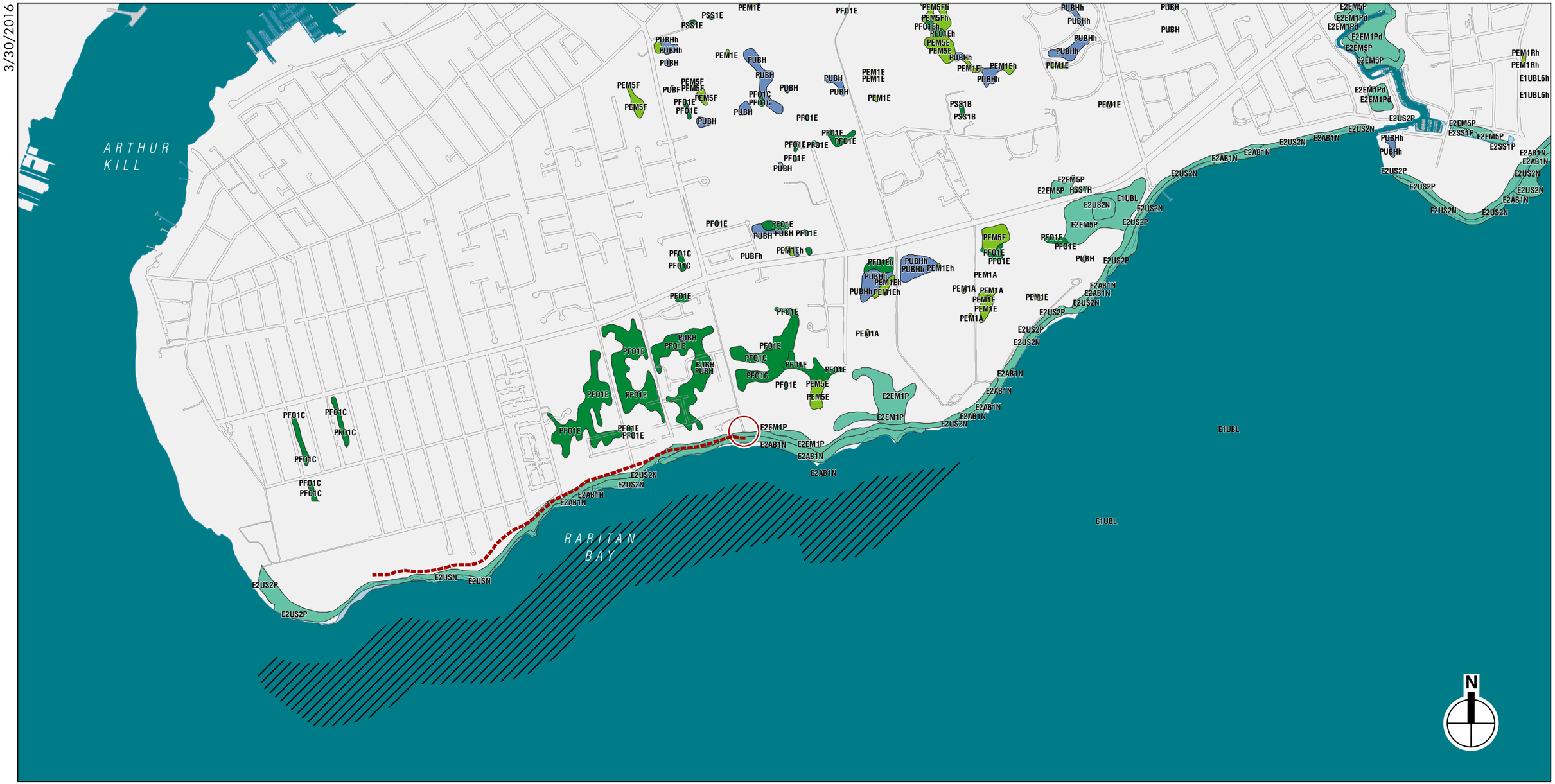

Zone of Potential Breakwater Alignment
Approximate Location of Proposed Water Hub (exact location to be determined)
Proposed Shoreline Project Elements

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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USFWS National Wetlands Inventory

Figure 4

Coastal and Social Resiliency Initiatives for Tottenville Shoreline

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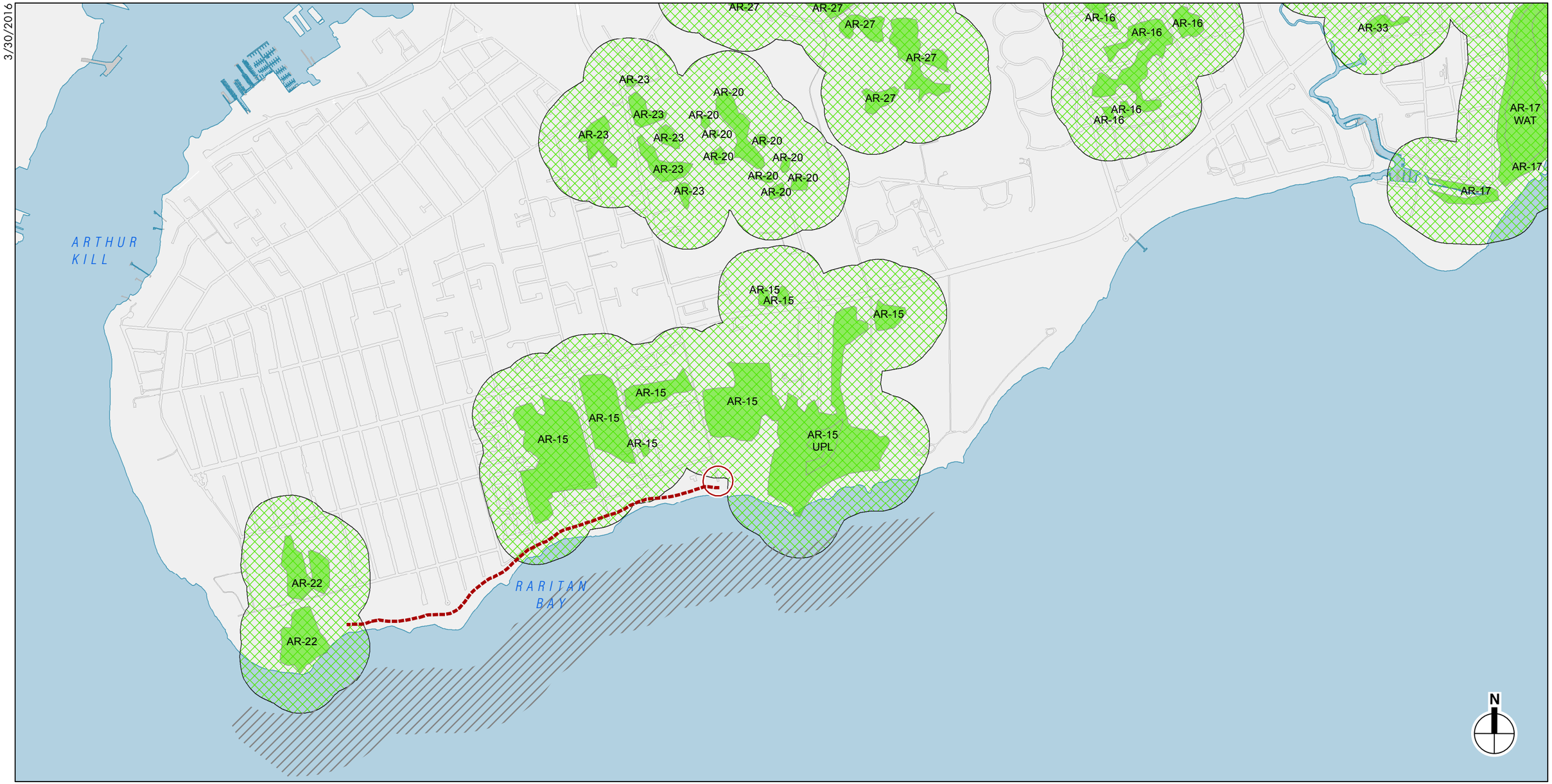

Zone of Potential Breakwater Alignment

Approximate Location of Proposed Water Hub (exact location to be determined)

Proposed Shoreline Project Elements

State-regulated freshwater wetlands

Wetlands checkzone

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0 2,000 FEET

Coastal and Social Resiliency Initiatives for Tottenville Shoreline

NYSDEC Freshwater Wetlands

Figure 5

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 Shoreline Project. 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 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 shoreline protection 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 shoreline structure (e.g., proposed berm, dune and revetment, and restored/enhanced shoreline vegetation) 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.
- 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

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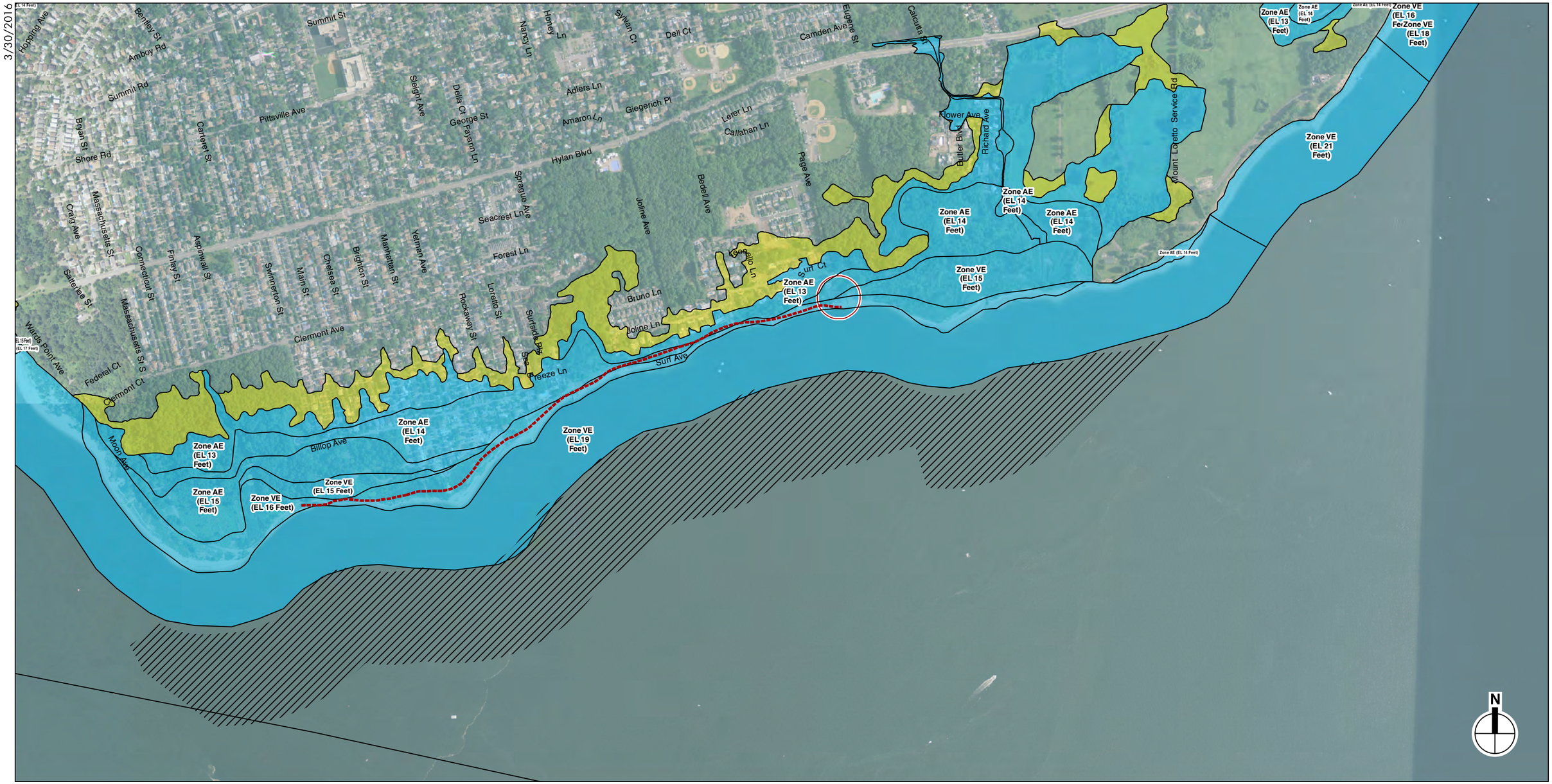

Zone of Potential Breakwater Alignment

Approximate Location of Proposed Water Hub (exact location to be determined)

Proposed Shoreline Project Elements

1% Annual Chance Flood Hazard (100-year floodplain)

0.2% Annual Chance Flood Hazard (500-year floodplain)

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0 2,000 FEET

Coastal and Social Resiliency Initiatives for Tottenville Shoreline

FEMA Flood Hazard Preliminary

Figure 6

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 shoreline elements 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 shoreline protection elements 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 shoreline protection elements, 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 shoreline protection elements, 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 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 $PM_{2.5}$ 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_2, ozone, PM_{10}, and $PM_{2.5}$ 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[1] 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_2e) metric tons per year. GHG emissions other than carbon dioxide (CO_2) 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.

[1] NYSDEC, Guide for Assessing Energy Use and Greenhouse Gas Emissions in an Environmental Impact Statement, July 15, 2009.

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 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 Water Hub and the structural shoreline elements along the shoreline in Tottenville (from approximately Carteret Street to east of Sprague 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_x) 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_2), PM with an aerodynamic diameter less than or equal to 10 micrometers and 2.5 micrometers ((PM_{10} and $PM_{2.5}$), 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 structural shoreline elements 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_2) 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 Actions, 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, socioeconomics, 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 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 ✷

Attachment A Response to Comments on the Draft Scope of Work

This document summarizes and responds to comments on the Environmental Impact Statement (EIS) Draft Scope of Work for the Coastal and Social Resiliency Initiatives for Tottenville Shoreline, Staten Island, NY, issued on April 1, 2015. Oral and written comments were received during the public scoping session held on April 30, 2015, by 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. Written comments were accepted from issuance of the Draft Scope of Work through the public comment period which ended June 15, 2015.

Section A of this document lists the organizations and individuals who provided relevant comments on the Draft Scope of Work. Section B contains a summary of these relevant comments and a response to each. These summaries convey the substance of the comments made, but do not necessarily quote the comments verbatim. Comments are organized by subject matter and generally parallel the structure of the Draft Scope of Work. Where more than one commenter expressed similar views, those comments have been grouped and addressed together. A number of commenters submitted general comments to the proposed project but did not have specific comments related to the Draft Scope of Work. These comments were given due consideration but are not itemized below.

A. LIST OF COMMENTERS

LOCAL ORGANIZATIONS

1. Christopher Broughton, Tottenville Civic Association, written comments
2. Phyllis Broughton, Tottenville Civic Association, written comments
3. Robert DeBiase (Transportation 18 Alternatives, the Staten Island Activist 19 Committee), oral comments
4. Linda Culter Hauck, Tottenville Historical Society, written comments
5. John Malizia, Fisherman's Conservation Association, oral comments
6. James M. Pistilli, Tottenville Civic Association, oral and written comments
7. Natural Resources Protective Association, written comments

INTERESTED PUBLIC

1. Peg Brunda, oral comments
2. Patricia Crispi, written comments
3. Dennis Dellangelo, oral comments

4. Andrew Desimione, written comments
5. Debbie Donato, written comments
6. Mr. & Mrs. Michael Fenga, written comments
7. Jeanette Fuoco, written comments
8. Goody Halvorsen, oral and written comments
9. Kerry Halvorsen, oral and written comments
10. Amelia Lindauer, oral comments
11. Jeffrey Lindauer, written comments
12. Dianne Mattioli, written comments
13. Cecile Palumbo, oral comments
14. Sophia Palumbo, oral comments
15. Parente, written comments
16. Veronica Petersen, oral and written comments
17. Anthony Pimpinella, oral comments
18. Saverio Salemi, oral comments
19. Diane Silverman, oral and written comments
20. Stacey Tancredi, written comments
21. Allison Tohl, written comments
22. Dee Vandenburg, oral comments

B. COMMENTS AND RESPONSES

PROJECT PURPOSE AND NEED

Comment 1: We have in front of my home a substantial barrier; however, the amount of sand and actual beach area that's there has been decreased significantly.

One of the comments made was to preserve the beach width, which in front of our homes has been decreased by half. (Brunda)

I saw that city water main on the beach way before the storm. When the New York City Department of Transportation (NYCDOT) had that property, they would always bring sand back up and build a berm back up. And it wouldn't have gotten hit that bad, how bad it got hit. (G. Halvorsen)

Response: As described in Scope of Work, 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.

Comment 2: What impact does this have on the quality of life of the individuals who live in these areas? You've talked about social resiliency and in doing that, you referred to the center which is yet to be created. And to me, social resiliency also involves the community. That is what social resiliency is; not a center, but a people. And that's what we need to stand there and look at. There is so much talk about the environmental impact and there is not much talk about the social impact. (Brunda)

Response: As stated in the Scope of Work, the Purpose and Need of the Project includes Social Resiliency objectives which are in furtherance of the comment.

Comment 3: We need to consider accessibility for people and the fishermen. (Petersen)

Response: As described in the Scope of Work, one of the objectives of the Proposed Actions is Social Resiliency, which includes increasing physical and visual access to the water's edge.

PROJECT ALTERNATIVES

Comment 4: If it becomes apparent that the impact to the environment would prevent work in the water from happening and it can't be done, what will be done for us? What will the government do for us? What will the governor do for us? Are we going to be forced to stay there, be at risk, not get the money we should be getting for our homes if we need to sell, not being able to afford flood insurance? I am not assuming you have the answer now. We were told and it was believed that other things were going to work for us, whether it was something that has nothing to do with you, like Build it Back, and things turned out not to work. I would like you to please bring that question to Governor Cuomo because we are hurting enough that he took the buyout away from us. (Lindauer)

Response: The Proposed Actions include extensive planning, design and regulatory consultation efforts aimed at developing and implementing viable resiliency improvements. In addition, other programs and actions being undertaken to improve resiliency in the Project Area will be described as part of the No Action Alternative of the EIS.

Comment 5: At the bottom of Joline, the elevation is about four feet higher than Sprague Avenue where you want to put this wall. After Joline, going towards Mount Loretto, the elevation drops like you wouldn't believe. Now, we get another storm surge like that, the water is going to end up going through Mount Loretto and coming up behind everything that you're building. What are you going to be doing about that? (G. Halvorsen)

Right now you've got temporary sandbags and I know you've got the rock wall behind the sandbags. With the right pavement behind, you'll be fine. And then a

little past Sprague towards the Conference House, they need to raise that elevation up. (G. Halvorsen)

Please, Governor Cuomo, put up that wall between Brighton Street and Swinnerton because the rest of the wall between Joline and Brighton is a solid wall. But then everybody else going towards the Conference House is left on the wayside. So we want to be included with you. (Silverman)

You're stopping this at Joline. The low part is past Joline from Brighton toward the Conference House and from Page Avenue toward Joline. They're the low areas, between Joline and not even Bedell. We're six feet higher than either end. That's where it all came from, behind. So I think that needs to be looked at. (K. Halvorsen)

It is necessary to provide Brighton to Swinnerton with protection. Please continue to build the dunes from Brighton south. (Tohl)

I am requesting that the Governor's Office of Storm Recovery revise the current proposed plan for:

1) The construction of hardened (permanent) dunes along the Tottenville Shoreline from Joline Avenue to Brighton Street to include the area from Brighton Street to Swinnerton Street; or

2) To develop an alternate project that will protect this area from future storm surge and resultant damage.

Super Storm Sandy collectively caused several million in damage to area homes and to the Lenape Playground and other areas of Conference House Park. Without permanent dunes, these blocks are being left without protection in the event of another storm surge. (Mattioli, P. Broughton, Tancredi, Parente, Donato, Petersen, Halvorsen, Fuoco, Crispi, J. Lindauer, C. Broughton, Silverman, Hauck, Pistilli, Petitions from 182 Tottenville Beach Area Residents)

Response: In response to public comments and through preliminary design efforts the project area has been extended to include shoreline treatments from Carteret Street to Page Avenue. Under the current design concept, the shoreline protection structures will generally extend from Carteret Street to east of Sprague Avenue along with other potential shoreline treatments from east of Sprague Avenue to Page Avenue. During the design process, GOSR will analyze the feasibility of these other shoreline treatments providing a level of shoreline protection. The proposed breakwater system is intended to reduce wave action and address shoreline erosion for the entirety of this area.

Comment 6: I believe in jetties and seawalls. You've got the ground there right now. You just put the slope, the right paper behind, boulders, and build that up a little bit. If you build the jetties out, we'll be able to catch sand. And that will keep the

water offshore also. Did anybody look into that? Once you start doing this work in the bay a little farther, that's going to stop the sands from pushing up on the beach. (G. Halvorsen)

Response: As described in the Scope of Work, the EIS will evaluate a range of alternatives that meet the purpose and need of the project, and will include detailed hydrodynamic and sediment transport conditions for the Preferred Alternative.

Comment 7: Rather than standing there and having this dune system set up, would it be possible to have a second layer out in the water; and how high, what will it look like, what will the visual impact be for people, and how extensive will that go? And how much access will we have? (Brunda)

Response: The visual and other environmental impacts of the proposed dune system as well as its effects on visual and physical access to the waterfront will be analyzed in the EIS, as will the performance of various breakwater configurations.

Comment 8: You've got to look out for the homeowners that have been living down there for their whole lives. We definitely don't want a bike path in front of our house because that's where we moved to get away from everybody. You end up doing that, then at night, the kids all come out and they run up and down along there. If you're going to invest all this money, the money needs to be towards Sprague Avenue, towards the Conference House, all the low areas. (G. Halvorsen)

Response: Comment noted; input from the Tottenville community regarding the various aspects of the proposed project is welcome through regular citizen's advisory committee (CAC) meetings and other community outreach events, as well as through the EIS public process. It should be noted that the area mentioned in the comment is part of the existing public park. As noted in the Draft Scope of Work, the EIS will also include an assessment of neighborhood character. Also, see response to Comment 5.

Comment 9: Why is there no alternative being proposed north of the breakwater going up to Great Kills Park? That whole section is being left out and it has no other means of protection. (Pimpinella)

Response: As noted in the Scope of Work, in June 2013, HUD launched Rebuild by Design, a competition to respond to Superstorm Sandy's devastation in the northeast. 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. The coastline north of the proposed breakwaters project is outside the scope of this EIS.

Comment 10: The proposed dune location needs to move north to Cunningham Street and Richards Avenue, where it would be more effective. (Natural Resources Protective Association)

Response: As stated in the Final Scope of Work, the Tottenville Shoreline Protection Project (which includes a proposed hardened dune) was conceived through the NY Rising planning process. This EIS will evaluate the project that would use CDBG-DR program funds to implement shoreline treatments along the Tottenville shoreline from approximately Carteret Street to Page Avenue. The area mentioned in the comment is outside the scope of this EIS.

Comment 11: Where is the shipping channel with respect to the breakwaters? At the bottom of Seguine Avenue, it's 200 yards out. (Vandenburg)

Response: The potential location, size and footprint of the proposed breakwaters system will be determined through the conceptual design process and presented in the EIS. The EIS will contain detailed renderings of the breakwaters' position in relation to features such as the existing navigation channel. It should also be noted that GOSR undertook an extensive bathymetric survey of the project area. As mentioned in the Scope of Work, siting considerations would include maximizing reductions in wave heights and shoreline erosion, avoiding or minimizing habitat displacement, avoiding navigational impacts (including those associated with the navigation channel mentioned in the comment), and identifying favorable geotechnical conditions. At present, the northern limit of the proposed breakwater zone is far south of Seguine Avenue (at approximately Cunningham Road) where the navigation channel is farther out from shore.

Comment 12: What happens to us now until 2019? We are still going to have storms. (Petersen)

Response: It is anticipated that the shoreline protection elements of the Proposed Actions (including proposed berms, dunes and other measures) would be completed in advance of the breakwater system. Until such time, the existing temporary dunes that are currently in place from approximately Swinnerton Street to Sprague Avenue would remain and be maintained by the New York City Department of Parks and Recreation (NYCDPR).

Comment 13: I would suggest that you replenish the beaches in Tottenville every year and fund a fair market buyout, or a raising of the homes that were affected by Super Storm Sandy. (Fenga)

Response: As described in the Scope of Work, 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. The purpose and need for the Proposed

Actions has been defined as risk reduction (including attenuating waves, addressing shoreline erosion), and addressing coastal flooding, ecological enhancement, and social resiliency. It should be noted that there are existing programs for home elevation and home reconstruction in New York City.

Comment 14: If GOSR is serious about reducing wave height, how about reducing the Sand mining of sediment (sand) for construction purposes? The current permitted sand mining increases the depth of the bottom, allowing for greater wave heights. This is contradictory to the purpose of the dunes and Breakwaters, and potentially destructive to the Community Hub. (Natural Resources Protective Association)

Response: Comment noted. Regulation of any permitted sand mining activities is outside the scope of the EIS.

DESIGN AND ANALYSIS FRAMEWORK

Comment 15: What will the project look like; how big, how tall, what it's going to be made of and the exact locations of it? What is the exact location of the breakwaters? What is the exact location of the dunes? (K. Halvorsen)

Response: The potential location, size and footprint of the proposed project elements will be determined through the conceptual design process and presented in the EIS. In addition, project updates will be presented at future CAC meetings and other community outreach events.

Comment 16: I hope that this breakwater would consider the fact that there might be a ferry coming out of the bottom of Sharrott Avenue and that we don't have to go blasting our way through the breakwater if we ever get that ferry, that there will be some provision made for it or a channel or something specifically coming off the pier here. (Dellangelo)

Response: The northern limit of the proposed breakwater system is located far south of Sharrott Avenue; design and siting of the proposed breakwaters would take into account navigation concerns in the surrounding area.

Comment 17: Another concern I have is all the storm drains going out. You have two down by Sprague Avenue and you have one down Joline. And those things are constantly running. Now the water's going to be rushing out and it's just going to be staying in that area. That's one of the best clearing beds around at this time right now. What's going to happen? (G. Halvorsen)

If you put a breakwall out there, whatever water does get through is going to be stagnant and stay there. How are you getting that water out of there? (K. Halvorsen)

Response: As described in the Scope of Work, the design of the breakwaters (through an evaluation of such factors as elevation of the breakwater, distance from the shoreline, and separation between the breakwater segments) will consider the effects of the proposed system on long-term changes in circulation, flushing and sediment transport. The potential impacts of these effects including water quality will be evaluated in the EIS. In consultation with New York City Department of Environmental Protection (DEP) and the New York State Department of Environmental Conservation (NYSDEC), the existing and future infrastructure in the area will be surveyed and evaluated.

Comment 18: I have doubts about its effectiveness, about what we're going to be left with. There are millions of tons of broken concrete from cities that have been bombed over the last 20 years, from artillery shells and tank shells and missiles. And all of that munitions contains something called depleted uranium which a lot of the Gulf War veterans had suffered from coming back, that they breathe it in. There are tons of broken cities there that have this in it. And I want to make sure that we are all aware of that fact and wherever these tons and tons of stuff is coming from is not coming from somewhere where we're going to be looking at the three-eyed fish and our children can't go into the water for the rest of their lives. (Dellangelo)

I had read something that a project was done in Perth Amboy where they restored their beach. The government brought in previously contaminated soil which they cleaned but the environmentalists weren't happy with it nor were the residents. And I want to make sure that the City is aware of this sand and any sand that is used on any of these projects along Staten Island is clean sand. I don't want to find out years from now people have cancer and the fish have three eyes because they used this contaminated sand. So I want to make sure the Environmental Protection is fully endorsing all the materials that are being used on any project on Staten Island. (Silverman)

Response: Comment Noted. USACE and DEC will be responsible for permitting the placement of the sand and breakwater materials associated with the Proposed Actions.

Comment 19: When the storm comes the water gets behind the dunes and it can't get out. Capodanno Boulevard was raised, the hurricanes came, and they sat behind the boulevard. Those children in that car that went in there went into that hole behind Capodanno. These dunes are a problem. You go out to Long Beach and you go out to the Rockaways, they had five feet of sand in the streets of Long Beach. And these dunes just come after you. I do have some reservations on it. (Dellangelo)

Response: The design of the shoreline protection components of the Proposed Actions (including the proposed dune system) will take into account the topography and

drainage patterns in the project area. Consultation with DEP has been ongoing and information regarding the existing and future infrastructure improvements in the area will be used to inform the design of the shoreline protection system. As described in the Scope of Work, this includes a hardened dune system that would consist of constructed dunes having a stone core with a sand cap. 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.

Comment 20: The area at the bottom of Bedell towards Mount Loretto, it has got to be at least nine feet lower. And that's where the storm surge came in, from the ocean, that way. So now if you have that storm surge again, it's getting behind the wall you're going to build and it's going to flood out people even more. (G. Halvorsen)

Response: In response to public comments and through preliminary design efforts, the shoreline project limits have been extended both to the north and the south (from approximately Carteret Street to Page Avenue) in order to address topographic and shoreline conditions. Under the current design concept, the shoreline protection structures will generally extend from Carteret Street to east of Sprague Avenue along with other potential shoreline treatments from east of Sprague Avenue to Page Avenue. Also see response to Comment 19.

Comment 21: Will the placement of the breakwater project divert nature's course and affect areas which are "safe" now to become vulnerable in the future by diverting the tides elsewhere? (Desimione)

The installation of Breakwaters may cause a shifting of sediments and creation of sandbars and shoaling. If these shoals are created, who would be responsible for either allowing the sandbars to expand, or contract with ACOE for their removal? (Natural Resources Protective Association)

Response: The design of the project elements and the analyses of the EIS will take into account detailed hydrodynamic and sediment transport conditions for the Preferred Alternative to address concerns such as those expressed in the comments above.

Comment 22: In addition to the dunes we also need our sewers fixed. Every time it rains heavily our street over flows with water and floods my basement. (Tohl)

I'm concerned about the sewers, the combined sewer overflows. When it rains or when there's a surge, the water comes up the street through the manholes. (C. Palumbo)

When the water comes, you have to think about opening up the sewers because every time it rains a lot, the water comes almost up the block—four, five inches of water, regular water, coming up. (Salemi)

Response: The project will coordinate closely with DEP regarding the area-wide drainage plan as it relates to the proposed shoreline protection system. Although drainage concerns not related to the shoreline protection system are outside the scope of this project, the EIS will describe other efforts underway by the City to address such issues. In addition, the EIS will analyze impacts related to sewer and water infrastructure.

VISUAL CHARACTER

Comment 23: The area where these dune systems would be located involves my home. I wish that in the presentation there would've been a 3D picture of exactly what this is going to look like because that would really impact significantly on people. (Brunda)

Response: The potential location, size and footprint of the proposed project elements will be determined through the conceptual design process and presented in the EIS. In addition, project updates will be presented at future CAC meetings and other community outreach events. Also, as described in Draft Scope of Work, a visual character assessment will be undertaken in accordance with NYSDEC's methodologies for assessing and mitigating visual impacts.

SEWER AND WATER INFRASTRUCTURE

Comment 24: When Sandy came in, it inundated into the sanitary sewer lines. A lot of these areas have sanitary sewers. No storm sewers exist currently. There should be not one combination sewer on this end of Staten Island for the Oakwood Beach sewer treatment plant. (Vandenburg)

Response: As mentioned in the Draft Scope of Work, the EIS will describe the City's existing and future drainage plans for the area to the extent they are relevant to the project, as well as measures to deal with issues such as those mentioned in the comments. The EIS will evaluate the impacts of the project components with respect to sewer and water infrastructure, as well as water quality.

NATURAL RESOURCES

Comment 25: The footprint of the breakwaters seems to be approximately 8,000 square feet. The DEIS needs to address the loss of 8,000 square feet of valuable benthic habitat, especially near Page Ave, which is loaded with existing structure, crustaceans, fin fish, arthropods, and much more. What would be the mitigation for the habitat loss? (Natural Resources Protective Association)

My main reservation is the fact that the bottom of this bay is like this floor. It is silt and it has been that way for millions of years. It's what the oysters came for. It's what the clams are there now because of. Looking at this cross-section and what they want to put out there is a huge change to the environment, underwater and above the water, boating in addition. Trying to get your boat around this thing is going to be a lot of fun. I'm sure they're not going to have lights all over it. (Dellangelo)

Response: Subsequent to the issuance of the Draft Scope of Work, an extensive data collection program was undertaken to characterize the existing natural resources within or in the vicinity of the proposed project area. This included 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). As detailed in the Scope of Work, the EIS will assess the Proposed Actions' potential impacts on natural resources, 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. The breakwaters will require permits from USACE and NYSDEC including the requirements of Section 404 of the Clean Water Act which includes an evaluation of benthic habitat. With respect to navigation and lighting, the design and siting of the proposed breakwaters would take into account navigation concerns in the surrounding area. As noted in the Scope of Work, prior to implementation, GOSR will, to the extent required, coordinate with the United States Coast Guard to seek any relevant authorization regarding marking/lighting for new in-water structures.

Comment 26: Please have the DEIS outline who is watching and monitoring the forced main private sewage treatment and pumping stations. The NYSDEC, New York City Department of City Planning, and New York City Department of Buildings need to take responsibility for these "Force Mains", which are constructed to enable developments, but then abandoned as the Homeowners Association realizes how much the pump maintenance costs. Consequently, the pumps become inoperable, discharging raw sewage until such time the residents and elected

officials urge DEP to step in and enact repairs/replacement. Unless the DEIS addresses these sewage and non- point source pollution water quality issues prior to Project implementation, the "Living Breakwaters" are likely to struggle, suffocate and sadly, expire. (Natural Resources Protective Association)

Response: As described in the Scope of Work, to the extent necessary and relevant, the EIS will evaluate potential effects to infrastructure, including sanitary and storm sewer systems, and the effect of discharges from these systems to the Raritan Bay that would result from the Proposed Actions.

Comment 27: You were talking about making sure the breakwaters don't trap any contaminated waters. That sewer, the overflows from the sewage, goes right into Raritan Bay in a couple of spots, the end of Yetman, of Loretto, of (inaudible). How is the project going to affect the sewage? Are they going to change the system or is there a study involved? (C. Palumbo)

Response: As described in the Scope of Work, to the extent necessary and relevant, the EIS will evaluate the impacts of the project components with respect to sewer and water infrastructure, as well as water quality.

Comment 28: A huge part of the "Living Breakwaters" is oyster propagation. Water quality of the proposed area of the breakwaters is subject to sanitary sewer discharges, combined sewer overflow, and illegal septic discharges, all of which contribute to algae blooms, known as "red tide" or "brown tide." The hypoxic conditions starve the water of oxygen. The average temperature of the Raritan Bay waters is steadily increasing, causing disgusting and deadly algal blooms. The water needs a minimum of 5 ppm of dissolved oxygen to support marine life. The sewage in the bay lowers the concentration of dissolved oxygen. At times, the waters have so much bacteria and fecal coliform that shellfish harvested from Raritan Bay must be transplanted to Suffolk County for "depuration." The DEIS needs to address the required water improvement for "Breakwaters" to support life. (Natural Resources Protective Association)

Response: As described in the Scope of Work, the EIS will evaluate the impacts of the project components with respect to sewer and water infrastructure, as well as water quality. In addition, the EIS will evaluate the potential water quality improvements resulting from the establishment of a sustainable mollusk population on the breakwater.

Comment 29: What will be the maintenance schedule for the oyster pens and cages, to remove the sea grapes, bladder wrack, and debris that might accumulate and suffocate the larval oysters? This maintenance of breakwaters needs to be built into the DEIS. (Natural Resources Protective Association)

Response: Comment noted. Standard protocol for the maintenance and monitoring of the proposed project elements will be addressed in the EIS.

TRANSPORTATION

Comment 30: If you build the water hub building, obviously there's going to be some traffic for that. Where would you build a parking lot for that or where would there be parking for it? Because if you build it right on the beach, it's all parks around there. (S. Palumbo)

Response: The design of the proposed Water Hub would include consideration of parking needs based on its anticipated programming. The community will have an opportunity to discuss these concerns as part of future CAC meetings and other community outreach events. As described in the Scope of Work, preliminary findings will be made on the level of analyses warranted to assess potential transportation-related impacts. If warranted, traffic analyses, parking and vehicular and pedestrian safety assessments will be conducted.

CONSTRUCTION

Comment 31: Hopefully when the time comes and the vehicles can be brought in, there can be community input in terms of looking at the best places of where to deal with construction vehicles, where to have sites for materials to be so that the community is not adversely impacted. (Pistilli)

Response: The community will have an opportunity to discuss these construction-related concerns as part of future CAC meetings and other community outreach events. In addition, as described in the Scope of Work, the EIS will provide an assessment of construction-related impacts including those related to transportation and equipment staging.

Comment 32: I have some concerns with what's going to be going on during the construction phase and I'm worried about accessibility for the public to the beach and also the adjacent parkland. (S. Palumbo)

Response: As described in the Scope of Work, the operations of the parkland in the project area and the effects of the Proposed Actions on these resources (during construction and after completion) will be discussed in the EIS.

Comment 33: What are you going to do to mitigate the noise problem during construction, especially working on the dunes, because you’re right next to people’s homes. (S. Palumbo)

Response: As detailed in the Scope of Work, the construction noise assessment in the EIS will include a detailed qualitative discussion of noise levels from construction

equipment 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.

Comment 34: When they temporarily put those dunes in, they destroyed some of our infrastructure and wildlife. (Petersen)

Response: The EIS will provide an assessment of the potential for construction-related impacts including those related to natural resources. The design of the project elements will be undertaken in consideration of existing and future infrastructure in the project area.

Comment 35: Where are the fishermen going to fish during construction? (Petersen)

Response: In-water construction activities are anticipated to be concentrated in the area of the proposed breakwater footprint. Other portions of the bay will be available for recreational fishing. In addition, construction activities are not likely to occur throughout the year depending on seasonal constraints and any relevant regulatory restrictions. As noted in the Scope of Work, prior to construction, GOSR will coordinate with the United States Coast Guard to seek any relevant authorization regarding marking/lighting for new in-water structures and placement of construction barges.

MITIGATION

Comment 36: If the DEIS is going to speak to unavoidable adverse impacts, and through analysis it becomes apparent that impacts are severely detrimental, please have the DEIS add in: Acquisition of parcels along Joline Lane, and Tricia Way, and bottom of Bedell Avenue for Parkland, resiliency and flood plain absorption. Also, privately held vacant property at Chester Avenue between Huguenot Ave and Arbutus Ave needs to be added to nearby Wolfes Pond Park for flood plain resiliency. (Natural Resources Protective Association)

Response: It should be noted that many of the areas mentioned in the comment are outside the project area. As described in the Draft Scope of Work, the EIS will assess the potential impacts associated with occupying the floodplain. All feasible mitigation measures will be explored, as necessary. Where impacts cannot be mitigated, they will be described as unavoidable.

GENERAL SUPPORT

Comment 37: The Fisherman's Conservation Association supports the breakwaters. We've been trying to get reefs into the bay. This is an alternative to the reefs. We hope that this really works out, especially with the Mayor's Billion Oyster Project.

This is a help. But it's a help to the community, fishing community, boating community and Tottenville Community. (Malizia)

Response: Comment noted.

Comment 38: The Tottenville Civic has worked probably for the last year and a half with the various entity to develop the Breakwaters Project including commenting with them. We would like to commend the fact that having examined all of the options—someone talked before about a seawall—I think we esthetically have probably the best proposal on Staten Island. We will not have an obstructed view of the water, we will enhance the shoreline, and we'll enhance the recreational, environmental and ecological aspects. So we want to basically applaud the work that the committee has done, the governor. We're optimistic that this project will go there, that it will succeed, and it will achieve the goals we're establishing this evening. It's up to all of us to work with you to make sure that the concerns are answered. (Pistilli)

Response: Comment noted.

Comment 39: We are extremely grateful to be awarded the Living Breakwaters Project in Tottenville. However, the temporary sand dunes between Brighton Street and Swinnerton Street, even with an additional landing, are not adequate protection for the community. They are constantly vandalized by dirt bikes and other activities and they require too much maintenance. And they're not stable enough. A solid structure, whether of stone or wall, in conjunction with the Breakwaters Project and an approval by the Army Corps of Engineers is what's needed. Everyone needs to understand we must be approved by the Army Corps of Engineers. If we are not, it will not reduce our flood insurance. If we have approval, our flood insurance could go maybe to 600 or something a year. It will protect the lives of homeowners and still allow plenty of access to the beach. It will reduce the wave action and therefore lower our flood insurance. It will also protect our home prices and we can live our lives in peace. (Silverman)

Response: Comment noted. For clarification, while the Army Corps of Engineers has jurisdiction over permits under Section 404 of the Clean Water Act, the flood insurance rate map (FIRM) process is regulated by the Federal Emergency Management Agency (FEMA). FEMA must formally determine whether the maps can be modified and result in reductions. GOSR will consult with FEMA regarding the Proposed Actions' potential risk reduction.

MISCELLANEOUS

Comment 40: Has this project been done before? (Pistilli)

Response: There are many breakwater projects that have been implemented in the United States and abroad.

Comment 41: There's physical health, mental health, social health, emotional health. We need think about what public health really means. (Brunda)

Response: Comment noted. As noted in the Scope of Work, to the extent relevant, the EIS will include an evaluation of public health as per CEQR guidelines.

Comment 42: This project has a number of opportunities to improve alternate transportation, like, bicycle and pedestrian access along the East Shore. Back in the 1990s, there was this bicycle master plan and parts of it had been built on the East Shore around South Beach and the Midland Beach area. South of Eltingville that plan was replaced by bike lanes on Hylan Boulevard, which were not received very well by automobile drivers and they haven't been received that well by bicyclists either perhaps because of all the heavy traffic and high speed on Hylan Boulevard. It would be nice to use this project as an opportunity to go back to the bicycle master plan and put a trail there that has sufficient connectivity to the crossroads that actually provide some access. It's not just a recreational trail but an alternate trail as well. The living breakwaters look like they go all the way up to around Cunningham. If you can have some sort of a trail from Billop, you can go by bicycle from Conference House Park to Sprague and then you are forced onto Hylan Boulevard. (DeBiase)

Response: Comment noted, however, the focus of this EIS is to evaluate the environmental impacts of the proposed resiliency initiatives for the Tottenville shoreline. Alternative transportation proposals are not included as part of the Proposed Actions.

Comment 43: As people see at the bottom of Sprague, those temporary sandbags are deteriorating. Once a storm comes or just regular erosion, where is the money coming from to maintain this for the life of it? Who's paying for that? Once it's installed, who's maintaining when it deteriorates? (K. Halvorsen)

The people in the area come with quads and destroy the temporary dunes. (Salemi)

Response: Comment noted. The EIS will describe the maintenance and operation plans for the project elements.

Comment 44: Concerned about the construction of the education center and the damage the construction of the center may cause to roads due to heavy equipment. According to NYCDOT, the only place you have a substructure is on main arterials and truck traffic routes. You are going to have to maintain the roads after construction with the heavy equipment because NYCDOT is not going to

do it. A legal document needs to be drafted required the damage to be fixed. (Vandenburg)

Construction staging access roads are needed for the project. The project community Hub and dunes require special roads, with advanced road bed improvement prior to construction of the foundation of dunes and Hub. (Natural Resources Protective Association)

Response: Comment noted.

Comment 45: The DEIS needs to account for maintenance and operation of the community Hub, which is the active endorsement of the breakwaters. (Natural Resources Protective Association)

Response: Comment noted. The EIS will describe the maintenance and operation plans for the project elements.

Comment 46: The DEIS needs to address access to the breakwaters. Would boats be able to anchor adjacent to them? Would surf fish persons be able to fish from them? Can we swim out to them? Will traditional uses like shell fishing, crabbing, and swimming be authorized? (Natural Resources Protective Association)

Response: The breakwater system itself is not intended to be used for recreation. However, the areas within the park and within the bay will be available for recreation.