Draft Integrated Interim Response Feasibility Report and Environmental Assessment for Actionable Elements

NEW YORK-NEW JERSEY HARBOR AND TRIBUTARIES COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY

SUBAPPENDIX A-1E OAKWOOD BEACH ACTIONABLE ELEMENT SITE CLEAN WATER ACT

July 2025

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1 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), New York District (District), has prepared this assessment to evaluate consistency with the New York State and New York City coastal zone management policies for the New York New Jersey Harbor and Tributaries (NYNJHAT) Coastal Storm Risk Management (CSRM) Feasibility Study, Integrated Interim Response Feasibility Report and Environmental Assessment on Actionable Elements.

The NYNJHAT Study was authorized as a result of the findings in the January 2015, USACE North Atlantic Coast Comprehensive Study (NACCS) which identified high-risk areas on the Atlantic Coast for warranting further investigation of flood and coastal storm risk management solutions including the NYNJHAT study. In February 2019, a NYNJHAT Feasibility Study Interim Report (Interim Report) was completed to document existing information and assumptions about the future, and to identify knowledge gaps that warranted further investigation because of their potential to affect plan selection. The Interim Report states the impacts from Hurricane Sandy highlighted the National need for a comprehensive and collaborative evaluation to reduce risk to vulnerable populations within the North Atlantic region. In September 2022, a Draft Integrated Feasibility Report and Tier 1 (Programmatic) Environmental Impact Statement for the Comprehensive Plan was released detailing the additional analyses conducted following the Interim Report (2019) and what additional information was needed in the future for the remainder of Tier 1 and Tier 2 of the programmatic process.

Section 401 of the Clean Water Act (CWA) requires every applicant for a Federal license or permit for any activity that may result in a discharge into navigable waters to obtain a State Water Quality Certificate or a waiver that the proposed activity will comply with the state water quality standards. NYSDEC and NJDEP issue Section 401 Water Quality Certificates for activities within each respective State (in New Jersey via the Waterfront Development Permits and CAFRA Permits processes).

Section 402 of the CWA prohibits the discharge of pollutants to the waters of the United States from any point source unless the discharge follows a National Pollutant Discharge Elimination System (NPDES) Permit (SPDES in New York and NJPDES in New Jersey). Storm water discharges associated with any activity that involves earth disturbances that exceed one acre also require a NPDES permit.

Section 404 of the CWA regulates the discharge of dredge or fill materials into the waters of the Unites States, including wetlands, at specific disposal sites. The selection and use of disposal sites must be in accordance with guidelines development by the U.S. EPA in conjunction with the Secretary of the Army and published in 40 CFR Part 230 (also known as the 404(b)(1) guidelines). Under Section 404(b)(1) USACE shall examine practicable alternatives to the proposed discharge and permit only the Least Environmentally Damaging Practicable Alternative (LEDPA). Both Section 404 and 33 C.F.R. 336(c)(4) and 320.4(b) require USACE avoid, minimize, and mitigate impacts to wetlands.

The purpose of this CWA Section 404(b)(1) assessment is to ensure that the Actionable Element Site will not cause or contribute to significant degradation of the waters of the United States.

This document focuses on the Oakwood Beach Actionable Element Site, comprised of a CSRM-focused NBS wetland enhancement and dune restoration, as a complimentary feature to the NYNJHAT Study Comprehensive Plan.

1.1 PROJECT PURPOSE AND NEED

Storms have historically severely impacted the NY/NJ Harbor region, including Hurricane Sandy most recently, causing loss of life and extensive economic damages.

In 2012, Hurricane Sandy caused considerable loss of life, extensive damage to property, and massive disruption to the North Atlantic Coast. The effects of this storm were particularly severe because of its tremendous size and the timing of its landfall during high tide. Twenty-six states were impacted by Hurricane Sandy, and disaster declarations were issued in 13 states. NY and NJ were the most severely impacted states, with the greatest

damage and most fatalities in the NY Metropolitan Area. For example, a storm surge of 12.65 feet above normal high tide was reported at Kings Point on the western end of Long Island Sound and 9.4 feet at the Battery on the southern tip of Manhattan. Flood depths due to the storm tide were as much as nine feet in Manhattan, Staten Island, and other low-lying areas within the NY Metropolitan Area. The storm exposed vulnerabilities associated with inadequate coastal storm risk management (CSRM) measures and lack of defense to critical transportation and energy infrastructure.

The January 2015, USACE North Atlantic Coast Comprehensive Study (NACCS) identified high-risk areas on the Atlantic Coast for warranting further investigation of flood risk management solutions. In February 2019, a NYNJHAT Feasibility Study Interim Report was completed to document existing information and assumptions about the future conditions, and to identify knowledge gaps that warranted further investigation because of their potential to affect plan selection. The Interim Report states the impacts from Hurricane Sandy highlighted the national need for a comprehensive and collaborative evaluation to manage storm risk to vulnerable populations within the North Atlantic region. To address the impacts and concerns associated with devastating storms, the USACE New York District has proposed measures to manage coastal storm risk in the NYNJ Harbor and its tributaries.
In response, the USACE New York District is investigating measures to manage future flood and coastal storm risk in ways that support the long-term resilience and sustainability of the coastal ecosystem and surrounding communities, and reduce the economic costs and risks associated with flood and storm events for the NYNJHAT Study Area (USACE 2019). The alternative concepts proposed would help the region manage flood risk that is expected to be exacerbated by relative sea level rise.

The scope of the Interim Response Actionable Element builds upon the September 2022 Draft Integrated Feasibility Report (FR) and Tier 1 (Programmatic) Environmental Impact Statement (EIS), as an interim action while the overall Comprehensive Plan continues to be studied, subject to future funding and appropriations. The Comprehensive Plan is a programmatic assessment described as containing two tiers, with September 2022 Draft Report initiating the Tier 1, or broad-level assessment, with plans for a future Tier 2 containing the detailed site-specific analyses including any design refinements and reasonable alternatives. This Report is not a Tier 2, but rather an Interim Response to the Comprehensive Plan responsive to the larger Coastal Storm Risk Management (CSRM) authorization to assess a 2,500+ square mile radius in the New York-New Jersey Metropolitan Area. This interim response, like Tier 2, assesses the measures at a site-specific level, completing enough design maturity and analyses to disclose the potential effects of the Alternatives, and complete full environmental compliance. Interim responses often arise during the progress of a programmatic study, of which purpose and need is to respond to an immediate need for CSRM where able in the interim and corresponding with future legislative cycles (e.g. Water Resources Development Act (WRDA), while the more complex measures of the larger NYNJHAT Study require additional analysis, modeling, public engagement, and design maturity to complete. Interim responses often arise during the progress of a programmatic study, in this case, to respond to an immediate CSRM need in the interim and corresponding with future legislative cycles (e.g. Water Resources Development Act (WRDA), while the more complex measures of the larger NYNJHAT Study require additional analysis, modeling, public engagement, and design maturity to complete. The purpose and need of this action is to manage risk to critical infrastructure in local areas of high susceptibility to storm surge and at-risk communities. This Interim Response action addresses a critical need for CSRM measures in Harlem River, New York, East Riser, New Jersey, and Oakwood Beach, New York.

1.2 COORDINATION AND CONSULTATION HISTORY

Coordination with stakeholders has been a critical component of the NYNJHAT study. Since early 2017. The USACE New York District held many workshops and meetings with Cooperating and Participating Agencies and other stakeholders to share information on the study scope and purpose and formulation of alternatives, and to exchange ideas and information on natural and marine resources within the Study Area.

The USACE New York District announced the preparation of an Integrated Feasibility Report/Tiered EIS for the NYNJHAT study feasibility in the February 13, 2018 Federal Register pursuant to the requirements of Section 102(2)(C) of NEPA. The NEPA scoping period initially spanned 45 days from July 6 – August 20, 2018, but was

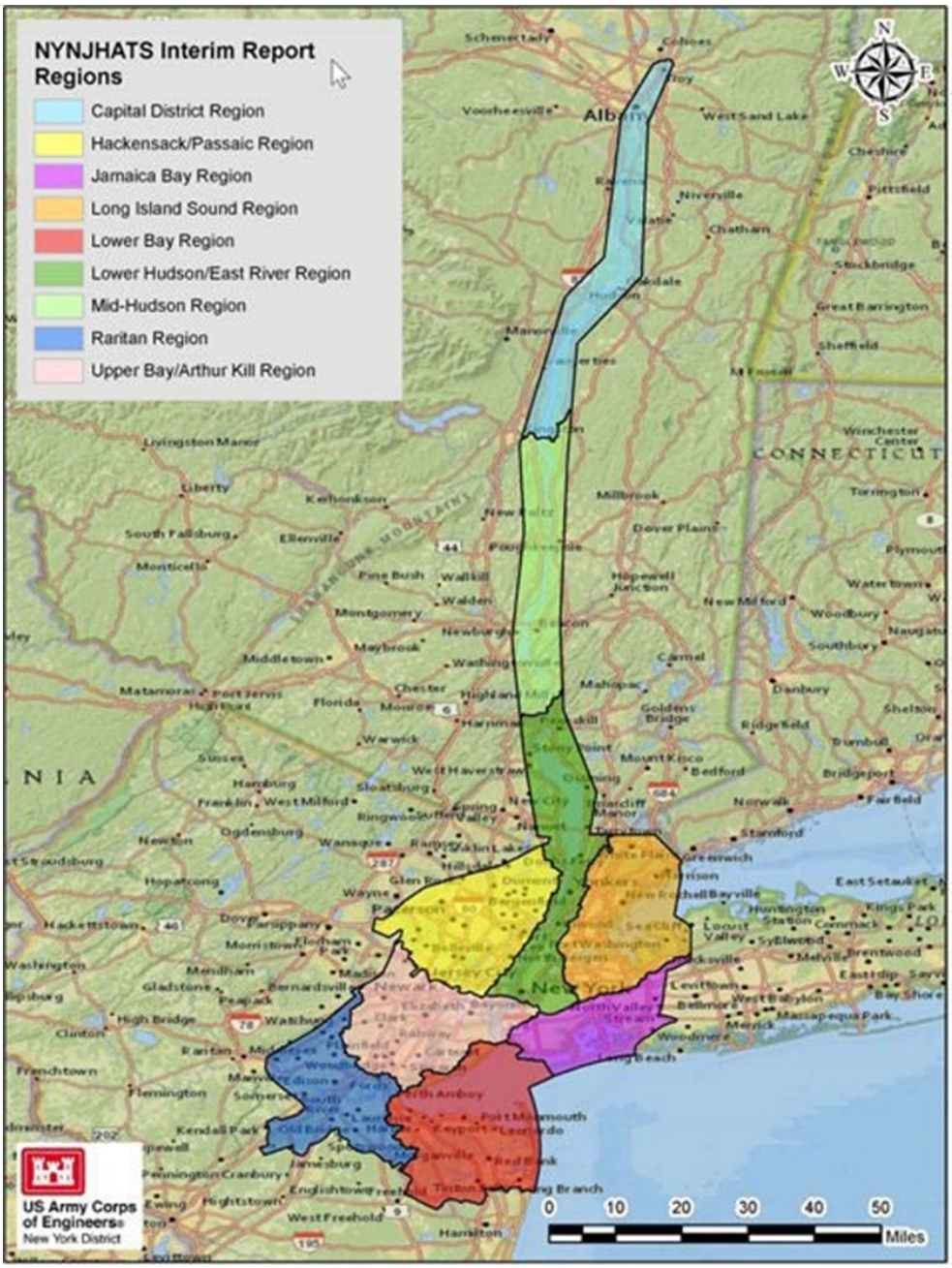
extended to 120 days due to numerous requests from the public. The USACE New York District held a total of nine public scoping meetings during the public scoping period. In 2019, four NYBEM workshops were held on January 3, March 11, June 6, and November 14 to help inform the NYBEM model set up to be used as a tool for assessing some direct and indirect effects of agency actions on regional ecosystems including the NYNJHAT Study, among others.

In February 2020, the NYNJHAT Study paused until October 2021 due to a lack of Federal funding. Following study resumption, the USACE New York District held several Cooperating Agency meetings to facilitate open communication, share study progress, status updates, and data as it became available, including an Engineering presentation on the study alternatives, a presentation on the TSP, and a presentation on the NYBEM development progress. In September 2022, a Draft Integrated FR/Tier 1 (Programmatic) EIS was released for stakeholder, agency, and public review and comment. Following a substantial public review period of 175+ days, and approximately 2,700 comments received, many comments required a need for, among other requests, more consideration for Nature-Based Solutions to be incorporated into the Study. Ultimately, these comments informed the future of the NYNJHAT Study, and introduced the need for further coordination with public and resource agencies as the Study progresses.

2 STUDY AREA

2.1 COMPREHENSIVE PLAN

The Study Area of the NYNJHAT Study includes the NY Metropolitan Area, including New York City (NYC) which is the most densely populated city in the United States, and five of the six largest cities in New Jersey by population. The shorelines of some of the NYNJHAT Study Area is characterized by low elevation areas, developed with residential and commercial infrastructure, and is subject to tidal flooding during storms. The Study Area covers more than 2,150 square miles and comprises parts of 25 counties in New Jersey and New York, including Bergen, Passaic, Morris, Essex, Hudson, Union, Somerset, Middlesex, and Monmouth Counties in New Jersey; and Rensselaer, Albany, Columbia, Greene, Dutchess, Ulster, Putnam, Orange, Westchester, Rockland, Bronx, New York, Queens, Kings, Richmond, and Nassau Counties in New York.

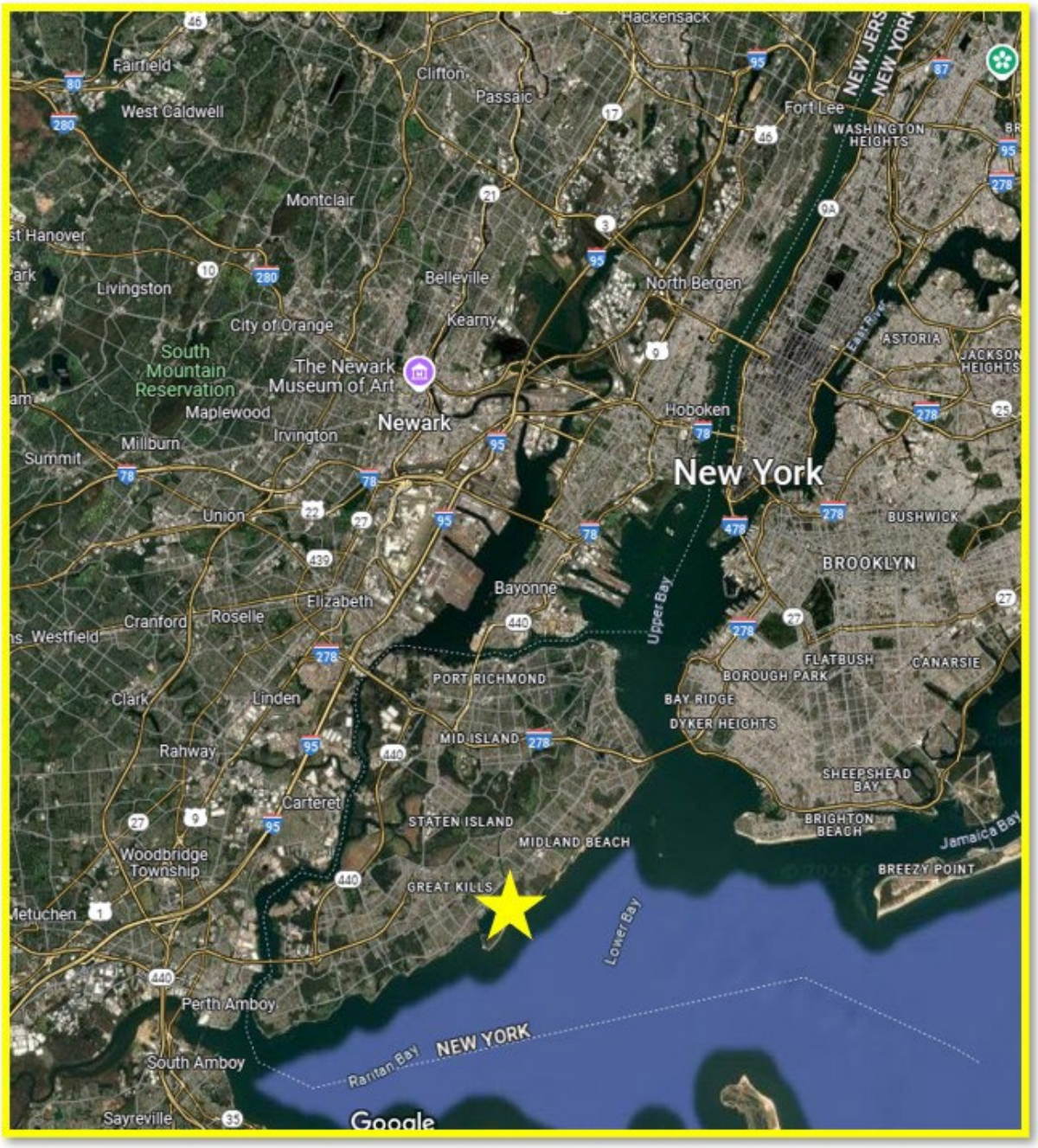


2.2 LOWER BAY PLANNING REGION

The Lower Bay Region is based on the 10-digit HUCs for the Raritan Bay-Lower Bay watershed and the Navesink River-Shrewsbury River watershed, and well as the 8-digit HUC for the Mullica-Toms subbasin, from the Watershed Boundary Dataset (USGS 2018). This includes a portion of Richmond County in NY, and portions of Middlesex and Monmouth counties in NJ. Major waterbodies in this area provide a combination of marine and estuarine habitats that support diverse ecological communities (USACE, 2004) and are hydrologically connected to the Upper Bay and HR, JB, and the Atlantic Ocean. There are major estuarine wetland systems throughout the region. The Sandy Hook peninsula makes up one unit of the National Park Service (NPS)'s Gateway National Recreation Area (GNRA). The Staten Island Unit of GNRA consists of Great Kills Park, Miller Field, and Fort Wadsworth (NPS, 2018). GNRA features important sections of estuarine wetland habitat and freshwater forested/shrub wetland habitat (USFWS, 2018). Sandy Hook is a New York and New Jersey Harbor and Tributaries Coastal Storm Risk Management Study Appendix A5: Clean Water Act Section 404(b)(1) Evaluation 11 nine-mile narrow sand spit that has a fairly extensive vegetated dune system and two distinct maritime forest communities that encompass 285 acres (RPA, 2003). The uplands along the shoreline of the Lower Bay are important as migratory and wintering stopover habitat for migratory perching birds and raptors, as well as an important staging area for many species of waterfowl on the Atlantic Flyway (USACE, 2017). Beach habitat provides foraging areas for waterfowl and shorebirds (RPA, 2003). The Sandy Hook Unit of GNRA provides habitat for roughly 60 percent of the NJ piping plover (federally threatened, NY - and NJ State-endangered) population. This region also contains valuable fish and shellfish habitat (RPA, 2003).

2.3 ACTIONABLE ELEMENT – OAKWOOD BEACH

The Actionable Element Site identified within the Study Area for this consistency determination is identified as Oakwood Beach, located in Richmond County, Staten Island, New York and a part of Great Kills Park, under the National Park Service jurisdiction Gateway National Recreation Area. This Actionable Element Site is located within the Lower Bay Planning Region of the overall Comprehensive Plan.


Hackensack
Fairfield
Clifton
Passaic
West Caldwell
Fort Lee
WASHINGTON HEIGHTS
Montclair
Belleville
North Bergen
Livingston
City of Orange
Kearny
South Mountain Reservation
The Newark Museum of Art
ASTORIA
JACKSON HEIGHTS
Maplewood
Newark
Hoboken
Millburn
Irvington
Summit
New York
Union
BUSHWICK
BROOKLYN
Bayonne
Elizabeth
Cranford
Roselle
Westfield
Upper Bay
FLATBUSH
CANARSIE
BOROUGH PARK
PORT RICHMOND
Clark
Linden
BAY RIDGE
DYKER HEIGHTS
MID ISLAND
Rahway
SHEEPSHEAD BAY
Carteret
STATEN ISLAND
BRIGHTON BEACH
MIDLAND BEACH
Jamaica Bay
Woodbridge Township
BREEZY POINT
GREAT KILLS
Lower Bay
Perth Amboy
NEW YORK
Raritan Bay
South Amboy
Sayreville
Google

3 ACTION ALTERNATIVE

The Oakwood Beach Actionable Element Site is a Coastal Storm Risk Management (CSRM) nature-based feature of the NYNJHAT Study Overall Comprehensive Plan, managing high-frequency flood risk by serving as a natural buffer and also working complementary to the South Shore of Staten Island Project (presently under construction) and to Great Kills Park. The proposed Actionable Element will also reduce wildfire risk for the impacted area. This CSRM-focused Nature-Based Solution (NBS) wetland enhancement includes three primary components: removal of non-native invasive plants, creation of a vegetative mosaic with native plants and tidal channels, and dune restoration described in more detail below.

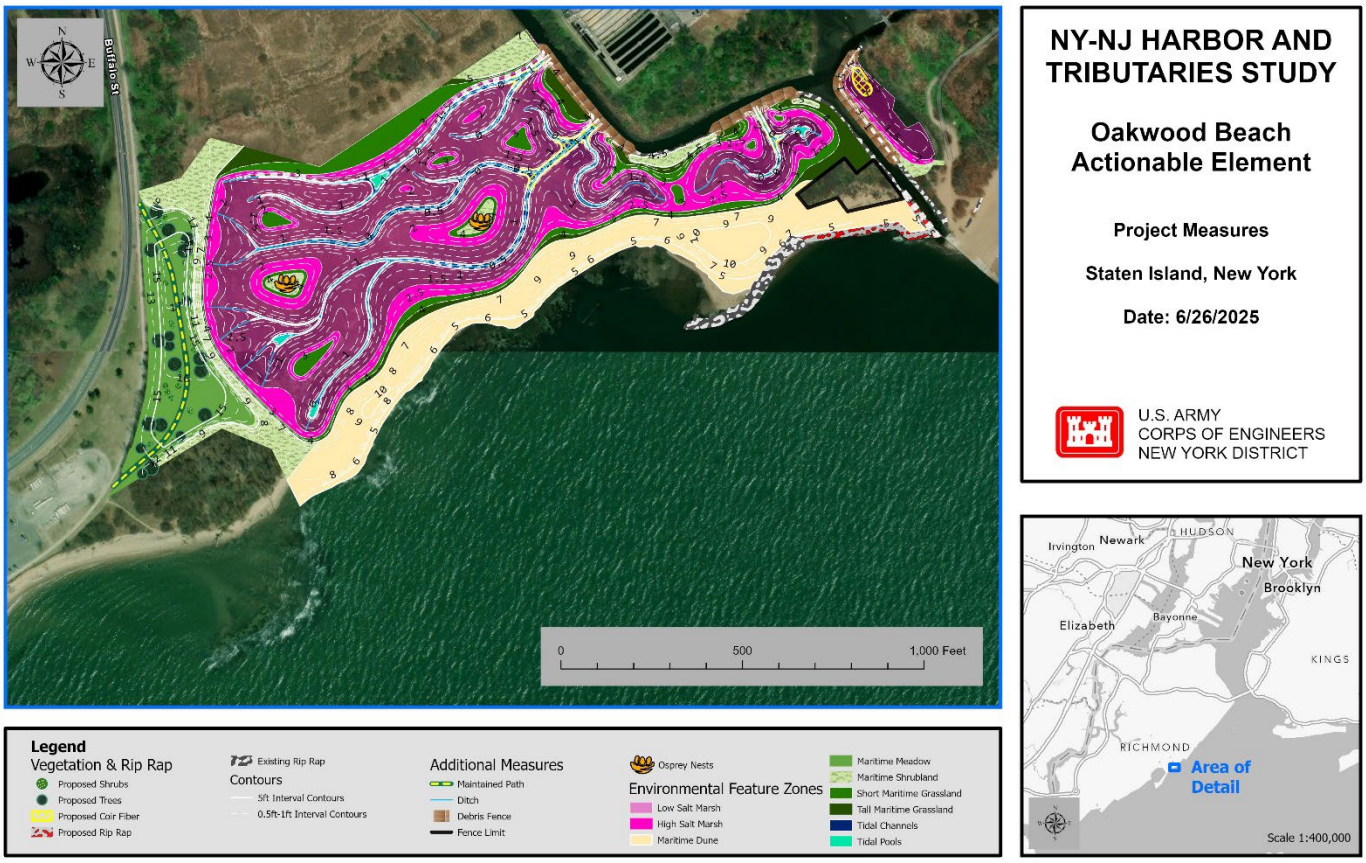
Removal of Non-Native Plants and Creation of Native Vegetative Mosaic and Tidal Channels:
The project proposes the removal of approximately 22.38-acres of non-native invasive Common Reed (*Phragmites australis*) and replacement with a vegetative mosaic of Low Salt Marsh (11.5 acres), High Salt Marsh (4.5 acres), Maritime Grassland (4.5 acres), Maritime Dune (5.5 acres), with upland buffers of Maritime Shrubland (3 acres) and Maritime Woodland (1 acre). Native plants will be established, with a particular focus on *Spartina alterniflora*, *Spartina patens* (salt meadow cordgrass), and *Distichlis spicata* (salt grass) for the created low and high marsh habitats. Any existing native plants that are salvageable will be salvaged and transplanted in the appropriate habitat. A network of tidal channels and/or pools with three main branches will be created within the vegetative mosaic supporting the created habitat, referred to as the North Channel, Middle Channel, and South Channel, totaling approximately 1.30-acres.

Dune Restoration:
Along the shoreline in front of and to the south of the created vegetative mosaic, adjacent to the mudflats and Lower Bay, a dune restoration measure is proposed for shoreline stabilization integral to maintaining the essential function of the restored wetland. The dune will consist of approximately 5.5 acres of clean sand with an elevation range up to 10-feet above mean sea level.

Additional Plan Features:
Riprap will be placed at several locations at the site to support erosion control and channel protection, including an approximate 1,115 cubic yards (CY) area to the east of the restored dune at the southeastern border adjacent to the Lower Bay between the existing riprap and main tidal channel (where a deteriorated wooden seawall is currently), 55-CY along the southwestern banks of the main tidal channel where existing riprap has eroded, 600-CY on the southeastern bank of the main tidal channel convergence with an eastern branching tidal channel where existing riprap is placed, and 700-CY at the inlets of the created tidal channels (along with coir fiber mats).

A maintained lawn trail will be developed on the westernmost edge of the site through the proposed maritime meadow, connecting an existing adjacent concrete bike/walking path to the parking lot for Great Kills Park to be utilized for O&M and public access.

Two osprey nests are proposed in the created maritime shrublands located within central the tidal channel network.



3.1 ALTERNATIVES CONSIDERED:

The consideration of reasonable alternatives is required in accordance with the National Environmental Policy Act (NEPA; 42 United States Code [USC] § 4321 *et seq.*), President's Council on Environmental Quality (CEQ) NEPA Regulations (40 Code of Federal Regulations [CFR] §§ 1500–1508), and Engineering Regulations (ER) 200-2-3 "Environmental Analysis of Army Actions" as promulgated by 32 CFR Part 651. Site selection standards were developed for the Action and used to identify, compare, and evaluate reasonable alternatives. The selection standards were developed to be consistent with the purpose and need for the Action and to address pertinent mission, environmental, safety, and health factors.

No Action Alternative: Under the No Action Alternative, the U.S. Army Corps of Engineers will not enhance the CSRM-focused complimentary Nature-Based Solution (NBS) wetland. The Actionable Element Site would remain as is, comprised of a degraded wetland dominated by non-native invasive phragmites.

Action Alternative: The Actionable Element Site for the Action Alternative is an approximately 39-acres bounded by Great Kills Park to the north and west, a Wastewater Treatment Plant to the west, and the future site of the South Shore of Staten Island floodwall measure, and the Lower Bay to the south. The entire site is comprised of a degraded wetland, dominated by non-native invasive Phragmites (approximately 22-acres). Implementation of the Action Alternative at the Actionable Element Site will create 30-acres of native wetland habitat, as presented on the following table:

Target Natural Community	Elevation Range (above mean sea level, AMSL)	Acreage (total, non-contiguous)
Low Salt Marsh	-0.2 to 2.15 feet	11.5

High Salt Marsh	2.15 to 3 feet	4.5
Maritime Grassland	3 to 5 feet	4.5
Maritime Dune	Up to 10 feet	5.5
Maritime Shrubland	5+ feet	3
Maritime Woodland	6+ feet	1
Total Vegetative Community Acreage Created		**30**

4 EXISTING CONDITIONS

The surface water systems located throughout the NYNJHAT Study Area are subject to water quality concerns including salinity variances, low dissolved oxygen, presence of pathogens, contaminants, and nutrient depletion. Potential water quality degradation sources vary between waterway, but generally are associated with known contaminated sites, Superfund Sites, wastewater treatment effluents, combined sewer outfalls, storms, and stormwater runoff from the highly urban surrounding environment (USACE, 2022). The NJDEP and NYSDEC have established classification systems for the best intended uses of surface water quality within the Study Area (e.g. Surface Water Quality Standards, *New Jersey Administrative Code* (N.J.A.C.) 7:9B and Water Quality Regulations, 6 NYCRR Parts 700-705). These classifications are based on the extent to which these surface waters will attain the Clean Water Act goals of aquatic life support and swim-ability, and the designated uses outlined by each State.

The following briefly discusses the quantitative and qualitative water quality data taken from various sources, including a high-level overview inclusive of salinity, dissolved oxygen, nitrogen, fecal coliform, and chlorophyll-a trends in these dominant surface water bodies. Reference is specifically made to the Harbor-Wide Water Quality Monitoring Report (HWQMR) 2021 completed by the Hudson River Foundation as a part of the NY/NJ Harbor and Estuary Program. The report contains data on dissolved oxygen, pathogenic bacteria (fecal coliform and Enterococcus), nitrogen, and chlorophyll-a that was collected from 2010-2017 in many of the waterbodies in the Study Area. Those data are discussed frequently throughout this section. Much of this information is also presented in the New York New Jersey Harbor and Tributaries Draft Integrated Feasibility Report and Tier 1 Environmental Impact Statement, which encompasses much of the same Study Area as this, supplemented by the New York City Department of Environmental Protection 2022-2023 Harbor Survey Report (NYC DEP, 2024).

The USEPA defines salinity as "...the dissolved salt content of a body of water...[that] can be a chemical stressor in the aquatic environment as fluctuating levels of salinity can affect aquatic biological organisms which are adapted to prevailing salinity concentrations." Salinity concentrations can vary depending on a variety on conditions including location, tidal influence, weather, storms, and floods, etc. Salinity conditions are generally categorized as follows: tidal fresh (<0.5 parts per thousand [ppt]); oligohaline (0.5-5.0 ppt), mesohaline (5.0-18.0 ppt); polyhaline (18.0-30.0 ppt); and euhaline (>30.0 ppt).

The HWQMR utilized the USEPA's nationally recognized standards for dissolved oxygen, nitrogen, fecal coliform, and chlorophyll-a to compare the recorded values, as follows:

- **Dissolved Oxygen:** there are two threshold values for hypoxia: acute hypoxia, the dissolved oxygen level at which marine life has a greater potential to die, is indicated when water has less than 2.3 milligrams of dissolved oxygen per liter (mg/L); and chronic hypoxia, the continuous level at which dissolved oxygen hinders growth of marine life and is indicated by dissolved oxygen levels less than 4.8 mg/L.
- **Nitrogen:** levels of total nitrogen exceeding 1.2 milligrams per liter (mg/L) is considered poor, and levels found equal to, or less than 0.4 mg/L is considered good.
- **Chlorophyll-a:** a threshold of greater than 20 micrograms per liter (µg/L) to indicate poor quality while considering values of less than 5 µg/L as supportive of healthier habitats for fish survival and propagation. High Chlorophyll-a concentrations can be indicative of an algal bloom.
- **Fecal Coliform:** fecal coliform levels should not exceed a geometric mean of 200 cfu/100mL. No more than 10% of all samples taken in a 30-day period should exceed 400 cfu/100 mL (Da Silva et al. 2021).

Details regarding potential for contaminants are discussed in the Hazardous, Toxic, Radioactive Waste Section SubAppendix.

The Lower Bay salinity is characterized by freshwater sources meeting tidally influenced, salty waters, therefore the salinity in this area varies greatly. Fish in this region are not consistently stressed by dissolved oxygen concentrations which have been recorded less than 4 mg/L between 0-8.2% for surface concentrations and between 0-10% for bottom concentrations in the HQWMR. The NYC DEP data collected between 2022-2023 show concentrations through the bay are generally greater than 5 mg/L. Between 2010 and 2017, the summer means for total nitrogen ranged between 0.56 and 1.03 mg/L, within the USEPA's threshold for healthy concentrations. Chlorophyll-a concentrations in the Lower Bay generally were observed ranging at or below 30 ug/L at the confluence with the Upper Bay and incrementally increasing in concentration further south towards New Jersey shoreline to less than or equal to 60 ug/L in 2022 and less than or equal to 70 ug/L in 2023 (NYC DEP, 2024). Fecal coliform summer discreet measurements ranged from 1 cfu/100mL to 2,000 cfu/100mL over the eight-year period as reported in the HWQMR. The average geomean for fecal coliform in this region is 8 cfu/100mL (USACE 2022, Da Silva et al., 2021).

Salinity in the Main Tidal Channel located to the adjacent east ranges from 1.5 to 23.9 parts per thousand with a mean of 13.3, appearing to be entirely depending on the tidal fluctuations from the Lower Bay, and associated flooding in the vicinity (USACE 2019).

There is a neighboring Wastewater Treatment Plant to the adjacent east, that likely discharges into the Lower Bay possibly through the tidal channel on the eastern portion of the Site. Effluents are managed under Federal/State discharge permits. According to the USEPA ECHO database, there are reported Clean Water Act violations, with the most recent identified in March 2025, and is unresolved.

Although the project area is not permanently flooded, influences from the adjacent tidal channel and shore may influence the quality of any temporary water storage present onsite following a flood event, heavy rain, or tidal variations.

4.1 ACTION ALTERNATIVE

Adverse Effects

Direct impacts from construction would result in complete removal of non-native phragmites, which largely dominants the site, and replace with native wetland plants including Spartina to redevelop the low salt marsh of the wetland. This would result in temporary removal of habitat during construction. Re-establishment of the wetland may also include the removal of native species that are intermixed with the phragmites, in order to develop the tidal channel network, low salt marsh, and dunes proposed. Large trees throughout the site may be left in place, or removed and replaced in kind, or better, depending on their size and ability to thrive in the restored wetland bounds. Any vegetation or tree removal will be done in accordance with best management practices, as well as Federal and State regulations for removal and replacement. Water quality at the site would be anticipated to improve with native plantings and sediments serving as natural wetland filters of pollutants. Salinity in the created tidal channel network would take on the characteristics of the adjacent Main Tidal Channel of which they would connect into. As over 1-acre of land will be disturbed, a NPDES/SPDES permit will be required under the Clean Water Act. BMPs will be utilized to reduce adverse effects and prevent discharges into navigable waters. Sediment resuspension and turbidity would be anticipated during construction, although would be temporary and settle post construction.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to water quality, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat, preserving the quality of terrestrial habitat for wildlife present. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts.

Beneficial Effects

The proposed project would remove non-native phragmites of which fill and degrade wetlands, and replace with native habitat, inclusive of a new network of tidal channels more suitable for an estuarine wetland habitat, providing additional areas for wildlife to forage and shelter. 1.30-acres of newly created tidal channels would expand the available surface waters, bathymetry, and sediments at the site, introducing additional opportunity for benthic resources and fish access into the site. With the conversion to native habitat, the wetland would be better quality habitat for wildlife and fish with the tidal channel and native salt marsh plantings. Coastal influences through the Main Tidal Channel into the newly developed tidal channel network would introduce aquatic resources within the site (e.g. benthic resources, fish, crabs, etc.). The increased function and capacity of the CSRM wetland would be designed to function as a nature-based coastal storm risk reduction feature that could more naturally support the absorption of flood damages, and would be more readily able to function as a natural CSRM buffer between the coast and surrounding communities. The restored dune would serve to reduce wave attack effects on the protect side. Increased benefits would be observed from a reduced fire risk that can have direct and indirect effects to the Oakwood Beach neighborhood, wildlife, and fish, such as air quality concerns, smoke, fire damage, and storm damage related pollution.

4.2 FACTUAL DETERMINATION

Review of Compliance: Section 230.10(a)-(d)	Yes	No
a. The discharge represents the least environmentally damaging practicable alternative and, if in a special aquatic site, the activity associate with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose.	X	
b. The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally-listed threatened and endangered species or their habitat; and 3) violate requirements of any Federally designated marine sanctuary.	X	
c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values.	X	
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.	X	

Technical Evaluation Factors (Subparts C-F)	Adverse Effects Determination		
Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)	**Not Applicable**	**Significant**	**Not Significant**
1) Substrate			X
2) Suspended particulates/turbidity			X
3) Water column impacts			X
4) Current patterns and water circulation			X
5) Normal water circulations			X
6) Salinity gradients			X
Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)	**Not Applicable**	**Significant**	**Not Significant**
1) Threatened and endangered species			X
2) Fish, crustaceans, mollusks, and other organisms in the aquatic food web			X
3) Other wildlife (mammals, birds, reptiles, and amphibians)			X

Potential Impacts on Special Aquatic Sites (Subpart E)	Not Applicable	Significant	Not Significant
1) Sanctuaries and refuges	X		
2) Wetlands			X
3) Mud Flats			X
4) Vegetated Shallows			X
5) Coral Reefs	X		
6) Riffle and pool complexes	X		
Potential Effects on Human Use Characteristics (Subpart F)	**Not Applicable**	**Significant**	**Not Significant**
1) Municipal and private water supplies	X		
2) Recreational and commercial fisheries	X		
3) Water-related recreation			X
4) Aesthetic impacts			X
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites and similar preserves			X

Evaluation and Testing – Subpart G		
A. The following information has been considered in evaluating the biological availability of possible contaminants in dredge or fill material:	**YES**	**NO**
1) Physical characteristics	X	
2) Hydrology in relation to known or anticipated sources of contaminants	X	
3) Results from previous testing and the material or similar material in the vicinity of the project	X	
4) Known, significant sources of persistent pesticides from land runoff of percolation	X	
5) Spill records of significant introduction of contaminates	X	
6) Public records of significant introduction of contaminants from industries, municipalities or other sources	X	
7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	X	
8) Other sources (specify)		X
B. An evaluation of the appropriate information factors in 3a above indicates that there is reason to believe the proposed dredge material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints.	X	

Actions to Minimize Adverse Effects (Subpart H)	YES	NO
All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.	X	

Factual Determination – Section 230.11	YES	NO

A review of appropriate information, as identified in items 2-5 above, indicates there is minimal potential for shore or long term environmental effects of the proposed discharge as related to:	X	
a. Physical substrate at the disposal site (review Section 2a, 3, 4, and 5 above)	X	
b. Water circulation, fluctuation and salinity (review Sections 2a, 3, 4, and 5)	X	
c. Suspended particulates/turbidity (review Sections 2a, 3, 4, and 5)	X	
d. Contaminant availability (review Sections 2a, 3, and 4)	X	
e. Aquatic ecosystem structure, function, and organisms (review Sections 2b, 2c, 3 and 5)	X	
f. Proposed disposal site (review Section 2, 4, and 5)	X	
g. Cumulative effects on the aquatic ecosystem	X	
h. Secondary effects on the aquatic ecosystem	X	

Findings of Compliance or Non-Compliance	**YES**	**NO**
The proposed disposal site for discharge of dredged or fill material complies with Section 404(b)(1) guidelines.	X	

In summary, this Actionable Element Site's purpose is to manage coastal storm risk related to storm surges, sea level rise and flooding that involves placement and/or beneficial use of clean sand and/or dredged material, which will be coordinated with or directed by the affected state and:

- Will have no significant adverse effects of the discharge of pollutants on human health or welfare, including but not limited to effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites.

- Will have no significant adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical, and chemical processes.

- Will have no significant adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability.

- Will have no significant adverse effects of discharge of pollutants on recreational, aesthetic, and economic values.

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