

APPENDIX N

CLEAN WATER ACT SECTION 404(B)(1)
GUIDELINES EVALUATION

SECTION 404(b)(1) GUIDELINES EVALUATION

Introduction

This appendix of the Atlantic Coast of New York, Fire Island Inlet to Montauk Point Combined Beach Erosion Control and Hurricane Protection Project (FIMP) (hereafter referred to as “Project”) presents a Section 404(b)(1) Guideline evaluation for the comprehensive evaluation of improvements to the project area. The evaluation is based on the regulations found at 40 CFR 230, Section 404(b)(1): Guidelines for Specification of Disposal Sites for Dredged or Fill Material. The regulations implement Sections 404(b) and 501(a) of the Clean Water Act, which govern the disposal of dredged and fill material inside the territorial sea baseline (§230.2(b)).

Generic 404 (b)(1) Evaluation

The following Section 404(b)(1) evaluation is presented in a format consistent with typical evaluations in the New York area and addresses all required elements of the evaluation.

(1) Project Description

- a. Location: The Study Area extends from Fire Island Inlet east to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. The majority of Fire Island lies within the legislative boundaries of the Fire Island National Seashore.

The EIS Study Area extends from Fire Island Inlet east to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. The majority of Fire Island lies within the legislative boundaries of the Fire Island National Seashore (FIIS). The Study Area includes the barrier island chain from Fire Island Inlet to Southampton inclusive of the Atlantic Ocean shorelines, and adjacent back-bay areas along Great South, Moriches, and Shinnecock Bays. The Study Area continues to the east including the Atlantic Ocean shoreline along the mainland of Long Island extending from Southampton to Montauk Point. This area includes the entire Atlantic Coast of Suffolk County covering a shoreline length of approximately 83 miles. The Study Area also includes over 200 additional miles of shoreline within the estuary system. The Study Area includes areas on the mainland that are vulnerable to flooding, which generally extend as far landward as Montauk Highway, for an approximate area of 126 square miles.

- b. General Description: The Study Area represents a complex mosaic of ocean fronting shorelines, barrier islands, tidal inlets, estuaries, and back bay mainland area (see EIS Section 1.6 for a general discussion of the ecosystems and habitats). The Study Area functions as an interconnected system driven by large scale processes with respect to hydrodynamic and sediment exchange, supporting diverse biological and natural resources. Within the Study Area, ocean shoreline sand generally moves east to west alongshore, in response to waves, and currents during normal conditions and during storms. This alongshore movement of sand maintains the prevailing shoreline conditions. In addition to alongshore movement, sediment is also exchanged in the cross-shore direction, through erosion and accretion of the beach and dune, exchange of sand through tidal inlets, and during large storm events through the episodic transport of sand over the island through overwash or breaching. Over the years, the Study Area has become increasingly developed with extensive development on portions of the barrier island and in the mainland floodplain.

As development has increased over the past 75 years, activities have been undertaken to provide for and protect infrastructure in the area, and to improve navigation in the area. These past activities have included inlet stabilization, construction of jetties and groins, seawalls, and revetments, beachfill, beach scraping, breach closures, channel dredging in the inlets and bays, bayside bulkheading, and ditching of wetlands for mosquito control.

These activities have been undertaken to address localized problems, and often have been implemented without consideration of regional effects. Collectively, these activities have dramatically altered the existing natural coastal processes. As a result, the area is not functioning as a natural, sustainable system. This leaves over 15,000 structures at risk to major damages from coastal storms such as hurricanes and nor'easters. This risk will continue to grow with continued development, continued erosion, and sea level rise.

The Study Area also includes portions of the Towns of Babylon, Islip, Brookhaven, Southampton and Easthampton, as well as 12 incorporated Villages, the entirety of FIIS, the Poospatuck Indian Reservation, and the Shinnecock Indian Reservation as well as the critical coastal habitat and environmentally sensitive areas, such as the Fire Island National Seashore. The Study Area contains over 46,000 buildings, including 42,600 homes and more than 3,000 businesses. There are 60 schools, 2 hospitals, and 21 firehouses and police stations in the Study Area. Of the buildings within the Study Area, more than 9,000 fall within the modeled 100-year floodplain (storm with a 1 percent probability of occurring in any given year, based upon current modeling). It is estimated that over 150,000 people reside in the coastal 100-year floodplain of the South Shore of Suffolk County, which represents 10 percent of the population of Suffolk County (USCB 2010). The Study Area is also a popular summer recreation area. In addition to the residential population, there is a large seasonal influx of tourists who recreate in this area, and businesses which support the year round and seasonal population of the area.

Commercial, residential, public and other infrastructure in the Study Area are subject to economic losses (or damages) during severe storms. The principal problems are associated with extreme water levels and waves that can cause extensive flooding and erosion both within barrier island and mainland communities. Breaching and/or inundation of the barrier islands also can lead to increased flood damages, especially along the mainland communities bordering Shinnecock, Moriches and Great South Bays.

The current study is called a Reformulation, because it seeks to reexamine the Project that was originally formulated in the 1950's. This Reformulation came about in part due to a referral to the Council on Environmental Quality in response to a 1978 EIS that was prepared for the project subsequent to passage of NEPA in 1969. As a result of the referral, USACE agreed to reformulate the Project with particular emphasis on identifying and evaluating alternatives that considers cumulative impacts on the overall coastal system. The goal of the Reformulation Study is to identify an economically viable, environmentally acceptable plan that addresses the storm damage reduction needs of the Study Area and is acceptable to the key federal, state, and local stakeholders (USACE 2016). Included within the study area is the Fire Island National Seashore (FINS). The authorizing law for FINS

specifies that any plan for coastal storm risk management with the boundary of FIIS be mutually agreeable with the Secretary of the Interior and Secretary of the Army.

In support of this EIS, the New York District, in cooperation with Federal, State and local agencies, has been conducting Reformulation Study to evaluate several storm damage reduction plans for the Study Area (“Reformulation Study”) (USACE 2009a). The Reformulation Study focuses on identifying a long-term solution to reduce the risk of coastal storm damages in the Project Area in a manner which considers the risks to human life and property, while maintaining, enhancing, and restoring ecosystem integrity and coastal biodiversity.

Following Hurricane Sandy on October 29-30, 2012, the New York District has continued to work collaboratively to refine the proposed action that was identified in the 2009 USACE Study to address the agency missions and respond to lessons learned during Hurricane Sandy.

Participating agencies have coordinated their response to storm impacts and the breaches that occurred, to implement the stabilization efforts, and to advance the overall Reformulation Study. Through that process, the New York District and the cooperating agencies have collectively recognized that adjustments to the proposed action that were being formulated were necessary. The New York District has prepared an updated 2016 Reformulation Study (USACE 2016) to document the post-Sandy proposed action for this EIS. As discussed in Chapter 2, the proposed action for this EIS, as well as the reasonable alternatives, were developed in part, through the efforts associated with the 2009 USACE Study and the post-Hurricane Sandy efforts documented in the updated 2016 Reformulation Study (USACE 2016a).

Within the study area, sediment along the ocean shoreline has a net east to west alongshore movement, in response to waves and currents during normal conditions and during storms. This alongshore movement of sand shapes the prevailing shoreline conditions. In addition to alongshore movement, sediment is also exchanged in the cross-shore direction, through erosion and accretion of the beach and dune, exchange of sand through tidal inlets, and during large storm events (storms generally greater than a 2% annual chance of exceedance) through the episodic transport of sand over the island through overwash or breaching.

Given the complex system and the large number of stakeholders, a collaborative planning approach has been utilized to involve the key stakeholders and the public. An Interagency Reformulation Group (IRG) was established that provided executive level leadership for the study from the key federal and State agencies. The IRG developed a vision statement that identified the broad objectives for the study. The IRG also established various Technical Management Groups that included agency members, as well as non-governmental organizations and academia.

On October 29, 2012, Hurricane Sandy made landfall near Atlantic City, NJ, where it collided with a blast of arctic air from the north, creating conditions for an extraordinary historic ‘super storm’ along the East Coast with the worst coastal impacts centered on the northern New Jersey, New York City, and the Long Island coastline. Hurricane Sandy’s

unusual track and extraordinary size generated record storms surges and offshore wave heights in the New York Bight. The maximum water level at The Battery, NY peaked at +12.4 feet NGVD, exceeding the previous record by over 4 feet. Coastal erosion and damages within the FIMP study area as a result of Hurricane Sandy were severe and substantial. For example, post-Sandy measurements of volume loss of the beach and dunes on Fire Island indicated that the subaerial beach lost 55 percent of its pre-storm volume equating to a loss of 4.5 million cubic yards. A majority of the dunes either were flattened or experienced severe erosion and scarping. As a result of Sandy, further refinements were made to the TFSP, in order to arrive at the Tentatively Selected Plan (TSP) as described in the Draft Hurricane Sandy General Revaluation Report (GRR; USACE 2016a) and Draft EIS (USACE 2016b)).

The Recommended Plan for the Fire Island to Montauk Point New York Hurricane Sandy project area provides a systems approach for Coastal Storm Risk Management (CSRМ) that balances the risks to human life and property, while maintaining and restoring the natural coastal processes and ecosystem integrity. The current plan reflects modifications and refinements to the TSP that was proposed in the June 2016 Draft HSGRR/EIS, based on public and agency review comments, subsequent discussions to develop a plan that is mutually acceptable to the USACE and the Department of Interior (DOI), and coordination with the local sponsor.

The Final GRR and FEIS will serve as decision documents for implementation of the reformulated FIMP project, in accordance with the Disaster Relief Appropriations Act of 2013 (P.L. 113- 2). As an “authorized, but unconstructed” project, the reformulated FIMP project is eligible for funding under PL 113-2 for initial construction at full federal expense.

The mutually acceptable plan has been evaluated as the Recommended Plan in the Final GRR and FEIS and consists of the following features:

Inlet Sand Bypassing

- Provides for sufficient sand bypassing across Fire Island, Moriches, and Shinnecock Inlets to restore the natural longshore transport of sand along the barrier island for 50 years. Scheduled O&M dredging of the authorized navigation channel and deposition basin with sand placement on the barrier island will be supplemented, as needed, by dredging from the adjacent ebb shoals of each inlet to obtain the required volume of sand needed for bypassing.
- The bypassed sand will be placed in a berm template at elevation +9.5 ft NGVD in identified placement areas.
- Monitoring is included to facilitate adaptive management changes.

Mainland Nonstructural

- Addresses approximately 4,432 structures within the 10 year floodplain using nonstructural measures, primarily, structural elevations and building retrofits, based upon structure type and condition.
- Includes localized acquisition in areas subject to high frequency flooding, and reestablishment of natural floodplain function.

Breach Response on Barrier Islands – Provides for the following types of Breach Response

- Proactive Breach Response – is a response plan which is triggered when the beach and dune are lowered below a 4% level of performance and provides for restoration of a dune at +13 ft. NGVD and a 90 ft. berm.
- Reactive Breach Response – is a response plan which is triggered when a breach has physically occurred, e.g. the condition where there is an exchange of ocean and bay water during normal tidal conditions. It is utilized, as needed, in locations that receive beach and dune placement, and also in locations where there is agreement that a breach should be closed quickly, such as Robert Moses State Park and the Talisman Federal tract.
- Conditional Breach Response – is a response plan that applies to the large, Federally-owned tracts within Fire Island National Seashore where the Breach Closure Team determines whether the breach is closing naturally, and if found not to be closed at Day 60, that closure would begin on Day 60. Conditional Breach closure provides for a 90 ft. wide berm at elevation +9.5 ft. and no dune.
- Wilderness Conditional Breach Response – is a response plan that applies to the Wilderness Federally-owned tracts within Fire Island National Seashore, where the Breach Closure Team determines whether a breach should be closed, based upon whether the breach is closing naturally and whether the breach is likely to cause significant damage.

Beach and Dune Fill on Shorefront

- Provides for a 90 ft. wide berm and +15 ft. dune along the developed shorefront areas on Fire Island and Westhampton barrier islands.
- All dunes will be planted with dune grass except where otherwise as detailed in the Recommended Plan description as presented in the GRR.
- On Fire Island the post-Sandy optimized alignment is followed and includes overfill in the developed locations to minimize tapers into Federal tracts.
- Renourishment takes place approximately every 4 years for up to 30 years after project completion; while proactive breach response takes place from years 31 to 50.
- Provides for adaptive management to ensure the volume and placement configuration accomplishes the design objectives of offsetting long-term erosion.
- Provides for construction of a feeder beach every 4 years for up to 30 years at Montauk Beach.

Groin Modifications

- Provides for removal of the existing Ocean Beach groins.

Coastal Process Features (CPFs)

- Provides for 12 barrier island locations and two mainland locations as coastal process features
- Includes placement of approximately 4.2 M CY of sediment in accordance with the Policy Waiver for a Mutually Acceptable Plan between the Department of the Army and the Department of the Interior. Sediment will be placed along the barrier island bayside shoreline over the 50 year project period of analysis that reestablishes the coastal processes consistent with the reformulation objective of no net loss of habitat or sediment. The placement of sediment along the bay shoreline will be conducted in conjunction with other nearby beach fill operations undertaken on the barrier island shorefront.
- The CPFs will compensate for reductions in cross-island transport and sediment input to the Bay, offset Endangered Species Act impacts from the placement of sediment along the barrier island shorefront, augment the resiliency and enhance the overall barrier island and natural system coastal processes.

Adaptive Management

- Provides for monitoring and the ability to adjust specific project features to improve effectiveness and achieve project objectives.
- Climate change will be accounted for with the monitoring of climate change parameters, identification of the effect of climate change on the project design and identification of adaptation measures that are necessary to accommodate climate changes as it relates to all the project elements.

Integration of Local Land Use Regulations and Management

- Upon project completion, the U.S. Army Corps of Engineer's Project's Annual Inspection of Completed Works (ICW) program provides for monitoring and reporting of any new development within the project area to the appropriate federal, state, and local entities responsible for enforcing applicable land use regulations.

Additional details of the shorefront Recommended Plan features and descriptions of the Recommended Plan for each of the project sub-reaches, the type of breach response plan, and the Life Cycle Plan following project construction for Years 1-30 and Years 31-50 can be found in the GRR Main Report (USACE 2019) and Appendices and the FEIS.

- c. Authority and Purpose: The problems along the shorefront include storm damages due to erosion, wave attack, and flooding. Along the barrier island there is also the threat of barrier island overwash and breaching. Along the back bay, there is the threat of flooding during no- breach conditions. Flooding becomes worse when there is a breach of the barrier island, which allows for more storm water from the ocean. These problems have occurred repeatedly in the past, resulting in damages to the existing environment.

The Fire Island Inlet to Montauk Point, New York, Combined Beach Erosion Control and Hurricane Protection Project was authorized by the River and Harbor Act of 14 July 1960, and subsequently modified in accordance with Section 103 of the River and Harbor Act of 12 October 1962. The project authorization was modified again by Section 31 of the Water Resources Development Act (WRDA) of 1974. The authorization was further modified by section 502 of the WRDA of 1986 (P.L. 99-662). For portions of Fire Island to Montauk Point, other than the portion from Moriches Inlet to Shinnecock Inlet, Section 103 of the WRDA of 1986 (P.L. 99-662) defined the cost sharing of the first cost to be 65 percent Federal. In addition, Section 156 of the WRDA of 1976, as modified by Section 934 of the WRDA 1986, modifies the existing authorization to provide for continued renourishment not to exceed 50 years from initiation of construction of each of these reaches. The WRDA of 1992 further modified the project to extend the period of periodic nourishment to 30 years from the date of project completion for Moriches to Shinnecock Inlet, with the non-Federal share not to exceed 35 percent of the total project cost. The WRDA of 1999 further modified the project authorization, requiring the Corps to submit to Congress a mutually acceptable plan for the Fire Island Inlet to Moriches Inlet Reach (USACE 2009a).). The authorizing law for FIIS specified that any plan for shore protection with the boundary of FIIS be mutually agreeable with the Secretary of the Interior and Secretary of the Army.

The New York District is currently leading the planning effort for the proposed action in this EIS, with the National Park Service (NPS)-FIIS and the U.S. Fish and Wildlife Service (USFWS) as the responsible cooperating agencies and New York State, represented by the New York State Department of Environmental Conservation (NYSDEC), as the local sponsor.

- d. General Description of Placement Material: Sand that is compatible to the existing beach that will be pumped in from offshore borrow area. The inner continental shelf south and offshore of the Study Area is characterized by ridge and swale morphology. Surficial sediments are predominantly fine to medium grained sands. Fine-grained sediment outcrops exist in isolated areas of the inner shelf and shoreface. The geology of this area is complex and is characterized by Holocene sediments of variable thickness. These sediments generally consist of either organic-rich muds (backbarrier deposits typically found in the sheltered waters leeward of a barrier island) or modern marine and inlet-filling sands. The area west of Moriches Inlet is typified by a seaward-sloping wedge-shaped deposit of backbarrier sediments underlying marine sand. The maximum thickness of these Holocene sediments is 10 feet along the western portion of Fire Island. This sedimentary layer thins towards Moriches Inlet. Along the FIMP Study Area the grain size distribution of the beach material varies. Typically, grain size increases from west to east, with mean grain size of 0.39 mm at Robert Moses State Park to 0.52 mm at Montauk Point.
- e. Proposed Discharge Site: The Study Area includes the barrier island chain from Fire Island Inlet to Southampton inclusive of the Atlantic Ocean shorelines, and adjacent back-bay areas along Great South, Moriches, and Shinnecock Bays. The Study Area continues to the east including the Atlantic Ocean shoreline along the mainland of Long Island

extending from Southampton to Montauk Point. This area includes the entire Atlantic Coast of Suffolk County covering a shoreline length of approximately 83 miles. The Study Area also includes over 200 additional miles of shoreline within the estuary system. The Study Area includes areas on the mainland that are vulnerable to flooding, which generally extend as far landward as Montauk Highway, for an approximate area of 126 square miles.

- f. Disposal Method: Use of hydraulic dredging equipment for the initial construction and renourishment efforts. The sand would be moved through a hydraulic pipeline that would extend from the dredging site across the inlet and nearshore area.
- g. Discharge Quantities: The Beach and Dune Fill on Shorefront project feature provides for placement of sand on the barrier island, including on shore as well as in areas regulated under Section 404. The specific quantities of material that would be placed in Section 404 regulated areas will be determined during the preliminary engineering design (PED) phase of the project. The beach fill plan initial construction quantities and locations are listed in the following table:

Beach Fill Plan Initial Construction Quantities

Location	Subreach	Sediment Source	Fill Length (ft)	Volume (cy)
Kismet to Lonelyville	GSB-2A	2C	8,900	deferred
Town Beach to Corneille Estates	GSB-2B	2C	4,500	deferred
Ocean Beach to Seaview	GSB-2C	2C	3,800	deferred
Ocean Bay Park to Point O’Woods	GSB-2D	2C	7,300	deferred
Cherry Grove	GSB-3A	2H	3,400	deferred
Fire Island Pines	GSB-3C	2H	7,000	deferred
Water Island	GSB-3E	2H	1,600	deferred
Davis Park	GSB-3G	2H	5,000	deferred
Fire Island Subtotal				0
Cupsogue	MB-2C	4C	2,000	156,000
Pikes	MB-2D	4C	9,600	232,000
Westhampton	MB-2E	4C	10,900	176,000
Westhampton Subtotal				564,000
Total				564,000

Notes: Robert Moses State Park and Smith Point County Park-West are not shown here because the required fill material is coming from inlet dredging. Initial fill along Fire Island (1,582,000 cy) deferred to Year 4 with first renourishment event.

A 30-year commitment of Federal and non-Federal renourishment is proposed, which recognizes the potential for variable beach conditions between renourishment cycles. The required renourishment fill volumes have been computed based on representative erosion rates and expected renourishment interval of approximately every 4 years. After 30 years, the Federal and non-Federal commitment would transition to a BRP for the remainder of the 50 year period of analysis. Fill quantities and locations over the 30 year period are listed in the following table:

Beach Fill Plan – Renourishment Quantities Per Operation

Location ¹	Subreach	Sediment Source	Fill Length (ft.)	Volume (cy)
Kismet to Lonelyville	GSB-2A	2C	8,900	319,000
Town Beach to Corneille Estates	GSB-2B	2C	4,500	162,000
Ocean Beach to Seaview	GSB-2C	2C	3,800	134,000
Ocean Bay Park to Point O' Woods	GSB-2D	2C	7,300	262,000
Cherry Grove	GSB-3A	2H	3,400	48,000
Fire Island Pines	GSB-3C	2H	7,000	503,000
Water Island	GSB-3E	2H	2,9600	41,000
Davis Park	GSB-3G	2H	5,000	428,000
Fire Island Subtotal				1,897,000
Montauk	M-1F	8D	3,200	392,000
Cupsogue	MB-2C	4C	2,000	71,000
Pikes	MB-2D	4C	9,600	620,000
Westhampton	MB-2E	4C	10,900	468,000
Westhampton Subtotal				1,159,000
Total				3,057,000

¹Robert Moses State Park and Smith Point County Park-West are not shown here because the required fill material is coming from inlet dredging.

Factual Determinations

Additional details related the assessment of project effects can be found in the FEIS, Chapter 4.0.

- (1) **Physical Substrate Determinations:** Borrow areas that can provide material compatible with the existing beach and shoreline sediments with respect to grain size and other physical characteristics of the placement areas have been selected. The borrow areas have been selected based on suitability of the available material for beach nourishment and dune creation. The material has been deemed compatible with the areas receiving the sand. The beach and dune fill on the shoreline and the CPF material placement on the bay side will temporarily impact the benthic community through direct burial. The organisms are expected to recolonize relatively quickly; therefore, impacts would be short term.
- (2) **Sediment Type:** Sediments similar to those present in the placement area will be utilized. No impacts are anticipated. Placement of material on the bay side will simulate and reestablish natural coastal processes.
- (3) **Dredged Material Movement:** Minor short-term movement and existing shore processes will continue.
- (4) **Physical Effects on Benthos:** Minor short-term disruption. No long-term impact.
- (5) **Other Effects:** None identified
- (6) **Action to Minimize Impacts:** Direct fill placement in 404 regulated waters has been minimized to the extent practicable while still achieving the project objectives. Measures to minimize impacts to protected species and areas include monitoring, seasonal restrictions and other measures as detailed in the EIS (See EIS section (4.0)), the Biological Opinion (EIS

Appendix B) and the Fish and Wildlife Coordination Act Report (EIS Appendix J). In addition, best management practices (BMPs) as applicable and appropriate for the various project activities will be implemented to minimize indirect temporary impacts to water quality; specific measures will be identified the Section 401 water quality certificate issued by New York State prior to project implementation.

b. Water Circulation, Fluctuations, and Salinity Determinations

(1) Water

- (a) Salinity: Not applicable - Proposed project is not expected to affect salinity because beach fill does not govern the overall water mass movements (tidal flow and river discharge) that control salinity.
 - (b) Water Chemistry: No major impacts are expected.
 - (c) Clarity: Temporary increase in turbidity will occur in the offshore borrow areas during hydraulic dredging and in the nearshore and intertidal areas during placement of sand on beaches. Minor impacts are expected since there is natural turbidity in the along shore zone. Impacts will be limited in spatial extent and duration..
 - (d) Color: Minor temporary changes possible but no major impacts are expected.
 - (e) Odor: No measurable impacts are expected.
 - (f) Taste: Not applicable
 - (g) Dissolved Gas Levels: Possible short-term variation may occur due to turbulence created by placement of the material on the beach.
 - (h) Nutrients: Temporary and localized nutrient increases may occur due to sediment resuspension during beach fill activities. No long-term increase in nutrients and eutrophication will result from the proposed project.
 - (i) Eutrophication: None identified
 - (j) Other: None identified
- (2) Current Patterns and Circulation: Sediment transport at the placement areas is dominated by wave driven, long shore currents which tend to move sediment over much of the project length; this would continue.
- (3) Normal Water Level Fluctuations: The project will shift the high-water line offshore from its present location, but will not alter the water level or tidal range.
- (4) Salinity Gradients: No impacts expected
- (5) Actions to Minimize Impacts: Fill locations, areas, profiles and quantities are the minimum necessary to provide the desired level of coastal storm risk management.

c. Suspended Particulate/Turbidity Determination

(1) Change at Disposal Site: Short-term, localized increases in suspended particulates/turbidity as a result of placement of material. Temporary increases in turbidity due to hydraulic pumping are expected. However, the existing environment at the placement area is turbid, and therefore, any increase in turbidity will not be noticeable and would be short term and should not extend much beyond the placement area.

(2) Effects on Chemical and Physical Properties of the Water Column: Impact should be minimal since particles will settle out fairly rapidly and no toxic metals or organic compounds are anticipated to be encountered.

(a) Light Penetration - Particles will settle fairly rapidly. Minor short term impacts are anticipated.

(b) Dissolved Oxygen - Possible short-term reduction at the borrow areas.

(c) Toxic Metals and Organics - No toxic metals or organic compounds are anticipated to be encountered.

(d) Pathogens - Not applicable.

(e) Aesthetics - Temporary short-term increase in turbidity are expected, but the water is naturally turbid at the sand placement areas.

(3) Others - Not applicable.

(4) Effects on Biota:

(a) Primary Production, Photosynthesis - Minor short-term impacts at the borrow areas are anticipated. No significant impacts are expected.

(b) Suspension/Filter Feeders - Minor short-term impacts are anticipated. Non-motile forms at placement site would be buried, but would recolonize shortly. At the borrow site, recolonization is also expected.

(c) Sight Feeders - Fishes and motile invertebrates generally can avoid or leave areas where dredging and fill placement are being conducted. No significant impacts are expected.

d. Action to Minimize Impacts: The depth of borrow area excavation is being limited to avoid deep stratified pits. Dredging and material placement in the nearshore and intertidal zones will be staggered over the proposed 15 month construction schedule, thereby affording opportunity for biota to re-establish gradually over the length of the project area.

e. Contaminant Determination: No impacts identified. All beach fill placed must have a sand content of 90% or greater, with any object (rock, rubble, debris) greater than .75 inches in diameter being held back by the discharge end screening device and disposed of. With respect to other water quality concerns, since sediments beneath navigable

waters proposed for dredging are considered as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action or if they are part of the National Priority List (NPL) site under CERCLA, no preliminary assessment for HTRW at the borrow area was necessary. Sand from the borrow area is predominantly sand and gravel mixtures (> 90%); as such, it lacks affinity for binding of contaminants. The extremely low organic carbon and clay content of the borrow area sediments makes the presences of contaminants, at other than trace levels, extremely unlikely. Silicon particles are believed to have no substantial chemical attraction to heavy metals and organics, and under ocean disposal testing guidance "Green Book" - USACOE & EPA, 1991, it is assumed to be contaminant free and therefore, testing of the sediments has not been done. Also, the borrow area is geographically removed from the direct influence of any known point source of contaminants and from any historical disposal area.

f. Aquatic Ecosystems and Organisms Determination:

1. Effects on Plankton - No major impacts are anticipated as the dredging area is comparatively small and only minor short term localized increases in turbidity are expected.
2. Effects on Nekton - No major impacts are anticipated as the dredging area is comparatively small and only minor short term localized increases in turbidity are expected.
3. Effects on Benthos - Benthos in the borrow area are likely to experience direct mortality, unless they can vacate the area. Likewise, non-motile benthic species at the placement site would be buried.
4. Effects on Aquatic Food Web - Long-term effects are not anticipated as the benthic communities are expected to re-establish within a relatively short time period.
5. Effects on Special Aquatic Sites:
 - Sanctuaries and Refuges - Not applicable
 - Wetlands - Not applicable – no fill material will be placed in vegetated wetlands
 - Mud Flat - Not applicable.
 - Vegetated Shallows - Not applicable
 - Coral Reefs - Not applicable
 - Riffle and Pool Complexes -Not applicable

g. Other Wildlife:

1. Threatened and Endangered Species:

- The proposed project has the potential to adversely affect two federally listed threatened species: piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*). In accordance with the proposed action's Biological Opinion from USFWS, the USACE appropriate measures have been incorporated to ensure that the project is implemented in such a way as to minimize adverse impacts to these species and comply with the Endangered Species Act.
- No adverse impacts to occasionally occurring transient federally listed sea turtles or marine mammals are expected.
- Additional state listed species may also be present in the project area. The FEIS provides an assessment of potential project impact on these species; however, no significant impacts were identified.

2. Adverse impacts to non-listed terrestrial wildlife are not anticipated; these species will avoid the sand placement area during construction and will benefit in the long term from the created beach and dune habitat and stabilized conditions on the barrier island.

- h. Actions to Minimize Impacts: The placement of sand would be controlled and scheduled to prevent interference with bird breeding and nesting seasons.

i. Proposed Disposal Site Determination:

1. Mixing Zone Determination: Because of the short-term duration of the effects and the existing water depth in the sand placement area, the vertical and horizontal mixing zones are negligible.

2. Determination of Compliance with Applicable Water Quality Standards: The NYS DEC classifies waters in the study area as SA, saline surface waters. State water quality standards are not expected to be exceeded by the proposed action.

3. Potential Effects on Human Characteristic:

- Municipal and Private Water Supply - Not applicable.
- Recreational and Commercial Fisheries – Work would be in sections to minimize impacts to recreation and swimming. Minimal adverse impacts to sport fishery are expected; these impacts would be short term and limited to the construction period.
- Water-Related Recreation - New and additional recreational opportunities are expected due to expanded beach areas.
- Aesthetics - The beach would be returned to a width which is generally considered to be aesthetically pleasing.

- Parks, National and Historical National Seashores, Wilderness Research Sites, and Similar Preserves - No adverse effects are expected; the project will provide erosion protection to these areas.
- j. Determination of Cumulative Effects on the Aquatic Ecosystem: See FEIS Chapter 4.0. The cumulative effect of the proposed discharge would be to reduce storm damage by restoring a functional beach berm and dune system. In so doing, historical littoral drift patterns will be recreated. The proposed project would protect the shores from beach erosion with no serious disadvantage to water quality or the aquatic ecosystem. Impacts associated with hydraulic dredging and placement are anticipated to be short-term.
- k. Determination of Secondary Effects on the Aquatic Ecosystem: The potential secondary impacts of the proposed placement activity include impacts resulting from dredging the proposed offshore borrow areas. Potential impacts include changes in bathymetry, sediment type, water circulation and current patterns, turbidity, benthos and epibenthos community characteristics. Borrow area design has incorporated these concerns to minimize physical and biological impacts. The proposed limit on dredging depth (maximum 20-feet) would limit changes in bathymetry to minimize possible circulation and sedimentation impacts. Borrow area benthic populations are expected to reestablish fairly quickly. Increase in recreational use of the shoreline would be another secondary impact, but the existing infrastructure is adequate to accommodate the increased activity without any significant adverse effects.

Findings of Compliance or Noncompliance

- a. No significant adaptations of the guidelines were made relative to this evaluation.
- b. There are no practicable alternatives for the proposed action under the jurisdiction of Section 404(b)(1) Guidelines.
- c. The proposed action does not appear to violate applicable state water quality standards or effluent standards.
- d. The proposed dredged material placement would not cause violations of the Toxic Effluent Standards of Section 307 of the Clean Water Act.
- e. The proposal will not have significant adverse impacts on endangered species or their critical habitats. Formal coordination with the USFWS under section 7 of the Endangered Species Act of 1973 is has resulted in a Biological Opinion to insure the safety of placement areas that utilize the area. For marine species, best management practices coordinated with NMFS are being implemented to minimize any impacts for species that may be present during construction.
- f. The proposed action will not result in significant adverse impacts on human health or welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife and special aquatic sites.
- g. All appropriate steps to minimize adverse environmental impacts have been taken.

Conclusions

Based on all of the above, the proposed action is determined to be in compliance with the Section 404(b)(1) Guidelines, subject to appropriate and reasonable conditions, to be determined on a case-by-case basis, to protect the public interest.

References

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| USACE 2016a | USACE. 2016. Fire Island Inlet to Montauk Point New York Reformulation Study. Draft General Reevaluation Report July 2016. |
| USACE 2016b | USACE. 2016. Fire Island Inlet to Montauk Point Reformulation Study Draft Environmental Impact Statement. July 2016. |
| USACE 2019 | USACE. 2019. Final General Reevaluation Report: Fire Island to Montauk Point Reformulation Study. October 2019. |