

Appendix B

Section 404(b)(1) Water Quality Evaluation

**SECTION 404(b)(1) GUIDELINES EVALUATION,
SOUTH SHORE OF STATEN ISLAND COASTAL STORM RISK
MANAGEMENT PROJECT, NEW YORK CITY, NEW YORK**

INTRODUCTION

This document presents a Section 404(b)(1) guidelines evaluation for the South Shore of Staten Island Coastal Storm Risk Management Project (hereafter referred to as “Project”). The primary goal of the Project is to reduce the risk of damages from hurricane and storm surge flooding along the south shore of Staten Island. The evaluation is based on the regulations found in 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 401(1) of the Clean Water Act, which govern disposal of dredged and fill material inside the territorial sea baseline [§230.2(b)].

DRAFT 404(b)(1) EVALUATION

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

I. Project Description

- a. Location - The project is located solely within the Borough of Staten Island, City of New York, and is made up of 5.3 miles of coastline from Fort Wadsworth to Oakwood Beach.
- b. General Description - The National Economic Development (NED) Plan involves the construction of a line of protection (LOP) consisting of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP would consist of a T-Type vertical floodwall, and levee. The crest elevation of the LOP would be 18 feet NGVD29 to 20.5 feet NGVD29. The finished elevation of the buried seawall, which accounts for approximately 80% of the LOP, would be 2 feet higher than this. The LOP would also include a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The NED Plan also involves excavation of interior areas to augment/create 10 ponds that would alleviate flooding that may subsequently occur from interior runoff.
- c. Authority and Purpose - The project is authorized by a United States House of Representatives Committee on Public Works and Transportation resolution dated May 13, 1993. Public Law 113-2, The Disaster Relief Appropriations Act of 2013, will provide authorization for construction. This EIS was initiated by the United States Army Corps of Engineers (USACE), New York District (District). The New York State Department of Environmental Conservation (NYSDEC), New York City Department of Environmental Protection (NYCDEP), and New



York City Department of Parks and Recreation (NYCDPR) are the non-Federal sponsors of the Project.

d. General Description of Fill Material -

- (1) General Characteristics of Material - Foundation fill material, which would be the predominant material for the buried seawall, would generally consist of coarse to fine sands with varying amounts of clay, silt, and gravel. Compacted fill would be used for core and shell material for levee structures, and as earth cover material on the water side and impervious fill on the landside for the buried seawall. Considering that the compacted fill should be relatively impervious, it is anticipated that silty sand and/or clay sand layers of silt would be used. Fill material for the seawall cover would come from excavations of the seawall foundation. Fill material for the levee would be brought in from outside the Project area. .
- (2) Quantity of Material - The estimated fill quantity is 230,000 cubic yards.

e. Proposed Discharge Site -

- (3) Location - Project area as described above in I a.
- (4) Size - The LOP would have a crest elevation of +18.0 feet NGVD29 to +20.5 feet NGVD29, and the finished elevation of the buried seawall would be +22.5 feet NGVD29. The maximum width of the LOP would be approximately 85 feet, and the length would be 27,900 feet.
- (5) Type of Sites/Habitat – Fill placement would be in a beach/coastal plain habitat. Surface water classifications in the vicinity of the Project area are: SB in the Lower Bay, as designated by the NYSDEC. This classification permits primary and secondary contact recreation and fishing. In the interior lower watershed, surface water classification is generally I/C or C. Class C waters are designated as a best usage for fishing and Class I waters are designated as best usages for secondary contact recreation and fishing.
- (6) Time and Duration of Disposal - Construction of the LOP would be completed within an estimated 3.5-year period (nominally June 2016 – December 2019). No marine-related threatened and endangered species are expected in the Project area. Because osprey, northern harrier, Coopers hawk, and Preregrine falcon have the potential to nest, forage or flyover the lower watershed Project areas, a pre-construction survey would be conducted for these species. If these species are observed or nesting, measures would be taken to avoid impacting these species during construction and operation of the NED Plan. The District would



coordinate construction activities with the U.S. Fish and Wildlife Service, the National Marine Fisheries Services, and NYSDEC to ensure no adverse impacts to protected species.

- f. Disposal Method - Hydraulic construction equipment, such as bulldozers and backhoes, depending upon the construction methods selected by the contractor(s). It is expected that all material associated with construction would be transported by truck and that all construction equipment would be land-based.

II. Factual Determinations

a. Physical Substrate Determination -

- (1) Substrate Elevation and Slope - No major impacts; the beach slope would be relatively unaffected by the LOP. Interior drainage areas would be excavated to approximately 2 feet NGVD29.
- (2) Sediment Type - No major impacts because sediment grain size of fill material would be similar to that of the existing environment.
- (3) Dredged Material Movement - No major impacts because no offshore dredging would occur and no offshore dredged material would be used as fill. Excavation material from ponds would likely be disposed of outside the Project area.
- (4) Physical Effects on Benthos - Some benthic invertebrates may be buried/smothered by LOP construction, and disturbed during excavation of ponds. However, long-term effects are not anticipated.
- (5) Other Effects - Not applicable (N/A).
- (6) Action to Minimize Impacts - N/A.

b. Water Circulation, Fluctuations, and Salinity Determinations -

- (1) Water - consider effects on:
 - (a) Salinity - Proposed tidal gates associated with the LOP would remain open during normal tidal elevations to allow passage of saline tidewater into marsh areas and drainage of rainfall runoff. Consequently, no salinity effects are expected.
 - (b) Water Chemistry - The NED Plan is expected to result in improved water quality in the watershed compared to the No-Action (without-project) Alternative. Without the NED Plan, runoff would not be collected and directed to the proposed ponds. In contrast, proposed ponds function as wetlands that provide



physical, chemical, and biological treatment of pollutants contained within runoff; flow rates into wetlands are attenuated, allowing sediment and organic debris to settle. During this process, nutrients undergo both chemical and biological transformation in a wetland. Nitrogen can be naturally altered into forms that are more favorable to uptake by wetland plants and phosphorus is readily precipitated out of water in many of its chemical forms, depending on the pH of the water and is also utilized by plants. Proposed ponds can also reduce fecal coliform concentrations by detaining water, allowing for die-off of microorganisms. (Note: ponds would be excavated to elevations appropriate for volunteer wetland plants, even though the District's NED Plan does not include planting).

- (c) Clarity - Temporary increases in turbidity and suspended sediment during excavation of ponds and placement of fill for the LOP. Long-term impacts are not expected because fill material, dominated by coarse material (sand), would settle quickly out of the water column.
 - (d) Color - Minor short-term changes are possible in interior drainage areas due to turbid water.
 - (e) Odor - Not measurable.
 - (f) Taste - N/A.
 - (g) Dissolved Gas Levels – Not expected.
 - (h) Nutrients - Potential long-term increase due to proposed ponds functioning as wetlands.
 - (i) Eutrophication - N/A.
 - (j) Other - N/A.
- (2) Current Pattern and Circulation -
- (a) Current Pattern and Flow - The LOP would be constructed parallel to the shoreline and would reduce the drift and deposition of sand inland. A prevailing east to west littoral drift of sand is a known pattern on the south shore of Staten Island. However, the LOP is not expected to significantly alter or interrupt these littoral drift patterns.
 - (b) Velocity - No major impacts.



- (c) Stratification - N/A.
- (3) Normal Water Level Fluctuations - N/A.
- (4) Salinity Gradients - No impact.
- (5) Actions that Will be Taken to Minimize Impacts - N/A.
- c. Suspended Particulate/Turbidity Determination -
 - (1) Expected Changes - Short-term increases are expected due to pond excavation.
 - (2) Effects on Chemical and Physical Properties of the Water Column -
 - (a) Light Penetration - Sediments dominated by coarse textured soil material that will settle rapidly out of the water column. Minor, temporary impacts are anticipated.
 - (b) Dissolved Oxygen - No adverse effects. Long-term effects expected to be positive from improved water quality.
 - (c) Toxic Metals and Organics - No adverse effects. Depending on the depth of excavation (which will not be finalized until after field work for plans and specifications), the NED Plan may potentially involve the disturbance of groundwater in areas where prior uses, regulatory database searches, and testing have indicated a potential for the presence of hazardous materials in the soil and/or groundwater. These locations would be tested in accordance with NYCDEP protocols prior to construction. If contaminated materials are found, they would be removed and disposed of in accordance with all City, State, and Federal regulations. In addition, the NED Plan would handle contaminated groundwater in accordance with all regulations. The NED Plan involves potential beneficial impacts associated with cleanup of hazardous materials.
 - (d) Pathogens - N/A.
 - (e) Aesthetics - Temporary increase in turbidity.
 - (f) Others as Appropriate - N/A.
 - (3) Effects on Biota -



- (a) Primary Production, Photosynthesis - Potential short-term disruption from excavation of ponds. Long-term effects expected to be positive from improved water quality. (Note: excavated ponds would be at a suitable elevation for volunteer wetland plants, contributing to positive impact).
- (b) Suspension/Filter Feeders - No significant effects.
- (c) Sight Feeders - Fishes and motile invertebrates are generally capable of avoiding areas of degraded water quality. Therefore significant effects are not anticipated. However, suspended sediments that settle out of the water column will smother eggs of demersal egg-laying fish that may spawn in the work area during the construction period.

(4) Action to Minimize Impacts - N/A.

d. Contaminant Determination –

The NED Plan may potentially involve the disturbance of soil and groundwater in areas where prior uses, regulatory database searches, and testing have indicated a potential for the presence of hazardous materials in the soil and/or groundwater. Under the NED Plan, these locations would be tested in accordance with NYCDEP protocols prior to construction. If contaminated materials are found, they would be removed and disposed of in accordance with all City, State, and Federal regulations. In addition, the NED Plan would handle contaminated groundwater in accordance with all regulations. The NED Plan involves potential beneficial impacts associated with cleanup of hazardous materials.

e. Aquatic Ecosystems and Organisms Determination -

- (1) Effects on Plankton/Nekton - No significant resident aquatic resources are identified in the Project area. Potential short-term disruption from excavation of ponds.
- (2) Effects on Benthos - Some benthic species and some embryonic/juvenile nekton may be buried during LOP construction and disturbed during excavation of ponds.
- (3) Effects on Aquatic Food Web - Long-term adverse effects are not anticipated. The NED Plan is expected to result in improved water quality in the watershed.
- (4) Effects on Special Aquatic Sites -
 - (a) Sanctuaries and Refuges - N/A.



- (b) Wetlands – In total, up to 10.9 acres of freshwater wetlands could be permanently impacted by the placement of fill for the LOP. Approximately 46 acres of tidal wetlands would be constructed as a result of the NED Plan. The interior drainage features of the NED Plan would not affect wetland acreage in the Project area, but would improve wetland quality by increasing diversity with expanded open water (low-flow channels and ponds) and permanent pool (emergent wetlands) habitats.
 - (c) Mud Flat - No impacts.
 - (d) Vegetated Shallows - N/A.
 - (e) Shoreline – The shoreline would be unaffected.
 - (f) Riffle and Pool Complexes - N/A.
- (5) Threatened and Endangered Species - No Federal or state endangered or threatened species are expected to be impacted.
- (6) Other Wildlife - No impacts.
- (7) Actions to Minimize Impacts - N/A.
- f. Proposed Disposal Site Determination -
 - (1) Mixing Zone Determination - Because of the short-term duration of the effects, the vertical and horizontal mixing zones are negligible.
 - (2) Determination of Compliance with Applicable Water Quality Standards – The NYSDEC classifies this Project area as SB waters in the Lower Bay, and generally as I/C or C in the interior lower watershed. State water quality standards would not be exceeded by the NED Plan in the short-term. Over the long-term, water quality would be improved.
 - (3) Potential Effects on Human Use Characteristic -
 - (a) Municipal and Private Water Supply - N/A
 - (b) Recreational and Commercial Fisheries - Implementation of the NED Plan would provide an opportunity to maintain and preserve the Project area’s many existing parks and other recreational facilities for the foreseeable future. The NED Plan also allows for the possibility that the risk reduction measures would enhance recreational opportunities. Minimal adverse impacts to sport fishery. Improved water quality would enhance recreational use and the commercial fisheries value of the Lower Bay.
 - (c) Water-Related Recreation - Improved water quality would enhance recreational use of the Lower Bay.



- (d) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves - No adverse effects.
- g. Determination of Cumulative Effects on the Aquatic Ecosystem - None anticipated. All construction work will be in a beach/coastal plain habitat. Impacts associated with excavation and fill placements are anticipated to be short-term.
- h. Determination of Secondary Effects on the Aquatic Ecosystem - Beneficial impacts to aquatic ecosystem would occur through construction of tidal wetlands and improved freshwater wetland quality and habitats.

III. Findings of Compliance or Noncompliance

- a. No significant adaptations of the guidelines were made relative to this evaluation.
- b. Several alternatives to reduce the risk of damages from hurricane and storm surge flooding along the south shore of Staten Island were considered. There are no practicable alternatives under the jurisdiction of Section 404(b)(1) guidelines.
- c. The NED Plan does not appear to violate applicable state water quality standards or effluent standards.
- d. The proposed LOP placement and pond excavations would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
- e. The NED Plan would have no adverse impact on endangered species or their critical habitats. (Endangered Species Act of 1973).
- f. The NED Plan would have no impact on marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972.
- g. The proposed placement of the LOP and pond excavations would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Significant adverse effects on aquatic ecosystem diversity productivity and stability, and recreational, aesthetic and economic values would not occur.
- h. Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems include good engineering practices.



- i. On the basis of the guidelines, the proposed site for placement of the LOP and excavation of ponds is specified as complying with the requirements of these guidelines.

IV. Conclusions

Based on all of the above, the NED Plan 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.

