



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

JUL 09 2020

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

THE SECRETARY OF THE ARMY

1. I submit, for transmission to Congress, my report on the reformulation study of coastal storm risk management for communities located between Fire Island Inlet and Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. It is accompanied by the report of the District Commander. Construction of the project was authorized by Section 101 of the River and Harbor Act of 1960, with modifications to the project authorized by the Disaster Relief Appropriations Act of 2013 (P.L. 113-2). P.L. 113-2 provided funding to "reduce future flood risk in ways that will support the long-term sustainability of the coastal ecosystem and communities and reduce the economic costs and risks associated with large-scale flood and storm events in areas along the Atlantic Coast within the boundaries of the North Atlantic Division of the Corps that were affected by Hurricane Sandy" and provided further "[t]hat efforts using these funds shall incorporate current science and engineering standards in constructing previously authorized Corps projects designed to reduce flood and storm damage risks and modifying existing Corps projects that do not meet these standards, with such modifications as the Secretary determines are necessary to incorporate these standards or to meet the goal of providing sustainable reduction to flooding and storm damage risks." This report describes the previously authorized Fire Island to Montauk Point project with modifications as authorized by P.L. 113-2 to incorporate current science and engineering standards or to meet the goal of providing sustainable reduction to flooding and storm damage risks. The U.S. Army Corps of Engineers (USACE) intends to undertake initial construction of the modified project using funds provided in P.L. 113-2. I am recommending that the Congress authorize the modified project to allow for periodic nourishment and any initial construction of the project that will not be completed using P.L. 113-2 funds.

2. The reporting officers recommended implementation of a plan that is mutually acceptable between the Secretary of the Army and the Secretary of the Interior, in accordance with the provisions of the enabling legislation of the Fire Island National Seashore, section 8, P.L. 88-587. This mutually acceptable plan provides a systems approach for coastal storm risk management that balances the risks to human life and property, while maintaining and restoring the natural coastal processes and ecosystem integrity from Fire Island Inlet east to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. To meet the requirement of mutual acceptability, a policy waiver was received allowing the inclusion of features that are not incrementally justified.

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

3. The recommended plan includes a combination of features along the shorefront including inlet bypassing, beach nourishment, and breach response, which will continue for a period for 50 years from initiation of construction. From 31 years after construction initiation through 50 years after construction initiation, the plan recommends a lesser level of continuing construction along the shorefront, consisting of breach response and inlet bypassing. The principal features of the plan include:

a. Inlet sand bypassing to provide sufficient sand bypassing across Fire Island, Moriches, and Shinnecock Inlets to restore the natural long shore transport of sand along the barrier island for 50 years. Sand placed on the barrier island from scheduled maintenance of the authorized navigation channel and deposition basin will be supplemented, as needed, with sand dredged from the adjacent ebb shoals of each inlet to obtain the required volume of sand needed for bypassing, which will be placed in a berm template at elevation +9.5 feet National Geodetic Vertical Datum of 1929 (NGVD29) in identified placement areas.

b. Mainland nonstructural measures for approximately 4,500 structures in the 10 percent floodplain (the area which has a minimum statistical probability of one in ten of being flooded in any given year). Measures include structural elevations, flood proofing, acquisitions, and structural ringwalls for structures that are not suitable for nonstructural treatment.

c. In conjunction with the mainland nonstructural program, the reestablishment of natural floodplain function at identified high-frequency locations where acquisition is recommended because of low ground elevations.

d. A range of breach response along the barrier island system for 30 years after initiation of construction. Proactive breach response is recommended for beach and dune placement at specific locations where the beach and dune are below a four percent level of risk reduction. Reactive breach response is recommended at discrete locations so that a breach can be closed quickly, with placement of a beach and dune after breach occurrence. Conditional breach response is recommended at specific locations to close a breach, with beach and dune fill placement if the breach remains open after 60 days. Wilderness Conditional Response is included for locations within the Otis G. Pike High Dunes Wilderness area, to close a breach if it remains open and meets the triggers of significant damage to warrant closure.

e. A 90 feet wide berm and +15 feet dune along the developed shorefront areas on Fire Island and Westhampton barrier islands. All dunes will be planted with dune grass, and renourishment will occur approximately every four years for up to 30 years after initiation of construction.

f. From years 31 to 50, the plan recommends proactive breach response in locations identified as beachfill with renourishment for years 1-30. The plan

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

recommends the continuation of breach response and sand bypassing in other locations from years 31 to 50.

g. Removal of the two existing groins located in the Village of Ocean Beach.

h. Construction of a feeder beach along 6,000 feet of shoreline in Downtown Montauk, with renourishment every four years for up to 30 years after initiation of construction.

i. Construction of Coastal Process Features and renourishment at 12 identified barrier island locations to restore the cross island sediment transport processes and provide habitat for protected species.

j. Adaptive management that provides for monitoring of project features and project performance, and the ability to adjust specific project features to improve effectiveness and achieve project objectives, including the monitoring and adaptation for climate change.

k. As part of the USACE Annual Inspection of Completed Works program, permanent easements acquired for the project will be monitored to confirm that they remain undeveloped and functioning as intended.

l. The Secretary of the Army and the Secretary of the Interior find the portion of the recommended plan on the Fire Island National Seashore to be mutually acceptable. The following plan features are departures from the National Economic Development (NED) plan and have been approved by the Assistant Secretary of the Army for Civil Works (ASA(CW)) to arrive at a mutually acceptable plan.

(1) Sand bypassing at Fire Island Inlet, Moriches Inlet, and Shinnecock Inlet is included to reestablish alongshore sediment transport.

(2) Removal of the ocean beach groins is included to reestablish alongshore transport.

(3) Breach response plans are included on lands within Fire Island National Seashore, in lieu of beachfill to balance coastal storm risk management objectives and natural resource management objectives on these properties.

(4) Barrier island coastal processes features are included to compensate for no net loss of cross-island sediment transport.

(5) A nonstructural plan for the 10 percent floodplain along the mainland shores is included to compensate for the smaller scale barrier island features, which includes acquisition and reestablishment of floodplain function in locations subject to very frequent flooding.

(6) Monitoring and adaptive management will be applied to the continuing construction of these features.

m. An environmental impact statement was prepared in accordance with the National Environmental Policy Act. The recommended plan has been determined to be

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

economically justified and environmentally acceptable. No mitigation measures (beyond best management practices and avoidance) or compensation measures would be required. USACE will demonstrate conformity with the New York State Implementation Plan by utilizing one of the following emissions offset options, which will be reported and coordinated with the Regional Air Team consisting of USACE, the U.S. Environmental Protection Agency, New York State Department of Environmental Conservation (NYSDEC), New Jersey Department of Environmental Protection and follow agreed upon regional protocols and best management practices.

4. NYSDEC is the non-federal cost-sharing sponsor for all features. Based on October 2019 price levels, the estimated total first cost of the recommended plan is \$1,541,981,000. The total construction cost includes cost shared periodic renourishment approximately every four years over a 30 year period, and unscheduled cost shared renourishment until year 50 in the form of breach response. Section 103 of WRDA of 1986, as amended, establishes the generally applicable cost sharing for construction of coastal risk management projects; however, for this project, initial construction will be implemented using funding and authority provided in P.L. 113-2.

a. In accordance with P.L. 113-2, initial construction of this ongoing construction project would be completed at 100 percent federal expense to the extent P.L. 113-2 funds are available and used for such purpose. The federal share of the project first cost is \$1,541,981,000. NYSDEC is responsible for providing all required lands, easements, rights-of-way, relocations, and disposal facilities (LERRD). LERRD costs are estimated at about \$153,277,000. The costs incurred by NYSDEC to acquire LERRD required for the project from private owners after 29 January 2013 are eligible for reimbursement using P.L. 113-2 funds.

b. Costs for periodic renourishment, including monitoring and adaptive management, for 50 years following the initiation of initial construction will be shared 50 percent federal and 50 percent non-federal. The renourishment costs, inclusive of monitoring and adaptive management, are estimated at \$1,485,853,000 and would be cost shared as \$742,926,500 federal and \$742,926,500 non-federal.

c. NYSDEC would be responsible for 100 percent of the costs of operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project, at an average annual cost currently estimated to be \$677,000.

5. Based on a 2.75 percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated to be \$97,383,000, including monitoring, adaptive management and OMRR&R. All project costs are allocated to the authorized purpose of coastal storm risk management. The recommended plan will reduce the future equivalent average annual damages caused by coastal storms by \$216,106,000, or 60 percent, and would leave average annual residual damages of \$121,590,000. The net NED benefit of the project is \$118,723,000

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

and the benefit to cost ratio is 2.2. These costs and benefits reflect October 2019 price levels under the USACE "intermediate" relative sea level change scenario.

6. A risk and uncertainty analysis that incorporated key economic, hydraulic and sea level change parameters was performed for the feasibility study. Flood risk to people, critical infrastructure, and structures at any location in a floodplain is the function of the flood hazard at the location, and their exposure and vulnerability to the flood hazard. The severity of impacts from large storms (an annual chance of exceedance of 2 percent or greater) in the areas surrounding Great South, Moriches and Shinnecock Bays is strongly dependent on the integrity of the barrier islands from Fire Island Inlet to Southampton. In this regard, overwashing and/or breaching of the barrier islands can lead to increased storm damages as bay storm water elevations are increased. The recommended plan reduces the risk of flooding, wave attack, erosion, and barrier island breaching. The plan provides a greater level of risk reduction for the first 30 years, after which a lesser level of risk reduction is provided. Loss of life can only be prevented by residents and visitors following existing local evacuation plans. The study report fully describes the flood risks associated with coastal storms, and describes the residual risk. The residual risks have been communicated to the non-federal sponsor, and they understand and agree with the analysis. The recommended plan has been designed to avoid or minimize environmental impacts while maximizing future safety and economic benefits to the community. The study team organized and participated in stakeholder meetings and public workshops throughout the process and worked with local groups to achieve a balance of project goals and public concerns.

7. Per ER 1100-2-8126, Incorporating Sea Level Change in Civil Works Programs, a sensitivity analysis was conducted to determine the effects that different rates of accelerated sea level rise could have on the recommended plan. The plan was initially formulated using a historic rate of approximately 0.7 ft. of sea level rise over 50 years from 2028 to 2078 and a sensitivity analysis assessed the intermediate rate and the high rate of sea level rise, to consider how the project would perform under these varying rates. The analysis found that with the addition of sea level change to the current floodplain, the floodplain for the region expands in area and depth. Regions currently in the floodplain are at risk of higher flood depths during storm events. Similarly, the floodplain will extend further inland, increasing the number of assets at risk of flooding. Adaptive management costs factored in response to sea level rise, including increased costs for increasing dune and berm height in the future, and adding volume requirements for periodic renourishment, and increased breach response to compensate for sea level rise. The renourishment estimates are based upon USACE "intermediate" sea level change projections.

8. The renourishment design and volume requirements, and breach response designs, triggers, and volume requirements will be further adjusted as an adaptive management measure based on monitoring results. It is further acknowledged that the monitoring and adaptive management of project performance could trigger the need for project

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

reevaluation, to more fully evaluate the consequences of relative sea level change if relative sea level change greater than the intermediate projection is realized.

9. In accordance with USACE policy on the review of decision documents, all technical, engineering and scientific work underwent an open, dynamic and rigorous review process to ensure technical quality. This included District Quality Control Review, an Agency Technical Review, Independent External Peer Review, and headquarters policy and legal review. All comments from the above-referenced reviews have been addressed and incorporated into the final documents. Overall, the reviews have resulted in improvements to the quality of the feasibility analyses supporting the recommended plan.

10. Washington-level review indicated that the project recommended by the reporting officers is technically sound, environmentally and socially acceptable, and economically justified. The plan complies with all essential elements of the 1983 U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Land Related Resources Implementation Studies and complies with other administrative and legislative policies and guidelines, when considering that certain policies have been waived by the ASA(CW), in order to reach a mutually acceptable plan. The views of interested parties, including federal, state, and local agencies have been considered. The recommended plan would not have any significant adverse effects; therefore, no compensatory mitigation would be required.

11. I generally concur with the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the project to reduce coastal storm damages from Fire Island Inlet to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York be implemented in accordance with the reporting officers' recommended plan, with such modifications as in the discretion of the Chief of Engineers may be advisable. Initial construction of the project can be carried out at 100 percent federal expense under the authority of and within available funds provided under P.L. 113-2. I am recommending that the Congress authorize the project to allow for periodic renourishment and any initial construction of the project that will not be completed using P.L. 113-2 funds. My recommendation is subject to cost sharing and other applicable requirements of federal laws and policies, including Section 103 of the Water Resources Development Act of 1986, as amended, and P.L. 113-2. This recommendation is subject to the non-federal sponsor agreeing to comply with all applicable federal laws and policies, including that it will:

a. Provide 35 percent of initial project costs, including design costs, assigned to coastal and storm damage reduction above the costs that will be funded by P.L. 113-2, plus 100 percent of initial project costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits, and 50 percent of periodic renourishment costs assigned to coastal and storm damage reduction, plus 100 percent of periodic renourishment costs assigned to protecting undeveloped private

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

lands and other private shores which do provide public benefits, and as further defined below:

(1) Provide all lands, easements, rights-of-way, including suitable borrow areas, and perform or assure performance of all relocations, including utility relocations, as determined by the federal government to be necessary for the initial construction, periodic renourishment or operation and maintenance of the project, all in compliance with applicable provisions of the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601-4655) and the regulations contained in 49 C.F.R. Part 24. For work to be undertaken on land under ownership by the National Park Service, construction will be undertaken utilizing a Special Use Permit issued to the Corps, and maintenance will be undertaken utilizing a Special Use Permit issued to the non-Federal partner;

(2) Provide, during construction, any additional amounts necessary to make its total contribution equal to 35 percent of initial project costs assigned to coastal and storm damage reduction above the costs that will be funded by P.L. 113-2 plus 100 percent of initial project costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits, 50 percent of periodic renourishment costs assigned to coastal and storm damage, plus 100 percent of periodic renourishment costs assigned to protecting undeveloped private lands and other private shores which do provide public benefits;

b. Prevent obstructions or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) such as any new developments on project lands, easements, and rights-of-way or the addition of facilities which might reduce the outputs produced by the project, hinder operation and maintenance of the project, or interfere with the project's proper function;

c. Inform affected interests, at least yearly, of the extent of protection afforded by the project; participate in and comply with applicable federal floodplain management and flood insurance programs; comply with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12); and publicize floodplain information in the area concerned and provide this information to zoning and other regulatory agencies for their use in adopting regulations, or taking other actions, to prevent unwise future development and to ensure compatibility with protection levels provided by the project;

d. Operate, maintain, repair, replace, and rehabilitate the completed project, or functional portion of the project, at no cost to the Federal Government, in a manner compatible with the project's authorized purpose and in accordance with applicable federal laws and any specific directions prescribed by the Federal Government;

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

e. For so long as the project remains authorized, ensure continued conditions of public ownership and use of the shore upon which the amount of federal participation is based;

f. Provide and maintain necessary access roads, parking areas, and other public use facilities, open and available to all on equal terms;

g. At least annually and after storm events, perform surveillance of the beach to determine losses of renourishment material from the project design section and provide the results of such surveillance to the Federal Government;

h. Hold and save the United States free from any and all damages arising from the construction, periodic renourishment, operation, maintenance, repair, replacement, or rehabilitation of the project, except for damages due to the fault or negligence of the United States or its contractors.

i. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) which might hinder its operation and maintenance, or interfere with its proper function, such as any new development on project lands or the addition of facilities which would degrade the benefits of the project.

j. Provide and maintain necessary access roads, parking areas, and other public use facilities, open and available to all on equal terms.

k. Perform, or ensure performance of, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, periodic nourishment, or operation and maintenance of the project;

l. Assume, as between the Federal Government and the non-federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any hazardous substances regulated under CERCLA that are located in, on, or under lands, easements, or rights-of-way required for the initial construction, periodic nourishment, or operation and maintenance of the project;

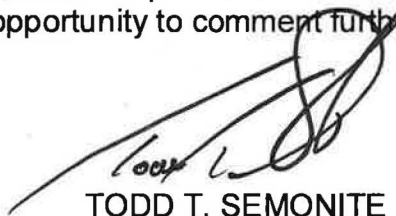
m. Agree, as between the Federal Government and the non-federal sponsor, that the non-federal sponsor shall be considered the owner and operator of the project for the purpose of CERCLA liability, and the non-federal sponsor shall, to the maximum extent practicable, operate, maintain, repair, replace, and rehabilitate the project in a manner that will not cause liability to arise under CERCLA.

DAEN

SUBJECT: Fire Island Inlet to Montauk Point, New York Reformulation

12. The recommendations contained herein reflect the information available at this time and current departmental policies governing formulation of individual projects. These recommendations do not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program or the perspective of higher review levels within the Executive Branch. Consequently, the recommendation may be modified before it is transmitted to Congress as a proposal for authorization and additional funding. However, prior to transmittal to Congress, the non-federal sponsor, the state, interested federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.

A TRULY
MONUMENTAL ACHIEVEMENT!
FIMP IS A MODEL FOR
21ST CENTURY COASTAL
MANAGEMENT. WE HAVE
THE SANDY FUNDS - LET'S
GET IT BUILT!!



TODD T. SEMONITE
Lieutenant General, USA
Chief of Engineers