



Proposed Report

DEPARTMENT OF THE ARMY
CHIEF OF ENGINEERS
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WASHINGTON, DC 20310-2600

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 study of coastal storm risk management for coastal communities located between Fire Island Inlet to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. It is accompanied by the report of the district and division engineer. This report is an interim response to authorizations provided by the Rivers and Harbors Act of 14 July 1960, Section 31 of the Water Resources Development Act (WRDA) of 1974, Sections 103, 502, and 934 of the WRDA of 1986 (Public Law [P.L.] 99-662), and Public Law 113-2 (29 Jan 13), the Disaster Relief Appropriations Act of 2013 (the Act). These authorizations requested that the Secretary of the Army review existing reports with a view to identify cost effective measures for storm damage reduction and reduce future flood risk in ways that will support the long-term sustainability of the communities and reduce the economic costs and risks associated with large-scale flood and storm events. I am recommending a coastal storm risk management plan that includes periodic renourishment, inlet bypassing, breach response, and adaptive management of these features. Preconstruction engineering and design activities for the Fire Island Inlet to Montauk Point, New York project will continue under the authorities cited above. The Corps of Engineers intends to undertake initial construction of the project under the authority of, and using funds provided in, P.L. 113-2.

2. The reporting officers recommended authorizing 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 (CSRМ) 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. A policy waiver was received for this project, which allows for the inclusion of features that are not incrementally justified, in order to meet the requirement of mutual acceptability. The recommended plan includes a combination of features along the shoreline including inlet bypassing, beach nourishment, and breach response, which will be maintained as continuing construction for a period for 30 years from initiation of construction. Beginning in year 31 and continuing through year 50, the plan recommends a lesser level of continuing construction along the shoreline, consisting of breach response and inlet bypassing. The principal features of the plan include:

¹ This report contains the proposed recommendation of the Chief of Engineers. The recommendation is subject to change to reflect Washington-level review and comments from federal and state agencies

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a. Inlet sand bypassing provides 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. Scheduled operation and maintenance (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, which will be placed in a berm template at elevation +9.5 feet NGVD29 in identified placement areas.

b. Mainland nonstructural measures for the 10 percent floodplain to include approximately 4,432 structures using nonstructural measures, including structural elevations, flood proofing, acquisitions, and structural ringwalls for structures that are not suitable for nonstructural treatment.

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

d. For 30 years after initiation of construction, the plan includes a range of breach response along the barrier island system. Proactive breach response is recommended for beach and dune placement at specific locations when the beach and dune are below a 4% level of risk reduction. Reactive breach response is recommended at discrete locations to close a breach 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. Beach and dune fill on shorefront provide for 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 takes place approximately every 4 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 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 groins.

h. Construction of a feeder beach, located in Downtown Montauk along 6,000 ft. of shoreline, with renourishment every 4 years for up to 30 years after initiation of construction.

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i. Coastal Process Features (CPFs) construction 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 sea level change.

k. Upon project completion, USACE's Annual Inspection of Completed Works (ICW) program will provide 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.

l. The recommended plan is a mutually acceptable plan between the Secretary of the Army and Secretary of the Interior. The following plan features represent departures from the NED plan, which have been incorporated into the recommended plan, based upon the approved policy waiver from the ASA(CW), in order to arrive at a mutually acceptable plan. Sand bypassing at Fire Island Inlet, Moriches Inlet, and Shinnecock Inlet is included to reestablish alongshore sediment transport. Removal of the ocean beach groins is included to reestablish alongshore transport. Breach response plans are included on lands within Fire Island National Seashore, in lieu of beachfill to balance CSRM objectives and natural resource management objectives on these properties. Barrier island coastal processes features are included to compensate for no net loss of cross-island sediment transport. A nonstructural plan for the 10% 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. 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 economically justified and environmentally acceptable. No habitat mitigation (beyond management practices and avoidance) is required. Mitigation for Clean Air Act emissions will be achieved as generally described in the FEIS. Compliance with the Endangered Species Act will be achieved as required in the Biological Opinion.

3. The New York State Department of Environmental Conservation (NYSDEC) is the non-federal cost-sharing sponsor for all features. Based on October 2018 price levels, the estimated total first cost of the recommended plan is \$1,520,933,000. The total construction cost includes periodic renourishment approximately every 4 years over a 30 year period, and unscheduled renourishment until year 50 in the form of breach response. Cost sharing is applied in accordance with the provisions of Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended; the Rivers and

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Harbor Act of 1960; Section 934 of the WRDA 1986; and the provisions of P.L. 113-2, as follows:

a. P.L. 113-2 states that “the completion of ongoing construction projects receiving funds provided by this division shall be at full Federal expense with respect to such funds.” Accordingly, initial construction will be completed at 100 percent federal expense. The federal share of the project first cost is \$1,520,933,000. The NYSDEC remains 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 the NYSDEC to acquire LERRD from private owners after January 29, 2013 are eligible for reimbursement using federal funds.

b. Costs for periodic renourishment, monitoring and adaptive management for 50 years beyond initial construction will be shared 50 percent federal and 50 percent non-federal. The renourishment costs, inclusive of monitoring and adaptive management are \$1,395,619,000, which would be cost shared as \$697,808,500 Federal and \$697,808,500 non-federal.

c. The NYSDEC would be responsible for the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project after construction, at an average annual cost currently estimated to be \$660,000.

4. Based on a 2.875 percent discount rate and a 50 year period of analysis, the total equivalent average annual costs of the project are estimated to be \$96,731,900, including monitoring, adaptive management and OMRR&R. All project costs are allocated to the authorized purpose of storm damage management. The recommended plan will reduce the future equivalent average annual damages caused by coastal storm by \$100,013,000,000, or 60 percent, and would leave average annual benefits of \$130,791,200. The net national economic development (NED) benefits of the project is \$34,059,000 and the benefit to cost ratio (BCR) is 1.4. These costs and benefits reflect October 2018 price levels under the historic rate of relative sea level change.

5. The Atlantic Coast of Suffolk County, New York is at risk of flooding, wave attack, and erosion impacts along the barrier islands and mainland under moderate to high flow. Flood risk to people, critical infrastructure, and structures at any location in a floodplain is the function of 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. The transition from a beachfill plan after year 30 was recommended in order

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to achieve a mutually acceptable plan. For New York State to support this project, it needs to provide a reasonable probability of performing for 30 years. 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 goals and objectives included in the Campaign Plan of the U.S. Army Corps of Engineers have been fully integrated into the feasibility study process. 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.

6. In accordance with the Corps of Engineers Circular (EC) 1165-2-217 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 (ATR), Independent External Peer Review (IEPR), 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. Recommended improvements better support the decision-making process in the plan selection process.

7. In accordance with 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 2023 to 2073 and a sensitivity analysis considered 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 renourishments, and increased breach response to compensate for sea level change. The renourishment estimates are based upon the low sea level change projections. The renourishment design and volume requirements, and breach response designs, triggers, and volume requirements can 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 reevaluation, to more fully evaluate the consequences of relative sea level change.

8. 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

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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. Also, 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.

9. I generally concur in 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 authorized for implementation, as a federal project, with such modifications thereof 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 and within available funds provided under PL 113-2. All renourishment activities will require authorization by Congress. My recommendation is subject to cost sharing, financing, and other applicable requirements of federal laws and policies, including Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 215 of WRDA 1999. 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 a minimum of 35 percent of initial project costs assigned to coastal and storm damage reduction above the costs covered by P.L. 113-2 authority and funding, 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 nourishment costs assigned to coastal and storm damage reduction, plus 100 percent of periodic nourishment costs assigned to protecting undeveloped private lands and other private shores which do provide public benefits, and as further defined below:

(1) Provide, during design, 35 percent of design costs allocated to coastal and storm damage reduction above the costs covered by P.L. 113-2 in accordance with the terms of a design agreement entered into prior to commencement of design work for the project;

(2) 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 nourishment 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;

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(3) 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 covered 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 nourishment costs assigned to coastal and storm damage, plus 100 percent of periodic nourishment 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 flood risk management features; 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 flood risk management features;

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

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 twice annually and after storm events, perform surveillance of the beach to determine losses of nourishment 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 all damages arising from the construction, periodic nourishment, operation, maintenance, repair, replacement, and rehabilitation of the Project and any Project-related betterments, except for damages due to the fault or negligence of the United States or its contractors.

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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.

h. 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 USC 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, 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, 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 operator of the project for the purpose of CERCLA liability, and, 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.

10. 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 implementation 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.

TODD T. SEMONITE
Lieutenant General, USA
Chief of Engineers