DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314-1000

CECW-SAD (1105-2-10a)

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SUBJECT: Surf City and North Topsail Beach, North Carolina Coastal Storm Damage Reduction Report

THE SECRETARY OF THE ARMY

1. I submit for transmission my report on coastal storm damage reduction along the Atlantic Ocean shoreline of the towns of Surf City and North Topsail Beach, North Carolina. It is accompanied by the report of the district and division engineers. These reports are in response to two resolutions by the Committee on Transportation and Infrastructure of the House of Representatives, adopted on February 16, 2000 and April 11, 2000. The resolutions requested a review of the report of the Chief of Engineers on West Onslow Beach and New River Inlet, North Carolina, and other pertinent reports, to determine whether any modifications of the recommendations contained therein are advisable at the present time in the interest of shore protection and related purposes for Surf City and North Topsail Beach, North Carolina. Preconstruction engineering and design activities for this project will be continued under the authority provided by the resolutions cited above.

2. The reporting officers recommend authorization for a plan to reduce coastal storm damages by construction of a berm and dune along the Surf City and North Topsail Beach shorelines. The recommended plan includes a 52,150-foot long dune and berm system to be constructed to an elevation of 15 feet National Geodetic Vertical Datum (NGVD) fronted by a seven-foot NGVD (50-foot wide) beach berm with a main fill length of 52,150 feet, extending from the boundary between Topsail Beach and Surf City to the southern edge of the Coastal Barrier Resources Act (CBRA) Zone in North Topsail Beach. The recommended plan also includes renourishment at six-year intervals. Other associated features of the project are dune vegetation and construction of 60 dune walkover structures. Material for the dune and berm construction and renourishment will be dredged from borrow sites identified between one to six miles off the coast of Topsail Island. The recommended plan also includes post-construction monitoring over the period of Federal participation to ensure project performance and adjust renourishment plans as needed. Since the recommended plan would not have any significant adverse effects, no mitigation measures (beyond management practices and avoidance) or compensation measures would be required. The recommended plan is the National Economic Development (NED) Plan for coastal storm damage reduction.

3. The Towns of Surf City and North Topsail Beach are the non-Federal cost-sharing sponsors for all features. Based on October 2010 price levels the estimated total first cost of the plan is

$123,135,000. Renourishment is planned at six-year intervals. There will be seven renourishments with a total cost estimated at October 2010 price levels to be $205,539,000. The ultimate project cost, which includes initial construction, monitoring, and periodic renourishment is estimated to be $353,924,000. Cost sharing is applied in accordance with the provisions of Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 215 of WRDA 1999. Additional access points and nearby public parking will be necessary to meet the requirements for federal cost sharing; the sponsors anticipate no obstacles to develop such additional access and parking. The Federal and non-Federal shares shown below reflect anticipated development and satisfaction of access and parking requirements, but the final cost-share amounts will be based upon the conditions of public access, parking, development and use of the shore at the time when the Project Partnership Agreement (PPA) is signed.

a. The Federal share of the total first cost would be about $80,038,000 (65 percent) and the non-Federal share would be about $43,097,000 (35 percent).

b. The cost of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas (LERRD) is estimated at $4,814,000, all of which is eligible for LERRD credit.

c. The Federal share of the total renourishment cost would be about $102,769,500 (50 percent) and the non-Federal share would be about $102,769,500 (50 percent).

4. Based on a 4.125 percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated to be $10,702,000, including monitoring and OMRR&R. All project costs are allocated to the authorized purpose of coastal storm damage reduction. The equivalent average annual benefits, which include recreation benefits, are estimated to be $40,129,000 with net average annual benefits of $29,427,000. The benefit cost ratio is approximately 3.7 to 1.

5. The goals and objectives included in the Campaign Plan of the U.S. Army Corps of Engineers have been fully integrated into the Surf City and North Topsail Beach study process. The project contains adaptive management measures through an annual project monitoring program in order to be able to reevaluate and adjust the periodic renourishment actions. The study was conducted using a systems perspective that considered the effects of other Federal (West Onslow and New River Inlet [Topsail Beach] Coastal Storm Damage Reduction study, New River and New Topsail Inlet Navigation features) and non-Federal projects in the area, particularly as related to borrow volume availability. A statistical, risk based model was used to formulate and evaluate the project. The study report fully describes risks associated with residual coastal storm damages and risks that will not be reduced, such as sound side flooding and wind damages. The project is intended to address erosion and prevent damages to structures and contents; it is not intended to

nor will it reduce the risk to loss of life during major storm events. Loss of life can only be prevented by the existing procedure of evacuating the barrier island completely well before expected hurricane landfall, thus removing people from harm's way. This study recommends continuation of the evacuation policy both with and without the project. Additional institutional nonstructural measures to be implemented by the local governments are contained in the study report recommendation. The selected plan would reduce average annual coastal storm damages by about 88 percent and would leave average annual damages estimated at $2,241,000. These residual risks have been communicated to both the Towns of Surf City and North Topsail Beach.

6. In accordance with the Corps Engineering Circular EC 1165-2-211 on sea level change, the study performed a sensitivity analysis to look at the economic effects that different rates of accelerated sea level rise could have on the recommended plan. The plan was formulated using a historical or low rate of sea level rise, and the sensitivity analysis used additional accelerated rates, which includes what the EC defines as medium and high rates. The sensitivity analysis indicates that at higher rates of sea level rise, the project costs increase; the project benefits however, increase even more.

7. In accordance with the Corps Engineering Circular EC 1165-2-209 on review of decision documents, all technical, engineering and scientific work underwent an open, dynamic and vigorous review process to ensure technical quality. This included an independent Agency Technical Review (ATR) and an Independent External Peer Review (IEPR). The IEPR was managed by an outside eligible organization (Battelle) that assembled a panel of five experts with combined expertise in the fields of geotechnical and coastal engineering, plan formulation, environment/biology, economics, and recreation analysis. Ultimately, the panel identified and documented sixteen comments. Eight of the panel comments were classified as having high significance. These comments raised questions regarding various aspects of the coastal and non-structural analysis in the report, the availability of sufficient borrow material for the life of the project, and the methods used to determine property values in the economic analysis. Based on these comments, the report's coastal appendix was greatly expanded. To address the concern regarding borrow volume availability, additional analysis was conducted and the discussion in the report regarding risks and uncertainty in borrow availability was expanded. Also information regarding the economic feasibility of obtaining additional borrow material if the currently identified borrow sites were to be depleted in the latter years of the project was added. The panel did not concur with this last response and maintained that the plan formulation should still have been constrained by borrow availability due to uncertainty. I have considered the borrow availability issue and concluded it has been appropriately addressed in the project's risk management plan through the identification of additional sites with similar borrow cost and volume to mitigate the uncertainty. Even though uncertainty remains regarding utilization of specific borrow sites, the recommendation is viable and economically justifiable. Overall the reviews have resulted in the improvement of the technical quality of the report including the enhanced communication of risk and uncertainty.

8. The United States Army Corps of Engineers Headquarters review indicates that the project recommended by the reporting officers is technically sound, environmentally and socially acceptable, and economically justified. The goal to reduce loss of life is incorporated into this project but it is a shared responsibility that can never be completely mitigated by structural solutions. Discussion in the report emphasizes that residual risk will remain after this project is executed; it also, emphasizes the roles of all partners in addressing and communicating residual risk to the public, including the need for a well coordinated hurricane storm warning and evacuation plan. The plan complies with all essential elements of the 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.

9. I concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the plan to reduce coastal storm damages for Surf City and North Topsail Beach, North Carolina be authorized in accordance with the reporting officers recommended plan at an October 2010 estimated initial cost of $123,135,000 with such modifications as in the discretion of the Chief of Engineers may be advisable. My recommendation is subject to cost sharing, financing, and other applicable requirements of Federal and State laws and policies, including Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 215 of WRDA 1999. The non-Federal sponsors would provide the non-Federal cost share and all LERRD. Further, the non-Federal sponsors would be responsible for all Operation and Maintenance, Repair, Replacement and Rehabilitation (OMRR&R). This recommendation is subject to the non-Federal sponsors agreeing to comply with all applicable Federal laws and policies and in accordance with the required items of cooperation, and agreeing prior to project implementation, to perform as follows:

a. Provide 35 percent of initial project costs assigned to coastal storm damage reduction, plus 50 percent of initial project costs assigned to reducing damages to undeveloped public lands, plus 50 percent of initial project costs assigned to recreation, plus 100 percent of initial project costs assigned to reducing damages to undeveloped private lands and other private shores that do not provide public benefits; and 50 percent of periodic nourishment costs assigned to hurricane and storm damage reduction, plus 100 percent of periodic nourishment costs assigned to reducing damages to undeveloped private lands and other private shores that do not provide public benefits and as further specified below:

(1) Provide 25 percent of design costs in accordance with the terms of a design agreement entered into prior to commencement of design work for the project.

(2) Provide, during the first year of construction, any additional funds needed to cover the non-Federal share of design costs.

(3) Provide all lands, easements, and rights-of-way, and perform or ensure the performance of all relocations determined by the Federal Government to be necessary for the initial construction, periodic nourishment, operation, and maintenance of the project.

(4) Provide, during construction, any additional amounts as are necessary to make it total contribution equal to 35 percent of initial project costs assigned to coastal storm damage reduction, plus 50 percent of initial project costs assigned to reducing damages to undeveloped public lands, plus 50 percent of initial project costs assigned to recreation, plus 100 percent of initial project costs assigned to reducing damages to undeveloped private lands and other private shores that do not provide public benefits; and 50 percent of periodic nourishment costs assigned to hurricane and storm damage reduction, plus 100 percent of periodic nourishment costs assigned to reducing damages to undeveloped private lands and other private shores that do not provide public benefits.

b. Operate, maintain, repair, rehabilitate and replace 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 purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government.

c. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, on property that the non-Federal sponsors, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project. OMRR&R by the Federal Government will not relieve the non-Federal sponsors of responsibility to meet the non-Federal sponsors' obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance.

d. Hold and save the United States free from all damages arising from the initial construction, periodic nourishment, OMRR&R of the project and any project related betterments, except for damages due to the fault or negligence of the United States or its contractors.

e. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of three years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as will properly reflect total costs of construction of the project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 CFR 33.20.

f. Perform, or cause to be performed, 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), P.L. 96-510, as amended, 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 required for the initial construction, periodic nourishment, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government will perform such investigations unless the Federal Government provides the non-Federal sponsors with prior specific written direction, in which case, the non-Federal sponsors will perform such investigations in accordance with such written direction.

g. Assume, as between the Federal Government and the non-Federal sponsors, complete financial responsibility for all necessary cleanup and response costs of any CERCLA-regulated materials 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, or maintenance of the project.

h. Agree that, as between the Federal Government and the non-Federal sponsors, the non-Federal sponsor will be considered the operators of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that will not cause liability to arise under CERCLA.

i. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, P.L. 91-646, as amended by (42 U.S.C. 4601–4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way required for the initial construction, periodic nourishment, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with that Act.

j. Comply with all applicable Federal and State laws and regulations, including section 601 of the Civil Rights Act of 1964, P.L. 88-352 (42 U.S.C. 2000d), Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, titled *Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army*, and all applicable Federal labor standards and requirements, including, 40 U.S.C. 3141–3148 and 40 U.S.C. 3701–3708 (revising, codifying, and enacting without substantial change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c *et seq.*).

t. 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.

u. Comply with section 221 of P.L. 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5b), and section 103(j) of the WRDA of 1986, P.L. 99-662, as amended (33 U.S.C. 2213(j)), which provides that the Secretary of the Army must not commence the construction of any water resources project or separable element thereof, until the non-Federal interests have entered into a written agreement to furnish its required cooperation for the project or separable element.

10. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects. It does 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 the Congress as a proposal for authorization and implementation funding. However, prior to transmittal to Congress, the sponsors, the State, interested Federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.

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