



## DEPARTMENT OF THE ARMY

U.S. Army Corps of Engineers  
441 G Street N.W.  
WASHINGTON, D.C. 20314-1000

REPLY TO  
ATTENTION OF:

SEP 28 2009

CECW-SAD (1105-2-10a)

SUBJECT: West Onslow Beach and New River Inlet (Topsail Beach), North Carolina

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on hurricane and storm damage reduction along a 5-mile reach of Atlantic Ocean shoreline at Topsail Beach, North Carolina. It is accompanied by the report of the district and division engineers. These reports are in final response to the Energy and Water Development Appropriations Act for Fiscal Year 2001, Public Law 106-377, which included funds for the U.S. Army Corps of Engineers to initiate a General Reevaluation Report (GRR) of the West Onslow Beach and New River Inlet (Topsail Beach) Shore Protection Project, and the remaining shoreline at Topsail Beach. The original project was authorized in Section 101(15) of the Water Resources Development Act (WRDA) of 1992 at a total cost of \$14,100,000, with an estimated Federal cost of \$7,600,000, and an estimated non-Federal cost of \$6,500,000. The authorized project was never constructed. Several recent coastal storms and hurricanes along many portions of North Carolina's shoreline and increasing threats to existing and new development within the Town of Topsail Beach led to initiation of this post-authorization investigation. Preconstruction engineering and design activities for Topsail Beach will be continued under the authorities above.

2. The reporting officers recommend a new authorization for a locally preferred plan (LPP) to reduce hurricane and storm damages by construction of a sand dune and berm along the Topsail Beach shoreline. The recommended plan includes a 26,200-foot long dune and berm system to be constructed to an elevation of 12 feet National Geodetic Vertical Datum (NGVD) fronted by a 50-foot wide berm at an elevation of 7-foot NGVD, with a main fill length of 23,200 feet and a 2,000-foot transition length on the north end into the Town of Surf City and a 1,000-foot transition on the south end. The recommended plan also includes periodic nourishment at four-year intervals. Other associated features of the project are dune vegetation and construction of 23 dune walkover structures for public access. The estimated in-place volume of fill for the initial project construction is 2,387,000 cubic yards, which does not include placement of 690,000 cubic yards for the first nourishment. Fill material for the sand dune and berm construction and nourishment will be dredged from offshore borrow sites identified off the coast of Topsail Beach. The recommended plan also includes post-construction monitoring over the life of the project to ensure project performance. Since the recommended plan does not have any significant adverse effects, no mitigation measures (beyond management practices and avoidance) or compensation measures are required. Compared to the National Economic Development (NED) Plan, the LPP has a dune three feet lower and extends the main fill protection 400-feet southwest to include properties south of Godwin Avenue that are vulnerable

to coastal storm damage. The Assistant Secretary of the Army (Civil Works) approved a policy exception allowing the Corps of Engineers to recommend the LPP by letter dated May 8, 2008. The 400-foot project extension costs an additional \$320,000, and is not economically justified. The extension will therefore be funded entirely by the non-Federal sponsor. All features are located in North Carolina.

3. Based on October 2008 price levels the estimated total first cost of the NED plan is \$50,332,000, of which \$32,712,000 (65 percent) is Federal and \$17,620,000 (35 percent) is non-Federal. The estimated first cost of the LPP is \$37,712,000. The total initial cost of the recommended plan, including sunk preconstruction engineering and design (PED) costs from project authorization in 1992 through completion of this GRR and Environmental Impact Statement (EIS), is \$42,558,000. These sunk PED costs include initial project PED costs of \$616,000 and the GRR and EIS cost of \$4,230,000, for a total of \$4,846,000. The sunk PED costs for the original project are cost shared 75 percent Federal and 25 percent non-Federal and the expanded portion of the project is cost shared 50 percent Federal and 50 percent non-Federal. The total initial project construction cost is composed of both the total first cost of the LPP plus sunk PED costs. Cost sharing for the construction of the project is applied in accordance with the provisions of Section 103 of WRDA 1986, as amended by Section 215 of WRDA 1999. The Federal share of the total cost for the LPP is estimated to be \$27,455,000 and the non-Federal share is estimated to be \$15,103,000, but will be based upon conditions of public ownership and use of the shore when the Project Partnership Agreement is signed. The non-Federal share includes \$320,000 for the incremental cost of the 400-foot berm and dune extension. The estimated cost of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas (LERRD) is \$ 1,654,000, of which \$1,481,000 is estimated to be creditable to the non-Federal sponsor's share.

4. Total periodic nourishment costs for the LPP are estimated to be \$113,904,000 (October 2008 price level) over the 50-year period following initiation of construction. These costs are based on an estimated cost for each periodic nourishment of \$9,492,000 occurring at four year intervals subsequent to completion of the initial construction (year zero) and include engineering and design and monitoring. The ultimate project cost, which includes initial construction, project monitoring, and periodic nourishment is estimated to be \$170,032,000 (October 2008 price level). The equivalent annual cost of periodic nourishment is estimated to be \$2,190,000, based on a Federal discount rate of 4.625 percent and a 50-year period of analysis. Based on WRDA 1996, as amended, subject to the availability of funds, periodic nourishment is cost-shared 50 percent Federal and 50 percent non-Federal, based upon conditions of public ownership and use of the shore. The Federal share of each periodic nourishment cost is estimated to be \$4,746,000 (50 percent) and the non-Federal share is estimated to be \$4,746,000 (50 percent). The project includes beach fill and environmental monitoring costs estimated at \$269,000. Annual beach fill monitoring includes semi-annual beach profile surveys (\$137,000), annual hydrographic surveys of New Topsail Inlet (\$6,000), annual aerial photography of the inlet and beach (cost included in inlet hydrographic survey), an annual monitoring report (\$93,000), and monitoring program coordination (\$15,000). Annual environmental monitoring includes sea turtle nesting (\$17,000) and sea beach amaranth surveys (\$1,000), and a one-time cost for benthic invertebrate monitoring (\$120,000). The estimated Federal share of annual monitoring costs is \$134,500 (50 percent) and the estimated non-Federal share is \$134,500 (50 percent). The estimated

Federal share of the one-time benthic invertebrate monitoring is \$60,000 (50 percent) and the estimated non-Federal share is \$60,000 (50 percent). The Town of Topsail Beach is the non-Federal cost-sharing sponsor for all features and is responsible for the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project after construction, a cost currently estimated at about \$22,000 per year.

5. Based on a 4.625-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated to be \$4,450,000, including monitoring and OMRR&R. The equivalent average annual benefits are estimated to be \$13,328,000 with net average annual benefits of \$8,878,000. The benefit-cost ratio is three to one.

6. The goals and objectives included in the Campaign Plan of the U.S. Army Corps of Engineers have been fully integrated into the Topsail Beach study process. From inception, the district has implemented an effective comprehensive systems approach with full stakeholder participation. The study included an integrated analysis of the Topsail Beach shoreline system and cumulative environmental effects. A statistical, risk based model was used to formulate and evaluate the project. The study report describes risks associated with residual coastal storm damages and risks that will not be reduced such as sound side flooding and wind damages. Loss of life is prevented by the existing procedure of evacuating the barrier island completely well before expected hurricane landfall, removing people from harm's way. The study recommends continuation of the evacuation policy both with and without the project. The selected plan would reduce average annual coastal storm damages by about 84 percent and would leave average annual residual damages estimated at \$1,543,000. Additional institutional nonstructural measures to be implemented by the local government are contained in the study report recommendation. The project contains adaptive management measures through the development of borrow area contingency plans to be applied during construction and by an annual project monitoring program to reevaluate and adjust the periodic renourishment actions. The project monitoring program will be a useful research tool for other beach and shoreline studies.

7. I concur with the findings, conclusions, and recommendations of the reporting officers. The plan developed is technically sound, economically justified, and environmentally and socially acceptable. The plan conforms to essential elements of the U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and complies with other administrative and legislative policies and guidelines. Also, the views of interested parties, including Federal, State, and local agencies have been considered. Substantive comments concerned borrow material compatibility, potential existence of near shore hard bottom areas, and avoiding impacts to sea turtles and piping plover. The comments resulted in some changes to the text of the GRR and EIS, but did not change the design of the recommended plan. Independent external peer review (IEPR) was not undertaken for this project, since it was not considered to be unusually complex, novel approaches or methods were not employed, there is no significant threat to public safety from project failure, and it was not controversial. Additionally, the project did not generate significant interagency interest, and only negligible adverse impacts would result.

8. Accordingly, I recommend that the plan to reduce hurricane and storm damages at Topsail Beach, North Carolina be authorized in accordance with the reporting officers' recommended

plan at an October 2008 estimated cost of \$42,558,000 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 WRDA 1986, as amended by Section 215 of WRDA 1999. The non-Federal sponsor would provide the non-Federal cost share and all LERRD. Further, the non-Federal sponsor would be responsible for all OMR&R. This recommendation is subject to the non-Federal sponsors agreeing to comply with all applicable Federal laws and policies.

9. I further recommend that construction of the proposed project be contingent on the project sponsor giving written assurances satisfactory to the Secretary of the Army that it will:

a. Provide 35 percent of initial construction costs assigned to hurricane and storm damage reduction plus 100 percent of initial construction costs assigned to protecting privately owned shores where use is limited to private interests, 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 necessary to pay the full non-Federal share of design costs;

3. Provide all lands, easements, and rights-of-way, including those required for relocations, the borrowing of material, and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct all improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material all as determined by the Government to be required or to be necessary for the construction, operation, and maintenance of the project; and

4. Provide, during initial construction, any additional funds necessary to make its total contribution equal to 35 percent of project costs assigned to hurricane and storm damage reduction plus 100 percent of costs assigned to protecting privately owned shores where use is limited to private interests.

b. Provide during the periodic nourishment period, 50 percent of periodic nourishment costs and 50 percent of monitoring costs assigned to hurricane and storm damage reduction plus 100 percent of periodic nourishment costs and 100 percent of monitoring assigned to protecting privately owned shores where use is limited to private interests.

c. Shall not use funds from other Federal programs, including any non-Federal contribution required as a matching share therefore, to meet any of the non-Federal obligations for the project unless the Federal agency providing the Federal portion of such funds verifies in writing that expenditure of such funds for such purpose is authorized;

d. 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;

e. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (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 construction, operation, and maintenance of the project, including those necessary for relocations, the borrowing of materials, or the disposal of dredged or excavated material; and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act;

f. For so long as the project remains authorized, operate, maintain, repair, rehabilitate, and replace the project, or functional portions of the project, including any mitigation features, 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;

g. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor owns or controls for access to the project for the purpose of completing, inspecting, operating, maintaining, repairing, rehabilitating, or replacing the project;

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

i. Keep and maintain books, records, documents, or 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, or other evidence are required, to the extent and in such detail as will properly reflect total project costs, 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 Code of Federal Regulations (CFR) Section 33.20;

j. Comply with all applicable Federal and State laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d) and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled "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 requirements including, but not limited to, 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.*);

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), Public Law 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 construction, 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 shall perform such

investigations unless the Federal Government provides the non-Federal sponsor with prior specific written direction, in which case the non-Federal sponsor shall perform such investigations in accordance with such written direction;

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 that the Federal Government determines to be required for construction, 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, rehabilitate, and replace the project in a manner that will not cause liability to arise under CERCLA;

n. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5b), and Section 103(j) of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213(j)), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until each non-Federal interest has entered into a written agreement to furnish its required cooperation for the project or separable element;

o. Not less than once each year, inform affected interests of the extent of protection afforded by the project;

p. Agree to participate in and comply with applicable Federal floodplain management and flood insurance programs;

q. Comply with Section 402 of the Water Resources Development Act of 1986, as amended, (33 U.S.C. 701b-12), which requires a non-Federal interest to prepare a floodplain management plan within one year from signing a project partnership agreement, and to implement such plan not later than one year after completion of construction of the project;

r. 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;

s. For so long as the project remains authorized, the non-Federal Sponsor shall ensure continued conditions of public ownership, access, and use of the shore upon which the amount of Federal participation is based;

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

u. At least twice annually at no cost to the Federal Government, 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.

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 sponsor, the State of North Carolina, interested Federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.

Vr,



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Lieutenant General, US Army  
Chief of Engineers