



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

CECW-SAD

June 16, 2020

MEMORANDUM FOR Assistant Secretary of the Army (Civil Works)

SUBJECT: Carolina Beach, North Carolina Integrated Beach Renourishment Evaluation Report and Environmental Assessment

1. Purpose: To provide for your review and approval the Final Integrated Beach Renourishment Evaluation Report and Environmental Assessment for the Carolina Beach portion of the Carolina Beach and Vicinity Coastal Storm Risk Management (CSRМ) Project. This report was prepared under the authority of Section 156 of the Water Resources Development Act (WRDA) of 1976 (42 U.S.C. 1962d-5f), as amended by Section 1037(a) of the Water Resources Reform and Development Act (WRRDA) of 2014 (Public Law (PL) 113-121), and further amended by Section 1158 of WRDA 2016 (PL 114-322), which authorized the Secretary of the Army to carry out, for any coastal storm risk management project for which periodic renourishment is authorized for a maximum period of 50 years, a study to determine the feasibility of extending the period of nourishment for a period not to exceed 15 additional years beyond the 50 year maximum period of federal participation in cost shared renourishment. However, additional congressional authorization is still needed in order to implement the extension. If the project is authorized, the 15 year period would begin on the date of construction initiation for the first cycle of the additionally congressionally authorized nourishment. This report constitutes the final report for this project in accordance with this authority.

2. Background: The Carolina Beach portion of the Carolina Beach and Vicinity Coastal Storm Risk Management Project was authorized under Section 101 of the Rivers and Harbors Act of 1962 (PL 87-874). Construction of this project portion was initiated in 1964, and following completion of a Section 934 Report conducted under the authority of WRDA 1986 (PL 99-662), the Department of the Army and the non-federal sponsor entered into a Project Cooperation Agreement, dated 29 July 1994, for continuation of federal participation in periodic nourishment of the project. Subsequent amendments to the Project Cooperation Agreement were executed on 6 July 2015 and 27 December 2017 that extended federal participation in periodic nourishment until Fiscal Year (FY) 2017 and 2020, respectively, as allowed under Section 156, as amended.

3. Discussion:

a. The recommended plan is the National Economic Development plan, which is a continuation of the existing Carolina Beach CSRМ project portion for a 15-year period from 2022 to 2036. The borrow source utilized would be Carolina Beach Inlet. The recommended plan consists of approximately 14,000 feet of ocean shoreline fronting the majority of the Town of Carolina Beach, a dune having a crown width of 25 feet at 12.5 feet North American Vertical Datum of 1988 (NAVD88), together with a storm berm, having a

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crown width of 50 feet at 9.5 feet NAVD88 and a varying width construction berm at 5.5 feet NAVD88. The dune and berm extend about 14,000 feet along the beachfront from the northern to the southern limits of Carolina Beach. Included in the existing project is a 2,050 foot long rock revetment located on the far northeast segment of the project. The average volume of each nourishment interval is approximately 800,000 cubic yards for the five nourishment events expected throughout the remaining 15-year period of analysis.

b. All the historic borrow area is within the Carolina Beach Inlet complex and within a Coastal Barrier Resources System (CBRS) unit. The Coastal Barrier Resources Act (CBRA) was enacted in 1982 and contains restrictions on federal spending within undeveloped coastal barrier shorelines. Section 6 of CBRA (16 U.S.C. 3505) permits certain federal expenditures and financial assistance within System Units of the CBRS after consultation with the U.S Fish and Wildlife Service (USFWS). The Department of Interior recently amended their interpretation of the applicability of the exception at 16 U.S.C. 3505(a)(6)(G), determining that qualifying stabilization actions under this statutory exception are not limited to actions within a CBRS unit. Utilization of the Carolina Beach Inlet borrow source thus would qualify under the exception to CBRA found at 16 U.S.C. 3505(a)(6)(G) for "non-structural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system." However, in order to be allowable, this exception must also be consistent with the three purposes of the CBRA, which are to minimize the loss of human life by not encouraging development in high risk areas; minimize the wasteful expenditure of federal revenues; and minimize the damage to fish, wildlife, and other natural resources associated with coastal barriers.

(1) Utilizing existing information about the Carolina Beach Inlet borrow source and information gathered about the Borrow Area B offshore borrow source, it has been determined that the use of the Carolina Beach Inlet as the primary borrow source is consistent with the three purposes of the CBRA. Specifically, utilizing the Carolina Beach Inlet borrow source minimizes the loss of human life, as it does not encourage development on the barrier islands, and would minimize wasteful expenditure of federal revenues, as it is the lowest cost alternative. Finally, utilizing the Carolina Beach Inlet borrow source would be environmentally preferable to only using the offshore borrow source.

(2) The Department of Interior recently amended their interpretation of the applicability of the exception at 16 U.S.C. 3505(a)(6)(G), determining that qualifying stabilization actions under this statutory exception are not limited to actions within a CBRS unit. The amended interpretation was issued subsequent to the completion of the report by the Wilmington District Commander; thus, that report does not reflect use of the Carolina Beach Inlet as part of the recommended plan. Therefore, the Wilmington District reinitiated consultation with the USFWS regarding this matter by letter dated 19 December 2019. By letter dated 10 March 2020, USFWS concurred that the project meets the exception at 16 U.S.C. 3505(a)(6)(G), if the U.S. Army Corps of Engineers (Corps) adopts the measures listed in the 10 March 2020 USFWS letter and 26 February 2020 Addendum to the Corps 19 December 2019 CBRA consultation request to USFWS. The Wilmington District will adopt these measures in its implementation of the project.

c. The Town of Carolina Beach is the non-federal cost-sharing sponsor for the project. Based on fiscal year FY 2020 price levels, the estimated project total cost is \$48,410,000, which includes the cost of an estimated five periodic nourishment events for the additional period of federal participation over a proposed 15-year extension and the value of lands, easements, rights-of-way, relocations and disposal areas (LERRDs). LERRDs are estimated to be \$168,000. The total estimated federal and non-federal shares of the project portion cost are \$24,205,000 and \$24,205,000, respectively, which equates to 50% percent federal and 50% percent non-federal, as apportioned in accordance with the cost sharing provisions of Section 103(d)(2)(A)(iii) of WRDA 1986 (33 U.S.C. 2213(d)(2)(A)(iii), as amended by Section 215(a) of WRDA 1999. The estimated cost for operations, maintenance, repair, replacement, and rehabilitation of the project (OMRR&R) is \$95,000 per year. OMRR&R is a 100% non-federal cost and responsibility.

d. Based on FY 2020 price levels, 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 \$3,460,000. The average annual equivalent benefits are estimated to be \$8,885,000, which include incidental recreation benefits of \$3,004,000. The average annual net benefits are approximately \$5,425,000 and the benefit-to-cost ratio is 2.6.

e. Risk and uncertainty have been explicitly factored into the economic analysis of this project. A statistical risk based model, Beach-fx, was used in this study to formulate and evaluate the project in a life-cycle approach. The application of Beach-fx in this study is to estimate future without project damages and quantify the damages prevented by various coastal storm risk management alternatives for the Carolina Beach portion of the Carolina Beach and Vicinity CSR project. The project is intended to address erosion and prevent damages to structures and infrastructure; it is not intended to reduce the risk of loss of life during major storm events. Loss of life can only be prevented by residents and visitors following the local evacuation plans that are already in place.

f. Engineer Regulation 1100-2-8162 provides guidance on the incorporation of the direct and indirect physical effects of projected future sea level change on design, construction, operation, and maintenance of coastal projects. Three estimates are required by the guidance: a baseline estimate representing the minimum expected sea level change, an intermediate estimate, and a high estimate representing the maximum expected sea level change. Sea levels could rise by 0.0066 feet (baseline), 0.0128 feet (intermediate), and 0.0325 feet (high) over the next 15 years. Adaptive management will be used including adjusting the timing of periodic nourishments and project volume requirements based on monitoring reports to compensate for any significant accelerated sea level rise beyond the historical or low rate should it become necessary.

g. In accordance with Engineer Circular 1165-2-214, review of all technical, engineering and scientific work in decision documents underwent an open, dynamic and rigorous review process to ensure technical quality. This included District Quality Control, Agency Technical Review, Policy and Legal Compliance Review, and review and certification by the

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Cost Engineering Mandatory Center of Expertise for Civil Works Review. All comments and concerns from these reviews have been addressed and incorporated into the final report. The requirement to perform Independent External Peer Review was waived per the implementation guidance for Section 1037(a) of WRRDA 2014, issued on 6 July 2015.

h. Existing environmental authorizations for this project include seasonal environmental windows. This reauthorization study, and its associated National Environmental Policy Act (NEPA) document, do not propose changes to existing environmental windows; however, consultation with resource agencies locally and regionally will likely result in changes to those seasonal environmental windows. The Wilmington District expects to programmatically address changes to environmental windows, including changes to the time of year when this project is constructed, if applicable, in a supplemental NEPA document covering multiple projects.

4. Conclusion and Recommendation: I have reviewed the Final Integrated Beach Renourishment Evaluation Report and Environmental Assessment for the Carolina Beach portion of the Carolina Beach and Vicinity CSRM Project. Based on this review, I find the proposed plan is technically and environmentally sound, justified based on the monetary and non-monetary benefits it provides, and is socially acceptable. The proposed project complies with applicable Corps planning procedures and regulations. Also, the views of interested parties, including federal, state, and local agencies, have been considered. Accordingly, I recommend approving the subject report and submitting it to congress for authorization, in order to extend federal participation in periodic renourishments of the Carolina Beach portion of the Carolina Beach and Vicinity CSRM project for an additional 15 years from the date of construction initiation for the first cycle of the additional congressionally authorized nourishment, and delegating signature of the Finding of No Significant Impact to the Wilmington District Commander.



ALVIN B. LEE
Director of Civil Works

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