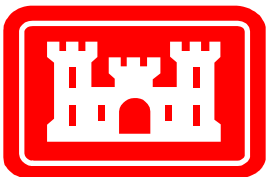

**INTEGRATED
FEASIBILITY REPORT
AND
ENVIRONMENTAL IMPACT STATEMENT
COASTAL STORM DAMAGE REDUCTION**

**BOGUE BANKS, CARTERET COUNTY
NORTH CAROLINA**

**APPENDIX G
ENVIRONMENTAL COMMITMENTS**



**US Army Corps
of Engineers**

Wilmington District

The tables below include a list of environmental commitments associated with construction and maintenance of the proposed project.

Species, habitat, other	Commitments to reduce environmental impacts and other impacts
<i>Sediment Compatibility</i>	<p>(1) Only beach compatible sediment would be placed on the beach as a component of this project.</p> <p>(2) During the PED phase of this project, additional borings or geophysical surveys or both would be performed to better delineate the borrow area boundaries and material types.</p> <p>(3) If the dredging operations encounter sand deemed non-compatible with native grain size or sorting characteristics of the native beach, the Wilmington District would make the decision on a suitable contingency measure that may include moving the dredge to another site in the borrow area and would notify the NCDCM and other resource agencies of such a contingency measure.</p>
<i>Piping Plover and Other Shorebirds</i>	<p>(4) The Corps would adhere to appropriate environmental windows to the maximum extent practicable.</p> <p>(5) All staging areas, pipeline routes, and associated construction activities would avoid piping plover critical wintering habitat and high valued shorebird habitat located within Bogue Banks, to the maximum extent practicable and all personnel involved in the construction process along the beach will be trained in recognizing the presence of piping plovers and red knots prior to the initiation of the work on the beach. A contractor representative authorized to stop or redirect work shall be responsible for conducting a shorebird survey prior to 9 am each day of sand placement activities. The survey shall cover the work area and any location where equipment is expected to travel. The contractor shall note on their Quality Assurance form for each day any observance of red knots and/or piping plovers and provide the information to the Wilmington District Office.</p> <p>(6) Endangered Species Observers (ESO's) on board the hopper dredges will be required to document bird species present and associated behavioral activities in the project area. All bird data will be provided to the NCWRC.</p>
<i>Manatee</i>	<p>(7) The Corps would implement precautionary measures for avoiding impacts to manatees during construction activities as detailed in the <i>Guidelines for Avoiding Impacts to the West Indian Manatee in North Carolina Waters</i> established by the USFWS.</p>

Species, habitat, other	Commitments to reduce environmental impacts and other impacts
<i>Large Whales and other Marine Mammals</i>	<p>(8) ESO's would be on board all hopper dredges and would record all large whale sightings and note any potential behavioral effects. The Corps and the contractor would keep the date, time, and approximate location of all marine mammal sightings. They would take care not to closely approach (within 500 yards) any whales, manatees, or other marine mammals during dredging operations or transport of dredged material. An observer would serve as a lookout to alert the dredge operator or vessel pilot or both of the occurrences of such animals. If any marine mammals are observed during other dredging operations, including vessel movements and transit to the dredged material disposal site, collisions would be avoided either through reduced vessel speed, course alteration, or both.</p>
<i>Sea Turtles</i>	<p>(9) The Corps would strictly adhere to all conditions outlined in the most current NMFS Regional Biological Opinion (RBO) for dredging of channels and borrow areas in the southeastern United States. Furthermore, as a component of this project, hopper dredging activities for both initial construction and each nourishment interval would adhere, to the maximum extent practicable, to a dredging window of December 1 to March 31 to avoid periods of peak sea turtle abundance. Turtle-deflecting dragheads, inflow and overflow screening, and NMFS-certified turtle observers would also be implemented.</p> <p>(10) To determine the potential taking of whales, turtles, and other species by hopper dredges, NMFS-certified observers would be on board during all hopper dredging activities. Recording and reporting procedures would be followed in accordance with the conditions of the current NMFS RBO.</p> <p>(11) The Corps would attempt to avoid the sea turtle nesting season during initial construction and each nourishment interval. If, because of unforeseen circumstances, construction extends into the nesting season, the Corps would implement a sea turtle nest monitoring and avoidance/relocation plan through coordination with USFWS and NCWRC.</p>

Species, habitat, other	Commitments to reduce environmental impacts and other impacts
<i>Sea Turtles (continued)</i>	<p>(12) The beach would be monitored for escarpment formation by the contractor before completion of beach construction activities associated with initial construction and each nourishment interval. Additionally, the local sponsor would monitor the beach for escarpment formation before each turtle nesting season every year between nourishment events. Escarpments that exceed 18 inches in height for a distance of 100 ft. would be leveled by the contractor or the local sponsor accordingly. If it is determined that escarpment leveling is required during the nesting or hatching season, leveling actions should be directed by the USFWS.</p> <p>(13) Only beach-compatible sediment would be placed on the beach as a component of the project. The Corps would, in coordination with the NCWRC and USFWS, evaluate post-nourishment beach compaction (hardness) would using qualitative assessment techniques to assure that impacts to nesting and incubating sea turtles are minimized and, if necessary, identify appropriate mitigation responses, which may include tilling.</p> <p>(14) Local lighting ordinances would be encouraged to the maximum extent practicable to reduce lighting impacts to nesting females and hatchlings. The local sponsors would be encouraged to work with the USFWS, local monitoring groups, and other concerned organizations to develop the best plan for the project beaches.</p>
<i>Seabeach Amaranth</i>	<p>(15) The seabeach amaranth monitoring will be conducted for 5 years following the initial sediment placement. The commitment is intended to survey and document presence/absence of plants following Bogue Banks Project nourishment events utilizing offshore borrow sources in order to quantify the number of plants before/after nourishment. Subsequent monitoring will be dependent on results of the initial monitoring.</p>

Species, habitat, other	Commitments to reduce environmental impacts and other impacts
<i>Benthic Invertebrates</i>	<p>(16) The anticipated construction time frame for initial and periodic nourishment events would avoid peak recruitment and abundance time period for surf zone fishes and benthic invertebrates.</p>

	(17) Initial construction would be completed over one year with nourishment every 3 years. With this approach, effects would be expected to be localized, short-term, and reversible. .
<i>Shellfishing</i>	(18) The Corps would contact the North Carolina Shellfish Sanitation and Recreational Water Quality Section before start of work, so the project area may be posted as required.
<i>Erosion/Sediment Control</i>	(19) Before initiating any land-disturbing activities, the Corps would obtain the approval of the North Carolina Division of Land Resources of an erosion and sedimentation control plan. The Corps would comply with the requirements of the approved erosion and sedimentation control plan. A copy of the plan approval will be forwarded to NCDCM.
<i>Water Quality</i>	(20) Before construction, the Corps would obtain a Section 401 Water Quality Certification from the NCDWQ for the proposed project. The Corps would comply with the requirements of the Section 401 Water Quality Certification. A copy of the certification would be forwarded to NCDCM. (21) Temporary dikes would be used to retain and direct flow of material parallel to the shoreline to minimize surf zone turbidities. The temporary dikes would be removed and the beach graded in accordance with approved profiles on completion of pumping activities in that section of beach.

Species, habitat, other	Commitments to reduce environmental impacts and other impacts
<i>Terrestrial Habitat</i>	(22) Land-based equipment necessary for beach nourishment work would be brought to the site through existing accesses. If the work results in any damage to existing accesses, the accesses would be restored to pre-project conditions immediately on project

	<p>completion.</p> <p>(23) Dune disturbance would be kept to a minimum. Any alteration of existing dunes would be coordinated with NCDCM and the appropriate property owner(s). All disturbed areas would be restored to original contours and configuration with reference to the surveyed normal high water line and would be revegetated immediately after project completion in that area.</p> <p>(24) Dune stabilization would be accomplished by planting vegetation on the dune during the optimum planting seasons and after the berm and dune construction. Representative native planting stocks may include sea oats (<i>Uniola paniculata</i>), American beachgrass (<i>Ammophila breviligulata</i>), and panic grass (<i>Panicum amarum</i>).</p> <p>(25) To prevent leakage, dredge pipes would be routinely inspected. If leakage is found and repairs cannot be made immediately, pumping of material must stop until such leaks are fixed.</p>
<i>Hard Bottom Habitat</i>	<p>(26) Once pipeline corridor and pumpout details are defined during PED, the Corps intends to survey all area before construction to avoid potential hard bottom impacts. All existing remote-sensing and ground-truth data would be used in combination with the new survey data. All information associated with the surveys, data analysis, identification and mapping of pipeline corridors, appropriate buffers, and subsequent measures developed to avoid resource impacts would be coordinated with the resource agencies before construction.</p> <p>(26a) Low relief hardbottoms are present in borrow area U and Y. A 500 meter buffer will be implemented to avoid impacts to the resources.</p>

Species, habitat, other	Commitments to reduce environmental impacts and other impacts
<i>Other</i>	(27) Before construction the existing MHW line would be surveyed,

<i>Commitments</i>	<p>and a copy provided to the NCDCM. If construction is not initiated within 60 days or there is a major shoreline change before beginning beach nourishment (or both), a new survey would be conducted.</p> <p>(28) Before initiating any beach nourishment activity, the Corps would coordinate with NCDCM to determine the static vegetation line to be used as the reference point for measuring future oceanfront setbacks. That static vegetation line would then be marked, and a survey depicting the static vegetation line would be submitted to NCDCM before any beach nourishment activities.</p> <p>(29) After the post-construction beach profile surveys are completed, the Corps would coordinate with the North Carolina Floodplain Mapping Program to support revisions to the Digital Flood Insurance Rate Maps (DFIRMs). As part of such coordination, the Corps would provide a Letter of Map Revision.</p> <p>(30) No sand would be placed on any sandbags that have been determined by NCDCM to be subject to removal under 15A NCAC 07H .0308(a)(2). To ensure compliance with that condition, NCDCM would be contacted before project initiation so that NCDCM staff may meet on-site with the Corps or the contractor or both.</p> <p>(31) To mitigate the possibility of encountering UXO, the beach would be inspected daily, and any potential UXO discovered would be handled in accordance with the Military Munitions Rule, 40 CFR 266, Subpart M. Explosive Ordnance Disposal (EOD) Teams stationed at nearby military installations are available (on call) to be summoned if potential UXO items are discovered during the dredging process. Additionally, the contract specifications for the proposed project would direct the contractor to immediately stop work and inform the contracting officer if UXO is encountered during dredging or disposal. At that time, additional measures would be implemented, as necessary, including inspecting dredged material on the beach and installing outflow screens on the dredge pipeline. Any UXO found on the beach would be promptly removed.</p>
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Species, habitat, other	Commitments to reduce environmental impacts and other impacts
<i>Other</i>	(32) To assure the risk of potential impacts to cultural resources

<p><i>Commitments (continued)</i></p>	<p>within inshore areas subject to pumpout activities are avoided, specific pumpout locations would identified, surveyed, and investigated for cultural resources in conjunction with hard-bottom surveys before beginning nourishment activities.</p> <p>(33) To further minimize the risk of cultural resource impacts before and during construction, the following commitments would be implemented: (1) Areas subject to pump-out activities are avoided, specific pump-out locations would identified, surveyed, and investigated for cultural resources in conjunction with hard bottom surveys before commencement of nourishment activities, (2) Should any previously unidentified or unanticipated historical, archaeological, and cultural resources be discovered or found within the inflow screening of the dredge or within the beach placement area, all activities that may damage or alter such resources would be temporarily suspended. The Corps' Contracting Officer would be immediately notified so that the appropriate authorities, including BOEM, can be notified in accordance with Corps policy and 30 CFR 250.194(c) and a determination made as to their significance and what, if any, special disposition of the finds should be made. All activities that could result in effects on or the destruction of those resources would cease. The area would be secured to prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources until the sites potential historic significance can be assessed and protected.</p>
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