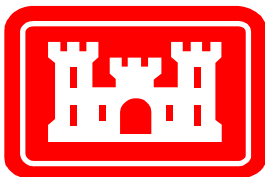


---

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

**BOGUE BANKS, CARTERET COUNTY  
NORTH CAROLINA**

**APPENDIX J  
404(b)(1) ANALYSIS**



**US Army Corps  
of Engineers  
Wilmington District**



**BOGUE BANKS, NORTH CAROLINA  
Final Evaluation of Section 404 (b) (1) Guidelines 40 CFR 230**

This evaluation of the placement of any and all fill material into waters and wetlands of the United States required for construction and maintenance of the Bogue Banks, North Carolina, Coastal Storm Damage Reduction Project.

The tentatively selected plan will require an estimated 2.45 million cubic yards of borrow material during initial construction, and about 1.07 million cubic yards during each renourishment cycle, which would occur every 3 years. During the 50 year project, this would equate to 16 total renourishment events. In total, it is estimated that 19.55 million cubic yards of material are needed for initial construction and subsequent renourishments during the 50 year project.

The material would most likely be pumped to the beach as a slurry from hopper dredges (although other types of dredges could potentially be used) and shaped on the beach by earth-moving equipment. About 50% of the sand from each disposal operation will be placed in the ocean below mean high water. However after about 6 months when conditions adjust to the final design profile, about 80% of the total sand from the disposal operations will have relocated below mean high water.

**Section 404 Public Notice No. CESA-W-TS-PE**

1.	<u>Review of Compliance (230.10(a)-(d))</u> A review of the NEPA Document indicates that:	Preliminary <u>1/</u>	Final <u>2/</u>
a.	The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose Remarks: The Corps planning process has brought us to the conclusion the TSP was the LEDPA.	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>
b.	The activity does not: 1) violate applicable State water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of federally listed endangered or threatened species or their habitat; and 3) violate requirements of any federally designated marine sanctuary (See Section 7.0 and Appendix F of the Final Integrated Feasibility Report and EIS)	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>
c.	The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (See Section 8.0 of the Final Report)	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>
d.	Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (see Section 8.0 of the Final Report).	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>	YES  <input checked="" type="checkbox"/>   NO  <input type="checkbox"/>

Proceed to Section 2

\*, 1, 2/ See page 6.

2.	Technical Evaluation Factors (Subparts C-F)	N/A	Not Signifi- cant	Signifi- cant*
a.	Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)			
	(1) Substrate impacts.		X	
	(2) Suspended particulates/turbidity impacts.		X	
	(3) Water column impacts.		X	
	(4) Alteration of current patterns and water circulation.		X	
	(5) Alteration of normal water fluctuations/hydroperiod.		X	
	(6) Alteration of salinity gradients.	NA		
b.	Biological Characteristics of the Aquatic Ecosystem (Subpart D)			
	(1) Effect on threatened/endangered species and their habitat.		X	
	(2) Effect on the aquatic food web.		X	
	(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).		X	
c.	Special Aquatic Sites (Subpart E)			
	(1) Sanctuaries and refuges.	NA		
	(2) Wetlands.		X	
	(3) Mud flats.	NA		
	(4) Vegetated shallows.	NA		
	(5) Coral reefs.	NA		
	(6) Riffle and pool complexes.	NA		
d.	Human Use Characteristics (Subpart F)			
	(1) Effects on municipal and private water supplies.	NA		
	(2) Recreational and commercial fisheries impacts.		X	
	(3) Effects on water-related recreation.		X	
	(4) Aesthetic impacts.		X	
	(5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.		X	

Remarks: See Section 7.0 and Appendix F of the Final Integrated Feasibility Report and EIS, Bogue Banks, North Carolina for more information on the above topics.

Proceed to Section 3

\*See page 6.

3. Evaluation of Dredged or Fill Material (Subpart G) 3/

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

- (1) Physical characteristics. . . . .
- (2) Hydrography in relation to known or anticipated sources of contaminants . . . . .
- (3) Results from previous testing of the material or similar material in the vicinity of the project . . . . .
- (4) Known, significant sources of persistent pesticides from land runoff or percolation . . . . .
- (5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances . . . . .
- (6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources. . . . .
- (7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities. . . . .
- (8) Other sources (specify). . . . .

Reference: See Sections 2.0, 7.0.9, and the Geotechnical and Sand Compatibility Analyses Appendices Final Report for Bogue Banks, North Carolina.

Remark: Sediments to be dredged consist of beach quality sand. Contaminants do not bind to sand, therefore, contaminant testing of sediments was not required.

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to result in degradation of the disposal site.

YES  NO

Proceed to Section 4

\*, 3/, see page 6.

4. Disposal Site Determinations (230.11(f)).

a. The following factors as appropriate, have been considered in evaluating the disposal site.

- (1) Depth of water at disposal site. . . . .
- (2) Current velocity, direction, and variability at disposal site . . . . .
- (3) Degree of turbulence. . . . .
- (4) Water column stratification . . . . .
- (5) Discharge vessel speed and direction . . . . .
- (6) Rate of discharge . . . . .
- (7) Dredged material characteristics (constituents, amount and type of material, settling velocities). . . . .
- (8) Number of discharges per unit of time. . . . .
- (9) Other factors affecting rates and patterns of mixing (specify) . . . . .

Reference: See Final Integrated Feasibility Report and EIS, Bogue Banks, North Carolina.

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable. YES  NO \*

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendations of 230.70-230.77, to ensure minimal adverse effects of the proposed discharge. YES  NO \*

See Section 7.2 of Final Report for Marine Environment  
See Section 7.9 of Final Report for Water Resources  
See Appendix F of the Final Report for threatened and endangered species

Return to section 1 for final stage of compliance review.  
See also note 3/, page 6.  
\*See page 6.

6. Factual Determinations (230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

- |  |   |                             |   |
|--|---|-----------------------------|---|
| a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5).      | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |
| b. Water circulation, fluctuation, and salinity (review sections 2a, 3, 4, and 5). | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |
| c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5).             | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |
| d. Contaminant availability (review sections 2a, 3, and 4).                        | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |
| e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5).  | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |
| f. Disposal site (review sections 2, 4, and 5).                                    | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |
| g. Cumulative impact on the aquatic ecosystem.                                     | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |
| h. Secondary impacts on the aquatic ecosystem.                                     | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> | * |

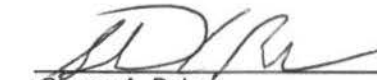
Remark: More detailed information on the topics above may be found in Sections 2.0, 7.0, and the Geotechnical, Sand Compatibility, and Cumulative Impacts analyses Appendices of the Final Report for Bogue Banks, North Carolina.

7. Findings.

- a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines. . . . .
- b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions: . . . . .
- c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reasons(s):
  - (1) There is a less damaging practicable alternative . . . . .
  - (2) The proposed discharge will result in significant degradation of the aquatic ecosystem . . . . .
  - (3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem. . . . .

\*See page 6.

8. Signature.

 COL. EN  
Steven A. Baker  
Colonel, U.S. Army  
District Commander

Date: 16 APR 14

\*A negative, significant, or unknown response indicates that the permit application may not be in compliance with the Section 404(b)(1) Guidelines.

1/ Negative responses to three or more of the compliance criteria at this stage indicate that the proposed projects may not be evaluated using this "short form procedure." Care should be used in assessing pertinent portions of the technical information of items 2 a-d, before completing the final review of compliance.

2/ Negative response to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form evaluation process is inappropriate."

3/ If the dredged or fill material cannot be excluded from individual testing, the "short-form" evaluation process is inappropriate.