
Appendix A
Pertinent Correspondence

Appendix A Pertinent Correspondence

(NOTE: This appendix includes general correspondence concerning the project, including the views of the local sponsor; correspondence pertaining to the draft U.S. Fish and Wildlife Coordination Act Report; correspondence pertaining to the scoping for the berm and dune construction from the North Carolina Department of Administration (State Clearinghouse Intergovernmental Review Process); and the comments letters received during the public review of the Draft Environmental Impact Statement.

Table of Contents

Letter dated 29 January 1991, Headquarters, Corps of Engineers, With Dare County Beaches Study Resolution	A-1
Letter dated 4 February 1991 from Dare County	A-3
Letter dated 25 May 1994 from Dare County	A-4
Letter dated 19 August 1997 from North Carolina Department Of Administration	A-5
Letter dated 9 September 1999 from Senator Jesse Helms	A-20
Letter dated 17 April 2000 from Dare County	A-22
Letter dated 21 September 2000 from Dare County	A-23
Draft EIS Comment Letters from Federal Agencies	A-24
Draft EIS Comment Letters from State Agencies	A-107
Draft EIS Comment Letters from Local Agencies	A-129
Draft EIS Comment Letters from Elected Officials	A-133
Draft EIS Comment Letters from Conservation Groups	A-142
Draft EIS Comment Letters from Interested Businesses, Groups, and Individuals	A-167



DEPARTMENT OF THE ARMY

U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

29 JAN 1991

CECW-PM (10-1-7a)

MEMORANDUM FOR Commander, South Atlantic Division, ATTN:CESAD-PD

SUBJECT: Dare County Beaches, North Carolina - 12835

1. Enclosed is a copy of a resolution of the Committee on Public Works and Transportation, United States House of Representatives dated August 1, 1990, subject as above. Please prepare and submit a report covering the subject matter of the resolution.

2 Funds to initiate this study were provided in the FY 91 Appropriations Act. The name and number of this study have been designated as "Dare County Beaches, North Carolina - 12835". If you believe there are compelling reasons for combining this authority with any currently outstanding study please notify me as soon as possible.

3. The reconnaissance study effort will be limited to 12 months and 25% of the total study any extension of the 12 month limit or cost estimate greater than 25% must be approved by HQUSACE, ATTN: CECW-P. The reconnaissance study period will be measured from the date of the initial obligation of funds and will end with the district engineer's submission of the final reconnaissance report to the division engineer.

Hugh E. Wright / JR

Encl

JIMMY F. BATES
Chief, Policy and Planning Division
Directorate of Civil Works

**COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.**

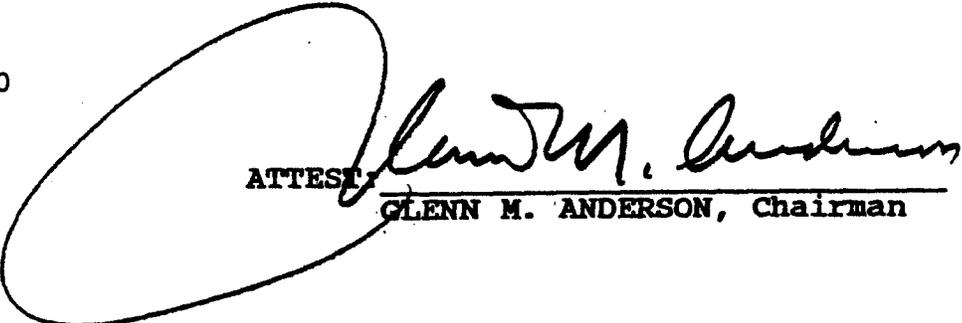
R E S O L U T I O N

**Dare County Beaches, North Carolina,
Hurricane and Storm Damage Prevention
Docket 2339**

Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, That the Secretary of the Army, in accordance with section 110 of the River and Harbor Act of 1962, is requested to make, under the direction of the Chief of Engineers, studies of the Dare County beaches, Dare County, North Carolina, in the interest of beach erosion control, hurricane protection, storm damage reduction needs, and related purposes.

Adopted: August 1, 1990

ATTEST


GLENN M. ANDERSON, Chairman

(Requested by Representative Walter Jones)



COUNTY OF DARE
MANTEO, NORTH CAROLINA 27954

OFFICE OF THE
BOARD OF COMMISSIONERS
Louise Dollard

~~MICHAEL R. DANIELS WANGHRE~~
CHAIRMAN

JESSE F. AMBROSE, MANNS HARBOR
VICE CHAIRMAN

~~ROSE DOLLARD~~
GASKILL W. AUSTIN, SALVO
~~HOWARD W. WALKER~~
Ozzie Gray

Robert Williams

Mr. Lawrence W. Saunders
Chief, Planning Division
U. S. Army Corps of Engineers
Wilmington District Office
P. O. Box 1890
Wilmington, NC 28402-1890

Dear Mr. Saunders:

Thank you for your letter dated January 7, 1991 concerning Congressional authorization of a reconnaissance study of shore protection measures for the northern beaches of Dare County.

On February 4, 1991, the Dare County Board of Commissioners adopted a motion to sponsor this reconnaissance study and designated the Dare County Planning Department as the local contact agency. Our Planning Director is Mr. Raymond P. Sturza II, and he is quite familiar with many of the issues I suspect you will need local assistance with.

On behalf of the Dare County Board of Commissioners I want to thank you for the information you forwarded with your January 7, 1991 letter. We look forward to the results of your study and what we hope will become a mutually beneficial and long term relationship with your division. If there is any way I can be of further assistance, please let me know.

Sincerely yours,

Louise Dollard, Chairman
Dare County Board of
Commissioners

LD/jw

cc: Honorable Walter B. Jones
Honorable Don Bryan
Honorable Lowell Perry
Honorable Cliff Perry

Appendix A-3

P. O. BOX 1000
PHONE (919) 473-1101
SANDRA W. GAMIEL
SECRETARY AND CLERK
TO THE BOARD
DWIGHT H. WHELESS
COUNTY ATTORNEY



COUNTY OF DARE

MANTEO, NORTH CAROLINA 27954

May 25, 1994

PLANNING DEPARTMENT

DARE COUNTY
ADMINISTRATIVE BUILDING
P.O. BOX 1000
PHONE (919) 473-1101

Ms. Carol Niesen, Project Manager
Dare Beaches Nourishment Study
U.S. Army Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402

Dear Carol:

I'm sorry that circumstances beyond our control forced the cancellation of our meeting yesterday. I know that both of our County Commissioners planning to attend that meeting were looking forward to it, and I feel the same was true for Mayor Cahoon and Mayor Gray. I'll be back in touch about rescheduling after the Memorial Day holiday weekend.

I do, however, want to use this opportunity to express the Board's concern about an issue that would have been prevalent at the meeting and one that you will hear again from the Dare County delegation. Your local sponsor of this feasibility study feels that we are simply not in a position to agree with the length of the study period. If our shoreline management situation was not as critical as it is, we might be more willing to accept the proposed time frame. But, in addition to the natural forces that our reshaping our beaches, there are political and economic forces that can change dramatically in five years. And so our coalition of partners in this important study is strongly committed to reducing the time frame for study completion.

Enclosed with this letter is a check for \$96,250.00 for the local share of the first year cost. I think this should demonstrate our commitment to this project. We look forward to working with the Corps as this study unfolds as a reliable local sponsor. But we also remain determined to shorten the time frame, and will be engaging in further discussions to that end at a later date.

Sincerely yours,

Raymond P. Sturza, Jr.
Planning Director

Appendix A-4

LAND OF BEGINNINGS

PRINTED ON RECYCLED PAPER



North Carolina
Department of Administration

James B. Hunt, Jr., Governor

Katie G. Dorsett, Secretary

August 19, 1997

Mr. Charles Wilson
Dept. of the Army
Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402-1890

Dear Mr. Wilson:

Re: SCH File # 98-E-0000-0008; Scoping Proposed Shoreline Protection Project in Dare County, Involves the Placement of Beach Fill Consisting of a Berm and, Where Necessary, the Establishment of a Dune Line

The above referenced project has been reviewed through the State Clearinghouse Intergovernmental Review Process. Attached to this letter are comments made by agencies reviewing this document.

Should you have any questions, please do not hesitate to call me at (919) 733-7232.

Sincerely,

A handwritten signature in cursive script that reads "Chrys Baggett".

Mrs. Chrys Baggett, Director
N. C. State Clearinghouse

Attachments

cc: Region R
Melba McGee, DEHNR

Appendix A-5

116 West Jones Street Raleigh, North Carolina 27603-8003 Telephone 919-733-7232

An Equal Opportunity / Affirmative Action Employer

State of North Carolina
Department of Environment,
Health and Natural Resources
Legislative & Intergovernmental Affairs

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Richard E. Rogers, Jr., Acting Director



MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee ✓
Environmental Review Coordinator

RE: 98-0008 Scoping Berm and Dune Construction, Dare County

DATE: August 19, 1997

The Department of Environment, Health, and Natural Resources has reviewed the proposed information. The attached comments are for the applicant's information.

Thank you for the opportunity to review.

attachments

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Water Quality

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director



July 28, 1997

MEMORANDUM

TO: Melba McGee, DEHNR SEPA Coordinator

FROM: Michelle Suverkrubbe, DWQ SEPA Coordinator *MS*

RE: Comments on ~~the~~ Scoping #97-0008; WQS# 11681
Army Corps of Engineers
Berm and Dune Construction
Dare County

The Division of Water Quality (DWQ) requests that the following topics be discussed in the EIS document, as applicable to both the temporary construction and long-term operation phases of the proposed dune construction project:

- A. Identify the streams potentially impacted by the project. The current stream classifications and use support ratings for these streams should be included. This information is available from DWQ through the following contacts:
- Liz Kovasckitz - Classifications - 919-733-5083, ext. 572
Carol Metz - Use Support Ratings - 919-733-5083, ext. 562
- B. Identify the linear feet of stream channelization/relocations. If the original stream banks were vegetated, it is requested that the channelized/relocated stream banks be revegetated.
- C. Will new access roads be constructed for earth-moving equipment to reach the project sites? If so, please identify their locations, construction details, and environmental impacts. Please indicate: the number and locations of all proposed stream crossings; identify if permanent spill catch basins be utilized, and identify the stormwater controls (permanent and temporary) to be employed. Identify the responsible party for maintaining the catch basins and stormwater controls.
- F. Please ensure that sediment and erosion control measures are not placed in wetlands.
- G. Wetland Impacts
- i) Identify the federal manual used for identifying and delineating jurisdictional wetlands.
 - ii) Have wetlands been avoided as much as possible?
 - iii) Have wetland impacts been minimized?
 - iv) Mitigation measures to compensate for habitat losses.

Appendix A-7

- v) Wetland impacts by plant communities affected.
 - vi) Quality of wetlands impacted.
 - vii) Total wetland impacts.
 - viii) List the 401 General Certification numbers requested from DWQ.
- H. Borrow/waste areas should avoid wetlands to the maximum extent practicable. Prior to the approval of any borrow/waste site in a wetland, the contractor shall obtain a 401 Certification from DWQ.
- I. Please provide a conceptual wetland mitigation plan to help the environmental review. The mitigation plan may state the following:
1. Compensatory mitigation will be considered only after wetland impacts have been avoided and minimized to the maximum extent possible.
 2. On-site, in-kind mitigation is the preferred method of mitigation. In-kind -- mitigation within the same watershed is preferred over out-of-kind mitigation.
 3. Mitigation should be in the following order: restoration, creation, enhancement, and lastly preservation.
- J. The EIS should identify alternatives that would require less long-term maintenance.
- K. The project may encourage more development. WQ is also concerned about secondary wetland and water quality impacts from this potential future development. The EIS should discuss the additional infrastructure, wastewater management and construction impacts to wetlands and water quality that may result from this project.
- L. All conclusions should be referenced as to how they were made (i.e. with literature studies, field visits etc.).
- M. The report preparers' qualifications should be presented. For instance, someone that has significant experience delineating wetlands should prepare a conclusion about the presence of wetlands and waters.
- N. Please note that a 401 Water Quality Certification cannot be issued until the conditions of NCAC 15A: 01C.0402 (Limitations on Actions During NCEPA Process) are met. This regulation prevents DWQ from issuing the 401 Certification until a FONSI or Record of Decision (ROD) (for and EIS) has been issued by the Department requiring the document. It is recommended that if the 401 Certification application is submitted for review prior to the sign off, the applicant states that the 401 should not be issued until the applicant informs DWQ that the FONSI or ROD has been signed off by the Department.

Written concurrence of 401 Water Quality Certification may be required for this project. Applications requesting coverage under our General Certification 14 or General Permit 31 (with wetland impact) will require written concurrence. Please be aware that 401 Certification may be denied if wetland or water impacts have not been avoided and minimized to the maximum extent practicable.

98-0008 Corps Scoping
July 28, 1997
Page 3

Please have the applicant give Eric Galamb a call at 919-733-1786 if they have any questions on these comments.

mls\980008 Dare Dune ACOE project

cc: Eric Galamb, DWQ Wetlands

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Environmental Management

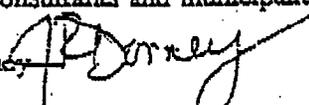
James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director



October 6, 1995

MEMO

To: Wetland consultants and municipalities

From: John Dorney 

Re: Modification to Certification for Nationwide Permit 12 - Utility lines

The Division of Environmental Management (DEM) has reissued the General Certification (GC) for Nationwide Permit 12 and Regional Permit 049. The new GC will expedite the permitting process and clarify for the applicant conditions necessary for a certifiable project. The significant changes are:

- 1) No fertilizer applied within 10 feet of streams;
- 2) Anti-seep collars every 150 feet in wetlands;
- 3) Restore to original contours after construction. A specific plan is needed;
- 4) Rip rap is restricted to stream bottom and banks directly impacted by the utility line;
- 5) The construction corridor (including access roads and stockpiling of materials) is limited to 40 feet in width;
- 6) Construction corridors parallel to streams shall be placed at the furthest distance from the stream to the maximum extent practicable; and
- 7) Although you still need to apply to the U.S. Army Corps of Engineers for these permits, written concurrence from DEM is no longer needed provided that all conditions of the General Certification are followed. Written concurrence is required if the utility line is installed parallel and closer than 10 feet to a stream or if the line crosses a stream channel at less than 75 degrees or more than 105 degrees (i.e., not perpendicular stream crossing).

A copy of the revised GC is enclosed for your information. DEM will be making compliance site inspections. Should the utility line be installed such that a condition is violated, remedial actions including utility line relocation or installation of anti-seep collars fines may be imposed.

Should you have any questions, please contact Eric Galamb or John Dorney at (919) 733-1786.

nw12.mun

RECEIVED

Appendix A-10

OCT 16 1995

ENVIRONMENTAL SCIENCES

7. The construction corridor (including access roads and stockpiling of materials) is limited to 40 feet (12.2 meters) in width and must be minimized to the maximum extent practicable.
8. Measures shall be taken to prevent live or fresh concrete from coming into contact with waters of the state until the concrete has hardened;
9. Permanent, maintained access corridors shall be restricted to the minimum width practicable and shall not exceed 10 feet (3 meters) in width except at manhole locations. A 10 feet (3 meters) by 10 feet (3 meters) perpendicular vehicle turnaround must be spaced at least 500 feet (152.4 meters) apart.
10. An anti-seep collar shall be placed at the downstream (utility line gradient) wetland boundary and every 150 feet (45.7 meters) up the gradient until the utility exits the wetland for buried utility lines. Anti-seep collars may be constructed with class B concrete or compacted clay. Perpendicular wetland crossings less than 150 feet (45.7 meters) long do not require anti-seep collars.

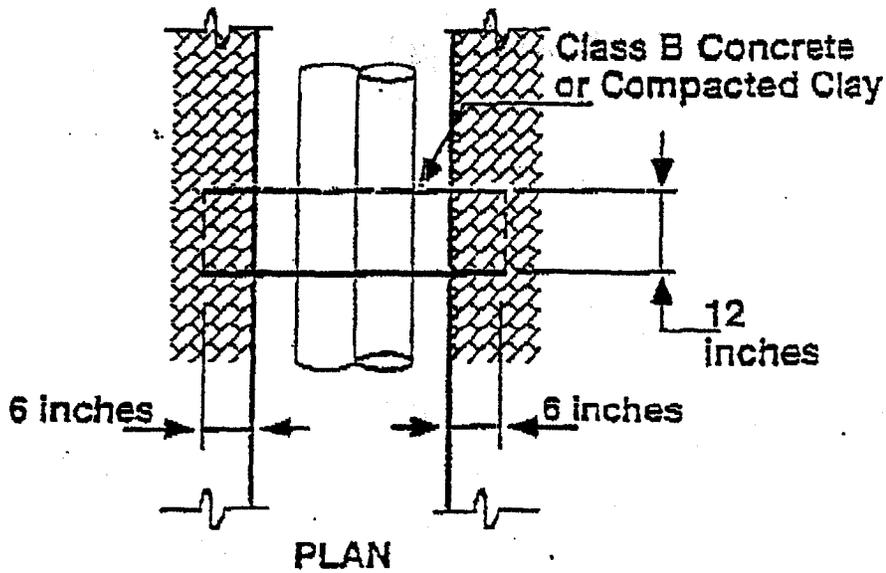
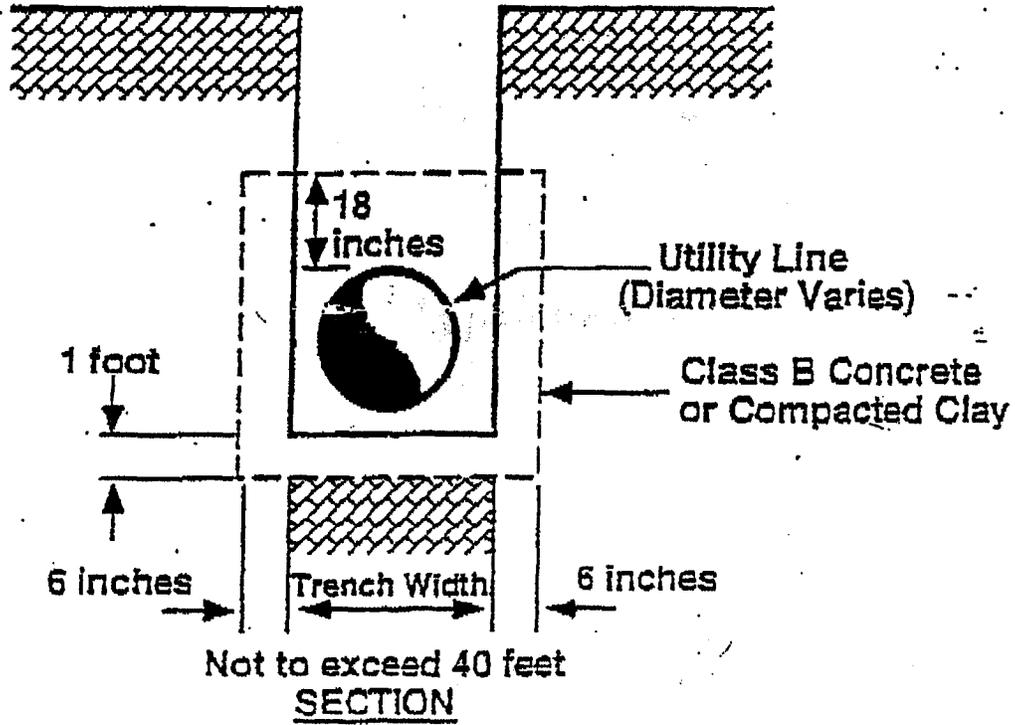
The compacted clay shall have a specific discharge of 1×10^{-5} cm/sec or less. A section and plan view diagram is attached for compacted clay and concrete anti-seep collars.

The following specifications shall apply to class B concrete:

a) Minimum cement content, sacks per cubic yard with rounded course aggregate	5.0
b) Minimum cement content, sacks per cubic yard with angular course aggregate	5.5
c) Maximum water-cement ratio gallons per sack	6.8
d) Slump range	2" to 4"
e) Minimum strength - 28 day psi	2,500

11. Placement of rip rap is restricted to stream bottom and banks directly impacted by the placement of the utility line. The stream berm must be restored to the original contour after construction;
12. This general certification does not authorize any permanent changes in preconstruction elevation contours in waters or wetlands. The permittee will have a specific plan for restoring wetland contours. Any excess material will be removed to a high ground disposal area;
13. If an environmental document is required, this Certification is not valid

ANTI-SEEP COLLAR



Appendix A-12

JUL-28-1997 12:51 FROM

State of North Carolina
Department of Environment
Health and Natural Resources
Division of Coastal Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Roger N. Schecter, Director

Post-It™ Fax Note	7671	Date	07/28/97	# of pages	2
To	Steve Benton	From	Ed Harrell		
Co./Dept.		Co.			
Phone #		Phone #			
Fax #	Hand copy to follow by mail.				Fax #



MEMORANDUM:

Appendix A-12

TO: Steve Benton

FROM: M. Edward Harrell ^{MEM}

SUBJECT: Project Number DCM97-23, Dated 07/01/97 Scoping - EIS for Dare County Beaches Shoreline Protection Project - USACOE

DATE: July 28, 1997

The staff feels that the following 12 concerns should be addressed in the Environmental Impact Statement for the USACOE's proposed shoreline protection project:

- 1) Impact upon public/private beach accesses and the ability of beach users and emergency vehicles to access the public trust areas paralleling the shoreline.
- 2) Potential impacts to NCDOT's ocean outfalls.
- 3) Impact of two-year construction time on tourism.
- 4) Possible impacts to sea turtles utilizing the area.
- 5) Associated impacts to fish and invertebrates within the project area.
- 6) Possible impact on erosion rates along beaches lying just outside the project area.
- 7) Frequency of needed renourishment, availability of sand needed for renourishment, reoccurring costs.
- 8) Matching project to areas of beach in greatest need of protection.
- 9) Cost/benefit ratios based on possibility of having to relocate Virginia Dare Trail, (R-O-W-Acquisition, loss of tax base, cottages, etc.).

Appendix A-13

Steve Benton
July 28, 1997

Page Two

- 10) Consider advantage of stabilizing dunes and berms.
- 11) Possible impact upon beach profile by offshore dredging activity.
- 12) Full investigation of potential impacts to Benthic life associated with the offshore dredging.



☒ North Carolina Wildlife Resources Commission ☒

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Charles Wilson
Environmental Resources Section
Engineering and Planning Division

FROM: William Wescott, Coastal Coordinator
Habitat Conservation Program

DATE: July 28, 1997

SUBJECT: Scoping comments for an Environmental Impact Statement (EIS) regarding a proposed shoreline protection project in Dare County.

Staff biologists with the Wildlife Resources Commission have reviewed the document. Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.), the Clean Water Act of 1977 (as amended) and the North Carolina Environmental Policy Act (G.S. 113A-1 et seq., as amended; 1 NCAC-25).

The U.S. Army Corps of Engineers is conducting feasibility studies on 20 miles of Dare County oceanfront located north of Oregon Inlet. The studies will address the possibility of future beach renourishment projects along 10 miles of oceanfront in Nags Head, Kitty Hawk, and Kill Devil Hills.

We request the following issues be included in the final Environmental Impact Statement.

- Oregon Inlet is the only inlet between the NC-VA state line and Cape Hatteras, therefore; it is vital to determine the peak movement of larval fish being transport by the current along the shoreline, through the inlet and into the estuaries.
- Include previous monitoring studies and data that documented the short-term and long-term impacts of beach nourishment on benthic infauna, nearshore fisheries resources and threatened/endangered species.

Appendix A-15

- Give the number and location of structures within the study area in imminent danger resulting from the natural westerly migration of the shoreline.
- Include cost analysis of removing threatened structures and mandating setbacks as compared to initial and subsequent renourishment activities.
- Provide examples of several previous beach renourishment projects (including subsequent renourishments) and their effectiveness pertaining to yearly erosion and protection during major storm events.

Thank you for the opportunity to comment on this project. If you need to discuss these comments please call William Wescott at (919) 927-4016.

WW/fm

cc: ✓ Melba McGee, Office of Legislative and Intergovernmental Affairs
Kevin Moody, U.S. Fish and Wildlife Service

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Coastal Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Roger N. Schecter, Director



MEMORANDUM

TO: Melba McGee, NC Division of Policy and Development
FROM: Steve Benton, NC Division of Coastal Management

SUBJECT: Review of SCH # 98-0008

DATE: 7/14/97

A Copy of All Comments Received by the SCH
is Requested

Reviewer Comments Attached

Review Comments:

This document is being reviewed for consistency with the NC Coastal Management Program pursuant to federal law and/or NC Executive Order 15. Agency comments received by SCH are needed to develop the State's consistency position.

Project Review Number (if different from above) _____

A Consistency position will be developed based on our review on or before _____

A Consistency Determination document _____ is, or _____ may be required for this project. Applicant should contact Steve Benton or Caroline Bellis in Raleigh, phone # (919) 733-2293, for information on the proper document format and applicable state guidelines and local land use plan policies.

Proposal is in draft form, a consistency response is inappropriate. A Consistency Determination should be included in the final document.

A Consistency Determination document (pursuant to federal law and/or NC Executive Order 15) is not required.

A consistency response has already been issued.

Project No. _____ Date issued _____

Proposal involves < 20 Acres or a structure < 60,000 Sq. Feet and no AEC's or Land Use Plan Problems.

Proposal is not in the Coastal Area and will have no significant impacts on any land or water use or natural resource of the Coastal Area.

A CAMA Permit _____ is, or _____ may be required for all or part of this project proposal. Applicant should contact _____ in _____, phone # _____ for information.

A CAMA Permit _____ has already been issued, or _____ is currently being reviewed under separate circulation.
Permit No. _____ Date issued _____

Other (see attached). DOCUMENT BEING REVIEWED AS DCM 97-23: SCOPING

State of North Carolina Consistency Position:

The proposal is consistent with the NC Coastal Management Program provided that all conditions are adhered to and that all state authorization and/or permit requirements are met prior to implementation of the project.

The proposal is inconsistent with the NC Coastal Management Program.

Other (see attached)

Appendix A-17



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

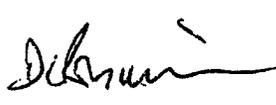
JAMES B. HUNT JR.
GOVERNOR

DIVISION OF HIGHWAYS
P.O. BOX 25201, RALEIGH, N.C. 27611-5201

GARLAND B. GARRETT JR.
SECRETARY

July 15, 1997

MEMORANDUM TO: Chris McAdams
DOT Clearinghouse Coordinator

FROM: David C. Robinson, Ph.D., P.E. 
Assistant Manager, Environmental Services
Planning and Environmental Branch

SUBJECT: Clearinghouse Review # 98-E-0000-0008
Department of the Army, Wilmington District
Corps of Engineers

Ron Poole of the Statewide Planning Branch asked me to review the subject proposal. We are concerned that the Corps of Engineers' proposed project might affect a possible coastal marsh mitigation site that we are evaluating on the western (sound) side of US 158 in the general area between stations 1020+79.29 and 800+05.35 (as indicated on Figure 1 in the proposal.) Consequently, we need to kept informed during the planning of the proposed project.

Dept of Crime Control & Public Safety
Division of Emergency Management
National Flood Insurance Program

STATE NUMBER: 98-E-0000-0008

APPLICANT: Department of the Army

DESC: Proposed Shoreline Protection Project in Dare County, Involves the Placement of Beach Fill Consisting of a Berm and, Where Necessary, the Establishment of a Dune Line

Any portion of the proposed project that affects the regulatory 100 year floodplain as shown on the published Flood Insurance Rate Map (FIRM) must be constructed in accordance with the Local Flood Damage Prevention Ordinance.

Susan R. Phather

Division of Emergency Management - NFIP

7/9/97

Dated

JESSE HELMS
NORTH CAROLINA

United States Senate

WASHINGTON, DC 20510-3301

September 9, 1999

Colonel James W. DeLony
U.S. Army Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402-1890

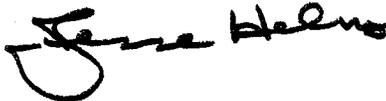
Dear Colonel DeLony:

Because of my desire to answer each inquiry to my office, your attention to the attached letter from Mr. J. Webb Fuller, Nags Head Town Manager, P.O. Box 99, Nags Head, NC 27955, is appreciated.

You may contact me at my Raleigh office, 310 New Bern Ave. #122, Raleigh NC 27601 (Attn: Eddie)

Thank you for assisting me with this matter.

Sincerely,



Jesse Helms
United States Senate

JH:ew

Enclosure

Appendix A-20



TOWN OF NAGS HEAD

Post Office Box 99
Nags Head, North Carolina 27958
Telephone (252) 441-5508
FAX (252) 441-0776

GEORGE FARAH, III
Commissioner

R. BRANTLEY MURRAY
Commissioner

DOUGLAS A. REMALEY
Commissioner

B. CAHOON
Mayor

ROBERT W. MULLER
Mayor Pro Tem

J. WEBB FULLER
Town Manager

September 2, 1999

Via telecopy #202-228-1338
and Regular Mail

The Honorable Jesse Helms
United States Senate
Washington, D. C. 20510

Dear Senator Helms:

I'm sure you are aware of the recent destruction suffered by the Town of Nags Head as a result of Hurricane Dennis. Although we are in the process of affecting a beach nourishment project, the authorization and appropriation processes are in the initial stages. I understand that Federal staff is extremely busy, however we have incurred damages to our beaches and roadways which serve as the only access to a number of homes in South Nags Head. The destruction is evident throughout the Town.

By copy of this letter I am soliciting your support for immediate federal assistance to help us restore our beaches, our destroyed protective dune system, and other affected infrastructure such as roadways and water lines. I also request your help to expedite the US Army Corps of Engineers beach nourishment project for the northern Dare beaches. We need this project to move as expeditiously as possible through the federal system.

Your help and support is greatly appreciated.

Sincerely,

J. Webb Fuller
Town Manager

cc: The Honorable John Edwards
The Honorable Walter B. Jones, Jr.



COUNTY OF DARE
MANTEO, NORTH CAROLINA 27954

PLANNING DEPARTMENT

April 17, 2000

DARE COUNTY
ADMINISTRATIVE BUILDING
P.O. BOX 1000
PHONE (252) 473-1101

Sharon Haggett, Project Manager
US Army Corps of Engineers
Wilmington District
P.O. Box 1890
Wilmington, NC 28402-1890

Dear Sharon:

I write today to follow-up on our meeting with the Corps staff last week in Wilmington. As you recall, the issue of a re-examination of the northern portion of the study area was discussed at length. In addition, Dare County agreed to provide information to the district concerning the availability of shoreline access, particularly in the South Nags Head area.

I want to express my appreciation to you and the entire staff in the Wilmington District for the voluminous amount of information provided at the meeting. More importantly, the modification of the project's schedule to make a completed report available by December 31, 2000 was welcome news. I want to make it clear to the Corps that the earlier completion date is Dare County's top priority given all the issues discussed at our April 14th meeting. If however the re-consideration of the Kitty Hawk area can be accommodated without jeopardizing the earlier completion of December 2000, then that aspect of our meeting would be our second priority.

I will be contacting the other local governments in the project area concerning their shoreline access plans and the COBRA issue raised at the meeting. Once I receive this information, I will forward the same to you. If there are other items you need from Dare County to expedite the completion of the final report, please let me know as soon as possible.

Sincerely yours,

Raymond P. Sturza
Dare County Planning Director

RPS/jt

cc: Tim Owens
Webb Fuller
Greg Loy
Ed Welch

Appendix A-22

LAND OF BEGINNINGS



COUNTY OF DARE
MANTEO, NORTH CAROLINA 27954

September 21, 2000

P. O. BOX 1000
PHONE (919) 473-1101
FAX (919) 473-1817

TERRY L. WHEELER
COUNTY MANAGER

Colonel James W. DeLony
U.S. Army Corps of Engineers
Wilmington District
Post Office Box 1890
Wilmington, North Carolina 28402-1890

Dear Colonel DeLony:

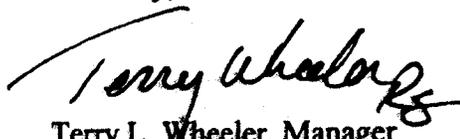
We met recently with representatives of the Wilmington District to discuss the Dare County Beaches (Bodie Island Portion) Feasibility Study, which is nearing completion for submittal to Congress for a contingent WRDA 2000 authorization. We believe that this Study is a valuable contribution toward the Hurricane Protection and Beach Erosion Control plan for the Dare County Beaches. We support your continuing work into the pre-construction, engineering and design (PED) and construction phases and seeking necessary funding.

Dare County is prepared to be the sponsor of these phases and understands that the estimated cost of these phases will require sponsor's matching funds of approximately \$24,500,000. There will be additional costs associated with each nourishment cycle for the 50-year life of the project. The County will be prepared to negotiate with the Wilmington District on the PED cost sharing agreement and Project Cooperation Agreement (PCA) for construction at the proper times.

Mr. Ray Sturza, our Planning Director, will be the County's lead representative for this feasibility study. He may designate other staff members to participate in the study in various ways. Mr. Sturza may be contacted by phone at (252) 473-1101, ext. 331

We look forward to working with you on the Dare County Beaches (Bodie Island Portion) project.

Sincerely,


Terry L. Wheeler, Manager
Dare County

Appendix A-23

LAND OF BEGINNINGS

**Draft EIS
Comment Letters
From Federal Agencies**



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312, FAX 570-5517

AUG 11 2000

F/SER3:EGH

Colonel James W. DeLony
District Engineer, Department of the Army
Wilmington District, Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402-1890

Dear Colonel DeLony:

This responds to your July 7, 2000, letter to Mr. Charles Oravetz requesting section 7 consultation, pursuant to the Endangered Species Act (ESA), on the potential project impacts of beach renourishment and erosion control measures in Dare County (Bodie Island portion), North Carolina. A biological assessment (included in the Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control, Dare County Beaches (Bodie Island Portion), Dare County, North Carolina, Volume 1, June 2000) was received on August 3, 2000, and has been reviewed by NMFS Protected Resources Division staff.

We concur with your determination that, since a hopper dredge may be used for parts of the proposed activity, the project may affect listed species under NMFS purview. The potential for adverse effects to listed species from hopper dredging of offshore sand borrow areas for beach renourishment activities proposed by the Corps for this project is covered by an existing NMFS biological opinion to the Corps. On September 25, 1997, NMFS issued a Regional Biological Opinion to the Corps' South Atlantic Division on the continued hopper dredging of channels and borrow areas in the southeastern United States, including offshore borrows areas off North Carolina. Since the Wilmington District will implement endangered species observer coverage aboard the hopper dredges (to watch for whales, sea turtles, and sturgeon) and abide by all the other Terms and Conditions established in the 1997 Regional Biological Opinion, no further consultation is necessary.

This concludes consultation responsibilities under section 7 of the ESA. Consultation should be reinitiated if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat determined that may be affected by the identified activity.

We appreciate the opportunity to comment and work with Corps of Engineers, Wilmington District. Please contact me 727/570-5312 if you have any questions or if I may be of assistance.

Sincerely,

Charles A. Oravetz

Car Carol S. Ballew
Acting Regional Administrator

cc: F/SER4 - A. Mager
F/PR3
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File: 1514-22 f.1.

Appendix A-25





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
 9721 Executive Center Drive N
 St. Petersburg, Florida 33702

August 22, 2000

Colonel James W. DeLony
 District Engineer, Wilmington District
 Department of the Army, Corps of Engineers
 P. O. Box 1890
 Wilmington, North Carolina 28402-1890

Attention Chuck Wilson

Dear Colonel DeLony:

The National Marine Fisheries Service (NMFS) has reviewed Public Notice CESA W-TS-PE-00-28-0008 and Notice of Availability dated July 14, 2000, for the Draft Feasibility Report (DFR) and Draft Environmental Impact Statement (DEIS) on Hurricane Protection and Beach Erosion Control Dare County Beaches (Bodie Island Portion), Dare County, North Carolina, June 2000. The purpose of the project is to increase storm protection and control beach erosion in the project area. The project consists of the ocean beach disposal of dredged material for the initial construction (3 years) and periodic maintenance (50 years) of a vegetated dune with a crest elevation of 13 feet National Geodetic Vertical Datum (NGVD) and a berm 50-feet-wide with an elevation of 7-feet NGVD. The work involves two project segments, a 4.1-mile-long beach segment called the North Project Area and a 10.7-mile-long beach segment called the South Project Area. A 0.57-mile-long transition zone is included on both ends of each segment for a total project length of approximately 17 miles. The proposed source of sand for initial construction and periodic nourishment is two borrow sites designated as N1 (800 acres) and S1 (5,700 acres), located 1 to 2 miles offshore in the Atlantic Ocean.

The NMFS reviewed and provided comments on the DEIS by letter dated August 18, 2000. The proposed project involves beach nourishment over an extended period of time and on a scale that could result in short-term and cumulative impacts to NMFS trust fishery resources. We are concerned that both the dredging offshore for borrow material and the disposal of dredge material on the Dare County beaches would adversely impact Essential Fish Habitat (EFH) for Federally managed species. Red drum (*Sciaenops ocellatus*), managed by the South Atlantic Fisheries Management Council, and summer flounder (*Paralichthys dentatus*) and bluefish (*Pomatomus saltatrix*), managed by the Mid-Atlantic Fisheries Management Council (MAFMC) use the surf zone in the project area as EFH. Borrow site N1 is located in an important overwintering area for juvenile and adult summer flounder and spiny dogfish (*Squalus acanthias*), species managed by the MAFMC. Other migratory species known to overwinter in the project area include Atlantic sturgeon

Appendix A-26



(*Acipenser oxyrinchus*), weakfish (*Cynoscion regalis*) and striped bass (*Morone saxatilis*) managed by the Atlantic States Marine Fisheries Commission.

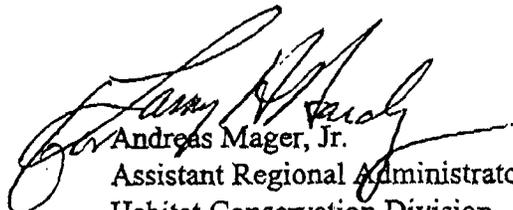
Based on our review, we concluded that the EFH assessment in the DEIS was inadequate regarding the potential impacts to the Surf Zone (a subcategory of marine water column) and Marine Water Column EFH types. We did not agree with the finding that EFH impacts are minimal. The NMFS's determination regarding project related impacts to EFH and other fisheries concerns, as well as our EFH recommendations, are provided in our comments on the DEIS (copy enclosed). However, to ensure clarity, our EFH recommendations for this project are restated below.

EFH Recommendations

1. Implementation of the project should be delayed pending completion of the studies to be funded by the Wilmington District and the Environmental Resource Development Center. Completion of these studies will provide new information regarding the impact of beach nourishment in nearshore areas on early life history stages of Federally managed species.
2. To minimize the direct and indirect impact of turbidity, the Corps of Engineers should ensure that the project does not use any sediment which consists of more than 10 percent silt or clay particles.
3. The project plans in the DFR should be revised to avoid impacts to overwintering habitat for the Federally managed spiny dogfish and summer flounder by eliminating dredging in site N1 and limiting dredging for borrow material to site S1 or another site with similar sand content and low fishery value.

In view of the scope and duration of the potential impacts of this project on EFH and associated fishery resources, we recommend against implementing this project as currently proposed. We appreciate the opportunity to provide these comments. If we can be of further assistance in this matter, please advise.

Sincerely,


Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

cc: FWS, ATLA, GA
FWS, Raleigh, NC
EPA, ATLA, GA
NCDENR, Raleigh, NC
NCDENR, Morehead City, NC
SAFMC, Charleston, SC
MAFMC, Dover, DE
F/SER4

Atlantic States Marine Fisheries Commission

1444 Eye Street, N.W., Sixth Floor
Washington, D.C. 20005
(202) 289-6400 (phone) (202) 289-6051 (fax)
www.asmf.org

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EXECUTIVE OFFICE

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David V.D. Borden (RI)
Chair

John H. Dunnigan
Executive Director

Susan Shipman (GA)
Vice-Chair

August 23, 2000

James W DeLony
Department of the Army
Wilmington District, Corps of Engineers
PO Box 1890
Wilmington, NC 28402-1890

Dear James W. DeLony:

We appreciate the opportunity to comment on the Feasibility Report and Draft Environmental Impact Statement (DEIS) on Hurricane Protection and Beach Erosion Control in Dare County, North Carolina. The Atlantic States Marine Fisheries Commission, comprised of the fifteen Atlantic Coastal States and chartered by Congress in 1942, collectively manages the fishery resources in state waters along the Atlantic Coast.

We are particularly concerned with this proposed beach nourishment project because of the potential negative impacts on many of our managed species including striped bass, summer flounder, spiny dogfish, weakfish, and Atlantic Sturgeon. The proposed borrow site is important habitat for these species. According to survey work in the area, this site serves as striped bass wintering grounds, as well as spiny dogfish and summer flounder nursery areas. Tagging studies have indicated that fish found in this area are from North Carolina as well as farther north along the coast to Maine.

Withdrawing sand from the proposed borrow site (S1) for fifty years as outlined in the DEIS could have significant impacts on these important fish stocks. Because of the huge volume of sand proposed for removal, the project could permanently alter the physical structure of the bottom. This project could severely impact the area's benthic community, which could negatively impact the prey organism species composition, distribution, and abundance patterns. While we are aware of evidence which indicates that the benthos may repopulate an area after sand is removed, because the pumping of sand will continue annually for fifty years, we firmly believe that this project could permanently alter the food chain dynamics of the area.

While the draft EIS touched on some of our concerns, the document did not adequately address them. There is no discussion of the economic costs of lost revenues from project impacts on the commercial and recreational fishing industries in the area. There is more marine sport fishing in Dare County than in any other area of North Carolina. Many of the tourists mentioned in the report are sport fishermen and this project could negatively impact the fish and fishing opportunities available to them. The draft EIS mentions that the project could affect many of our managed species but there is not adequate discussion of the magnitude of the environmental or economic impacts. In addition, we are aware that many beach

nourishment projects are proposed on the Atlantic Coast and feel the cumulative impacts of all these projects on fishery resources should be addressed.

We are currently in the process of updating many of our interstate fishery management plans. These updated plans will include a habitat source document outlining the habitat needs of the species and habitat areas of particular concern. We anticipate striped bass, summer flounder, spiny dogfish, and Atlantic Sturgeon to be completed within the next year. We will provide this information to the Army Corps of Engineers and would expect this information to be taken into account in the future planning for this project.

Thank you for your careful and close attention to the needs of our managed species. Please contact Carrie Selberg, the Habitat Specialist on my staff, if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Dieter Busch". The signature is written in a cursive style with a large, stylized 'D' at the beginning.

Dieter Busch
Director, Interstate Fishery Management Program



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE

ACTION: PM

Southeast Regional Office

CF: DE

9721 Executive Center North

St. Petersburg, FL 33702

(727) 570-2857

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DD

AUG 22 2000

F/SER3:JLL

Colonel James W. DeLony
Environmental Resources Section
U.S. Department of the Army
Wilmington District, Corps of Engineers
P.O. Box 1890
Wilmington, North Carolina 28402-1890

Dear Colonel DeLony:

This responds to your July 7, 2000, letter transmitting the June 2000 Draft Feasibility Report and Environmental Impact Statement (DEIS) on Hurricane Protection and Beach Erosion Control for Dare County Beaches (Bodie Island Portion), Dare County, North Carolina, Volume 1. You requested that we prepare a Biological Opinion (Opinion) on the proposed project, since it may affect listed species under the National Marine Fisheries Service (NMFS) purview.

NMFS has reviewed your DEIS and determined that the proposed initial construction and periodic renourishment of a berm and dune on Dade County beaches, with the exception of any associated hopper dredging, is not likely to adversely affect any threatened or endangered species under NMFS purview. Hopper dredging of borrow areas off of Dade County is covered by the September 25, 1997, Regional Biological Opinion (RBO) for continued hopper dredging of navigation channels and borrow areas in the southeastern United States. Any hopper dredging associated with the proposed project must be performed under the RBO and all provisions of this RBO, or any issued subsequently, must be strictly followed. Any takes that occur during this project will be counted toward the Incidental Take Stake Statement for the RBO.

This concludes consultation responsibilities under section 7 of the ESA. Consultation should be reinitiated if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat determined that may be affected by the identified activity. Please contact Ms. Jennifer Lee at the above telephone number if you have any questions or if we may be of further assistance.

Sincerely,

Charles A. Oran

for Carol S. Ballew
Acting Regional Administrator

Appendix A-31



cc: F/PR3
F/SER4
NCWRC - Ruth Boettcher
File:1514.22 fi NC
o:\section7\informal\dare



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE
 Southeast Regional Office
 9721 Executive Center Drive N.
 St. Petersburg, Florida 33702
 (727) 570-5317, FAX 570-5300

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August 18, 2000 F/SER4:RS:am

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*KS Planning
 TSPE J Env.*

Colonel James W. DeLony
 District Engineer, Wilmington District
 Department of the Army, Corps of Engineers
 P. O. Box 1890
 Wilmington, North Carolina 28402-1890

Dear Colonel DeLony:

This responds to your July 7, 2000, request for comments on the Draft Feasibility Report (DFR) and Draft Environmental Impact Statement (DEIS) on Hurricane Protection and Beach Erosion Control Dare County Beaches (Bodie Island Portion), Dare County, North Carolina, Volume I, dated June 2000. Also requested was our review and concurrence with the Essential Fish Habitat (EFH) assessment incorporated as a part of the DEIS pursuant to the EFH coordination procedures required by the 1996 Amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA).

The proposed beach nourishment project consists of the initial construction and periodic maintenance of a vegetated dune with a crest elevation of 13 feet National Geodetic Vertical Datum (NGVD) and a berm 50 feet wide with an elevation of 7 feet NGVD. The work involves two project segments; a 4.1-mile-long beach segment called the North Project Area and a 10.7-mile-long beach segment called the South Project Area. A 0.57-mile-long transition zone is included on both ends of each segment for a total project length of approximately 17 miles. The proposed sand source for initial construction and periodic nourishment is two borrow sites designated as N1 (800 acres) and S1 (5,700 acres) located one to two miles offshore in the Atlantic Ocean. An estimated total of 88.7-million cubic yards will be dredged during the 50-year life of the project.

General Comments

The DEIS implies that this beach nourishment project will have minimal impacts on fisheries, but this conclusion is poorly supported. Few peer-reviewed field studies on short-term dredge and fill effects have been published and no studies of long-term effects are available. The utilization of nearshore areas to fishery resources, especially for larvae and juveniles, is becoming better documented. The effects to these sensitive life stages from sediment suspension, elevated turbidity, and modification of the nearshore area warrants better information, especially since the life of this project is 50 years.



The DEIS describes the physical characteristics and benthic and pelagic species associated with the proposed offshore borrow sites N1 and S1, but the importance of overwintering habitat for migrating fish in the vicinity of borrow site N1 is not adequately addressed. Species known to overwinter in this area include striped bass (*Morone saxatilis*), Atlantic sturgeon (*Acipenser oxyrinchus*), and weakfish (*Cynoscion regalis*). This area also is EFH for juvenile and adult summer flounder (*Paralichthys dentatus*) and spiny dogfish (*Squalus acanthias*), species managed by the Mid Atlantic Fishery Management Council (MAFMC).

The DEIS underestimates the potential impact of dredging at borrow site N1 on overwintering habitat for migrating fish. An analysis of sediment data by the U.S. Fish and Wildlife Service (FWS) found that many of the sediment samples from site N1 contain greater than 10 percent fines (silt and clay). Only by averaging was the site determined to meet the 90 percent sand criteria for beach nourishment. Dredging sediments with greater than 10 percent fines may result in suspended sediments loads and turbidity that exceed the levels predicted in the DEIS. Borrow site N1 is located within an area where the above species concentrate in the winter months because of favorable habitat conditions. If the turbidity levels in these water are higher than predicted, avoidance reactions and/or a reduction in feeding efficiency due to poor visibility could be expected. These effects could reduce survival rates of fish subject to these conditions.

We also are concerned with potential impacts to striped bass, a species managed by the Atlantic States Marine Fisheries Commission. The DEIS states that the FWS analysis of Southeast Area Monitoring and Assessment Program trawls for striped bass between 1994 and 1997 indicated that the northern borrow site N1 (along with N2 which is not being used) had the highest catch per unit effort values for eight of the ten years for which data are compiled. The primary food source for striped bass within the project area was anchovies. Although anchovies are associated with the upper portion of the water column, turbidity generated by extensive dredging over the life of the project could disrupt sight feeding by striped bass or cause forage species to avoid the project area. Restoration of the striped bass population to its current level involved the long-term conservation and management efforts by state and Federal resource and regulatory agencies. Therefore, measures should be described and implemented to avoid any adverse impact to striped bass populations.

The area of disposal site N1 is EFH for summer flounder and dogfish and these species also may experience stresses similar to those described for striped bass. Further, the nearshore area within the project boundaries is EFH for early life stages of red drum (*Sciaenops ocellatus*), managed by the South Atlantic Fisheries Management Council (SAFMC), summer flounder, and bluefish (*Pomatomus saltatrix*). In our specific comments, several ongoing studies are noted that will provide new information that should be considered before this beach nourishment project is initiated.

NMFS believes that a more environmentally responsible plan for this project would be to eliminate dredging in site N1 by limiting all excavation of borrow material to borrow site S1 or another site with appropriate sand content and low fishery value. The DEIS should be revised to address the alternative(s) that avoid dredging in borrow site N1 and any other borrow sites located within the limits of the over wintering area for migratory fish populations. Initiation of this project should be deferred until current studies, applicable to the nearshore areas of the project site, are completed and evaluated.

Specific Comments

1.00 Summary

1.02 Areas of Controversy

Page 1-3, paragraph 2. NMFS does not agree that no known areas of controversy exist for this project and has previously raised questions regarding the impact of beach nourishment on early life history stages of fishery resources. Although the Corps of Engineers (COE) has recently committed to begin addressing this issue by agreeing to conduct studies of the impact of beach nourishment on the Brunswick County beaches, these studies have not been completed. Accordingly, this section should be revised to reflect that there still are unresolved issues regarding the impacts of beach nourishment on fishery resources.

3.00 Alternatives

3.02 Nonstructural Alternatives

Page 3-1, paragraph 4. This paragraph refers to Federal guidelines on relocation plans as a basis for determining that nonstructural alternatives are not economically feasible. The DEIS should include a citation for the guidelines and more detail on the specific aspects of the guidelines that make the relocation of structures on the beach impractical.

4.00 Recommended Plan of Action

4.05 Periodic Nourishment Schedule

Page 4-7, paragraph 3. This paragraph provides no supporting documentation for the presumption that material eroded from a nourished beach during storm events will work its way back onshore during fair weather conditions. Data and analyses to support this conclusion should be provided.

6.00 Environmental Effects

6.01 Natural Communities

6.01.2 Cumulative Impacts

Page 6-1, paragraph 4, Page 6-2, Table 6-1. Table 6-1 is intended to provide a summary of cumulative impacts of beach nourishment. However, this table does not include Bogue Banks and Onslow Beach, both of which are developing beach nourishment proposals, or the proposed nourishment of the Brunswick County beaches in association with the Wilmington Harbor Project. Also, the derivation of the 20.8 percent total (Column 5) of North Carolina beaches impacted by beach nourishment is unclear. Our calculations indicated a total of 24 percent. The calculations in this table should be examined to ensure that the DEIS provides the correct value.

6.01.3 Nearshore Ocean

Page 6-2, paragraph 3. Project-related impacts to overwintering migratory fish populations, especially striped bass, could be reduced by avoiding dredging activities in borrow site N1. The DEIS should be revised to address the alternative of limiting dredging to borrow site S1 or another site with a similar sand content and low fishery value. Based on information provided in the DEIS, a sufficient volume of material is available at S1, the use of which would preclude the need to dredge in overwintering areas for important fishery resources.

6.04 Marine Resources

6.04.1 Dredging Impacts

Page 6-7, paragraph 3. The DEIS provides no basis for the conclusion that beach nourishment activities within four miles of Oregon Inlet will not adversely impact larval fish recruitment into the inlet. Information provided in the DEIS indicates that larvae generally move at a right angle to the beach until they reach land fall, then parallel to the beach until they reach an inlet. We are unaware of data that indicate the distance larvae are capable of traveling parallel to the beach before they reach an inlet. Therefore, it is inappropriate to imply that larval fish losses four miles from the inlet are of no consequence.

6.04.12 Impacts on the Marine Water Column

Page 6-11, paragraph 4. We agree that scientific data on the effects of beach disposal in the surf zone on fishery resources are very limited. This paucity of data is the basis for our determination that impacts to EFH (Surf Zone) and the associated Federally managed species and their prey may be more than insignificant as indicated in the DEIS. The magnitude of the impact of beach disposal in the surf zone has yet to be determined and this uncertainty should be identified in the DEIS.

6.04.14 Impact Summary for Essential Fish Habitat

Page 6-12, paragraph 3. See our comments on 6.04.12 Impacts on the Marine Water Column above. Also, see EFH comments that follow.

6.11 Environmental Commitments and Mitigation

6.11.1 Commitments

Page 6-22. We recommend that the list of commitments be revised to include the following:

- A commitment to limit dredging for borrow material to borrow site S1 or another site with similar sand content and a low value to fishery resources.
- A commitment to post-construction monitoring of all borrow sites. The details of this monitoring effort should be coordinated with the state and Federal resource agencies.

6.11.2 Mitigation

Page 6-23, paragraph 4. COE-funded monitoring of beach nourishment projects in Brunswick and New Hanover Counties should better define the impact of beach disposal on early life history stages of fishes and nursery area functions of the surf zone. A more acceptable approach for this project would be to defer any decision on mitigation for impacts to fishery resources until the above referenced studies are completed and evaluated against this project.

Essential Fish Habitat Comments

Transmittal of the DEIS initiated coordination procedures for EFH consultation pursuant to the MSFCMA. Based on our review of the DEIS we have determined that the EFH assessment does not adequately address the project-related impact to Surf Zone (a subcategory of marine water column) and Marine Water Column EFH. The NMFS is convinced that dredging offshore for borrow material and the disposal of dredged material on the Dare County beaches would adversely impact EFH. Furthermore, insufficient information is available to reach a conclusion on the impacts of dredged material disposal on early life history stages of Federally managed species. Therefore, we do not concur with your conclusion that EFH impacts are minimal.

Red drum, managed by the SAFMC, and summer flounder and bluefish, managed by the MAFMC use the surf zone in the project area as EFH. According to the DFR, about 17 miles of beaches, incorporating about 600 acres of surf zone, will be periodically impacted by a total of 88.7-million cubic yards of dredged material during the 50-year life of the project. This incremental addition to the currently impacted shoreline described in Table 6.1 of the DEIS is significant and adds to the cumulative area of North Carolina shoreline impacted by beach nourishment on an annual basis. The COE recognizes that limited information is available on the impacts of beach nourishment on early life history stages of fishes. However, the DFR concludes that neither the three years required to construct the project nor the 50-year maintenance plan will result in significant impacts. Studies recently funded by the COE will examine the impacts of beach nourishment on early life history stages of fishes as a part of the Wilmington Harbor Improvement Project. Also, the COE's Engineering Research and Development Center (ERDC), possibly in cooperation with the National Ocean Service, Center for Coastal Fisheries and Habitat Research, will soon conduct studies of the effects of various levels of turbidity on larval fishes at the ERDC Field Research Facility at Duck in Currituck County, North Carolina. In spite of the fact that these studies may clarify the impacts of the disposal of dredged material in the surf zone, the DEIS makes no commitment to defer action on the proposed project until appropriate studies are completed and the results evaluated.

We also are concerned that borrow site N1 is located in an important overwintering area for juvenile and adult summer flounder and spiny dogfish, species managed by the MAFMC. Over the 50-year life of the project, up to 800 acres of habitat that supports these species would be altered. As noted under our General Comments, suspended sediment levels may be greater than predicted as a result of dredging in borrow site N1. If elevated turbidity levels in borrow site N1 result in avoidance of prime overwintering habitat or a reduction in feeding efficiency, the EFH value of the area for summer flounder and spiny dogfish would be reduced. The DEIS therefore underestimates the potential impact of dredging at borrow site N1 on overwintering habitat for migratory fish populations that represent the primary brood stock for these species.

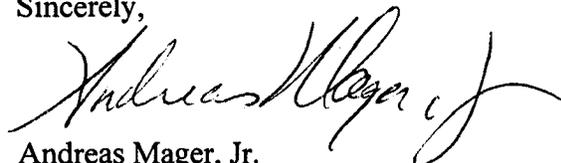
In view of the above, the NMFS offers the following recommendations.

EFH Recommendations

1. Implementation of the project should be delayed pending completion of the studies to be funded by the Wilmington District and the ERDC. Completion of these studies will provide new information on the impact of beach nourishment in nearshore areas on early life history stages of Federally managed species.
2. To minimize the direct and indirect impact of turbidity, the COE should ensure that the project does not use any sediment which consists of more than 10 percent silt or clay particles.
3. The project plans described in the DEIS should be revised to avoid impacts to overwintering habitat for the Federally managed spiny dogfish and summer flounder by eliminating dredging in site N1 and limiting dredging for borrow material to site S1 or another site with similar sand content and low fishery value

We appreciate the opportunity to provide these comments.

Sincerely,

A handwritten signature in cursive script, appearing to read "Andreas Mager, Jr.", written in black ink.

Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division



UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

August 3, 2000

Mr. James W. DeLony, Colonel, U.S. Army
District Engineer
DOA, Wilmington District, Corps of Engineers
PO Box 1890
Wilmington, NC 28402-1890

Dear Mr. Delony:

Enclosed are comments on the Draft Environmental Impact Statement for Hurricane Protection and Beach Erosion Control Dare County Beaches Dare County, North Carolina. We hope our comments can assist you. Thank you for giving us an opportunity to review this document.

Sincerely,

Susan B. Fruchter

Susan B. Fruchter
NEPA Coordinator

Enclosure



MEMORANDUM FOR: Susan B. Fruchter
Acting NEPA Coordinator

FROM: Charles W. Challstrom
Director, National Geodetic Survey

SUBJECT: DEIS-0007-03 Hurricane Protection and Beach Erosion Control
Dare County Beaches, Dare County, North Carolina

The subject statement has been reviewed within the areas of the National Ocean Service's (NOS') responsibility and expertise and in terms of the impact of the proposed actions on NOS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in the subject area is contained on the National Geodetic Survey (NGS) home page at the following Internet World Wide Web address: <http://www.ngs.noaa.gov>. After entering the NGS home page, please access the topic "Products and Services" and then access the menu item "Data Sheet." This menu item will allow you to directly access geodetic control monument information from the NGS data base for the subject area project. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

If there are any planned activities which will disturb or destroy these monuments, NGS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation. NGS recommends that funding for this project includes the cost of any relocation(s) required.

For further information about these geodetic monuments, please contact Rick Yorczyk; NOAA, NOS, National Geodetic Survey, N/NGS; SSMC3 8636, 1315 East West Highway; Silver Spring, Maryland 20910; telephone: 301-713-3230 x142; fax: 301-713-4175.

Regarding the potential impact on NOAA's nautical charts, the recommended plan will not directly or significantly affect the safety of navigation. However, any shoreline changes should be reflected on nautical charts. NOS would like U.S. Army Corps of Engineers blueprints of this project upon completion so that any related changes can be accurately detailed on future editions of affected NOS charts.

MEMORANDUM FOR: Susan B. Fruchter
Acting NEPA Coordinator

FROM: Charles W. Challstrom
Director, National Geodetic Survey

SUBJECT: DEIS-0007-03 Hurricane Protection and Beach Erosion Control
Dare County Beaches, Dare County, North Carolina

The subject statement has been reviewed within the areas of the National Ocean Service's (NOS') responsibility and expertise and in terms of the impact of the proposed actions on NOS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in the subject area is contained on the National Geodetic Survey (NGS) home page at the following Internet World Wide Web address: <http://www.ngs.noaa.gov>. After entering the NGS home page, please access the topic "Products and Services" and then access the menu item "Data Sheet." This menu item will allow you to directly access geodetic control monument information from the NGS data base for the subject area project. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

If there are any planned activities which will disturb or destroy these monuments, NGS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation. NGS recommends that funding for this project includes the cost of any relocation(s) required.

For further information about these geodetic monuments, please contact Rick Yorczyk; NOAA, NOS, National Geodetic Survey, N/NGS; SSMC3 8636, 1315 East West Highway; Silver Spring, Maryland 20910; telephone: 301-713-3230 x142; fax: 301-713-4175.

Regarding the potential impact on NOAA's nautical charts, the recommended plan will not directly or significantly affect the safety of navigation. However, any shoreline changes should be reflected on nautical charts. NOS would like U.S. Army Corps of Engineers blueprints of this project upon completion so that any related changes can be accurately detailed on future editions of affected NOS charts.

For further information about these charting activities, please contact Howard Danley;
NOAA, NOS, Office of Coast survey, N/CS28; SSMC3 7458; 1315 East West Highway;
Silver Spring, Maryland 20910; telephone: (301)713-2732 x105.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

AUG 29 2000

Colonel James W. DeLony
Wilmington District, Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402-1890
Attn: Mr. Chuck Wilson - Environmental Resources Branch

Subject: Draft Environmental Impact Statement (DEIS) for Hurricane Protection and Beach Erosion Control, Dare County Beaches (Bodie Island Portion), Dare County, NC; CEQ #000237

Dear Colonel DeLony:

Pursuant to Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA), EPA, Region 4, has reviewed the subject document, an evaluation of the environmental consequences of long-term sand emplacement on approximately 16 miles of eroding shoreface. The proposed nourishment is divided into two reaches, viz., North Project Area encompassing Kitty Hawk and Kill Devil Hills and a South Project Area encompassing Nags Head and Cape Hatteras National Seashore. Two offshore borrow areas comprising approximately 7 square miles will be mined for the necessary sand during the project's life span. Given the magnitude of the initial project construction coupled with the desire to reduce mobilization costs, it was deemed necessary to void the seasonal dredging restrictions usually operative for nourishment projects. Since the time window in which dredging occurs is so important to mitigating environmental losses (especially turtle nesting), the consequences of this decision will be more definitively examined via consultation with the U.S. Fish and Wildlife Service (USFWS). Specific measures by which this matter is resolved should be discussed in the final EIS.

The Wilmington District (District) has committed to a project alternative which is conceptually in conflict with recent decisions made by the State of North Carolina and the Outer Banks Erosion Task Force, together with the past Land Use Plans for the local communities involved. Each of these entities is on record as having serious reservations about the adverse environmental ramifications of routinely applying a beach nourishment solution to all shore line erosion problems. In an immediately related matter, the DEIS has some procedural shortcomings in that of the three planning objectives listed on page

2-2; viz., (a) Reduce the adverse effects of hurricanes and northeasters including flooding and erosion, considering nonstructural, structural, and no Federal Action alternatives; (b) Avoid or minimize impacts to natural resources, including beach invertebrates, marine fish, sea birds, and marine mammals; and (c) Protect endangered and threatened species, only reduction of property damage from storms is given an adequate examination. Given that the entire analysis immediately follows from what a proposal seeks to produce, this matter should be addressed in greater detail the final document.

Our specific comments on this proposal directly track those already provided in the USFWS Coordination Report and by the overview given in the presentation by Dr. Robert Dolan. The concerns raised by these commentators about the environmental, geotechnical, and societal ramifications of this extensive nourishment plan were explored by the District. While each of their major subject matter areas received a response, we do not agree with many of the conclusions drawn in this regard by the District about the lack of any adverse long-term environmental impacts resulting from this proposal, whether the federal interest will provide a real long-term solution to the current erosion situation, and/or address (or even lessen) the potential for ever increasing real estate (societal) losses.

The idea that there are sufficient resources (sand, financial, or otherwise) to protect all eroding shorelines within the District's boundaries via a beach nourishment/dune construction solution needs to be explored more definitively in the final document. Moreover, there should be an evaluation of the environmental consequences of the cumulative impacts of the initial construction coupled with the repetitive episodes on both the receiving and borrow sites. Further, it should also be made clear to the decision-maker(s) for this project that the protection attendant to this sand redistribution is only operative for relatively minor storm events. In fact, larger, admittedly less frequent, storms would completely subsume any protection provided by the project, but would destroy the intensified development engendered by a false sense of protection.

We continue to believe that the need for routine maintenance to sustain these beach projects underestimates the direct, indirect, and cumulative impacts on the biological resources which are permanently destroyed in the process of sand manipulation. Since our perspectives regarding the overall merits of beach nourishment continue to be so divergent from that of the District, it would be helpful to have a meeting of the state/federal stakeholders involved with these type projects to discuss their ramifications.

We have assigned this particular project a rating of EC-2. That is, we have pronounced environmental concerns about the election of maintaining a given amount of beach in a specific location in a high energy marine environment given the magnitude of

processes working contrary to this objective. Additional information derived from an interagency meeting would more definitively frame those areas of agreement/disagreement in this regard. The results of this dialogue should be included in the final EIS.

Thank you for the opportunity to comment. If we can be of further assistance, Dr. Gerald Miller (404-562-9626) will serve as initial point of contact.

Sincerely yours,



Heinz J. Mueller, Chief
Office of Environmental Assessment



United States Department of the Interior

OFFICE OF THE SECRETARY

OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE

Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

September 14, 2000

ER-00/523

Colonel James W. DeLony,
U.S. Army District Engineer
Wilmington District
U. S. Army Corps of Engineers
P. O. Box 1890
Wilmington, NC 28402-1890

ATTN: "Chuck" Wilson

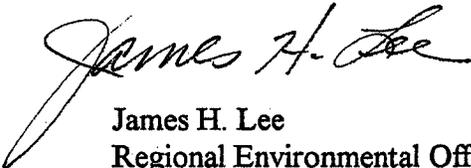
Dear Colonel DeLony:

The Department of the Interior has reviewed the Draft Feasibility Report and EIS on Hurricane Protection and Beach Erosion Control, Dare County Beaches (Bodie Island Portion), Dare County, North Carolina, Vol. I, as requested.

The U. S. Fish and Wildlife Service, the National Park Service, and the U. S. Geological Survey provided comments which are enclosed as the Departmental response to your request for comments. If there are questions regarding Fish and Wildlife Service comments, please contact Bruce Bell at 404/679-7089. If there are questions regarding National Park Service comments, please contact Francis Peltier at 252/473-2111. If there are questions regarding U. S. Geological Survey comments, please contact Dr. James F. Devine at 703/648-4423.

Thank you for the opportunity to review the draft Feasibility Report and EIS.

Sincerely,



James H. Lee
Regional Environmental Officer

Enclosure

Appendix A-45

FISH AND WILDLIFE SERVICE COMMENTS

ER-00/523

The Draft Feasibility Report (DFR) and Draft Environmental Impact Statement (DEIS) present study results for a primary study area of 20 miles of Dare County beaches in the vicinity of the oceanfront communities, from north to south, of Kitty Hawk, Kill Devil Hills, Nags Head, and South Nags Head. Within this study area the protection of two beach stretches (a northern area of 3.01 miles and a southern area of 9.53 miles) was economically justified. These areas would be protected by constructing an artificial dune at 13 feet above the National Geodetic Vertical Datum (NGVD), approximately mean sea level, behind an artificial berm (subaerial beach) 50 feet wide. The two disjunct placement areas, totally 12.54 miles, would have a 3,000-foot transitional area at each end of the main fill. The four transition areas would add 12,000 feet (2.27 miles) to the disposal area, for an overall project length of approximately 14.8 miles. Initial project construction would require 12,480,000 cubic yards of sand. Renourishment would require 4,160,000 cubic yards of sand with each segment being renourished every three years. The official life of the project is 50 years. Sand would be taken from one northern (N1) and one southern (S1) borrow areas located offshore in water beyond the -30 foot NGVD contour line, but within the 3-mile limit of state-controlled waters. The two borrow sites cover approximately seven square miles. Material would be collected by pipeline or hopper dredges and moved by pipeline to the beaches. The pipeline would be routed along the ocean shoreline.

These comments are submitted in accordance with the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543). These comments do not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. The Fish and Wildlife Service (Service) provided a Draft FWCA Report (U. S. Fish and Wildlife Service [hereafter USFWS] 1999) to the Wilmington District, U. S. Army Corps of Engineers. The Service plans to provide a Final FWCA Report in conjunction with the Biological Opinion in mid-November, 2000.

GENERAL COMMENTS

The Service supports the project goal of reasonable storm damage reduction. The DFR (pp. 24-29) indicates that the project area has a long history of damage due to hurricanes and northeasters. The project area is certain to be hit by storms of all magnitudes in the future, and structural damage along with loss of life will continue unless actions are taken and with some magnitude storms, may continue even if these proposed actions are implemented.

The Dare County Beaches Project epitomizes the struggle now underway that will ultimately decide the fate of America's beaches. This struggle was clearly presented by Dean (1999) in her book subtitled "The Battle for America's Beaches." Decisions made today, such as the actions taken to

reduce storm damage in Dare County, will have profound ramifications in the decades to come. The issues at stake were succinctly noted by (Pilkey et al. 1998, p. 102):

“ . . . North Carolinians must make a decision. They can have beaches or they can have beachfront buildings; they can't have both. If we opt in favor of buildings, the beaches will be lost - and so, ultimately, will the buildings.”

The National Environmental Policy Act (NEPA) plays a major role in the making of these decisions by Federal agencies, such as the Corps, to construct, at public expense, these projects. At its heart, NEPA is about vigorously searching to discover the true consequences of federal actions and then studying the findings to determine the best overall course of action. Decisions made without considering all available information or without really examining the long-term consequences, no matter how popular a decision may seem in the short-term, carry a significant risk of creating serious environmental degradation. Mistakes are also extremely costly to undo.

The Service has reviewed the DFR and DEIS and presents four important ideas for consideration. These ideas arise from the mission of the Service to conserve, protect, and enhance fish and wildlife and their habitats.

First, beaches and marine areas, both nearshore and offshore, are important habitat for many important fish and wildlife resources. The Service presented information on the existing fish and wildlife resources of the project area (USFWS 1999). The Corps (DEIS, p. 2-2) expresses concern for the “high value resources in the project area.” The beaches are heavily used by migrating shorebirds (DEIS, p. 5-2). Marine waters in the vicinity of potential beach nourishment areas and offshore borrow sites provide habitat for a variety of ocean fish (DEIS, p. 5-6). The intertidal zone within the proposed beach disposal area serves as habitat for invertebrates that provide an important food source for surf-feeding fish and shorebirds (DEIS, p. 5-7). Sea turtles use the project area beaches for nesting (DEIS, p. 5-23). Project area habitats are a significantly important resource both regionally and nationally.

Second, the large scale dredging and sand placement associated with constructing and maintaining artificial beaches and dunes create both short-term and long-term adverse environmental impacts on these resources. The Corps states (DFR, p. 85) that some adverse environmental impacts are anticipated. Section 10 of the Service's Fish and Wildlife Coordination Act Report discussed the likely impacts of the proposed construction (USFWS 1999, pp 115-131).

Third, from a long-term perspective of a hundred years or more, static beachfront development cannot coexist with the habitat values of a natural beach. The Corps states (DEIS, p. 8-11) that continued development in the project area will occur with or without the project. The Service believes that future development in the absence of an artificially maintained berm-dune system would be fundamentally different from that which would occur if natural forces are not allowed to dominate the area. Without the commitment for an artificial berm-dune system, beachfront lots would not be viewed as permanent. There would be a recognition that the beach would continue to recede

landward. Such a recognition would surely influence the type and level of development. Development would be more modest and perhaps built to allow for periodic retreats from the ocean. The creation of an artificial berm-dune system creates a positive feedback loop in which ever greater property values demand ever greater expenditures for protection that leads to greater development. The initial placement of sand creates an impression of permanency for beachfront structures. Based on the perception of permanency, larger and more expensive structures are built. When the initial sand placement washes away, the value of property in danger is greater and greater funds can be justified for additional sand placements. However, this loop cannot continue indefinitely. At some point the availability of affordable sand, or sand at any price, will end. By that time, the level of development will have increased to the point that a policy of letting nature take its course would result in staggering economic losses. The only remaining option will be a seawall that would rapidly lead to the destruction of the beach. The structures will be saved, but all habitat values of the beach will vanish. There is emerging evidence for this beach loss scenario today. Dean (1999, p. 119) writes that Miami Beach, Florida, an area nourished since 1977, has a beach so inhospitable to small beach creatures and the birds that feed on them that the beach is quiet and "bereft of life."

Fourth, the Service would accept a decision to follow a course of creating an artificial berm-dune system if all the social, economic, and environmental consequences of the various alternatives for reducing storm damage are completely developed and analyzed. However, any failure to fully comply with the letter and spirit of NEPA raises serious concerns about the legal foundation of an alternative selected for implementation.

SPECIFIC COMMENTS

The Service believes that documents prepared under NEPA benefit from a clear distinction between the "need" for federal action and the "purpose" for the project under consideration. This distinction assists decisionmakers and the public to fully understand the alternatives being presented and ultimately leads to a better informed decision. While these two aspects are often discussed concurrently, these comments discuss each separately.

PROJECT NEED

A need expressed during project planning should be a well defined problem. Furthermore, the problem should not be stated in a manner which points to a single solution. The DEIS states (p. 2-1) that the Dare County beaches need shore protection. The DFR (p. 9) also indicates that shore protection is a suitable federal objective. Neither of the broad statements of need specifically mention the beneficiaries of the protection sought. Shore protection is later divided into two components: (1) reduction in damage caused by major coastal storms; and, (2) the control of beach erosion, the steady reduction in the distance between the ocean and fixed structures.

The DFR (pp. 24-29) presents a thorough history of the devastating storms that have impacted the project area, and notes that hurricanes and storms can sweep away entire structures. The Service recognizes this need.

The need to control the distance between fixed structures and the ocean during non-storm conditions is more complicated. Local interests have expressed a need for beach erosion control since (DFR, pp. 8-9) “[a] severe erosion problem exists in much” of the 20-mile project area. This problem is later linked to “damages”, but without specifying what had been damaged (DFR, p. 10). The DFR later states (p. 14) that the problem of beach erosion refers to long-term shoreline recession rather than the rapid recession that occurs during storms, and that this problem threatens structures located just upland of the shoreline. By 2054, progressive long-term erosion is expected to have “claimed more than 1,000 structures . . . and to have also washed out NC [highway] 12 in Kitty Hawk.” (DFR, p. 23).

The Corps seeks to equate shoreline recession with inland erosion where the natural hydrologic cycle does indeed transport sediment completely out of the area from where water first picks up material. Sediment picked up in inland mountains can in theory be carried to the sea. Inland erosion can produce a permanent loss of land. The Corps states (DFR, p. 14) that “. . . land losses to progressive erosion are essentially permanent.” The situation on Atlantic barrier islands is completely different. The barrier islands are surrounded by water that has been rising for five to eight thousand years (Inman and Dolan, 1989; USFWS, 1999, pp. 6,9). Dean (1999, p. 34) writes that the Intergovernment Panel on Climate Change, a United Nations organization, anticipates the sea level to rise by one to three feet by the middle of the 21st century. If barrier islands could be destroyed by the type of “erosion” suggested by the Corps, they would have disappeared thousands of years ago. The reason that barrier islands still exist is they move landward toward higher ground in response to rising seas (see Figures 3 and 5, USFWS 1999). The barrier islands stay pretty much the same size, but occur in a different location.

One natural process that allows the islands to survive is the movement of sand from the ocean front over the island to the back, or sound, side. This process is called island overwash. However, this natural mechanism for island survival has been diminished in the project area. Artificial shoreline dunes hinder the island overwash process. Ironically, the DFR (pp. 14, 24, 37) states that erosion has removed much of a “natural protective dune system” in the project area. Characterizing shoreline dunes in the project area as “natural” is incorrect since shoreline dunes were made by the Civilian Conservation Corps in the 1930s. Dean (1999, p. 62-63) writes that:

“. . . the entire string of barrier islands that stretches its narrow way from the Virginia border past Cape Hatteras to Ocracoke is fronted by a sea wall. It looks like a sand dune but it is a wall just the same, built by the Civilian Conservation Corps in a project started during the Depression. . . . and its aim was to improve the Bank’s economy by holding off the sea and allowing the construction and preservation of a paved road.”

The issues associated with the man-made dune reflect the feedback loop mentioned earlier. Dune construction in the 1930s facilitated the existing development which can now be used to justify larger, more costly measures to protect structures since the initial dune is being eliminated by natural forces.

When the process of island migration is considered, the Corps is wrong in assuming that long-term ocean processes are destroying the barrier islands. Some sand that is prevented from moving to the back side of the island eventually goes back out to sea, and may ultimately be lost to the barrier island ecosystem. Sand moved inland by smaller storms is pushed back to the beach and may also be lost. This is the real threat to the long-term survival of the barrier islands.

The Corps should redefine the need which is now designated as "beach erosion control" and give a more accurate assessment of exactly what is needed. The Corps should acknowledge that the sea level is rising and that barrier islands adjust to this rise by moving landward. The westward movement of the shoreline is not due to erosion analogous to that occurring inland, but is simply an adjustment to rising sea level. The Service will use the term shoreline adjustment to refer to the movement of the shoreline. However, the Corps refers (DFR, p. 30) to progressive beach erosion due to long-term shore processes as a problem. If the Corps considers the shoreline adjustment associated with island migration to be a problem, that position should be clearly defined and stated.

Regarding the needs within the project area, the Service recommends that the Corps clarify the relationship between reducing damage to structures and shoreline stabilization, i.e., beach erosion control. If the Corps seeks to stabilize the shoreline for reasons other than reducing property damage, the rationale for seeking shoreline stabilization independent of damage reduction should be explained. If shoreline stabilization is sought to reduce damage to structures, it is redundant to mention it in addition to damage reduction. This clarification is requested because the DEIS notes (p. 8-3) that non-structural plans can be beneficial at reducing some types of damage, but would not halt shoreline recession which is a concern of the project's sponsor. This statement suggests that shoreline stabilization is sought for reasons other than reduction in property damage.

An important issue related to needs in the project area is the continued existence of the recreational beach. Table 4-3 of the DEIS indicates that the no action alternative will result in the "continued deterioration of the existing beach." The DFR (p. 34) notes that "[t]he recreational beach that remains by 2004 is expected to be very narrow or nonexistent at high tide." There is a fundamental, unstated assumption in this position that beachfront structures must remain in their present position. On the other hand, geologists contend that natural, coastal processes do not destroy barrier island beaches. As with the barrier islands themselves, if the ocean destroyed the beaches, they would have disappeared thousands of years ago. In North Carolina, Core Banks, an undisturbed barrier island which was spared the artificial dune building of the 1930s, has a beautiful, wide beach that has never been nourished. When natural processes are allowed to operate, wide natural beaches will continue to exist.

The real reason for the shrinking recreational beach in the project area is that it is trapped between fixed man-made structures to the west and a rising sea to the east. The artificial dunes block most attempts for natural processes to move the beach to higher ground. As noted above, the artificial dune has acted like a seawall. Seawalls have invariably led to the disappearance of natural beaches (Pilkey and Dixon 1996, p. 40). Storms that carry sand landward as overwash fans are actually creating a beach properly positioned for the current level of the ocean. The overwash fan is a higher

and wider beach, but unfortunately beachfront property owners do not want the beach landward of their property. Earth moving equipment is brought in and the new beach is picked up and moved back to the rising shoreline.

The Service is also concerned that constructing artificial beaches is often presented as the only way to save a recreational beach. This is clearly a false argument. The real issue is not whether barrier islands will have recreational beaches, but where these beaches will be located. Powerful hydrologic and geologic forces are trying to move the beaches to higher ground as the sea level rises. Beachfront property owners want the beach in front of their homes, not under or behind them. A truly impartial observer might conclude that it is the beachfront property owners that are destroying the recreational beaches by pushing the sand back into the sea every time an ocean overwash moves the beach landward. If the fact of barrier island migration was widely accepted, recreational facilities would adapt and tourists would continue to enjoy the beaches with little regard for the fact that the beach moved a few yards every year. Overall, the preservation of recreational beaches and the tourist economy which they support provides no justification for constructing artificial beaches.

The Service has concerns about the Corps' stated need to "control beach erosion." This position seems to imply that shoreline adjustment on an undeveloped barrier island, such as Core Banks, is just as harmful to national interests as shoreline adjustment at Kitty Hawk. Such a position totally ignores the fact that shorelines on undeveloped islands can adjust to a rising sea and maintain a beautiful wide beach. If this control is directed at the natural survival processes of the barrier islands, the long term consequences would be extremely detrimental for the project area.

The Service believes that the present need statement is deficient in that there is no clear explanation of why protection is needed for the three weakest hurricane classes, with storm surges up to 12 feet (see USFWS 1999, p. 84), and none is proposed for the two strongest classes, with storm surges over 13 feet. Defining storm intensity for which protection is desired is important even if the total funds available for the project are unknown. The fact that certain financial, social, or logistical factors may ultimately define the level of protection should not be considered in this section of the NEPA document. This definition reflects the purpose of the project and is used in developing alternatives. The actual goal such as protection against hurricanes in categories 1-2 or even protection against a severe category five storm (winds over 155 mph and a storm surge over 18 feet) may not be achieved by the project ultimately approved and funded, but this definition sets the project purpose as required by the NEPA. While funding constraints may not allow the stated project goal to be achieved, the potential level of funding is irrelevant to goals that are sought. Actual funding will dictate the degree to which desired goals are obtained, but should not influence the goals themselves.

The planning documents do not mention any need to reduce damage from storm waves and flooding coming from the sound. In fact, the DFR (p. 75) notes that project plans have no provisions to protect the area against storm tide flooding occurring from increased water levels in the estuary backing the barrier island. Pilkey et al (1998, p. 37) present an excellent diagram showing that as hurricanes move north along the Atlantic coast, the initial storm winds blow landward, creating the dangerous storm surge from the ocean. However, after the eye of the storm moves north of a given

point, the wind direction changes and storm winds blow toward the ocean. These latter winds create the ebb surge that can carry water from the sound over the island. The Service has discussed this ebb storm surge (USFWS 1999, p. 90) and presented a diagram (USFWS 1999, p. 91, Figure 14) showing that every type of storm damage that occurs on the coast can also occur on the sound side of the island. County officials recognize that sound side areas are susceptible to flooding and the impact of wind driven waves during hurricanes and other weather events (Dare County 1994, p. 23). The back side of barrier islands need as much attention for storm damage reduction as the ocean side. Bush et al. 1996, pp. 31-32, state that "A mighty fortress (e.g., a seawall) is worthless if the attack comes from the rear." A beachfront home directly behind the primary dune can be completely flooded and pounded by waves associated with the storm surge coming from the sound.

The Service considers the present need statement deficient in that only storm damage resulting from wave attacks coming from the ocean appear to require protective action. We wonder whether property owners will truly benefit if structures are protected from ocean wave attack only to be flooded by waves coming from the sound. This is a critical element in project planning since project needs lead to the project purpose which ultimately determines the alternatives to be considered.

With regard to need, the Service does not understand why the Corps does not simply say that man-made structures within the project area have been, and in the future are certain to be, damaged by coastal storms and shoreline adjustment to a rising sea. While such a clear and direct statement begs the question of why the structures were built in such a hazardous location, we believe this is the most accurate statement of need. We believe that the project need should not separate the control of shoreline adjustment from damage to structures. Shoreline adjustment is a completely natural, continuous response of a barrier island to rising sea level, and it is only a source of concern when fixed structures have been built too close to the ocean.

PROJECT PURPOSE

Under the planning process mandated by NEPA, the stated need sets the stage for the purpose of federal action. The August 1, 1990, Congressional Resolution requested the Corps to study the Dare County beaches "... in the interest of beach erosion control, hurricane protection, storm damage reduction, and related purposes." While the resolution mentions several goals, the overall statement can be reduced to protection of existing structures in the project area from storms and shoreline adjustment.

Purpose of Storm Damage Reduction - The Service recommended (USFWS 1999, p. 150). that the Corps provide specific information on the level of storm, the type(s) of storm damage, and the locations within the project area for which protection from storm damage is sought.

The planning documents fail to specify the level of storm for which protection is sought. The DFR (p. 29) does not appear to consider variation in storm magnitude in the project propose, but speaks generically of "hurricane-wave attack" as a mathematical probability. The main body of the DEIS (pp. 2-1) is also vague on the magnitude of storms for which protection is sought. The only real clues

to this aspect of project planning appear in the Corps' response to the Service's FWCA Report recommendations. The DEIS (p. 8-3) notes that "plans are not targeted at any particular high or low intensity storm and would not totally eliminate damage from severe storms." The DEIS also states (p. 8-2):

"Beach nourishment projects are no longer formulated according to meeting a desired level of protection. Rather the project dimensions are optimized based on the project size yielding the largest net benefit. Using a 50-year life cycle approach, the beaches are subjected to a randomly generated group of storms. The project dimension yielding the biggest spread between benefits and costs is the NED [National Economic Development] Plan."

This explanation is extremely confusing and is not understandable to decisionmakers and the public. Rather than stating a clear level of protection desired and working forward to design a project, the Corps seems to have estimated the available sand and money and worked backward to design the structure that produced the largest benefits possible for a 50 year planning scenario. The Corps should have examined the basic features of hurricanes such as those given by Pilkey et al. (1998, p. 23). These authors note that the characteristic storm surges for hurricanes in categories 1 through 5 are 4-5, 6-8, 9-12, 13-18, and more than 18 feet, respectively. These data indicate that hurricanes in categories 4 and 5 would easily pass over the proposed 13-foot artificial dune. The project would provide little, if any, real protection against the two strongest classes of hurricanes. The planning documents fail to explain why the project purpose is limited to the three smallest hurricane classes and leaves the project area completely vulnerable to the two strongest classes. Clearly the project as proposed will not protect the public against all possible storm damage. The types of storms for which protection would be provided seem to be a critical element of the project purpose.

References to the types of storm damage for which protection would be provided are vague and scattered through the documents. The DFR states (p. 75) that the selected plan of improvement provides for storm protection only in terms of protecting development from the action of ocean storm surge and wave action. The DEIS (p. 2-2) merely speaks of reducing the adverse effects of hurricanes and northeasters. The DFR (p. 24) also notes that "[w]hen the island is under hurricane and storm attack, the full force of waves is felt along the immediate ocean shoreline; as the waves break and spill over the ocean edge of the island, development in upland areas is subject to the force of the waves." The clearest statement of damage prevention is given later in the DFR (p. 33) when economic benefits are expected to accrue by reduced inundation and undermining by erosion during hurricanes and northeasters. The project purpose appears to ignore flooding from the sound (flooding by the storm surge ebb), flooding due to heavy rain, and real extent to which inundation and scouring during storms will be reduced. As noted, the DFR states (p. 75) that "[t]here are no provisions in the project to protect the area against storm-tide flooding occurring from increased water levels in the estuary backing the barrier island."

The actual area to be protected is not clearly given in the DFR or the DEIS. The Service discussed (USFWS 1999, p. 90) the different zones of flood hazard used by the National Flood Insurance

Program (NFIP). On the coast there are V-zones that can expect flooding with waves of three feet or higher, the most dangerous area. There is an A-zone that would experience flooding with waves of less than three feet. An artificial berm and dune may have only limited success in controlling basic flooding since the storm surge ebb, heavy rains, and ocean surges passing around the ends of the project may inundate large areas. Therefore, protection would result primarily in the V-zone where there would be some reduction in wave height. Since wave heights would naturally diminish as they move inland, the actual area to be protected would be a strip of land along the coast. This area should be defined and mapped as part of the project purpose.

Purpose of Beach Erosion Control - Beach erosion control has been an inconsistent feature of the project. The January 1993 Reconnaissance Report did describe the project as a hurricane protection and beach erosion control project (U. S. Army Corps of Engineers [hereafter USACOE] 1993). However, the Corps request for scoping comments of July 1, 1997, describes the project as a hurricane and storm damage reduction project. The Notice of Intent to prepare the DEIS which appeared in the Federal Register on July 23, 1997, also described the work as a hurricane and storm damage project with no mention of controlling beach erosion. The current DEIS has reinstated beach erosion control as part of the project purpose. The return to the original dual project purpose is significant. The DEIS notes (p. 3-1) that nonstructural alternatives may reduce storm damage, but do not inhibit erosion. With erosion control back in as a primary project purpose, a nonstructural alternative is much easier to dismiss.

The Service believes that the Corps exaggerated the ability of the project to control the natural recession of the beach. The DFR states (p. 24) that “. . . the most effective solution for the beach erosion problems along the Primary Study Area would be a beach berm project.” The efficacy of which the Corps speaks does not refer to controlling shoreline adjustment, but instead refers to preventing the land underneath existing structures from being washed away. A more accurate statement of project purpose would be the use of a temporary sediment barrier to save beachfront structures. In a geological sense, shoreline adjustment cannot be controlled. Placing sand on the beach does not “control” erosion, but merely constructs a sacrificial barrier that is fully expected to disappear, or erode, under the existing conditions before it is replaced and the process starts over again.

The Service recommends that the Corps revise and clarify the project purpose. If the project seeks comprehensive storm protection over a wide area, then the details mentioned in these comments must be addressed. If the goals of protection are limited in scope, these limitations should be clarified in the stated purpose for both decisionmakers and the public. Since the artificial berm and dune system will not “control” shoreline adjustment, the project purpose should be restated to reflect the real desire to preserve the area on which beachfront structures have been built.

DEVELOPMENT OF ALTERNATIVES

The project purpose should set the stage for developing the widest range of alternatives. The Service recommended (USFWS 1999, p. 150) that NEPA documents present the entire range of alternatives

to achieve the desired level of storm damage reduction. The DEIS (pp. 3-1 to 3-2) does consider three broad approaches: (1) no action; (2) non-structural alternatives; and, (3) structural alternatives. The non-structural alternatives include relocation of oceanfront structures, strict zoning and set back requirements, retrofitting existing buildings, and stricter building codes for new buildings. The Service is pleased that these options were developed it is the Corps handling and evaluation of these alternatives that are suspect. These measures were discussed by the Service (USFWS 1999, pp. 83-105).

Evaluation of Alternatives and Selection of the Preferred Alternative

The selection of a preferred alternative should be a thoughtful balancing of achieving the project purpose and minimizing adverse environmental impacts to the greatest extent possible. However, early project planning equates storm damage reduction with beach nourishment. The Corps' Reconnaissance Report (USACOE 1993) seems to assume that any effort to reduce storm damage would be a beach nourishment project. While discussing the area without a federal project, the report notes that local governments would not be able to implement a full-scale beach nourishment project by themselves (USACOE 1993, p. 13). The discussion of environmental considerations focuses exclusively on constructing and maintaining an artificial berm and dune system (USACOE 1993, pp. 14-15).

The Service recommended (USFWS 1999, p. 150) that NEPA documents discuss the factors that led to selecting the preferred alternative. After summarizing the problems in the project area, the DFR (p. 10) swiftly reaches the conclusion that "[t]he only technically feasible solution identified in this study consisted of berm and dune construction to arrest erosion and protect against wave action." After a more detailed discussion of storm damage and shoreline adjustment, the report again finds (DFR, p. 30) that "[t]he most effective measure to address these needs appears to be a berm and dune project . . ."

The DEIS makes a better attempt to evaluate possible alternatives. While the Service prefers that alternative development and evaluation be separated, the no action alternative and non-structural alternatives are each introduced, evaluated, and eliminated in two paragraphs. We do not believe the Corps has followed the NEPA implementing regulations regarding alternative analysis. CEQ's implementing regulations, as found in CFR 1502.14, state the development of alternatives should be the "heart of the environmental statement" and that the discussion of alternatives should "sharply define the issues and provide a clear basis for choice among the alternatives". It is apparent from the limited discussion of any but the selected alternative that the Corps did not take its formulation and evaluation of alternatives seriously.

Evaluation of the No Action Alternative - The DFR considers (p. 30) the consequences of a no action alternative. This section notes that storm damage would continue in the project area. A course of no federal action is also examined in Table 17 (DFR, pp. 93-97). This table notes (p. 96) that both the artificial beach alternative and the no action alternative would have no beneficial contribution to environmental quality. The Service disagrees. The no action alternative would avoid

50 years of offshore dredging and sand placement on the beach.- The absence of these actions would benefit all fish and wildlife resources in the action area.

Table 17 also states (DFR, p. 96) that a course of no action would lead to a “[c]ontinued loss of aesthetic values of oceanfront as erosion intrudes upon development.” While damaged structures would be unsightly, these structures could be dismantled or relocated in a fairly short time period. Without a major federal commitment to perpetually maintain an artificial berm and dune system (the no action option), the former homesites would be replaced by an undeveloped beach. While beauty and aesthetic values may be in the eye of the beholder, the Service questions whether the replacement of mile upon mile of beachfront homes with a natural beach would really represent a loss of aesthetic values. If the Corps has survey data supporting the aesthetic superiority of beachfront structures over the natural, unspoiled beach, such data should be provided.

Evaluation of Relocation and Other Non-structural Alternatives - The Corps provides only eight sentences in the DEIS (pp. 3-1/2) as its analysis of a non-structural alternative. The reader is provided scant information on the non-structural plans considered by the Corps. The only non-structural approach mentioned is the relocation, presumably within a single, short time frame, of “all the oceanfront structures along the same boundaries as the recommended project.” There is no discussion of the damage reduction benefits that would be provided by other non-structural approaches such as the imposition of strict zoning and setback requirements, retrofitting existing buildings and stricter building codes for new buildings. Although some information regarding the development of the costs for this alternative is contained in the documents’ appendices, the only information provided in the DEIS is a statement that the cost for relocating all oceanfront structures within the proposed projects’ boundaries is about 300 million dollars. The Service again recommends that the Corps seriously evaluate a phased non-structural alternative which would employ sequential abandonment/retreat as a feature, along with the other measures which would likely greatly reduce future structural damage from hurricanes and other storms. The relocation option should not be viewed as one-time movement of every structure on the shoreline, but rather as a phased withdrawal in which some structures would be relocated and others purchased and dismantled.

The DFR mentions (p. 42) that “[n]onstructural’ measures were also considered as required by Federal planning regulations. These measures usually include relocation, elevation, or waterproofing of buildings to reduce damageability. The only non-structural measure that would substantially reduce damages in the project area is structure relocation.” The DFR then notes that “federal guidelines on relocation plans” seldom make these efforts economically feasible and that many large structures along the oceanfront are physically impractical to move. Based on this analysis, relocation was not considered a practicable alternative. In only four sentences non-structural alternatives are introduced and eliminated. In the following section on alternative plans, the DFR (p. 42) notes that “[t]he alternative plans evaluated in detail were beach berm plans. . . and berm and dune plans.”

The Corps appears to reject the relocation option on four grounds. First, many large structures along the oceanfront are physically impractical to move (DFR, p. 42). Second, the environmental consequences of finding new sites for relocated structures and the associated infrastructure would

harm the remaining natural resources of the barrier island (DEIS, p. 3-2). Third, relocating structures does not stop shoreline adjustment which from the Corps' perspective would eventually eliminate the recreational beach (DEIS, p. 3-1). Fourth, relocating all the oceanfront structure threatened by shoreline adjustment would be prohibitively expensive (DFR, p. 42; DEIS p. 3-2).

The Service believes there are factors which the Corps has not fully considered in eliminating the non-structural alternatives. First, large structures can be relocated. In 1888 the large Brighton Beach Hotel on Coney Island, New York, was moved back 2,000 feet from the shoreline by six steam locomotives (Pilkey and Dixon 1998, p. 51). More recently and closer to the project area, the Cape Hatteras Lighthouse was moved back 2,900 feet from a precarious position near the ocean. This lighthouse is 200 feet tall and weighs approximately 2,800 tons. The lighthouse was successfully relocated between June and October 1999 and survived a brush with Hurricane Dennis. A Cape Hatteras National Seashore web page (<http://www.nps.gov/caha/moving.htm>) noted that "[m]oving great weights has become easier with the development of hydraulic technologies, and within the last five years, three lighthouses along the New England coast have been moved to reduce the threat of collapse into the sea." While the Cape Hatteras Lighthouse did not have to contend with avoiding other existing structures, the technology exists to move most, if not all, structures on the oceanfront of the project area back from the sea.

There is no reason to eliminate the relocation alternative due to environmental impacts at the relocation site. The Corps notes (DEIS, p. 8-11) that "continued development will occur with or without the proposed project [beach nourishment]." The relocation of existing beachfront structures is not likely to take land that would otherwise remain undeveloped. Any land suitable for development will be developed and this argument is not a valid reason for eliminating the relocation alternative. The environmental consequences of a non-structural approach would have been easier to evaluate if the Corps had included this option in Table 17 of the DFR, Summary of Plan Effects. However, this table considered only constructing the berm and dune system along with the no action alternative.

The Corps' assertion that a relocation alternative does not reduce long-term erosion (DEIS, p. 1-1) implies that the option of relocating structures should be eliminated because beach "erosion" would continue to destroy the recreational beach. The Service has pointed out that natural processes cause the shoreline to adjust landward as sea level rises. No alternative can truly control the consequences of a rising sea. The relocation alternative would allow the shoreline to naturally move landward while all alternatives for constructing artificial barriers, including the artificial berm and dune system, would simply force water levels higher on the structural barrier. The fundamental difference between structural and non-structural alternatives is not whether there will be a recreational beach, but where that beach will be located.

Table 4-3 (DEIS, after p. 4-8) presents interesting comparisons between the artificial berm and dune system and relocation alternatives. Some positive characteristics of the relocation alternative would be to: (1) provide a more remote, undisturbed beach; (2) eliminate the need for future protection structures; and, (3) create a more natural appearance along the beach. The major negatives given in

the table are: (1) displaced beachfront homeowners; (2) a reduce tax base; and, (3) the expectation that costs would exceed benefits. The last point raises the question of whether the Corps did a complete and reasonable analysis of the cost for a relocation option. Overall, the advantages of the relocation option are primarily environmental and the disadvantages are primarily social and economic. These comparisons should have been presented in Table 17 of the DFR, but that "Summary of Plan Effects" considered only the artificial berm and dune system and the no action plan.

The Service fails to see how the Corps analysis (DFR, p. 42) of a non-structural alternative can be considered thorough and complete. The analysis is cursory and the option is summarily dismissed from further consideration. The Service recommends that the Corps fully develop and analyze for consideration by their decisionmakers, the public, reviewers and local project sponsors a non-structural alternative which employs a more cost-effective abandonment/retreat approach that would be phased in over many years, rather than the all-at-once relocation alternative which was apparently the basis of the Corps perfunctory analysis. Use of such an approach by the project sponsors would place the burden of dealing with beach recession on individual, beachfront property owners, rather than the broader community of local residents and non-resident taxpayers whose federal taxes will be employed to fund a structural alternative. Further, a phased, long-term abandonment/retreat alternative will totally avoid impacts to the significant aquatic resources present in the study area, as well as impacts to commercial and recreational fishing activities and revenues. The final feasibility report and EIS should include the relocation option in a Table similar to Table 17 in the DFR.

Evaluation and Selection of the Artificial Berm and Dune System - The DFR states (p. 42) that selection of the preferred alternative was based on "engineering and economic analyses." The documents do not mention that environmental considerations played a role in the selection. As often occurs, the preferred alternative is not so much selected as it is the only option remaining after the elimination of all other options.

The selection of the artificial berm and dune system was not based on a detailed discussion of its efficacy over the long term. The DEIS notes (p. 3-1) that small scale emergency measures such as sandbagging and beach scraping are "ineffective at battling the receding shoreline over the long term." However, the document presents no evidence that the millions of dollars to be spent over decades on the artificial berm and dune system would be any more effective. The DFR (p. 53) merely states that all designs for the artificial berm and dune system would "effectively control long-term shore erosion." This statement is misleading. Shoreline erosion would continue after the artificial berm and dune system is built. This erosion is the reason that approximately 4.16 million cubic yards of new sediment must be added to the area every three years. The DFR should state that the preferred alternative would create a sacrificial barrier (a mass of sand that is expected to be washed away and periodically replaced) in front of beachfront structures in order that shoreline adjustment can work on the artificial barrier rather than the existing shoreline. The process referred to as "beach erosion" will not be "controlled" by any Corps intervention, but can be expected to intensify over the decades of project life.

It is unclear how the project purpose played a role in the selection of berm width within the preferred alternative (DFR, pp 43-60). Berm widths of 50, 100, 150, and 200 feet were studied as alternatives, and the 50 feet was selected as the preferred alternative. In terms of storm damage reduction, "wider is better" is the generally accepted norm for berm width. The DFR indicates (p. D-36) that this width yielded the best economic situation for the project because the wider berms could not physically be maintained in the high energy system of the project area. Thus it would appear that while wider berms are typically preferred for storm damage reduction projects, such a project in this area could not be economically maintained.

The Service is concerned that the offshore material used to construct the dune and berm would be different from existing beach material and thereby alter the habitat characteristics of the beach. The borrow materials proposed for this project are all finer than the native sediments in the project area. The Outer Banks of North Carolina have some of the highest wave energies on the East Coast, and their underlying geology contains a significant amount of coarse sands and gravels. Pea gravel is common on Kitty Hawk beaches, for example. Placing fill on these beaches that is finer than the native sediments will hasten erosion of the fill and resuspension of fines in the water column. Both an increase in sediment movement created by higher erosion rates and an increased turbidity in the water from fines washing off the artificial beaches will adversely affect fish and wildlife resources.

The sediments proposed for initial construction of the North Project Area are "less compatible material" with the native sediments, and thus 50% losses are expected from this area (Appendix D, p. D-4). The geotechnical data describing the N1 borrow area in Appendices E and I indicate the presence of significant quantities of mud and unsuitable materials for beach disposal. In fact, 20 of the 27 cores taken in the N1 borrow area have mud contents exceeding 10%, and only 7 are completely clean of mud. By averaging all of the cores together over the entire borrow area, the Corps generates an average mud content for N1 of 9%. With current technology, practical dredging procedures preclude a 100% mixing of all of the sediments in the borrow area before they are placed on the beach. Dredges fill to their capacity from a subset of the borrow area, then pump out those sediments to the beach. Thus the mud content within sections of the borrow area will not be mixed with clean sediments from other parts to average 9%. Localized pockets of very muddy sediments will end up on the beaches in the North Project Area. To minimize the adverse impacts to the environment, the Service recommends elimination of borrow site N1 as a source of material for the dune and berm for sediment compatibility reasons.

The Service is also concerned that the selection of the preferred alternative represents a short-sighted approach to storm damage reduction by using the natural resources of the seafloor to artificially maintain a barrier to natural oceanic processes. At the end of the 50 year project life, 71-72% of the locally available borrow material will be used up. The sediment supply for this proposed project is not unlimited. Over 79 million cubic yards (mcy) of material will be introduced to the nearshore coastal system and removed from the offshore system. This is a wholesale alteration to two coastal ecosystems, and the environmental forcing mechanisms currently existing in both. These 79 mcy are not expected to stay on the beaches in the project area. The DFR does not adequately address where these sediments will go. The borrow areas will have a crater that not only alters wave conditions but

also the seafloor benthic substrate. At the end of the project life, and as the sea level continues to rise, the need for the project will only increase. Increased development and predictions about increased storm frequency and inlet formations on the Outer Banks would only exacerbate the situation.

Two broad areas of supposed analysis appear to dominate in the selection of the preferred alternative: computer models used to predict shoreline conditions and economics. These areas are considered below.

Use of Models in Selecting Preferred Alternative - The DFR uses several mathematical models to estimate the performance and maintenance needs of the beach fill material, the storm damages to structures in the project area, and economic benefits of the preferred alternative. The alternative evaluation process and selection of a preferred alternative are dominated by shoreline response models which are presented with data from limited periods and supplemented with assumptions. Each of these models, and their applications to this project, make assumptions about the natural environment that do not allow the impacts to fish and wildlife resources to be adequately addressed in the DFR and DEIS.

The DFR states (p. 53) that all designs for the artificial dune and berm would “effectively control long-term shore erosion.” This statement should be qualified by an introductory phrase noting that computer modeling studies have been used to predict the efficacy of the artificial dune-berm system. Any significant deviation from the storm frequency and sand transport assumptions used in the Corps models can result in significant departures from model predictions, as has been the well-documented case for numerous other Corps beach nourishment projects in North Carolina and elsewhere.

The DFR uses a mathematical model called GENESIS (Generalized Model for Simulating Shoreline Change) to predict the performance of the preferred alternative. The Wilmington District, or South Atlantic-Wilmington (SAW), had these analyses performed by the Engineering Research and Development Center (ERDC), and a summary of the results are provided in a report prepared by Thompson and Gravens (1999). There are several key assumptions and simplifications that GENESIS uses and that are used in other models by the Corps which have been severely criticized in the scientific literature (Thieler *et al.* 2000, Young *et al.* 1995).

First, the model makes several assumptions that oversimplify natural conditions. The model assumes, for example, that the shorelines and underwater bathymetry in the project area are straight with parallel contours. In fact, the shoreline and bathymetric contours are much more complex and variable in Dare County. This assumption precludes the presence of offshore sandbars and underlying outcrops of peat, mud or rock. The Outer Banks have been documented to have sandbars and geologic outcrops (Riggs *et al.* 1996, Kraft 1969). The Corps’ profile data in Appendix E documents the presence of offshore sandbars throughout the project area, yet they are not included in the model simulation of the existing conditions used to justify the chosen alternative.

No sand is lost by wind to dunes or by overwash to the island interior in the model. Instead, sand remains within the precise boundaries that the user has designated. Bottom currents, intrinsically involved in sand transport, have been documented to exist (Hayes 1967, Morton 1981, Snedden *et al.* 1988, Gayes 1990, Wright *et al.* 1991, Thieler *et al.* 1995, Wright 1995), but the model assumes that they do not. GENESIS also assumes that the sea level is not rising. Yet sea level is rising globally at about 1 foot per century and may rise one to three feet over the next 100 years. Thus the Corps implicitly and incorrectly assumes that a rising sea level will have no impact on the preferred alternative over the lifespan of the project. Obviously several basic assumptions utilized in the model make the results suspect.

Second, none of the waves used in the model are actually measured in the field, but instead they are estimated, or hindcast, from old wind speed measurements. These waves are commonly referred to as WIS (Wave Information Study) data. The Corps took 20 years of these hindcasted waves (1976-1995), but used 1982-84 as "typical years" since the model output for those years matched the longshore transport rates targeted by the Wilmington District (Thompson and Gravens 1999, p. 22). So 1982-84 was chosen as average years for waves, and waves from these three years were used in model predictions. The problem with this critical assumption is that no major storms struck the Outer Banks during 1982-84. The main purpose of the project is to reduce storm damages, yet no model simulations were calculated to see how the artificial beaches would perform in a projected storm wave scenario.

A **third** critical flaw in the GENESIS model is that it assumes all sediment moves along the shore, or parallel to the beach. No sediment moves across the shore, or perpendicular to the beach. However, many scientists have documented that cross-shore currents exist and can move a significant amount of sediment (Swift 1976, Snedden *et al.* 1988, Wright *et al.* 1994). In fact, the Corps has created another model that assumes all sediment moves across the shore and ignores all longshore transport, which acknowledges the importance of this coastal process. However, that model, called SBEACH, was not used in the current planning effort.

Perhaps the greatest criticism of the GENESIS model, however, is what are known as the "K" factors. There are two variables in the model that are simply fudge factors. These two variables are what engineers use to calibrate the model, or make the predictions fit the data. The K values can be adjusted so that everything in the model matches up correctly, but they have no basis in reality. K1 and K2 are arbitrarily set at 0.8 and 0.2 in Thompson and Gravens (1999, p. 20), but no justification or sensitivity analyses for the selection of these values is provided.

Besides these severe criticisms of the GENESIS model, the Service is very concerned about the assumptions and calibration the Corps used in its application of the model for this preferred alternative. The boundaries of the area of shoreline and ocean used in the model simulations exclude Oregon Inlet (see DEIS, Figure 4-1), even though inlet systems are generally known to influence up to a mile or more of the adjacent shorelines. The model grid used for this project extends 6.1 miles north of the North Project Area but only 4.0 miles south of the South Project Area, stopping 0.8 miles from the inlet so as to exclude its associated shoals (Thompson and Gravens 1999, p. 16). This

elimination of Oregon Inlet from consideration by the model biases the model domain to the north and prevents the simulations from accurately representing the natural coastal conditions in the project area. The inlet, its shoals and tidal currents are artificially set to not influence the performance of the project. Thus any longshore sediment transport figures that the model generates do not incorporate Oregon Inlet as a potential sand source or sink, and such results are not representative of existing conditions.

Furthermore, the fill lengths modeled by ERDC were much shorter than proposed by DFR as the preferred alternative. The north project area appears to have been 8,600 feet in all simulations, with variable transition lengths. The south project area was modeled at 37,600 feet long (Thompson and Gravens 1999, p. 38). With 3,000 foot transitions for both areas as proposed in the preferred alternative, this yields model simulations of 2.8 and 8.3 mile fill areas respectively. Yet the preferred alternative is to fill 4.1 miles and 10.7 miles for the north and south project areas, respectively. The Service is concerned that if none of the model simulations accurately depict the proposed project, then the results of these simulations are not applicable to the alternative proposed and to the assessment of project impacts.

Additionally, the draft report summarizing the GENESIS analyses (Thompson and Gravens 1999) states that the Wilmington District provided the ERDC with longshore transport rate numbers that the GENESIS model had to match:

"Detailed GENESIS model calibration to historical shoreline positions, the typical procedure, was not performed in this study. Alternatively, SAW provided **target sediment budget information, which was to be reproduced in model simulations.** SAW defined the net and gross longshore sand transport rates, and they provided spatially dense information on long-term shoreline change rates, for the project domain. Both pieces of sediment budget information were based on previous analyses they had done. Reproduction of the target transport and shoreline change rates was accomplished in the modeling via specification of background erosion/accretion rates. A reasonably good reproduction was achieved, and accepted as calibration of the GENESIS model." (Thompson and Gravens 1999, p. 21) [emphasis added]

It appears the Wilmington District told ERDC what was wanted in terms of longshore transport numbers and GENESIS was manipulated to come up with transport rates that agreed with their predetermined "answer." Normally, GENESIS is used to determine the longshore transport rates, which then determines the shoreline position. Since the Wilmington District already had longshore transport numbers in hand, it is unclear why GENESIS was needed. If these rates were measured in the field, and widely accepted as accurately representing existing coastal conditions, that alone would allow the model to be calibrated to replicate natural processes in the project area.

The longshore transport numbers provided to ERDC (Thompson and Gravens 1999, p. 21) are not known to the Service as having been measured in the field. The numbers seem to match those generated in other GENESIS simulations for the Oregon Inlet jetties project instead, which were

based on yet a third set of GENESIS simulations for northern Dare County. The DEIS states (p. 6-6) that since 1983 an average of 490,000 cubic yards of material has been dredged annually from the Oregon Inlet area, but the quantity of material has varied greatly from zero to more than 1,100,000 cubic yards with a standard deviation of 320,000 cubic yards per year. Maintenance dredging for the ocean bar at Oregon Inlet, the most hazardous area for commercial fishermen, averages 300,000 cubic yards per year (cy/yr) (Howard Varum, U. S. Army Corps of Engineers, Wilmington District, August 30, 2000), so it is unlikely the historical dredging needs generated the preconceived 0.8 to 1.0 mcy/yr longshore transport rates.

Not surprisingly, Thompson and Gravens (1999) found that their application of GENESIS to the (shorter) nourishment project yielded longshore transport numbers that were "significantly less than the target rates" (p. 21). Comparison with measured waves from the Duck Field Research Facility (FRF) instead of hindcast WIS waves generated similar numbers that were much less than the numbers provided by the Wilmington District. Thompson and Gravens (1999) provide a few potential reasons for this discrepancy, one of which was that the Wilmington District's numbers were "too high" (p. 22).

In order for the model to be calibrated to the predetermined rates, the ERDC modified the waves input into the model by rotating them all counterclockwise by 5 degrees (Thompson and Gravens 1999, p. 22). By manipulating the data the ERDC was able to generate output numbers that matched those requested by the Wilmington District. It should be noted that to conduct other model simulations to forecast the performance of the fill material during a period of reversed net longshore transport (i.e., from south to north), the ERDC had to remove this 5 degree wave rotation to allow natural, historical conditions to be simulated (Thompson and Gravens 1999, p. 55).

The model was considered calibrated when ERDC tuned the model until it yielded the longshore transport numbers that were requested by the Wilmington District. This is very different from the standard tuning method used in GENESIS, wherein one gets a set of historical shorelines and tries to tune the longshore transport rates until the simulated shoreline agrees with the real historical shoreline (i.e., the longshore transport rate is the unknown for which you are solving; it appears the Corps did the opposite without mention of shorelines agreement). By rotating the wave angle, the Corps increased the breaker angle and thus the longshore transport rate. If our interpretation is correct, this is an example of how a model can be manipulated to achieve the desired results.

Another calibration procedure used to facilitate the model simulations was to smooth out the documented shoreline erosion rates. The Corps let the model define the initial condition of the shoreline because the real data did not work right and created "undesirable behavior" (Thompson and Gravens 1999, p. 24). The documented shoreline did not respond to the hindcast waves from 1982-84 input into GENESIS, so the model was run for 5 years to "a more-or-less smoothed version of the initial shoreline" that removed +/- 3 ft/yr off the measured erosion rates (Thompson and Gravens 1999, p. 24). Basically the Corps ignored the initial (measured) shoreline and substituted a shoreline that: (1) is not realistic, and, (2) could literally have been drawn by hand with a mathematically equivalent result.

While this generated the desired results, the Corps appears to have arbitrarily set natural conditions to fit an artificial model in an effort to achieve preconceived results based on yet another model. Models should be calibrated with real world information, not with other model-derived numbers. Oreskes et al. (1994), Baker (1994), and Konikow and Bredehoeft (1992) all argue that calibration-verification procedures cannot be used within earth surface systems to begin with because earth systems are open systems, but numerical models treat them as closed systems.

Finally, every model simulation run with GENESIS assumes that the sediments are significantly coarser than what is documented to occur in both the borrow and fill areas. The model simulation assumed that all the sand in the project area, both native and fill material, was 0.45 millimeters (mm) in grain size (Thompson and Gravens 1999, p. 20). Appendix E of the DFR reports that the native grain size averages 0.31 mm in the North Project Area and 0.26 mm in the South Project Area (p. E-3), however, with a range of roughly 0.12 to 4.0 mm (p. E-24). The borrow fill averages 0.22 mm for the N1 borrow site and 0.34 mm for S1 (p. E-5). Thus the model assumed that the sediments in the project area were significantly coarser than the averages measured anywhere in the borrow or fill areas. Coarser sediments last longer on a nourished beach than finer fill sediments, so this unsubstantiated assumption regarding grain size likely led to a significant overestimation of fill performance.

In short, the predictive capability that this preferred alternative's design and maintenance plans are based upon is extremely limited and highly suspect. The limitations in predicting changes in the artificial berm and dune affect all aspects of the project from the frequency that additional sand placements would be required to areas that would receive sand from the project area. These uncertainties reduce the possibility that the magnitude and frequency of negative impacts to fish and wildlife resources, as well as the Cape Hatteras National Seashore, are likely to be insignificant.

The Corps believes that the preferred alternative is not likely to adversely affect navigation through Oregon Inlet. The DFR reports (p. 91) that "... model investigations reveal that a minor increase in net southerly transport would result from fully excavating all offshore borrow areas during the 50 year project life. Under this condition, an approximately 13 percent increase in maintenance dredging could result at Oregon Inlet or about 65,000 cubic yards per year . . . the possible increase in maintenance dredging is well within the historical variation under the worse case condition."

Thompson and Gravens (1999) do not discuss the potential for increased sediment transport to Oregon Inlet, and **purposefully** exclude the inlet system from the model simulations. Therefore, it is unknown how the figure of 65,000 cy/yr of additional sand was calculated. The model predicts that the beach fill will last less than three years, and that from Whalebone Junction south, the longshore transport rate will exceed 1.21 million cubic yards (mcy) per year as the fill spreads to the south (Thompson and Gravens 1999, p. 25). This is the material that would be carried annually by the longshore transport current along the shoreline only 0.8 miles north of Oregon Inlet. However, the Oregon Inlet jetty project (USACOE 1999a, General Design Memorandum, p. 3-24) estimates background longshore transport to be an average net movement of 862,000 cy/yr to the south. Therefore, it would appear that construction of the proposed berm and dune would increase the

average longshore transport at Oregon Inlet by approximately 348,000 (1,210,000 - 862,000) cy/yr unless 283,000 (348,000 - 65,000) cy/yr stops immediately north of the inlet. Project plans offer no explanation of why such a large amount of sand would be carried south of the placement area, but stop immediately north of Oregon Inlet with only 65,000 cy/yr above the pre-project base transport rate continuing on southward to the inlet.

The DFR and DEIS fail to adequately consider the potential impact of such a large inflow of sediment and its significance in the presence of the terminal groin on Pea Island that prevents the inlet from migrating in response to an increased sediment budget from the north. The inflow of large amounts of sand would alter tidal exchange. If the inlet narrowed as the southern end of Bodie Island expanded southward, tidal flows could further undercut supports for the Bonner Bridge. In the event of a strong, hurricane-generated ebb storm surge, the terminal groin could be flanked and cut off from Pea Island.

Additional model simulations summarized in Thompson and Gravens (1999) appear to have been conducted in an attempt to see how sensitive the model outputs were to alterations in the waves and longshore transport directions. Results of the experiments to predict the fill performance during years of high longshore transport rates indicated that this "significantly degrades [the] project performance and increases volumetric requirements of the design alternatives. ... renourishment requirements increase by about 20 to 25 percent [for Kill Devil Hills] and in the Nags Head project ... by about 50 percent" (Thompson and Gravens 1999, p. 52). Further simulations tweaking the wave climate to one the authors deemed more realistic increased the renourishment needs in Nags Head by 100 percent (Thompson and Gravens 1999, p. 55).

Similar results were found if the direction of net longshore transport was reversed (i.e. to the north). Transport reversals simulated by GENESIS indicated a 2 to 4% increase in the volume of material needed for renourishment at Kill Devil Hill and 30 to 35% at Nags Head (Thompson and Gravens 1999, p. 61). The latter increases to 70% if more probable wave scenarios (Thompson and Gravens 1999, p. 61) are used. These supplemental simulations imply that any year that differs from 1982-84 conditions could significantly degrade the project, leading to increased costs, decreased storm damage benefits, and a shorter renourishment interval that would not allow fish and wildlife resources to fully recover and significantly increase project costs.

The Corps does not adequately describe how waves from 1980, 1981 and 1989 were selected for the first set of experiments and 1980, 1983 and 1985 for the latter. How can 1980 represent both a higher longshore transport rate and a reversal in direction? Data from 1983 are also used as one of the "typical" years for waves in the performance simulations. The Corps does not provide information on whether this means the natural conditions in 1983 were a reversal in net longshore transport direction, and that the 5 degree wave direction calibration altered this fundamental characteristic of the input data such that the net transport was to the south. If the latter is the case, then all simulations based upon the tweaked 1983 data are meaningless and cannot be used to evaluate the project performance or its impacts on fish and wildlife resources.

The impacts to the existing coastal processes by dredging borrow pits at the proposed sites for 50 years were also studied by Thompson and Gravens (1999). The GENESIS simulations suggest that the removal of the offshore shoals in the borrow areas will alter the wave dynamics of the project area. The ERDC found that dredging of all the borrow areas in the worst-case scenario positively influenced the northern project area in terms of altered wave conditions, but degraded the southern project area. Figure 30 in Thompson and Gravens (1999, p. 34) shows that the wave heights striking the beach will be modified from +7 to -12 percent. The waves will also strike the coast at different angles, ranging from +5.5 to -3.0 degrees different than existing conditions. The ERDC thus recommended avoiding dredging of S2 and S3 to minimize the negative impacts to the Nags Head fill area (Thompson and Gravens 1999, p. 62). So if the waves change, the direction of longshore transport changes, or the magnitude of longshore transport changes, the performance of the fill is estimated to be significantly impaired. Tweaking to more realistic scenarios as defined by ERDC generates similar predictions.

These alterations to the hydrodynamic conditions of the project area will not only influence the fill's durability, but also the wave energy and patterns that partially control the distribution of sandy beach infauna (Donoghue 1999, Bowman and Dolan 1985). The ability to maintain burrows and optimize filter feeding appears to be directly related to both grain size and hydrologic parameters, both of which would be altered by this artificial beach fill project. If the N1 borrow site is eliminated to minimize adverse affects on the environment, the wave dynamics predicted by Thompson and Gravens (1999) will be altered. The Corps should provide further wave transformation analyses for the project area if the preferred alternative is to restrict dredging to S1 only.

Using a continuous cycle of wave conditions from 1982, 1983 and 1984 to estimate the performance of the project for 50 years is not reasonable. Wave conditions, background erosion/accretion rates and longshore transport magnitudes and directions all fluctuate on an annual, monthly and even daily basis. Assuming that they will remain constant within the hindcast and tweaked 1982-84 conditions further oversimplifies the dynamic and variable nature of coastal systems.

Overall the model simulations for estimating the physical impacts of the preferred alternative do not replicate natural conditions in many critical ways. The existing shoreline was essentially eliminated when it generated "undesirable behavior." The waves were rotated 5 degrees and the erosion rates were smoothed out when the longshore transport numbers did not match the predetermined answer. The fill dimensions were shorter than the NED plan. The grain size used in the model did not match anything measured on the beach or in the borrow areas. The project was not tested for its performance during a storm. All of these factors lead to the Service to conclude that the GENESIS model simulations critical to alternative selection provide no useful information on which to evaluate the physical and biological impacts of the proposed project.

The DFR states (p. D-39) that the modeling exercises indicated that a 1000 foot transition area performed just as well as a 3000 foot taper, but the latter generated less maintenance needs over time. The Corps therefore has no engineering justification for extending the project along 8000 feet of shoreline between the two project areas, which would increase the impacts to fish and wildlife

resources just to save maintenance costs. The DFR should compare how much money would be saved by adversely affecting the environment and causing environmental costs against the assumed increases in maintenance costs without engineering justification.

Use of Economics in Selecting Preferred Alternative - The Corps utilized two models to estimate the storm damages with and without the project and thus the economic benefits. A model called GRANDUC calculated the storm damages from a variety of storms occurring over the 50 year project life. The second model, STORM9, was a new one developed by the Wilmington District for this project.

STORM9 was created to predict the erosion distances and net volume losses to the beach system from a frequency distribution curve of storms (p. D-40). The DFR fails to provide any more information on this customized program, including whether it has been peer reviewed, published or the source code provided for review to independent parties. No details are provided as to how this model calculates the erosion and volume losses resulting from different types of storms. As a result the Service, or any other reviewer, cannot evaluate the assumptions, relationships and accuracy of the model to replicate natural coastal processes. This customized "model" that provides answers on which the economic justification for the project is based should be fully disclosed for public comment and analysis. The Service has no means by which to evaluate the impacts to fish and wildlife resources resulting from the use of this model.

The STORM9 output is used as input into GRANDUC. GRANDUC attempts to comprehensively calculate the structural and content damages from the STORM9 scenarios to each building within a certain distance of the shoreline. However, the DFR does not adequately explain how this distance from the shoreline was delineated. This distance appears to range from 738 to 1400 feet for the north and south project areas, respectively (p. F-21). The Corps should provide maps of the entire modeling area with a detailed explanation to justify the selection of its apparent varying distances inland. If the distance inland over which damages would be reduced is too far, structures in the back that do not receive damages may inflate the benefits of the project if they are included.

The GRANDUC model as described in the DFR does not provide enough detail for the Service to adequately evaluate its assumptions, algorithms and uncertainties. This hinders a corresponding evaluation of the fish and wildlife impacts of the project.

One parameter in GRANDUC, for instance, is a "storm recovery factor" (p. D-46). The Corps should provide a full discussion of the value of this factor, whether it varies across the project areas or is set to a constant, and its scientific and/or engineering basis and calculation. Some portions of coastal ecosystems are storm-driven, and the "storm recovery factor" may or may not relate to the recovery of biological and physical parameters.

Ten types of erosion were used to categorize the project area for GRANDUC and STORM9 simulations, but the DFR does not offer any information on how these types were defined, what they were based upon, and to which reaches they were applied. GRANDUC assumes that the shoreline

retreats uniformly and the beach profiles never change (p. F-1), so it is unclear how different types of erosion are resolved with these assumptions. Similarly, the variables listed in the net storm damage equation on page F-7 are not defined.

Long-term erosion is included in the GRANDUC model as well as storms. Once structures were determined to be undermined by long-term erosion, they were designated "inactive" in the model (p. F-8). The Corps should describe if these structures are then assumed to be removed from the system, and if so if there is an associated cost for their demolition and removal. If they are not removed, more information is needed on whether the obstructions the structures generate are incorporated into the model. It is unclear whether there is a threshold for the percentage of the structure that has to be undermined before it is considered lost in this manner. The Corps should explain if the 50% recession value discussed on page H-38 is such a threshold.

The annual erosion rate is defined as incorporating an increase of 0.3 ft/yr due to rising sea level (p. F-13). The DFR should discuss what this value is based upon, what sea level rising rate was used, whether it is assumed there are no other sources of annual erosion since storms are separate in the model, and how the long-term erosion rate was used by the model, if at all. Also it seems incongruous that the economic models used as critical factors a rising sea level and the engineering models did not. This apparent disparity in methods should be explained.

The "erosion distance" resulting from various storms is another unknown parameter used in GRANDUC. The DFR states that this parameter is "calculated from [an] empirical method developed" by the Wilmington District (p. D-40). The Corps should revise the DFR to include a description of this empirical method and whether the erosion distance represents where there would be flooding, wave action, structural damages or shoreline recession, and whether it is calculated after each individual storm event in the 50 year simulation or after 50 years of storms. An explanation of how the erosion damage curves were calculated, and how the percent undermining of a structure is related to the percent damage in GRANDUC, should also be incorporated into the DFR.

Furthermore, the uncertainty analysis performed on the GRANDUC simulations utilized a +/- 2 foot error on the erosion distance parameter (p. D-51). The Corps should provide data to support this narrow window of error based on historical erosion distances as they have been defined. The DFR states that more uncertainty parameters "can and will be added" in time as GRANDUC is "more fully developed" (p. D-51). The Service recommends that the Corps make an estimate of the limitations of the GRANDUC model until such improvements can be made, and outline which areas of the model have been targeted as needing development and why.

Table F-1 on page F-13 lists the storm surge and setup elevations applied in these GRANDUC simulations. The Corps should describe in more detail whether the 500 year event storm surge of 11.70 feet listed in the table is equivalent to a category 3 hurricane, rendering category 4 and 5 hurricanes as greater than 500 year events. Historical storm surge elevations for various storms in the project area should be compared to the values in Table F-1.

Insufficient information is available in the DFR to determine the with project conditions input into GRANDUC. If the model simply widened the beach to the preferred alternative design dimensions, and held those dimensions constant before each storm event, then the pre-existing conditions were probably not accurately portrayed. The initial construction of the project, for example, will create a beach much wider than the design to allow for equilibration of the fill material. A storm that struck at that point in time would find a beach wider than the design. After two years of erosional losses, which are higher than background rates for nourished beaches, the beach will be narrower than the design as it awaits its renourishment in the third year. A storm that struck the project area at that time would find a beach narrower than the design dimensions. How this variability in project condition is accounted for in GRANDUC and STORM9, if at all, is unknown and should be disclosed by the Corps. Similarly, the generation of the volumes of sand eroded by the storms should be described (i.e., whether they were based on GENESIS output, another model like SBEACH or STORM9, empirical evidence, or professional judgement).

The DFR contains inadequate information on whether sandbags were considered as armoring in front of structures (Appendix F); how the annual volume loss (non-storm) was calculated for each reach (Appendix F); whether SBEACH was used to model the storm performance of the project; what wave attenuation parameters were used in GRANDUC (p. F-4); whether wave attack angle of 1 was applied uniformly to the project area for all life cycles and what angle is equal to 1 (i.e., parallel or perpendicular to the beach) (Fig. F-4a); and how the silt factor is calculated for incorporation into overfill ratios (Appendix D).

The GRANDUC model uses all of these aforementioned parameters and others to calculate the storm damages to the given set of structures in the project area from a random storm history over the 50 year project life. In the sample scenario provided in Appendix F, 7000 life cycles (or storm histories) were used to generate a frequency distribution of the expected storm damages. The Corps should explain why only 500 life cycles were used in this project analysis, and whether the model is sensitive to the number of life cycles included in terms of the accuracy of the resulting frequency and probability curves. More information is also needed on how the life cycle storm histories were developed, especially regarding the Empirical Simulation Technique, what historical storm database was used, and the "multidimensional interpolation procedure" (p. F-3).

The probability curves are then compared for with and without project conditions, and the difference between the two is considered the reduction in storm damages, or economic benefits, for the project. Figure D-28, for example, shows the probability of total net benefits, or storm damage reduction, for the North Project Area with the preferred alternative. Various statistics are listed for the probability distribution, including a mode of -\$7.5 million and a range from -\$27.8 million to +\$89.6 million. While the average is +\$11.8 million for this project, the mode represents the most common benefits provided by the preferred alternative. The Corps should provide a detailed explanation of whether this negative number indicates that the North Project Area is in fact not likely to have positive benefits, but will instead be more likely to cost more than it protects. The graph implies that there is a 32% probability that the North Project Area will have negative benefits. The mode for the net

benefits of the South Project Area, on the other hand, is +\$42.5 million and the probability for negative benefits is less than 2% (Fig. D-29, p. D-53).

The GRANDUC simulations assume a constant interest rate of 6 5/8% over the 50 year lifespan of the project. Higher interest rates generally account for more risk and uncertainty, but the Corps did not raise the interest rate here to reflect the inherent risk and uncertainty associated with maintaining an artificial beach for 50 years along the highest energy coast in North Carolina.

The Corps used a land valuation of \$270,000 per acre in the GRANDUC modeling (p. F-13). The DFR should be revised to include more information about if this value was applied uniformly to the entire project area such that oceanfront lots were equal in value to third row lots. A comparison to actual market values for properties throughout the project area, and whether \$270,000 per acre is a reasonable average or not, should also be provided. Details are needed on whether this land valuation is held constant over the 50 year life of the project, and whether land prices in the project area have been constant for the last 50 years to support such an assumption.

Another economic factor employed in the GRANDUC calculations was beach scraping. In Appendix F the costs for beach scraping are included in the project costs in order to repair dunes damaged by the storms. In Appendix H, however, the costs of beach scraping are used as benefits of the project since scraping is perceived to be no longer necessary with the project (p. H-32). The DEIS cites beach scraping as an impact of the no-action alternative, but the GRANDUC simulations imply that it will occur with the preferred alternative as well. The Corps should clarify whether beach scraping is assumed to occur or not, and if so who will pay for the costs of scraping and how a \$1.55/cy cost was derived. Counting beach scraping as both a cost and benefit of the project is contradictory and inappropriate.

GRANDUC calculated its output based on "maximum storm damage amounts," but the DFR does not define these amounts (p. F-7). The Corps should provide a more comprehensive summary of how this parameter eliminates the potential double counting of multiple storms in a year or loss to long-term erosion. The Service is concerned that this might indicate that only one storm strikes the project area in any given year, and the worst-case storm damage is calculated to allow for multiple smaller storms throughout the year but no larger storms.

Finally, the economic model GRANDUC and its application to this project make other assumptions that may not be realistic. All structures that can be repaired are restored to their original value, for example (p. F-7). Yet property-owners often use the opportunity of rebuilding to upgrade and improve the value of the structure. Repeat losses to the same structure are then likely to be greater because the structure's value has increased. Another assumption that the modelers use is that the renourishment cycle will fully repair all annual and storm erosion damages (p. F-8). A catastrophic category 5 hurricane, though, could destroy the entire project and all the structures in the project area and beyond. New inlets might open in such a scenario, and the erosional losses of beach and island width and elevation might exceed the renourishment volume. This assumption would be invalidated in such situations as the renourishment as proposed would be unable to fully repair the damages.

In the benefits and costs comparison in Appendix H, the GRANDUC results are integrated into the overall project economics. The recreational factors used in the benefit-cost calculations makes a few assumptions that oversimplify reality and overestimate the benefits of the project. The recreational experience assumes "excellent conditions for swimming, fishing, ..." for example (p. H-42). This assumes that the project will not adversely affect fish resources in the surf zone, while scientific studies show that it does. Surf fishing would in reality be impaired at least temporarily immediately following each renourishment cycle. Table H-14 lists an increase in environmental quality with the project, yet no basis or quality parameters are provided for this assessment (p. H-43). If this factor is based solely on aesthetics, the Corps should provide documentation that the public perceives an artificial beach as prettier than a natural one.

A third assumption that this economic evaluation makes is that human nature does not change over time. No increase in demand or visitation is expected over the 50 year project life (p. H-44). Changes in future development patterns are not included because the Corps states that the oceanfront lots are near build-out (p. H-31-32). The Corps should note that development may occur in the vertical direction, however. The DFR does not discuss whether non-oceanfront lots are near build-out as well. If not, then it is reasonable to assume build-out will be reached within the 50 year life of the project and visitation would increase correspondingly. It is also reasonable to argue that the forecast increase in storminess will discourage development/redevelopment and start a reverse trend of people leaving the project area. The Corps should clarify these assumptions about human nature and how they affect the economic justification for the project.

Overall modeling used for the economic justification for this project is based upon faulty assumptions and inaccurate representations of existing conditions. The DFR states that "[w]herever relatively inexpensive, single unit housing dominates a segment [of coast], the potential for damaged property within that segment probably fails to cover the costs of its protection" (P. H-16). The North Project Area has a good probability of not being economically feasible in particular. The technical appendices of the DFR do not provide adequate information for the Service to fully evaluate the impacts of the project to fish and wildlife resources. The renourishment interval and volumes are based upon these modeling simulations of GENESIS and GRANDUC, and the severity of the impacts to fish and wildlife resources corresponds with the volume of fill and recovery time between fill episodes.

The Corps' initial analyses of costs (DFR, Tables 6-10, pp. 47-60) do not appear to include any costs associated with biological monitoring. These costs only appear later (DFR, Table 16, pp. 83-84) when discussing the preferred alternative. Monitoring costs should have been factored into the decision on the preferred alternative. Such inclusion would be important because the non-structural alternatives would require relatively minor monitoring costs. The berm and dune alternative would require monitoring for sea turtles on the beach and for benthos within the proposed borrow sites, or for revenues lost due to reductions or disruptions in shore and vessel-based commercial and recreational fishing activities. The berm and dune alternative would also have monitoring costs not only within the project area, but to the extent that any project-induced reductions in fish stocks may be estimable, may require expenditures for fisheries promulgated in areas distant from the project site,

such as recreational fisheries for striped bass and weakfish in Chesapeake Bay, and bluefin tuna off New England.

The actual overall cost of nourishing a beach cannot be predicted. A return to a period of increased storm frequency would greatly increase the need for renourishment and greatly increase project cost. Using "best case scenarios" to predict the cost of constructing and maintaining an artificial berm and dune for 50 years can be misleading. An accurate cost comparison among the alternative is not possible. The Service agrees with the Corps (DEIS, p. 3-1) that such emergency measures as sandbagging and beach scraping are ineffective for halting barrier island recession. However, we also note that the Corps proposed alternative has also generally proven ineffective, since the longevity of beach nourishment projects cannot be predicted. Dean (1999, p. 95) writes that until more is known about how sand moves on the beach, it will be impossible to accurately predict how long any given project will survive.

The alternatives analysis does not address the economic ramifications of providing protection from smaller storms, but no protection against larger storms. The Ash Wednesday storm of 1962 pounded the Atlantic seaboard with waves as high as 30 feet (Dean 1999, p. 145). It struck at the perigean spring tide, when tides rise highest, and lasted through five high tide cycles. Such a storm will certainly strike the area again, and remove the artificial berm and dune leaving the "protected" structures vulnerable to catastrophic damage. The economics of damage from the largest categories of both northeasters and hurricanes should play a role in selecting the preferred alternative.

The Service does not agree that the preferred alternative would have no affect on increases in income and employment (DFR, p. 97). We recommend that entry in Table 17 be changed to note that a loss in revenues would occur from reduced tourist visitation and surf and pier angling during project construction and maintenance; and unknown permanent reduction in commercial and recreational fishing and landings from the proposed borrow areas during construction and maintenance.

The Service concurs with the Corps (DEIS, p. 6-14) that the area available for fishing under the four piers in the project area will be reduced, and that sand placements during the fishing season may reduce the catch and/or fishing activity, due to angler perceptions regarding perceived impacts. The impacts of these alterations should be quantified and included in project costs, as noted above.

The Service agrees with the Corps (DEIS, p. 6-8) that there will likely be displacement of various species of sport fish, with resultant negative impact to and lost revenues from reduced surf and pier fishing in the area of deposition. These impacts should be quantified and included in the analysis of project costs.

The Service agrees with the Corps (DEIS, p. 6-9) that there will be routine annual displacement of both commercial and recreational fishing vessels in and near the proposed borrow sites. The Corps should, with the assistance of the NC Division of Marine Fisheries, use data from North Carolina's mandatory trip ticket program to study the amount of catch and effort taking place during the pre- and post-project periods, and quantify any reductions which occur, which are attributable to the

proposed project. Other additional costs incurred by fishermen as a result of the project, such as increased time and/or fuel consumption resulting from having to avoid dredging equipment, etc., should also be quantified and included in a revised DFR and DEIS.

The Corps estimate (DEIS, p. 3-2) of \$300 million to relocate all the oceanfront structures along the same boundaries of the artificial berm-dune project seems unnecessarily high. This figure is used to determine that the relocation alternative is not economically feasible. However, this figure seems to reflect a coordinated movement of all structures over a fairly short time period. All structures would not need to be moved at one time. A phased withdrawal over several decades would, with the used of an appropriate discount rate, reduce this cost figure.

Summary Comments on Selection of the Preferred Alternative - As occurs in many cases when the Corps evaluates a potential construction project, this case does not provide a range of options among which the Corps can choose to meet the project purpose. All alternatives to constructing the berm and dune system are found deficient and plan formulation was limited to consideration of beach berm and berm and dune alternatives (DFR, p. 42). The DFR states (p. 42) that the selection of the preferred alternative was based on "engineering and economic analyses conducted during the study." There is no statement that environmental impacts played a role in the selection process.

The Service disagrees with the Corps that the selected alternative represents the optimum solution to hurricane and storm damage reduction (DFR, p. 100). Furthermore, the Service cannot agree with the contention that there are no known areas of controversy with this project (DEIS, p. 1-3). The entire subject of beach nourishment, its costs to society, and whether or not it is even an effective long-term strategy are in fact highly controversial and likely to remain so. It is most interesting to note the implicit valuation of the project by local officials that is buried deep in appendix H. That portion of the documents note on page H-7:

"Officials of Dare County, the towns of Kitty Hawk, Kill Devil Hills, and Nags Head, as well as the State of North Carolina, have indicated that they would not undertake large beach nourishment protection for the Dare County Beaches without Federal Participation."

This implies that those closest to the problem and most familiar with the value of the property to be protected and the forces of wind and wave action on these properties have concluded that the project is economically justified, **only if someone else pays for it.** The Service recommends the Corps consider and analyze a phased abandonment/retreat nonstructural alternative, which avoids all adverse environmental impacts and entails considerably less costs to society.

ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

Impacts on General Fisheries - The DFR states (p. 37) that the nearshore waters of the project area accumulate juvenile, ocean spawning, estuarine dependent fish and invertebrates in late winter and early spring prior to their transport through Oregon Inlet to the Pamlico Sound. This statement does not consider that organisms using Albemarle Sound also accumulate in the project area. Oregon Inlet

is also the only route available for transport of larval and juvenile aquatic organisms from the Atlantic Ocean to Albemarle Sound. The Final EIS should be revised to indicate that organisms that ultimately use both Pamlico and Albemarle Sound estuaries may be impacted by the preferred alternative.

Table 1-1 of the DEIS (p. 1-4) contains a list of environmental requirements to which the project is subject. The Magnuson-Stevens Fishery Conservation and Management Act of 1996, as amended (also known as Sustainable Fisheries Act) should be added to the table.

The Service disagrees with the statement (DEIS, p. 4-7) that the resources present during the colder months of the year, when project construction is proposed, are "less sensitive" to the impacts of the preferred alternative. We are unsure of the Corps' definition of the term "less sensitive resources," and request that this statement be clarified. While the fishery resources present in the area may be regarded as less biologically sensitive than the federally-listed species (piping plovers, sea turtles) present during the warmer months, other species of marine mammals (e.g. humpback whales) which are equally biologically sensitive are present. In fact, the level of biological sensitivity of the significant fishery resources present in the study area during the winter months to project-related impacts is relatively unknown, hence the Service recommendation for thorough pre- and post-project studies. With regard to social sensitivity, the Corps need only attend one of the numerous public hearings regarding proposed amendments to the fishery management plans for most of the species present in the proposed borrow areas during the winter months when construction is proposed, to acknowledge that fishermen concerns for these species are equal if not perhaps greater to those for listed species.

The Service does not agree with the Corps conclusion (DEIS, page 6-7) regarding the lack of impacts on anadromous and other estuarine-dependent fish. Noise, turbidity and other project-related activities could cause shifts in migratory pathways, and despite the relatively small size of the proposed borrow sites, they are located within an area heavily used by numerous species of commercial and recreational importance. At best, the magnitude of project impacts is unknown and should be documented by pre- and post-project studies as previously recommended.

The Service does not agree with the Corps statement (DEIS, p. 6-12) that no significant adverse impact to designated Essential Fish Habitat (EFH) is expected from the project. Such a conclusion is easy to derive in the absence of any data. The project area is likely within designated EFH for a number of species, and project-related impacts will undoubtedly have some impact on the use of the proposed borrow sites by those species. Whether or not these impacts will be of significance can only be determined by conducting the studies recommended by the Service, as the New York Corps District is doing for a project in its jurisdiction (USACOE 1999b).

Impacts on Offshore Fisheries - There is a tendency to view all aspects of the ocean as uniform and practically limitless. These viewpoints are not accurate. Both the pelagic and benthic environments of the offshore borrow sites have high ecological value. Woodward (2000, p. 233-234) notes:

"In many parts of the ocean, vital ecological activities concentrate in specific locations. Fish and other marine life may gather on a specific part of the seafloor at certain times of the year or of their life cycle to spawn, mature, or feed. These unique areas are the biological factories for the surrounding ocean."

The proposed project is located in a site which is of great significance to numerous stocks of commercially and recreationally important, cooperatively-managed, Atlantic Coast fish. Stocks of migratory Atlantic sturgeon, bluefin tuna, bluefish, spiny dogfish, striped bass, summer flounder, weakfish and other species gather in large numbers in the nearshore waters of the Atlantic Ocean off the Outer Banks during the late fall and winter months to feed, rest and prepare for spring and summer spawning activities (Atlantic sturgeon, bluefin tuna, bluefish, striped bass and weakfish) or to actively reproduce (spiny dogfish and summer flounder). Several of the species use the area as nursery habitat (Atlantic sturgeon, spiny dogfish, and summer flounder). The importance of the proposed project borrow sites with their associated benthic and schooling prey species to the predatory, migratory adult spring spawners which spend the winter there may be as significant as the importance of southern United States wetlands and their associated food resources (macroinvertebrates and plant seeds) to migratory wintering waterfowl for determining reproductive success in the subsequent spring and ultimately influencing initial year-class strength. Tagging studies document the fact that the fish using the area are not only from North Carolina estuaries and rivers, but also travel there from great distances (e.g., for striped bass, from the Hudson River and Chesapeake Bay tributaries). All of these species presently support or have historically supported highly significant commercial and recreational fisheries on the east coast of the United States, and all of them are the subject of current management plans prepared by either the Atlantic States Marine Fisheries Commission (Atlantic sturgeon, striped bass, weakfish), jointly by the Commission and the Mid-Atlantic and South Atlantic Fishery Management Councils (bluefish, summer flounder), Mid-Atlantic Council (spiny dogfish), or National Marine Fisheries Service and international partners (bluefin tuna). Portions or all of the site have been designated as Essential Fish Habitat for some of these species by the Councils and National Marine Fisheries Service. For these reasons, the Service is seriously concerned that any proposal to alter or modify these highly important wintering grounds be rigorously and conservatively analyzed.

The Service remains concerned that the biological characteristics of the offshore borrow areas would be permanently altered by the removal of 79 mcy of sediment over the 50-year project. The average proposed cut in the southern and northern borrow areas are 12 feet and nine feet, respectively, with the maximum cuts in these two areas being 20 feet and 12 feet, respectively (DEIS, p. 6-4). The Corps states (DEIS, p. 6-6) that borrow areas can fill in and return to near pre-dredging conditions when there is adequate transport of sediment under the influence of strong currents in the area, and that currents in the area are expected to contribute to some filling of the borrow sites with material from undisturbed areas adjacent to the construction sites.

There are problems with the assumptions that the borrow sites would eventually return to their pre-dredging conditions. The borrow areas at depths of 30-60 feet are beyond the stated closure depth

of -27 feet NGVD in the project area (DEIS, p. 3-2). Closure depth is defined as the water depth at which wave action produces no appreciable movement of sediment (National Research Council [hereafter] NRC 1995, p. 8). Therefore, neither alongshore or across shore currents produced by waves can be expected to move bottom sediment into the borrow area. The sediment that is expected to return to the borrow areas is very fine grained material that drops out of the water column. The Service noted (USFWS 1999, p. 119) that:

“The majority of follow up studies from offshore borrow sites have shown decreases in the mean grain size, including, in some cases, increases in the percentage of silts and clays in the borrow site (NRC 1995, p. 118). Offshore holes may fill with finer grain material (NRC 1995, p. 118). The finer material or other significant alterations in the physical characteristics of the substrate may not be suitable for the organisms that formerly occupied bottom sediment of the borrow area.”

The Corps assertion that similar material may move into holes created by dredging appears to be at odds with evidence from the area off the coast of Pea Island, immediately south of Oregon Inlet and approximately 5-6 miles south of the project area. From 1983 through 1989, the Corps removed more than 500,000 cubic yards of material per year from the Oregon Inlet ocean bar and deposited it in approximately 20 feet of water off the northern end of Pea Island. The Corps reports (USACOE 1999a, Appendix E, Item 16) that surveys of the offshore disposal sites in 1990 indicated that essentially all the dredged material was still in place. If there has been little, if any, movement of this material in 20 feet of water, the Corps should explain their assumptions and the factors that would move material into the borrow areas at depths of 30 to 60 feet.

An important point regarding the movement of fine-grained sediment into the borrow areas should be discussed. If as the Corps postulates, currents would move sediment into the borrow areas, some of this sediment would be coming from the beaches. Some sand placed on the beaches and carried seaward by waves may not stop at the designed closure depth of -27 feet. Large storms may carry fine sand further seaward to depths greater than -30 feet. Sand carried to depths of more than 30 feet could return to the original borrow sites. If sand can be carried back to the borrow sites, the longevity of the nourishment project would be reduced. In essence, sand would be removed from the base of an underwater slope, carried landward and placed at the top of the slope, and then roll down the slope to the place from which it was removed.

A major change in the physical characteristics of offshore bottom substrate would influence the organisms that can live there. The Corps states (DEIS, p. 6-12) that:

“Benthic organisms in areas dredged for construction and maintenance will be lost. However, recolonization by opportunistic species is expected to begin soon after the dredging activity stops. Rapid recovery is expected from recolonization from migration of benthic organisms from adjacent areas and by larval transport. Some changes in species composition and population may occur.”

This statement suggests that the organisms which recolonize the borrow areas may be different from those occupying the area prior to dredging. The Service disagrees with the Corps assertion (DEIS, p. 6-19) that the removal of food resources from the ocean bottom in the proposed borrow sites will be temporary. There is no certainty that the post-dredging benthos will have the same food value as pre-dredging populations. While it is true that there may be some level of recolonization, the Service believes that annual disruption of the bottom resulting from initial construction and nourishment activities will cause a net reduction of benthos standing crop from baseline conditions. The Corps should conduct the recommended studies to determine the level of reduction.

In addition to permanent alterations of the offshore benthic habitats, dredging for borrow material will create turbidity which is harmful as a direct impact and also harmful as a cause of sedimentation at sites distant from the actual borrow areas. The Corps has noted (USACOE 1993, p. 15) that the turbidity associated spring and summer nourishment may be significant and require mitigation. The Service is especially concerned about sedimentation on hardbottoms. The DEIS notes (p. 6-10) that hardbottoms occur "in the project vicinity", but concludes that "if hardbottoms are present they are ephemeral in nature or small in size." The Corps' conclusion fails to consider that many vital habitats, such as water holes in desert areas, are ephemeral and small. The point is that some exist and can be used by mobile species. If hardbottoms constitute a relatively small percentage of the offshore bottoms and are constantly appearing in some areas and disappearing in others, these facts do not diminish their importance.

The presence of fine grained material within the proposed borrow sites poses a risk to hardbottoms over a wide area. In his review of the Corps' data, Dr. Robert Dolan noted (USFWS 1999, p. C-9) "[t]he percentage of fine sediment within the vibracores collected from offshore should be of concern." While this statement was directed at the compatibility with existing beach sand, fine grained material would be carried farther away from the borrow site than larger grained material. Bush et al (1996, p. 83) state their belief that the dredging of sand off Boca Raton, Florida, for a new beach released mud that was responsible for killing coral heads more than 20 miles to the north.

Due to the risk of significant alteration in bottom sediment characteristics and benthic populations inhabiting the area, the Service does not concur with the Corps (DFR, p. 86) that "since stable, productive bottom will be avoided, there should be very little impact associated with the borrow areas." In addition to the fact that the Service has provided some data which indicate that in some years, striped bass consume as much as 12.8 percent prey which are somewhat dependent on benthos, there are additional species such as spiny dogfish and summer flounder which are much more dependent on benthic species as prey and are therefore likely to be more greatly affected. The wholesale removal of the benthic prey base from the sites during initial construction, as well as the reconfiguration of the bottom within seven square miles of habitat in these important wintering grounds during the course of the 50-year project life, is likely to have at least a localized impact on the use of the proposed borrow sites for resting, foraging and spawning activities by adults and resting and foraging by juveniles. The Corps should conduct the requested studies to assess the level of impact which occurs.

Offshore dredging is likely to adversely impact fish by forcing them to leave traditional habitat. The Corps states (DEIS, p. 6-7) that “[f]ish species are expected to leave the area temporarily during the dredging operation and return when dredging ceases . . .” The impact of this exodus could be considerable, if it causes fish to leave productive wintering grounds where they are resting and feeding in preparation for spring spawning migrations. Impacts may be particularly severe during the fall/winter of 2003-2004, when project construction is scheduled to occur for much of the year, if fish are not able to find resources in areas other than the proposed borrow sites. The Corps should fund the recommended studies to determine the level of impact which occurs.

Although dredging equipment may be able to detect and avoid marine mammals (DFR, p. 89), neither mammals nor fish present in the area will be able to avoid, except through departure from the area, the noise generated by the dredging equipment. The Corps should assess in future project documentation the levels of underwater noise generated by the dredging operations, and the expected impact upon marine mammals and fishery resources present in the area. At a minimum, the Corps should document expected levels of noise, and conduct a literature review to assess the likelihood that marine mammals and fish may be driven from the project area. Potentially, noise impacts could impact a wider area than the immediate footprint of sand removal, transport and deposition activities. The Corps should be able to determine the potential area impacted by noise disturbance. This information should be provided in a revised DFR and DEIS.

Overall, the Service believes that the long-term impacts on the offshore benthos, both flora and fauna, as well as the important fisheries resources have not been adequately addressed. While the Corps acknowledges (DFR, p. 96) the “destruction and displacement” of offshore benthos, such impacts are considered “temporary.” The fact that such “temporary” impacts would occur every year for 50 years, and probably forever, has not been adequately considered. The initial elimination and reduced production of borrow site benthos and impaired use by fish for resting, foraging, spawning and nursery area for a 50-year period may produce serious consequences.

Impacts on Nearshore and Surf Zone Fisheries - The Service is concerned that material placed on the beaches will be carried away from the beaches over the years and cover productive hardbottoms far removed from the disposal site (USFWS 1999, p. 117). The Corps contends (DEIS, p. 6-11) that potential hardbottoms are located beyond the closure depth (the depth at which movement of bottom sediment is negligible) and should be unaffected by disposal operations. However, there is evidence indicating that all the sand placed on Wrightsville Beach, North Carolina, from the mid-1930s to the early 1990s is now on the inner continental shelf, seaward to the closure depth used by the Corps (Riggs 1994). Most of the sand pumped onto the beach, estimated to be about 7 mcy, has now buried extensive hardbottoms on the inner continental shelf. these hardbottoms were once prime fishing spots, but are now buried with two to six inches of sand and out of production (Riggs 1994).

The Service agrees (DFR, p. 86) that there will be “...a negative impact to surf fishing in the area of deposition.” However, the two tables comparing alternatives (DFR, Table 17; DEIS, Table 4-3) fail to mention the economic impacts of sand disposals. The DFR (p. 97) does not mention any adverse contributions of the selected plan on income and employment.

Impacts on Beach Invertebrates - The Service expressed concern about the adverse impacts of sand placement on beach invertebrates (USFWS 1999, p. 117) and recommended (USFWS 1999, p. 152) that the Corps assess the impacts of the preferred alternative on these important components of the food chain. The Corps acknowledges (DFR, p. 96) that initial construction and periodic renourishment would cause the "destruction and displacement of intertidal and benthic fauna." The Corps notes (DEIS, p. 6-13) that

"While beach disposal may produce negative effects on intertidal macrofauna, these are localized in the vicinity of the disposal operation. Beach disposal conducted as a component of the proposed action could occur year-round during construction, but would be expected to move along the beach at a relatively slow rate. This rate of progress is slow enough that surf-feeding fishes and shorebirds may move to other areas that are not affected by the disposal operation. . . . As the dredging operation passes by a given section of beach, that area is soon available for recolonization by invertebrates."

The Service is concerned that these statements do not adequately address the adverse impacts of nearshore turbidity resulting from sand placement. These adverse impacts were discussed by the Service (USFWS 1999, p. 116-117; 120-122). First, the "negative effects" mentioned above are actually complete mortality. Second, invertebrates population recover slowly on beaches receiving sand (Reilly and Bellis 1978, p. 83). The adverse impacts of sand placement are not limited to the actual disposal site. Sand placement can produce: (1) failure of adult intertidal organisms to return from their nearshore over-wintering refuges; (2) reduction in organism densities on adjacent beaches; and, (3) inhibition of pelagic larval recruitment efforts (Reilly and Bellis 1978, p. 83). Proposed construction and nourishment activities which will occur on 14.8-miles of beach initially, and on shorter stretches thereafter, regularly during the winter months for 50 years, will undoubtedly result in a net reduction of standing crop, if not productivity, when compared to the baseline conditions in the project area. The net project impact appears to the Service to be widespread, long-term, and of questionable reversibility.

Project documentation does adequately describe the various impacts to beach invertebrates. The Summary of Plan Effects in the DFR (p. 96) notes that effects will be temporary, but will recur over the life of the project - perhaps a contradiction in terms. The comparison of impacts in the DEIS (Table 4-3) notes that the no action alternative would continue to impact beach invertebrates due to private beach bulldozing and sandbag installation. The Corps assumes that "existing conditions allow little time for full recovery . . ." If "existing conditions" refer to the relatively small scale of beach bulldozing and sandbagging, it is difficult to see how these operations would be so harmful while placing 79 mcu of sand on beaches over 50 years would only produce "temporary" impacts and allow for recovery. The assessment of the no action alternative fails to consider that there could be a resumption of natural beach recession that would greatly benefit beach invertebrates and the birds and fish which feed on them.

Migrating birds may rely on the peak abundances during a short period in the summer. If the abundance of beach invertebrates are greatly depressed along several miles of beach, even for a week, this may have more significant impact on their dependent populations than a lag in recovery the following season (Donoghue, 1999, p. 184).

The DEIS (p. 4-7) notes that between periodic nourishment, the towns would continue to make repairs to the beach fill following storms. This work would consist primarily of reshaping the fill cross-section using material displaced from the upper portion of the profile or hauled in from some outside source. The Corps should identify how much and from what source(s) sand may be hauled in by the towns to make repairs to the beach fill following storms. The Service views this as an additional direct impact of the proposed project which should be quantified and included in a revised DFR and DEIS.

Adverse Impacts on Navigation at Oregon Inlet - The Service expressed concern (USFWS, pp. 147-148) that the predominant north-to-south longshore current would carry sand from the project area to the Oregon Inlet navigation channel, approximately 5 miles south of the boundary between Nags Head and the national seashore (USFWS 1999, Figure 9, p. 19). Shoaling produced by project sand could close the navigation channel. A single severe storm could wash thousands of cubic yards of new sand off the Dare County beaches project area southward to the Oregon Inlet navigation channel in a relatively short time (USFWS 1999, p. 147). Without adequate planning and resources for additional dredging the channel would become blocked to commercial fishing vessels. To address this problem, the Service recommended that all interested parties sign a Memorandum of Agreement that would clearly establish the procedures to be used and the methods of funding for both increased maintenance and emergency dredging.

Movement of sediment away from a nourished beach may accelerate the filling of navigation channels in down current areas, which could increase the frequency of dredging required to maintain the channel (NRC 1995, p. 113). The intense wave action in the area transports large amounts of sand toward Oregon Inlet, and much of this sand is trapped in the inlet environment, resulting in the development of massive shoals (USACOE 1999a, EIS, p. 2-2). The Corps has had difficulties maintaining the authorized Oregon Inlet channel due to shoaling. The Corps states (USACOE 1992, p. 3):

“The Oregon Inlet Channel in the vicinity of the Bonner Bridge and the channels west of Bonner Bridge are subject to frequent migration and rapid shoaling. Shoal in these channels are characterized by small-scale, shallow humps which stop virtually all navigation. These shoals are unpredictable and hazardous and require immediate response by a dredge.

Since intensive hopper dredging started at Oregon Inlet in 1983, the controlling depth in the bar channel have equaled or exceeded the authorized depth of 14 feet only 24% of the time (USACOE 1999a, Appendix E, p. 3). The average cost of maintaining the entrance channel since 1983 has been

slightly over \$5 million per year. Even a ten percent increase in annual dredging costs would require an average annual increase of \$50,000 for work at the inlet.

However, the Corps expects some sand to be pushed south of the project area. The DEIS notes (p. 6-5/6-6) that “[s]horeline modeling shows that the beach fill can be expected to spread into the CHNS [Cape Hatteras National Seashore] for 6,000 feet beyond the transition area under average wave conditions. This would place the extent of the dispersed sand about 9,000 feet [1.7 miles] south of the CHNS boundary.” The DEIS also notes (p. 6-1) that 1-2 miles of beaches within the Cape Hatteras National Seashore will receive sand “indirectly” due to littoral transport from adjacent construction areas.

The assertion that a very limited amount of sand would be carried south by the longshore transport system is apparently based on the assumption that sand would be moved directly seaward rather than along the shoreline. The DEIS states (p. 6-8) that “[m]ost of the fine material in the beachfill is expected to be washed seaward into the surf zone during construction and maintenance.” The DEIS also notes (p. 4-7) that “[a]s with the existing conditions, material placed on the beach is expected to be eroded from the upper profile and displaced seaward to form an offshore bar parallel to the shoreline during storm events.” Any southward movement of sand is expected to stop prior to reaching the Oregon Inlet area.

The Service has concerns about the Corps analysis of the risk to navigation at Oregon Inlet. As noted, we question the Corps’ modeling results that predict only a small amount of additional sand that will move south with the predominant longshore current. The project plan now estimates that approximately 4.16 mcy of sediment will need to be added to the beaches every three years (DFR, p. 64), an average annual loss of about 1.4 mcy. If this material must be replaced, it has moved from the location where it was originally placed. Some sediment will move offshore and some sediment may even be blown inland. However, it is the sediment which moves south that is the greatest concern to the Service. The Corps’ estimate that only 65,000 cubic yards (1.6%) of additional sand will traverse the 4-5 miles to the Oregon Inlet navigation channel seems questionable.

An case study from Florida suggests that alongshore movement may be extensive (NRC 1995, pp 200-201). Delray Beach is an example of a beach nourishment project where spreading losses represented the greatest component of the erosion rate on the nourished beach. The beach was nourished in 1973 with 1.57 mcy of sand. Prior to the project, the beach was eroding at a rate of 19,620 cubic yards per year. From 1973 through 1978 the beach eroded at a rate of 91,560 cubic yards per year. The beach was renourished in 1978, 1984, and 1992. The erosion rate (the entire profile) was again about 91,560 cubic yards per year from 1978 through 1984. Between 1984 and 1992, losses moderated and averaged 45,780 cubic yards per year. The NRC (1995, p. 201 based on Beachler 1993) stated that “[o]ver half of the sand lost from Delray Beach can be accounted for as accretion on adjacent beach . . . “[emphasis added]. This study is noted as an example of the importance of estimating spreading losses in the design of beach nourishment project.

Dean (1999, p. 60-61) describes the movement of nourishment sand away from Hunting Island State Park, South Carolina. After a sand-pumping operation placed sand on the narrowing beaches of the park, the sand washed away and moved southward to the beaches of Fripp Island. In 1968 approximately 650,000 cubic yards of sand were placed on park beaches, but almost all this material was gone within 18 months (Dean 1999, p. 107-108). While this sand movement provided a brief respite for the beaches of Fripp Island, sand washed off any created beach may aggravate navigation through downdrift inlets.

If the beaches south of the proposed disposal area are in equilibrium with the existing wave forces, there is no reason to assume that the southward drifting sand would come to a halt before reaching Oregon Inlet. It is likely that project sand placed on beaches would continue to move south to the Oregon Inlet navigation channel.

While the Service believes that much more than an additional 65,000 cubic yards of sand could reach the navigation channel in any given year, especially as a result of major storms, there is another factor to consider. Even a small amount of sand could close the navigation channel. Using the same statistical logic which allows a man to drown in a lake with an average depth of only six inches, the Corps assertion that an average of only 65,000 additional cubic yards of sand would reach the inlet annually does not consider the wide range in sand transport volumes that is possible. A season of severe storms could move several hundred thousand cubic yards of additional sediment to the vicinity of the navigation channel. The overriding problem is not so much the exact amount of sand that would be carried to the navigation channel, but the risk that the channel would be closed or that a vessel would run aground if only a small section of the channel experienced shoaling. The Corps has not considered this impact to the human environment, i.e., the fishermen that must pass through the inlet. Therefore, the DEIS is deficient in this respect.

The Service has three recommendation regarding the possible closure of the Oregon Inlet navigation channel. First, the Final EIS should go beyond merely considering the cost of dredging the Oregon Inlet navigation channel and acknowledge that sand from the project could close this important commercial passageway. Closure of the navigation channel is an impact on the human environment, and must be addressed in the NEPA planning process. The Corps should estimate how frequently the channel might be closed and the duration of these closures. The Corps should also estimate the lost income to fishermen that use the navigation channel.

Second, the Final EIS should include details of all the models and data inputs uses to predict movement of sand. These disclosures should be made available to independent geologists and engineers to allow them to verify or critique the Corps' findings.

Third, the Service seeks a clear understanding among all the parties with an interest in navigation through Oregon Inlet. These parties include the Service, the Corps, the National Park Service (NPS), and especially the Oregon Inlet and Waterways Commission (OIWC), a body of the Dare County Government which has spoken on behalf of commercial fishermen. The concerns of the Service and the NPS are clear. A prolonged closure of the Oregon Inlet navigation channel would create a crisis

and demands for construction of the controversial dual jetty system at the inlet. The Service is insistent that such a crisis not be allowed to occur. All parties must acknowledge that massive sand placements in the project area pose a risk to the navigation channel. All parties must acknowledge the capabilities and limitations of the Corps in keeping the navigation channel open. The Corps should clearly state the procedures and funds that would be used to open and maintain the navigation channel. These procedures must be acceptable to the Service, the NPS, and OIWC. The concurrence of the OIWC is essential. Overall, the Service seeks formal assurances that any increase in the closure of the navigation channel will not be used to demand construction of the jetties. Without such an agreement, formalized in a Memorandum of Agreement (MOA) among the parties, the Service must consider construction of the Oregon Inlet jetties as an indirect impact of the Dare County Project and a feature which must be considered in the EIS of the storm damage reduction project.

Cumulative Impacts of Constructing an Artificial Berm and Dune - An accurate discussion of the cumulative impacts of the project is important. The preferred alternative seeks to essentially replace the natural beach and its adjustment to a rising sea with a static artificial beach and dune constructed with offshore sand. While the constructed shoreline may resemble a natural beach, an artificial beach does not have the same habitat values as a natural beach. This loss of the natural beach must be placed in the context of other sand placements.

The DEIS (p. 6-2) discusses other beach disposal projects within North Carolina. The list of potential projects in the state omits several projects that have had, or are likely to have, adverse impacts on natural beaches. The ongoing disposal operations on Atlantic Beach is omitted. The disposal operation related to enlargement of Wilmington Harbor that will begin soon has also been omitted. A discussion of these and other reasonably foreseeable beach nourishment projects and cumulative impacts on the environment is a requirement of CEQ's implementing regulations for NEPA compliance.

NEED FOR ENVIRONMENTAL MONITORING

Creation of an artificial berm and dune on the Outer Banks represents an engineering effort that requires special attention to environmental monitoring. The project area is a high energy coast that differs from ongoing beach nourishment projects such as Carolina Beach and Wrightsville Beach in the southern part of the state. It is important that any adverse environmental impacts be detected early in order that design modification can be made and/or mitigation measures can be initiated.

The Service is pleased that project plans contain some quantitative benthic sampling within the offshore borrow areas (DEIS, p. 6-22). The Corps should provide a detailed plan of the proposed benthic monitoring plan for the proposed borrow sites for review by the Service and inclusion in the revised DFR and DEIS. The proposed study should be sufficiently designed to detect changes in benthic diversity and productivity which may occur as a consequence of project construction. Post-project monitoring should be added as a component of the study, as previously recommended by the Service.

The Service recommends that the Corps ensure that the total area of hardbottoms is not reduced as a result of the preferred alternative. Maintaining these important habitats would require determining the pre-project area of existing hardbottoms and periodic surveys to determine the changes in area. The Service is pleased that the Corps proposes (DEIS, p. 6-22) to assess "[t]he current status of potential nearby hardbottom areas." However, any plans for offshore dredging should include a commitment to monitor hardbottoms within a specified distance, up to 15 or 20 miles, from the dredge site. Both pre-dredging and post-dredging surveys should be incorporated into project plans. Project plans should also include a procedure, such as "dustpan" or thin layer dredging, as a remedial measure to maintain the present areal extent of hardbottoms.

The Service also appreciates the Corps commitment to study beach nourishment impacts to surf zone fishes in Brunswick County. This effort is scheduled to begin in December 2000 as part of the Wilmington Harbor expansion project. However, most of this project represents a one-time dredged material disposal operation and is not comparable to the long-term systematic sand placements proposed for Dare County. Studies from Brunswick County are not acceptable to the Service as a substitute for studies conducted in the project area. Dare County is situated in an entirely different biogeographic zone than Brunswick County, with resultant differences in species diversity and seasonal occurrence. The Corps should duplicate the studies proposed in Brunswick County within the Dare County project area.

The Service recommended that a monitoring program for beach and subtidal invertebrates be a part of the construction and maintenance of an artificial berm and dune system (USFWS 1999, p. 152). The Corps responded (DEIS, p. 8-7) that the impacts of beach disposal on beach invertebrates had been well documented and no program was proposed for the project. While the short-term impacts have been documented, the most important issue involves the ability of these invertebrates to recolonize a given disposal area and maintain adequate population levels through decades of periodic decimation. The Service noted (USFWS 1999, p. 121) the position of the NRC (1995, p. 115) that studies have documented only limited or short-term alterations in abundance, diversity, and species composition of nearshore infaunal communities sampled off new beaches (NRC 1995, p. 115). However, several of these studies had inadequate sampling designs that may have precluded detection of significant alterations in the populations or community parameters measured (Nelson 1991, 1993). The NRC (1995, p. 115) concluded that "... efforts should be directed toward obtaining a better understanding of functional changes in the trophic contribution of benthic assemblages to the fish and crustaceans species that rely on the benthos as a major food resource." There should be a requirement to quantify changes in biomass and community composition at one-, three-, five-, and ten years after initial construction. If an assessment indicates a significant decline in either biomass or the number of species present when compared to control areas, there should be definite procedures in place to mitigate for this community. Therefore, the Service reiterates the need for long-term studies of beach and subtidal invertebrates if the preferred alternative is implemented.

The Service appreciates the Corps' commitment (DEIS, p. 6-23) to provide us with the coordinates of the excavated portions of the offshore borrow areas. However, the Corps should plan and provide funding for additional fish sampling in the study area above and beyond that conducted during the

annual SEAMAP Cooperative Winter Tagging Cruise. The purpose of the SEAMAP cruise is tagging fish, not conducting the systematic sampling required to detect changes which may result from project construction, although such an element could perhaps be added to the purpose of the cruise, given adequate ship time and funding. The Corps should contact the Service and NMFS for further discussions regarding this issue.

Current documents do not consider losses in income and employment from reduced fishing opportunities as a result of sand placement on area beaches. The Corps should conduct studies to measure the impact and compute costs associated with this impact as well as any lost revenues from impacts to fishing on the four piers located in the project area.

In light of the extensive monitoring that has been proposed by the Corps and additional work recommended by the Service, the annual budget of approximately \$7,569 for annual environmental monitoring (DFR, p. 84) seems too low. Corps estimates of annual environmental monitoring costs should be revised to reflect the costs of studies similar to those currently being conducted by the New York District for the Asbury Park to Manasquan Section Beach Erosion Control Project (USACOE 1999b).

EDITORIAL NOTES

The Service recommends that the Corps review the following editorial notes:

Page 90, paragraph 1: The spellings "aesthetic" and "esthetic" are employed interchangeably throughout the DFR and DEIS. One or the other should be selected.

DFR, pages 80-82, Table 15, p. 87: The word "tiling" should be replaced with the word "tilling" throughout the DFR, unless in fact the Corps proposes to tile the beach, in which case the Service should reassess project impacts.

DEIS, Figure 4-4: The word "Occurance" in the title is misspelled.

DEIS, page 5-2, paragraph 1: The "The" preceding "North Carolina" should be deleted

DEIS, page 5-2, paragraph 4: "Variabilus" should be "variabilis."

DEIS, page 5-7, paragraph 1: Insert a comma between the words "mackerel" and "amberjack" in the last line.

DEIS, Table 5-3, p. 5-9: A useful modification to this table would be to include the responsible management authority (i.e., ASMFC, MAFMC, SAFMC, etc.) in an additional column.

DEIS, page 5-13, paragraph 4: The text should be corrected to read "...between 1988 and 1997...."

DEIS, page 5-26, paragraph 5: "Has" should be "have."

DEIS, page 6-1, paragraph 3: "...transport on sand..." should be "transport of sand..." In paragraph 4, add "to" after the word "similar."

DEIS, page 6-9, paragraph 1: The word "shoreward" in line 1 should be "seaward."

DEIS, pages 6-13 to 6-14: Some text appears to be missing between the bottom of page 6-13 and top of page 6-14. The missing text should be added to a revised DEIS.

DEIS, page 6-15, paragraph 1: The word "generated" should be inserted after the word "turbidity" in line 2.

DEIS, page 6-20, paragraph 1: The Service is unaware of any "...recent prohibition on taking any species of sturgeon less than 3 feet in length..." The provisions of the Shortnose Sturgeon Recovery Plan (NMFS) and Amendment 1 to the Interstate Fishery Management Plan for Atlantic Sturgeon prohibit the taking or possession of any species of sturgeon on the entire Atlantic Coast. While we agree with the Corps that these plans will help to protect both shortnose and Atlantic sturgeon from fishing pressure, poaching still occurs and remains an ongoing concern, as does bycatch in commercial fisheries.

SUMMARY

Our review of the project planning documents has identified several aspects of the NEPA planning process that have not been adequately addressed. The Service has attempted to clearly outline these deficiencies and recommend ways for bringing these documents into compliance with NEPA. The Service encourages the Corps to implement the important changes given in detail above and summarized below.

First, the Corps should clarify the need for action. While it is clear that oceanfront structures are susceptible to both storm damage and the gradual effects of shoreline adjustment, it is not clear whether the Corps seeks shoreline stabilization independent from damage to structures. If shoreline stabilization is sought to preserve oceanfront structures in their present location, the overall project need should be simplified to reflect the goal of preserving these structures. If shoreline stabilization is sought to reduce damage to structures, it is redundant to mention it in addition to damage reduction. If there is a secondary goal of arresting shoreline adjustment without regard for existing structures, the justification for this goal must be explained. The planning effort should also explain that the phenomenon referred to as beach "erosion" is actually the natural shoreline adjustment of barrier islands to a rising sea level. Project planning should eliminate all references to a need to restore the recreational beach destroyed by the ocean. The ocean may move the beach, but it does not destroy the beach. Any reference to the recreational beach should note that action is only needed to determine where the beach will be, not whether it will exist. If there is a need to create a sense of permanency to structures that might otherwise be considered temporary, this should be noted.

Second, the DEIS provides only a vague outline of the project purpose. The documents do not respond to the recommendation of the Service that the purpose should state: (1) the level of storm for which protection is sought; (2) the types of damage which should be reduced; and, (3) the specific areas for which protection should be provided. Without specific goals there is really no way to measure the success of the project. Furthermore, an ill-defined purpose does not provide the necessary foundation for developing and evaluating alternatives. The Final EIS must provide clear goals for the federal action, even if these goals cannot be achieved at the present time.

Third, the DEIS does note the three major alternatives, but does not provides a complete analysis of any actions other than constructing and maintaining the artificial berm and dune system. The consideration of relocating structures away from the shoreline fails to discuss a long-term, phased retreat and the advances in technology that make such relocations feasible. Project planning apparently only considered a single, short-term relocation of every current structure on the shoreline. This unrealistic approach was naturally deemed impractical. A more thorough analysis of a phased relocation program in combination with retrofitting existing homes to reduce damage and strict zoning standard must be undertaken as part of this project. CEQ's implementing regulations require, and numerous court cases have re-iterated the need for, a "substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits (CFR 1502.14)." We believe the EIS and the Corps planning process have violated the spirit and intent of NEPA as well as the CEQ's implementing regulations.

Fourth, the tabular comparisons (DFR, Table 17; DEIS, Table 4-3) of the options seem strongly biased in favor of constructing the artificial berm and dune system. Impacts of this system to beach invertebrates and fish (larvae, juveniles, and adults) are all considered "temporary" (DEIS, Table 4-3) even though the same impacts would occur every few years for at least five decades and probably much longer. Since the resilience of many of the species at risk is unknown, the Corps should rethink whether these impacts recurring periodically over decades should be designated as "temporary." The Service also questions whether the replacement of oceanfront structures with a natural beach constitutes (DFR, p. 96) a "continued loss of aesthetic values." The tables also neglect the distinct possibility that constructing the artificial berm-dune system would reduce income and employment by reducing both commercial and recreational fisheries. The Corps should revise both tables comparing project alternatives. Both tables should also include a reference to the possible closure of the Oregon Inlet navigation channel.

Fifth, planning documents have not adequately addressed the risk that sand placed on project area beaches could be carried southward and close the Oregon Inlet navigation channel. Without a thorough analysis of both the direct and indirect impacts on the Oregon Inlet navigation channel that may occur with implementation of this project, the NEPA process is incomplete and unacceptable. The Corps should include Thompson and Gravens (1999) as an appendix in the Final EIS in the interest of full disclosure of the project's design and performance expectations to the public. The Final EIS should fully discuss the risk of channel closure and provide details on the social and economic impacts of such a closure and remedial actions that would be taken. The Corps should work with the Service and other interests, especially commercial fishermen, to ensure that an

adequate plan is in place to minimize any disruptions associated with closure of the channel. This plan must be formalized with a Memorandum of Agreement among all interested parties to ensure that a crisis is not allowed to occur.

Sixth, the selection of the preferred alternative failed to fully consider adverse environmental impacts. The DFR (p. 42) states that a shore protection project consisting of a beach berm or a berm and dune combination was selected as the "most appropriate measure" based on "**engineering and economic analyses**" [emphasis added]. There is no indication that environmental factors played a role. The Service requests, and NEPA implementing regulations require, that the Corps conduct another alternatives analysis that fully incorporates the environmental concerns given in these comments.

Seventh, the Corps did not fully commit to studies recommended by the Service for monitoring and documenting pre-project baseline conditions of aquatic resources and assessing project impacts. The project area is unique in many respects and dependence on short-term studies from other areas is not acceptable. The Service agrees with the Corps conclusion (DFR, p. 85) that "...some adverse environmental impacts are anticipated...on biological resources, water quality, aesthetic values and threatened species." Adverse impacts would also be produced on commercial and recreational fishing activity in the project area. However, the DFR and DEIS do not adequately analyze those impacts or propose adequate studies to document them. These deficiencies should be rectified in revised documents as noted elsewhere in these comments.

Finally, the DFR (p. 31, 41) discusses federal action in a general sense as a "plan of improvement," but notes that such plans must be environmentally acceptable. It is unclear what improvements the current effort seeks. This statement raises the interesting questions of whether the barrier islands need "improvements" and whether any major alterations to the islands can be environmentally acceptable. Unimproved barrier islands have survived for centuries in one of the most geologic active environments in the world. These piles of sand have responded to a major rise in sea level and the force of massive hurricanes. In their natural state the barrier islands of the Outer Banks are not conducive to large structures permanently fixed on a patch of sand. The islands have been hit by massive storms and the shoreline has been moving landward since European settlers arrived. People that build structures on the beach are either ignorant of the natural forces surrounding them or have chosen to ignore these facts. The frequent mention of a "natural" protective dune in the project area exemplifies the basic misunderstanding of the barrier islands by suggesting that nature has encouraged development by providing this dune which was, in fact, man made. The need for any "improvement" to the barrier islands is highly questionable. In fact, "improvements" aimed at preventing the barrier islands from moving to higher ground will ultimately lead to the destruction of habitat values and human amenities that barrier islands currently provide. The present need is not for improvement, but is instead a rescue effort. This is made all the more apparent when local and state governments are not willing to undertake such tasks unless there is some form of federal government subsidy.

We suggest the identified deficiencies in the documents be rectified, and a revised DFR and DEIS be issued for review before the Service can concur that the impacts of the proposed project have been fully identified and adequately avoided or minimized. Due to the significant adverse environmental

impacts of the proposal, the flawed planning process, inadequate evaluation of direct and indirect effects and depending of the Corps' preferred alternative identified in subsequent draft and final environmental impact statements, the Department of the Interior may refer this project to the Council on Environmental Quality, pursuant to 40 CFR 1504.

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NATIONAL PARK SERVICE COMMENTS

ER-00/523

The COE has asked that the National Park Service (NPS) issue a Special Use Permit (SUP) concurrently with these comments, for a portion of the project that is proposed on NPS property. However, the COE did not consult with the NPS on this proposed use of park lands in the early planning stages of this proposal. The NPS does not intend to issue the SUP permit for the proposed use of park lands described in the this document. This decision is based upon federal legislation and NPS policy that governs use of NPS lands. National Park Service Management Policies (1988) generally prohibit this type of use on National Park Service lands. We also question whether such use is necessary for the proposed project.

We believe that the proposed project may have significant impacts on Cape Hatteras National Seashore (CAHA). We encourage the COE to use information provided in these comments to assist them in developing a more feasible and less economically and environmentally costly proposal for hurricane protection and beach erosion control in Dare County. As the FR/DEIS currently reads, the National Park Service believes the document to be inadequate to select the optimum alternative to accomplish project objectives. The National Park Service has concerns for the following:

- 1) the Purpose and Need for the Project;
- 2) National Environmental Policy Act compliance;
- 3) Project Engineering;
- 4) the Economic Analysis;
- 5) Potential Conflicts with Coastal Zone Management Act; and
- 6) the Environmental Analysis.

The National Park Service believes the project description and justification are based on several unsupported assumptions and provide the basis for development of a project whose outcome is uncertain, considering the high economic and potential environmental costs associated with the project.

One assumption that requires clarification is the continued reference to the term "natural dune" in the project area. The dune system that exists on the Outer Banks was initially constructed by the Civilian Conservation Corps in the 1930's. These dunes are artificial, not natural, and their existence is the primary reason that growth and development has occurred along the Outer Banks landward of the dune line, particularly in the last few decades. The eroding constructed dune the COE refers to is eroding as a function of naturally occurring coastal processes such as storms and sea level rise, processes that the COE will not be able to manage. The "protective" nature of this dune system, from its first construction, has always been limited. Only recently has the reliability of the dune's protective function been questioned, due primarily as a result of property damage resulting from storm-induced erosion events which have scoured the Outer Banks in recent years. This damage has not been the result of insufficient beach and "natural" dune protection, but rather the existence and continued

development of areas affected by coastal processes within identified Ocean Hazard and Erodible Zones.

Many northeasters and tropical systems (hurricanes and tropical storms) have affected the Outer Banks and caused beach erosion and property damage. The DEIS provides this storm history and property damage information. According to global weather forecasters, the Atlantic and Gulf basins are in a period of increased storm frequency and intensity. It is likely that the Outer Banks will be subject to more frequent and intense storms, if predictions are accurate. The National Park Service questions whether the COE has taken into account this increased forecast storm frequency and intensity. These storm events can displace or remove large amounts of beach sediments from where they exist on the beach and perhaps negate any positive benefit projected to provide storm protection and reduce or prevent storm erosion. For example, at a COE sponsored Dredging Coordination meeting for the State of North Carolina in 1999, a COE engineer stated that the beaches of Nags Head lost about 1 million cubic yards of sand during Hurricane/Tropical Storm Dennis in September 1999. Hurricane/Tropical Storm Dennis was a small storm with minor winds that affected the coast for a week. Larger, more powerful storms could be expected to have as much or greater impact on the beach sediments. It is recognized that storm events can rapidly alter sediment budgets on the beaches. However, the FR/DEIS seems to disregard the evidence provided and claims to be able to provide adequate protection measures in the face of sea level rise, a history of storms in the region, and the likelihood of storms of increased frequency and intensity. Considering this information, the National Park Service questions whether the COE has established reasonable and realistic goals for this proposed project. The National Park Service requests that the COE provide an analysis of the project and projections of property damage and beach erosion, taking into consideration sea level rise and increased storm frequency and intensity. Ultimately, this consideration could lead to the development and/or recommendation of other goals and alternatives that are more likely to succeed.

The National Park Service encourages the COE to consult with leading coastal geologists in North Carolina and incorporate their knowledge and experience into the process of developing feasible alternatives to meet project objectives. Dr. Robert Dolan (University of Virginia), Dr. Stan Riggs (East Carolina University) and Dr. Leonard Pietrafesa (North Carolina State University) can all provide valuable information to the COE for this project.

Another assumption used to justify this project and boost the economic analysis is that without the project, the beach will disappear, and without the beach, the tourism industry and local economy will suffer due to losses of recreational use of the beach. The FR/DEIS provides no data to support that the beach will disappear without the project. The recreational use of the Outer Banks beaches seems to be increasing annually despite the rates of erosion and storms that have occurred on the Outer Banks. It is not reasonable to assume that the beaches, recreational beach use, and tourism will disappear without the project. Beaches will always be present on the coast and available for recreational activity. They may be narrower than historic beaches, but sea level rise and storm induced erosion affecting the constructed dune system create narrower beaches. Still, beach goes

continue to stream to the Outer Banks. Conversely, with the project, the beaches in the project area will be much narrower than they are now (replacing the existing dune with a 50 foot wide berm reduces the beach area by 50 feet at all locations) and may restrict the number of recreationists that will use the beaches.

The FR/DEIS assumes that this beach will disappear. The FR then declares that the project will result in a benefit of \$427.1 million to Dare County by providing a recreational beach that would otherwise be lost, reduced property damage, and savings in emergency costs that would otherwise occur without the project. However, the National Park Service believes this is an unjustified assumption and that as long as there are beaches in these communities, there will always be people using them. Furthermore, the Economic Analysis for the Manteo (Shallowbag) Bay project states that growth of the area is increasing faster than the state average. Has the COE now reversed its position and believe that this growth will not occur because the beaches will disappear? This question must be answered and reasonable assumptions applied for this project and other COE related projects in the local area. The National Park Service believes that the COE should coordinate its projects and present an accurate and reasonable prediction of recreational use now and in the future in Dare County. The fact remains that no analysis has been made of recreational use in Dare County, future use of the beaches with or without the project, or consideration of other growth factors in the analysis of this project. The National Park Service requests that these analyses be conducted before claims of recreation loss due to loss of beaches can be made.

The COE also assumes that barrier island dynamics can be "managed." The FR/DEIS assumes that the project will alleviate any change in shoreline position as a result of sea level rise and storm frequency and strength. The National Park Service believes this is an invalid assumption.

The underlying justification for project development seems to be the protection of existing structures and structures projected to be built in this area by the year 2004 (FR pages 7 and 30). However, this development could be managed in a manner that would reduce vulnerability to beach erosion and storm events by compliance with North Carolina Coastal Management Act provisions. Yet, it appears that the option to utilize proper coastal development planning is not considered. Rather the decision to implement an alternative that will likely encourage development in this ocean hazard area, expend large amounts of federal and local dollars to provide questionable storm protection and protection from beach erosion, and potentially create a situation that will result in greater storm damage and loss of life. The National Park Service does not believe this is a justified position to promote without further analysis. Furthermore, the National Park Service requests that the COE provide information on the potential for and increased impact of likely increased development in the project area if the project is implemented. The FR/DEIS should discuss in this analysis the additional potential for increased storm and erosion damage that will occur as a result of development associated with this project.

The FR/DEIS claims that the development at Nags Head, Kill Devil Hills, and Kitty Hawk will

continue to be threatened if no federal action is taken. The fact remains that the existing development will always be threatened at this location with or without the project. This conclusion is misleading to the public and communities, implying that implementation of this project will result in the achievement of stated objectives.

1) PURPOSE AND NEED: The stated objective of this project in the FR/DEIS is to develop the most suitable plan to reduce hurricane and storm damage and reduce or prevent beach erosion in the project area. This objective seems an almost impossible task considering the coastal dynamics of the Outer Banks, increasing rates of sea level rise, and a history of prevalent storms in the region. This bold objective projects an attitude that the project will successfully tame the ocean, thwart sea level rise, and divert storms, hence reducing storm damage and beach erosion. The COE admittedly states that "the development of major ports and terminals has been tempered by difficult currents, shoals, and shifting inlets that characterize this portion of North Carolina's coast. Indeed, these are among the most treacherous waters in the Atlantic" and "The Outer Banks is subject to the most severe wave climate along the entire East Coast of the United States." (DEIS 5-18 and DEIS 5-4 respectively). Furthermore, the COE recognizes in the FR that the proposed project will not eliminate beach erosion, especially during storms (DEIS, 4-7) and offers no method of protection against property damage that may result from storm-driven winds. In the event a major hurricane occurs on the Outer Banks, the COE analysis of property damage may be greatly underestimated and the proposed project objective will remain unmet. The COE must recognize that this plan may only provide protection for minor storm events. Hurricane Dennis, a Category 1 storm that never came closer than 90 miles to the Outer Banks caused tremendous property damage, beach erosion, and washed out a section of NC 12 north of Buxton, North Carolina. The National Park Service believes the COE has established goals that may be unachievable on the Outer Banks. The National Park Service encourages the COE to more fully consider alternatives that were not fully analyzed and additional alternatives such as building relocation, restricting developments according to North Carolina law, and avoiding unnecessary development in identified Ocean Hazard and Erodible Zones.

The wave climate, frequency of northeaster storms, tropical storms, and sea level rise all contribute to a dynamic coastal environment that becomes impossible to predict, much less "manage" as the COE suggests. These forces historically altered the coastline of North Carolina, and no effective engineering solutions have been developed to adequately mitigate the effects of these forces. The FR provides this evidence (FR, 24-29) by listing all the hurricanes and the associated damage that resulted. The FR provides further evidence of historical erosion rates in the proposed project area (FR 15-22).

The State of North Carolina has recognized the dynamic coastal environment in North Carolina and has passed legislation (CAMA 1974) to guide and manage development and other activities in North Carolina Areas of Environmental Concern (Ocean Hazard Areas, Ocean Erodible Areas, and Public Trust Lands), within which project lands fall. The CAMA sets forth policy that regulates setback requirements from the ocean, development restrictions, and encourages relocation of threatened

structures in these areas.

2) NEPA COMPLIANCE: The National Park Service strongly believes that the COE has not complied with the intent of the National Environmental Policy Act (NEPA) in the development of this project. In the FR (page 24) the COE states that the "most effective solutions for the beach erosion problems along the Primary Study Area would be a beach berm project." This statement is made without full consideration of all alternatives and an objective analysis of all potential alternatives. The FR/DEIS does not present a full spectrum of alternatives and analysis that would justify selection of the optimum method to achieve project goals. Only two alternatives were considered, berm projects and berm and dune projects. This limited approach to the project is not adhering to the intent of NEPA.

For instance, the DEIS does not seriously consider the relocation of ocean front structures due to an estimated cost of \$300 million. However, based on projected costs of the selected plan, \$300 million is expended 24 years through the project life (\$49 million first three years for construction and \$251 million over next 21 years for renourishment). Surely, the retreat from the ocean and the obvious loss of property damage during this time would result in a much greater savings to the public taxpayer and the federal budget, yet this alternative was not considered.

The COE's requirement to select the National Economic Development (NED) Plan (alternative; FR 8; DEIS 8-2) negates the entire process of NEPA and often results in the selection of an alternative that is not preferred and/or the most environmentally sensitive alternative. With this project, no environmental costs are considered in the selection of the alternative that provides the highest NED benefit. Similarly, the dune and berm configuration that could provide the most protection is not selected because it does not convert to the highest NED benefit. Therefore, the intent of NEPA and the objectives of the project are minor considerations in the selection of a suitable alternative. The National Park Service believes the alternative selection process used by the COE does not provide adequate consideration and valuation of environmental costs likely to occur as a result of selection of the NED plan.

3) PROJECT ENGINEERING: The National Park Service believes the FR/DEIS does not present full consideration of the dynamic coastal processes on the Outer Banks, likely storm scenarios, and rising sea level in the development of the full range of feasible alternatives to achieve project objectives. The FR/DEIS does present and frequently refers to these processes but does not seem to consider and analyze these processes for the project.

The COE again chooses to use the GENESIS model for the basis of engineering the solution to achievement of the project objectives. However, as previously recorded in comments on the Manteo (Shallowbag) Bay project (March 1999), the National Park Service and other prominent coastal geologists do not agree that GENESIS is a model that provides accurate and realistic modeling of the coastal dynamics that occur in the proposed study area. Because the proposed project

engineering is based upon this model, the National Park Service believes that the engineering solution selected to meet the project objectives does not represent a feasible and realistic method to obtain project objectives.

The COE uses another model GRANDUC, a model with which the National Park Service is unfamiliar. The assumptions used to justify this model for its use for this project should be provided in the final EIS.

4) ECONOMIC ANALYSIS: The National Park Service believes the FR/DEIS presents an overestimation of benefits for this proposed plan and an underestimation of the costs of implementation. The fact that the COE is forced to select the NED plan immediately disregards any environmental damages or mitigation costs associated with the project. These costs, which do exist, have not been factored into the Economic Analysis.

Benefits

The stated annual benefits of savings derived from reduced hurricane and storm damage should be reduced by an amount equal to the damage that will occur when the project is implemented and severe storms occur in the area. This listed figure is not realistic because some damage will always occur from storms that pass through the project area. Additionally, the analysis should include estimates from hurricane and storm wind damages which the project does not and can not prevent.

The National Park Service also believes that the Emergency cost savings as a result of the project are over estimated. It does not seem possible that the costs associated with beach scraping and pushing, sandbagging, North Carolina Department of Transportation emergency costs, damage to public property, and damage to private property, cleanup costs, post-storm recovery expenses, etc., will be precluded by this project as claimed (FR, 33). The National Park Service requests that reasonable estimates of these costs for the project be provided.

It is unclear how the COE calculated a "with project" unit day value of \$5.17 per person, an increase of \$1.30 per person from the "without project" unit day value. This figure seems to be based solely on the assumption that the recreational experience with a berm and dune condition will be more valuable than the current value. However, the COE does not provide any information that supports this increase in value. The National Park Service requests that the FR/DEIS provide the data or information to support the increased value in recreation with the project.

Costs

The analysis does not include the loss of benefit that occurs when portions of the berm and dune are lost to storms or other coastal process related erosion. When the berm and dune are eroded and before replenishment occurs again, there is a theoretical loss of "protection" by the berm and dune.

This figure must be subtracted from the benefit of property loss prevention.

Furthermore, the dollar value loss of the berm and dune and repairs to this berm and dune must be calculated into the analysis.

The costs of future damage from increased development in the project area should also be included in the cost analysis.

The National Park Service believes that the costs of the project are underestimated and requests the COE to conduct a more comprehensive and realistic cost analysis for the project.

5) CONFLICTS WITH NORTH CAROLINA COASTAL ZONE MANAGEMENT ACT

The National Park Service believes that this project has potential to be in direct conflict with the Coastal Zone Management Act (1972) and the North Carolina Coastal Area Management Act (1974) (CAMA). As a federal agency, the National Park Service must comply with the Coastal Zone Management Act and the North Carolina CAMA. Implementation of the proposed project would be in conflict with this requirement and potentially violate several provisions of CAMA that pertain to use standards in Areas of Environmental Concern (AEC) in North Carolina. The entire proposed project area lies within an AEC, namely the Public Trust Lands, Ocean Hazard Areas, and Ocean Erodible Zone. Provisions of these CAMA sections do not permit the activities proposed for this project unless there is sufficient mitigation or a variance is granted for this project. Yet, no such mitigation for the project, other than for sea turtle monitoring, is offered.

6) ENVIRONMENTAL ANALYSIS:

The National Park Service believes that the environmental analysis provided by this project does not fully disclose and address the impacts this project may have on federal, state, private, and municipal resources. Several times the FR/DEIS stated that the project is environmentally acceptable, yet the document also states there will be adverse impacts to several environmental parameters. Based on information provided in the DEIS, the National Park Service does not believe that the COE can claim that adverse impacts are environmentally acceptable. The DEIS is not the document to make that declaration. It is the understanding of the National Park Service that this decision can be rendered only after all direct, indirect, and cumulative impacts of the project have been identified and evaluated. The claim that the project is environmentally acceptable is premature; the purpose of the DEIS is to provide a forum for agency, organizational, and public review so that the additional environmental concerns and impacts can be identified and incorporated into the process.

The FR/DEIS claims that impacts from the project will be reduced by the use of beach compatible material. However, comments provided by Dr. Robert Dolan and data in the DEIS suggest the material from the borrow areas is not compatible with materials on the beaches. If this material is

used, it appears likely that the sand will be transported off the beach during tidal cycles and storm events and its value and purpose will be greatly diminished or potentially lost. According to Dr. Dolan, "The obvious conclusion is that a substantial percentage of the material that would be extracted from the identified source areas offshore would be finer in grain size than the native beaches, and thus suggest that the hydraulics of the beaches in the project area would be too energetic for the finer fraction to have a very long residence time in the project area," (DEIS Appendix C). The National Park Service does not believe that a suitable sand source that will be compatible with the native beach sands has been identified and located. The National Park Service further believes that a substantial portion of the material deemed suitable for the project could move south into CAHA. No impact analysis of this probability has been conducted. The National Park Service requests that a thorough analysis of the impacts that sediments of this size will have on water quality, benthic organisms, intertidal organisms, and dredging in Oregon Inlet (see Cumulative Impacts below) be provided.

Additionally, the National Park Service is concerned that excavation of the borrow areas will significantly alter the biological base of these borrow areas and potentially affect a wide range of ecological parameters in the area. The FR/DEIS claims that no adverse impact will occur but does not provide the data to support that statement. The National Park Service requests that the data be provided that supports the claims that this project is environmentally acceptable and that impacts will be minimal to benthic and fishery resources in the offshore borrow areas.

The National Park Service also requests that the data be provided that suggests that the effects of excavation of the borrow sites will have minimal effect on the local wave climate, potential erosion, and sediment budgets in the project area. Since a portion of CAHA is directly adjacent to the southernmost borrow area, any impacts as a result of excavation could potentially affect CAHA. These impacts must be clearly understood before a project of this magnitude can proceed.

The FR/DEIS states that a 3000 foot transition zone for the project is planned for CAHA and that CAHA can expect beach fill to be transported as far as 6000 feet below this transition zone, potentially affecting 9000 feet or 1.7 miles of CAHA beach and shoreline. Since CAHA does not intend to issue a SUP for this transition zone, there is still recognition that at least 6000 feet of shoreline and beach will be affected. The COE does not describe or analyze the effects this project will have on CAHA resources, other than to say there is a benefit from increased recreational use of the Seashore. First, there is no evidence that recreational use of the Seashore will increase as a result of this project. Second, increased usage also increases impacts from recreational use. The FR/DEIS must fully describe the direct, indirect, and cumulative impacts of this project for the duration of the project on CAHA resources (natural, cultural, and recreational) and operations.

The recognition that the beach fill material will move southward at least 6000 feet from the transition zone also recognizes the fact that substantial amount of beach fill could be transported south into Oregon Inlet, a possibility which is essentially ignored. The FR/DEIS claims that the amount of sand

that could be transported and have to be dredged out of Oregon Inlet due to project conditions falls well within the annual variation of current dredging operations. As mentioned earlier, a COE employee has stated that over 1 million cubic yards of beach sediment were transported off Nags Head beaches in September 1999 during Hurricane Dennis. The COE employee also said that 600,000 cubic yards of this material ended up in Oregon Inlet. Should this be an accurate statement, then the analysis provided in the section on Maintenance of Oregon Inlet needs to be revised to reflect a more likely scenario and include any provision or contingencies the COE plans in the event that material outside the annual variation is transported into Oregon Inlet. These costs must be accounted for in the economic analysis.

In Table 4-3 (DEIS) a list of comparative impacts of the project is provided. Many of these impacts are not supported by data and can be considered only speculative. The National Park Service requests that the data be provided that supports the claims made in this table. The following claims need support:

Under the NED Plan, additional information is needed to support the claims that:

- Improved recreational quality will be a benefit,
- Improved appearance of the beach will enhance the recreational experience,
- Only a temporary loss of benthic invertebrates will be experienced in the borrow areas,
- Only a temporary loss of beach invertebrates will be experienced.

The COE is requested to analyze and discuss the impacts that increased recreation will have on the project area and local interests that will be affected, such as CAHA.

The National Park Service strongly disagrees with the claim that beach invertebrates will only experience a temporary, localized, and reversible loss. Based on the proposed construction and periodic nourishment schedule, there will be little time for beach invertebrates to recover, potentially impacting a significant ecological community on the Outer Banks. The FR/DEIS did not refer to Dr. Cinde Donoghue's 1999 work on beach invertebrates on Pea Island National Wildlife Refuge and Cape Hatteras National Seashore, research that the National Park Service has deemed critical to understanding intertidal ecology. Donoghue's research has indicated that projects of the nature proposed by this project can eliminate beach invertebrates for years. Should the project area be continually renourished as proposed, beach invertebrates could be totally eliminated. The National Park Service views this as an unacceptable impact and requests that this information be incorporated into the impact assessment of the proposed project.

The National Park Service also requests that the COE discuss the cumulative impacts this project will have on statewide or regional resources. Numerous other dredge and fill projects not discussed by the COE in their analysis of cumulative impacts are planned for North Carolina, including impacts

from previous beach disposal operations. NEPA requires that all of these projects be considered in the cumulative impact analysis and this project is no exception. The FR/DEIS only provides information on the total amount of North Carolina beaches "impacted" by dredging operations in their cumulative impact analysis. However, they do not discuss true "impacts" of each of these projects and the cumulative effect these impacts have throughout the region. The FR/DEIS does not provide a comprehensive analysis of the impact of this project on the effectiveness of the dual jetty system and sand bypass system at Oregon Inlet. The National Park Service requests these analyses be provided.

The FR/DEIS states clearly that "No compensatory mitigation is proposed for this project" (DEIS 6-23) and the only other mitigation proposed is to monitor sea turtle nesting during the nesting season because of the desire by the COE to construct this project during the nesting season. The National Park Service requests that mitigation monitoring funds be identified in the project that will permit the comprehensive assessment and monitoring of impacts to nearshore organisms, intertidal organisms, and shorebirds utilizing these resources, before, during, and after project implementation.

CONCLUSION

The National Park Service believes the time permitted for adequate review and comment on this project was insufficient. This three volume document contained a tremendous amount of information that could not be adequately reviewed in the time frame given to arrive at a full understanding of the implications and impacts this project may have on the Outer Banks coastal environment. The National Park Service believes that time constraints imposed by the COE for reviewing and providing comment on this project has resulted in an incomplete comment of this document by the National Park Service and perhaps others.

The National Park Service believes the COE has established goals that may not be achievable on the Outer Banks. The National Park Service encourages the COE to more fully consider alternatives that were not fully analyzed and additional alternatives such as building relocation, restricting developments according to North Carolina law, and avoiding unnecessary development in identified Ocean Hazard and Erodible Zones. The COE has relied on engineering solutions for this project rather than explore other feasible alternatives that may be accomplished by other agencies or partnerships.

The economic analysis seems to be based on assumptions not justified in the FR/DEIS and represents an unrealistic projected future condition. For instance the FR/DEIS does not analyze recreational use of beaches in the Project Area. The National Park Service believes that tourism and recreational beach use will continue without the project, since the beach will always be present. Furthermore, the project will not preclude all damage as the FR/DEIS suggests. As a result, the benefit/cost ratio of this project is believed to be exaggerated.

The environmental analysis does not fully analyze the direct, indirect, and cumulative impacts of the

proposed project and related regional projects. Therefore, a thorough evaluation of the impacts was not made, and the selection of an alternative to accomplish project objectives is premature.

The National Park Service supports the project objective of reducing storm damages to existing properties on the Outer Banks. However, we do not believe there is economic practicality or environmental sensitivity in attempting to reduce beach erosion and property damage from storm conditions prevalent in the area by the method proposed.

U. S. GEOLOGICAL SURVEY COMMENTS

ER-00/523

GENERAL COMMENTS:

Careful and detailed examination of the economic calculations of project costs and projected future benefits are extremely important in judging the Dare County project. Because there is some concern about the accuracy of the nourishment/erosion model, provisions need to be made for a thorough review of the economic calculations that contribute to the cost/benefit ratios.

SPECIFIC COMMENTS:

DRAFT FEASIBILITY REPORT

Page 87, Volume 1, Section VI – SELECTED PLAN OF IMPROVEMENT, ENVIRONMENTAL IMPACTS, ENDANGERED AND THREATENED SPECIES:

The report indicates that both pipeline and hopper dredges will be used for project (Figure 9, Periodic Nourishment), yet states that hopper dredges will be used for nourishment of the North Project Area where sea turtles occur. Hopper dredges are particularly harmful to sea turtles. Pipeline dredges are considered less harmful to sea turtles. Because the proposed project has a 50-year project life (Table 4-3: Comparative Impacts of the Proposed Plan to the Nonstructural and No Action Alternative), the Corps of Engineers (Corps) should reconsider the use of pipeline dredges for the North Project Area to favor sea turtles, many of which are endangered and threatened.

Page 101, Section VII – CONCLUSIONS AND RECOMMENDATIONS, RECOMMENDATIONS:

In item "e", in addition to public education and outreach for flood plain information, coastal erosion and rising sea-level information needs to be included to discourage unwise and unsustainable coastal development. The planners and managers and the public should be made aware that erosion and flooding risks are likely to increase along the North Carolina coast in the near future and that beach nourishment is a costly and nonpermanent means of mitigating erosion.

In item "i", it should be clearly stated that the non-Federal partners are obligated to pay their share of the periodic nourishment costs for the 50-year project life. All of the benefits of this project are formulated on a 50-year life, and the State and local governments need to be fully aware of their considerable financial commitment in moving ahead with the Dare County project.

Volume II, Appendix D, Coastal Engineering

Page D-9, Section 4. Data Collection, 1) Seismic Surveys:

For the data-collection period of July-August 1994, where 535 miles of data were collected along 480 miles of track lines, the grid-line spacing needs to be defined. In addition, although this information is useful in regards to helping to define subsurface stratigraphy, there are gaps in the data between grid lines. Side-scan sonar, used in conjunction with shallow sub-bottom profiler data, is useful in helping to refine shallow stratigraphic mapping, and identifying habitat areas and live hard bottom areas. However, there are no maps showing the results of these surveys. Without these data (side-scan sonar and shallow sub-bottom profiler data) collected multiple times, it is unclear how quantitative predictions regarding sand migration can be produced, and how the effects of beach-nourishment methods on various nearshore habitats and ecosystems can be made.

Page D-10, Section 5. Final Borrow Site Selection:

The recommended plan calls for dredging over 66 million cubic yards of sand (page 4-3 of the Draft EIS) from two offshore borrow areas that are within three miles of the shore, close to the project beaches, and seaward (-30 to -50 ft) of the calculated "close-out depth" for this part of the North Carolina coast. Using the vibracore logs and grain-size data, the S-1 area appears suitable based on mean grain size, sorting, and minimal fine-grained sediments, but the N-1 area contains sand considerably finer than the native beach sand. With an overfill ratio of 1.5, this sand fill is likely to erode even faster than parts of the nourished beach with coarser, more suitable sand. As such, post-fill erosion rates could be significantly higher than modeled in the Draft EIS, requiring more frequent periodic renourishment than planned. This will increase the projects costs, change the shore-property damage projections, and reduce the project benefits. In turn, it will likely shorten the time when the Corps, the State, and local government officials must once again expend considerable public monies temporarily protecting property and development from storm erosion and sea-level rise.

Borrow sands should be analyzed for their chemical composition in order to match the island sand. Color and heat content of sand are factors to consider. A sand with high-quartz content has a heat capacity of about 44.59 J/mol (k) while the heat capacity of a calcite sand is about 83.47 J/mol (k). Therefore, high-quartz sands are hotter than those sands with a high content of calcite. If sands with significantly different heat capacities are used as replacement sand, this could have a deleterious effect on animals that live in the swash zone.

Page D-23, Section c. Long-Term Erosion Rates:

Future shoreline positions are based solely on extrapolation of historic rates of erosion, but this is likely to be too conservative because of increasingly credible scientific information and predictions that sea-level rise will double over the next century, and that with climate change, the frequency and

magnitude of coastal storms will increase. Both of these factors exert strong control on coastal processes, and a rise in sea level and an increase in storminess will result in even more erosion for coastal North Carolina. Such information needs to be factored into management planning and the Draft EIS.

Page D-39, Section g. Issues Addressed by Modeling, 4) Maintenance at Oregon Inlet:

The statement is made that the beach nourishment process of adding over 66 million cubic yards to the coastal sediment budget will have only minor effects on the coastal processes, but there is not sufficient information to support this conclusion. With a southerly net transport of littoral drift, infilling and migration of Oregon Inlet could accelerate following the renourishment. In addition, with a robust coastal storm, the increased sand in longshore transport to the south could fill the navigation channel through the inlet and possibly constrict or even seal off Oregon Inlet. This issue is in need of further scientific investigation.

**Draft EIS
Comment Letters
From State Agencies**



North Carolina
Department of Administration

James B. Hunt, Jr., Governor

Katie G. Dorsett, Secretary

July 11, 2000

Mr. Chuck Wilson
Department of the Army
Wilmington District
P.O. Box 1890
Wilmington NC 28402-1890

Dear Mr. Wilson:

Subject: Draft Environmental Impact Statement - Draft Feasibility Report and DEIS on Hurricane Protection and Beach Erosion Control

The N. C. State Clearinghouse has received the above project for intergovernmental review. This project has been assigned State Application Number 01-E-0000-0023. Please use this number with all inquiries or correspondence with this office.

Review of this project should be completed on or before 08/23/2000. Should you have any questions, please call (919)807-2425.

Sincerely,

A handwritten signature in cursive script that reads "Chrys Baggett".

Ms. Chrys Baggett
Environmental Policy Act Coordinator

PLEASE NOTE NEW MAILING ADDRESS
EFFECTIVE IMMEDIATELY

**N.C. STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
1302 MAIL SERVICE CENTER
RALEIGH, NC 27699-1302**



North Carolina
Department of Administration

James B. Hunt, Jr., Governor

Katie G. Dorsett, Secretary

August 29, 2000

Mr. Chuck Wilson
Department of the Army
Wilmington District
P.O. Box 1890
Wilmington, NC 28402-1890

Dear Mr. Wilson:

Re: SCH File # 01-E-0000-0023; Draft Environmental Impact Statement Draft Feasibility Report and DEIS on Hurricane Protection and Beach Erosion Control

The above referenced project has been reviewed through the State Clearinghouse Intergovernmental Review Process. Attached to this letter are comments made by agencies reviewing this document.

Should you have any questions, please do not hesitate to call me at (919) 807-2425.

Sincerely,

A handwritten signature in black ink that reads "Chrys Baggett".

Ms. Chrys Baggett
Environmental Policy Act Coordinator

Attachments

cc: Region R

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES



JAMES B. HUNT JR.
GOVERNOR

BILL HOLMAN
SECRETARY

MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee *MM*
Project Review Coordinator

RE: 01-E-0023 Draft Feasibility Report and Environmental
Impact Statement on Hurricane Protection and Beach
Erosion Control for Dare County Beaches

DATE: August 28, 2000

The Department of Environment and Natural Resources has reviewed the Draft Feasibility Report for the proposed project.

The attached comments identify a number of concerns that should be dealt with in order for The Corps of Engineers to produce an acceptable Final Environmental Impact Statement (FEIS). Addressing these issues will not only help our regulatory divisions but will provide greater assurances to this department that the impacts resulting from the proposed action will be avoided or minimized. The Corps of Engineers is encouraged to work directly with our divisions prior to submitting the FEIS to the State Clearinghouse for review so unnecessary delays can be avoided.

Thank you for the opportunity to respond.

Attachments

RECEIVED

AUG 28 2001



Appendix A-110 STATE CLEARINGHOUSE



☒ North Carolina Wildlife Resources Commission ☒

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Melba McGee, Environmental Coordinator
Office of Legislative & Intergovernmental Affairs

FROM: William Wescott, Coastal Coordinator
Habitat Conservation Program

DATE: August 17, 2000

SUBJECT: Scoping comments for the Draft Feasibility Report and Environmental Impact Statement (EIS) on Hurricane Protection and Beach Erosion Control for Dare County Beaches (Bodie Island Portion).

Staff biologists with the Wildlife Resources Commission have reviewed the document. Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.), the Clean Water Act of 1977 (as amended) and the North Carolina Environmental Policy Act (G.S. 113A-1 et seq., as amended; 1 NCAC-25).

The U.S. Army Corps of Engineers conducted feasibility studies on 20 miles of Dare County oceanfront located north of Oregon Inlet. The studies address the possibility of future beach nourishment projects along 14.8 miles of oceanfront in Nags Head, Kitty Hawk, and Kill Devil Hills. The preferred plan includes initial nourishment and 50 years of subsequent nourishments. According to the syllabus and pages 79 & 83 the total cost of the project would be 994 million dollars. Other information in this document indicates a different total cost of the project.

We request the following issues be thoroughly addressed in the Final Environmental Impact Statement.

1. The document includes the following statements:
 - "There are no areas of controversy for this study."
 - "Overall environmental impacts are expected to be minor..."
 - "No significant impact on biological resources is expected..."
 - "Since stable, productive bottom will be avoided there should be very little impact associated with the borrow areas."

Appendix A-111

The above statements possibly contradict information included in the Draft EIS.

- Fourteen federally listed endangered and threatened species occur in the study area.
 - Initial construction will take three years to complete with dredging and beach nourishment occurring year round. Periodic nourishment will occur every year along some segment of the project area for 50 years. The chronic environmental impacts to the borrow areas and beaches from annual long-term dredging requirements may preclude the recovery of invertebrate populations as an important food source for fish and wildlife species.
 - Portions of the habitat present in or near the proposed borrow areas are used for spawning, nursery, staging, foraging, and/or summer and wintering grounds for numerous species of fish, marine mammals and migratory birds.
 - The borrow areas are included in a larger area designated as essential fish habitat for numerous species of fish.
2. The likelihood that some portion of the 79 million cubic yards of beach nourishment sand will end up in Oregon Inlet is very realistic. If accelerated shoaling in Oregon Inlet is a possible side effect of this beach nourishment proposal then impacts to navigation, boating safety and additional maintenance dredging should be thoroughly addressed in the Final EIS.
 3. In section II, Past Hurricanes and Northeasters, the document neglected to provide the cost of damages in the study area for the six hurricanes since July 1996. These actual costs of damages in the study area would appear to be more applicable in performing a cost/benefit analysis than computer estimates based on probabilities of hurricane occurrence, intensity and unpredictable impacts to North Carolina's coast.

In section III, Potential Benefits for Hurricane and Storm Damage Reduction, the computer model used long-term progressive erosion together with storm damages to generate the projected annual hurricane and storm damage reduction estimate for the study area. Is it appropriate to include long-term erosion trends for this cost estimate?

4. We again request a history of North Carolina beach nourishment projects (including subsequent nourishments) and their effectiveness pertaining to yearly erosion and protection during major storm events. The Corps of Engineers should also show the longevity of the nourished areas once the beach nourishment efforts expired.

Thank you for the opportunity to comment on this project. If you need to discuss these comments please call William Wescott at (252) 946-6481.

State of North Carolina
Department of Environment
and Natural Resources
Division of Marine Fisheries

James B. Hunt, Jr., Governor
Bill Holman, Secretary
Preston P. Pate, Jr., Director



MEMORANDUM:

TO: Melba McGee, Environmental Coordinator

THROUGH: Mike Street, Chief of Habitat Section

FROM: Sara E. Winslow, Biologist Supervisor *SEW*

SUBJECT: Project Number OIE - 0023 - Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control

DATE: August 15, 2000

The North Carolina Division of Marine Fisheries has reviewed the referenced document and submits the following comments.

The study discloses that the most practicable plan of protection for the primary study area is a berm and dune project extending along approximately 14.8 miles on the oceanfront at Nags Head, Kill Devil Hills and Kitty Hawk. The recommended plan of improvement consists of a sandy dune constructed to an elevation of 13 ft. above the National Geodetic Vertical Datum (NGVD), fronted by a 50 ft. wide beach berm constructed to an elevation of 7 ft. above NGVD. The project accomplishment is the reduction of hurricane and storm damages and beach erosion. In addition, the project will enhance the beach strand available for recreation use.

First costs of the total project are currently estimated at \$69,518,000, with expected annual costs estimated at \$18,494,000. Expected annual benefits estimated at \$32,644,000, the total project benefit - cost ratio is 1.8. This plan fits the National Economic Development Plan (NED), which requires that the maximum net economic benefit is produced.

The Document states that the recommended plan of improvement is considered to be environmentally acceptable. Initial project construction and periodic nourishment could affect some threatened species and the existing fauna.

Both a pipeline dredge and a hopper dredge with pumpout capability, are proposed to be used for initial construction and periodic nourishment. A periodic nourishment operation will occur every

Appendix A-113

year along some segment of the project area, with each segment being renourished on a three year cycle.

Potential borrow areas for beach fill are located offshore, beyond the 30 ft. NGFD contour and inside the 3 mile nautical limit. The material in the southern borrow area (S-1) and the northern borrow areas (N1 and N2) is ideal for beach nourishment, with less than 10 percent in fines.

The Division is concerned with the adverse impacts that will occur from the project. Biological resources will be affected by dredging of material for initial project construction and by placement of material on the beach. These impacts will reoccur as the area is renourished.

As stated in the document the surf zone and the nearshore waters are utilized by kingfishes, spot, croaker, bluefish, weakfish, spotted seatrout, summer flounder, striped bass, spiny dogfish, Atlantic sturgeon and other commercially and recreationally important species. The offshore marine waters serve as habitat for the spawning of many estuarine dependent species. The Atlantic migratory striped bass population utilizes the area as overwintering grounds. Spiny dogfish also utilize the area for pupping grounds. During project construction and renourishment, commercial and recreational fisheries that occur in the area will be impacted or precluded. The impacts to the commercial and recreational fisheries utilizing the area need to be evaluated. Extensive recreational fisheries occur in the surf, as well as hook and line fishing from fishing piers and private and charter boats along the entire project area and in the borrow areas. Traditional commercial fisheries in the project area include beach seines, gill netting and trawling. Negative economic impacts would result from the fisheries being restricted or precluded in these areas for extensive periods of time during the initial project and during renourishment. Utilizing a hydraulic pipeline dredge would require the pipeline to be submerged from the dredge to a point close to shore. The placement of the pipeline would result in a hazard to navigation and preclude any fishing activity in the area. The proposed fill on the beach would move the shoreline seaward under ocean piers, reducing the available fishing area.

The Division is concerned with the increased turbidity levels that will result from the project. Displacement of various finfish species utilizing the area will likely occur. Even though the document states that the increases in turbidity and suspended materials is not expected to be greater than during storm events, this project will be a long term event, with prolonged periods of increased turbidity. Concern is also expressed with the impacts to the intertidal macrofauna. Even though recovery is rapid once the pumping operation ceases, due to the frequency of nourishment the Division would question the macrofauna recovery.

The importance of the area for a variety of finfish species was previously noted. This agency would be concerned with the entrainment impacts to larvae and juvenile species utilizing the area. The physical limitation of these stages make them potentially more susceptible to entrainment by an operating hydraulic or hopper dredge.

The Division appreciates the opportunity to review and provide comments on the document. If you have any questions, relative to these concerns, please contact me (252-264-3911).



**NORTH CAROLINA MARINE FISHERIES COMMISSION
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

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Columbia

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Wilmington

August 24, 2000

Melba McGee, Environmental Coordinator
Office of Legislative and Intergovernmental Affairs
Archdale Building, 14th Floor
512 Salisbury Street
Raleigh, North Carolina 27604

Re: Hurricane Protection and Beach Erosion Control -- Dare County Beaches (Bodie Island Portion)
DFR and DEIS (Volume 1) – OIE-0023

Dear Ms. McGee:

This letter constitutes the initial comments of the North Carolina Marine Fisheries Commission (MFC) on the subject project, in light of the MFC's duty to protect the marine and estuarine resources of North Carolina (G.S. 143B-289.52). The comments were developed with the advice of the MFC Habitat and Water Quality Standing Advisory Committee (HWQSAC) under authority delegated by the MFC to the HWQSAC's cochairs (Dr. Barbara Garrity-Blake and Mr. Willy Phillips). Please enter these comments into the public record, and keep the MFC informed of subsequent developments on this proposed project.

In general, the MFC finds that beach dredging and augmentation projects rarely provide adequate assessment or consideration of potential damage to fishery resources under state and federal management, and this project is no exception. Historically, emphasis has been placed on the logistics of sand procurement, related economics, and compliance with limitations imparted by the Endangered Species Act for sea turtles, piping plovers and other listed organisms. Too little attention has been paid to impacts on fisheries resources at either sand source sites or sand application sites, and certainly with too little concern for where the applied sand will end up once it moves off the beach. Also, too little attention has been paid to impacts on commercial and sport fisheries.

The proposed project is very large in both geographic and temporal scale, and presents a very significant threat to resources under MFC management authority. The project area impinges directly on essential fish habitats designated by the South Atlantic Fishery Management Council for red drum, penaeid shrimps, portions of the snapper grouper complex (including estuarine-dependent forms like gag grouper and black sea bass), portions of the coastal migratory pelagic complex, possibly calico scallop habitat (including quartz sands NE of Cape Lookout from 62 feet to 102 feet), and pelagic sargassum. The project also has direct implications for essential fish habitats designated by the Mid-Atlantic Fishery Management Council for summer flounder, bluefish and spiny dogfish. The project area also includes fish habitats in the process of being designated for special attention by the State of North Carolina through the "coastal habitat protection planning" provision of the 1997 Fisheries Reform Act (G.S. 143-279.8). The sand source areas include known winter aggregation sites for a wide array of economically

Appendix A-115

and ecologically important fishes managed by the Atlantic States Marine Fisheries Commission, including striped bass, Atlantic sturgeon, and weakfish. With this extreme involvement with essential fish habitats, special care is needed.

The draft consistently understates the potential impact on these resources. Repeated and long-lasting dredging in essential fish habitats has never been reliably evaluated in terms of impacts on fishery resources or fisheries. Disruption of bottom physical structure, creation of an artificial and continual disturbance regime, creation of artificial topography, turbidity in the water column, alteration of surficial sediment size-distributions inside depressions, impacts on prey organism distribution and abundance patterns (both benthic and in the water column), and a variety of other effects in concert create a very significant disturbance of this extremely important marine ecosystem.

The proposed alteration of about 800 acres of habitat in the critical overwintering area in N1 by itself is enough to warrant further analyses and mitigative efforts. Spiny dogfish are severely overfished, with serious depletion of large females most important as brood stock. Further impacts on these fish as they overwinter could threaten the rebuilding plan just adopted by the U.S. Department of Commerce. Rebuilding is underway as well for various striped bass stocks, which also overwinter in this area.

Repeated artificial disturbance of the surf zone and associated turbidity also has great potential to damage fish and crab larvae moving to and through Oregon Inlet and into Pamlico Sound. The best current information suggests that larvae move onshore and then along shore prior to entrainment into inlets. The risks to this most critical life-stage of North Carolina marine resources are not well-known, but of great concern.

Scientific work is underway to better characterize these potential impacts. The MFC feels it is premature to embark on a project of this magnitude until its likely effects are known. Certainly, the potential for negative effects impacts is not adequately characterized in the draft.

In addition, the MFC has adopted a specific policy of "net enhancement" for projects with the potential to significantly damage the marine and estuarine resources of North Carolina. The project is clearly out of compliance with the MFC's "net enhancement" policy (attached). Only the most cursory analyses of impacts on those resources are presented in the documents, and no significant attempt to minimize and then mitigate likely impacts have been proposed. Until such time as credible analyses are presented that demonstrate that the project has no net negative impact on the marine and estuarine resources of North Carolina, the MFC will continue to recommend denial of any and all state actions to allow the project to proceed. We request that this project be found inconsistent with the state's coastal zone management plan unless and until such analyses are completed.

The MFC also finds that piecemealing of the environmental evaluations of beach augmentation projects, in the face of overwhelming demand for such projects, necessarily results in inadequate evaluation of the relative merits and deficiencies of these projects. While it seems unavoidable that some sand will be moved to artificially enhance certain beaches, the relative pluses and minuses of those projects cannot be assessed under the current approach. This problem is particularly acute given the rush to augment beaches after recent hurricanes. The supply of appropriate sand is limited, in both state and federal waters, and the correspondence between areas with appropriate sand and important fish habitats is quite high. The cumulative effect of all these projects currently active or proposed for the North Carolina coast constitutes a potentially serious threat to the marine resources under state and federal management.

An integrated assessment should be conducted of the relative economic merits and the relative environmental harm of the entire slate of projects under consideration for coastal North Carolina. The exclusion of the Highway 12 section of the study area makes assessment of the cumulative impacts of the proposed activity in the area scientifically impossible. Segmenting the environmental analyses of

Appendix A-116

artificial beach augmentation activities under a variety of plans on a variety of temporal tracks all over the coast prevents any optimization of benefits and environmental impacts.

Unfortunately, the timing of the proposed project (and all the others) is particularly bad. The MFC is currently in the process of developing, along with the Environmental Management Commission and the Coastal Resources Commission, a Coastal Habitat Protection Plan (CHPP) for the Coastal Ocean, as required by the NC Fisheries Reform Act of 1997. The law requires the development and implementation of plans which provide a net enhancement of the value to the fishery resource of a long list of habitat types, including many potentially affected by redirection of sand. The Coastal Ocean CHPP will address problems with beach dredging; it will not even be available in draft until next year.

We suggest that the current suite of federal activities and expenditures related to beach augmentation comprise a real and significant threat to the marine and estuarine resources of the state of North Carolina, including the subject project. We ask the state to not approve consistency determinations on beach dredgings and augmentation projects until an adequate assessment of the cumulative impacts of these projects is conducted, and impacts on marine and estuarine resources are shown to be insignificant. Moreover, that analysis should be conducted in coordination with the development of the integrated fish habitat protection strategies in the Coastal Ocean CHPP, currently under development.

Barring such a comprehensive analysis, the MFC requests that adequate analyses of direct and indirect impacts of the proposed project on the marine resources of North Carolina be undertaken, and that impacts on those resources be clearly and carefully considered before any state or federal action is taken.

Thank you for the opportunity to comment on this important project.

Sincerely,

Barbara Garrity-Blake (bl)

Barbara Garrity-Blake, Ph.D., Co-Chair
MFC Habitat & Water Quality Standing Advisory Committee

Willy Phillips (bl)

Willy Phillips, Co-Chair
MFC Habitat & Water Quality Standing Advisory Committee

Attachments

cc: Mr. Jimmy Johnson, Chair, MFC
Dr. Gene Tomlinson, Chair, CRC
Dr. David Moreau, Chair, EMC
Bill Holman, Secretary, DENR
Mr. Roger Pugliese, SAFMC
Preston Pate, Director, DMF
Donna Moffitt, Executive Director, DCM
Jess Hawkins, MFC Liaison
Mike Street, DMF Habitat Coordinator
Jack Dunnigan, Executive Director, ASMFC
David Borden, Chairman, ASMFC
Mike Street, MFC
Sara Winslow, DMF



**NORTH CAROLINA MARINE FISHERIES COMMISSION
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

COMMISSIONERS

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NORTH CAROLINA MARINE FISHERIES COMMISSION

**POLICIES FOR THE PROTECTION AND RESTORATION OF
MARINE AND ESTUARINE RESOURCES AND
ENVIRONMENTAL PERMIT REVIEW AND COMMENTING
(ADOPTED APRIL 13, 1999)**

Issue

This document establishes the policies of the NC Marine Fisheries Commission (Commission) regarding overall protection and restoration of the state's marine and estuarine resources, and for environmental permit review for proposed projects with the potential to adversely impact those resources.

Background

The "marine and estuarine resources" of North Carolina are defined broadly as "[a]ll fish, except inland game fish, found in the Atlantic Ocean and in coastal fishing waters; all fisheries based upon such fish; all uncultivated or undomesticated plant and animal life, other than wildlife resources, inhabiting or dependent upon coastal fishing waters; and the entire ecology supporting such fish, fisheries, and plant and animal life." N.C.G.S. §113-129(11). The Commission is charged with the duty to "(m)anage, restore, develop, cultivate, conserve, protect, and regulate the marine and estuarine resources within its jurisdiction." N.C.G.S. §143B-289.51(b)(1).

Two powers of the Commission constitute its primary authorities to effectuate that charge, and thereby to protect and restore North Carolina marine and estuarine resources. First, the Commission is specifically empowered "[t]o comment on and otherwise participate in the determination of permit applications received by state agencies that may have an effect on the marine and estuarine resources of the state." N.C.G.S. §143b-289.52(2)(9). Second, the Commission has to power and duty to participate in the development, approval and implementation of Coastal Habitat Protection Plans (Habitat Plans) for all "critical fisheries habitats." N.C.G.S. §§143B-279.8; 143B-289.52(a)(11). The goal of such Habitat Plans is "the net long-term enhancement of coastal fisheries associated with each coastal habitat identified." N.C.G.S. §142B-279.8. The Commission by unanimous vote has delegated its permit commenting authority to its Habitat and

Appendix A-118

(Committee) for the sake of efficiency and effectiveness. Likewise, the Commission has designated the Committee as its participating body in the development of Habitat Plans, which will then be approved and implemented by the full Commission. However, since the formal preparation of Habitat Plans will not begin until at least 1 July 1999, it will be some time before final Habitat Plans can be developed and implemented in order to help protect against the impacts of coastal development and other human activities that adversely affect North Carolina's marine and estuarine resources. Consequently, the Commission's environmental permit review authority currently constitutes the primary vehicle by which the Commission can effectuate its duty to protect and enhance the state's marine and estuarine resources.

Discussion

There are two equally serious challenges to the Commission's successfully maintaining and enhancing North Carolina's marine and estuarine resources: (1) the lack of necessary information on the current nature and status of many of those resources; and (2) the lack of obvious mechanisms to account for and ameliorate the ever accumulating changes that impair the functioning of critical fisheries habitats and otherwise adversely affect fisheries stocks. The Commission cannot hope to comply with its statutory duties to protect and enhance marine and estuarine resources without the abilities to identify and monitor changes in those resources, to compensate for losses to critical fisheries habitats, and to enhance the overall functioning of the altered coastal ecosystem.

Cumulative adverse resource impacts from both large and small scale human activities constitute the principal impediment to the Commission's ability to achieve its statutory mandate of conserving, protecting and restoring North Carolina's marine and estuarine resources. Many of the activities that contribute to coastal resource destruction or impairment require no environmental permits. As a consequence, their impacts are not accounted for, to the long-term detriment of marine and estuarine resources. Even for permitted activities, the adverse impacts on marine and estuarine resources may be individually minor, causing them to fall below the thresholds that require compensatory mitigation under existing state policy.

However, where specific projects requiring environmental permits pose a threat to resources under the Commission's jurisdiction, it is reasonable to expect the permittee to contribute to resolving both the informational and resource protection dilemmas faced by the Commission to ensure that unacceptable impacts to marine and estuarine resources do not occur. A direct precedent to such action by a state agency is found in the N.C. Division of Water Quality's current requirement that NPDES permittees conduct upstream and downstream monitoring as a condition of their permits, to ensure that state water quality standards are not violated. In addition, that agency has worked with dischargers in certain river basins to establish industry - funded, integrated monitoring networks to track water quality trends in those waters.

Specific action by the Commission is required if it is to meet its charge of protecting and restoring the state's marine and estuarine resources. To the greatest extent possible, activities that potentially threaten those resources must be prevented from contributing to overall resource degradation. Instead, adequate measures must be implemented to ensure a long-term, net improvement in the quantity and quality of fisheries stocks and critical fisheries habitats under

the Commission's jurisdiction. To achieve that end, two goals must be attained. First, adequate compensatory and resource enhancement measures must be incorporated into existing environmental permitting processes. Second, resource restoration and enhancement programs must be developed to offset losses from activities not requiring permits. The proposed policies set out below are primarily intended to achieve the first of these goals.

Proposed Resource Protection and Environmental Permit Review and Commenting Policies

It shall be the policy of the North Carolina Marine Fisheries Commission that the overall goal of its marine and estuarine resource protection and restoration programs is the long-term enhancement of the extent, functioning and understanding of those resources.

Toward that end, in implementing the Commission's permit commenting authority pursuant to N.C.G.S. §143B-289.52(a)(9), the Habitat and Water Quality Standing Advisory Committee shall, to the fullest extent possible, ensure that state or federal permits for human activities that potentially threaten North Carolina marine and estuarine resources:

- (1) are conditioned on (a) the permittee's avoidance of adverse impacts to marine and estuarine resources to the maximum extent practicable; (b) the permittee's minimization of adverse impacts to those resources where avoidance is impracticable; and (c) the permittee's provision of compensatory mitigation for all reasonably foreseeable impacts to marine and estuarine resources in the form of both informational mitigation (the gathering of base-line resource data and/or prospective resource monitoring) and resource mitigation (in kind, local replacement, restoration or enhancement of impacted fish stocks or habitats); and
- (2) result, at a minimum, in no net loss to coastal fisheries stocks, nor functional loss to marine and estuarine habitats and ecosystems.

h&wq/policies



**NORTH CAROLINA MARINE FISHERIES COMMISSION
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

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Appendix A-121

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- (2) result, at a minimum, in no net loss to coastal fisheries stocks, nor functional loss to marine and estuarine habitats and ecosystems.

h&wq/policies

INTERGOVERNMENTAL REVIEW – PROJECT COMMENTS

Project Number: DIE-0023 Due Date: 8-18-00

After review of this project it has been determined that the ENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input type="checkbox"/>	Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters.	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
<input type="checkbox"/>	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit- whichever is later.	90-120 days (N/A)
<input type="checkbox"/>	Water Use Permit	Pre-application technical conference usually necessary	30 days (N/A)
<input type="checkbox"/>	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
<input type="checkbox"/>	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
<input type="checkbox"/>	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100, 2Q.0300, 2H.0600)	N/A	60 days
<input checked="" type="checkbox"/>	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
<input type="checkbox"/>	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 2D.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-733-0820.		
<input type="checkbox"/>	Complex Source Permit required under 15 A NCAC 2D.0800		
<input type="checkbox"/>	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (land Quality Sect.) At least 30 days before beginning activity. A fee of \$30 for the first acre and \$2000 for each additional acre or part must accompany the plan.		20 days (30 days)
<input type="checkbox"/>	The Sedimentation Pollution control Act of 1973 must be addressed with respect to the referenced Local Ordinance.		(30 days)
<input type="checkbox"/>	Mining Permit	On-site inspection usual. Surety bond filed with ENR. Bond amount varies with type mine and number of acres of affected land. Any are mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
<input type="checkbox"/>	North Carolina Burning permit	On-site inspection by N.C. Division Forest Resources if permit exceeds 4 days	1 day (N/A)
<input type="checkbox"/>	Special Ground Clearance Burning Permit - 22 counties in coastal N.C. with organic soils	On-site inspection by N.C. Division Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
<input type="checkbox"/>	Oil Refining Facilities	N/A	90-120 days (N/A)
<input type="checkbox"/>	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, certify construction is according to ENR approved plans. May also require permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of \$200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)

PERMITS		SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input type="checkbox"/>	Permit to drill exploratory oil or gas well	File surety bond of \$5,000 with ENR running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to ENR rules and regulations.	10 days N/A
<input type="checkbox"/>	Geophysical Exploration Permit	Application filed with ENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
<input type="checkbox"/>	State Lakes Construction Permit	Application fees based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15-20 days N/A
<input checked="" type="checkbox"/>	<i>Major program</i> 401 Water Quality Certification	N/A	60 days (130 days)
<input type="checkbox"/>	CAMA Permit for MAJOR development	\$250.00 fee must accompany application	55 days (150 days)
<input type="checkbox"/>	CAMA Permit for MINOR development	\$50.00 fee must accompany application	22 days (25 days)
<input type="checkbox"/>	Several geodetic monuments are located in or near the project area. If any monument need to be moved or destroyed, please notify: N.C. Geodetic Survey, Box 27687 Raleigh, NC 27611		
<input type="checkbox"/>	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
<input type="checkbox"/>	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
<input checked="" type="checkbox"/>	Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
*	Other comments (attach additional pages as necessary, being certain to cite comment authority)		

REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

Asheville Regional Office
59 Woodfin Place
Asheville, NC 28801
(828) 251-6208

Mooresville Regional Office
919 North Main Street
Mooresville, NC 28115
(704) 663-1699

Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 395-3900

Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, NC 28301
(910) 486-1541

Raleigh Regional Office
3800 Barrett Drive, P.O. Box 27687
Raleigh, NC 27611
(919) 571-4700

Winston-Salem Regional Office
585 Woughtown Street
Winston-Salem, NC 27107
(336) 771-4600

Washington Regional Office
943 Washington Square Mall
Washington, NC 27689
(252) 946-6481

Appendix A-125

GENERAL COMMENTS

Project: Dare Co. Beaches

___ The applicant should be advised that plans and specifications for all water system improvements must be approved by the Division of Environmental Health prior to the award of a contract or the initiation of construction (as required by 15A NCAC 18C 0.0300 et. seq.). For information, contact the Public Water Supply Section, (919)733-2460.

___ This project will be classified as a non-community public water supply and must comply with state and federal drinking water monitoring requirements. For more information, the applicant should contact the Public Water Supply Section, (919)733-2321.

___ If this project is constructed as proposed, we will recommend closure of adjacent waters to the harvest of shellfish. For information regarding the shellfish sanitation program, the applicant should contact the Shellfish Sanitation Section, (252)726-6827.

___ Cumulative impacts from this type of project could cause deterioration in water quality. The proposed project would increase impervious surfaces and alter natural drainage patterns. There would be a loss of natural vegetation causing an increase in stormwater runoff which could jeopardize the open status of adjacent waters. For more information, the applicant should contact the Shellfish Sanitation Section at (252)726-6827.

___ The subject project is located in an area open to shellfish harvesting. The 10-slip dock, as proposed, would not cause closure in accordance with 15A NCAC 18A MARINAS: DOCKING FACILITIES: OTHER MOORING AREAS; however, dockage at the facility could exceed 10 boats. If this was to occur, closure would be recommended in accordance with DEH rules. For information regarding shellfish sanitation, the applicant should contact the Shellfish Sanitation Section at (252)726-6827.

___ Proliferation of these type facilities could cause deterioration in water quality and consequently additional closures of shellfishing waters. For more information, the applicant should contact the Shellfish Sanitation Section at (252)726-6827.

___ The spoil disposal area(s) proposed for this project may produce a mosquito breeding problem. For information concerning appropriate mosquito breeding measure, the applicant should contact the Public Health Pest Management Section at (252)726-8970. The applicant should also contact _____ with Mosquito Control in _____ County at _____.

✓ This is a mosquito breeding area. Construction plans and operations should include awareness of this. The applicant should contact the Public Health Pest Management at (252)726-8970 for a site visit or information to help prevent the creation of more mosquito habitat.

✓ The applicant should contact Scott Sawyer with Mosquito Control in Dare County at (252)733-1101.

___ The applicant should be advised that this area is a mosquito infested habitat. Mosquito control will be a problem.

___ The applicant should be advised that prior to the removal or demolition of dilapidated structures, an extensive rodent control program may be necessary in order to prevent the migration of rodents to adjacent areas. For information concerning rodent control, contact the local health department or the Public Health Pest Management Section, (919)733-6407.

___ The applicant should be advised to contact the local health department regarding their requirements for septic tank installations (as required under 15A NCAC 18A .1900 et.seq.). For information concerning septic tank and other on-site waste disposal methods, contact the On-Site Wastewater Section at (919)733-2895.

___ The applicant should be advised to contact the local health department regarding the sanitary facilities required for this project.

___ The applicant should work with the local health department to assure that plans for the food service establishment are approved prior to construction.

Appendix A-126

Reviewer: Alicia L. Anderson Date: 7/21/00



NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
COASTAL RESOURCES COMMISSION



MEMORANDUM

TO: Melba McGee, NC Division of Policy and Development
FROM: Steve Benton, NC Division of Coastal Management
SUBJECT: Review of SCH#01-0023

DATE: 7/20/2000

A COPY OF ALL COMMENTS RECEIVED BY THE SCH IS REQUESTED REVIEWER COMMENTS ATTACHED

Review Comments:

project will be This ~~document is being~~ reviewed for consistency with the NC Coastal Management Program pursuant to federal law and or NC Executive Order 15. Agency comments received by SCH are needed to develop the State's consistency position.

Project Review Number (if different from above) _____

A consistency position will be developed based upon our review on or before _____

A Consistency Determination document is, or may be required for this project pursuant to federal law and or NC Executive Order 15. Applicant should contact Steve Benton or Caroline Bellis in Raleigh, phone (919)733-2293, for information on proper document format and applicable state guidelines and land use plan policies.

Proposal is in draft form, a consistency response is inappropriate at this time. A Consistency Determination should be included in the final document.

A Consistency Determination Document (pursuant to federal law and/or NC Executive Order 15) is not required.

A consistency response has already been issued.

Project Number _____ Date Issued _____

Proposal involves < 20 Acres and or a structure < 60,000 Square Feet and no AEC's or Land Use Plan problems.

Proposal is not in the Coastal Area and will have no significant impacts on any land or water use or natural resources of the Coastal Area.

A CAMA Permit is, or may be required for all or part of this project. Applicant should contact _____ in _____, phone # _____, for information.

A CAMA Permit has already been issued, or is currently being reviewed under separate circulation. Permit Number _____ Date Issued _____

Other (see attached).

State of North Carolina Consistency Position:

The proposal is consistent with the NC Coastal Management Program provided that all conditions are adhered to and that all state authorization and/or permit requirements are met prior to implementation of the project.

The proposal is inconsistent with the NC Coastal Management Program.

Other (see attached).

JAMES B. HUNT JR.
GOVERNOR

WAYNE MCDEVITT
SECRETARY

EUGENE B. TOMLINSON, JR.
CHAIRMAN

ROGER L. CROWE, JR.
VICE CHAIRMAN

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ROBERT R. EMORY, JR.

MARGARET A. "PEGGY"
GRIFFIN

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MARY PRICE TAYLOR
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PATRICIA S. HOWE

DOUGLAS W. LANGFORD

ERNEST W. LARKIN

JERRY L. OLD

MELVIN M. SHEPARD, JR.

ANGIE A. TOOLEY

DONNA D. MOFFITT
EXECUTIVE SECRETARY



NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

4 ERO1-7296

STATE NUMBER: 01-E-0000-0023 H05
DATE RECEIVED: 07/11/2000
AGENCY RESPONSE: 08/18/2000
REVIEW CLOSED: 08/23/2000

MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORD
DEPT OF CUL RESOURCES
ARCHIVES-HISTORY BLDG - MSC 4617
RALEIGH NC

REVIEW DISTRIBUTION
ALBEMARLE REG PLANNING COMM
CC&PS - DEM, NFIP
DEHNR - COASTAL MGT
DENR LEGISLATIVE AFFAIRS
DEPT OF CUL RESOURCES
DEPT OF TRANSPORTATION

PROJECT INFORMATION

APPLICANT: Department of the Army
TYPE: National Environmental Policy Act
ERD: Draft Environmental Impact Statement
DESC: Draft Feasibility Report and DEIS on Hurricane Protection and Beach Erosion Control

7/24
8/30/00
MAM
NC RB 8/31/00
98-E-0000-0008

Dare

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date. If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED:

- NO COMMENT.
- COMMENTS ATTACHED

SIGNED BY:

Renee Gledhill-Earley

DATE:

8/31/00

RECEIVED

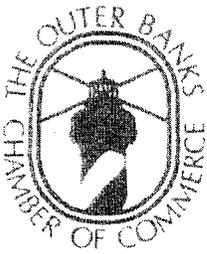
SEP 5 2001

N.C. STATE CLEARINGHOUSE

Appendix A-128

JUL 13 2000

**Draft EIS
Comment Letters
From Local Agencies**



THE OUTER BANKS CHAMBER OF COMMERCE

Serving Currituck and Dare Counties, Ocracoke Island

RECEIVED
EXECUTIVE OFFICE

July 28, 2000

2000 JUL 31 A 11: 07

LOCATED ON THE CORNER OF

COLINGTON ROAD &

MUSTIAN STREET,

KILL DEVIL HILLS

P.O. Box 1757

KILL DEVIL HILLS, NC 27948

VOICE (252) 441-8144

FAX (252) 441-0338

E-MAIL ADDRESS:

chamber@outer-banks.com

FIND OUR HOMEPAGE

ON THE INTERNET AT

www.outerbankschamber.com

Action: TS
CF: DE DX DP
DD PM-C

Colonel James W. DeLoney
District Engineer
P. O. Box 1890
Wilmington, NC 28402-1890

Dear Colonel DeLoney:

The Outer Banks Chamber of Commerce Board of Directors supports the Environmental Impact Statement for the Northern Dare Beaches Hurricane Protection and Erosion Control Project.

This decision was made by the Board based on the fact that our 2000 Legislative Poll shows that it is one of the major issues before us in the County, and that of all the possible methods to limit erosion this plan was listed as the most preferred by our membership.

Sincerely,

Ben Cahoon
Chairman

Willie R. Etheridge, Jr.
P. O. Box 77
Wanchese, NC 27981

August 29, 2000

Mr. Chuck Wilson
Environmental Resources Section
U.S. Army Engineer District, Wilmington
P. O. Box 189
Wilmington, NC 28402-1890

Dear Mr. Wilson:

Thank you for sending a copy of the "Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control – Dare County (Bodie Island Portion) – Volume 1."

After reviewing this information, I wish to submit the following questions and make a few statements regarding "the optimum plan of protection for this area."

- 1) What plans & funding have been offered to deal with the potential increase of sediment (sand) that most certainly will be a result of beach nourishment in Nags Head as relates to maintaining the navigation channel at Oregon Inlet?
- 2) What studies have been conducted as to the effects a north jetty would have on slowing the erosion, (i.e. the funneling effect of Oregon Inlet) to the north of Oregon Inlet?
- 3) Please share any info concerning the positive effects that sand bypassing at Oregon Inlet might have on old Highway #12 "Hot Spots" south of Oregon Inlet.
- 4) Please include any information available as to the protective benefits that the stabilization project would have for the O.I. bridge and its approaches from both the north and south, and how this might tie in with the prospective beach nourishment.
- 5) Since it appears to be an ongoing problem to locate suitable spoil disposal sites for channel dredging on the sound side, what studies have been conducted as to the probable effects of placing the material in the surf zones or work areas of the nearest ocean beaches?
- 6) And, what studies have been conducted as to the actual grain sizes and their compatibility, from areas other than the lower portion of the interior channels, sound side?

Mr. Chuck Wilson
Page 2
August 29, 2000

- 7) What studies have been conducted on the sound side to locate potential borrow sites from the sound?
- 8) Please address the potential effects of ocean dredging from the identified borrow sites to the naturally occurring storm bars that build and move onto the beach in a storm event in between the borrow areas and the shore.
- 9) Please cite any scientific studies which relate to the removal of sand from the ocean side borrow sites and its long-term effects.
- 10) For whatever studies that are cited for the above questions, please send a copy.
- 11) I find it interesting that this was sent to me personally, and can only attribute it to the many years of effort I have spent working for stabilization of Oregon Inlet as head of the Oregon Inlet Users Association.
- 12) A word to the wise to all (supporters of this beach nourishment project) – over the years there have been many promises by our elected officials that the Oregon Inlet Stabilization Project would be done, and it was authorized and funded by Congress in 1970, yet it still remains undone??

Please understand that I am not opposed to beach nourishment at this time, north or south of Oregon Inlet. However, I would appreciate answers to my questions and receiving the supportive data and inclusion of same in your Feasibility Report and Impact Statement.

Thank you once again for submitting the "draft" for my reading and comments.

Sincerely,



Willie R. Etheridge, Jr.

President

OREGON INLET USERS ASSOCIATION

WRE/ds

**Draft EIS
Comment Letters
From Elected Officials**



COUNTY OF DARE
MANTEO, NORTH CAROLINA 27954

PLANNING DEPARTMENT

August 11, 2000

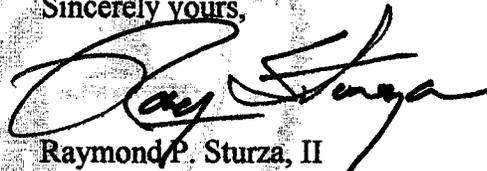
DARE COUNTY
ADMINISTRATIVE BUILDING
P.O. BOX 1000
PHONE (252) 473-1101

Colonel James W. DeLony
U. S. Army Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402-1890

Dear Colonel DeLony:

On August 7, 2000, the Dare County Board of Commissioners discussed the Draft EIS for the proposed Northern Dare Beaches Hurricane Protection and Erosion Control Project. The Board voted to adopt the resolution attached with this letter to indicate its continued support for this most important project.

Sincerely yours,



Raymond P. Sturza, II
Planning Director

**A RESOLUTION IN SUPPORT THE NORTHERN DARE BEACHES
HURRICANE AND EROSION CONTROL PLAN, FEASIBILITY REPORT, AND
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

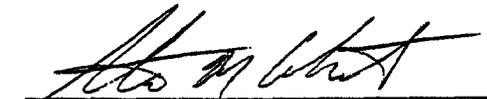
Whereas, the U.S. Army Corps of Engineers has released the Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control for the Northern Dare Beaches, and

Whereas, the County of Dare has served as the non-federal sponsor of this study with funding support from the Dare County Tourist Bureau and the NC Division of Water Resources, and

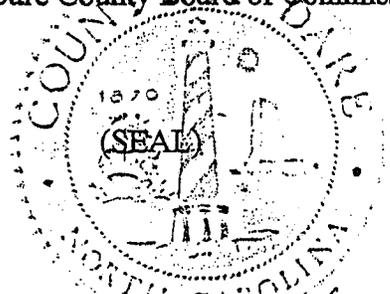
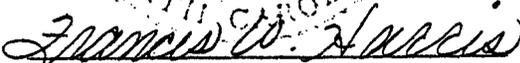
Whereas hurricane protection and beach erosion control are important to the economic vitality of Dare County, and it is in the public interest to protect lives and property from hurricanes and beach erosion,

Now Therefore be it resolved that the Dare County Board of Commissioners does endorse and support the authorization, funding, and construction of the Northern Dare Beaches Hurricane Protection and Erosion Control plan, as defined by the draft Feasibility report.

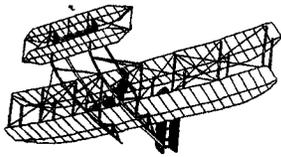
Adopted by the Dare County Board of Commissioners this the 7th day of August, 2000.



Stan M. White, Chairman
Dare County Board of Commissioners

Frances W. Harris, Clerk
Dare County Board of Commissioners



Town of Kitty Hawk

101 Veterans Memorial Drive

August 2, 2000

Action: PM
CF: DE DX DP
DD TS RG

US Army Corps of Engineers, Wilmington District
Attn: Colonel James W. DeLony
P.O. Box 1890
Wilmington, NC 28402-1890

Dear Colonel DeLony,

At the most recent applicant briefing, the Town of Kitty Hawk requested that the U.S. Army Corps of Engineers further explore the expansion of the Dare County Beaches Hurricane Protection and Erosion Control Project northward in the Town of Kitty Hawk to the Town boundary. The outcome of this additional study was that the Corps of Engineers could not justify the expansion of the project.

Currently, the Town has witnessed that the area to the north of where the project has been targeted is experiencing the majority of impacts from the ocean forces. The problems associated with the lack of a protective berm and the higher rates of erosion north of the proposed project area result in; severe erosion, ocean overwash and inundation of interior lots, loss of portions of NC12 with the potential to lose more, private property damage, clean-up following overwash events, and public health and safety issues. Each of the problems just mentioned will continue to intensify without the relief that an erosion control project will offer.

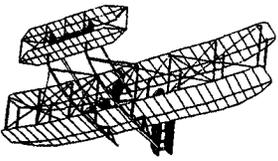
Once again, I have provided attachments to better explain the reasons why the Town would like to see the project expanded. At the beginning of the study process, it appeared that the entire oceanfront in Kitty Hawk had been targeted for this project. If the project is constructed as it is now proposed, the Town Council and the citizens of Kitty Hawk will be left with many questions regarding "why the worst areas of Town were not part of the targeted project area."

In closing, we do appreciate your hard work on the study and in accommodating our additional request to include the northern beach of Kitty Hawk. We have provided you with a resolution that lends our support to proceed with the project. If you have any questions or advice on this matter, I can be reached at (252) 261-3552.

Sincerely,


Clinton G. Perry
Mayor

Cc: Town Council Dare Co. BOC Kill Devil Hills
Ray Sturza Nags Head



Town of Kitty Hawk

101 Veterans Memorial Drive

A RESOLUTION IN SUPPORT OF THE NORTHERN DARE BEACHES HURRICANE AND EROSION CONTROL PLAN, FEASIBILITY REPORT, AND DRAFT ENVIRONMENTAL IMPACT STATEMENT

Whereas, the U.S. Army Corps of Engineers has released the Draft Feasibility report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control for the Northern Dare Beaches, and

Whereas, the County of Dare has served as the non-federal sponsor of this study with funding support from the Dare County Tourist Bureau and the NC Division of Water Resources, and

Whereas, hurricane protection and beach erosion control are important to the economic vitality of Dare County, and it is in the public best interest to protect lives and property from hurricanes and beach erosion, and

Whereas, it has been determined by the Corps of Engineers that the northern portion of the Town does not qualify for Federal funding to support this project despite a definite need that has been identified by the Town, and

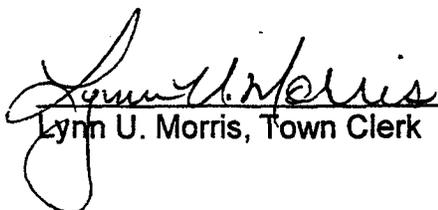
Whereas, this project provides little protection to the Town of Kitty Hawk despite more frequent events of ocean overwash, flooding and damage to homes to the north of the project terminus, and

Whereas, despite the fact that this project has been designed to help protect Dare County from severe storms for 50 years and the Town anticipates losing NC12 and experiencing ever-increasing problems associated with erosion within this time frame,

Now Therefore Be It Resolved that the Town Council of Kitty Hawk does endorse and support the authorization, funding, and construction of the Northern Dare Beaches and reserves the right to make a final decision on the project once all the facts have been presented and reviewed.

This resolution was adopted on August 7, 2000 by a vote of 4 in favor and 0 opposed.


Clifton G. Perry, Mayor


Lynn U. Morris, Town Clerk

Appendix A-137

Mayor
SHERELENE G. ROLLASON

Mayor Pro Tem
WILLIAM R. MORRIS, JR.

Commissioners
ROBERT C. COMBS, II
WILLIAM M. PITT
ROBERT L. WOODARD



The Town of
KILL DEVIL HILLS
NORTH CAROLINA

Town Manager
DEBORA P. DIAZ
Assistant
Town Manager
SHAWN R. MURPHY
Town Clerk
MARY E. QUIDLEY, CMC/AAE
Town Attorney
ROBERT L. OUTTEN
Action: TS
CF: DE DX DD
DP PM-C
EOC

RECEIVED
EXECUTIVE OFFICE

2000 JUL 31 A 11:07

July 28, 2000

Colonel James W. DeLony
US Army
District Engineer
P.O. Box 1890
Wilmington, North Carolina 28402-1890

REF: Resolution in Support of the Northern Dare Beaches Hurricane and Erosion Control Plan, Feasibility Report, and Draft Environmental Impact Statement

Dear Sir:

At their July 26, 2000 meeting, the Kill Devil Hills Board of Commissioners unanimously adopted the accompanying Resolution in Support of the Northern Dare Beaches Hurricane and Erosions Control Plan.

A copy of this resolution is also being forwarded to Dare County's Committee on this subject for their records.

Thank you.

Sincerely,

Mary E. Quidley
Town Clerk

Meq

C: Ray Sturza, Dare County Planning Director
Greg Loy, Kill Devil Hills Planning Director
Commissioner Bill Pitt, Kill Devil Hills Governing Board member

Mayor
SHERELENE G. ROLLASON

Mayor Pro Tem
WILLIAM R. MORRIS, JR.

Commissioners
ROBERT C. COMBS, II
WILLIAM M. PITT
ROBERT L. WOODARD



The Town of
KILL DEVIL HILLS
NORTH CAROLINA

Town Manager
DEBORA P. DIAZ

Assistant
Town Manager
SHAWN R. MURPHY

Town Clerk
MARY E. QUIDLEY, CMC/AAE

Town Attorney
ROBERT L. OUTTEN

A Resolution in Support of the Northern Dare Beaches
Hurricane and Erosion Control Plan,
Feasibility Report, and
Draft Environmental Impact Statement

WHEREAS, the United States Army Corps of Engineers has released the Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control for the Northern Dare Beaches; and

WHEREAS, the County of Dare has served as the non-federal sponsor of this study with funding support from the Dare County Tourist Bureau and the North Carolina Division of Water Resources; and

WHEREAS, hurricane protection and beach erosion control are important to the economic vitality of Dare County and it is in the public interest to protect lives and property from hurricanes and beach erosion;

NOW, THEREFORE, BE IT RESOLVED, that the Kill Devil Hills Board of Commissioners does endorse and support the authorization, funding, and construction of the North Dare Beaches Hurricane Protection and Erosion Control Plan.

Adopted this 26th day of July 2000.



ATTEST

Sherelene G. Rollason
Mayor
Town of Kill Devil Hills

Mary E. Quidley, Town Clerk

Appendix A-139



RENÉE CAHOON
Mayor

ROBERT W. MULLER
Mayor Pro Tem

J. WEBB FULLER
Town Manager

TOWN OF NAGS HEAD EXECUTIVE OFFICE

Post Office Box 99
Nags Head, North Carolina 27959
Telephone (252) 441-5508
FAX (252) 441-0776

RECEIVED
2000 AUG 11 A 11: 50

GEORGE FARAH, III
Commissioner

R. BRANTLEY MURRAY
Commissioner

DOUGLAS A. REMALEY
Commissioner

Action: TS
CF: DE DX
DP DD
PM-C

August 8, 2000

Colonel James W. Delony, U.S. Army
District Engineer
Wilmington District, Corps of Engineers
P. O. Box 1890
Wilmington, NC 28402-1890

Dear Colonel Delony:

I am in receipt of the *Public Notice and Notice of Availability* dated July 14, 2000 entitled: *Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control; Dare County Beaches (Bodie Island Portion); Dare County, North Carolina; June 2000.*

The *Draft Environmental Impact Statement* was reviewed by staff and subsequently forwarded to the Nags Head Board of Commissioners for their review.

The Nags Head Board of Commissioners, at their August 2, 2000, meeting, voted unanimously to adopt the attached Resolution of Support.

Thank you.

Sincerely,


J. WEBB FULLER
Town Manager

WF/cfm

Attachment

RESOLUTION OF SUPPORT

WHEREAS, the quality of life on the Outer Banks of North Carolina is directly related to the quality of its beaches; AND

WHEREAS, the beaches of the Outer Banks have suffered extensive storm damage including severe beach erosion in recent years; AND

WHEREAS, the beaches of Dare County have been the subject of a lengthy study by the Army Corps of Engineers to investigate opportunities to increase storm protection and control beach erosion and to determine the feasibility of federal funding of a hurricane and storm protection plan; AND

WHEREAS, the *Draft Feasibility Study* and *Draft Environmental Impact Statement* were recently completed by the Army Corps of Engineers which identifies 15 miles of ocean shoreline in Dare County that qualifies for federal funding assistance; AND

WHEREAS, the majority of this nourishment effort is in the Town of Nags Head; AND

WHEREAS, both the *Draft Feasibility Study* and *Draft Environmental Impact Statement* have been reviewed by the Nags Head Board of Commissioners.

NOW, THEREFORE BE IT RESOLVED that the Board of Commissioners of the Town of Nags Head fully supports and endorses the *Draft Feasibility Report* and *Environmental Impact Statement on Hurricane Protection and Beach Erosion Control for the Dare County Beaches* dated June 2000 as prepared by the Army Corps of Engineers.

ADOPTED THIS 2ND DAY OF AUGUST 2000.

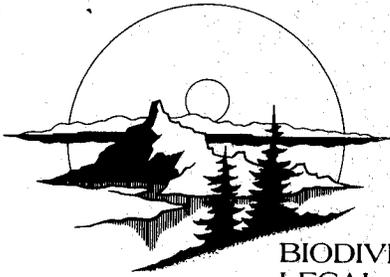

Renée Cahoon, Mayor

ATTEST:


Carolyn F. Morris, Town Clerk



**Draft EIS
Comment Letters
From Conservation Groups**



BIODIVERSITY
LEGAL
FOUNDATION

RECEIVED
EXECUTIVE OFFICE

2000 SEP 19 A 10:43

Action: PM
CF: DE DD DP
DX OC RG
PAO
SUS: 27 Sep 00

By Fax and U. S. Mail

September 12, 2000

Colonel James W. DeLony
Wilmington District
U. S. Army Corps of Engineers
Post Office Box 1890
Wilmington, NC 28402

Re: Dare Beaches Draft Feasibility Report/EIS

Dear Colonel DeLony:

The Biodiversity Legal Foundation ("BLF") is a non-profit, science based conservation organization dedicated to the preservation of all native wild plants and animals, communities of species and naturally functioning ecosystems. Through reasoned educational, administrative and legal actions, the BLF endeavors to encourage improved public attitudes, policies and actions for all living things.

The BLF submits the following comments on the "Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control, Dare County Beaches (Bodie Island Portion)." Due to the significant economic and ecological costs, we urge the U. S. Army Corps of Engineers ("Corps") not to select the ocean sand mining and beach disposal proposal.

Page 4, ¶ 6. The statement that material from the Oregon Inlet dredging project "has been placed on the beach" is no longer correct, as the Corps has abandoned using a pipeline dredge (which did deposit the sand on the beach). Currently, the sand is deposited offshore by a hopper dredge. The estimates regarding the depth at which the sand is deposited range from 14 to greater than 20 feet. A serious concern is that a large portion of the sand deposited in this manner does not return to the beach, resulting in artificially increased erosion rates on Pea Island.

Page 5. The map of the jetty project utilizes a 1985 date; the 1999 Corps DEIS revised the proposed project.

Page 6, ¶ 1. Stating there are "no areas of controversy for this study" makes us question whether the Corps read the Draft Fish and Wildlife Service Coordination Report, which lists many issues that are controversial regarding the proposal.

Appendix A-143

P.O. BOX 1359 BUXTON, NC 27920

(252) 995-3312



In addition, we strongly object to any use of National Park Service lands for the ocean sand mining and beach disposal proposal, as we are concerned about the adverse environmental impacts, and we question the consistency of the proposed action with the laws governing the Cape Hatteras National Seashore. The Organic Act directs the NPS to "regulate the use" of the Seashore "by such means, and measures that conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve natural and historical objects and the wildlife therein and to provide for the enjoyment of same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 U.S.C § 1). In addition to this general mandate, the enabling legislation contains a very restrictive limitation on the management of the lands (16 U.S.C. § 459a-2):

Except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing, and other recreational activities of similar nature, which shall be developed for such uses as needed, the said area shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area. . .

We are concerned that the ocean sand mining and beach disposal proposal would adversely impact Seashore lands. The proposal would not leave the Park Service lands "unimpaired" for future generations, nor would it conserve wildlife. In addition, the proposal is the antithesis of "wilderness."

Page 7, ¶ 2. What data does the Corps have to support the statement that "most" of the visitors "will be staying in the oceanfront areas"? Most of the structures in the County clearly are not "oceanfront," so we question how the statement can be accurate.

Page 7, ¶ 4. Based on information presented at the Outer Banks Task Force meetings, we understand the Outer Banks have, over the last several thousand years, undergone periods of erosion and accretion. However, recently, on eastern facing beaches, the dominant trend has been one of erosion.

Page 9, ¶ 2. The statement that there is a "severe erosion problem" – as well as many similar statements throughout the document – fails to acknowledge the true cause of the "problem." If people had not built too close to the ocean, there would not be any "problem." Rather than face up to their own responsibility, certain local interests instead want the federal government to pay a huge amount of money to rescue people from the predictable results of their own decisions. People intentionally decided to build their houses, rental cottages, and businesses; no one forced them to choose the particular location. They did this to get the benefits of such a location – whether it is better views of the ocean, a shorter walk to the beach, or higher rates that accompany an oceanfront room. Now, after having reaped the benefits of an exclusive beachfront location, certain interests are asking for a hugely expensive, taxpayer funded bailout.

There are other serious concerns about this paragraph. First, there is not a "natural protective dune system," as is noted in this paragraph and in other sections of the document. The dune system, where it does exist, is not "natural" under any reasonable definition of the term (with the exception of certain areas at the Seashore). Rather, the artificial dunes were constructed by people utilizing sand fences, bulldozers, sand bags, vegetation, and other techniques.

Second, "erosion" has not caused the dunes to be "lost." If buildings were not in the way, a natural dune could exist. The "problem" for certain people is that the dune would probably be at or behind the first row of buildings, which would not sufficiently "protect" the buildings. It is critically important for the Corps to acknowledge that under more natural conditions, as erosion occurred, the dune – and the beach – would continue to move westward, but the beach and dune area still would continue to exist. By trying to lock in the position of the beach to "save" the buildings, people are destroying the very beach that they purportedly want to protect.

Page 23, ¶ 4. The claim that erosion will have "claimed" more than 1,000 structures does not acknowledge that most of the structures could be moved back from the ocean. This technique is not new; in 1888, the Brighton Beach Hotel on Coney Island was moved back 2,000 feet (Pilkey and Dixon, 1996). Relocation is a viable alternative that is preferable to the proposed activity. In addition, we note that statements in the document that relocation would result in adverse impacts are not supported by reference to data, nor does the Corps fully compare the impacts of the two alternatives. Rather, relocation is dismissed with an inadequate discussion.

Page 24, ¶ 2. The modifying clause "If replenished as necessary" is a massive understatement that borders on being deceptive. We question if the people understand that there will be a continuing need for incredibly expensive replenishment actions on a continuing basis, and that this replenishment will have to occur indefinitely.

We are also concerned that the statement here, and in other locations in the document, that the project will "provide protection" "against erosion" and "against wave overwash during hurricane and storm events" fails to disclose to the reader the significant limitations that are inherent in these statements. Volume II contains more detailed information on the coastal modeling, but most people will not review that technical information. The feasibility report should acknowledge that the proposed alternative may reduce damage and erosion under certain circumstances, but in particularly bad storms, severe erosion and property damage still would occur.

Page 30, ¶ 2. We question whether development "is expected to continue" without ocean sand mining and beach disposal; instead, the Corps actions will influence whether people choose to build structures on the remaining vacant lots or build elsewhere. By telling people that their homes will be "protected," the Corps could be giving people a false sense of security. In turn, this results people building more structures in unsafe locations, and, when a large storm hits, higher damages.

Page 32, ¶ 4. The Corps' proposed action may be inflating the value of houses, because if these houses are less likely to be washed away, their value will increase. In turn, this gives the Corps a higher cost/benefit ratio.

Page 32, ¶ 1. We strongly question the conclusion that the value of household contents for residential structures is 50% of the structural value. We request data to support this conclusion. The reference to responses from "Dare County officials and realtors familiar with development" – the very interests that are supportive of beach replenishment – is completely unpersuasive. It also goes against common sense: these houses are rental houses or beach cottages that are not, with only very limited exceptions, expensively decorated or full of expensive extras. We are concerned that the Corps is overestimating the value of household contents; in turn, this provides an overly inflated cost/benefit ratio.

Page 32, ¶ 3. We strongly question the conclusions regarding the expected annual hurricane and storm damages. The Corps does not adequately assess the possibility that a structure that is close to the ocean can be moved, thereby sparing it from destruction. The Outlaw family house in Nag's Head, for example, has been moved back, as of 1995, three times for a total distance of 600 feet over the past 100 years (Pilkey and Dixon 1996: 50). Thus, relocation can effectively reduce storm damages.

Page 33, ¶ 4. We are concerned that throughout the document, the Corps overstates the potential benefits of the ocean sand mining and beach disposal proposal. At least in this paragraph, the Corps refers to damage "reduction" rather than "prevention," but we are concerned that this distinction may be lost on most readers.

Page 34, ¶¶ 3-4. We strongly object to the accuracy of the recreational benefit calculations, which the Corps claims will be \$6,346,000 annually. The Corps admits (H- 35 – 36):

The recreational benefits for this project analysis stem from improving the quality of the recreation experience, not from drawing more people. In general, the supply of beach exceeds the demand for beach recreation along this 20-mile stretch of beach. The project would not be the draw; it merely enhances the experience for persons using the beach....

Given the ever increasing demand for beach vacations and second homes on the coast, it is not likely that these lost properties would lead to any net loss in visitation. A more likely scenario is that the properties that would be lost to erosion would be replaced by more public parking, and new motels and homes would replace older ones along the second row of development from the ocean....

This same reasoning applies to the "quality of the recreational experience" that the Corps claims justify the recreational "benefits." As the beach retreats westward, people will just shift their use with the shifting beach. This is shown by the experience in Nags Head: houses that are now oceanfront were, only 25 years ago, on the third row of structures back from the ocean (Pilkey et al. 1998). Yet, this has not stopped the explosive growth rate in visitation to this area. We request that the Corps remove all recreational "benefits" from the cost/benefit equation.

Page 37, ¶ 4. In addition to the species listed, royal terns and oystercatchers also have the potential to breed in the project area.

Page 37, ¶ 5. The dunes are not "natural," and accordingly, while they do have some habitat value (especially at the Seashore area of the project), it is important for the Corps to acknowledge how the artificial dunes adversely affect certain species.

Page 38, ¶ 2. The Corps says that the one site protected under the Coastal Barrier Improvement Act of 1991 is the Nags Head Woods; we question whether this is correct, for we understand that Cape Hatteras National Seashore also is included in the protected area status. In turn, this would limit destructive federal activities, and we question whether ocean sand mining and beach disposal would be consistent with the relevant restrictions.

Page 40, ¶ 4. We disagree with the conclusion that there are "no environmental constraints" that would "preclude implementation" of the proposed action. The Draft Fish and Wildlife

Coordination Act letter from the Service lists many concerns that the Corps has apparently unduly minimized. These include adverse impacts to fish habitats, invertebrates, nesting and migrating shorebirds, nesting sea turtles, and Oregon Inlet.

Page 42, ¶ 2. We request that the Corps elaborate on the conclusions that relocation plans "are seldom found to be economically feasible." Why? What assumptions underlie this conclusion? This is a very important issue and it is not appropriate for the Corps to give it such a short discussion.

Page 47, ¶ 1. The statement that the "interval between periodic nourishment operations will be 3 years" is undercut by statements later in the text (page 64). Because of the manner in which the sand will be replenished, once the maintenance activities start, there always will be a part of the project area that is under construction. The "3 years" statement unduly minimizes the disruption that will exist as a result of the proposal.

We also object to the use of the term "nourishment" to describe the proposed action. "Nourish" means: "1. To provide with food or other substances necessary for life and growth; feed. 2. To foster the development of; promote; 'Athens was an imperial city, nourished by the tribute subjects' (V. Gordon Childe). 3) To keep alive, maintain: nourish a hope" (Soukhanov, 1992: 1239). Dumping mined sand on the beach does not "nourish" the beach; from the standpoint of coastal geology, the beach itself would do just fine without our intervention. Indeed, this proposal would result in adverse ecological impacts to species that depend on or utilize beach habitats. It is inaccurate to suggest that such an action is "nourishing" the beach. We request that the proposed alternative be called "ocean sand mining and beach disposal."

Page 52, ¶ 1, and page 53, ¶ 2. The Corps notes that the proposed alternative would "reduce the landward retreat of the beach," and on the next page, the Corps states that the proposed alternative would "reduce damages to upland development due to hurricane-wave overwash." These are important admissions. "Reduce" and "prevent" are very different results; yet, the Corps often uses "prevent" rather than "reduce" throughout the document. We request that the Corps replace "prevent" with "reduce."

Page 61, ¶ 1. We do not believe that the proposed action or the other alternatives that involve ocean sand mining and beach disposal are "environmentally acceptable."

Page 64. We prefer that the structure relocation alternative be pursued. However, in the event the Corps chooses to proceed with the ocean sand mining and beach disposal proposal, then the project should be modified so that no sand is deposited on Cape Hatteras National Seashore. Thus, the "transition area" should be either started at a more northerly location or reduced in size. However, we would stress that the proposal should not damage or adversely affect Seashore lands or lands at Pea Island National Wildlife Refuge.

Page 71, ¶ 1. We are concerned about the long-term impacts of the proposal on the borrow areas, including the impacts to fish resources and the modification of wave action due to long term mining of sand.

Page 71, ¶ 4. Based on many areas where people routinely do not utilize walkover structures, we question the statement that access will be "restricted."

Page 75, ¶ 1. We request that the Corps elaborate on the conclusions that the proposal will result in the reduction of storm damages by 71 and 83% for the primary study area and the total project area, respectively. We request additional elaboration on the assumptions and calculations that underlie the conclusions.

Page 75, ¶ 2. The Corps admits that there are “no provisions in the project to protect the area against storm-tide flooding occurring from increased water levels” in the sound. How would this affect damage calculations, if the expected damages from such storm surges were figured into the calculations? As the Corps is well aware, many of the damages during hurricanes can come from sound side flooding.

Page 85. We question the accuracy of the cost/benefit calculation for the reasons noted in this letter.

Page 86, ¶ 6. We question whether there will be “rapid recovery,” given the virtually continual replenishment actions that will be necessary under the project.

Page 87. The Corps neglects to note that there is a confirmed nesting of a leatherback sea turtle on Hatteras Island and this species utilizes waters offshore of the project area. Thus, the proposal could also adversely affect the leatherback sea turtle and the loggerhead and green sea turtles also. The National Marine Fisheries Service and the U. S. Fish and Wildlife Service note several of the adverse impacts (1993: 6):

Sand sources may be dissimilar from native beach sediments and can affect nest site selection, digging behavior, incubation temperature (and hence sex ratios), gas exchange parameters within incubating nests, hydric environment of the nest, hatching success and hatchling emergence success (Mann, 1977; Ackerman, 1980; Mortimer, 1982; Raymond, 1984a). Beach nourishment can result in severe compaction or concretion of the beach. Trucking of sand onto project beaches may increase the level of compaction.

Significant reductions in nesting successes have been documented on severely compacted nourished beaches (Raymond, 1984a). Nelson and Dickerson (1988) evaluated compaction levels at ten renourished east coast Florida beaches and concluded that 50 percent were hard enough to inhibit nest digging, 30 percent were questionable as to whether their hardness affected nest digging and 20 percent were probably not hard enough to affect nest digging. They further concluded that, in general, beaches nourished from offshore borrow sites are harder than natural beaches, and, while some may soften over time through erosion and accretion of sand, others remain hard for 10 years or more. Nourished beaches often result in severe escarpments along the mid-beach and can hamper or prevent access to nesting sites.

Page 89. We believe that the proposed project will adversely affect breeding, migrating, and wintering piping plovers due to adverse effects to feeding activities (reduction in invertebrates); in addition, the people who vacation in this area – drawn by the beach – may adversely affect the plover and sea turtles due to their activities (e.g., loose dogs, feral cats, recreational activities, etc.).

Page 91. The Corps claims that maintenance dredging for Oregon Inlet will increase by only about 65,000 cubic yards per year. We question this conclusion, given the millions of cubic yards of sand that the Corps will be depositing on the beach, and the continuing millions of cubic yards of sand that will be necessary in periodic replenishment activities. We request that all assumptions underlying this conclusion be disclosed. We are very concerned that the Corps is creating a situation that will artificially increase the sand going into the inlet, and in turn, the shoaling. Then, the Corps will be able to turn around and argue for the necessity of their proposed jetties.

Page 99. How do we know that the state and Dare County will be able to come up with the huge amount of money discussed in this page? What commitments have been given, and are those commitments reasonable?

DEIS

Page 5-22. We have been told that piping plovers have nested successfully in the vicinity of Oregon Inlet.

Page 6-2. The proposal does not fully review cumulative effects. By breaking the projects down into annual amounts (average miles per year), this underestimates the total amount of miles that are effected. In addition, the Corps neglects to include ocean sand mining and beach disposal projects outside of North Carolina, and the Corps also does not include other coastal engineering projects (groins, jetties, etc.) from other states.

ESA Compliance

We are very concerned that the document does not include a biological opinion ("BO"). As the proposed action may affect listed species, section 7 of the Endangered Species act requires the Corps to enter into formal consultation with the U. S. Fish and Wildlife Service and the National Marine Fisheries Service. We are concerned that the lack of inclusion of a draft BO is yet another example of the Corps rushing to complete the EIS/Feasibility Report without adequate analysis.

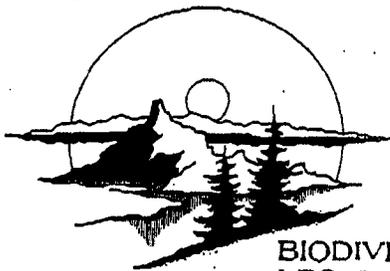
Conclusion

We emphasize that the Corps should not interpret our lack of comment on a particular issue as an indication that we agree with the statement that the Corps made in the document. Due to the inadequate comment period, we have not been able to review properly the three volume feasibility report/DEIS. We continue to object strongly to the Corps' decision not to provide the BLF with an extension on the comment period, and we are very concerned that this project is being rushed through without sufficient review.

Please place the BLF on the mailing lists to receive a complete copy (all volumes) of the final feasibility report/EIS and the record of decision.

Sincerely,


Sidney B. Maddock
Environmental Analyst



BIODIVERSITY
LEGAL
FOUNDATION

By Fax

August 30, 2000

Mr. Chuck Wilson
Wilmington District
U. S. Army Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402

Re: Comment Extension Request, Dare Beaches Feasibility Report/DEIS

Dear Mr. Wilson:

This letter is in response to a letter dated August 29, 2000 from Colonel James DeLony, denying the Biodiversity Legal Foundation's (BLF) request for a month long comment extension, and the conversation that I had with you yesterday afternoon. After I received the Colonel's letter by fax, I called Ms. Haggett, as I needed clarification regarding the letter.

I asked Ms. Haggett whether a comment letter from the BLF, if it were received by the Corps within two weeks of the deadline, would be part of the official administrative record on the Dare Beaches DEIS/Feasibility Report. I indicated that if I spent the time doing comments, I wanted to make sure that the Corps would fully consider the comments.

Ms. Haggett then gave the phone to you, and I again said the same thing. You said that if the comments were received by the Corps within 2 weeks of the comment deadline, the comments would be reproduced in the Final Feasibility Report/EIS, and that the Corps would consider and respond to the comments.

This is my understanding of our conversation. If this understanding is not correct, I would appreciate it if you would contact me as soon as possible to clarify this matter.

Sincerely,

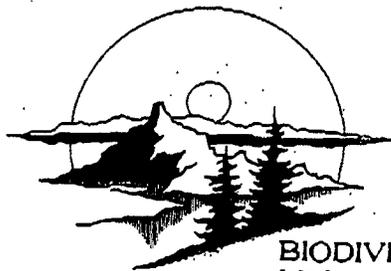
Sidney B. Maddock
Environmental Analyst



Appendix A-150

P.O. BOX 1359 BUXTON, NC 27920

(252) 995-3312



BIODIVERSITY
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FOUNDATION

Fax Cover Sheet

To: Mr. Chuck Wilson

Re: Dare Beaches DEIS Comment Extension Request

Fax Number: 910.251.4653

From: Sidney B. Maddock

Date: 8/30/00

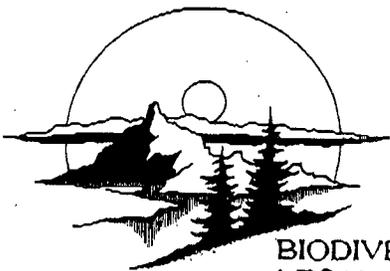
Number of Pages (including cover sheet): 2



Appendix A-151

P.O. BOX 1359 BUXTON, NC 27920

(252) 995-3312



BIODIVERSITY
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FOUNDATION

By Fax and U. S. Mail

August 28, 2000

Mr. Chuck Wilson
Wilmington District
U. S. Army Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402

Re: Comment Extension Request, Dare Beaches DEIS

Dear Mr. Wilson:

The Biodiversity Legal Foundation ("BLF") is a non-profit, science based conservation organization dedicated to the preservation of all native wild plants and animals, communities of species and naturally functioning ecosystems. Through reasoned educational, administrative and legal actions, the BLF endeavors to encourage improved public attitudes, policies and actions for all living things.

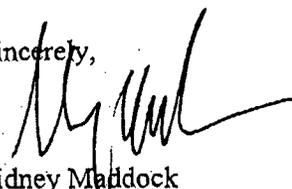
The BLF requests a four week extension on the public comment period for the "Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control, Dare County Beaches (Bodie Island Portion)." The existing comment period is clearly not sufficient. Without additional time, we will not be able to adequately review, and provide meaningful comment on, the massive three-volume report.

We have many significant concerns about the proposal, including issues regarding adverse ecological impacts; project economics; and inconsistencies with the analysis in the Oregon Inlet jetties DEIS. We urge the Corps not to rush ahead with this project and frustrate public review of this significant proposal in the process.

Others also are concerned about the adequacy of the comment period. We have heard that DOI informally has been granted an extension until September 28. We likewise should be granted a similar extension.

Thank you for your attention to this matter. Please notify us by phone at the earliest possible time of your decision on this request.

Sincerely,


Sidney Maddock
Environmental Analyst



Comments Concerning:

**DRAFT Feasibility Report And Environmental Impact Statement On
Hurricane Protection And Beach Erosion Control - DARE COUNTY
BEACHES (BODIE ISLAND PORTION) - Dare County, North Carolina,
Volume 1 - June 2000.**

Vincent Bellis, Chapter Chair, North Carolina Chapter, SIERRA CLUB
September, 2000

Introduction

My first reaction upon receiving the DFR&EIS was a flashback to 1953. That was the year my Dad and I drove from Asheville for a camping trip to the Outer Banks. Highway 12 had just been extended and for the first time a paved road connected Nags Head to Cape Hatteras via a ferry crossing at Oregon Inlet.

I was 15 years old, and since the NC Highway Patrol did not operate south of Oregon Inlet, Dad let me drive. The contrast between crooked two-lane mountain roads and this long ribbon of flat highway was striking. I remember miles of telephone poles fading into the horizon. There was virtually no commercial development along the shoreline. The vegetation between the ocean and the sound consisted largely of grasses and low shrubs. Trees were sparse. But, it was the snow fences that really attracted my attention. They seemed so out of place! Previously I had seen the red wire and wood fences only along roads and fields during the winter in the Finger Lakes country of western New York where I lived as a young child. What were snow fences doing here in the south, on the beach?

I will not here review the saga, and ultimate failure, of attempts to "save" the outer banks by using snow fences to build a sand berm along the ocean. You may now understand why I thought, "Don't they ever learn?", when I read the public notice describing a ***"plan of improvement (that) consists of a sand dune constructed to an elevation of 13 feet above the National Geodetic Vertical Datum (NGVD), fronted by a 50-foot wide beach berm constructed to an elevation of 7 feet above NGVD."***

Some of those snow fences appeared again in the 1970's. This time their sun-bleached and broken remains emerged from the frontal dunes in places where the rising ocean and narrowing beach had undercut them as the ocean reclaimed its stolen sand. The earlier attempt to 'save' the Outer Banks used ingenuity and wind power to build a sea wall of sand. The proposed project will be much more expensive as it depends upon energy from fuel to pump sand from near shore benthic environments to the beach. More fuel will be consumed as heavy earth moving equipment shapes the sand to engineered specification.

**REGIONAL
GROUPS**

BLUE RIDGE
Boone

CAPE FEAR
Wilmington

CAPITAL
Raleigh

**CENTRAL
PIEDMONT**
Charlotte

CYPRESS
Greenville

FOOTHILLS
Winston-
Salem

HAW RIVER
Burlington

HEADWATERS
Durham

MEDOC
Rocky
Mount

**ORANGE-
CHATHAM**
Chapel Hill

**PIEDMONT
PLATEAU**
Greensboro

PISGAH
Brevard

**SOUTH
MOUNTAINS**
Morganton

WENOCA
Asheville



Project Cost

Most of the economic justification for the proposed sand pumping plan seems to be derived from projections of shoreline position over a projected 50-year lifetime of the project. Much of the benefit is tied to "Hurricane and Storm Damage Reduction" (Table 3). The benefit seems to be derived from preventing loss of structures and the income that would be derived from them. The costs of the project are about \$70 million (first cost) with expected annual costs of about \$18 million. Spread over the 78 thousand linear feet of the project this works out to about \$1100 per linear foot (almost \$6 million per mile) for initial construction.

The relatively low benefit-cost ration of 1.2 for the north project (Kill Devil Hills/Kitty Hawk) is off-set by a benefit-cost ratio of 2.1 for the south project (Nags Head). Overall benefit-cost ratio is estimated at a modest 1.8.

It might be interesting to consider a response plan that invests these same funds in a long term phased 'strategic withdrawal' from the ocean beach and use of the resulting open space for recreation and to enhance the visitor access and enjoyment of the beach.

Critique of this DEIS

The DEIS (p.9) states that, "The Federal Objective in water resources planning is to contribute to the National Economic Development in a manner consistent with protection of the nation's environment." Basically this project is a political directive (?) from Congress to the US Army Corps of Engineers to find the least expensive means of reducing the immediate storm threat to beachfront structures within the designated area. An added caveat is that the project must meet a benefit/cost ratio exceeding 1.0.

DEIS Does Not Adequately Consider Long-term Effect of Rising Sea-level. In our opinion Congress should have first asked the Corps of Engineers to establish the **long-term** feasibility and potential for indirect environmental impacts before simply finding the most cost effective way to build a protective barrier. The favorable benefit/cost ratio for this project was achieved by estimating the cost of replacing existing development and infrastructure resulting from storm damage. It is our opinion that future costs resulting from probable changes to the stability of the shoreline and near shore sediments in areas adjacent to, but not included within the project, were not adequately accounted for. Completion of the project may lead to a false sense of security among individuals within the affected zone. This could lead to even greater investment in development and infrastructure that must eventually be lost as the cost of future attempts to stabilize a fundamentally unstable beach becomes untenable.

Given past experience with sand berms and artificial dunes together with the documented rising sea level, it seems reasonable to expect the need for beach replenishment to become increasingly frequent as normal erosion removes beach from areas not included in the nourishment program. It seems equally probable that the gradient of the near shore in front of the artificial beach will become increasingly steep. A steeper gradient will require a greater volume of nourishment sand with each new beach re-nourishment (every three years?). The long-term effects on near shore sand supply caused by frequent removal for beach replenishment are not well understood. Barrier Island over-wash has been seriously hindered for over a half century because of various attempts to protect beachfront infrastructure. Sand that might have accumulated on the barrier beaches may have bypassed and resulted in a massive sand deficit within the near shore environment. The long term wisdom of adding to this deficit by removing sand for beach replenishment is questionable. Attempts to 'buy time' for beachfront structures with projects such as those proposed here may well result in massive future economic costs when it becomes too expensive to defend a few miles of beach from inevitable encroachment.

DEIS Does Not Adequately Address Concerns Expressed by Coastal Scientists.

This DEIS does not adequately allay concerns expressed by coastal geologists (Dolan, Appendix C) and biologists that repeated replenishment events may permanently alter biological communities in the sub-tidal zone and on the beach due to changes in structure of the maritime food chain. Fisheries biologists have expressed concern that turbidity resulting from the winnowing of 'fines' from the replenishment sediment may harm larval fish and shellfish.

Completed Project May Instill Undue Confidence Among Residents. Although the dune and berm may offer temporary protection for structures and infrastructure it is unlikely to be effective against a major hurricane having a storm surge approaching 20 feet (Hurricane Hugo). There is a reasonable probability that such a storm will strike the Dare beaches within the 50-year plan projections. The general public and landowners in the affected area are unlikely to become aware of disclaimers within the DEIS that this project, if completed, will lead to only a measure of protection. It is misleading to allow landowners and taxpayers to believe that the proposed project will protect them and their investments against a major storm. How many members of the public will be able to translate the following example of 'agency speak' (p 8-1) in response to the USFWS request that the "EIS should define the level of storm for which protection is sought; the type(s) of storm damage that would be reduced; and those locations within the project area for which protection is sought.

[CORPS RESPONSE: Beach nourishment projects are no longer formulated according to meeting a desired level of protection. Rather, the project dimensions are optimized based on the project size yielding the largest net benefits. Using the 50-year life cycle approach, the beaches are subjected to a randomly generated group of storms. The project dimension yielding the biggest spread between benefits and costs is the NED Plan.]

Another Alternative.

It might be better to accept the inevitable loss of beach and to use the millions of dollars that would be spent on an ultimately futile and increasingly expensive project to 'hold-the-line' to begin a planned and orderly 'strategic withdrawal'. Highway 12 has been relocated land ward many times since my first visit in 1953. Begin now to relocate section of highway away from the beachfront. Highway 158 has long since replaced Highway 12 as the major route through the area.

Knowledge that public funds for 'beach protection' will be used instead to encourage an orderly retreat will encourage those having an economic interest to modify their growth planning so as to reduce the threat of storm loss.

It is a major failing of this DEIS that a 'strategic withdrawal' alternative was not even considered. We agree with the USFWS criticism (p. vi, Executive Summary) that: "The selection among alternatives appears to be confused by the degree to which purposes of storm damage reduction have been intertwined with the unstated goal of erosion control/beach nourishment".

The DEIS does give brief attention to "Nonstructural" measures. The primary 'nonstructural' option considered feasible for this location was structure relocation. This option was not considered to be 'practical alternative'. The DEIS then states that; "Therefore, plan formulation was limited to consideration of beach berm and berm and dune alternatives."

While we can agree that a program of rapid relocation might be impractical and very expensive, we believe that a slower, or phased, plan of strategic withdrawal might be possible and that such an alternative should be evaluated. Phased strategic withdrawal would take place as structures became obsolete, severely damaged by storms, or when there was a willing seller. Unlike the relocation alternative noted in the DEIS, phased strategic withdrawal would take place over the lifetime of the project and thus spread the cost more evenly over time.

The NC Chapter of the Sierra Club strongly endorses the measures described in Appendices F and G by which State Governments and Local Governments can reduce the damage caused by shoreline recession (Skidaway Institute of Oceanography 1985). A plan to implement appropriate measures described in these appendices could result in a phased strategic withdrawal from the danger area. Some of these measures are already being used in North Carolina and in other coastal states. These measures can serve as a menu from which to develop a site specific 'strategic withdrawal'. [We will not reproduce the list of measures here as they are readily available in the DEIS Appendices listed above.]

Summary

The berm and dune alternative preferred by the US Army Corps of Engineers does not adequately consider long-term geological trends within the project environment. It does not adequately evaluate or monitor possible indirect geological and biological consequences of repeated beach nourishment. The preferred alternative does not spell out explicitly the level of protection offered by the project. Many residents of the affected area may act according to unrealistic expectations of security.

Vincent Bellis
Sept. 14, 2000



SIERRA
CLUB
FOUNDED 1892

August 28, 2000

Mr. Chuck Wilson
U.S. Army Corps of Engineers
Wilmington District
Post Office 1890
Wilmington, North Carolina 28402-1890

FAX: Susan Haggett @ 910-251-4653

Re: CESA-W-TS-PE-OO-28-0008 Extension Request on DEIS-Dare County Beaches

Dear Mr. Wilson:

The Sierra Club is North America's oldest grassroots conservation organization. The Club exists to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environment. The following comments are being submitted the Sierra Club-North Carolina Chapter and the Sierra Club Atlantic Coast Ecoregion Project.

We request a month long extension on the public comment period for the Dare County Beaches Draft Environmental Impact Statement/Feasibility Report. The existing comment period is clearly not sufficient for a review of this massive three-volume report and without additional time; we are unable to adequately review, and provide meaningful comments.

Significant concerns that we have on this proposal include - but are not limited too - fisheries impacts (including all multi-state and federally managed species); essential fish habitat impacts; threatened and endangered species impacts; project economics; project changes in marine & terrestrial geology, direct to cumulative impacts for all recent past to future foreseeable activities; adverse impacts to the general ecology of the region; and time of year for project engagement.

It is our understanding that other conservation organizations as well as regulatory agencies are also concerned about the adequacy of time for public review. Therefore we again wish to request that a 30-day extension be granted and also ask your office to immediately send the DEIS 3 volume set to our Special Projects Director Michael D'Amico for his review (address listed below).

Thanking you in advance for your cooperation in this matter.

Sincerely,



Victor D'Amato
Conservation Chair
North Carolina Chapter Sierra Club
308 Glascock Street
Raleigh, NC 27604
(919) 834-7899 (T)
surffisher@mindspring.com



Michael J. D'Amico
SC Atlantic Coast Ecoregion
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Nassau, Delaware, 19969
302-644-0627 (T)
302-644-9172 (F)
mike.damico@sierraclub.org

SOUTHERN ENVIRONMENTAL LAW CENTER

200 WEST FRANKLIN STREET, SUITE 330
CHAPEL HILL, NC 27516-2520

Telephone 919-967-1450
Facsimile 919-929-9421
selcnc@selcnc.org

Charlottesville, VA
Chapel Hill, NC
Atlanta, GA

August 28, 2000

Colonel James W. DeLony
District Engineer, Wilmington District
U.S. Army Corps of Engineers
Post Office Box 1890
Wilmington, North Carolina 28402-1890

Re: Draft Feasibility Report and Environmental Impact Statement
Dare County Beaches Hurricane Protection and Beach Erosion Control

Dear Col. DeLony:

This letter, written on behalf of the North Carolina Coastal Federation, provides comments regarding the Feasibility Report and Draft Environmental Impact Statement ("FR/DEIS") for a Hurricane Protection and Beach Erosion Control project on the Bodie Island portion of Dare County, North Carolina. The North Carolina Coastal Federation ("NCCF") and the Southern Environmental Law Center are environmental organizations with a long-standing interest in the North Carolina coast. NCCF represents approximately 5,000 members across coastal North Carolina and participates actively in all facets of regulatory and environmental protection activities affecting the state's coast. NCCF has a long history of environmental advocacy regarding the beachfront of the Outer Banks and other segments of the North Carolina coastline, and appreciates the opportunity to submit these comments.

THE PROPOSED PROJECT

By resolution of a Congressional committee, the Corps of Engineers was requested to study beach erosion control, hurricane protection, and storm damage reduction on the beaches of Dare County, North Carolina. The Dare County beaches extend from the community of Sanderling, on the northern Outer Banks, south through the developed areas of Kitty Hawk, Kill Devil Hills and Nags Head on Bodie Island, and continue south to include the Pea Island National Wildlife Refuge and Cape Hatteras National Seashore on Bodie Island, Pea Island, and Hatteras Island. The FR/DEIS concentrates on a 20-mile-long "primary" study area encompassing the developed beachfront in Nags Head, Kill Devil Hills, and Kitty Hawk. The FR/DEIS does not include the extensive study of the shore protection needs for NC Highway 12, the highway that runs the length of the barrier islands. The Corps, with the North Carolina Department of Transportation ("DOT") as the non-federal partner, is currently studying potential erosion control and shore protection measures for this additional lengthy stretch of Dare County beaches.

The FR/DEIS selects as the Preferred Alternative a massive, 14.8 mile long dredge and fill project of artificial dune and beach berm. The project would require three years to construct and thereafter would entail perpetual maintenance dredging and filling. Our review of the FR/DEIS reveals that the Corps has not adequately considered alternatives to the project, has not carefully examined direct impacts of the project, has failed to consider cumulative impacts, and therefore has failed to fulfill its obligations under NEPA and the Water Resources and Development Act.

INADEQUATE CONSIDERATION OF ALTERNATIVES

The FR/DEIS fails to adequately consider alternatives to the proposed project. This constrained view of alternatives is, in part, the result of the Corps' reliance upon several inaccurate and unjustified assumptions. These assumptions also result in the benefits of the project being overstated and the costs being understated.

First, and foremost, the Corps unjustifiably dismisses non-structural alternatives. In two short paragraphs, the Corps concludes, without analysis or thoughtful discussion, that the only non-structural alternative is to relocate "all the oceanfront structures", an endeavor the Corps estimates would cost \$300 million. A non-structural alternative, however, does not necessarily entail relocation of all of the structures. No assessment is made of the availability of appropriate locations for structure relocation and how many structures could feasibly be relocated. No assessment is made of the alternative of a moderated retreat in which temporary, small-scale nourishment is used to reduce storm damage hazards in the short term while threatened structures are removed and either relocated or demolished.

Prevailing public policy, and the law of the State of North Carolina, establish a policy of retreat from eroding shorelines through building relocation, building setbacks, development restrictions, and land use planning. 15 N.C.A.C. § 7H.0202(b), 7H.0306, 7H.0308. The primary purpose of the project is storm damage prevention and hazard reduction, not saving or relocating all existing structures. A genuine and open-minded analysis of alternatives must evaluate thoroughly the costs and benefits of a range of combinations of selective relocation, demolition, and temporary nourishment.

A companion assumption that drives the Corps' analysis, but has no basis in fact, is that if the project is not constructed, the beach in front of existing structures will be hardened as property owners and communities take drastic shoreline protection steps. The FR/DEIS assumes that the beach will be lost if not nourished because shore protection structures, such as sandbags, will be installed and the beach will erode to those structures. Hardening of the beach, however, is prohibited under the North Carolina Coastal Area Management Act. While some communities have obtained permits for temporary placement of sandbags, long-term use of sandbags is not permitted and permanent erosion control structures are banned. 15 N.C.A.C. § 7H.0808(a)(1)(B); .0308(a)(2)(F).

The assumption that the beach will disappear unless the project is built also ignores the elemental facts of the natural processes of barrier island migration. The island will continue to have a beach unless constrained by artificial hardening. The beach itself does not need to be

protected from erosion and will not disappear unless hardened erosion control structures are allowed. Instead, buildings threatened by erosion will disappear as the beach moves landward. The Corps' selection of a massive structural alternative based on the fact that "it is primarily the beach that draws visitors to the area" contributes nothing to the analysis, for the beach will remain.

Because the FR/DEIS has not examined combinations of non-structural strategies of retreat, relocation, demolition, and temporary, short-term beach nourishment, the Corps has failed to comply with its duties under NEPA to give the project a "hard look" and to examine carefully all practicable alternatives.

INCOMPLETE EXAMINATION OF DIRECT IMPACTS

We will not reiterate here the detailed analysis of direct environmental impacts posed by this project which is set out in the Fish and Wildlife Coordination Act Report ("FWCA Report") of the Fish and Wildlife Service (the "Service"), included in the FR/DEIS as Appendix B. We share the Service's concerns and incorporate them by reference into this letter. We wish to highlight several.

The Corps' analysis turns entirely on an assumption that both dredged and filled areas will recover soon after the dredging and filling activity ceases. This conclusion is entirely undermined, however, by the unfortunate fact that neither the dredging nor the filling will cease in the proposed project. The construction of the project spans three years of continuous dredging and filling, followed by 47 years of continual renourishment. The Corps offers no evidence that either the dredged or the filled areas will have an opportunity to recover from the complete wipeout of organisms in the affected areas. ✓

In addition, any forecast concerning the actual amount of continuous dredging and filling needed to maintain the project over its 50-year lifespan is entirely speculative. Neither engineering experience nor computer models can predict the erosion rates on as active and varied a shoreline as this study area. Storm patterns, and storm impacts, are highly unpredictable. Changes caused by the project itself are unpredictable, and studies elsewhere have shown greatly accelerated beach erosion rates caused by nourishment projects. (See sources cited at pp. 98-100 of FWCA Report). This uncertainty is exacerbated by the finding, documented by Dr. Dolan in the FWCA Report, of an inappropriately high percentage of fine sediment particles in the proposed borrow areas. ✓

The FWCA Report identifies a number of direct impacts related to the dredging and filling activity which are underestimated in the FR/DEIS because of the unjustified assumption that the activity will cease. Turbidity impacts, destruction of organisms in the areas to be dredged and filled, and the impacts of conducting the dredging and filling activities during the biologically productive spring, summer and fall months, are outlined in the FCWA Report. These impacts also mean that the project will violate North Carolina law prohibiting shoreline erosion response projects in areas that sustain substantial habitat for important fish and wildlife species without adequate mitigation, because the many mitigation suggestions in the FWCA Report have not been incorporated into the project. See 15A N.C.A.C. § 7H.0308(a)(1)(E). ✓

The Corps' analysis also neglects the near certainty that substantial quantities of the project material will drift south into nearby Oregon Inlet, contributing to shoaling in that inlet, and thereby potentially exacerbating inlet migration to the south and pressure both on the North Carolina DOT terminal groin at the northern end of Pea Island and the southern terminus of the Bonner Bridge. Project sand migration into Oregon Inlet will increase the maintenance dredging required in that area to maintain the navigation channel, adding substantial costs attributable to the project.

Finally, the FR/DEIS does not acknowledge that the project will inexorably lead to increased beachfront development landward of the project. Increased development will only lead to increased, not decreased, storm damage in the future, directly contrary to the allocation of costs and benefits in the FR/DEIS. ✓

FAILURE TO CONSIDER CUMULATIVE IMPACTS

The FR/DEIS gives even shorter shrift to cumulative impacts than it does to other aspects of the analysis. NEPA requires that the cumulative effects of this project be analyzed along with the effects of existing and potential projects. Cumulative impacts "can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. The FR/DEIS at Section 6.01.2 and Table 6-1, purports to quantify the "general impacts of beach disposal on other North Carolina beaches . . .," but this presentation both completely misrepresents the amount of North Carolina oceanfront already affected and potentially affected by disposal activities, and completely fails to offer any analysis of the cumulative impacts.

To conduct a valid cumulative impacts analysis, the Corps must look at not only the ongoing and potential projects listed in Table 6-1, but at all other North Carolina beachfront sand disposal activities. In its 30-year economic forecast, the Corps includes four more proposed major nourishment projects not counted in the cumulative impacts figures: Topsail Beach, Bogue Banks in three phases, Surf City, and North Topsail Beach. Combined predicted shoreline lengths for these projects would add another 37.5 miles to the length of impacted beach. The projects are tentatively scheduled for construction in 2008 through 2015, pending study and funding, well within the 50-year life of the Dare County project, and should also be considered in the cumulative count of shoreline affected. ✓

Other current and proposed projects which need to be considered by the Corps in addition to the projects in Table 6-1 are:

PROJECT	AGENCY	TYPE OF PROJECT	STATUS	LENGTH
Topsail Beach	Corps of Engineers	Nourishment	Proposed	5.5 miles
Bogue Banks (three phases)	Corps of Engineers	Nourishment	Proposed	17 miles
Surf City	Corps of Engineers	Nourishment	Proposed	5 miles
North Topsail Beach	Corps of Engineers	Nourishment	Proposed	10 miles
Wilmington Harbor -- Bald Head Island	Corps of Engineers	Spoil disposal	Current	1 additional mile
Wilmington Harbor -- Caswell Beach/Oak Island	Corps of Engineers	Spoil disposal	Current	9.6 miles
Wilmington Harbor -- Holden Beach	Corps of Engineers	Spoil disposal	Current	2 miles
Atlantic Intracoastal Waterway	Corps of Engineers	Expanded channel dredging with spoil disposal	Proposed	from Virginia to South Carolina state line
Drum Inlet/Core Banks	Corps of Engineers	Spoil disposal	Unscheduled	2 miles
Onslow Beach (partially in the CBR System)	Marine Corps at Camp Lejeune	Nourishment	Proposed	1 mile
Mason Inlet Relocation -- Figure Eight Island	New Hanover County	Spoil disposal	Proposed	2 miles
Figure Eight Island	Private	Nourishment	Current	2 miles
Long Beach Sea Turtle Restoration Project	Corps of Engineers	Nourishment	Proposed	2.3 miles
Lockwoods Folly River Environmental Restoration	Corps of Engineers	Possible dredging and disposal	Proposed	Unknown
			TOTAL	59.4 miles known

Adding these figures to those in the FR/DEIS yields an estimated total of 136 miles of shoreline slated for sand disposal, almost double the 76.7 miles in Table 6-1. The total is now close to 43% of the entire North Carolina coastline. It is important to note also that this total does not include the new Atlantic Intracoastal Waterway project length which may place new sand disposal on numerous beaches up and down the entire length of the coast, according to a August 3, 2000 public notice.¹

In addition, the amount of sand disposal activity may well increase to keep pace with the large-scale cycle of nourishment which the Corps, the State, and the coastal counties propose to put in place over the next 15 years. Additional miles should be added in any cumulative impacts analysis to account for such unknown projects, and for scheduled projects which run over the Corps' estimated count.

The Corps should consider not only the length of projects, but also the huge amount and frequency of sand placement. Smaller, more frequent nourishments are reported to be more benign for aquatic and shore communities, and may last longer, as demonstrated by the experience of Virginia Beach. Instead, the Corps tends to increase both the amount of sand disposal, and the project length for dredging and disposal projects. For example, Manteo Shallowbag Bay (Oregon Inlet navigation dredging) was previously recorded as a 300,000 cubic yard annual disposal project on 1.5 to 3 miles length of shore. In a public notice dated April 10, 2000, the project was upgraded to a 350,000 cubic yard disposal amount on 2.6 to 3.4 miles of shore. The Corps may also largely increase its spoil disposal amounts on beaches as it develops its 20-year AIWW Dredge Material Management Plan.

In view of the massive amount of historic, current and proposed beachfront sand disposal, the Corps must completely redo its cumulative impact analysis. In doing so, the Corps must actually analyze, not just quantify, the impacts of beachfront sand disposal on this scale. As recently held in Friends of the Earth, Inc. v. United States Army Corps of Engineers, ___ F.Supp. 2d. ___ Civil Action No. 98-2439 (PLF)(D.D.C. August 10, 2000), a Corps' cumulative impact discussion that contains absolutely no "actual analysis," only the "conclusory statement" that the impacts "have been minimal" does not comply with NEPA. Such "conclusory remarks . . . do not equip a decision-maker to make an informed decision about alternative courses of action or a court to review the Secretary's reasoning. NRDC v. Hodel, 865 F.2d. 288, 298, (D.C.Cir.1988)."

For the same reasons, and as an alternative means of performing the cumulative impacts analysis, the Corps should consider performing a programmatic EIS for its North Carolina beachfront sand disposal activities before determining whether to conduct a specific project on Dare County. As the Fish and Wildlife Service points out in the FWCA Report, the current analysis does not address what areas of greatest need and greatest benefit are along the coastline. ✓

¹ The disposal projects in the FR/DEIS Table 6-1 are given as a total sum and are not catalogued. In order to attempt a determination of which projects were not used in the Corps' analysis, a study of other Corps' documents, including a chart of project lengths which corresponds to the list in the FR/DEIS, as well as information from the Fish and Wildlife Service and other sources were used. The status or length of projects may have changed or may change in the future due to the unpredictability of study and funding of the projects.

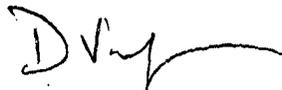
In addition, the project is proposed without consideration of the current, legislatively-mandated North Carolina study of North Carolina beach renourishment needs and priorities.²

In addition, and for the same reasons, limiting the present study to the Kitty Hawk, Kill Devil Hills and Nags Head portion of the Dare County beaches, and not including the remaining Dare County beaches and the NC Highway 12 study, unlawfully segments this study in violation of NEPA, which requires all connected actions be studied together.

For these reasons, the Draft FR/EIS should not be finalized in its present form, and substantial additional studies should be performed on analysis, direct impacts and cumulative impacts before a revised draft is published.

We appreciate the opportunity to make these comments.

Very truly yours,



Donnell Van Noppen III
Senior Attorney

DVN/ckt

cc: North Carolina Coastal Federation
US Fish and Wildlife Service
NC Wildlife Resources Commission
NC Division of Coastal Management
National Marine Fisheries Service
National Parks Service

² NC General Assembly (HB 1840) S.L. 2000-67 § 13.9(c). The General Assembly has instructed DENR to develop a beach management and restoration strategy that, among other directives, "Provides for coordination with the U.S. Army Corps of Engineers, the North Carolina Department of Transportation, the North Carolina Division of Emergency Management, and other State and federal agencies concerned with beach management issue . . . Considers the regional context of beach communities to determine the most cost-effective approach to beach nourishment . . . Recommends priorities for State funding for beach nourishment projects." The study is due for submission to the General Assembly by May 1, 2001.

**Draft EIS
Comment Letters
From Interested Businesses,
Groups, and Individuals**



**OUTER BANKS
ASSOCIATION OF REALTORS®, INC.**

**RECEIVED
EXECUTIVE OFFICE**

2000 AUG 10 11:02 AM
110 W. Oregon Avenue
RHP Devil Hills, NC 27938
Telephone: 252-441-4036
Fax: 252-441-7524
E-mail: obar@beachaccess.com

Action: TS
CF: DE DD
DP DX

August 8, 2000

Colonel James W. DeLony
District Engineer
U.S. Army Corps of Engineers
Wilmington District Office
P. O. Box 1890
Wilmington, NC 28402-1890

Dear Colonel DeLony:

Enclosed is a copy of a Resolution passed by the Outer Banks Association of REALTORS® supporting the authorization, funding and implementation of the North Dare Beaches Hurricane Protection and Erosion Control Plan.

It has always been the contention of the Outer Banks Association of REALTORS® that beach nourishment was the only viable solution to stabilize Dare County's beaches.

We will contact our State and Federal officials urging them to support the authorization, funding and implementation of this important project.

Very truly yours,

Michael Davenport
President

MD:ck
Enclosure

Appendix A-168





**OUTER BANKS
ASSOCIATION OF REALTORS®, INC.**

P.O. Box 1070
110 W. Oregon Avenue
Kill Devil Hills, NC 27948
Telephone: 252-441-4036
Fax: 252-441-7524
E-mail: obar@beachaccess.com

RESOLUTION

WHEREAS the United States Army Corps of Engineers has released the Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control for the Northern Dare Beaches; and

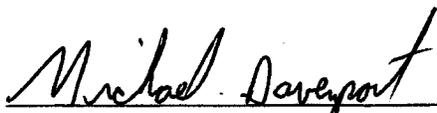
WHEREAS natural phenomena experienced in Dare County have caused a loss of hundreds of feet of beaches, threatening both the structures and roads along its shoreline; and

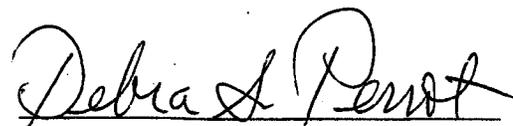
WHEREAS the continued loss of beaches will negatively impact Dare County's tax base and the tourism industry which is the livelihood of its citizens; and

WHEREAS the recently released reports support beach nourishment as a viable solution to beach erosion and its related problems in Dare County;

NOW, THEREFORE, BE IT RESOLVED that the Outer Banks Association of REALTORS®, the largest trade organization in Dare County, endorses and supports the authorization, funding and implementation of the North Dare Beaches Hurricane Protection and Erosion Control Plan.

ADOPTED THIS NINETEENTH DAY OF JULY, 2000 by the Outer Banks Association of REALTORS® in regular meeting.


Michael Davenport, President


Debra Perrot, Secretary

Appendix A-169



CLOUGH & CLOUGH
ATTORNEYS AT LAW
151 MAIN STREET
FLEMINGTON, NEW JERSEY 08822
TELEPHONE (908) 284-2165
TELEFAX (908) 284-2346
August 2, 2000

WILLIAM R. CLOUGH
M. MARIAN CLOUGH*
*N.J. & PA. BARS

SOMERSET COUNTY:
TEL: (732) 356-7709
FAX: (732) 356-4440

Mr. Chuck Wilson
Environmental Resources Section
U.S. Environmental Protection Agency
P. O. Box 1890
Wilmington, North Carolina 28402-1890

Re: Support of Beach Replenishment - Nags Head, North Carolina

Dear Mr. Wilson:

Our family has been visiting the Outer Banks since the early 1960s. We have been home owners since 1986. Thus, three generations of our family believes the beach in North Carolina are the most wonderful place in the world. We had a grandchild who was a victim of leukemia, but her "Make a Wish" was to travel to North Carolina to our little beach house in South Nags Head (she lived in Connecticut) just six weeks prior to her leaving us. The shells she collected are still on an outside bench where she placed them - despite the "Halloween" storm that followed her leaving by two weeks. I expound upon this because this is only one of the very personal reasons why we want to would like to see the beaches preserved.

Of course there are economic reasons that would justify the nourishment of the beaches. The businesses that have sprung up (and those businesses that had existed and have most obviously thrived) would not even exist if the beaches were not attracting the tourists. We live in New Jersey and the number of people who have heard of the "Outer Banks" and now vacation on those wonderful beaches is unbelievable. We are of the opinion that the economy dictates that the beaches be preserved. Thus, we most wholeheartedly support beach nourishment. Thank you for your consideration.

Sincerely,



Marian and William Clough
18 Redwood Road
Martinsville, New Jersey 08836

North Carolina address: 9425 Old Oregon Inlet Road, S. Nags Head, N.C.

P.O. Box 938
Nags Head, NC 27959
August 1, 2000

Mr. Chuck Wilson
Environmental Resources Section
USEPA
P.O. Box 1890
Wilmington, NC 28402-1890

Re: Nags Head, NC

Dear Mr. Wilson,

My wife and I decided some time ago to retire at the Outer Banks of North Carolina. Four years ago that dream became reality as we moved to our cottage, acquired in 1988, on the ocean front in Nags Head.

Following purchase, it was necessary to move the cottage back from the ocean. The annual erosion rate for this part of Nags Head, the historic district, is three feet per year. Thus we moved the recommended 90 feet.

Instead of being safe for thirty years, we find the ocean crawling ever closer to our home. We might be able to move westward 50 feet, but no further.

I thus write you in support of beach nourishment. I shall be glad to pay my part as either taxpayer or property owner, realizing that the beach is public domain for enjoyment by all. I shall also be glad to help in any other way I can since I am a retired attorney and have the time.

Yours truly,

Stephen R. Burch
Stephen R. Burch

I, too, support beach nourishment

Margaret R. Burch
(Mrs. S.R. Burch)

Chuck Wilson
Environmental Resources Section
U.S. Environmental Protection Agency
P.O. Box 1890
Wilmington, NC 28402-1890

July 27, 2000

Dear Mr. Wilson,

We are homeowners in Southern Shores, NC and have been since we built an oceanfront house in 1991. I understand you are interested in receiving material on the possibility of a beach nourishment program. I would like to share our experiences with you. We found that we were losing more and more of our dune as a result of storms, requiring more and more stairs to reach the beach. Then in about 1995 the entire slope on the ocean side had been eradicated and every time there was a high tide we were losing more of the top of the dune because it was falling into the ocean. After talking to some of the local experienced residents we got permission for a "beach push" in March 1995 after organizing 5 or 6 neighbors on both sides who were having similar problems. This "beach push" has really saved us along with the planting of beach grass. It created a slope from the tidal line up to the dune as well as providing a dune again as we had had four years before. Three years later we decided to have just a little touch up "push" as the permission was expiring and we are now in a position of fighting off the sand as it covers our dune deck and beach stairs--a far preferable problem.

This was surprisingly inexpensive compared to the nourishment programs we read about in New Jersey where our main domicile is. Here they are dredging sand and piping it on to the beaches and a good storm wipes it right back into the ocean. I believe the sloping of the beach as a result of the plows pushing 6 inches of sand toward the dune is as important as the building of the dune itself. The important thing is to preserve the dune BEFORE it falls into the ocean.

Sincerely,

Ruth L. MacWhorter

Mrs. R. Bruce MacWhorter
85 Jefferson Ave.,
Maplewood, NJ 07040-1228

beach address:
224 Ocean Blvd
Southern Shores, NC 27949

Mr. & Mrs. Donald J. Hughes
3200 South St.
Chester, Va 23831

August 7, 2000

Environmental Resources
U.S. Environmental Protection Agency
P.O. Box 1890
Wilmington, NC 28402-1890

Attn.: Mr. Chuck Wilson

Dear Sir:

We are very concerned with the beach erosion at Nags Head. We have a home on the ocean front, south of Nags Head.

We are situated on a high embankment and if the erosion takes out our home, and the homes on either side, the street leading to our home will be flooded. This will cause an additional eight homes to be wiped out.

Therefore, we urge N.C. to consider building the beaches up through beach nourishment.

Sincerely,



Mr. & Mrs. Donald J. Hughes

714 Benchmark Court
Wilmington, NC 28409
August 25, 2000

Charles Wilson
US Army Corp of Engineers
69 Darlington Avenue
Wilmington, NC 28403

Dear Mr. Wilson:

Thank you for the opportunity to review the Draft of the Dare County Project. After review, I still find that the proposed project falls short of solving a problem and creates long-term/permanent consequences.

I noted inconsistencies in and I have major concerns about the following:
the process; the predicted cost; the use of a computer-simulated model versus actual available data; the proposed location of disturbance which is a primary nursery area; the effectiveness of the project with the comparison to similar projects that have been unsuccessful along the coastline; the effects on the fisheries and other environmental impacts.

I strongly urge 1) the continuation of the study 2) new proposed solutions
3) public hearings about the matter.

As always, I appreciate the opportunity to review and respond to this proposal. I commend you and your staff for this opportunity. The matter is one with which I am extremely interested.

Sincerely,



Celeste Wescott Maus

Department of Planning
Wilmington District, Corps of Engineers
Post Office Box 1890
Wilmington, N.C. 28402

To: Chuck Wilson

From: Gwendolyn S. Wescott

Date: August 22, 2000

Subject: Draft Feasibility Report and Environmental Impact Statement on Hurricane Protection and Beach Erosion Control - Dare County, N.C., Volume 1. [Environmental Resources Section]

What: This study was dated June 2000; mailed to me July 14, 2000.

Remarks: Thank you for allowing me an opportunity to review Volume 1. (Where are the other volumes?) I have based my comments as a secondary-level educator, a college educator, an environmentalist, a student of nature, and a tax payer of Dare County and Camden County. Both counties will be changed by the results of this project. I have read, notated, "dogeared" and highlighted many statements. Yet, I choose to alert you to a few points:

The following items I question:

1. In the introductory section, it appears to be a segmented plan attempting to redesign by humans the coastal landscape of NC.
2. The Authority section suggests political and certain businesses, not environmental, scientific, nor humanitarian reasons.
3. In the Scope of Study section p. 4 - a misnomer appears as it reads "Supplement No. 2... to navigation improvements (jetties at Oregon Inlet)" in the complete sentence continuing to "Shallow-bag Bay"
4. Have commercial fishermen, environmentalists, geologists and Fish-Wildlife agencies really been contacted?
5. Listen to geologists from Dare and East Carolina - even UNC-W. (Listen to marine life professionals about habitat)
6. This project really is a modern lampoon on the "boy emptying the ocean with a bucket" or "the Dutch child plugging a hole in the dike." This proposed project

- will cost NC taxpayers and Federal taxpayers for over 50 years!
7. This project will have serious ramifications for foal, fish, turtles and other endangered marine life, and native vegetation.
 8. Map 14 - Figure 2 illustrated some of the ramifications.
 9. The topography of our coast will modify yearly for at least 50 years. (Erosion is a natural process and the modification will not be as dramatic as this proposed human change)
 10. Page 23 has words to stress safety from hurricanes -
The fact is hwy. 158 is the "new" road - and hwy. 12 was the only road people know that. This project will not create additional roads.
 11. Page 66, page 141 should be reviewed carefully.
 12. p. 14 "many of the seaward most buildings have been damaged ... due to the loss of the dune system" - (1) There is a set-back law; enforce it; insurance companies do not have to sell policies and the CCC men changed and created many of those dunes. The real "outbankers" knew where to build.
 13. Sections 6.04 and 6.07 and 6.10 need to be restudied carefully.
 14. Pages 37 - 41; 43 should be reread and reconsidered as to this project.

Residents have the choice of common sense to build other places; sandbags may be used in a limited fashion for a short period; developers (if they know geography) know the Carolina coast and its shallow inlets, shallow-still sounds and quiet bays; therefore, this formidable, financial "bottomless-pit" project will do more harm than good.

It truly is futile. And in the futility of it will probably erase marine life, vegetable (plant life) and human coastal life as we know it.

The Corps of Engineers has made errors before in its dams and canals, please do not make bad worse!

Appendix A-177

Shirley S. Wescott

Mr. Norman F. Perry
Box 145, East River Street
Colerain, North Carolina 27924

8-26-68

Dear Mr. Wilson,

I wholeheartedly endorse beach nourishment.

How can Dare County survive without it? It is not for just ocean front dwellers, although they would of course benefit from it. It would benefit all people who enjoy the beach and ocean experience.

I urge you to back this movement and work toward this goal.

Sincerely,

Marion C. Perry
(Mrs. N. F.)