NC COASTAL RESOURCES COMMISSION
March 24 - 26, 2010
Sea Trail Golf Resort and Convention Center
Sunset Beach, NC

The State Government Ethics Act (Chapter 138A of the General Statutes) mandates that the Chair (1) remind members of their duty to avoid conflicts of interest or appearances of conflict, and (2) inquire as to whether any member knows of any known conflict of interest or appearance of conflict with respect to matters before the Commission. If any member knows of a conflict of interest or appearance of conflict, please so state when requested by the Chairman.

Wednesday, March 24th

10:00 Field Trip (Optional): Bird Island Coastal Reserve — Hope Sutton

3:00 COMMISSION CALL TO ORDER (Byrd 2&3) — Bob Emory, Chair
- Roll Call

3:15 CONTESTED CASES
- Lawing v. DCM (09 EHR 4793), Pasquotank County, Boathouse — Ward Zimmerman
- Donaghue v. DCM (09 EHR 0568), Carteret County, 50% Rule — Ward Zimmerman

STATIC VEGETATION EXCEPTION REQUESTS
- Town of Atlantic Beach *(CRC-10-09)* — Jeff Warren
- Town of Emerald Isle *(CRC-10-10)* — Christine Goebel
- Town of Indian Beach & Salter Path *(CRC-10-11)*
- Town of Pine Knoll Shores *(CRC-10-16)*

5:00 PUBLIC HEARING — Bob Emory, Chair
- 15A NCAC 7H .0104 Development Initiated Prior To Adoption By The CRC
- CRC Study of the Feasibility and Advisability of the Use of Terminal Groins

6:00 RECESS

6:15 EXECUTIVE COMMITTEE MEETING (Byrd 2&3) — Bob Emory, Chair

Thursday, March 25th

8:30 COMMISSION CALL TO ORDER (Byrd 2&3) — Bob Emory, Chair
- Roll Call
- Approval of February 17, 2010 Meeting Minutes
- Executive Secretary's Report — Jim Gregson
- Chairman's Comments — Bob Emory
- CRAC Report — Dara Royal

ACTION ITEMS — Bob Emory, Chair
Land Use Plan Certifications and Amendments — John Thayer
- Tyrrell County/ Town of Columbia LUP Certification *(CRC-10-17)*
- Town of Atlantic Beach LUP Amendment *(CRC-10-12)*

9:00 PRESENTATIONS
- Terminal Groins Study Recommendations *(CRC-10-13)* — Bob Emory

12:00 PUBLIC INPUT AND COMMENT

12:15 LUNCH

1:30 PRESENTATIONS

- Terminal Groins Study Recommendations *(CRC-10-13)* — Bob Emory

5:00 RECESS

Friday, March 26th

8:30 COMMISSION CALL TO ORDER (Byrd 2&3) — Bob Emory, Chair

- Roll Call

PRESENTATIONS

- Amendments to 15A NCAC 7H .0304 AECs Within Ocean Hazard Areas - Ocean Erodible Area and Unvegetated Beach Area *(CRC-10-14)* — Jeff Warren
- Sea Level Rise Initiatives Update *(CRC-10-15)* — Tancred Miller

OLD/NEW BUSINESS — Bob Emory, Chair

- Future Meetings and Agenda Items

12:00 ADJOURN

Next Meeting
May 19, 2010
Pivers Island
Beaufort, NC

N.C. Division of Coastal Management
www.nccoastalmanagement.net

STATE OF NORTH CAROLINA
DEPARTMENT OF JUSTICE

ROY COOPER
ATTORNEY GENERAL

P.O. BOX 629
RALEIGH, NC 27602

REPLY TO:
WARD ZIMMERMAN
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wzimmerman@ncdoj.gov

March 1, 2010

Mr. James H. Gregson
Executive Secretary to the CRC
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

Re: *Pierce Lawing v. NCDENR, DCM* (09 EHR 4793)

Dear Mr. Gregson:

Please find enclosed Respondent's Memorandum in Support of the ALJ Decision, which is respectfully submitted in accordance with the letter of CRC Counsel Jennie Wilhelm Hauser dated February 5, 2010, asking that parties file any exceptions to the ALJ's Decision by March 12, 2010. In addition, Respondent requests oral argument.

If you have any questions, or need anything further, please do not hesitate to contact me. Thank you for your attention to this matter.

Sincerely,

Ward Zimmerman
Assistant Attorney General

cc: Pierce Lawing, Petitioner
Jennie Wilhelm Hauser, Special Deputy Attorney General & CRC Counsel
DCM Staff

Attachment (1)

STATE OF NORTH CAROLINA

COUNTY OF CHOWAN

BEFORE THE COASTAL RESOURCES COMMISSION
09 EHR 4793

PIERCE LAWING, Petitioner, v. NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF COASTAL MANAGEMENT, Respondent.	**RESPONDENT'S MEMORANDUM IN SUPPORT OF THE ALJ DECISION**

This memorandum is respectfully submitted to the Coastal Resources Commission by Respondent in support of the Decision by the Administrative Law Judge (ALJ) granting Respondent's Motion for Summary Judgment in the above-captioned matter. Respondent files no exceptions to the Decision, and respectfully urges the Commission to adopt the ALJ's Decision in its entirety as the Final Agency Decision.

The Motion for Summary Judgment in the above-captioned matter, pursuant to Rule 56 of the North Carolina Rules of Civil Procedure and 26 NCAC 3.0115, was heard on December 14, 2009, at the Pasquotank County Courthouse, Elizabeth City, North Carolina, before the Honorable Joe L. Webster, ALJ, on petition for Contested Case Hearing regarding the Division of Coastal Management's denial of a CAMA Major Development Permit for the property of Petitioner Pierce Lawing in Chowan County, North Carolina. On January 5, 2010, ALJ Webster issued a Decision granting Respondent's Motion for Summary Judgment, disposing of all issues in the matter.

STANDARD OF REVIEW

This case arises under the Administrative Procedure Act (APA), which gives express guidance to final agency decision-makers as to the standard of review in contested cases. In accordance with this standard of review, the Commission is to adopt each of the ALJ's findings of fact, "unless the finding is clearly contrary to the preponderance of the admissible evidence . . . ." N.C. Gen. Stat. § 150B-36(b). In considering the ALJ's findings, the Commission must "giv[e] due regard to the opportunity of the administrative law judge to evaluate the credibility of witnesses." Id. If the Commission were to not adopt the ALJ's findings, it would be required to explain its reasons for disagreeing with the ALJ and identify specifically the evidence in the record upon which it relied to make such conclusions. Id.

SUMMARY OF THE CASE

On April 16, 2009, Petitioner applied for a CAMA Major Development Permit to build a 14' X 28' boathouse by constructing a roof over an existing boatlift attached to an existing pier and platform in Edenton, along the Chowan River in Chowan County, North Carolina. Petitioner's property has approximately 50 linear feet of shoreline. 15A NCAC 7H.0208(b)(6)(G) states, in applicable part: "Boathouses shall not be allowed on lots with less than 75 linear feet of shoreline." On August 12, 2009, DCM denied Petitioner's application based upon the inconsistency between the requirements set forth in 15A NCAC 7H.0208(b)(6)(G) and the geographical limitations of Petitioner's property.

On August 18, 2009, Petitioner filed a Contested Case Hearing Request with the Office of Administrative Hearings (OAH). On September 11, 2009, Petitioner filed his Prehearing Statement alleging that "the *rule* [at the heart of this matter, 15A NCAC 7H.0208(b)(6)(G),] is arbitrary, capricious, and unconstitutional." (emphasis added). Nowhere did Petitioner allege,

either in prehearing correspondence or during the Motion for Summary Judgment hearing, as is required by N.C. Gen. Stat. § 150B-23(a), that DCM "acted outside its authority, acted erroneously, acted arbitrarily and capriciously, used improper procedure, or failed to act as required by law or rule."

ALJ'S CONCLUSIONS

For a case to properly sit before the OAH, N.C. Gen. Stat. § 150B-23(a) requires that Petitioner allege that DCM "acted outside its authority, acted erroneously, acted arbitrarily and capriciously, used improper procedure, or failed to act as required by law or rule." Petitioner has never alleged that DCM "acted outside its authority, acted erroneously, acted arbitrarily and capriciously, used improper procedure, or failed to act as required by law or rule." Petitioner's argument as to the *validity* of 15A NCAC 7H.0208(b)(6)(G) is not material to the N.C. Gen. Stat. § 150B-23(a) question of whether DCM *enforced* this rule appropriately. Therefore, there is no material fact at issue in this case, and a Summary Judgment ruling is proper.

Every conclusion of law is supported by the findings of fact, by the CAMA statute and by relevant case law where applicable. The decision reflects the presiding judge's careful consideration of the record. Because the overwhelming preponderance of the admissible evidence in the record supports Judge Webster's Decision, the Commission should adopt that decision, in full, as its own.

Respectfully submitted this the 1st day of March, 2010.

FOR THE DIVISION OF
COASTAL MANAGEMENT

Ward Zimmerman
Assistant Attorney General
N.C. Department of Justice
9001 Mail Service Center
Raleigh, NC 27699-9001
(919) 716-6600
(919) 716-6767 fax
wzimmerman@ncdoj.gov

CERTIFICATE OF SERVICE

This is to certify that a copy of the attached Respondent's Memorandum in Support of the ALJ Decision was served on Petitioner, CRC's Executive Secretary, and CRC's Counsel as follows:

By U.S. Mail:

Pierce Lawing
1705 Arapahoe Trail
Edenton, NC 27932

By Email and U.S. Mail:

James H. Gregson
Executive Secretary to the CRC
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

By Email and Hand Delivery:

Jennie Wilhelm Hauser
Special Deputy Attorney General & CRC Counsel

This the 1st day of March, 2010.

Ward Zimmerman
Assistant Attorney General

TOWN OF ATLANTIC BEACH
INSPECTION & PLANNING DEPARTMENT

125 WEST FORT MACON ROAD
ATLANTIC BEACH, NORTH CAROLINA

January 20, 2010

To: The Director of the Division of Coastal Management
From: The Town of Atlantic Beach
Re: Static Line Exception Application

Per the requirements listed in the rules for the Static Line Exception (listed below), the Town of Atlantic Beach is providing a hard copy of our Static Line Exception application to your office. The report has been submitted electronically to Jeff Warren on January 18, who forwarded it to Christine Goebel and Jim Gregson.

Please contact me if you need any additional information. I can be reached at (252) 726-4456 or planner@atlanticbeach-nc.com.

Best regards,

Jessica A. Fiester, MPA, CZO
Director of Planning & Zoning

(e) A static line exception request shall be submitted to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. Written acknowledgement of the receipt of a completed static line exception request, including notification of the date of the meeting at which the request will be considered by the Coastal Resources Commission, shall be provided to the petitioner by the Division of Coastal Management.

STATE OF NORTH CAROLINA
DEPARTMENT OF JUSTICE

ROY COOPER
ATTORNEY GENERAL

P.O. BOX 629
RALEIGH, NC 27602

REPLY TO: CHRISTINE A. GOEBEL
ENVIRONMENTAL DIV.
TEL: (919) 716-6600
FAX: (919) 716-6767
Cgoebel@ncdoj.gov

MEMORANDUM

TO: North Carolina Coastal Resources Commission

FROM: Christine A. Goebel, Assistant Attorney General
Dr. Jeff Warren, DCM Coastal Hazards Specialist

DATE: March 12, 2010 (for the March 24-26, 2010 CRC Meeting)

RE: Static Line Exception Request by the **Town of Atlantic Beach**

Petitioner, the Town of Atlantic Beach ("Town") requests an exception from the static vegetation line from the Commission pursuant to N.C.G.S. §§ 113A-107, -113(b)(6), -124, and 15A NCAC 7J.1200 et seq. The granting of such a request by the Commission would result in the application of 15A NCAC 7H.0305(a)(5) and 7H.0306(a)(8) to proposed development projects along the affected area of the town, instead of the current use of the static vegetation line per 7H.0305(a)(6). The Town has had a static vegetation line, used for determining ocean erosion setbacks**,** in place since 1986 (eastern part of Town's shoreline) and 1994 (triggering most of the remaining town shoreline) when the static line rules became effective for the Town in connection with their first large-scale nourishment projects.

Pursuant to the requirements of 15A NCAC 7J.1202(a), this memorandum will contain a description of the area subject to the static line exception request, a summary of the fill projects in this area, a summary of the evidence required from and produced by the Town, and a recommendation by Staff to the Commission.

The following information is attached to this memorandum:
Attachment A: Relevant Rules
Attachment B: Staff's Recommendation
Attachment C: Petitioner's Report
Attachment D: Petitioner's supplemental materials

cc: Jessica A. Fiester, Town's Director of Planning and Zoning
Jennie W. Hauser, CRC Counsel

ATTACHMENT A

Relevant Rules

SECTION .1200 – STATIC VEGETATION LINE EXCEPTION PROCEDURES

15A NCAC 07J .1201 REQUESTING THE STATIC LINE EXCEPTION

(a) Any local government or permit holder of a large-scale beach fill project, herein referred to as the petitioner, that is subject to a static vegetation line pursuant to 15A NCAC 07H .0305, may petition the Coastal Resources Commission for an exception to the static line in accordance with the provisions of this Section.
(b) A petitioner is eligible to submit a request for a static vegetation line exception after five years have passed since the completion of construction of the initial large-scale beach fill project(s) as defined in 15A NCAC 07H .0305 that required the creation of a static vegetation line(s). For a static vegetation line in existence prior to the effective date of this Rule, the award-of-contract date of the initial large-scale beach fill project, or the date of the aerial photography or other survey data used to define the static vegetation line, whichever is most recent, shall be used in lieu of the completion of construction date.
(c) A static line exception request applies to the entire static vegetation line within the jurisdiction of the petitioner including segments of a static vegetation line that are associated with the same large-scale beach fill project. If multiple static vegetation lines within the jurisdiction of the petitioner are associated with different large-scale beach fill projects, then the static line exception in accordance with 15A NCAC 07H .0306 and the procedures outlined in this Section shall be considered separately for each large-scale beach fill project.
(d) A static line exception request shall be made in writing by the petitioner. A complete static line exception request shall include the following:

(1) A summary of all beach fill projects in the area for which the exception is being requested including the initial large-scale beach fill project associated with the static vegetation line, subsequent maintenance of the initial large-scale projects(s) and beach fill projects occurring prior to the initial large-scale projects(s). To the extent historical data allows, the summary shall include construction dates, contract award dates, volume of sediment excavated, total cost of beach fill project(s), funding sources, maps, design schematics, pre-and post-project surveys and a project footprint;

(2) Plans and related materials including reports, maps, tables and diagrams for the design and construction of the initial large-scale beach fill project that required the static vegetation line, subsequent maintenance that has occurred, and planned maintenance needed to achieve a design life providing no less than 25 years of shore protection from the date of the static line exception request. The plans and related materials shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work;

(3) Documentation, including maps, geophysical, and geological data, to delineate the planned location and volume of compatible sediment as defined in 15A NCAC 07H .0312 necessary to construct and maintain the large-scale beach fill project defined in Subparagraph (d)(2) of this Rule over its design life. This documentation shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work; and

(4) Identification of the financial resources or funding sources necessary to fund the large-scale beach fill project over its design life.

(e) A static line exception request shall be submitted to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. Written acknowledgement of the receipt of a completed static line exception request, including notification of the date of the meeting at which the request will be considered by the Coastal Resources Commission, shall be provided to the petitioner by the Division of Coastal Management.
(f) The Coastal Resources Commission shall consider a static line exception request no later than the second scheduled meeting following the date of receipt of a complete request by the Division of Coastal Management, except when the petitioner and the Division of Coastal Management agree upon a later date.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1202 REVIEW OF THE STATIC LINE EXCEPTION REQUEST

(a) The Division of Coastal Management shall prepare a written report of the static line exception request to be presented to the Coastal Resources Commission. This report shall include:

(1) A description of the area affected by the static line exception request;

(2) A summary of the large-scale beach fill project that required the static vegetation line as well as the completed and planned maintenance of the project(s);

(3) A summary of the evidence required for a static line exception; and

(4) A recommendation to grant or deny the static line exception.

(b) The Division of Coastal Management shall provide the petitioner requesting the static line exception an opportunity to review the report prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff: March 23, 2009.

15A NCAC 07J .1203 PROCEDURES FOR APPROVING THE STATIC LINE EXCEPTION

(a) At the meeting that the static line exception is considered by the Coastal Resources Commission, the following shall occur:

(1) The Division of Coastal Management shall orally present the report described in 15A NCAC 07J .1202.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(b) The Coastal Resources Commission shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J .1201(d)(1) through (d)(4). The final decision of the Coastal Resources Commission shall be made at the meeting at which the matter is heard or in no case later than the next scheduled meeting. The final decision shall be transmitted to the petitioner by registered mail within 10 business days following the meeting at which the decision is reached.

(c) The decision to authorize or deny a static line exception is a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1204 REVIEW OF THE LARGE-SCALE BEACH-FILL PROJECT AND APPROVED STATIC LINE EXCEPTIONS

(a) Progress Reports. The petitioner that received the static line exception shall provide a progress report to the Coastal Resources Commission at intervals no greater than every five years from date the static line exception is authorized. The progress report shall address the criteria defined in 15A NCAC 07J .1201(d)(1) through (d)(4) and be submitted in writing to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. The Division of Coastal Management shall provide written acknowledgement of the receipt of a completed progress report, including notification of the meeting date at which the report will be presented to the Coastal Resources Commission to the petitioner.

(b) The Coastal Resources Commission shall review a static line exception authorized under 15A NCAC 07J .1203 at intervals no greater than every five years from the initial authorization in order to renew its findings for the conditions defined in 15A NCAC 07J .1201(d)(2) through (d)(4). The Coastal Resources Commission shall also consider the following conditions:

(1) Design changes to the initial large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) provided that the changes are designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work;

(2) Design changes to the location and volume of compatible sediment, as defined by 15A NCAC 07H .0312, necessary to construct and maintain the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2), including design changes defined in this Rule provided that the changes have been designed and

prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work; and

(3) Changes in the financial resources or funding sources necessary to fund the large-scale beach fill project(s) defined in 15A NCAC 07J .1201(d)(2). If the project has been amended to include design changes defined in this Rule, then the Coastal Resources Commission shall consider the financial resources or funding sources necessary to fund the changes.

(c) The Division of Coastal Management shall prepare a written summary of the progress report and present it to the Coastal Resources Commission no later than the second scheduled meeting following the date the report was received, except when a later meeting is agreed upon by the local government or community submitting the progress report and the Division of Coastal Management. This written summary shall include a recommendation from the Division of Coastal Management on whether the conditions defined in 15A NCAC 07J .1201(d)(1) through (d)(4) have been met. The petitioner submitting the progress report shall be provided an opportunity to review the written summary prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.
(d) The following shall occur at the meeting at which the Coastal Resources Commission reviews the static line exception progress report:

(1) The Division of Coastal Management shall orally present the written summary of the progress report as defined in this Rule.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1205 REVOCATION AND EXPIRATION OF THE STATIC LINE EXCEPTION

(a) The static line exception shall be revoked immediately if the Coastal Resources Commission determines, after the review of the petitioner's progress report identified in 15A NCAC 07J .1204, that any of the criteria under which the static line exception is authorized, as defined in 15A NCAC 07J .1201(d)(2) through (d)(4) are not being met.
(b) The static line exception shall expire immediately at the end of the design life of the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) including subsequent design changes to the project as defined in 15A NCAC 07J .1204(b).
(c) In the event a progress report is not received by the Division of Coastal Management within five years from either the static line exception or the previous progress report, the static line exception shall be revoked automatically at the end of the five-year interval defined in 15A NCAC 07J .1204(b) for which the progress report was not received.
(d) The revocation or expiration of a static line exception is considered a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1206 LOCAL GOVERNMENTS AND COMMUNITIES WITH STATIC VEGETATION LINES AND STATIC LINE EXCEPTIONS

A list of static vegetation lines in place for petitioners and the conditions under which the static vegetation lines exist, including the date(s) the static line was defined, shall be maintained by the Division of Coastal Management. A list of static line exceptions in place for petitioners and the conditions under which the exceptions exist, including the date the exception was granted, the dates the progress reports were received, the design life of the large-scale beach fill project and the potential expiration dates for the static line exception, shall be maintained by the Division of Coastal Management. Both the static vegetation line list and the static line exception list shall be available for inspection at the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557.
History Note: Authority G.S. 113A-107; 113A-113(b)(6), 113A-124 Eff. March 23, 2009.

15A NCAC 7H .0305 GENERAL IDENTIFICATION AND DESCRIPTION OF LANDFORMS

(a) This section describes natural and man-made features that are found within the ocean hazard area of environmental concern.
***

(5) Vegetation Line. The vegetation line refers to the first line of stable and natural vegetation, which shall be used as the reference point for measuring oceanfront setbacks. This line represents the boundary between the normal dry-sand beach, which is subject to constant flux due to waves, tides, storms and wind, and the more stable upland areas. The vegetation line is generally located at or immediately oceanward of the seaward toe of the frontal dune or erosion escarpment. The Division of Coastal Management or Local Permit Officer shall determine the location of the stable and natural vegetation line based on visual observations of plant composition and density. If the vegetation has been planted, it may be considered stable when the majority of the plant stems are from continuous rhizomes rather than planted individual rooted sets. The vegetation may be considered natural when the majority of the plants are mature and additional species native to the region have been recruited, providing stem and rhizome densities that are similar to adjacent areas that are naturally occurring. In areas where there is no stable natural vegetation present, this line may be established by interpolation between the nearest adjacent stable natural vegetation by on ground observations or by aerial photographic interpretation.

(6) Static Vegetation Line. In areas within the boundaries of a large-scale beach fill project, the vegetation line that existed within one year prior to the onset of initial project construction shall be defined as the static vegetation line. A static vegetation line shall be established in coordination with the Division of Coastal Management using on-ground observation and survey or aerial imagery for all areas of oceanfront that undergo a large-scale beach fill project. Once a static vegetation line is established, and after the onset of project construction, this line shall be used as the reference point for measuring oceanfront setbacks in all locations where it is landward of the vegetation line. In all locations where the vegetation line as defined in this Rule is landward of the static vegetation line, the vegetation line shall be used as the reference point for measuring oceanfront setbacks. A static vegetation line shall not be established where a static vegetation line is already in place, including those established by the Division of Coastal Management prior to the effective date of this Rule. A record of all static vegetation lines, including those established by the Division of Coastal Management prior to the effective date of this Rule, shall be maintained by the Division of Coastal Management for determining development standards as set forth in Rule .0306 of this Section. Because the impact of Hurricane Floyd (September 1999) caused significant portions of the vegetation line in the Town of Oak Island and the Town of Ocean Isle Beach to be relocated landward of its pre-storm position, the static line for areas landward of the beach fill construction in the Town of Oak Island and the Town of Ocean Isle Beach, the onset of which occurred in 2000, shall be defined by the general trend of the vegetation line established by the Division of Coastal Management from June 1998 aerial orthophotography.

15A NCAC 07H .0306 GENERAL USE STANDARDS FOR OCEAN HAZARD AREAS

(a) In order to protect life and property, all development not otherwise specifically exempted or allowed by law or elsewhere in the CRC's Rules shall be located according to whichever of the following is applicable:
(1) The ocean hazard setback for development is measured in a landward direction from the vegetation line, the static
vegetation line or the measurement line, whichever is applicable.

***
(8) Beach fill as defined in this Section represents a temporary response to coastal erosion, and compatible beach fill as defined in 15A NCAC 07H .0312 can be expected to erode at least as fast as, if not faster than, the pre-project beach. Furthermore, there is no assurance of future funding or beach-compatible sediment for continued beach fill projects and project maintenance. A vegetation line that becomes established oceanward of the pre-project vegetation line in an area that has received beach fill may be more vulnerable to natural hazards along the oceanfront. A development setback measured from the vegetation line provides less protection from ocean hazards. Therefore, development setbacks in areas that have received large-scale beach fill as defined in 15A NCAC 07H .0305 shall be measured landward from the static vegetation line as defined in this Section. However, in order to allow for development landward of the large-scale beach fill project that is less than 2,500 square feet and cannot meet the setback requirements from the static vegetation line, but can or has the potential to meet the setback requirements from the vegetation line set forth in Subparagraph (1) and (2)(A) of this Paragraph a local government or community may petition the Coastal Resources Commission for a "static line exception" in accordance with 15A NCAC 07J .1200 to allow development of property that lies both within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. This static line exception shall also allow development greater than 5,000 square feet to use the setback provisions defined in Part (a)(2)(K) of this Rule in areas that lie within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. The procedures for a static line exception request are defined in 15A NCAC 07J .1200. If the request is approved, the Coastal Resources Commission shall allow development setbacks to be measured from a vegetation line that is oceanward of the static vegetation line under the following conditions:

(A) Development meets all setback requirements from the vegetation line defined in Subparagraphs (a)(1) and (a)(2)(A) of this Rule;
(B) Total floor area of a building is no greater than 2,500 square feet;
(C) Development setbacks are calculated from the shoreline erosion rate in place at the time of permit issuance;
(D) No portion of a building or structure, including roof overhangs and elevated portions that are cantilevered, knee braced or otherwise extended beyond the support of pilings or footings, extends oceanward of the landward-most adjacent building or structure. When the configuration of a lot precludes the placement of a building or structure in line with the landward-most adjacent building or structure, an average line of construction shall be determined by the Division of Coastal Management on a case-by-case basis in order to determine an ocean hazard setback that is landward of the vegetation line, a distance no less than 30 times the shoreline erosion rate or 60 feet, whichever is greater;
(E) With the exception of swimming pools, the development defined in 15A NCAC 07H .0309(a) is allowed oceanward of the static vegetation line; and
(F) Development is not eligible for the exception defined in 15A NCAC 07H .0309(b).

ATTACHMENT B

Staff's Report to the Commission

I. Description of the affected area

The Town of Atlantic Beach (Town) is located on a barrier island known as Bogue Banks, located in Carteret County, North Carolina. The Town is approximately 2.4 square miles in size, and is approximately 4.5 miles long and 1 mile wide at the widest point. It is generally oriented in an east-west direction. It is bounded on the north by the Atlantic Intracoastal Waterway (AIWW) and Bogue Sound, on the south by the Atlantic Ocean, on the west by the Town of Pine Knoll Shores and on the east by Fort Macon State Park and Beaufort Inlet.

The current static line extends for approximately 4.5 miles of shoreline from just east of The Sheraton Hotel property (western end of the static line) to Fort Macon State Park (eastern end of the static line). The approximately 700-feet of Sheraton Hotel property is the only part of the Town's oceanfront which is not covered by the current static line. The initial static line location was determined by DCM Staff by locating the bulkhead or line of stable, natural vegetation on 1984 pre-project photographs.

The current average annual erosion setback for the affected area is primarily 2.0 feet per year, except a section near the border with Fort Macon State Park which is 2.5 feet per year. The static line area is a developed area, with approximately 350 total oceanfront lots. The Town estimates that about 50 developed oceanfront lots and 10 vacant oceanfront lots could potentially be affected by the granting of this exception.

II. Summary of past nourishment project and future project maintenance

Atlantic Beach has been receiving beach nourishment as material derived from construction and maintenance activities associated with the Morehead City Harbor (MHCH) federal navigation project and during routine maintenance of the Atlantic Intracoastal Waterway (AIWW) and side channels that connect to the AIWW. The MHCH project was constructed in 1911 to enhance the connection for shipping interests leading to and from the Atlantic Ocean and the interior waterways of Morehead City and Beaufort, and has undergone several improvements over the years. The most recent nourishment of Atlantic Beach was in 2007, and the project has been constructed, improved, and maintained by the USACE since its inception. The designated beach disposal area for the MHCH project eventually evolved to include approximately 7 miles of shoreline on the east end of Bogue Banks beginning at the Fort Macon terminal groin and extending west into the Town of Pine Knoll Shores. The nourishment at Atlantic Beach is unique compared to most other beach nourishment because it is accomplished at 100% federal cost. As the initial date of construction of the two sections in 1986 and 1994 which triggered the static line, is more than five years ago, the request meets the 5-year requirement of 15A NCAC 7J.1201(c).

III. Summary of Petitioner's evidence supporting the four factors

The Commission's rule 15A NCAC 07J.1203(b) indicates that the Commission "shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J.1201(d)(1) through (d)(4)." Specifically, these four criteria require a showing by the Petitioner of (1) a summary of all beach fill projects in the area proposed for the exception, (2) plans and related materials showing the design of the initial fill projects, and any past or planned maintenance work, (3) documentation showing the location and volume of compatible sediment necessary to construct and maintain the project over its design life, and (4) identification of the financial resources or funding sources to fund the project over its design life. (See 15A NCAC 07J.1202(d) for exact rule language). Staff's summary and analysis of Petitioner's response to these four criteria follows.

A. Summary of fill projects in the area- First factor per 15A NCAC 7J.1202(d)(1)

The Town's report, specifically pages 11-18, provides the following information about the history of the beach fill projects that have/will have taken place beginning in 1911:

PROJECT NOURISHMENT HISTORY.

The beach fill project for the Town of Atlantic Beach is totally dependent on material deposited along its shoreline during construction and maintenance of the MHCH federal navigation project. A description of the MHCH project including its construction and maintenance history, beach disposal operations, and future dredged material management plans are provided below.

3.1 Morehead City Harbor Federal Navigation Project

3.1.1 MHCH Construction & Improvements

The MHCH project has included the construction and maintenance of a commercial navigation channel through Beaufort Inlet, located along the low energy limb of the Cape Lookout foreland. Beaufort Inlet is one of only three inlets in the State known to be open continuously since 1585, and connects Back and Bogue Sounds to Onslow Bay and the Atlantic Ocean. In its natural state, the inlet was characterized as a migratory tidal channel surrounded by a broad ebb tidal shoal system and ocean bar. The natural controlling depth over the bar was approximately -15 feet MLW. The MHCH project was constructed in 1911 to enhance the connection for shipping interests leading to and from the Atlantic Ocean and the interior waterways of Morehead City and Beaufort, and has undergone several improvements as summarized below. The project has been constructed, improved, and maintained by the USACE since its inception.

MHCH Construction History

1911 - A 300 ft wide navigation channel was dredged through the bypassing bar at a depth of -20 feet MLW. Between 1911 and 1936, a channel was maintained at about these dimensions, but not at a fixed alignment.

1936 - The outer (bar) channel was deepened to -30 feet MLW and widened to 400 feet, and the channel location was fixed. The inner channels and basins were dredged to the same depth.

1961 - The channels and basins were deepened to -35 feet MLW.

1978 - The bar channel was increased to a -42 feet MLW depth by 450 feet width, and most of the interior channels and basin were deepened to -40 feet MLW. The alignment of the bar channel was shifted slightly eastward toward naturally deep water near Shackleford Point.

1994 - The bar channel was deepened to -47 feet MLW by 450 feet width, increased in length by 4,300 feet to reach the -47 foot MLW depth contour, wideners were added, and the interior channels and harbors were deepened to -45 feet MLW.

3.1.2 Disposal Methodologies

The USACE is congressionally mandated to maintain the Nation's navigational thoroughfares and conduct disposal practices *"... in the least costly manner, at the least costly and most practicable location, and consistent with engineering and environmental requirements.*", as specified in 33 C.F R. § 335.4. This is often referred to as the "least-cost option" or the "Federal Standard", and has resulted in the partitioning of the MHCH project into several reaches - Range A, the Cutoff, Range B, Range C, and the Turning basin (***Figure 3***). Historically, the Cutoff and Range A (collectively known as the ***Outer Harbor***) has been maintained by hopper dredging that collects sediment from the base of the channel and travels to one of two disposal areas located 1 to approximately 6.0 miles offshore to dispose the dredged material. Maintenance and construction of Range B, C and the Turning Basin (known as the ***Inner Harbor***) has been conducted utilizing a pipeline dredge that carries sediment from these areas to the confined upland disposal site of ***Brandt Island (Figure 3)***, located north of Ft. Macon State Park. As shown on ***Figure 3***, the Turning Basin is subdivided into various reaches or "legs" as well.

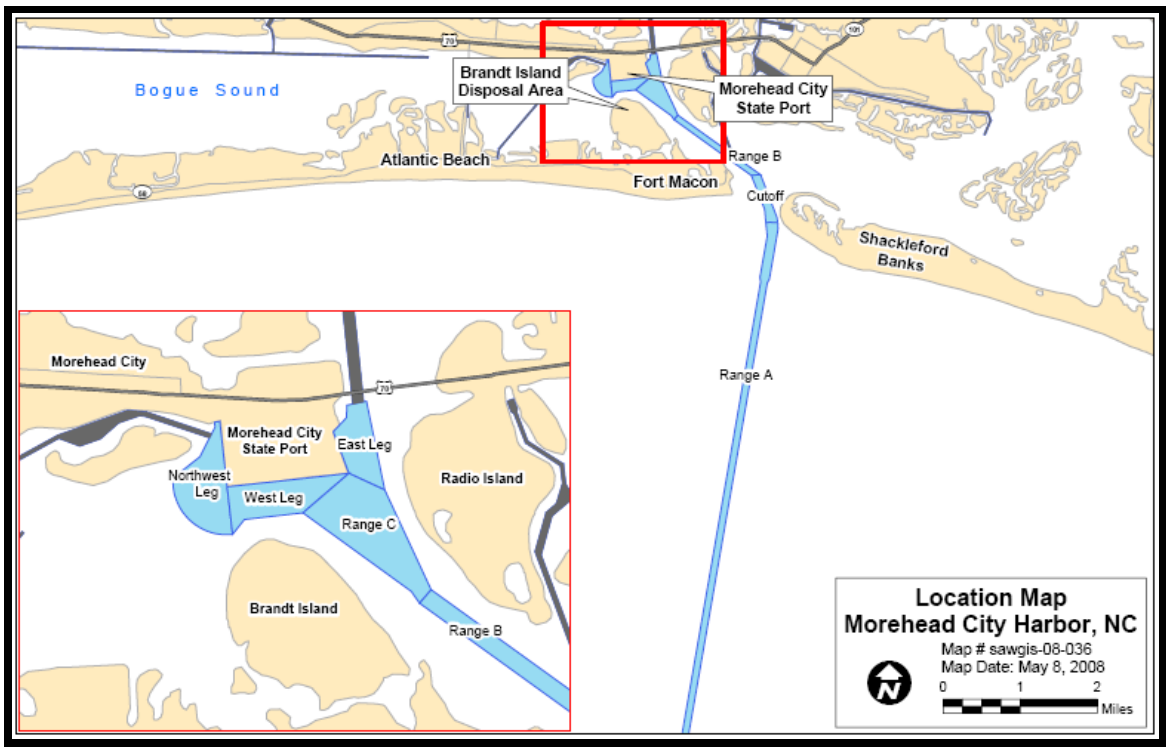

Figure 3. Maintenance reaches of the MHCH Project. (The Cutoff and Range A have traditionally been known as the ***Outer Harbor***; the remaining reaches have constituted the ***Inner Harbor***.)

Outer Harbor – Prior to 1996, the Offshore Dredged Material Disposal Site (ODMDS) was used exclusively for the disposal of ***Outer Harbor*** maintenance and deepening material. Environmental Protection Agency approved boundaries for the existing ODMDS are depicted in ***Figure 4.*** The existing ODMDS is located just seaward of the State 3-mile territorial limit and extends approximately 3 more miles offshore. Note the existing ODMDS does not encapsulate an area immediately to the north that was utilized for disposal prior to the establishment of the current approved area ***(Figure 4)***. Dredge records indicate approximately 46.85 mcy of material were excavated by hopper dredging and presumably placed in the ODMDS from 1911 to 1996. Of this total, 10.65 mcy was from new construction and 26.20 mcy from maintenance. As part of the 1994 deepening authorization, the USACE created the nearshore berm disposal area (***Figure 4)*** located about 1.0 to 1.5 miles offshore and along the western flank of the ebb tide delta at the -18 to -20 ft MLW contour. However, due to weather and equipment constraints, most of the disposal in the nearshore berm, which was first utilized in 1997, has occurred between -26 to -40 ft MLW. The deeper water ODMDS is still utilized in the event of inclement sea conditions. In this regard, between 1997 and 2004, approximately 47% of the ***Outer Harbor*** material (~3.8 mcy out of a total 8.1 mcy dredged from the ***Outer Harbor***) was placed in the nearshore berm. In 2004 and 2007, dredged material from the ***Outer Harbor*** was placed directly along the shorelines of Indian Beach, Salter Path, and Pine Knoll Shores under the auspices of the Section 933 Program that financially assists communities for the delta cost of placing dredged material in locations other than those identified under the Federal Standard. In 2004 and 2007, material was also removed from the northern portions of the ODMDS to nourish the

beaches of Bogue Banks that qualified for FEMA reimbursement for the Federally-declared disasters of Hurricanes *Isabel* and *Ophelia*. A total of 1.24 mcy was removed from the ODMDS and deposited along the shorelines of Pine Knoll Shores, Indian Beach, Salter Path, and Emerald Isle to repair the disaster related losses from the engineered beaches fronting these communities.

Maintenance dredging of the Outer Harbor has generally increased with each increase in the dimensions of the project as indicated in ***Table 1***. The one exception was for the period 1978 to 1994 when a slight reduction in maintenance dredging was realized by shifting of the channel toward Shackleford Banks to take advantage of naturally deep water. During the last decade, the USACE has reduced the depth in the entrance channel from 47 feet MLW to 45 feet MLW due to changes in the size of vessels calling on the port. This is reflected in the reduced volume of maintenance dredging given in Table 1 for the period 2001 to 2007.

Table 1. Maintenance dredging history - MHCH ***Outer Harbor***.

Bar Channel Dimensions (ft)	Time Period	Average Hopper Dredge Volume (cubic yards/year)
20 x 300	1911 - 1935	99,800
30 x 400	1937 - 1960	534,500
35 x 400	1962 - 1977	650,200
42 x 450	1978 - 1994	591,600
47 x 450	1996 - 2000	972,900
45 x 450	2001 - Present	659,700

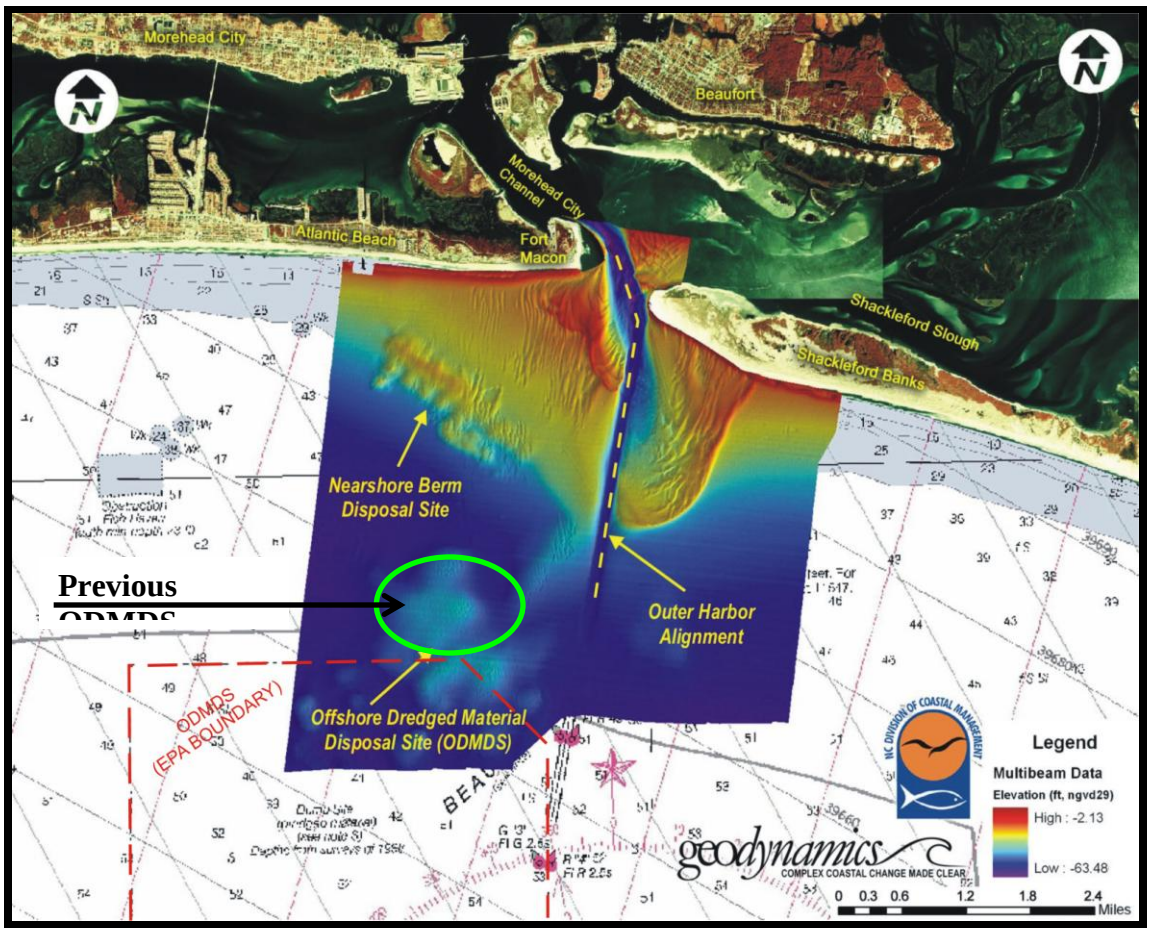

Figure 4. ***Outer Harbor*** schematic depicting offshore disposal sites utilized in the past and present by the USACE. (Seabed elevations are from 2006.)

Inner Harbor – The ***Inner Harbor*** has been constructed, improved, and maintained utilizing a pipeline dredge that has transferred dredged material to *Brandt Island* since the 1936 deepening project, with maintenance occurring on an approximate biennial basis since. The volume of material removed to maintain the ***Inner Harbor*** (Range B, C, and basins) has averaged 225,000 cy/yr over the past 20 years. The capacity of *Brandt Island* became limited as maintenance and construction work continued, and in absence of other suitable upland disposal areas, *Brandt Island* was designated as a temporary holding area for ***Inner Harbor*** dredged material during the formulation of the 40-foot MLW project and was first utilized in this new function in 1976. Once the capacity of *Brandt Island* is reached, material stored in the island was to be transferred to a beach disposal area located along the eastern portion of Bogue Banks to create accommodation space in *Brandt Island* for future dredged material disposal. The procedure for the removal of material from *Brandt Island* is commonly referred to as a "pump-out" and has occurred three times – 1986, 1994, and 2005 (***Figure 5***). The beach disposal area includes the shorelines of Ft. Macon and Atlantic Beach. During major improvements of the ***Inner Harbor*** (channel deepening), material has been piped directly to Ft. Macon. Also, during the 2002 and 2007 maintenance events, material from Range B and Range C was pumped directly to the Fort Macon shoreline via a pipeline dredge. In this regard, almost one-half of the material removed to maintain the ***Inner Harbor*** is taken from Range B and portions of Range C.

Approximately 69% of the material removed from Brandt Island during the 1986 and 1994 pump-out operations was considered to be littoral material, i.e., material derived from the ocean beaches (USACE 2001). However, the material pump-out of *Brandt Island* in 2005 had a silt and clay content greater than 10%. This is discussed further below, but the characteristics of the 2005 *Brandt Island* material has caused the USACE to reconsider disposal options for the ***Inner Harbor*** material.

Figure 5. Historical photographs of the *Brandt Island* Pump-Out process. (Panel (A) - Excavation of *Brandt Island* utilizing a cutter-head suction dredge in 1994. Panel (B) – Active disposal of *Brandt Island* material to the beaches of Atlantic Beach in 2004. The former Triple S, Oceanna, and former Sportsmans Piers are located in succession from the top (east) towards the bottom (west) of the photograph.)

3.2 Beach Nourishment/Disposal

As summarized in the previous section, beach nourishment along Atlantic Beach has constituted the "least cost" disposal option for the USACE and therefore the costs associated with this practice have been borne 100% by the Federal government. A summary of all nourishment activity emanating from the ***Inner Harbor*** is provided below and in ***Table 2***. ***Figure 6*** depicts the geographic extent of beach nourishment throughout the life of the MCHP. The profile stationing shown in ***Table 2*** and ***Figure 6*** is referenced to the USACE baseline.

MHCH Beach Disposal/Nourishment Chronology

1978 – 1,179,600 cy of material from the Turning Basin, Range C, and Range B were placed along the Ft. Macon shoreline during construction of the 40-foot MLW deepening project.

1986 – The upland recycling facility of *Brandt Island* was excavated ("pumped-out") for the first time with 3,918,484 cy placed along Atlantic Beach and Ft. Macon. An additional 250,116 cy of channel and basin material was pumped directly to the beach disposal area resulting in a total of 4,168,600 cy being placed on the beach.

1994 – A total of 4,664,400 cy of material was placed along the least cost corridor of Atlantic Beach and Ft. Macon, including; the second pump-out of *Brandt Island* (2,473,700 cy), ***Inner Harbor*** deepening material associated with the 45-foot MLW project (1,725,000 cy), and routine ***Inner Harbor*** maintenance (465,700 cy).

2002 – 209,348 cy of material maintained from Range B and a portion of Range C were directly placed along the beaches of Ft. Macon.

2005 – 2,390,000 cy and 530,729 cy of material were placed along Atlantic Beach and Ft. Macon, respectively (2,920,729 cy total) in association with the third *Brandt Island* pump-out and routine ***Inner Harbor*** maintenance.

2007 – 184,828 cy of material maintained from Range B and a portion of Range C were directly placed along the beaches of Ft. Macon, discreetly along the bath house region of the State Park shoreline.

Table 2 – Volumetric summary and geographic boundaries of beach nourishment resulting from the dredge disposal activities associated with the ***Inner Harbor*** of the MHCH project.

Date	Fort Macon (cubic yards)	Atlantic Beach (cubic yards)	Total cy	Fort Macon Bounding Location (USACE stations)		Atlantic Beach Bounding Location (USACE stations)	
				East	West	East	West
1978	1,179,600		1,179,600	49+00	100+00		
1986	250,116	3,918,484	4,168,600			100+00	290+00
1994	2,192,268	2,472,132	4,664,400	49+00	100+00	210+00	320+00
2002	209,348		209,348	49+00	75+00		
2005	530,729	2,390,000	2,920,729	49+00	100+00	100+00	290+00
2007	184,828		184,828	75+00	100+00		
Totals	4,546,889	**8,780,616**	13,327,505				

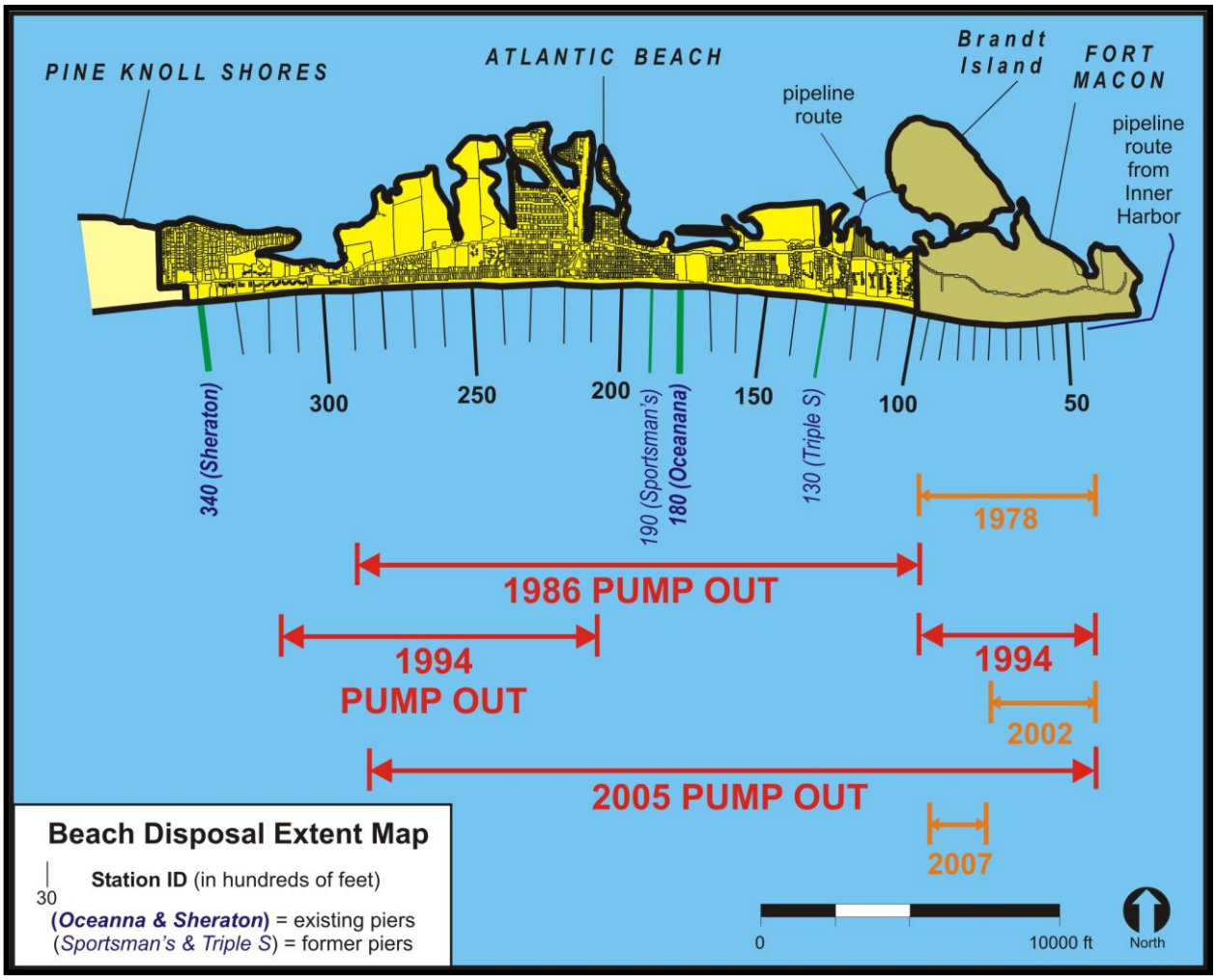

Figure 6. Site map depicting the geographic areas, general dates, and USACE stationing for beach disposal/nourishment events associated with dredging activities at the MHCH project. (Atlantic Beach has been the nourished three distinct times – 1986, 1994, and 2005.)

B. Design of the initial fill projects and past/planned maintenance Second factor per 15A NCAC 7J.1202(d)(2)

The Town's report, specifically pages 20-25, has the following information about how the project has performed in the past and the proposed future design of future beach fill projects for Atlantic Beach:

PROJECT PERFORMANCE.

The design template for the disposal of the 1986 Brandt Island material along Atlantic Beach included a variable width horizontal berm at elevation +10 ft NAVD with the material allow to assume its natural angle of repose seaward of the berm crest. Shortly after placement, vertical scarps became prevalent along the entire beach fill area. The formation of the vertical scarps was attributed to the +10 ft NAVD elevation of the berm with was about 4 feet above the elevation of normal wave run-up. Subsequent nourishment operations carried out in 1994 and 2005 lowered the berm elevation to +6 ft NAVD which allow normal wave and tide action to overtop the berm thus preventing the formation of vertical scarps. Note that through the course of a year, tides and wave vary and can produce a natural crest elevation of the berm greater than 6 ft NAVD which in turn can result in the formation of scarps. However, by lowering the design elevation of the berm, the scarps that do form are normally less than a foot high and are short lived.

A series of figures showing comparative plots of typical profiles along Atlantic Beach beginning in September 1981, prior to the first Brandt Island pump-out in 1986, through July 2008 are provided in Appendix A. The profiles selected for comparison are spaced 4,000 to 5,000 feet apart and include USACE Stations 120+00, 160+00, 210+00, 250+00, and 290+00 (***Figure 6***).

The profile comparisons show that the beach continues to be maintained well seaward of the 1981 or pre-project shoreline. The profile comparisons also show rather substantial adjustments in the fills immediately following placement. This is best illustrated by comparing the post-fill profile of May 2005 with the May 2006 profile. The magnitude of the fill adjustments that occurred following the 2005 fill placement was probably dominated by the high percent of fines in the material which would have resulted in large quantities of the fill being carried seaward or being swept out of the placement area by littoral currents.

The performance of the beach fill along Atlantic Beach between June 1999 and June 2009, which captures the 2005 fill from the Brandt Island pump-out, is depicted graphically in ***Figure 9***. The volumes shown in ***Figure 9*** are presented in terms of the cubic yards of material on the beach between the seaward toe of the dune and the -12-foot NAVD contour per lineal foot of beach. These volumes were obtained from monitoring reports prepared under the auspices of the Carteret County Shore Protection Office which are posted on the Shore Protection Office website at http://www.protectthebeach.com/.

As mentioned above, the 2005 fill underwent some rapid post-fill adjustments between May 2005 and May 2006 which is evident in ***Figure 9***. Following this initial adjustment, the fill has performed well. For the period from May 2005 (post-fill placement) to June 2009, the rate of loss of material from Atlantic Beach has averaged 7.1 cubic yards/lineal foot/year. Based on this rate of loss, the 4.2 miles of Atlantic Beach that includes the static line would need to be nourished at an average rate of approximately 160,000 cubic yards/year to maintain the beach in its existing condition.

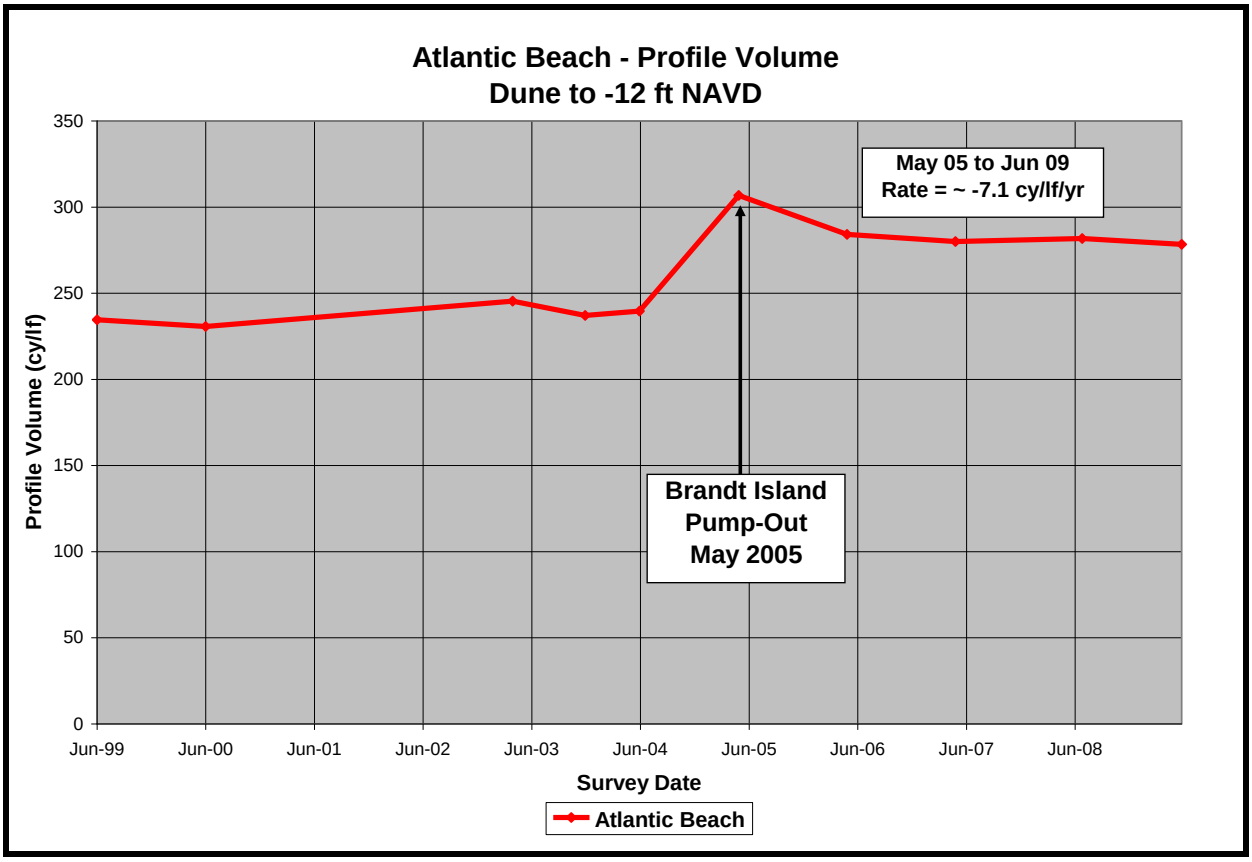

Figure 9. Profile volume changes along Atlantic Beach between June 1999 and June 2009.

5. FUTURE NOURISHMENT - USACE REVISED DREDGED MATERIAL MANAGEMENT PLAN FOR MHCH

The USACE is in the process of addressing the long-term management of beach quality material by preparing a Dredged Material Management Plan (DMMP) that is due to be completed by October 2011, as stipulated in a legal settlement reached by the USACE and Carteret County in 2008 (USACE 2008).

For the interim period between now and the adoption of a new DMMP for MHCH, the USACE has instituted an Interim Operation Plan (IOP). The IOP includes a three-year cycle consisting of maintenance of portions of the ***Outer Harbor*** with deposition of the material on Atlantic Beach during Year 1, spot maintenance of the ***Outer Harbor*** with disposal in either the ODMDS or the near shore berm during Year 2, and maintenance of the ***Inner Harbor*** with disposal on *Brandt*

Island during Year 3. At the end of the three-year IOP, the USACE anticipates the revised DMMP for the MHCH project will be implemented. While the revised DMMP has not been finalized, the final plan will likely resemble the IOP. If so, Atlantic Beach and Fort Macon can anticipate receiving material about every third year.

Due to the poor quality of material removed from Brandt Island during the 2005 pump-out operation, the USACE has indicated the revised DMMP will not include the disposal of the Brandt Island material on the east end of Bogue Banks. While the first two pump-out operations carried out in 1986 and 1994 provided reasonably good beach quality material, expansions of the Inner Harbor during recent years, including the addition of the Northwest Leg (***Figure 3***) and expansion of the East Leg, has apparently resulted in the preponderance of the ***Inner Harbor*** maintenance material, at least the material removed from the inner basins, consisting of riverine mud as demonstrated by the 2005 pump-out operation (***Figure 8***). Future plans for Brandt Island will likely include the removal of sediment from the island and transporting the material to a portion of the ODMDS cordoned off to receive material considered to be incompatible for disposal on the beach. The USACE may also consider maintaining the ***Inner Harbor*** with a bucket and barge operation which would remove material with a bucket dredge and place the material on a barge for transport to the designated disposal site within the ODMDS. In any event, beach disposal of the ***Inner Harbor****/Brandt Isl*and material will not be included in the revised DMMP.

As mentioned above, USACE sampling of the shoal material throughout the Harbor in preparation of the revised DMMP has identified a portion Range C, all of Range B and the Cutoff, and a portion of Range A to shoal with beach compatible material. Therefore, the material shoaling these sections of the harbor will be targeted for disposal along the Atlantic Beach and Forth Macon shorelines. A summary of the grain size analysis of the samples collected by the USACE from these areas and the location of the beach compatible shoal material in the ***Outer Harbor*** is provided on ***Figure 9***.

Since 2001, the volume of material removed from the Cutoff and Range A has averaged approximately 660,000 cubic yards/year. However, as indicated in ***Figure 9,*** the beach quality shoal material identified by the USACE does not extend all the way to the seaward limit of Range A. Based on the historic distribution of shoaling in the ***Outer Harbor*** (USACE 2001), the volume of material that would be removed from the Cutoff and the red-shaded area of Range A would be about 70% of the total or 462,000 cubic yards/year. In addition to the Cutoff and Range A material, the USACE IOP would pump material to the Fort Macon and Atlantic Beach shorelines directly from Range B and the portion of Range C that shoals with beach quality material. Again, based on historic shoaling records, the volume of beach quality material that would be removed from Range B and C should average around 110,000 cubic yards/year or roughly one-half of the total volume that has been historically removed to maintain the Inner Harbor.

The USACE IOP and possibly the final DMMP for the MHCH project will be performed on a three year cycle. During the first year, the beach quality shoal areas, shown in red on ***Figure 9***, would be maintained by a cutter-suction pipeline dredge which would pump the material directly to the Fort Macon and Atlantic Beach shorelines. During the second and third years, spot shoals

that may occur in the ***Outer Harbor*** would be removed via a hopper dredge and the material placed in either the near shore disposal mound (weather permitting) or in the ODMDS. The ***Inner Harbor*** would be maintained during the third year and the material deposited on Brandt Island or possibly transported directly to the ODMDS.

Under the IOP, Fort Macon and Atlantic Beach will likely receive 572,000 cubic yards of beach compatible material during the next maintenance event which is scheduled for 2009-10. Assuming the USACE can negotiate a favorable contract bid for the work (note bids recently received for work exceeded the allowable margin above the government estimate), 572,000 cubic yards of beach quality material will be distributed along the Fort Macon and Atlantic Beach shorelines. Based on the historic distribution of the material between Fort Macon and Atlantic Beach, Atlantic Beach would likely receive 66% of the material or 377,500 cubic yards. This will be followed by two years in which no material is placed directly on the east end of Bogue Banks.

Should the USACE adopt the IOP as the permanent DMMP for the MHCH project, material would again be placed on the east end of Bogue Banks during the 2012-13 maintenance event. Since some of the annual shoal material would be removed from the ***Outer Harbor*** and placed in the offshore disposal areas during the two intervening years, the volume of material that would have to be removed from the ***Outer Harbor*** and available for deposition on the east end of Bogue Banks during the 2012-13 maintenance event is uncertain. However, assuming one-half of the annual shoal volume would be removed during the intervening two years and placed offshore, the 2012-13 maintenance event could involve the removal of two full years of ***Outer Harbor*** shoaling or 1,144,000 cubic yards of beach quality material. Again assuming 66% of this material would be placed on Atlantic Beach, Atlantic Beach would receive about 755,000 cubic yards. Under this scenario in which the IOP is adopted at the permanent DMMP, Atlantic Beach would continue to receive 755,000 cubic yards every 3 years which is equivalent to about 252,000 cubic yards/year.

The projected rate of disposal of beach quality material under the revised DMMP for the MHCH project exceeds the estimated nourishment requirement of 160,000 cubic yards/year based on the performance of the project between May 2005 and June 2009. Therefore, maintenance of the existing beach would not be an issue under the revised DMMP. Furthermore, the mean grain size of the ***Outer Harbor*** material is coarser than the material that has been historically placed on Atlantic Beach from the ***Inner Harbor*** and the coarser material would be expected to be more resistant to erosion thus providing a much higher degree of performance and longevity of the fill compared to the ***Inner Harbor*** material.

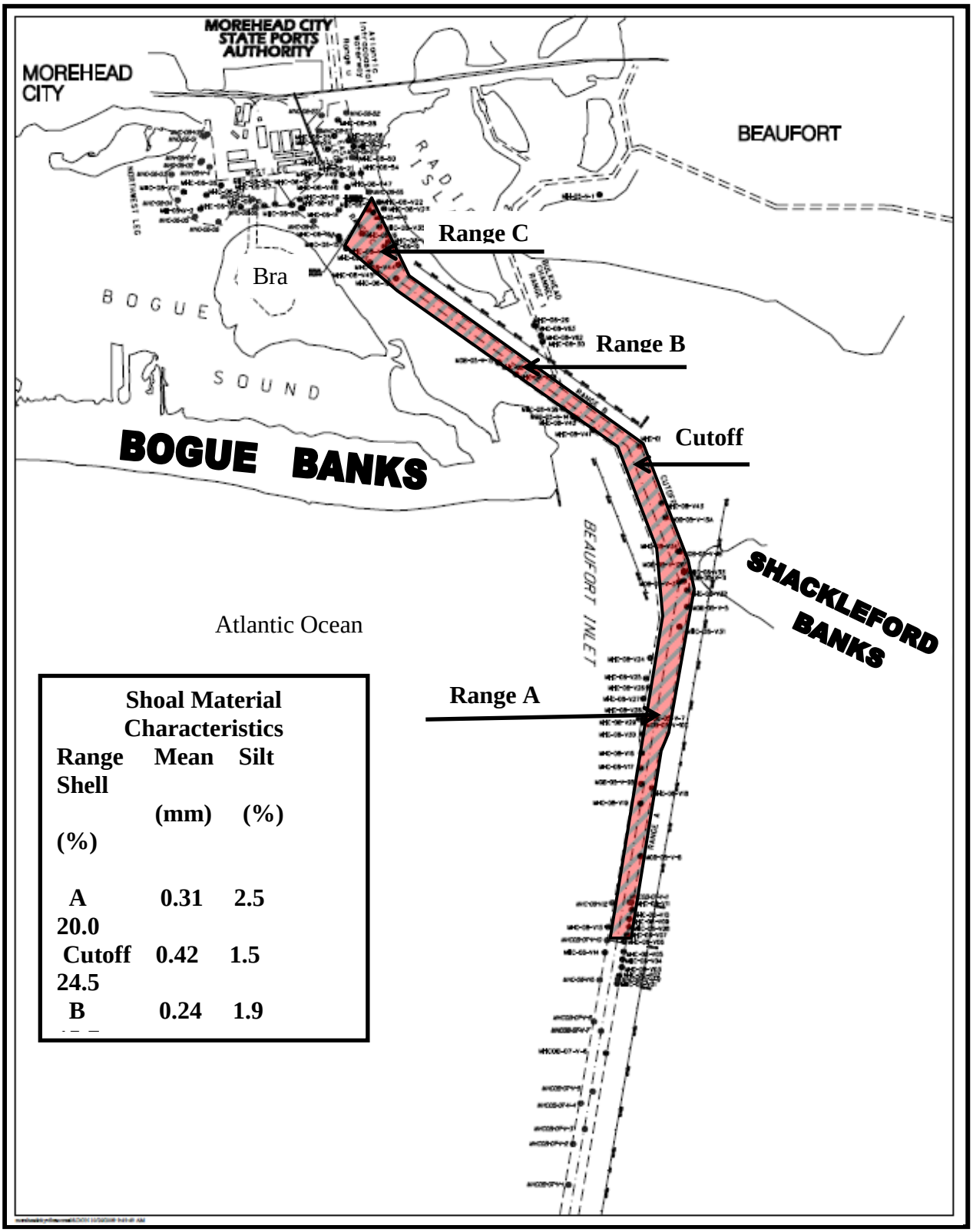

Figure 10. Channel areas (shaded red) identified by the USACE that contain beach quality shoal material.

C. Compatible Sediment
Third factor per 15A NCAC 7J.1202(d)(3)

The Town's report, specifically pages 18-20, provide the following information about the availability of compatible sediment for future beach fill projects:

Cumulative Volume - Atlantic Beach has been nourished three distinct times since 1986 with an estimated 8.78 mcy of dredged material deposited over approximately 4.2 miles of the Town's 4.5 mile shoreline. The amount of material deposited on Atlantic Beach constitutes about 66% of the total volume of all ***Inner Harbor*** material deposited on the east end of Bogue Banks under the USACE "least cost" disposal area encompassing the beaches of both Fort Macon and Atlantic Beach (***Figure 7***). The beach nourishment figures reported by the USACE are for the excavated volumes utilized to pay the dredging industry, and not the volume of sand that was actually placed and contoured on the beach. This is a traditional practice for navigation projects as dredging contractors are paid by their surveyed, excavation volumes rather than for the volume residing and surveyed on the beach – the latter is customary for designed beach nourishment projects.

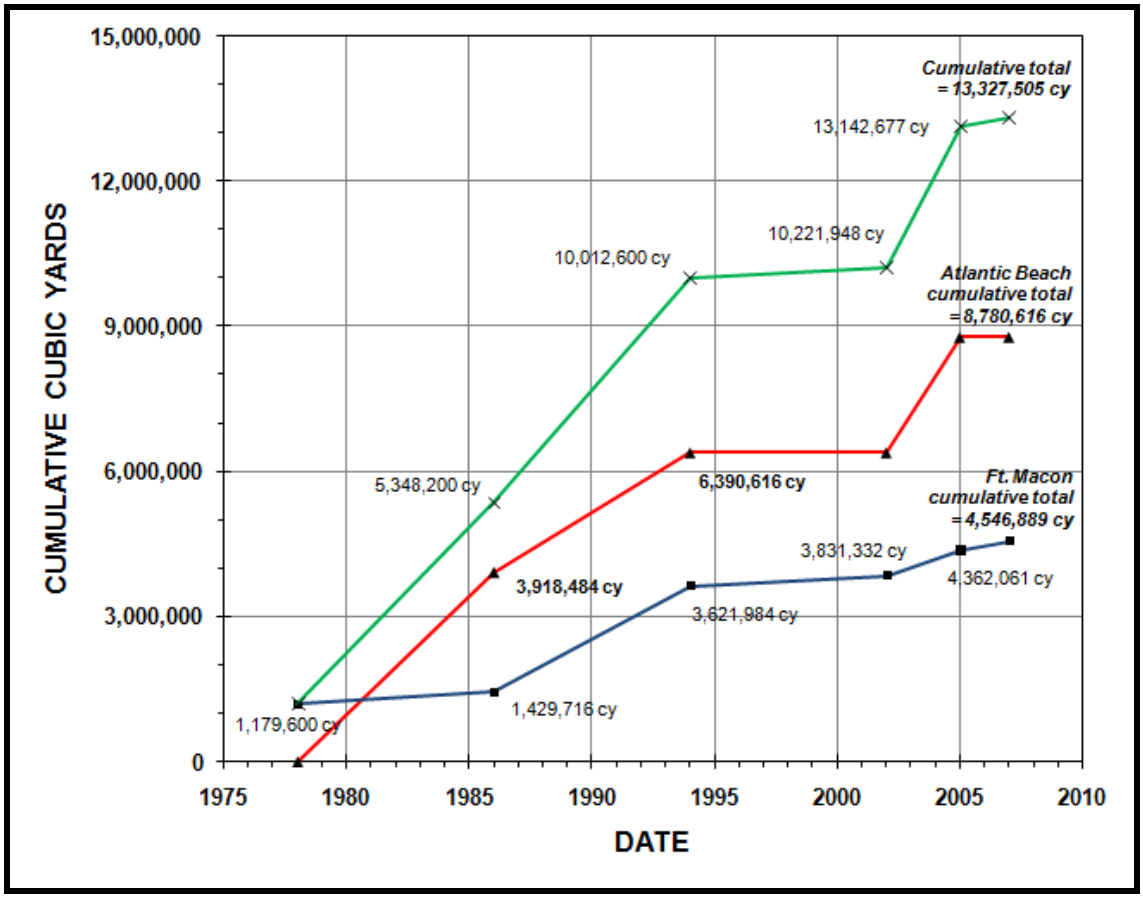

Figure 7. Cumulative volumes of material placed along the "least cost" reach of Atlantic Beach and Ft. Macon since 1978.

Beach Compatibility – Material removed from navigation channels is considered by the USACE to be compatible with the native material if the silt content (i.e., material with a grain size equal to or less than 0.0625 mm) is less than 10%. This is the same standard adopted by the State for beach nourishment emanating from the maintenance of navigation channels (15A NCAC 07H .0312). Based on observations by the local municipalities, the dredged material pumped to Atlantic Beach has been comprised of sand with a preponderance of mud. These observations are consistent with the provenance of sediments entering the ***Inner Harbor*** area that have been transferred, stored, and subsequently pumped out of *Brandt Island*, which includes sediments from adjacent beaches, ebb-tide delta sediments from Beaufort Inlet, riverine sediments of the Newport and North Rivers, and estuarine sediments transported from adjacent sounds and wetlands.

The USACE 2001 Section 111 Report (USACE 2001) provides mean grain sizes separately for Range B and the remaining portion of the ***Inner Harbor*** (Range C and the Turning Basin). Considering most of the Range B material has been directly pumped to the beaches of Ft. Macon, the sediment grain sizes and other properties reported for the remaining portion of the ***Inner Harbor*** are more indicative of the sediments that have been stored and pumped out of *Brandt Island* to Atlantic Beach. The composite value for the ***Inner Harbor*** is listed as 2.14 phi (0.23 mm) by the USACE with the native beach composite mean grain size for Atlantic Beach listed as 2.53 phi (0.17 mm), and a standard deviation of 0.55 phi. Using a value know as the overfill ratio (R_a), the USACE estimated 69% of the ***Inner Harbor*** materials utilized for beach disposal/nourishment along Atlantic Beach has been beach quality (USACE 2001). A total of 8,780,616 cy of material have been placed along Atlantic beach since the first 1986 *Brandt Island* Pump Out, and assuming 69% of this material was beach compatible, the effective volume is 6,058,862 cy. Based on the effective volume of beach fill placed on Atlantic Beach since 1986, the equivalent rate of nourishment has been approximately 263,400 cubic yards/year.

Visual observations as depicted in ***Figure 8*** and recent textural analyses of the entire Harbor by the USACE has substantiated that in general; beach quality material tends to shoal most of the ***Outer Harbor***, Range B, and the southern portion of Range C in the ***Inner Harbor***. The Turning Basin area and the northern segment of Range C are shoaled with non-beach quality material (well over 10% mud by weight percent).

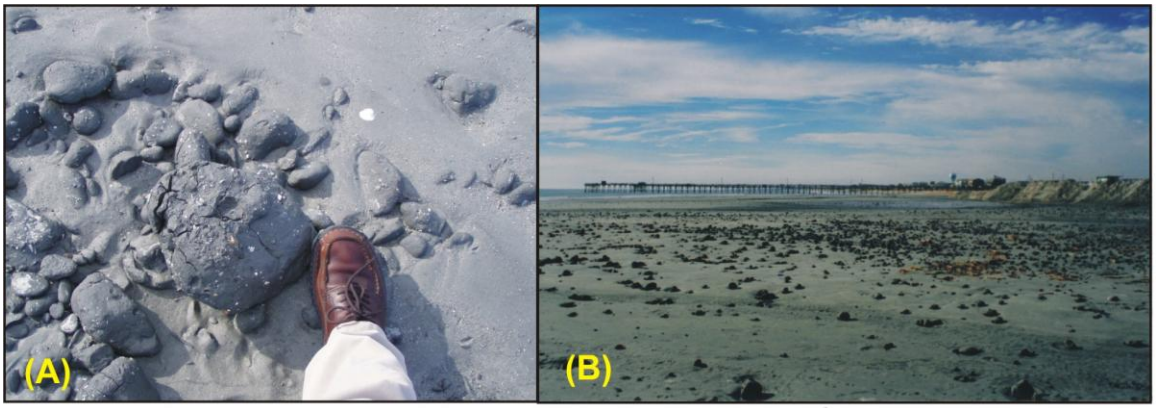

Figure 8. Photographs obtained during the 2005 *Brandt Island* Pump-Out. (The clumps imaged in both Panel (A) and (B) were comprised of mud – notice the muddy texture of the disposal

material as well in Panel (A).)

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STAFF'S COMMENTS IN RESPONSE:

Based on the current interim dredged material management plan by the USACE, maintenance of the Port of Morehead City's navigational channel will place beach compatible sediment along the Town's oceanfront shoreline. In this case, the USACE's sediment compatibility definition is the same as the CRC's (less than 10% fine-grained material) so consistency between State and Federal policy will be achieved. Staff has some concerns if material from Brandt Island is placed onto the beach (or if future beach compatible sand is first placed into Brandt Island for later pump-out onto the Atlantic Beach oceanfront). In 2005, this occurred and a noticeable volume of mud (fine-grained sediments) from Brandt Island was placed onto the beach. Brandt Island continues to receive some finer-grained sediments from harbor maintenance dredging that is not suitable for beach placement, by sequestering the beach compatible material in discrete cells. Future beach fill projects will either take sand directly from the channel and place it on the beach or take it out of the beach compatible cells of Brandt Island. In either case, based on the sediment criteria for navigation maintenance (less than 10% fines) used by both the USACE and DCM/CRC, DCM feels that the sediment compatibility requirements for this static line application will be met.

Financial Resources-
Fourth factor per 15A NCAC 7J.1202(d)(4)

The Town's report, specifically pages 26-32 and the supplemental material provided at the request of Staff, provide the following information about the financial resources planned for future beach fill projects:

FINANCIAL PLAN.

6.1 Introduction. The nourishment projects that resulted in the creation of a static vegetation line along most of the ocean shoreline of Atlantic Beach differs from the traditional beach nourishment projects in the State having been created as a result of the deposition of navigation channel maintenance material rather than with material from a designed borrow area. Another major distinction is the project is finance totally by the federal government through the application of the least cost disposal practice for federal navigation project. As a result, the Town of Atlantic Beach has not been required to provide any financial assistance for the project. As long as the MHCH project continues to be a viable navigation project, contributing to the overall economy of the United States, the federal government will continue to maintain the project at no expense to the Town of Atlantic Beach.

Since the USACE operates under the least cost disposal practice, the Town of Atlantic Beach is not assured the entire area covered by the static line rule would be nourished on a routine basis. In this regard, the length of shoreline over which the material is distributed is dictated by funds appropriated to the USACE by the US Congress. Generally, the USACE will design the disposal

operation within the capabilities of existing contractor owned dredge plant. For the most part, dredges normally employed for the MHCH project can pump material 3 to 4 miles without the assistance of a booster pump. In the case of the IOP and possible revised DMMP, dredging contractors would be required to pump material a minimum of about 1 mile to reach the east end of the Fort Macon shoreline to a maximum of approximately 7 miles to reach the west end of the Atlantic Beach shoreline covered by the static line. This would require the assistance of a booster pump. Should federal funding limitations prohibit the distribution of material along the entire Atlantic Beach shoreline subjected to the static line, the Town of Atlantic Beach may have to provide supplemental funding to cover the added cost of pumping the material along the entire length of the town.

Extending the beach disposal along the entire length of Atlantic Beach would not be required during every three-year maintenance operation. For purposes of developing the financial plan, extending the disposal along the entire length of Atlantic Beach was assumed to be required once every 9 years with the added cost for extending the disposal area estimated to be $1,000,000 to cover the cost of using a booster pump.

6.2. Island-Wide Nourishment Plan. Carteret County has initiated the development of an island-wide beach nourishment plan that is intended to protect the island for at least the next 30 years and possible beyond. Funding for the island-wide plan would come from Carteret County, the State of North Carolina, and contributions from each community along the island. As presently envisioned, the island-wide plan would include Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores. The Town of Atlantic Beach is not included in the island-wide plan since, as discussed above; Atlantic Beach is periodically nourished during dredged material disposal operations associated with the Morehead City Harbor federal navigation project. However, Carteret County intends to financially assist the Town of Atlantic Beach to assure material is deposited along the entire length of the town.

As Carteret County moves forward with the formulation of its long-range protection plan, the County intends to assume a major role in providing the necessary funding for periodic nourishment through distribution of funds from the County Beach Nourishment Fund. That fund is supported by revenues generated by the room occupancy tax. Carteret County will also provide funding support to the Town of Atlantic Beach to extend beach disposal along the entire length of the town's shoreline again using funds derived from the Beach Nourishment Fund.

Since periodic nourishment for all of the communities along Bogue Banks and the extension of the fill along Atlantic Beach are inter-linked and depend on the County Beach Nourishment Fund, the financial plan presented here includes the whole of Bogue Banks not just the Town of Atlantic Beach. In addition to funding provided by Carteret County, each community on the island would contribute some portion of the cost with the balance of the required funds being provided by the State of North Carolina.

Formulation of the financial plan considered island-wide periodic nourishment needs, the cost of periodic nourishment, allocation of costs to each island community, revenues generated by the Carteret County room occupancy tax, the expected growth of the Beach Nourishment Fund supported by the room occupancy tax, and two funding scenarios for the State of North Carolina.

6.3. Island-wide Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 3 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of the various reaches along the island would be accomplished when the volume of material residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Table 3. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[1]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.93	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.00	-4.1
Indian Beach/Salter Path	+181,185	855,952	-674,767	-109,400	30.72	-8.5
Pine Knoll Shores	+418,612	932,658	-514,046	-83,300	23.35	-3.5
Total for Bogue Banks Restoration Project				-357,100		-4.1

(1) Adjusted volume change = measured profile volume change minus fill added.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

6.4. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 4 provides a cost estimate for each operation based on current (2010) dollars.

Table 4. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[1]				$175,000
S&A[1]				$175,000
Total Cost/Operation				$14,253,000

(1) E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004. While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the 2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

6.5. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection, as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget constraints do not allow material to be distributed along the entire Atlantic Beach shoreline. Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

6.6. Funding/Cost Allocation.

As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Atlantic Beach.

The balance of necessary beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities.

Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 5.

Table 5. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.
[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

6.7. County Room Occupancy Tax/Beach Nourishment Fund. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 11 (blue line).

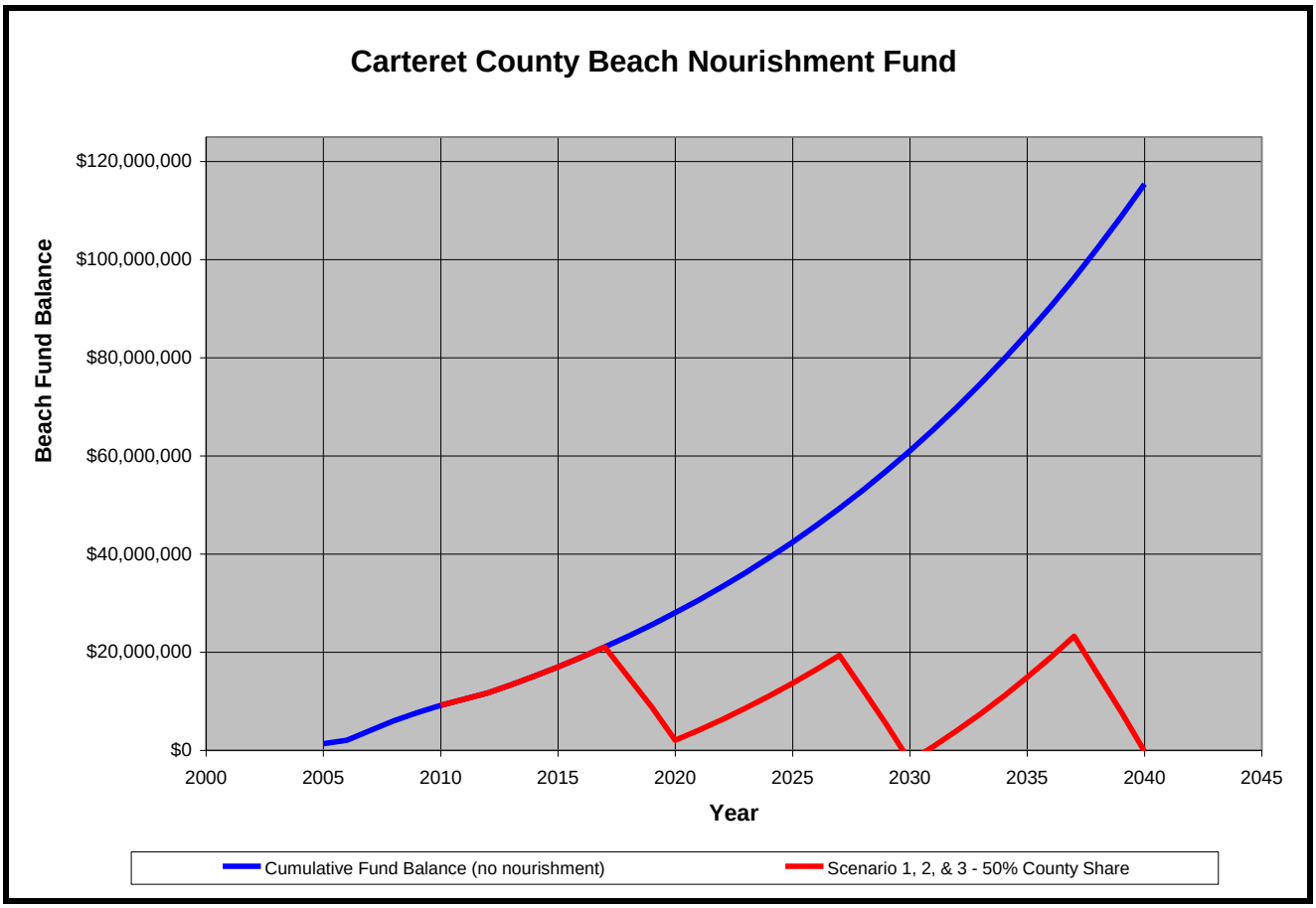

Figure 11. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 11 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

6.8. Town of Atlantic Beach Funding Source. The total contribution needed from the Town of Atlantic Beach to assure dredged material is distributed along the entire length of its shoreline over the 30-year planning period is estimated to be $750,000. In the initial version of the legislation authorizing the County's room occupancy tax (S.L. 2001-381), funds were distributed directly to the individual towns on Bogue Banks as opposed to the County's Beach Fund. As noted above, the funds were distributed on a pro-rata basis. Atlantic Beach has maintained their share of these initial distributions in a dedicated Beach Nourishment Fund with a current balance of approximately $334,380. The fund earns an annual interest rate of 2%.

The legislation restricts the use of these funds so that they can only be used for beach nourishment, including "[t]he costs associated with providing enhanced public beach access." Although Atlantic Beach may use a small portion of this fund to improve existing beach accesses, the Town intends to maintain the majority of this fund, and the interest income generated by the fund, to provide the local funds required to augment the work of the USACE. In the event its beach fund is ever depleted, and given the relatively small amount of local funds required, Atlantic Beach will be able to fund its local share through its existing revenue sources without implementation of an additional special district taxes.

Appendix B provides an analysis of the Town's Beach Nourishment Fund for the three funding scenarios presented above. Without any additional contributions to the fund other than the annual interest earned, the fund would be depleted by 2027. In order to keep the fund solvent with the assumed 25% State cost share, the Town would have to add at least $12,500 to the fund each year or transfer funds from its general account when additional funds are needed. Both of these options are well within the financial capability and authority of the Town. An annual contribution of $25,000 would be needed to accommodate a 4% annual rate of inflation in the cost of disposal which is also well within the financial capability of the town.

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STAFF'S COMMENTS IN RESPONSE:

The placement of dredged material on Atlantic Beach is to be covered primarily by the USACE. However, a portion of the financial plan in the static line exception application requires State, county, and local funds to cover an additional cost (above the USACE least-cost dredged material disposal methods) of $1.00,000 every nine years to ensure beach fill extends along the Town's entire oceanfront shoreline Although the static line application suggests that costs are nominal and "well within the financial capacity and authority of the Town," DCM has requested and the Town has provided additional documentation that it has the authority, capacity, and willingness to ensure funds are available for future beach maintenance.

IV. Staff's Recommendation

The Commission, through 15A NCAC 7J.1202(a)(4), directs Staff to provide a recommendation to the Commission whether it should grant or deny the Petitioner's Static Line Exception Request. Based on the Town's report and additional exhibits attached**,** Staff recommends that the Commission **GRANT** the Town's Petition for a Static Line Exception, and authorize the use of the rules at 15A NCAC 7H.0306(a)(8).

ATTACHMENT C
Petitioner's Report

Petitioner's Revised Report is Attached as an electronic file.

ATTACHMENT D
Petitioner's Supplemental Materials

Additional Materials supplied by Petitioner are included as additional electronic files and are intended to be part of the official record considered by the CRC.

Atlantic Beach, NC
Static Line Exception Application Report

MARCH 2010

Prepared by:
Coastal Planning & Engineering of NC
For:
Town of Atlantic Beach, NC

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ATLANTIC BEACH, NC
STATIC LINE EXCEPTION APPLICATION REPORT

1. PURPOSE.

The Town of Atlantic Beach (TOWN) is seeking an exception to the static vegetation line in accordance with the procedures outlined in 15A NCAC 07J .1201. A static vegetation line was established along most of the ocean shoreline of Atlantic Beach as a result of two beach disposal operations associated with the maintenance of the Morehead City Harbor federal navigation project (MHCH). The first disposal operation occurred in 1986 and covered approximately the eastern half of the town's 4.5 mile shoreline extending west from the Atlantic Beach/Fort Macon State Park boundary (AB/FM). The second disposal operation occurred in 1994 and covered most of the remaining portion of the town's shoreline, ending approximately 2,000 feet east of the town's west boundary with Pine Knoll Shores (AB/PKS). Material from maintenance of the MHCH project was also placed on Atlantic Beach in 2005 but that disposal operation did not extend the limits of the beach fill placement area associated with the 1986 and 1994 disposal operations and thus did not impact the static line. The location of the static line, which is shown in ***Figures 1a to 1i***, combined with the recently adopted rule establishing graduated setback requirements based on building size (15A NCAC 07h .0306), has rendered at least 60 ocean front structures in Atlantic Beach non-conforming.

2. PROJECT BACKGROUND.

The Atlantic Beach project differs from the traditional beach nourishment projects in that the material placed on the beach is derived from construction and maintenance activities associated with the MHCH federal navigation project. As a matter of background, the original rules for the static vegetation line were formulated so as not to require the establishment of a static vegetation line for routine navigation channel maintenance operations that involved disposal of beach quality dredged material on the beach. In this regard, the vast majority of beach disposal operations carried out by the US Army Corps of Engineers (USACE) occur during routine maintenance of the Atlantic Intracoastal Waterway (AIWW) and side channels that connect to the AIWW. Generally, these operations involve material quantities less than 200,000 cubic yards and result in minor widening of the beach over relative short lengths of shoreline. However, the beach disposal operations carried out for the MHCH project far exceed the norm and result in substantial widening of the beach that can stretch over several miles. Consequently, the original static line rule included a disposal threshold that would have to be exceeded in order to invoke the static vegetation line. This threshold included a total volume equal to or greater than 200,000 cubic yards and a placement rate of 50 cubic yards/lineal foot or greater. While the static vegetation line threshold has now been changed to beach fills equal to or greater than 300,000 cubic yards, the existing rule still does not obviate the MHCH disposal operations from the static line rule.

During the formulation of the project to deepen the MHCH project from 35-feet mean low water (MLW) to 40 feet MLW in the early 1970's, the USACE (USACE 1976) determined the least

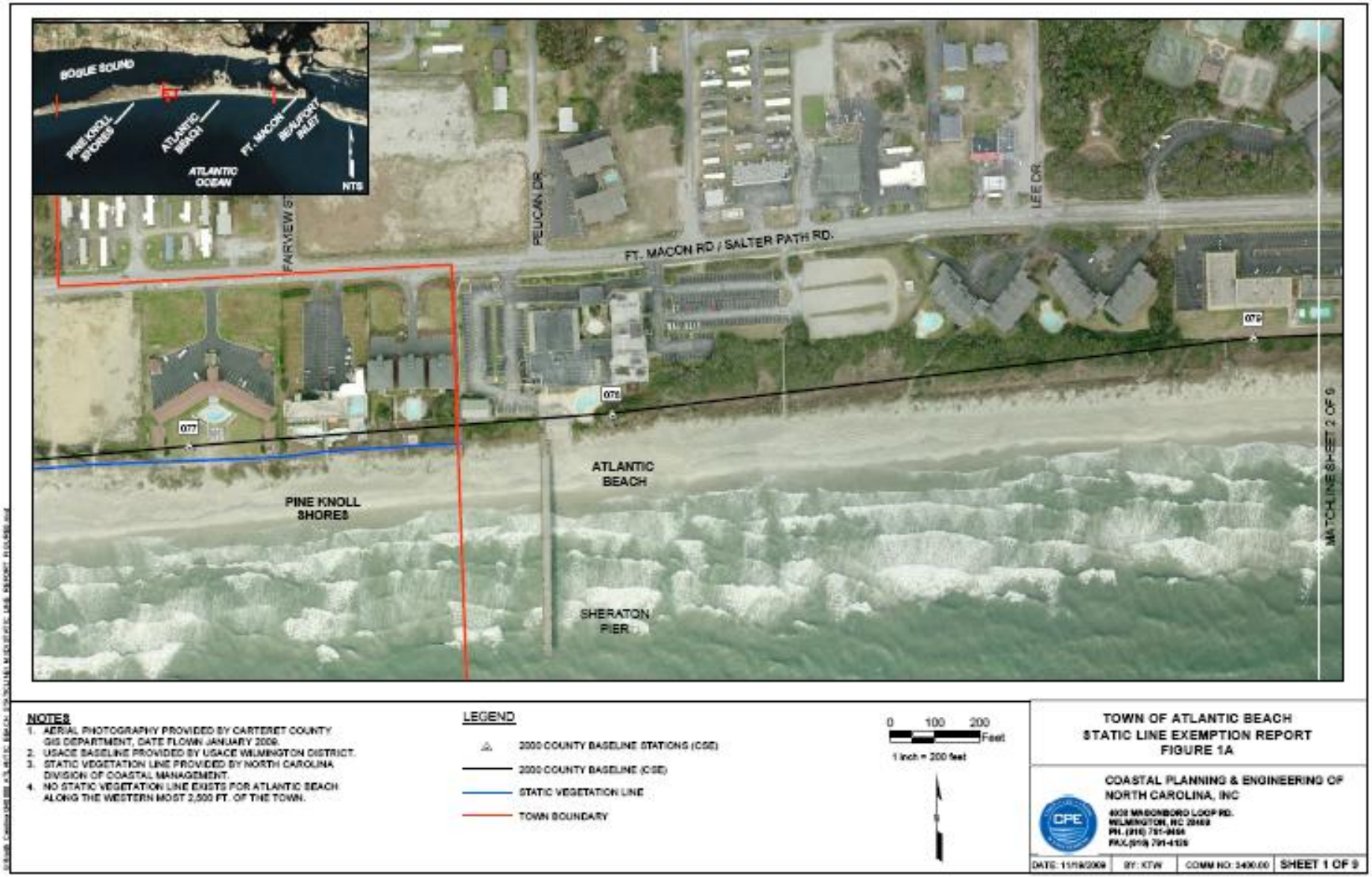


Figure 1a. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1b. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1c. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1d. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1e. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1f. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1g. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1h. Town of Atlantic Beach Static Line and Project Baseline.

Figure 1i. Town of Atlantic Beach Static Line and Project Baseline.

cost disposal of material removed to maintain the ***Inner Harbor*** (described below) would involve the temporary storage of material in an upland disposal area known as *Brandt Island* (***Figure 3***), and once full, the *Brandt Island* disposal area would be pumped-out with the material being distributed along the shoreline on the east end of Bogue Banks. The estimated time between pump-out operations was 8 to 10 years. The designated beach disposal area for the MHCH project eventually evolved to include approximately 7 miles of shoreline on the east end of Bogue Banks beginning at the Fort Macon terminal groin and extending west into the Town of Pine Knoll Shore. However, given funding and equipment limitations, disposal of the material removed from *Brandt Island* has never extended all the way to the AB/PKS town limit.

Another aspect of the Atlantic Beach project that make it unique compared to most other beach nourishment projects is the disposal of the Morehead City Harbor maintenance and construction material on the east end of Bogue Banks is accomplished at 100% federal cost, i.e., local cost-sharing for the disposal operation is not required. As a result, the Town of Atlantic Beach is totally dependent on federal funding for the MHCH navigation project to maintain the beach.

3. PROJECT NOURISHMENT HISTORY

As discussed above, the beach fill project for the Town of Atlantic Beach is totally dependent on material deposited along its shoreline during construction and maintenance of the MHCH federal navigation project. A description of the MHCH project including its construction and maintenance history, beach disposal operations, and future dredged material management plans are provided below.

3.1 Morehead City Harbor Federal Navigation Project

3.1.1 MHCH Construction & Improvements

The MHCH project has included the construction and maintenance of a commercial navigation channel through Beaufort Inlet, located along the low energy limb of the Cape Lookout foreland (***Figure 2***). Beaufort Inlet is one of only three inlets in the State known to be open continuously since 1585, and connects Back and Bogue Sounds to Onslow Bay and the Atlantic Ocean. In its natural state, the inlet was characterized as a migratory tidal channel surrounded by a broad ebb tidal shoal system and ocean bar. The natural controlling depth over the bar was approximately -15 feet MLW. The MHCH project was constructed in 1911 to enhance the connection for shipping interests leading to and from the Atlantic Ocean and the interior waterways of Morehead City and Beaufort, and has undergone several improvements as summarized below. The project has been constructed, improved, and maintained by the USACE since its inception.

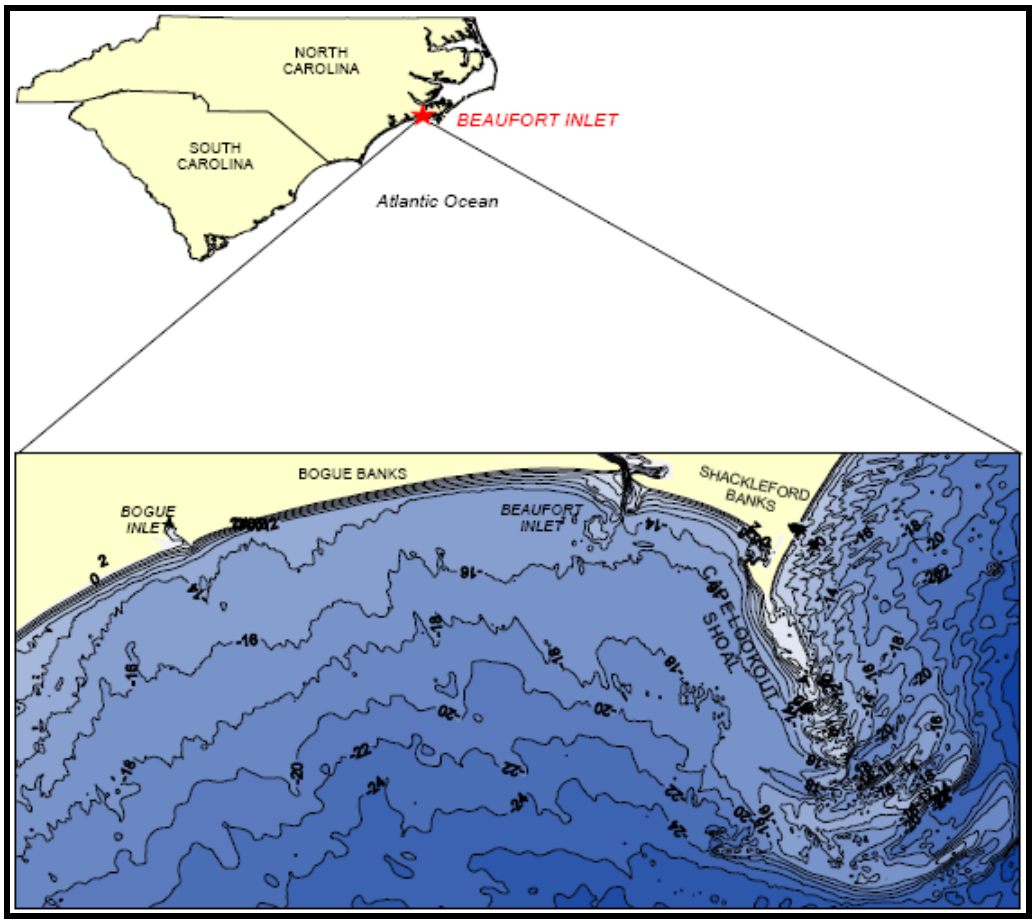


Figure 2. Site vicinity map of Beaufort Inlet and adjacent environments. (Contours are in meters relative to MLW.)

MHCH Construction History

1911 - A 300 ft wide navigation channel was dredged through the bypassing bar at a depth of -20 feet MLW. Between 1911 and 1936, a channel was maintained at about these dimensions, but not at a fixed alignment.

1936 - The outer (bar) channel was deepened to -30 feet MLW and widened to 400 feet, and the channel location was fixed. The inner channels and basins were dredged to the same depth.

1961 - The channels and basins were deepened to -35 feet MLW.

1978 - The bar channel was increased to a -42 feet MLW depth by 450 feet width, and most of the interior channels and basin were deepened to -40 feet MLW. The alignment of the bar channel was shifted slightly eastward toward naturally deep water near Shackleford Point.

1994 - The bar channel was deepened to -47 feet MLW by 450 feet width, increased in length by 4,300 feet to reach the -47 foot MLW depth contour, wideners were added, and the interior channels and harbors were deepened to -45 feet MLW.

3.1.2 Disposal Methodologies

The USACE is congressionally mandated to maintain the Nation's navigational thoroughfares and conduct disposal practices *"... in the least costly manner, at the least costly and most practicable location, and consistent with engineering and environmental requirements.*", as specified in 33 C.F R. § 335.4. This is often referred to as the "least-cost option" or the "Federal Standard", and has resulted in the partitioning of the MHCH project into several reaches - Range A, the Cutoff, Range B, Range C, and the Turning basin (***Figure 3***). Historically, the Cutoff and Range A (collectively known as the ***Outer Harbor***) has been maintained by hopper dredging that collects sediment from the base of the channel and travels to one of two disposal areas located 1 to approximately 6.0 miles offshore to dispose the dredged material. Maintenance and construction of Range B, C and the Turning Basin (known as the ***Inner Harbor***) has been conducted utilizing a pipeline dredge that carries sediment from these areas to the confined upland disposal site of *Brandt Island* ***(Figure 3)***, located north of Ft. Macon State Park. As shown on ***Figure 3***, the Turning Basin is subdivided into various reaches or "legs" as well.

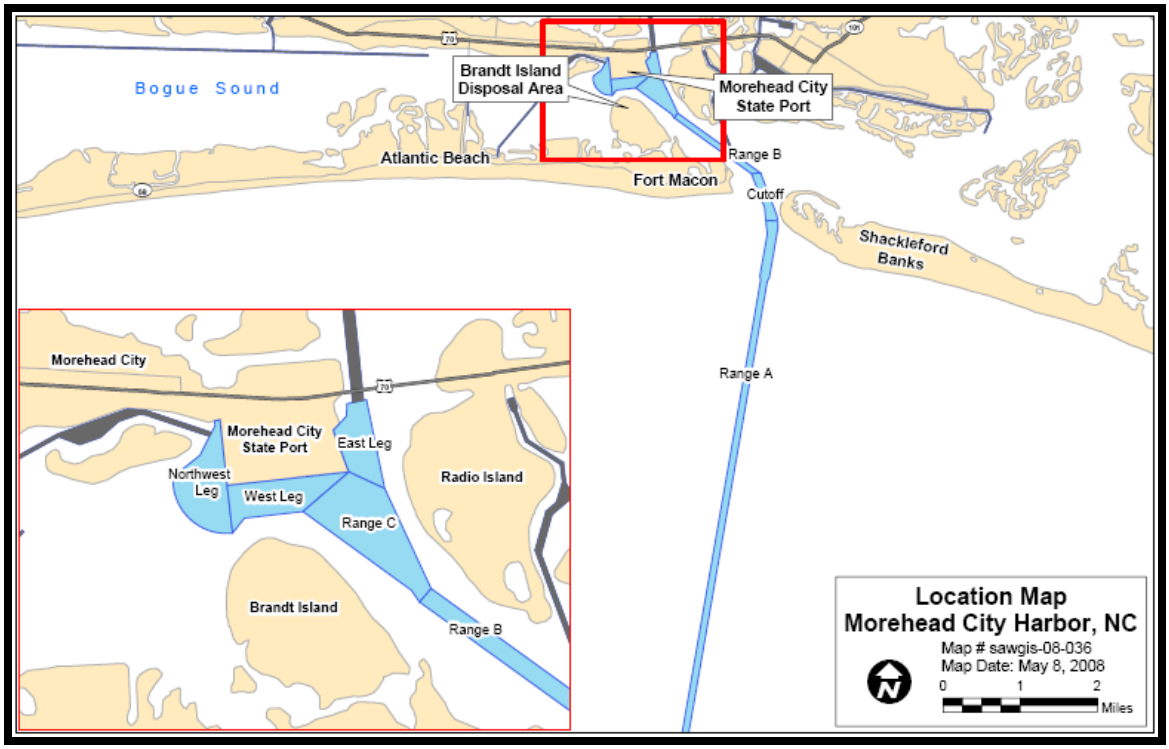


Figure 3. Maintenance reaches of the MHCH Project. (The Cutoff and Range A have traditionally been known as the ***Outer Harbor***; the remaining reaches have constituted the ***Inner Harbor***.)

Outer Harbor – Prior to 1996, the Offshore Dredged Material Disposal Site (ODMDS) was used exclusively for the disposal of ***Outer Harbor*** maintenance and deepening material. Environmental Protection Agency approved boundaries for the existing ODMDS are depicted in ***Figure 4.*** The existing ODMDS is located just seaward of the State 3-mile territorial limit and extends approximately 3 more miles offshore. Note the existing ODMDS does not encapsulate an area immediately to the north that was utilized for disposal prior to the establishment of the current

approved area ***(Figure 4)***. Dredge records indicate approximately 46.85 mcy of material were excavated by hopper dredging and presumably placed in the ODMDS from 1911 to 1996. Of this total, 10.65 mcy was from new construction and 26.20 mcy from maintenance. As part of the 1994 deepening authorization, the USACE created the nearshore berm disposal area (***Figure 4)*** located about 1.0 to 1.5 miles offshore and along the western flank of the ebb tide delta at the -18 to -20 ft MLW contour. However, due to weather and equipment constraints, most of the disposal in the nearshore berm, which was first utilized in 1997, has occurred between -26 to -40 ft MLW. The deeper water ODMDS is still utilized in the event of inclement sea conditions. In this regard, between 1997 and 2004, approximately 47% of the ***Outer Harbor*** material (~3.8 mcy out of a total 8.1 mcy dredged from the ***Outer Harbor***) was placed in the nearshore berm. In 2004 and 2007, dredged material from the ***Outer Harbor*** was placed directly along the shorelines of Indian Beach, Salter Path, and Pine Knoll Shores under the auspices of the Section 933 Program that financially assists communities for the delta cost of placing dredged material in locations other than those identified under the Federal Standard. In 2004 and 2007, material was also removed from the northern portions of the ODMDS to nourish the beaches of Bogue Banks that qualified for FEMA reimbursement for the Federally-declared disasters of Hurricanes *Isabel* and *Ophelia*. A total of 1.24 mcy was removed from the ODMDS and deposited along the shorelines of Pine Knoll Shores, Indian Beach, Salter Path, and Emerald Isle to repair the disaster related losses from the engineered beaches fronting these communities.

Maintenance dredging of the Outer Harbor has generally increased with each increase in the dimensions of the project as indicated in ***Table 1***. The one exception was for the period 1978 to 1994 when a slight reduction in maintenance dredging was realized by shifting of the channel toward Shackleford Banks to take advantage of naturally deep water. During the last decade, the USACE has reduced the depth in the entrance channel from 47 feet MLW to 45 feet MLW due to changes in the size of vessels calling on the port. This is reflected in the reduced volume of maintenance dredging given in Table 1 for the period 2001 to 2007.

Table 1. Maintenance dredging history - MHCH ***Outer Harbor***.

Bar Channel Dimensions (ft)	Time Period	Average Hopper Dredge Volume (cubic yards/year)
20 x 300	1911 - 1935	99,800
30 x 400	1937 - 1960	534,500
35 x 400	1962 - 1977	650,200
42 x 450	1978 - 1994	591,600
47 x 450	1996 - 2000	972,900
45 x 450	2001 - Present	659,700

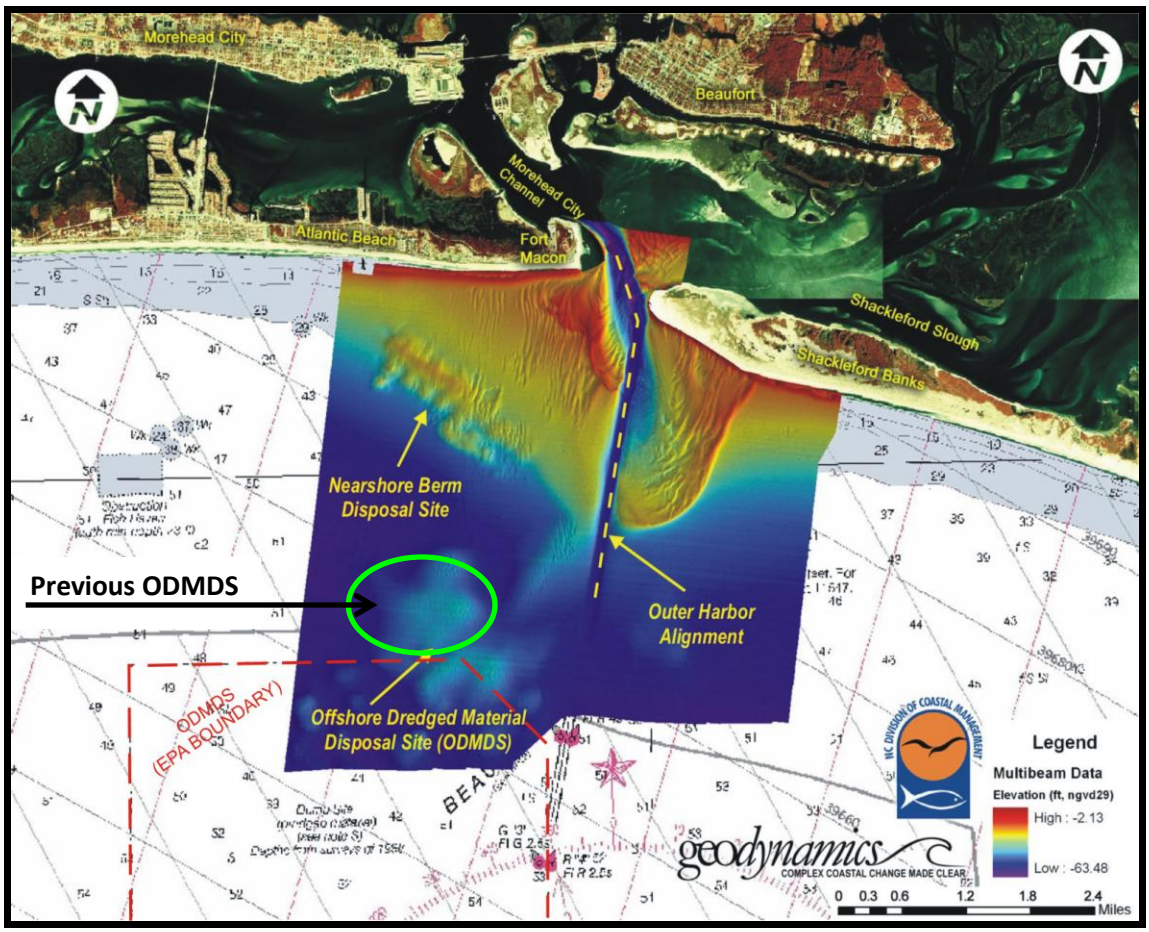


Figure 4. ***Outer Harbor*** schematic depicting offshore disposal sites utilized in the past and present by the USACE. (Seabed elevations are from 2006.)

Inner Harbor – The ***Inner Harbor*** has been constructed, improved, and maintained utilizing a pipeline dredge that has transferred dredged material to *Brandt Island* since the 1936 deepening project, with maintenance occurring on an approximate biennial basis since. The volume of material removed to maintain the ***Inner Harbor*** (Range B, C, and basins) has averaged 225,000 cy/yr over the past 20 years. The capacity of *Brandt Island* became limited as maintenance and construction work continued, and in absence of other suitable upland disposal areas, *Brandt Island* was designated as a temporary holding area for ***Inner Harbor*** dredged material during the formulation of the 40-foot MLW project and was first utilized in this new function in 1976. Once the capacity of *Brandt Island* is reached, material stored in the island was to be transferred to a beach disposal area located along the eastern portion of Bogue Banks to create accommodation space in *Brandt Island* for future dredged material disposal. The procedure for the removal of material from *Brandt Island* is commonly referred to as a "pump-out" and has occurred three times – 1986, 1994, and 2005 (***Figure 5***). The beach disposal area includes the shorelines of Ft. Macon and Atlantic Beach. During major improvements of the ***Inner Harbor*** (channel deepening), material has been piped directly to Ft. Macon. Also, during the 2002 and 2007 maintenance events, material from Range B and Range C was pumped directly to the Fort Macon shoreline via a pipeline dredge. In this regard, almost one-half of the material removed to maintain the ***Inner Harbor*** is taken from Range B and portions of Range C.

Approximately 69% of the material removed from Brandt Island during the 1986 and 1994 pump-out operations was considered to be littoral material, i.e., material derived from the ocean beaches (USACE 2001). However, the material pump-out of *Brandt Island* in 2005 had a silt and clay content greater than 10%. This is discussed further below, but the characteristics of the 2005 *Brandt Island* material has caused the USACE to reconsider disposal options for the ***Inner Harbor*** material.

Figure 5. Historical photographs of the *Brandt Island* Pump-Out process. (Panel (A) - Excavation of *Brandt Island* utilizing a cutter-head suction dredge in 1994. Panel (B) – Active disposal of *Brandt Island* material to the beaches of Atlantic Beach in 2004. The former Triple S, Oceanna, and former Sportsmans Piers are located in succession from the top (east) towards the bottom (west) of the photograph.)

3.2 Beach Nourishment/Disposal

As summarized in the previous section, beach nourishment along Atlantic Beach has constituted the "least cost" disposal option for the USACE and therefore the costs associated with this practice have been borne 100% by the Federal government. A summary of all nourishment activity emanating from the ***Inner Harbor*** is provided below and in ***Table 2***. ***Figure 6*** depicts the geographic extent of beach nourishment throughout the life of the MCHP. The profile stationing shown in ***Table 2*** and ***Figure 6*** is referenced to the USACE baseline.

MHCH Beach Disposal/Nourishment Chronology

1978 – 1,179,600 cy of material from the Turning Basin, Range C, and Range B were placed along the Ft. Macon shoreline during construction of the 40-foot MLW deepening project.

1986 – The upland recycling facility of *Brandt Island* was excavated ("pumped-out") for the first time with 3,918,484 cy placed along Atlantic Beach and Ft. Macon. An additional 250,116 cy of channel and basin material was pumped directly to the beach disposal area resulting in a total of 4,168,600 cy being placed on the beach.

1994 – A total of 4,664,400 cy of material was placed along the least cost corridor of Atlantic Beach and Ft. Macon, including; the second pump-out of *Brandt Island* (2,473,700 cy), ***Inner Harbor***

deepening material associated with the 45-foot MLW project (1,725,000 cy), and routine ***Inner Harbor*** maintenance (465,700 cy).

2002 – 209,348 cy of material maintained from Range B and a portion of Range C were directly placed along the beaches of Ft. Macon.

2005 – 2,390,000 cy and 530,729 cy of material were placed along Atlantic Beach and Ft. Macon, respectively (2,920,729 cy total) in association with the third *Brandt Island* pump-out and routine ***Inner Harbor*** maintenance.

2007 – 184,828 cy of material maintained from Range B and a portion of Range C were directly placed along the beaches of Ft. Macon, discreetly along the bath house region of the State Park shoreline.

Table 2 – Volumetric summary and geographic boundaries of beach nourishment resulting from the dredge disposal activities associated with the ***Inner Harbor*** of the MHCH project.

Date	Fort Macon (cubic yards)	Atlantic Beach (cubic yards)	Total cy	Fort Macon Bounding Location (USACE stations)		Atlantic Beach Bounding Location (USACE stations)	
				East	West	East	West
1978	1,179,600		1,179,600	49+00	100+00		
1986	250,116	3,918,484	4,168,600			100+00	290+00
1994	2,192,268	2,472,132	4,664,400	49+00	100+00	210+00	320+00
2002	209,348		209,348	49+00	75+00		
2005	530,729	2,390,000	2,920,729	49+00	100+00	100+00	290+00
2007	184,828		184,828	75+00	100+00		
Totals	4,546,889	**8,780,616**	13,327,505				

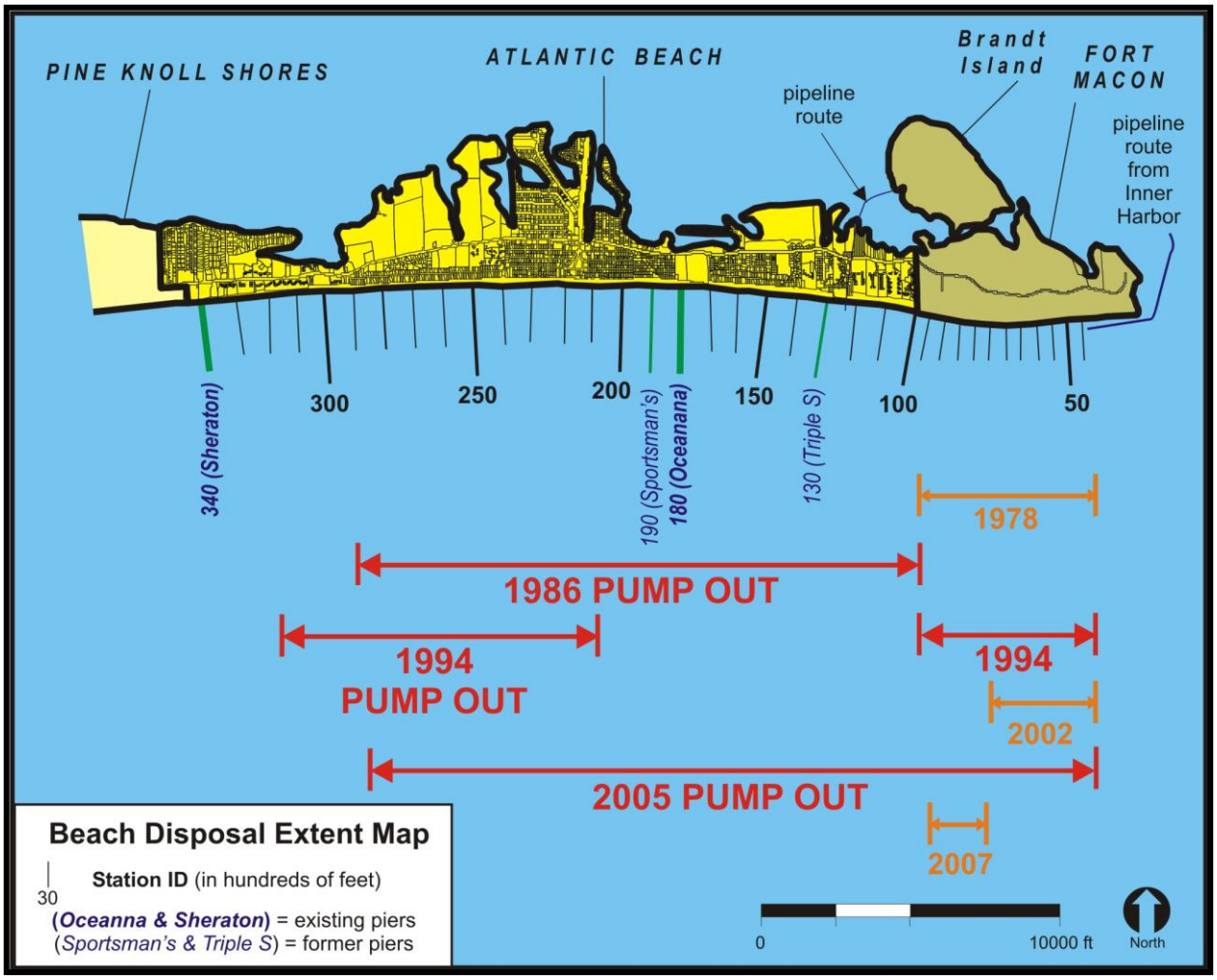


Figure 6. Site map depicting the geographic areas, general dates, and USACE stationing for beach disposal/nourishment events associated with dredging activities at the MHCH project. (Atlantic Beach has been the nourished three distinct times – 1986, 1994, and 2005.)

3.3 Cumulative Volumes and Beach Compatibility

Cumulative Volume - Atlantic Beach has been nourished three distinct times since 1986 with an estimated 8.78 mcy of dredged material deposited over approximately 4.2 miles of the Town's 4.5 mile shoreline. The amount of material deposited on Atlantic Beach constitutes about 66% of the total volume of all ***Inner Harbor*** material deposited on the east end of Bogue Banks under the USACE "least cost" disposal area encompassing the beaches of both Fort Macon and Atlantic Beach (***Figure 7***). The beach nourishment figures reported by the USACE are for the excavated volumes utilized to pay the dredging industry, and not the volume of sand that was actually placed and contoured on the beach. This is a traditional practice for navigation projects as dredging contractors are paid by their surveyed, excavation volumes rather than for the volume residing and surveyed on the beach – the latter is customary for designed beach nourishment projects.

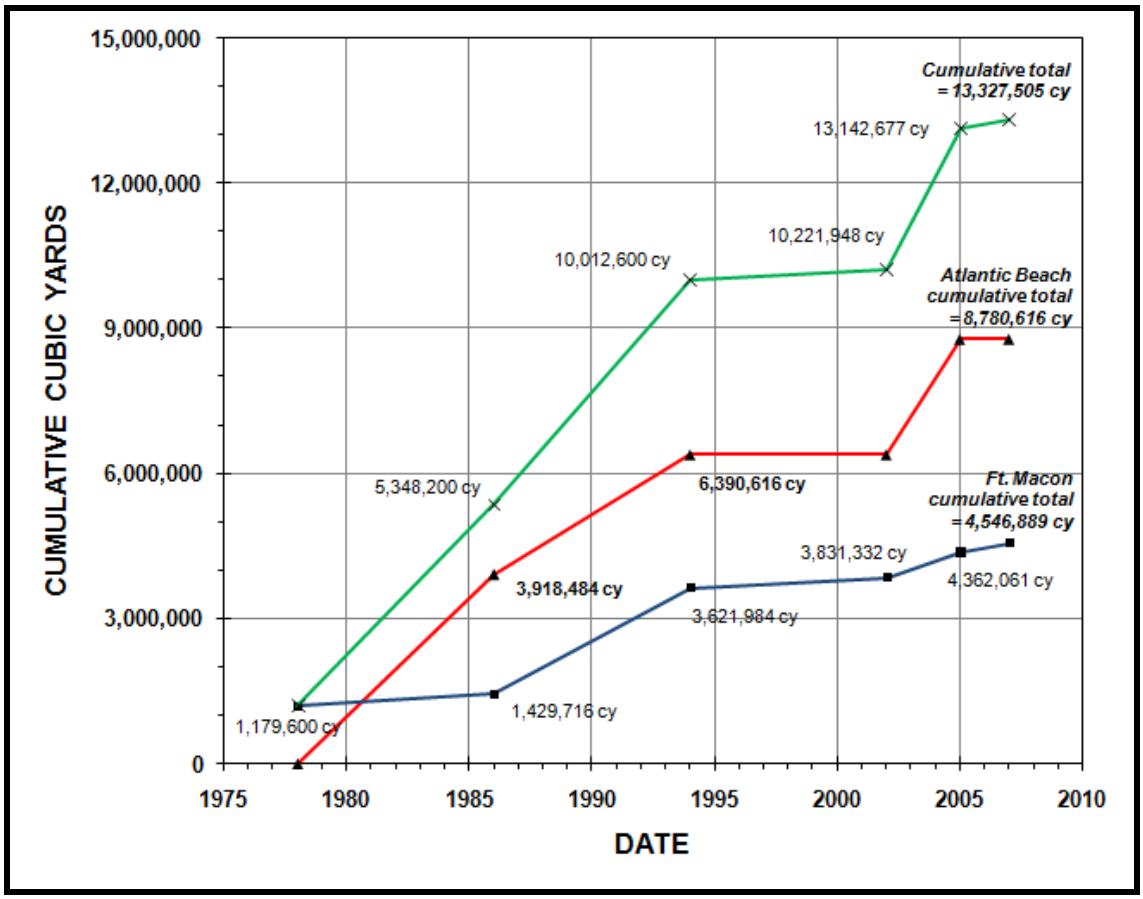


Figure 7. Cumulative volumes of material placed along the "least cost" reach of Atlantic Beach and Ft. Macon since 1978.

Beach Compatibility – Material removed from navigation channels is considered by the USACE to be compatible with the native material if the silt content (i.e., material with a grain size equal to or less than 0.0625 mm) is less than 10%. This is the same standard adopted by the State for beach nourishment emanating from the maintenance of navigation channels (15A NCAC 07H .0312). Based on observations by the local municipalities, the dredged material pumped to Atlantic Beach has been comprised of sand with a preponderance of mud. These observations are consistent with the provenance of sediments entering the ***Inner Harbor*** area that have been transferred, stored, and subsequently pumped out of *Brandt Island*, which includes sediments from adjacent beaches, ebb-tide delta sediments from Beaufort Inlet, riverine sediments of the Newport and North Rivers, and estuarine sediments transported from adjacent sounds and wetlands.

The USACE 2001 Section 111 Report (USACE 2001) provides mean grain sizes separately for Range B and the remaining portion of the ***Inner Harbor*** (Range C and the Turning Basin). Considering most of the Range B material has been directly pumped to the beaches of Ft. Macon, the sediment grain sizes and other properties reported for the remaining portion of the ***Inner Harbor*** are more indicative of the sediments that have been stored and pumped out of *Brandt Island* to Atlantic Beach. The composite value for the ***Inner Harbor*** is listed as 2.14 phi (0.23 mm) by the USACE with the native beach composite mean grain size for Atlantic Beach listed as 2.53 phi (0.17 mm), and a standard deviation of 0.55 phi. Using a value know as the overfill ratio (R_a), the USACE estimated

69% of the ***Inner Harbor*** materials utilized for beach disposal/nourishment along Atlantic Beach has been beach quality (USACE 2001). A total of 8,780,616 cy of material have been placed along Atlantic beach since the first 1986 *Brandt Island* Pump Out, and assuming 69% of this material was beach compatible, the effective volume is 6,058,862 cy. Based on the effective volume of beach fill placed on Atlantic Beach since 1986, the equivalent rate of nourishment has been approximately 263,400 cubic yards/year.

Visual observations as depicted in ***Figure 8*** and recent textural analyses of the entire Harbor by the USACE has substantiated that in general; beach quality material tends to shoal most of the ***Outer Harbor***, Range B, and the southern portion of Range C in the ***Inner Harbor***. The Turning Basin area and the northern segment of Range C are shoaled with non-beach quality material (well over 10% mud by weight percent).

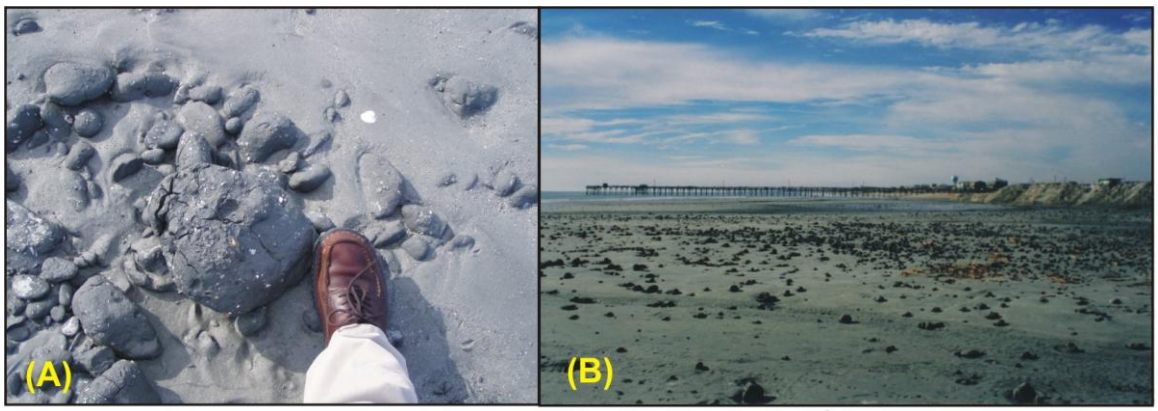


Figure 8. Photographs obtained during the 2005 *Brandt Island* Pump-Out. (The clumps imaged in both Panel (A) and (B) were comprised of mud – notice the muddy texture of the disposal material as well in Panel (A).)

4. PROJECT PERFORMANCE

The design template for the disposal of the 1986 Brandt Island material along Atlantic Beach included a variable width horizontal berm at elevation +10 ft NAVD with the material allow to assume its natural angle of repose seaward of the berm crest. Shortly after placement, vertical scarps became prevalent along the entire beach fill area. The formation of the vertical scarps was attributed to the +10 ft NAVD elevation of the berm with was about 4 feet above the elevation of normal wave run-up. Subsequent nourishment operations carried out in 1994 and 2005 lowered the berm elevation to +6 ft NAVD which allow normal wave and tide action to overtop the berm thus preventing the formation of vertical scarps. Note that through the course of a year, tides and wave vary and can produce a natural crest elevation of the berm greater than 6 ft NAVD which in turn can result in the formation of scarps. However, by lowering the design elevation of the berm, the scarps that do form are normally less than a foot high and are short lived.

A series of figures showing comparative plots of typical profiles along Atlantic Beach beginning in September 1981, prior to the first Brandt Island pump-out in 1986, through July 2008 are provided in Appendix A. The profiles selected for comparison are spaced 4,000 to 5,000 feet apart and include USACE Stations 120+00, 160+00, 210+00, 250+00, and 290+00 (***Figure 6***).

The profile comparisons show that the beach continues to be maintained well seaward of the 1981 or pre-project shoreline. The profile comparisons also show rather substantial adjustments in the fills immediately following placement. This is best illustrated by comparing the post-fill profile of May 2005 with the May 2006 profile. The magnitude of the fill adjustments that occurred following the 2005 fill placement was probably dominated by the high percent of fines in the material which would have resulted in large quantities of the fill being carried seaward or being swept out of the placement area by littoral currents.

The performance of the beach fill along Atlantic Beach between June 1999 and June 2009, which captures the 2005 fill from the Brandt Island pump-out, is depicted graphically in ***Figure 9***. The volumes shown in ***Figure 9*** are presented in terms of the cubic yards of material on the beach between the seaward toe of the dune and the -12-foot NAVD contour per lineal foot of beach. These volumes were obtained from monitoring reports prepared under the auspices of the Carteret County Shore Protection Office which are posted on the Shore Protection Office website at http://www.protectthebeach.com/.

As mentioned above, the 2005 fill underwent some rapid post-fill adjustments between May 2005 and May 2006 which is evident in ***Figure 9***. Following this initial adjustment, the fill has performed well. For the period from May 2005 (post-fill placement) to June 2009, the rate of loss of material from Atlantic Beach has averaged 7.1 cubic yards/lineal foot/year. Based on this rate of loss, the 4.2 miles of Atlantic Beach that includes the static line would need to be nourished at an average rate of approximately 160,000 cubic yards/year to maintain the beach in its existing condition.

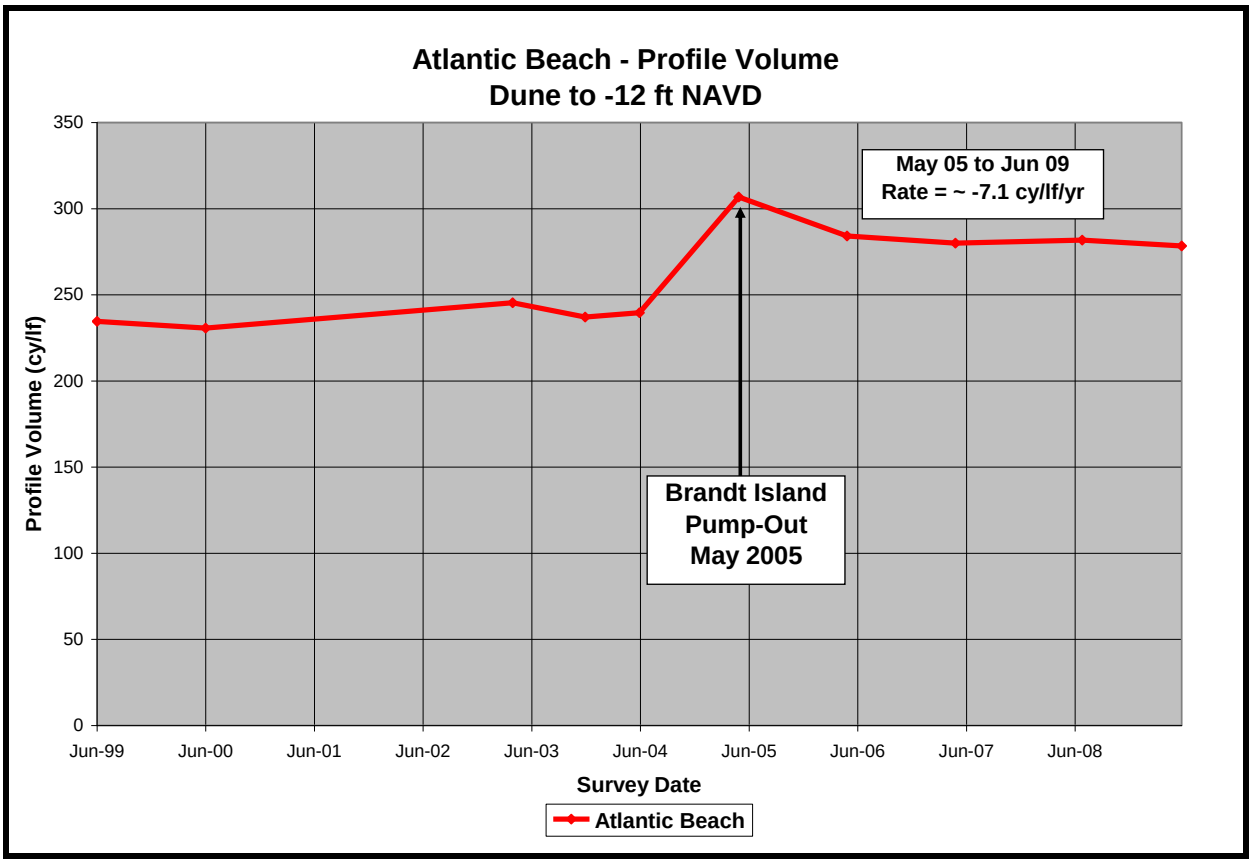


Figure 9. Profile volume changes along Atlantic Beach between June 1999 and June 2009.

5. FUTURE NOURISHMENT - USACE REVISED DREDGED MATERIAL MANAGEMENT PLAN FOR MHCH

The USACE is in the process of addressing the long-term management of beach quality material by preparing a Dredged Material Management Plan (DMMP) that is due to be completed by October 2011, as stipulated in a legal settlement reached by the USACE and Carteret County in 2008 (USACE 2008).

For the interim period between now and the adoption of a new DMMP for MHCH, the USACE has instituted an Interim Operation Plan (IOP). The IOP includes a three-year cycle consisting of maintenance of portions of the ***Outer Harbor*** with deposition of the material on Atlantic Beach during Year 1, spot maintenance of the ***Outer Harbor*** with disposal in either the ODMDS or the near shore berm during Year 2, and maintenance of the ***Inner Harbor*** with disposal on *Brandt Island* during Year 3. At the end of the three-year IOP, the USACE anticipates the revised DMMP for the MHCH project will be implemented. While the revised DMMP has not been finalized, the final plan will likely resemble the IOP. If so, Atlantic Beach and Fort Macon can anticipate receiving material about every third year.

Due to the poor quality of material removed from Brandt Island during the 2005 pump-out operation, the USACE has indicated the revised DMMP will not include the disposal of the Brandt Island material on the east end of Bogue Banks. While the first two pump-out operations carried out in

1986 and 1994 provided reasonably good beach quality material, expansions of the Inner Harbor during recent years, including the addition of the Northwest Leg (***Figure 3***) and expansion of the East Leg, has apparently resulted in the preponderance of the ***Inner Harbor*** maintenance material, at least the material removed from the inner basins, consisting of riverine mud as demonstrated by the 2005 pump-out operation (***Figure 8***). Future plans for Brandt Island will likely include the removal of sediment from the island and transporting the material to a portion of the ODMDS cordoned off to receive material considered to be incompatible for disposal on the beach. The USACE may also consider maintaining the ***Inner Harbor*** with a bucket and barge operation which would remove material with a bucket dredge and place the material on a barge for transport to the designated disposal site within the ODMDS. In any event, beach disposal of the ***Inner Harbor****/Brandt Isl*and material will not be included in the revised DMMP.

As mentioned above, USACE sampling of the shoal material throughout the Harbor in preparation of the revised DMMP has identified a portion Range C, all of Range B and the Cutoff, and a portion of Range A to shoal with beach compatible material. Therefore, the material shoaling these sections of the harbor will be targeted for disposal along the Atlantic Beach and Forth Macon shorelines. A summary of the grain size analysis of the samples collected by the USACE from these areas and the location of the beach compatible shoal material in the ***Outer Harbor*** is provided on ***Figure 9***.

Since 2001, the volume of material removed from the Cutoff and Range A has averaged approximately 660,000 cubic yards/year. However, as indicated in ***Figure 9,*** the beach quality shoal material identified by the USACE does not extend all the way to the seaward limit of Range A. Based on the historic distribution of shoaling in the ***Outer Harbor*** (USACE 2001), the volume of material that would be removed from the Cutoff and the red-shaded area of Range A would be about 70% of the total or 462,000 cubic yards/year. In addition to the Cutoff and Range A material, the USACE IOP would pump material to the Fort Macon and Atlantic Beach shorelines directly from Range B and the portion of Range C that shoals with beach quality material. Again, based on historic shoaling records, the volume of beach quality material that would be removed from Range B and C should average around 110,000 cubic yards/year or roughly one-half of the total volume that has been historically removed to maintain the Inner Harbor.

The USACE IOP and possibly the final DMMP for the MHCH project will be performed on a three year cycle. During the first year, the beach quality shoal areas, shown in red on ***Figure 9***, would be maintained by a cutter-suction pipeline dredge which would pump the material directly to the Fort Macon and Atlantic Beach shorelines. During the second and third years, spot shoals that may occur in the ***Outer Harbor*** would be removed via a hopper dredge and the material placed in either the near shore disposal mound (weather permitting) or in the ODMDS. The ***Inner Harbor*** would be maintained during the third year and the material deposited on Brandt Island or possibly transported directly to the ODMDS.

Under the IOP, Fort Macon and Atlantic Beach will likely receive 572,000 cubic yards of beach compatible material during the next maintenance event which is scheduled for 2009-10. Assuming the USACE can negotiate a favorable contract bid for the work (note bids recently received for work exceeded the allowable margin above the government estimate), 572,000 cubic yards of beach quality material will be distributed along the Fort Macon and Atlantic Beach shorelines. Based on the historic distribution of the material between Fort Macon and Atlantic Beach, Atlantic Beach would

likely receive 66% of the material or 377,500 cubic yards. This will be followed by two years in which no material is placed directly on the east end of Bogue Banks.

Should the USACE adopt the IOP as the permanent DMMP for the MHCH project, material would again be placed on the east end of Bogue Banks during the 2012-13 maintenance event. Since some of the annual shoal material would be removed from the ***Outer Harbor*** and placed in the offshore disposal areas during the two intervening years, the volume of material that would have to be removed from the ***Outer Harbor*** and available for deposition on the east end of Bogue Banks during the 2012-13 maintenance event is uncertain. However, assuming one-half of the annual shoal volume would be removed during the intervening two years and placed offshore, the 2012-13 maintenance event could involve the removal of two full years of ***Outer Harbor*** shoaling or 1,144,000 cubic yards of beach quality material. Again assuming 66% of this material would be placed on Atlantic Beach, Atlantic Beach would receive about 755,000 cubic yards. Under this scenario in which the IOP is adopted at the permanent DMMP, Atlantic Beach would continue to receive 755,000 cubic yards every 3 years which is equivalent to about 252,000 cubic yards/year.

The projected rate of disposal of beach quality material under the revised DMMP for the MHCH project exceeds the estimated nourishment requirement of 160,000 cubic yards/year based on the performance of the project between May 2005 and June 2009. Therefore, maintenance of the existing beach would not be an issue under the revised DMMP. Furthermore, the mean grain size of the ***Outer Harbor*** material is coarser than the material that has been historically placed on Atlantic Beach from the ***Inner Harbor*** and the coarser material would be expected to be more resistant to erosion thus providing a much higher degree of performance and longevity of the fill compared to the ***Inner Harbor*** material.

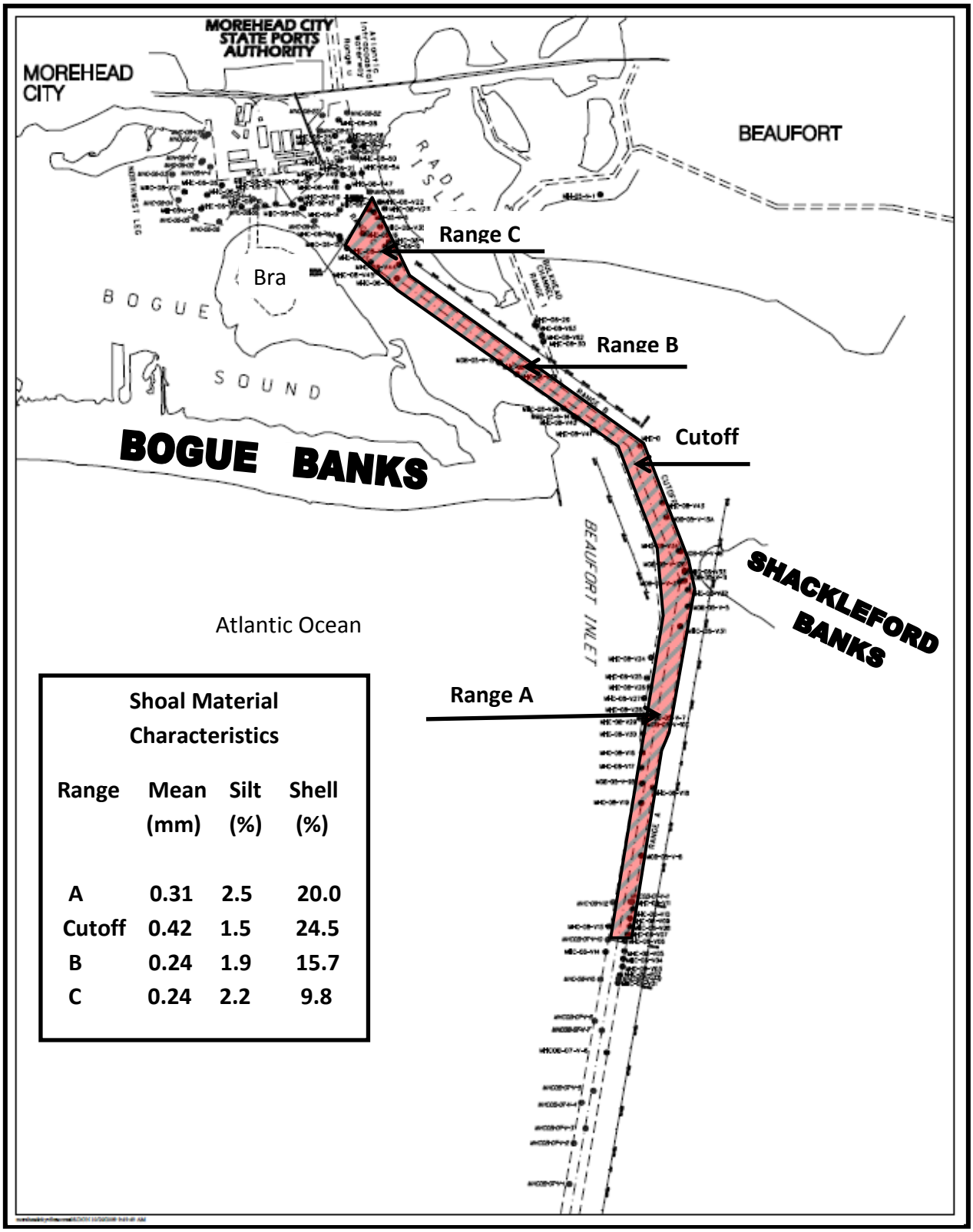


Figure 10. Channel areas (shaded red) identified by the USACE that contain beach quality shoal material.

6. FINANCIAL PLAN

6.1 Introduction. The nourishment projects that resulted in the creation of a static vegetation line along most of the ocean shoreline of Atlantic Beach differs from the traditional beach nourishment projects in the State having been created as a result of the deposition of navigation channel maintenance material rather than with material from a designed borrow area. Another major distinction is the project is finance totally by the federal government through the application of the least cost disposal practice for federal navigation project. As a result, the Town of Atlantic Beach has not been required to provide any financial assistance for the project. As long as the MHCH project continues to be a viable navigation project, contributing to the overall economy of the United States, the federal government will continue to maintain the project at no expense to the Town of Atlantic Beach.

Since the USACE operates under the least cost disposal practice, the Town of Atlantic Beach is not assured the entire area covered by the static line rule would be nourished on a routine basis. In this regard, the length of shoreline over which the material is distributed is dictated by funds appropriated to the USACE by the US Congress. Generally, the USACE will design the disposal operation within the capabilities of existing contractor owned dredge plant. For the most part, dredges normally employed for the MHCH project can pump material 3 to 4 miles without the assistance of a booster pump. In the case of the IOP and possible revised DMMP, dredging contractors would be required to pump material a minimum of about 1 mile to reach the east end of the Fort Macon shoreline to a maximum of approximately 7 miles to reach the west end of the Atlantic Beach shoreline covered by the static line. This would require the assistance of a booster pump. Should federal funding limitations prohibit the distribution of material along the entire Atlantic Beach shoreline subjected to the static line, the Town of Atlantic Beach may have to provide supplemental funding to cover the added cost of pumping the material along the entire length of the town.

Extending the beach disposal along the entire length of Atlantic Beach would not be required during every three-year maintenance operation. For purposes of developing the financial plan, extending the disposal along the entire length of Atlantic Beach was assumed to be required once every 9 years with the added cost for extending the disposal area estimated to be $1,000,000 to cover the cost of using a booster pump.

6.2. Island-Wide Nourishment Plan. Carteret County has initiated the development of an island-wide beach nourishment plan that is intended to protect the island for at least the next 30 years and possible beyond. Funding for the island-wide plan would come from Carteret County, the State of North Carolina, and contributions from each community along the island. As presently envisioned, the island-wide plan would include Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores. The Town of Atlantic Beach is not included in the island-wide plan since, as discussed above; Atlantic Beach is periodically nourished during dredged material disposal operations associated with the Morehead City Harbor federal navigation project. However, Carteret County intends to financially assist the Town of Atlantic Beach to assure material is deposited along the entire length of the town.

As Carteret County moves forward with the formulation of its long-range protection plan, the County intends to assume a major role in providing the necessary funding for periodic nourishment through

distribution of funds from the County Beach Nourishment Fund. That fund is supported by revenues generated by the room occupancy tax. Carteret County will also provide funding support to the Town of Atlantic Beach to extend beach disposal along the entire length of the town's shoreline again using funds derived from the Beach Nourishment Fund.

Since periodic nourishment for all of the communities along Bogue Banks and the extension of the fill along Atlantic Beach are inter-linked and depend on the County Beach Nourishment Fund, the financial plan presented here includes the whole of Bogue Banks not just the Town of Atlantic Beach. In addition to funding provided by Carteret County, each community on the island would contribute some portion of the cost with the balance of the required funds being provided by the State of North Carolina.

Formulation of the financial plan considered island-wide periodic nourishment needs, the cost of periodic nourishment, allocation of costs to each island community, revenues generated by the Carteret County room occupancy tax, the expected growth of the Beach Nourishment Fund supported by the room occupancy tax, and two funding scenarios for the State of North Carolina.

6.3. Island-wide Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 3 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of the various reaches along the island would be accomplished when the volume of material residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Table 3. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[(1)]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.93	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.00	-4.1
Indian Beach/Salter Path	+181,185	855,952	-674,767	-109,400	30.72	-8.5
Pine Knoll Shores	+418,612	932,658	-514,046	-83,300	23.35	-3.5
Total for Bogue Banks Restoration Project				-357,100		-4.1

(1) Adjusted volume change = measured profile volume change minus fill added.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

6.4. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 4 provides a cost estimate for each operation based on current (2010) dollars.

Table 4. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[(1)]				$175,000
S&A[(1)]				$175,000
Total Cost/Operation				$14,253,000

[(1)] E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004. While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the 2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

6.5. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection, as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget

constraints do not allow material to be distributed along the entire Atlantic Beach shoreline. Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

6.6. Funding/Cost Allocation.

As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Atlantic Beach.

The balance of necessary beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities.

Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 5.

Table 5. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.

[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

6.7. County Room Occupancy Tax/Beach Nourishment Fund. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 11 (blue line).

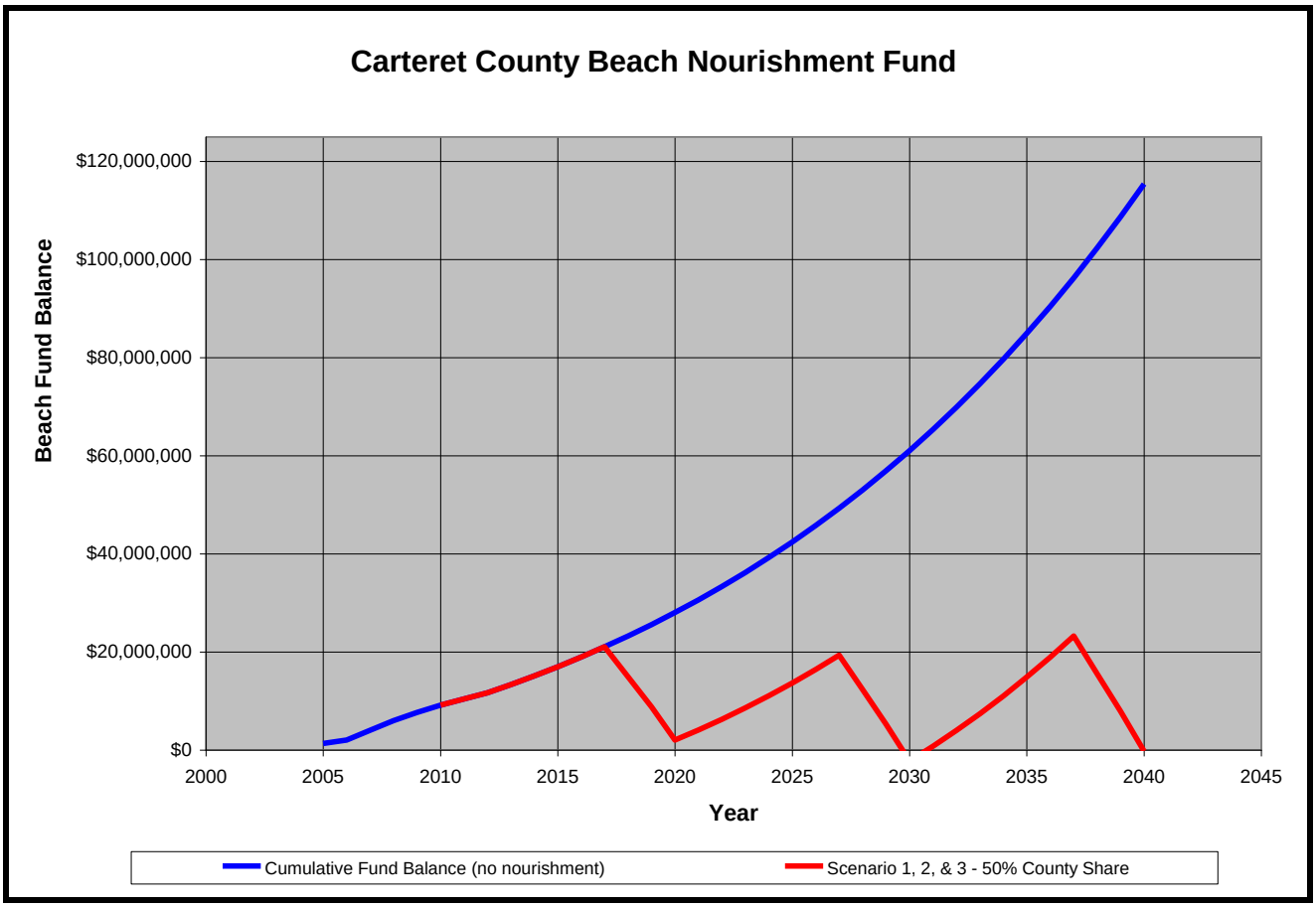


Figure 11. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 11 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

6.8. Town of Atlantic Beach Funding Source. The total contribution needed from the Town of Atlantic Beach to assure dredged material is distributed along the entire length of its shoreline over the 30-year planning period is estimated to be $750,000. In the initial version of the legislation authorizing the County's room occupancy tax (S.L. 2001-381), funds were distributed directly to the individual towns on Bogue Banks as opposed to the County's Beach Fund. As noted above, the funds were distributed on a pro-rata basis. Atlantic Beach has maintained their share of these initial distributions in a dedicated Beach Nourishment Fund with a current balance of approximately $334,380. The fund earns an annual interest rate of 2%.

The legislation restricts the use of these funds so that they can only be used for beach nourishment, including "[t]he costs associated with providing enhanced public beach access." Although Atlantic Beach may use a small portion of this fund to improve existing beach accesses, the Town intends to maintain the majority of this fund, and the interest income generated by the fund, to provide the local funds required to augment the work of the USACE. In the event its beach fund is ever depleted, and given the relatively small amount of local funds required, Atlantic Beach will be able to fund its local share through its existing revenue sources without implementation of an additional special district taxes.

Appendix B provides an analysis of the Town's Beach Nourishment Fund for the three funding scenarios presented above. Without any additional contributions to the fund other than the annual interest earned, the fund would be depleted by 2027. In order to keep the fund solvent with the assumed 25% State cost share, the Town would have to add at least $12,500 to the fund each year or transfer funds from its general account when additional funds are needed. Both of these options are well within the financial capability and authority of the Town. An annual contribution of $25,000 would be needed to accommodate a 4% annual rate of inflation in the cost of disposal which is also well within the financial capability of the town.

7. SUMMARY.

By virtue of this report, the Town of Atlantic Beach has provided information and supporting documents that satisfy all of the requirements for the consideration of a static line exception stipulated in 15A NCAC 07J .1201. The report documents the design and execution of the project has been accomplished by the USACE, demonstrated the project has been maintained for well over the 5-year minimum, shown the project has an identified source of beach compatible borrow material that will sustain the project for more than the minimum 25 years, and provided a funding plan that will support the project for at least the next 25 years.

REFERENCES

Olsen 2006. Regional Sand Transport Study: Morehead City Harbor Federal Navigation Project – Summary Report & Technical Appendices. Olsen Associates, Inc., 2006. Prepared for Carteret County.

USACE 2008. Interim Operation Plan Scoping Letter – 7/18/08, Morehead City Harbor. US Army Corps of Engineers Wilmington District, Wilmington, N.C., 2008.

USACE 2001. Final Section 111 Feasibility Report, Morehead City Harbor/Pine Knoll Shores, N.C., US Army Corps of Engineers Wilmington District, Wilmington, N.C., 2001.

USACE 1976. Morehead City Harbor, North Carolina, General Design Memorandum, US Army Corps of Engineers Wilmington District, May 1976.

USACE 1990. Morehead City Harbor Improvement, Morehead City, North Carolina, Feasibility Report & Environmental Assessment, US Army Corps of Engineers Wilmington District, June 1990 (Revised 12/90).

APPENDIX A

PROFILE PLOTS

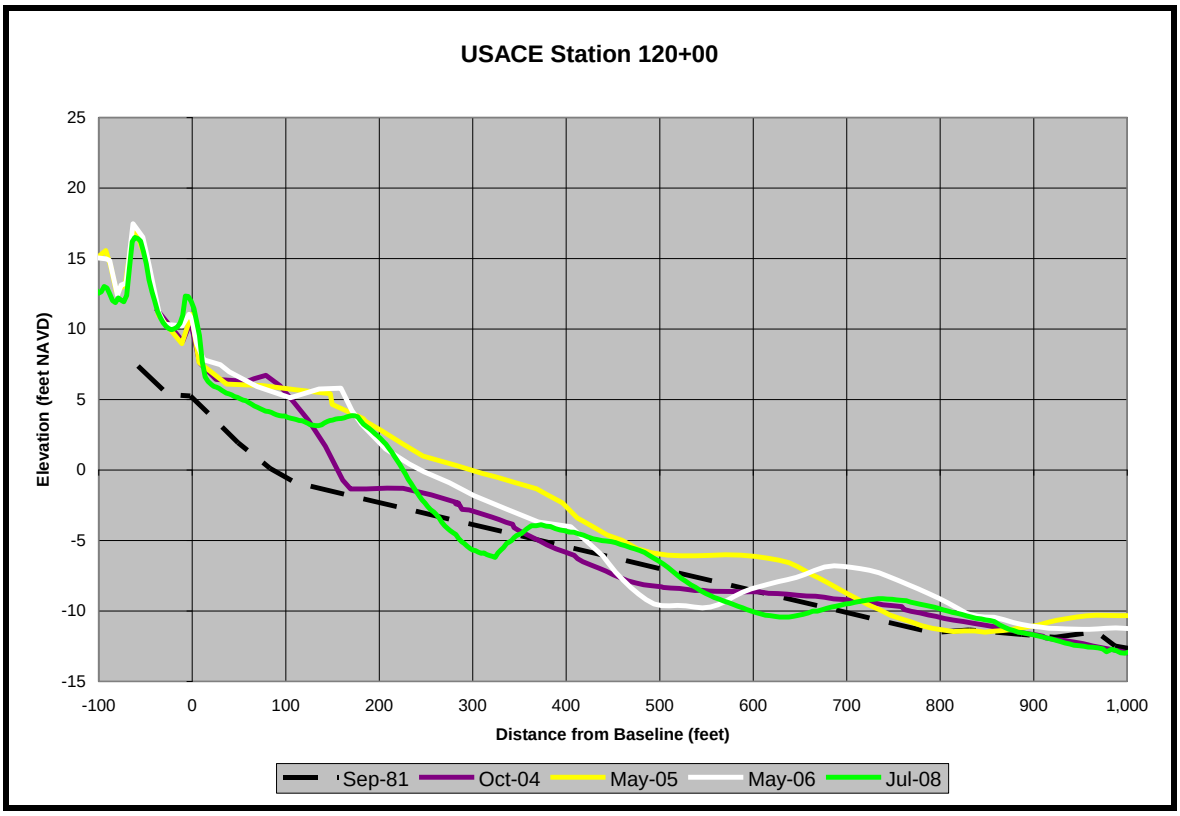
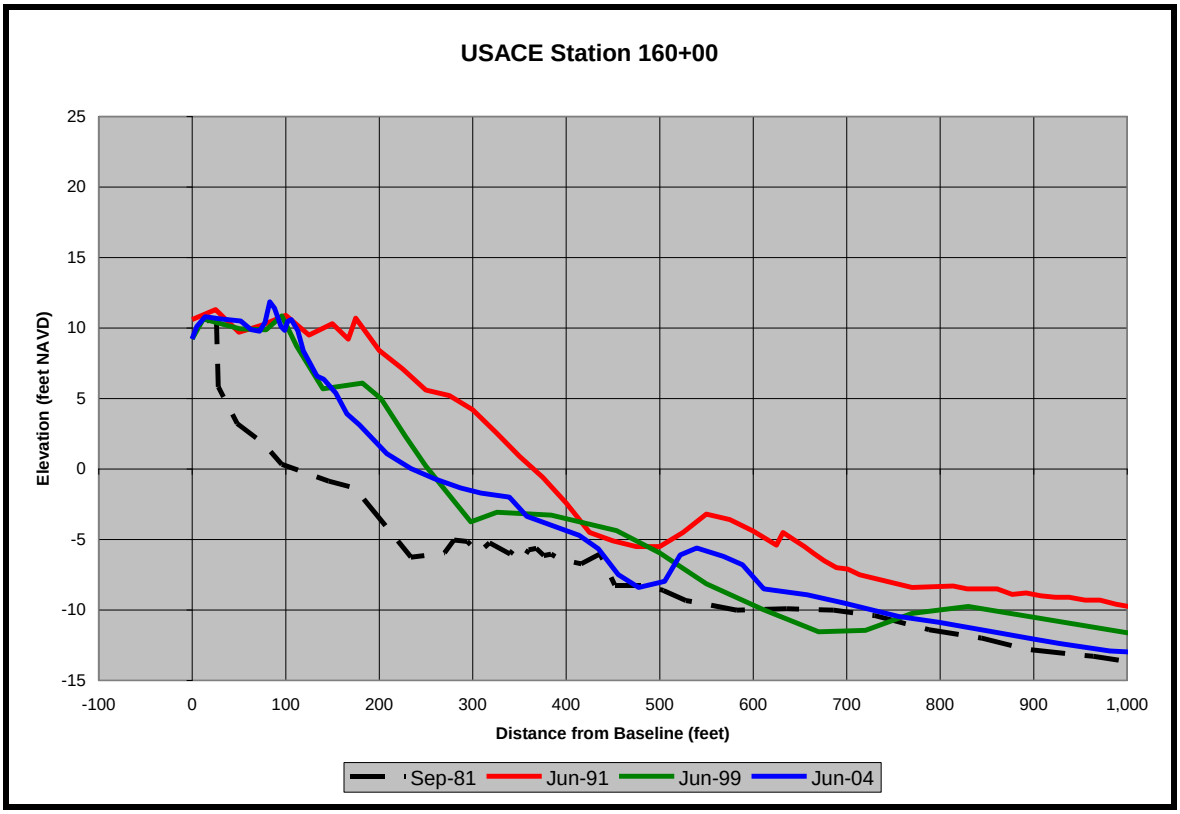


Figure A-1 Profile Comparisons for Station 120+00 – Sep 1981 to July 2008.



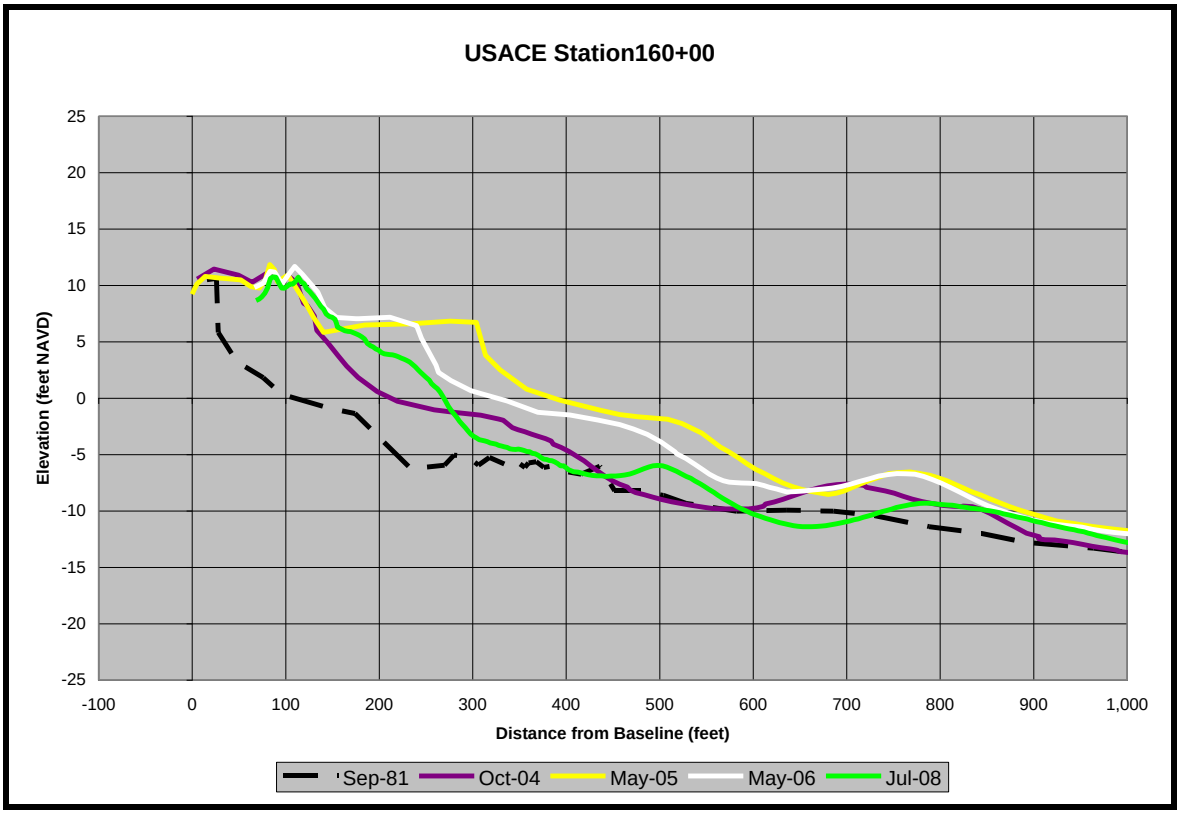
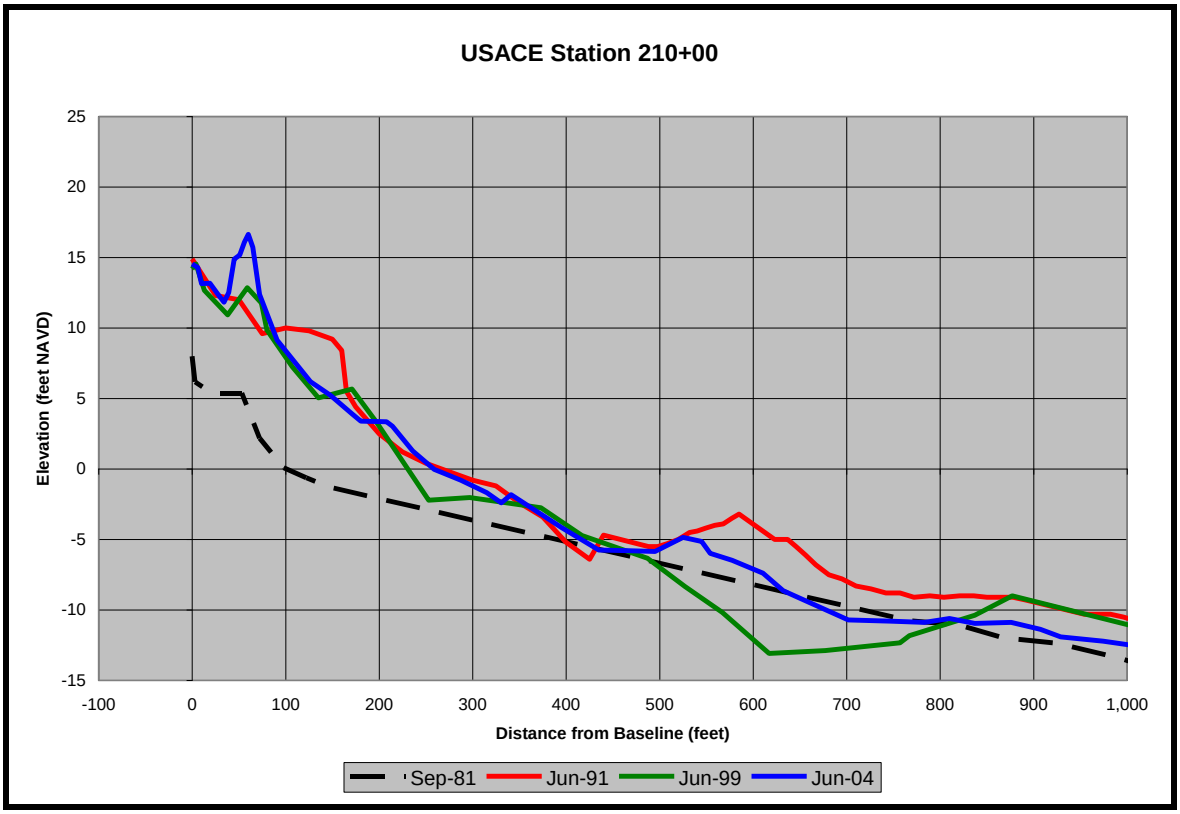


Figure A-2 Profile Comparisons for Station 160+00 – Sep 1981 to July 2008.



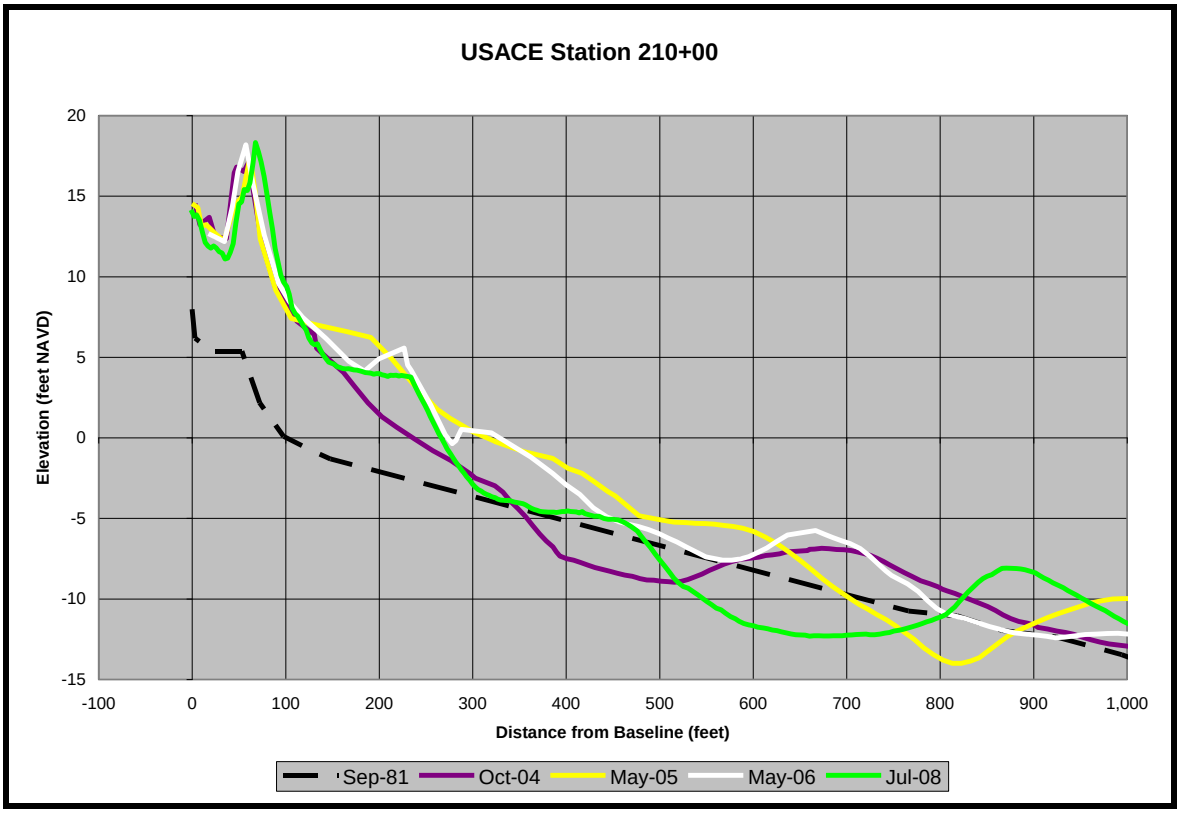
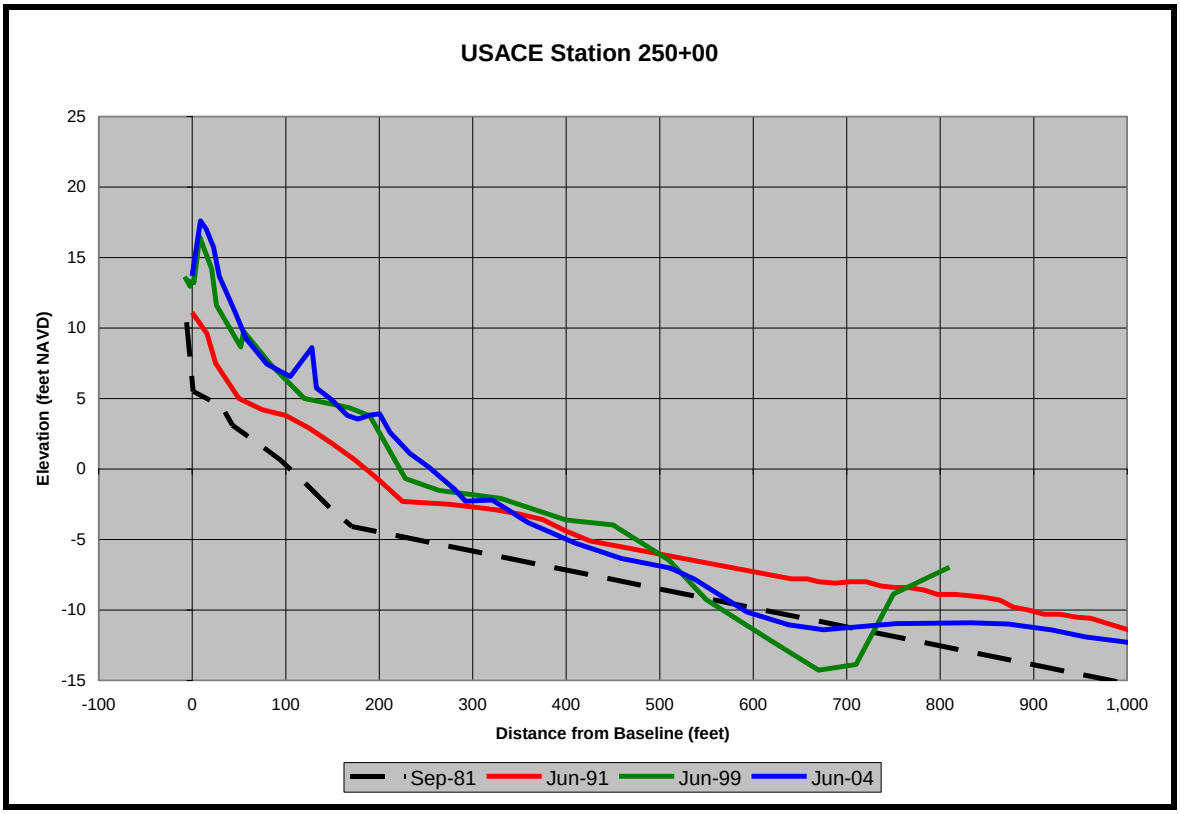


Figure A-3 Profile Comparisons for Station 210+00 – Sep 1981 to July 2008.



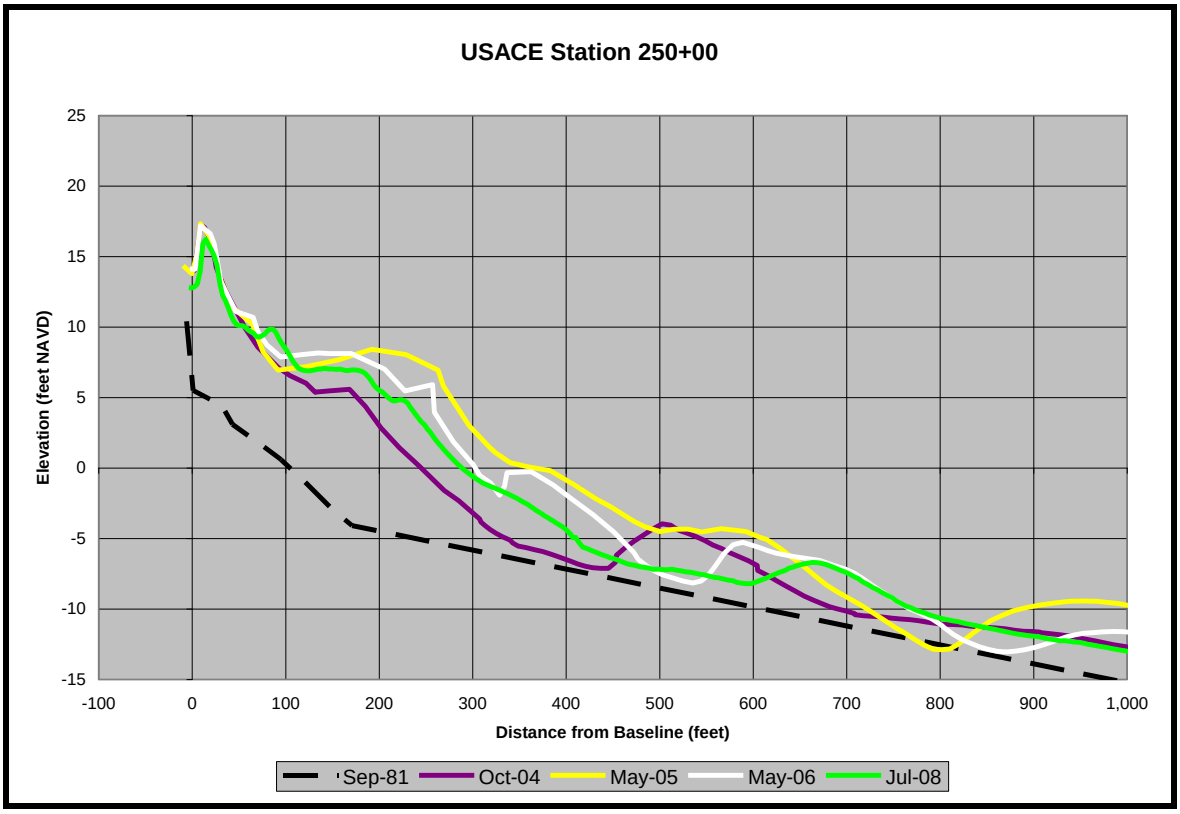
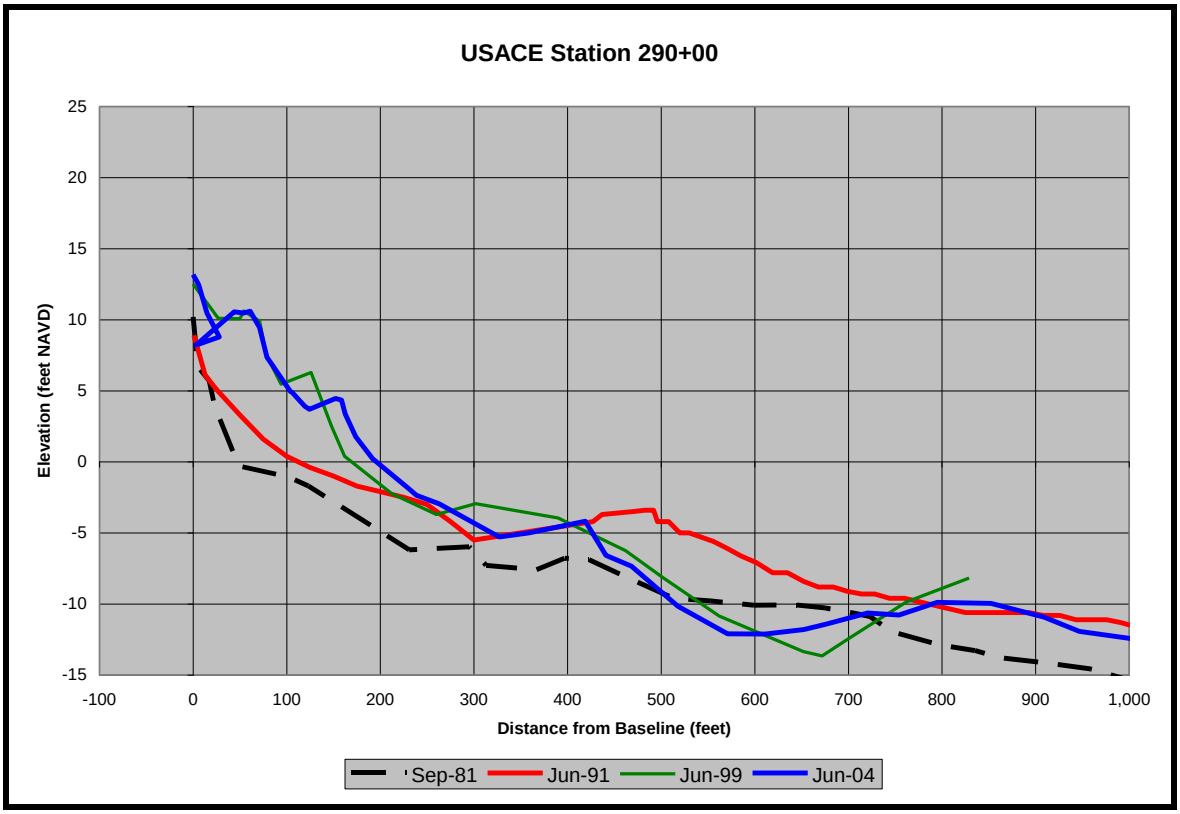


Figure A-4 Profile Comparisons for Station 250+00 – Sep 1981 to July 2008.



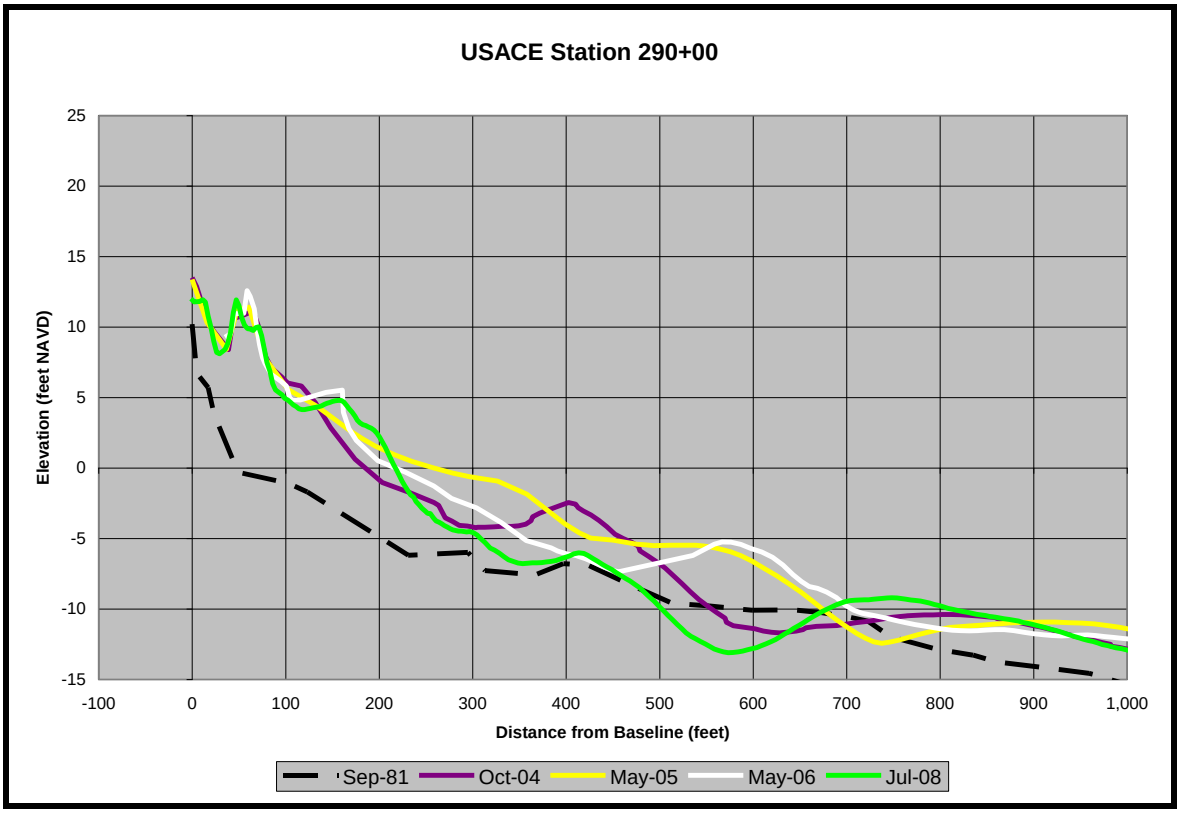


Figure A-5 Profile Comparisons for Station 250+00 – Sep 1981 to July 2008.

APPENDIX B

SUPPLEMENTAL FINANCIAL INFORMATION

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2007

SESSION LAW 2007-112
SENATE BILL 465

AN ACT TO CONSOLIDATE AND REWRITE THE CARTERET COUNTY OCCUPANCY TAX LAW AND TO AMEND THE DEADLINE FOR THE DEVELOPMENT OF A CONVENTION CENTER PLAN FOR CARTERET COUNTY.

The General Assembly of North Carolina enacts:

SECTION 1. Sections 1 through 9 of S.L. 2001-381, as amended by S.L. 2005-120 and S.L. 2005-435, are rewritten and recodified as Sections 2 through 4 of this act. This act does not affect the rights or liabilities of the county, a taxpayer, or another person arising under the law rewritten and recodified by this act before the effective date of this act; nor does it affect the right to any refund or credit of a tax that accrued under the law rewritten and recodified by this act before the effective date of this act.

SECTION 2. Occupancy Tax. – (a) Authorization and Scope. – The Carteret County Board of Commissioners may levy a room occupancy and tourism development tax of five percent (5%) of the gross receipts derived from the rental of any room, lodging, or similar accommodation furnished by any hotel, motel, inn, tourist camp, condominium, cottage, campground, rental agency, or other similar place within the county that is subject to sales tax imposed by the State under G.S. 105-164.4(a)(3). This tax is in addition to any State or local sales tax. This tax does not apply to accommodations furnished by the following:

(1) Religious organizations.
(2) Educational organizations.
(3) Any business that offers to rent fewer then five units.
(4) Summer camps.
(5) Charitable, benevolent, and other nonprofit organizations.

SECTION 2.(b) Additional Occupancy Tax. – In addition to the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the Carteret County Board of Commissioners may, no earlier than July 1, 2010, levy an additional room occupancy and tourism development tax of one percent (1%) of the gross receipts derived from the rental of accommodations taxable under subsection (a) of Section 2 of this act only if all of the following conditions have been met:

(1) A development plan for the construction of a convention center has been approved by resolution of the board of county commissioners and the governing board of the municipality where the center is to be located by June 30, 2010.
(2) There is a signed contract between the appropriate local governments and a private developer that includes financing commitments for construction to begin no later than July 1, 2011.
(3) The county is levying the room occupancy and tourism development tax authorized under subsection (a) of Section 2 of this act.

SECTION 2.(c) Repeal of Additional Occupancy Tax. – Carteret County's authority to levy the additional one percent (1%) room occupancy and tourism development tax under subsection (b) of Section 2 of this act is repealed as provided in this section if either of the following events occur:

(1) A cumulative total of ten million dollars ($10,000,000) in proceeds from the additional one percent (1%) room occupancy and tourism development tax is collected, calculated beginning on July 1, 2010. The repeal under this subdivision is effective on the first day of the second month following the date that the cumulative total of ten million dollars ($10,000,000) is collected.

(2) Construction on the convention center has not begun by July 1, 2011. The repeal under this subdivision is effective September 1, 2011. Any funds collected before the repeal date must be redistributed to the Tourism Development Authority and used only to promote travel and tourism.

SECTION 2.(d) Excess Proceeds from Additional Occupancy Tax. – Carteret County must redistribute any excess proceeds from the additional one percent (1%) room occupancy and tourism development tax authorized under subsection (b) of Section 2 of this act to the Tourism Development Authority to be used only to promote travel and tourism. For purposes of this subsection, "excess proceeds" means:

(1) Any proceeds in excess of ten million dollars ($10,000,000) collected prior to the repeal date of the additional tax.

(2) Any proceeds collected but not spent in excess of the actual cost of the convention center.

SECTION 2.(e) Administration. – A tax levied under this act must be levied, administered, collected, and repealed as provided in G.S. 153A-155. The penalties provided in G.S. 153A-155 apply to a tax levied under this act. The Carteret County Tax Collector must establish procedures to periodically audit the businesses subject to the tax levied under this act in order to ensure compliance with this act.

SECTION 2.(f) Definitions. – The following definitions apply in this act:

(1) Beach nourishment. – The placement of sand, from other sand sources, on a beach or dune by mechanical means and other associated activities that are in conformity with the North Carolina Coastal Management Program along the shorelines of the Atlantic Ocean of North Carolina and connecting inlets for the purpose of widening the beach to benefit public recreational use and mitigating damage and erosion from storms to inland property. The term includes expenditures for the following:

a. Costs directly associated with qualifying for projects either contracted through the U.S. Army Corps of Engineers or otherwise permitted by all appropriate federal and State agencies;

b. The nonfederal share of the cost required to construct these projects;

c. The costs associated with providing enhanced public beach access; and

d. The costs of associated nonhardening activities such as the planting of vegetation, the building of dunes, and the placement of sand fences.

(2) Net proceeds. – Gross proceeds less the cost to the county of administering and collecting the tax, as determined by the finance officer, not to exceed three percent (3%) of the first five hundred thousand dollars ($500,000) of gross proceeds collected each year and one percent (1%) of the remaining gross receipts collected each year.

(3) Promote travel and tourism. – To advertise or market an area or activity, publish and distribute pamphlets and other materials, conduct market research, or engage in similar promotional activities that attract tourists or business travelers to the area; the term includes administrative expenses incurred in engaging in these activities.

(4) Tourism-related expenditures. – Expenditures that, in the judgment of the Tourism Development Authority, are designed to increase the use of lodging facilities, meeting facilities, or convention facilities in a county or to attract tourists or business travelers to the county. The term includes tourism-related capital expenditures.

SECTION 2.(g) Use and Distribution of five percent (5%) Occupancy Tax Revenue. – If Carteret County levies only the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the net proceeds of the tax must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret County Tourism Development Authority. Beginning July 1, 2010, if the conditions in subsection (b) of Section 2 of this act are not met, then Carteret County must, on a quarterly basis, remit sixty percent (60%) to the Carteret County Tourism Development Authority. After deducting its administrative expenses, the Authority must use all of the funds remitted to it under this subdivision to promote travel and tourism in Carteret County. Administrative expenses may not exceed ten percent (10%) of the total budget of the Tourism Development Authority and may not include costs associated with the operation of visitor centers.

(2) Beach nourishment. – Carteret County must retain the remainder to be used only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

SECTION 2.(h) Use and Distribution of six percent (6%) Occupancy Tax Revenue. – If the conditions in subsection (b) of Section 2 of this act are met and Carteret County levies the room occupancy tax at a rate of six percent (6%) as authorized by subsections (a) and (b) of Section 2 of this act, the net proceeds must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret Tourism Development Authority to be used to promote travel and tourism.

(2) Beach nourishment. – Carteret County must use thirty-three percent (33%) only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

(3) Convention center financing. – Any remaining proceeds, up to a maximum of ten million dollars ($10,000,000), must be used for the financing of debt service, operating costs, or both associated with the construction of a new convention center in Carteret County.

SECTION 3.(a) Carteret County Tourism Development Authority. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Tourism Development Authority for the purpose of managing the promotion and development of tourism in Carteret County.

SECTION 3.(b) The Authority must consist of nine members and must be appointed by the board of county commissioners by the selection of two members from each list of nominees submitted by the following organizations:

(1) Carteret County Chamber of Commerce.

(2) Crystal Coast Hotel/Motel Association, doing business as Crystal Coast Hospitality Association.
(3) Carteret County Board of Realtors.

The nominees submitted by the Chamber of Commerce, the Hotel/Motel Association, and the Board of Realtors must be individuals who collect the occupancy tax levied under this act. However, notwithstanding the foregoing, the board of county commissioners must appoint those persons named to serve by their respective organizations.

Three additional Authority members must be directly appointed by the board of county commissioners. One of these appointments must be a county commissioner, and one must be a mayor of a Carteret County municipality.

SECTION 3.(c) All members of the Authority must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms.

No member must serve more than two consecutive three-year terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired terms they are appointed to fill.

SECTION 3.(d) The Authority must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 3.(e) The Authority must submit to the board of county commissioners an annual audited financial statement itemizing its receipts and expenditures each year.

SECTION 3.(f) The Authority may contract with any person, firm, or agency to advise, assist, manage, or promote travel and tourism in Carteret County.

SECTION 4.(a) Carteret County Beach Commission. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Beach Commission, which must advise the board on strategies for beach nourishment and on the expenditure of room occupancy tax proceeds dedicated to beach nourishment.

SECTION 4.(b) The Beach Commission must consist of 11 members appointed by the board of county commissioners according to the following formula:

(1) Two individuals who reside within the town limits of Atlantic Beach.
(2) Two individuals who reside within the town limits of Pine Knoll Shores.
(3) Two individuals who reside within the town limits of Emerald Isle.
(4) One individual who resides within the town limits of Indian Beach.
(5) One individual who resides on Bogue Banks.
(6) One individual who resides anywhere in Carteret County.
(7) A member of the board of county commissioners.
(8) A member of the Carteret County Tourism Development Authority.

SECTION 4.(c) All members of the Beach Commission must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired term.

SECTION 4.(d) The Beach Commission must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 4.(e) The Beach Commission may not contract with any person, firm, or agency. The board of commissioners must be bound by the recommendations of the Beach Commission regarding the expenditure of room occupancy tax proceeds dedicated to beach nourishment. The board of commissioners may in its discretion delegate additional responsibilities to the Beach Commission.

SECTION 5. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 27th day of June, 2007.

s/ Beverly E. Perdue
President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

The following three figures show (1) the growth in the Carteret County room occupancy tax collections since its inception in 1993 through 2008, (2) the year-to-year percent change in the in tax collections, and (3) monthly room occupancy tax collections for each year.

Fig. 1

Occupancy Tax Collections (1993-2008)

(collections prior to 2002 corrected to represent the current 5% rate)

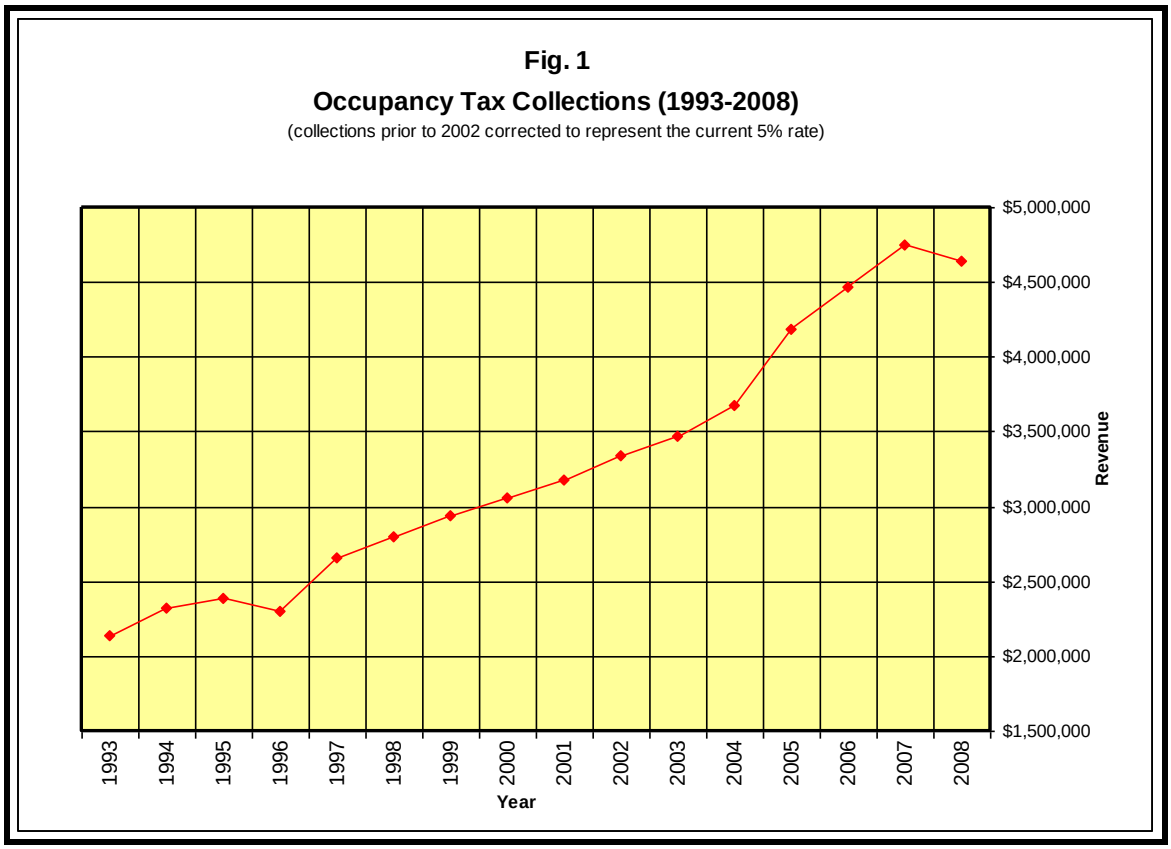


Fig. 2
Percent +/- Compared to Previous Year
Occupancy Tax Collections (1993-2008)
(collections prior to 2002 corrected to represent the current 5% rate)

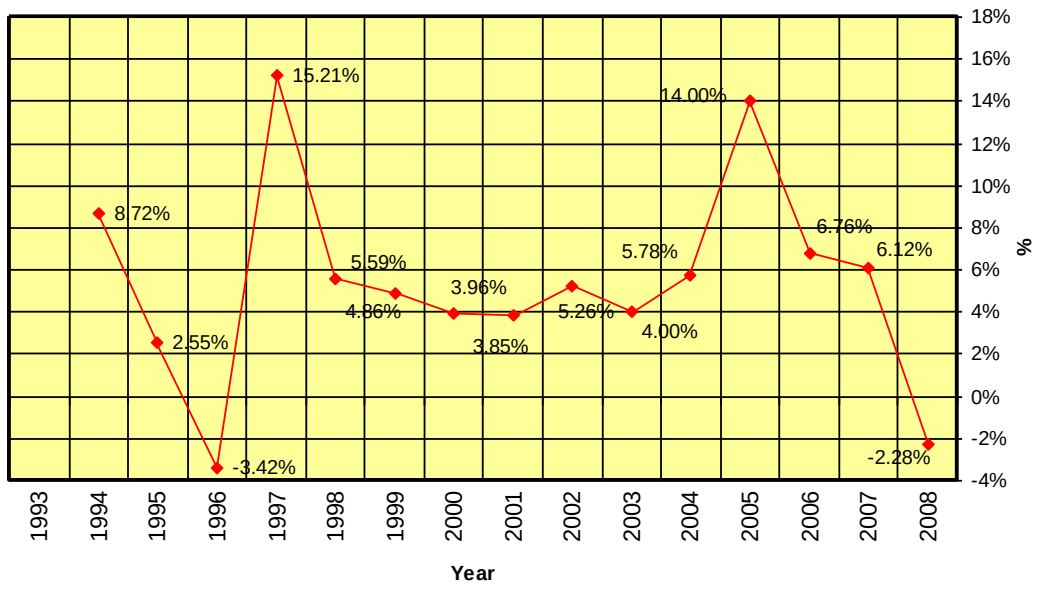
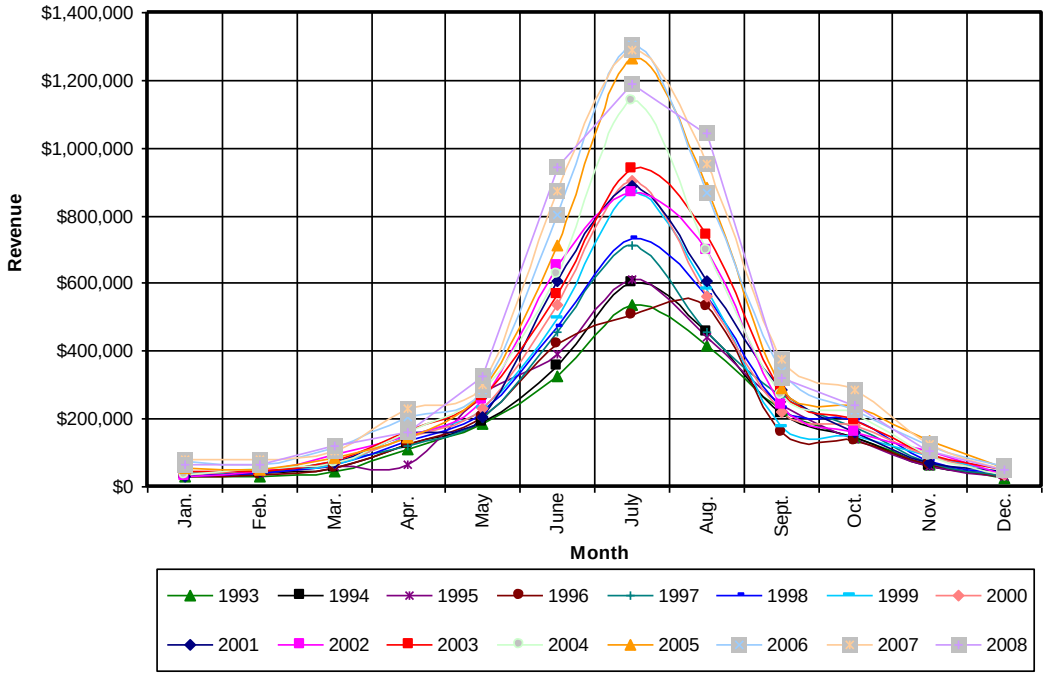


Fig. 3

Monthly Occupancy Tax Collections (1993-2008)

(collections prior to 2002 corrected to represent the current 5% rate)



Computations for the year-end balance in the Carteret County beach nourishment fund is provided in the following spreadsheet. Assumptions used to develop this projection are as follows:

Assumptions:

(1) Occupancy tax collections increase 4% annually beginning in FY 2012.
(2) Interest rate is 2.06%.
(3) Revenues - County beach nourishment is the surplus remaining after administrative costs for the annual occupancy tax collected for beach nourishment, State is 25% of annual nourishment cost, & local match is 25% of annual nourishment cost.
(4) Administrative expenditures increase at a 3% annual rate beginning in FY 2014.
(5) Annual nourishment cost for Bogue Banks is based upon historic erosion rates and volumetric need.

CARTERET COUNTY OCCUPANCY TAX PROJECTION

Portion of S.L. 2007-12 designated for beach nourishment (5% total w/ 50% towards nourishment until FY 2010, 40% thereafter)

25% STATE FUNDING, 50% COUNTY FUNDING, 25% LOCAL FUNDING

		REVENUES			**EXPENDITURES**			
Fiscal Year (July 1st - June 30th)	**Occupancy Tax** (occ. tax)	interest	State funding	Local match	administrative	nourishment	**Annual surplus or deficit**	**Balance**
2002	$856,091	<=included	$326,500		$863,511			$319,080
2003	$1,641,828	<=included	$179,500		$1,636,724			$503,684
2004	$1,777,409	<=included	$0		$1,391,030			$890,063
2005	$1,908,613	<=included	$85,000		$1,542,807			$1,340,869
2006	$2,217,115	<=included	$141,725		$1,630,665			$2,069,044
2007	$2,548,954	<=included	$55,500		$610,637			$4,062,860
2008	$2,555,364	<=included	$103,250		$724,520			$5,996,953
2009	$2,201,928	$193,510	$0		$729,494			$7,662,898
2010	$2,179,909	$160,050	$150,000		$971,555			$9,181,301
2011	$1,796,245	$188,899	$0	$0	$766,719	$0	$1,218,425	$10,399,727
2012	$1,868,095	$213,967	$0	$0	$789,495	$0	$1,292,567	$11,692,294
2013	$1,942,819	$240,561	$0	$0	$513,400	$0	$1,669,980	$13,362,273
2014	$2,020,532	$274,920	$0	$0	$528,802	$0	$1,766,649	$15,128,922
2015	$2,101,353	$311,267	$0	$0	$544,666	$0	$1,867,954	$16,996,876
2016	$2,185,407	$349,699	$0	$0	$561,006	$0	$1,974,100	$18,970,976
2017	$2,272,823	$390,315	$0	$0	$577,836	$0	$2,085,302	$21,056,277
2018	$2,363,736	$433,218	$4,409,750	$4,409,750	$595,172	$17,639,000	-$6,617,717	$14,438,560
2019	$2,458,286	$297,063	$4,159,750	$4,159,750	$613,027	$16,639,000	-$6,177,178	$8,261,383
2020	$2,556,617	$169,972	$4,159,750	$4,159,750	$631,417	$16,639,000	-$6,224,328	$2,037,055
2021	$2,658,882	$41,911	$0	$0	$650,360	$0	$2,050,433	$4,087,487
2022	$2,765,237	$84,097	$0	$0	$669,871	$0	$2,179,463	$6,266,951
2023	$2,875,846	$128,938	$0	$0	$689,967	$0	$2,314,818	$8,581,768
2024	$2,990,880	$176,564	$0	$0	$710,666	$0	$2,456,778	$11,038,547
2025	$3,110,515	$227,111	$0	$0	$731,986	$0	$2,605,640	$13,644,187
2026	$3,234,936	$280,720	$0	$0	$753,945	$0	$2,761,710	$16,405,897
2027	$3,364,334	$337,540	$250,000	$250,000	$776,564	$1,000,000	$2,425,310	$18,831,207
2028	$3,498,907	$387,439	$5,051,500	$5,051,500	$799,861	$20,206,000	-$7,016,515	$11,814,692
2029	$3,638,863	$243,079	$5,051,500	$5,051,500	$823,857	$20,206,000	-$7,044,914	$4,769,778
2030	$3,784,418	$98,135	$5,051,500	$5,051,500	$848,572	$20,206,000	-$7,069,020	-$2,299,241
2031	$3,935,794	-$47,305	$0	$0	$874,029	$0	$3,014,460	$715,218
2032	$4,093,226	$14,715	$0	$0	$900,250	$0	$3,207,691	$3,922,909
2033	$4,256,955	$80,711	$0	$0	$927,258	$0	$3,410,409	$7,333,318
2034	$4,427,233	$150,878	$0	$0	$955,076	$0	$3,623,036	$10,956,354
2035	$4,604,323	$225,419	$0	$0	$983,728	$0	$3,846,014	$14,802,368
2036	$4,788,496	$304,549	$250,000	$250,000	$1,013,240	$1,000,000	$3,579,805	$18,382,173
2037	$4,980,035	$378,201	$0	$0	$1,043,637	$0	$4,314,599	$22,696,772
2038	$5,179,237	$466,971	$6,138,750	$6,138,750	$1,074,946	$24,555,000	-$7,706,239	$14,990,533
2039	$5,386,406	$308,420	$6,138,750	$6,138,750	$1,107,194	$24,555,000	-$7,689,868	$7,300,665
2040	$5,601,863	$150,206	$6,138,750	$6,138,750	$1,140,410	$24,555,000	-$7,665,841	-$365,176
Totals	$118,629,510	$7,261,741	$47,841,475	$46,800,000	$33,697,902	$187,200,000	-$9,546,477	

Town of Atlantic Beach Local Funding.

The following spread sheet shows how the Town of Atlantic Beach plans to raise the necessary revenues to support the beach nourishment project.

Atlantic Beach fund projection - 25% State Cost Share
Annual interest rate = 2%

Added cost of disposal = $1,000,000 every 9 years

Year	total disposal cost	displ cost 25.00% Local Share	fund balance annual contribution $12,500
2012			$334,380
2013			$353,568
2014			$373,139
2015			$393,102
2016			$413,464
2017			$434,233
2018	$1,000,000	$250,000	$205,418
2019			$222,026
2020			$238,967
2021			$256,246
2022			$273,871
2023			$291,848
2024			$310,185
2025			$328,889
2026			$347,967
2027	$1,000,000	$250,000	$117,426
2028			$132,275
2029			$147,420
2030			$162,868
2031			$178,626
2032			$194,698
2033			$211,092
2034			$227,814
2035			$244,870
2036	$1,000,000	$250,000	$12,268
2037			$25,013
2038			$38,013
2039			$51,274
2040			$64,799

Added cost of disposal increses 4%/year

Year	total disposal cost	displ cost 25.00% Local Share	fund balance annual contribution $25,000
2012			$334,380
2013			$366,068
2014			$398,389
2015			$431,357
2016			$464,984
2017			$499,284
2018	$1,000,000	$250,000	$284,269
2019			$314,955
2020			$346,254
2021			$378,179
2022			$410,742
2023			$443,957
2024			$477,836
2025			$512,393
2026			$547,641
2027	$1,423,312	$355,828	$227,766
2028			$257,321
2029			$287,468
2030			$318,217
2031			$349,581
2032			$381,573
2033			$414,204
2034			$447,488
2035			$481,438
2036	$2,025,817	$506,454	$9,613
2037			$34,805
2038			$60,501
2039			$86,711
2040			$113,445

TOWN OF ATLANTIC BEACH

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Atlantic Beach, NC 28512

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March 11, 2010

Christine A. Goebel
Assistant Attorney General
NC Department of Justice
PO Box 629
Raleigh, NC 27602
VIA ELECTRONIC MAIL

RE: STATIC LINE EXCEPTION ADDITIONAL INFORMATION REQUEST

Dear Ms. Goebel:

I hope this letter finds you well. I am writing in response to your letter, dated February 26, 2010, requesting additional information in connection with the Town of Atlantic Beach's request for a Static Line Exception.

Based on your letter and subsequent conversations between representatives from Atlantic Beach, your office and the Division of Coastal Management, I understand that your remaining concerns are our commitment and ability to fund additional nourishment costs that may arise in the future. I will address these concerns below.

As a preliminary matter, however, I would like to reiterate that the funding needs for Atlantic Beach set fort in our Static Line Exception Application Report (the "Report") are estimates of what we *may* need to spend in the future *if* the Army Corps of Engineers (the "ACOE") changes its past practice of disposing of sand along the entire shoreline of Atlantic Beach. In our relatively long history of beach nourishment we have never had to spend any local money to nourish our entire shoreline. The ACOE has covered all of the costs. The cost estimate set forth in Section 6.8 of the Report is a contingency cost that may never materialize.

Nonetheless, given the "least cost option" methodology under which the ACOE operates with regard to maintaining the Morehead City harbor and nourishing our beaches, we thought it prudent to include the full amount of this contingency cost in the Report.

The primary purpose of this letter is to convey, on behalf of the Town Council, staff and citizens of Atlantic Beach, our commitment and willingness to fund any costs that may arise in the future in connection with the nourishment of our beach. There is no question

that this is among the highest priorities for our Town. Atlantic Beach will not prosper without a healthy beach strand—it protects our homes and is the economic engine that drives our businesses.

Should the ACOE change its practices in a way that results in additional cost to nourish our entire shoreline we are well positioned to fund our local share as set forth in the Report. We currently have over $330,000 in a dedicated beach nourishment fund and an unreserved fund balance in our General Fund of over $4,500,000. The dedicated beach nourishment fund alone is sufficient to fund the local share of our contingency cost through the next 25 years, if the need arises.

We believe that the next few nourishment cycles and the completion of the ACOE's revised Dredged Material Management Plan in the coming years will provide a good indication of the future need for these contingency funds. If it becomes evident that these funds will be needed over the next 30-50 years, the Town is committed to annual contributions to our dedicated beach nourishment fund to ensure sufficient reserves for nourishment needs. The estimated annual contribution to this fund is between $12,500 and $25,000. Given our annual budget of approximately $7,000,000, this contribution will be less than one-half of one percent of our budget and could easily be funded through our ordinary revenues or a transfer from the unreserved balance of our General Fund. For the sake of comparison, this contingency cost of nourishing our beach—the lifeline of our community—is less than the cost of one police car (we typically purchase 2 or 3 cars per year). Should the need for these contingency funds arise, Atlantic Beach is willing and able to fund its share.

Thank you for your help in reviewing our Report. Please let me know if there is any other information that we can provide to you.

Sincerely,

A.B. Cooper III
Mayor

cc: Jeff Warren, DCM Coastal Hazards Specialist
Tom Jarrett, CP&E
Derek Taylor, Atlantic Beach Town Attorney
Jessica Fiester, Atlantic Beach Planning Director
Greg Rudolph, Carteret County Shore Protection Office

STATE OF NORTH CAROLINA
DEPARTMENT OF JUSTICE

ROY COOPER
ATTORNEY GENERAL

P.O. BOX 629
RALEIGH, NC 27602

REPLY TO: CHRISTINE A. GOEBEL
ENVIRONMENTAL DIV.
TEL: (919) 716-6600
FAX: (919) 716-6767
Cgoebel@ncdoj.gov

MEMORANDUM

TO: North Carolina Coastal Resources Commission

FROM: Christine A. Goebel, Assistant Attorney General
Dr. Jeff Warren, DCM Coastal Hazards Specialist

DATE: March 12, 2010 (for the March 24-26, 2010 CRC Meeting)

RE: Static Line Exception Request by the **Town of Emerald Isle**

Petitioner, the Town of Emerald Isle ("Town") requests an exception from the eastern portion of the Town's static vegetation line from the Commission pursuant to N.C.G.S. §§ 113A-107, -113(b)(6), -124, and 15A NCAC 7J.1200 et seq. The granting of such a request by the Commission would result in the application of 15A NCAC 7H.0305(a)(5) and 7H.0306(a)(8) to proposed development projects along the affected eastern area of the town, instead of the current use of the static vegetation line per 7H.0305(a)(6). The Town has had a static vegetation line, used for determining ocean erosion setbacks**,** in place in the eastern 5.9 miles of the Town's 11 mile ocean shoreline since 2003 when the static line rules became effective for the Town in connection with their first large-scale nourishment project in this area.

Pursuant to the requirements of 15A NCAC 7J.1202(a), this memorandum will contain a description of the area subject to the static line exception request, a summary of the fill projects in this area, a summary of the evidence required from and produced by the Town, and a recommendation by Staff to the Commission.

The following information is attached to this memorandum:
Attachment A: Relevant Rules
Attachment B: Staff's Recommendation
Attachment C: Petitioner's Report
Attachment D: Petitioner's supplemental materials

cc: Frank Rush, Emerald Isle Town Manager
Jennie W. Hauser, CRC Counsel

ATTACHMENT A
Relevant Rules

SECTION .1200 – STATIC VEGETATION LINE EXCEPTION PROCEDURES

15A NCAC 07J .1201 REQUESTING THE STATIC LINE EXCEPTION

(a) Any local government or permit holder of a large-scale beach fill project, herein referred to as the petitioner, that is subject to a static vegetation line pursuant to 15A NCAC 07H .0305, may petition the Coastal Resources Commission for an exception to the static line in accordance with the provisions of this Section.
(b) A petitioner is eligible to submit a request for a static vegetation line exception after five years have passed since the completion of construction of the initial large-scale beach fill project(s) as defined in 15A NCAC 07H .0305 that required the creation of a static vegetation line(s). For a static vegetation line in existence prior to the effective date of this Rule, the award-of-contract date of the initial large-scale beach fill project, or the date of the aerial photography or other survey data used to define the static vegetation line, whichever is most recent, shall be used in lieu of the completion of construction date.
(c) A static line exception request applies to the entire static vegetation line within the jurisdiction of the petitioner including segments of a static vegetation line that are associated with the same large-scale beach fill project. If multiple static vegetation lines within the jurisdiction of the petitioner are associated with different large-scale beach fill projects, then the static line exception in accordance with 15A NCAC 07H .0306 and the procedures outlined in this Section shall be considered separately for each large-scale beach fill project.
(d) A static line exception request shall be made in writing by the petitioner. A complete static line exception request shall include the following:

(1) A summary of all beach fill projects in the area for which the exception is being requested including the initial large-scale beach fill project associated with the static vegetation line, subsequent maintenance of the initial large-scale projects(s) and beach fill projects occurring prior to the initial large-scale projects(s). To the extent historical data allows, the summary shall include construction dates, contract award dates, volume of sediment excavated, total cost of beach fill project(s), funding sources, maps, design schematics, pre-and post-project surveys and a project footprint;

(2) Plans and related materials including reports, maps, tables and diagrams for the design and construction of the initial large-scale beach fill project that required the static vegetation line, subsequent maintenance that has occurred, and planned maintenance needed to achieve a design life providing no less than 25 years of shore protection from the date of the static line exception request. The plans and related materials shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work;

(3) Documentation, including maps, geophysical, and geological data, to delineate the planned location and volume of compatible sediment as defined in 15A NCAC 07H .0312 necessary to construct and maintain the large-scale beach fill project defined in Subparagraph (d)(2) of this Rule over its design life. This documentation shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work; and

(4) Identification of the financial resources or funding sources necessary to fund the large-scale beach fill project over its design life.

(e) A static line exception request shall be submitted to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. Written acknowledgement of the receipt of a completed static line exception request, including notification of the date of the meeting at which the request will be considered by the Coastal Resources Commission, shall be provided to the petitioner by the Division of Coastal Management.
(f) The Coastal Resources Commission shall consider a static line exception request no later than the second scheduled meeting following the date of receipt of a complete request by the Division of Coastal Management, except when the petitioner and the Division of Coastal Management agree upon a later date.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1202 REVIEW OF THE STATIC LINE EXCEPTION REQUEST

(a) The Division of Coastal Management shall prepare a written report of the static line exception request to be presented to the Coastal Resources Commission. This report shall include:

(1) A description of the area affected by the static line exception request;

(2) A summary of the large-scale beach fill project that required the static vegetation line as well as the completed and planned maintenance of the project(s);

(3) A summary of the evidence required for a static line exception; and

(4) A recommendation to grant or deny the static line exception.

(b) The Division of Coastal Management shall provide the petitioner requesting the static line exception an opportunity to review the report prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff: March 23, 2009.

15A NCAC 07J .1203 PROCEDURES FOR APPROVING THE STATIC LINE EXCEPTION

(a) At the meeting that the static line exception is considered by the Coastal Resources Commission, the following shall occur:

(1) The Division of Coastal Management shall orally present the report described in 15A NCAC 07J .1202.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(b) The Coastal Resources Commission shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J .1201(d)(1) through (d)(4). The final decision of the Coastal Resources Commission shall be made at the meeting at which the matter is heard or in no case later than the next scheduled meeting. The final decision shall be transmitted to the petitioner by registered mail within 10 business days following the meeting at which the decision is reached.

(c) The decision to authorize or deny a static line exception is a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1204 REVIEW OF THE LARGE-SCALE BEACH-FILL PROJECT AND APPROVED STATIC LINE EXCEPTIONS

(a) Progress Reports. The petitioner that received the static line exception shall provide a progress report to the Coastal Resources Commission at intervals no greater than every five years from date the static line exception is authorized. The progress report shall address the criteria defined in 15A NCAC 07J .1201(d)(1) through (d)(4) and be submitted in writing to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. The Division of Coastal Management shall provide written acknowledgement of the receipt of a completed progress report, including notification of the meeting date at which the report will be presented to the Coastal Resources Commission to the petitioner.

(b) The Coastal Resources Commission shall review a static line exception authorized under 15A NCAC 07J .1203 at intervals no greater than every five years from the initial authorization in order to renew its findings for the conditions defined in 15A NCAC 07J .1201(d)(2) through (d)(4). The Coastal Resources Commission shall also consider the following conditions:

(1) Design changes to the initial large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) provided that the changes are designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work;

(2) Design changes to the location and volume of compatible sediment, as defined by 15A NCAC 07H .0312, necessary to construct and maintain the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2), including design changes defined in this Rule provided that the changes have been designed and prepared by the

U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work; and

(3) Changes in the financial resources or funding sources necessary to fund the large-scale beach fill project(s) defined in 15A NCAC 07J .1201(d)(2). If the project has been amended to include design changes defined in this Rule, then the Coastal Resources Commission shall consider the financial resources or funding sources necessary to fund the changes.

(c) The Division of Coastal Management shall prepare a written summary of the progress report and present it to the Coastal Resources Commission no later than the second scheduled meeting following the date the report was received, except when a later meeting is agreed upon by the local government or community submitting the progress report and the Division of Coastal Management. This written summary shall include a recommendation from the Division of Coastal Management on whether the conditions defined in 15A NCAC 07J .1201(d)(1) through (d)(4) have been met. The petitioner submitting the progress report shall be provided an opportunity to review the written summary prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.
(d) The following shall occur at the meeting at which the Coastal Resources Commission reviews the static line exception progress report:

(1) The Division of Coastal Management shall orally present the written summary of the progress report as defined in this Rule.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1205 REVOCATION AND EXPIRATION OF THE STATIC LINE EXCEPTION

(a) The static line exception shall be revoked immediately if the Coastal Resources Commission determines, after the review of the petitioner's progress report identified in 15A NCAC 07J .1204, that any of the criteria under which the static line exception is authorized, as defined in 15A NCAC 07J .1201(d)(2) through (d)(4) are not being met.
(b) The static line exception shall expire immediately at the end of the design life of the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) including subsequent design changes to the project as defined in 15A NCAC 07J .1204(b).
(c) In the event a progress report is not received by the Division of Coastal Management within five years from either the static line exception or the previous progress report, the static line exception shall be revoked automatically at the end of the five-year interval defined in 15A NCAC 07J .1204(b) for which the progress report was not received.
(d) The revocation or expiration of a static line exception is considered a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1206 LOCAL GOVERNMENTS AND COMMUNITIES WITH STATIC VEGETATION LINES AND STATIC LINE EXCEPTIONS

A list of static vegetation lines in place for petitioners and the conditions under which the static vegetation lines exist, including the date(s) the static line was defined, shall be maintained by the Division of Coastal Management. A list of static line exceptions in place for petitioners and the conditions under which the exceptions exist, including the date the exception was granted, the dates the progress reports were received, the design life of the large-scale beach fill project and the potential expiration dates for the static line exception, shall be maintained by the Division of Coastal Management. Both the static vegetation line list and the static line exception list shall be available for inspection at the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557.
History Note: Authority G.S. 113A-107; 113A-113(b)(6), 113A-124 Eff. March 23, 2009.

15A NCAC 7H .0305 GENERAL IDENTIFICATION AND DESCRIPTION OF LANDFORMS

(a) This section describes natural and man-made features that are found within the ocean hazard area of environmental concern.
***

(5) Vegetation Line. The vegetation line refers to the first line of stable and natural vegetation, which shall be used as the reference point for measuring oceanfront setbacks. This line represents the boundary between the normal dry-sand beach, which is subject to constant flux due to waves, tides, storms and wind, and the more stable upland areas. The vegetation line is generally located at or immediately oceanward of the seaward toe of the frontal dune or erosion escarpment. The Division of Coastal Management or Local Permit Officer shall determine the location of the stable and natural vegetation line based on visual observations of plant composition and density. If the vegetation has been planted, it may be considered stable when the majority of the plant stems are from continuous rhizomes rather than planted individual rooted sets. The vegetation may be considered natural when the majority of the plants are mature and additional species native to the region have been recruited, providing stem and rhizome densities that are similar to adjacent areas that are naturally occurring. In areas where there is no stable natural vegetation present, this line may be established by interpolation between the nearest adjacent stable natural vegetation by on ground observations or by aerial photographic interpretation.

(6) Static Vegetation Line. In areas within the boundaries of a large-scale beach fill project, the vegetation line that existed within one year prior to the onset of initial project construction shall be defined as the static vegetation line. A static vegetation line shall be established in coordination with the Division of Coastal Management using on-ground observation and survey or aerial imagery for all areas of oceanfront that undergo a large-scale beach fill project. Once a static vegetation line is established, and after the onset of project construction, this line shall be used as the reference point for measuring oceanfront setbacks in all locations where it is landward of the vegetation line. In all locations where the vegetation line as defined in this Rule is landward of the static vegetation line, the vegetation line shall be used as the reference point for measuring oceanfront setbacks. A static vegetation line shall not be established where a static vegetation line is already in place, including those established by the Division of Coastal Management prior to the effective date of this Rule. A record of all static vegetation lines, including those established by the Division of Coastal Management prior to the effective date of this Rule, shall be maintained by the Division of Coastal Management for determining development standards as set forth in Rule .0306 of this Section. Because the impact of Hurricane Floyd (September 1999) caused significant portions of the vegetation line in the Town of Oak Island and the Town of Ocean Isle Beach to be relocated landward of its pre-storm position, the static line for areas landward of the beach fill construction in the Town of Oak Island and the Town of Ocean Isle Beach, the onset of which occurred in 2000, shall be defined by the general trend of the vegetation line established by the Division of Coastal Management from June 1998 aerial orthophotography.

15A NCAC 07H .0306 GENERAL USE STANDARDS FOR OCEAN HAZARD AREAS

(a) In order to protect life and property, all development not otherwise specifically exempted or allowed by law or elsewhere in the CRC's Rules shall be located according to whichever of the following is applicable:
(1) The ocean hazard setback for development is measured in a landward direction from the vegetation line, the static vegetation line or the measurement line, whichever is applicable.

***
(8) Beach fill as defined in this Section represents a temporary response to coastal erosion, and compatible beach fill as defined in 15A NCAC 07H .0312 can be expected to erode at least as fast as, if not faster than, the pre-project beach. Furthermore, there is no assurance of future funding or beach-compatible sediment for continued beach fill projects and project maintenance. A vegetation line that becomes established oceanward of the pre-project vegetation line in an area that has received beach fill may be more vulnerable to natural hazards along the oceanfront. A development setback measured from the vegetation line provides less protection from ocean hazards. Therefore, development setbacks in areas that have received large-scale beach fill as defined in 15A NCAC 07H .0305 shall be measured landward from the static vegetation line as defined in this Section. However, in order to allow for development landward of the large-scale beach fill project that is less than 2,500 square feet and cannot meet the setback requirements from the static vegetation line, but can or has the potential to meet the setback requirements from the vegetation line set forth in Subparagraph (1) and (2)(A) of this Paragraph a local government or community may petition the Coastal Resources Commission for a "static line exception" in accordance with 15A NCAC 07J .1200 to allow development of property that lies both within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. This static line exception shall also allow development greater than 5,000 square feet to use the setback provisions defined in Part (a)(2)(K) of this Rule in areas that lie within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. The procedures for a static line exception request are defined in 15A NCAC 07J .1200. If the request is approved, the Coastal Resources Commission shall allow development setbacks to be measured from a vegetation line that is oceanward of the static vegetation line under the following conditions:

(A) Development meets all setback requirements from the vegetation line defined in Subparagraphs (a)(1) and (a)(2)(A) of this Rule;
(B) Total floor area of a building is no greater than 2,500 square feet;
(C) Development setbacks are calculated from the shoreline erosion rate in place at the time of permit issuance;
(D) No portion of a building or structure, including roof overhangs and elevated portions that are cantilevered, knee braced or otherwise extended beyond the support of pilings or footings, extends oceanward of the landward-most adjacent building or structure. When the configuration of a lot precludes the placement of a building or structure in line with the landward-most adjacent building or structure, an average line of construction shall be determined by the Division of Coastal Management on a case-by-case basis in order to determine an ocean hazard setback that is landward of the vegetation line, a distance no less than 30 times the shoreline erosion rate or 60 feet, whichever is greater;
(E) With the exception of swimming pools, the development defined in 15A NCAC 07H .0309(a) is allowed oceanward of the static vegetation line; and
(F) Development is not eligible for the exception defined in 15A NCAC 07H .0309(b).

ATTACHMENT B

Staff's Report to the Commission

I. Description of the affected area

The Town of Emerald Isle (Town) is located on a barrier island known as Bogue Banks, located in Carteret County, North Carolina. The Town is approximately 5.2 square miles in size, and is approximately 12.5 miles long and nearly 1 mile wide at the widest point. It is generally oriented in an east-west direction. It is bounded on the north by the Atlantic Intracoastal Waterway (AIWW) and Bogue Sound, on the south by the Atlantic Ocean, on the west by Bogue Inlet and on the east by the Town of Indian Beach.

The current portion of the static line, at issue in this request, extends for approximately 5.9 miles of shoreline from the Indian Beach border, eastward to Scotch Bonnet Drive, near mile marker 18 on NC 58. This area is also designated as Phase II or Emerald Isle- Eastern Phase of the larger Bogue Banks project. The static line location was determined by DCM Staff by locating the first line of stable, natural vegetation in the field in November 2002, and then having that line surveyed.

The current average annual erosion setback for the affected area is 2.0 feet per year for the entire area. The static line area is a developed area, and Town estimates are that approximately 160 developed oceanfront lots and 10 vacant oceanfront lots could potentially become conforming if this exception is granted. These lots are primarily in the eastern end of the Town limits which consists of primarily single family homes. The Town notes that there are several existing condominium buildings that will remain non-conforming under an exception, and the western part of the area at issue currently consists primarily of conforming structures which would not be impacted by the exception based on today's conditions.

II. Summary of past nourishment project and future project maintenance

In 1999, Carteret County, acting through its Beach Preservation Task Force (a forerunner to the Shore Protection Office), initiated planning for an island-wide shore protection project aimed at providing interim protection to development and infrastructure along the island until a long-term storm damage reduction project could be designed and implemented by the Corps of Engineers. The island-wide plan developed by the county is called the Bogue Banks Restoration Project. The county contracted Coastal Science & Engineering, PLLC (CSE) of Morehead City, NC to develop the plan. CSE also prepared an Environmental Assessment under the National Environmental Policy Act (CSE 2001a) and an Environmental Impact Statement required by the State Environmental Policy Act (CSE 2001b). The conceptual plan developed for the island-wide project is detailed in a report prepared by CSE entitled "Executive Summary – Shoreline Assessment and Preliminary Beach Restoration Plan, Bogue Banks, North Carolina" (CSE 1999). Following the review and approval of federal and state environmental documents, the project received a CAMA Major Permit Number 124-01 dated October 5, 2001 and a Department of the Army Permit #200000362 dated October 26, 2001. The Bogue Banks Restoration Plan covers approximately 16.8 miles of the 25 mile long island and extends from the Atlantic Beach/Pine Knoll Shores (AB/PKS) town boundary west to approximately one mile east of Bogue Inlet (Figure 1). The project is sponsored by Carteret County with the Towns of Pine Knoll Shores, Indian Beach, and Emerald Isle included in the permits as co-permittees.

The Island-wide project was implemented in three phases. Phase II, the focus of this static line exception request, was constructed in 2003 and covered the eastern 5.9 miles of Emerald Isle west of the IB/EI town boundary to a point approximately 1.5 miles east of the Bogue Inlet Fishing Pier (Stations 25 to 48 in Figure 2). Material for Phase II was obtained from borrow areas B2 and A (Figure 1). The initial date of construction of the Emerald Isle East (Phase II) Project which triggered the static is 2003, and is more than five years ago, so the request meets the 5-year requirement of 15A NCAC 7J.1201(c).

III. Summary of Petitioner's evidence supporting the four factors

The Commission's rule 15A NCAC 07J.1203(b) indicates that the Commission "shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J.1201(d)(1) through (d)(4)." Specifically, these four criteria require a showing by the Petitioner of (1) a summary of all beach fill projects in the area proposed for the exception, (2) plans and related materials showing the design of the initial fill projects, and any past or planned maintenance work, (3) documentation showing the location and volume of compatible sediment necessary to construct and maintain the project over its design life, and (4) identification of the financial resources or funding sources to fund the project over its design life. (See 15A NCAC 07J.1202(d) for exact rule language). Staff's summary and analysis of Petitioner's response to these four criteria follows.

A. Summary of fill projects in the area- First factor per 15A NCAC 7J.1202(d)(1)

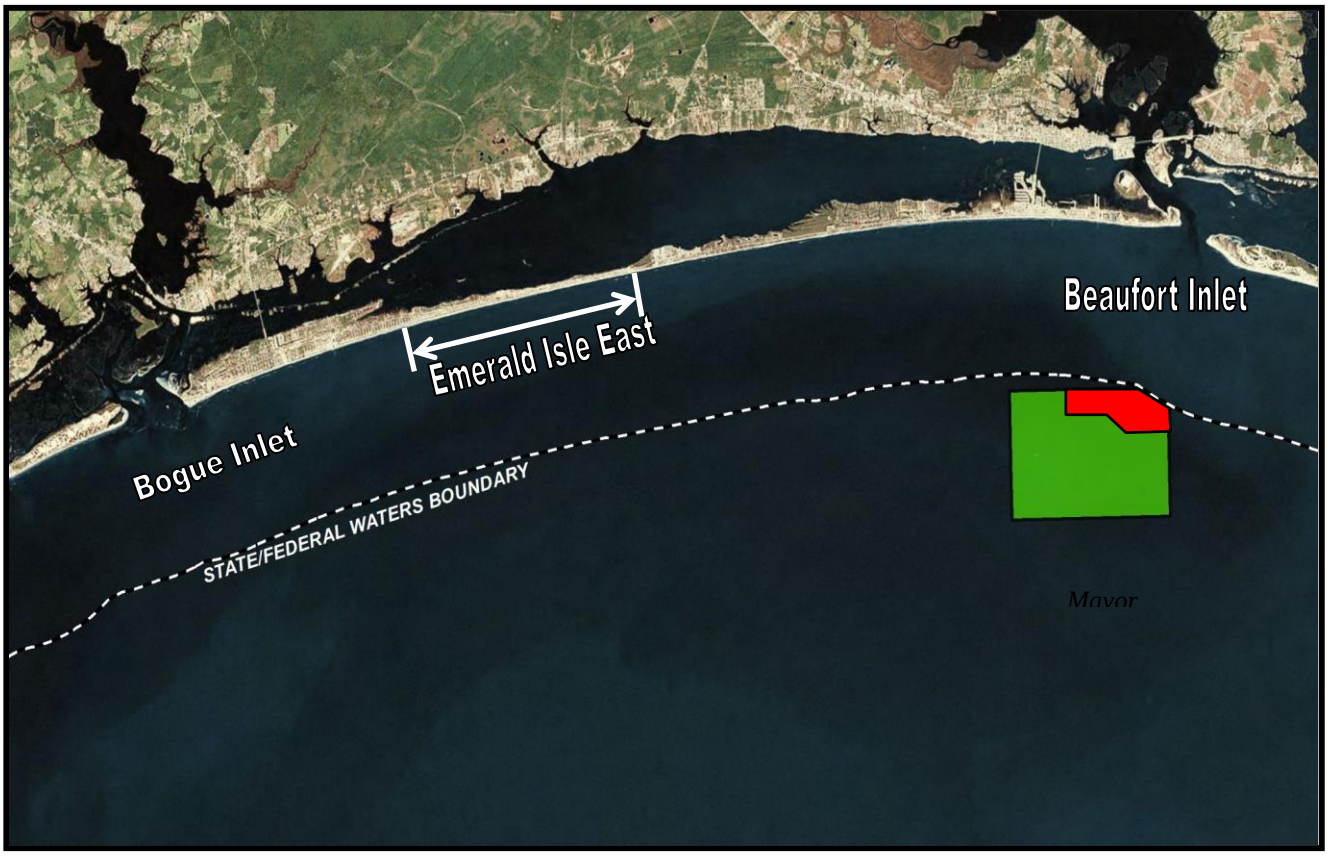
The Town's report, specifically pages 22-25, provides the following information about the history of the beach fill projects that have/will have taken place beginning in 1911:

PROJECT NOURISHMENT HISTORY.

The Emerald Isle East portion (Phase II) of the Bogue Banks Restoration Project has been nourished on two occasions following initial construction, both instances resulting from volume losses associated with declared natural disasters. The first event was Hurricane *Isabel* which impacted the Bogue Banks area in September 2003, only 5 months after initial construction of Phase II. The second was Hurricane *Ophelia* which passed through the area in September 2005.

Following the advent of Hurricane *Isabel*, the Town of Emerald Isle applied to the Federal Emergency Management Agency (FEMA) for funds to restore the material lost during *Isabel* under Category G of FEMA's Public Assistance Program. Specifically, the Public Assistance Program allows FEMA to provide funds to restore an "improved" or engineered beach providing the applicant can demonstrate the beach fill project had a designed template and grain size, a maintenance plan, and pre- and post-storm beach profile surveys. In its application, the Town of Emerald Isle was able to demonstrate it met all of the FEMA requirements including an engineered beach, a nourishment plan, and monitoring program and was subsequently approved to receive funds to restore the beach to the pre-storm condition.

Based on profiles of the beach taken before and after Hurricane *Isabel*, the Town of Emerald Isle was able to substantiate the loss of 121,000 cubic yards of material from two sections of Phase II, one located between profile stations 30 and 36 and the other between stations 38 and 43 (Figure 2). Emerald Isle obtained modifications to its original permits from both the Corps of Engineers and the Division of Coastal Management and completed the restoration of the project during March and April 2004. The final volume of material actually placed along the two eroded sections totaled 156,000 cubic yards. One hundred percent (100%) of the approximately $1.8 million cost of the restoration project was paid for by FEMA. In addition to obtaining a permit to restore the eroded material, the permit modification included the use of material from the northern sections of the



Morehead City Harbor Offshore Dredged Material Disposal Site (ODMDS) located seaward of the Beaufort Inlet ocean bar (Figure 13). The decision to use the ODMDS as a borrow site for the post-*Isabel* restoration was based on the desires of Emerald Isle to use only high quality beach compatible material even though the cost of transporting material from the ODMDS via hopper dredges would be more costly than using either borrow areas B2 or A. The Town of Emerald Isle was able to reduce the cost for the post-*Isabel* restoration project by combining the post-storm restoration project with a Section 933 project associated with the Morehead City Harbor federal navigation project which placed material on India Beach located just to the east of the Phase II project shoreline.

B. Design of the initial fill projects and past/planned maintenance Second factor per 15A NCAC 7J.1202(d)(2)

The Town's report, specifically pages 3-10, 22, 25-27, has the following information about how the project has performed in the past and the proposed future design of future beach fill projects for Emerald Isle:

PROJECT DESIGN.

During the active tropical storm period from 1996 to 1999, most areas along Bogue Banks experienced substantial damage to ocean front properties. The one exception was the Town of Atlantic Beach which did not experience any appreciable damage. In this regard, the Town of Atlantic Beach and Fort Macon State Park were the recipients of almost 4.2 million cubic yards of sediment in 1986 and 4.6 million cubic yards in 1994, which were associated with maintenance and new construction of the Morehead City Harbor Project. The 1986 disposal operation included removal of sediment from Brandt Island (termed the Brandt Island pump-out), an upland disposal site for the Morehead City Harbor Project, and from maintenance of the inner harbor channels and turning basin. The 1994 operation included a combination of material from channel maintenance, new channel construction, and the second Brandt Island pump-out. As a result of these two disposal operations, Atlantic Beach had an exceptionally wide beach prior to the onslaught of the storms. Noting the lack of damage to Atlantic Beach, CSE targeted the profile condition along Atlantic Beach as the design template for the remainder of the island.

CSE surveyed 111 transects (Figure 2) spaced approximately every 1,000 feet along the entire island and computed the volume of material residing on each profile between the toe of the dune seaward to the 12-foot NAVD (North American Vertical Datum) depth contour. Based on the volume computations for the profiles located within the town limits of Atlantic Beach (see example profile in Figure 3), CSE adopted a design volume between the toe of the dune and the -12-foot NAVD contour for the remainder of the island of 175 cubic yards/lineal foot. Given this design volume, CSE determined the volume of material that should be added to the shorelines of Pine Knoll Shores, Indian Beach, and Emerald Isle to increase the profile volume in these areas to 175 cubic yards/lineal foot. Since the purpose of the project at that time was to provide interim protection until the federal storm damage reduction project would be implemented, the total volume to be placed along the shoreline was increased by an amount deemed to be sufficient to accommodate 10 years of erosion at each location along the island.

The design profile volume for the Bogue Banks project was subsequently increased to 225 cubic yards per lineal foot to account for the volume of material from the landward toe of the dune to the seaward toe of the dune (CSE 2004).

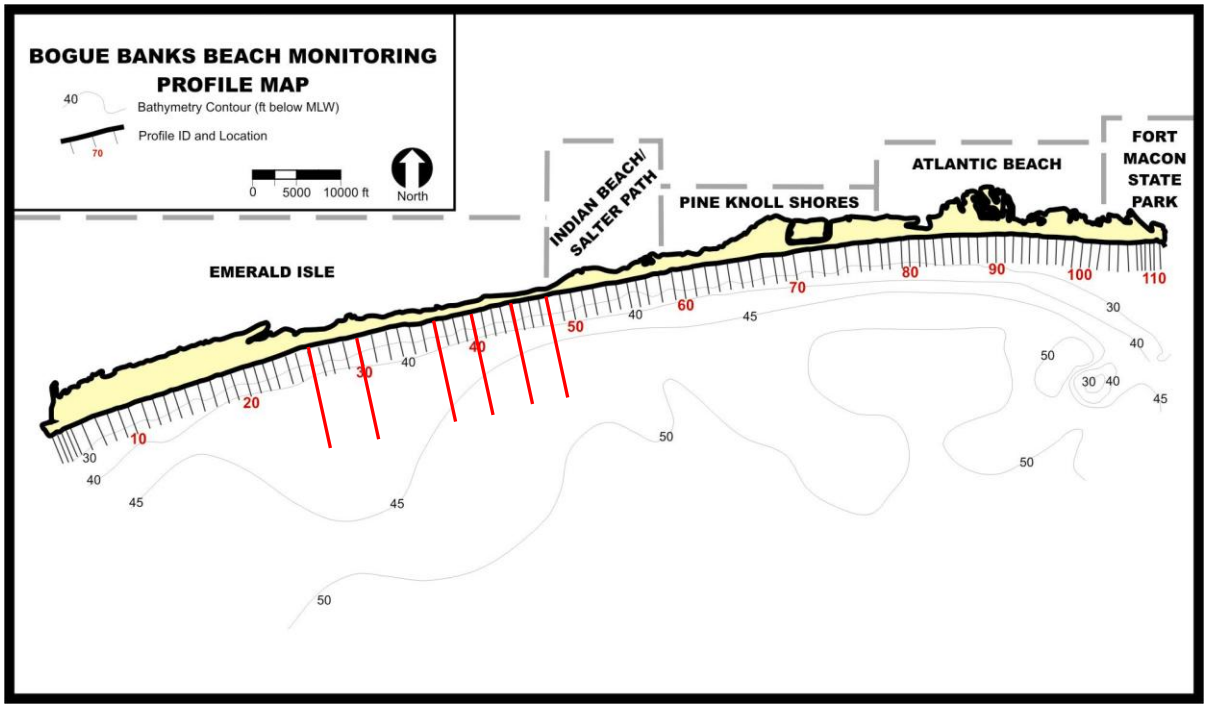


Figure 2. Location of 111 transects surveyed by CSE and location of typical profiles in Phase II – Emerald Isle East (shown in red). (Base map courtesy of the Carteret County Shore Protection Office).

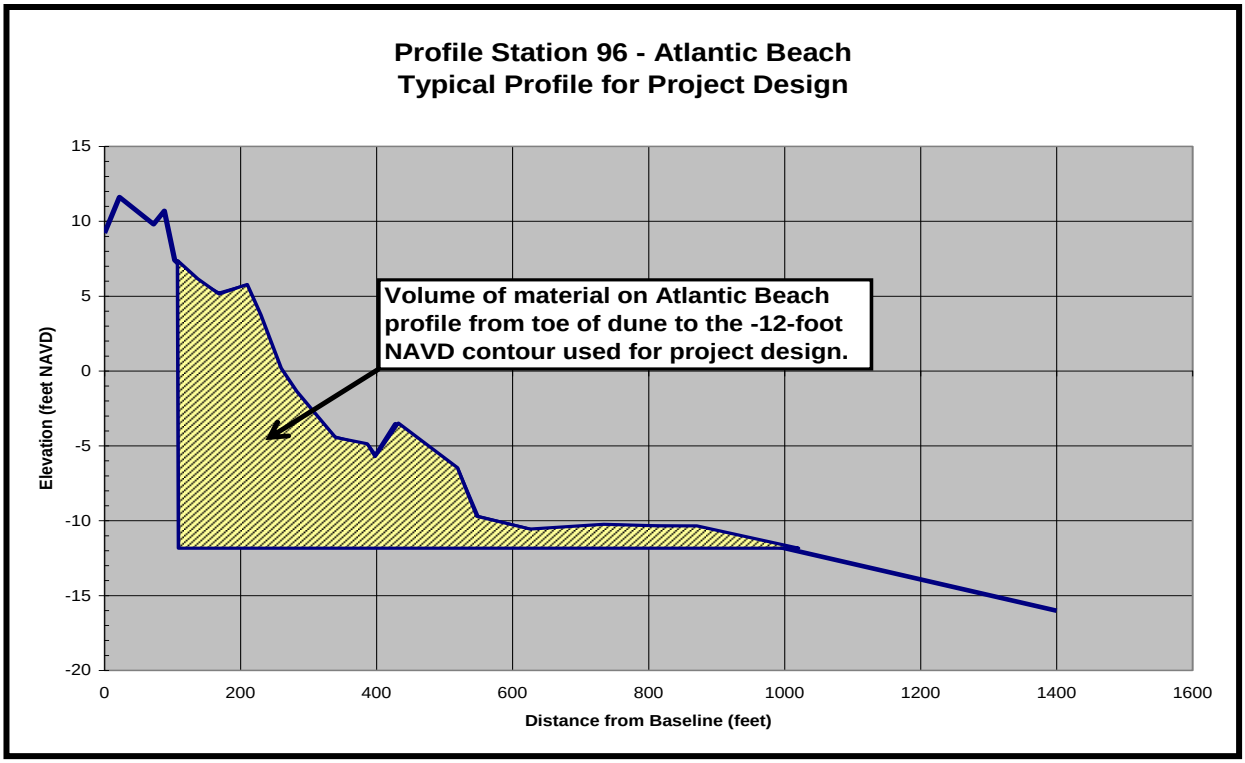


Figure 3. Typical profile on Atlantic Beach used to determine beach fill requirements for the remainder of Bogue Banks.

CSE divided Phase II of project (Emerald Isle East) into an Eastern, Middle, and Western Zone as shown in Figure 4 with different design volumes in each zone based on the volume needed to reach the design volume of 175 cubic yards/lineal foot and an advanced nourishment volume equal to expected volume losses in that zone over the next 10 years. The final design volume for each zone is shown in Figure 4. The Emerald Isle East portion of the project included a dune with a 10-foot wide crest at elevation +14 feet NAVD along the easternmost 2.2 miles of Emerald Isle (between stations 33 and 43). The new dune was only provided in areas where the existing dune was deemed inadequate to provide the desired level of protection. A 959-foot transition or taper section was provided on the east end of the fill and a 531-foot taper on the west end to help control losses of material off the ends of the fill. The plan layout of the Emerald Isle East project is shown on Figure 5. The beach fill was designed as a variable width horizontal berm at elevation +6.0 feet NAVD. Typical profiles showing the pre-nourishment and post-construction conditions are provided in Figures 6 to 11. The location of the typical profiles (Stations 26, 30, 36, 40, 44, & 48) are indicated by red lines in Figure 2.

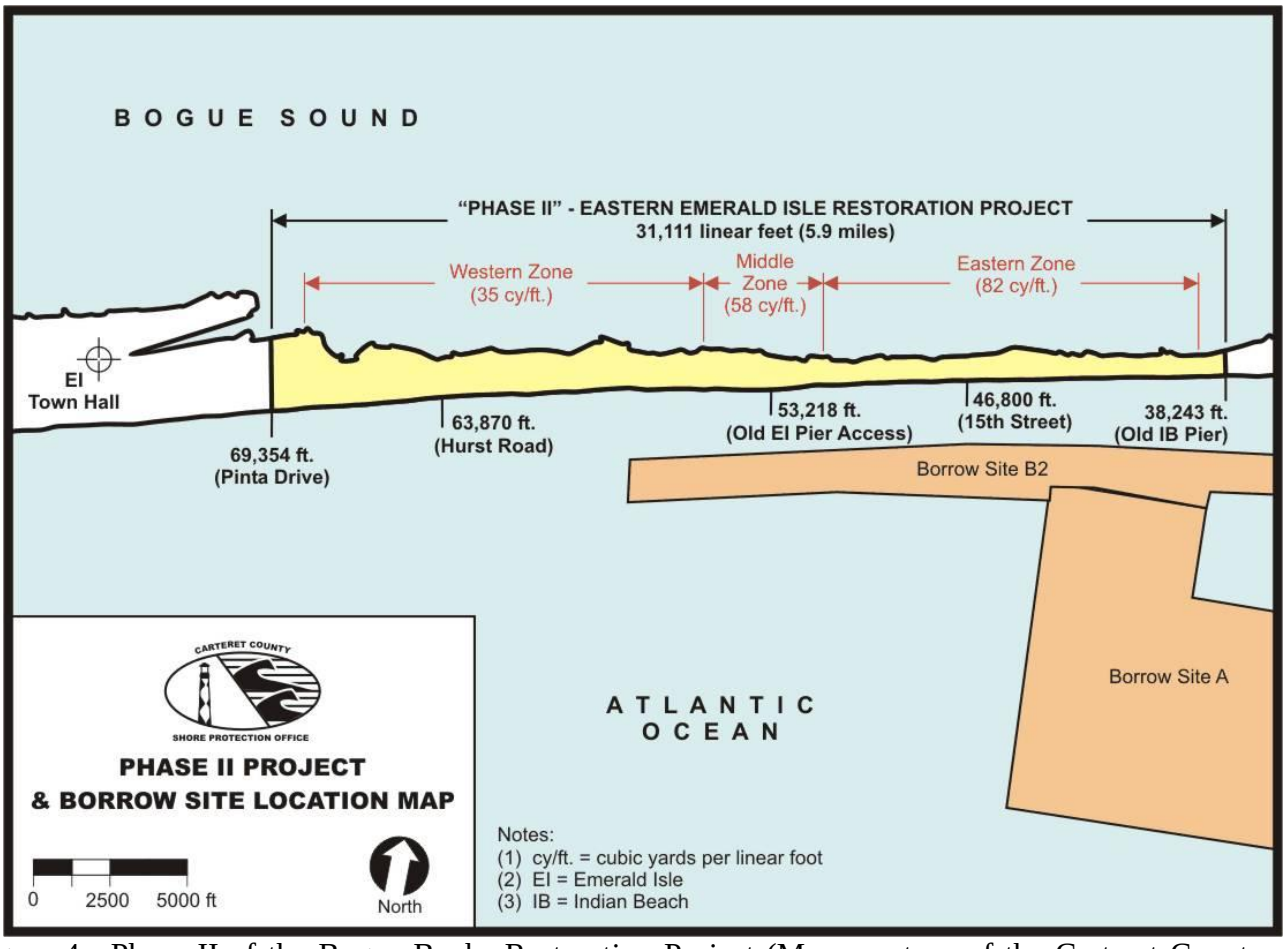


Figure 4. Phase II of the Bogue Banks Restoration Project (Map courtesy of the Carteret County Shore Protection Office).

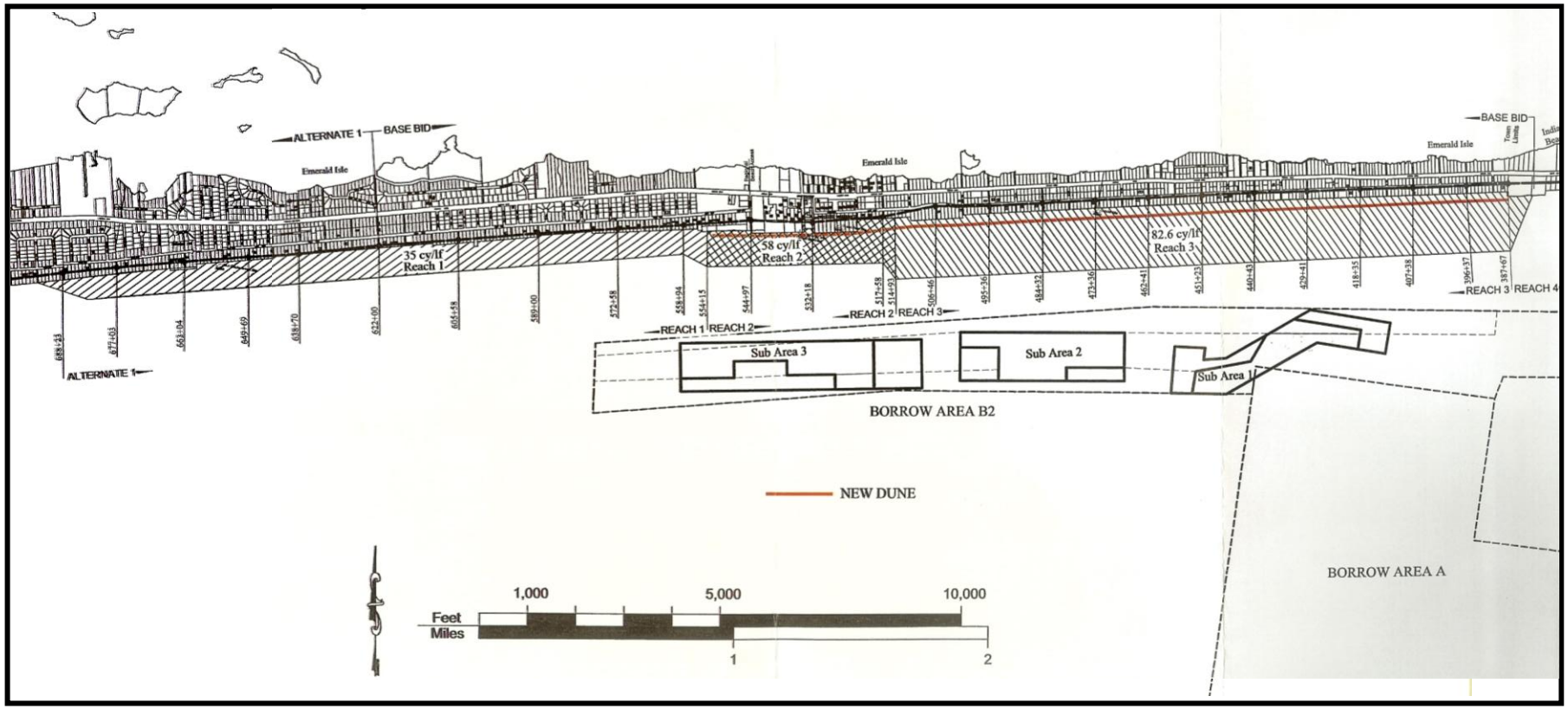


Figure 5. Plan view of Emerald Isle East beach fill project. Drawing adapted from Figure 2 in CSE 2003.

PROJECT CONSTRUCTION AND ESTABLISHMENT OF STATIC VEGETATION LINE.

The Emerald Isle East portion of the Bogue Banks Restoration Project (Phase II) was constructed between January 13 and March 27, 2003 by Weeks Marine, Inc. which used a combination of two hopper dredges and one cutter-suction pipeline dredge. As previously mentioned, material to construct Emerald Isle East was obtained from borrow areas B2 and A shown on Figure 1. The cutter-suction pipeline dredge, *RS Weeks*, worked exclusively in a portion of borrow area B2 which had been modified to allow excavation to 6 feet below the bottom. The *RS Weeks* delivered a total volume of 877,831 cubic yards and covered 10,479 feet of the project shoreline. The two hopper dredges, *RN Weeks and BE Lindholm*, removed material from various portions of borrow areas A and B2 delivering a total of 989,895 cubic yards that covered the remaining 20,632 feet of the project shoreline. Most of the hopper dredge material (89.2%) was derived from borrow area A. The total volume placed on the 5.9 mile shoreline segment was 1,867,726 cubic yards which is equivalent to 60.0 cubic yards/lineal foot. Of this total volume, 123,938 cubic yards were used for construction of the dune; 85,282 cubic yards were placed in the two taper sections with the balance of 1,658,506 cubic yards used to construct the new beach seaward of the dune. Based on after dredging surveys, the actual volume of material placed in each of the three zones shown in Figure 4 was: 444,800 cubic yards or 34.5 cubic yards/lineal foot in the Western Zone; 212,500 cubic yards or 54.2 cubic yards/lineal foot in the Middle Zone; and 1,001,300 cubic yards or 78.8 cubic yards/lineal foot in the Eastern Zone.

The static line rule in effect at the time the Emerald Isle East project was constructed required a static line be established for beach fills exceeding 250,000 cubic yards and a placement rate greater than 50 cubic yards/lineal foot. Although the placement rate in the Western Zone was less than 50 cubic yards/lineal foot, Emerald Isle East was treated as one project, and since the average placement rate over the 5.9 miles was 60.0 cubic yards/lineal foot, the entire project area was deemed subject to the static line requirement by the Division of Coastal Management.

PROJECT PERFORMANCE.

The performance of the Emerald Isle East project has been monitored on an annual basis by the island-wide beach profile monitoring program conducted under the auspices of the Carteret County Shore Protection Office. The profile monitoring program began in June 1999 prior to the construction of the beach fills projects. Annual reports summarizing the results of the monitoring surveys including the performance of the beach nourishment projects along Bogue Banks have been prepared since 2002-03 and are available from the Shore Protection Office website (www.protectthebeach.com).

The Emerald Isle East portion of the Bogue Banks Restoration Project includes a total of 24 profiles, numbered 25 to 48, that are surveyed annually and following significant storm events. Representative plots of the typical profiles 26, 30, 36, 40, 44, and 48, the location of which are indicated in Figure 2, are provided in Appendix A.

A plot of the cumulative changes in the volume of material from the back toe of the dune seaward to the -12-foot NAVD contour for Emerald Isle East is shown in Figure 14. This plot begins in June 1999, prior to the construction of the project, and extends through June 2009. The large jump in the cumulative volume curve in March 2003 was due to the initial construction of the project which added 1,867,726 cubic yards to the 5.9 mile long segment. Prior to initial construction, the volume of material within Emerald Isle East was only 140,235 cubic yards. The minor fill placed along limited sections of Emerald Isle East following Hurricane *Isabel* (156,000 cubic yards) and the larger fill placed in response to Hurricane *Ophelia* (344,400 cubic yards) are also indicated on the plot.

As discussed above, the periodic nourishment plan for Emerald Isle East calls for nourishment of the project once one-half of the fill placed seaward of the dune is lost to erosion. Based on post-construction surveys, 1,658,506 cubic yards was placed seaward of the dune to create the new beach with the balance of the material used to construct the new dune and the two taper sections. By adding one-half of the nourishment volume (829,253 cubic yards) to the pre-project profile volume within Emerald Isle East (140,235 cubic yards) yields a nourishment trigger volume of 969,488 cubic yards. This is shown by the horizontal red line in Figure 14. Said another way, once the volume of material within the bounds of Emerald Isle East (profile stations 25 to 48) and residing between the landward toe of the dune and the -12-foot NAVD contour is equal to or less than 969,488 cubic yards, the Town of Emerald Isle would perform periodic nourishment.

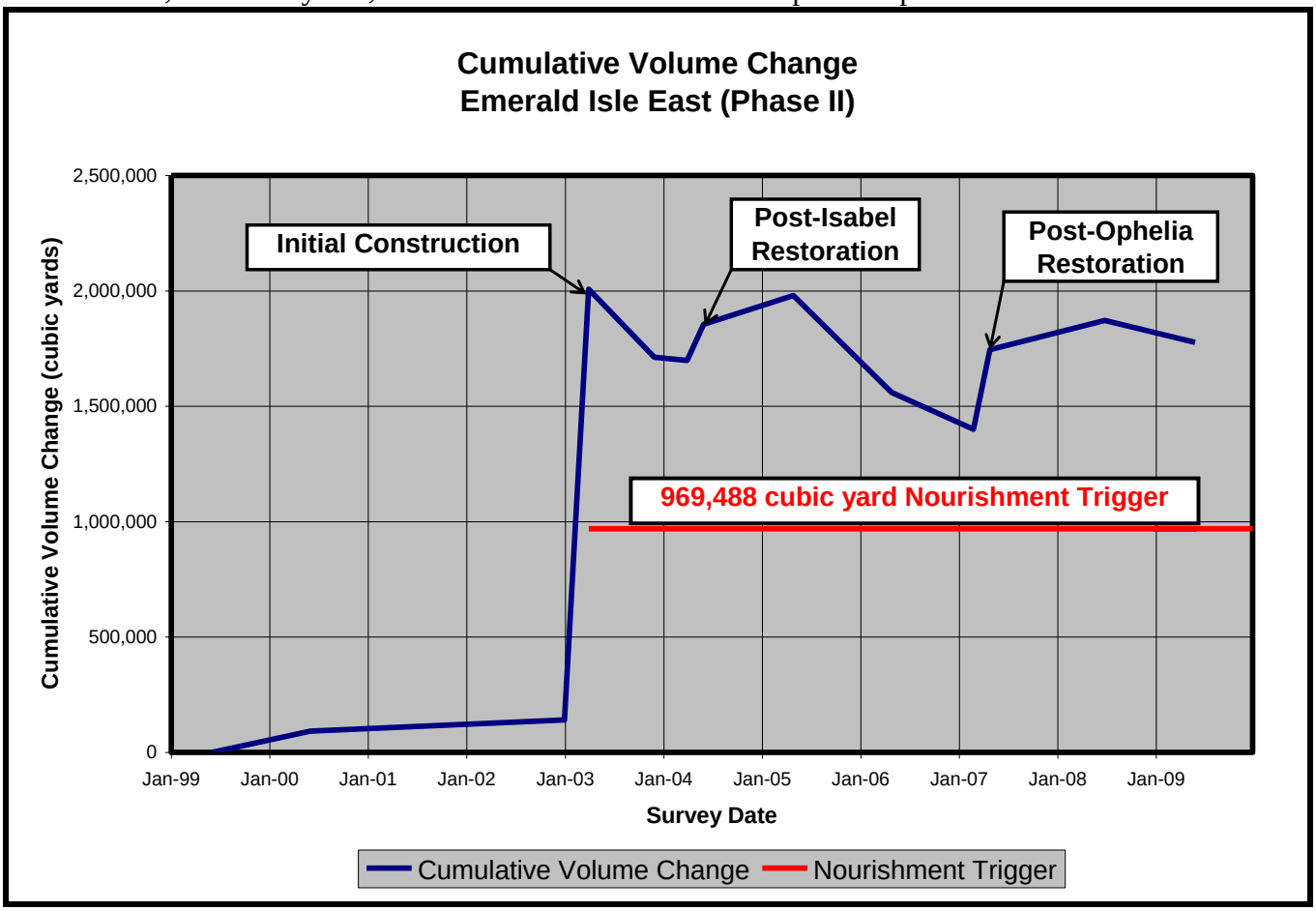


Figure 14. Cumulative beach profile vol change- Emerald Isle East – June 1999 to June 2009.

As of June 2009, the volume of material remaining on the beach within Emerald Isle East was 1,776,117 cubic yards compared to the post-construction volume measured in April 2003 of 2,007,961 cubic yards. This represents a net loss of 231,784 cubic yards over the 6.17 year period. However, the post-hurricane restorations added a total of 500,400 cubic yards to Emerald Isle East (156,000 cubic yards for *Isabel* and 344,400 cubic yards for *Ophelia*). In the absence of the post-storm fills, Emerald Isle East would have lost 732,184 cubic yards between April 2003 and June 2009. This represents an average annual volumetric loss rate of approximately 118,668 cubic yards/year, or an average loss of 4.1 cy/ft/yr.

The June 2009 profile volume was 806,689 cubic yards above the 969,488 cubic yard nourishment trigger. If the Emerald Isle East project continues to erode at 118,688 cubic yards/year, the volume of material within the project limits could drop to the nourishment trigger within the next 7 to 8 years. Periodic nourishment may not be required along the entire 5.9 mile segment as the profile monitoring surveys show the portion of the project between stations 25 and 36 appears to be more stable than the section from station 36 to 48.

Overall, the Emerald Isle East project has performed very well even with the advent of the two declared natural disasters that occurred within the first 2.5 years following initial construction. The average annual volumetric loss rate of 118,688 cubic yards/year is equivalent to 4.1 cubic yards/lineal foot of beach which is a relatively low loss rate compared to other beach nourishment projects.

PERIODIC NOURISHMENT PLAN.

The Bogue Banks Restoration Project was initially intended to be an interim measure aimed at protecting the island until a long-term (50 year) federal storm damage reduction project could be implemented. However, given the uncertainties associated with federal authorization for such a project and concerns over federal funding once federal authorization is attained, each of the island municipalities adopted periodic nourishment plans to assure adequate protection is maintained until the federal project is put in place. Also, Carteret County, acting through the Shore Protection Office, established a detailed beach profile monitoring program to document the condition of the beach fills placed along the island and determine where and when beach nourishment would be required.

Emerald Isle East Periodic Nourishment Plan. For the Phase II reach of the project covering Emerald Isle East, the periodic nourishment plan adopted by the Town of Emerald Isle dictates nourishment would be performed once one-half of the initial fill volume is lost to erosion. This periodic nourishment trigger excludes the volume of material placed in the dune and the volume placed in the two taper sections. Therefore, Emerald Isle will schedule maintenance of the Phase II shoreline when 829,253 cubic yards is lost from the initial fill. This periodic nourishment strategy is also represented in the Town's current FEMA Monitoring & Maintenance Plan that enables the Town to remain eligible for the cost reimbursement of replacing the volume of sand lost during a federally-declared disaster.

Again citing the uncertainties with continued federal involvement in shore protection, Carteret County has initiated a detailed assessment of the long-term shore protection requirements for Bogue Banks in the absence of federal funding that will also include compulsory documentation associated with State and National Environmental Protection Act coordination, and the successful procurement of permits to construct and maintain the Shore Protection Program. This long-term effort is directly related to and compliments the nourishment plan presented in this static line report as it will detail the many logistics required to execute future nourishment events (i.e., geotechnical and remotely-sensed information, habitat mapping, mitigation plans, endangered species considerations, etc.).

C. Compatible Sediment
Third factor per 15A NCAC 7J.1202(d)(3)

The Town's report, specifically pages 27-32, provide the following information about the availability of compatible sediment for future beach fill projects:

PLANNED BORROW AREAS.

The Town of Emerald Isle is primarily focusing on the ODMDS as a borrow source for maintenance of the Emerald Isle East project. However, the possible use of borrow sources identified by the USACE during planning for the 50-year federal project, which are closer to the project area, are also included in the town's long-range plans.

ODMDS. All the towns along Bogue Banks, including the Town of Emerald Isle, are targeting the ODMDS (Figure 13) as a future source of beach nourishment material to sustain the beach nourishment projects for at least the next 30 years. Between 1936 and 1994, all of the material removed from the Morehead City Harbor entrance channel through Beaufort Inlet was deposited in the ODMDS. Since 1995, approximately 3.8 million cubic yards of the maintenance material has been deposited in a near shore berm located on the west side of the Beaufort Inlet ebb tide delta (Figure 16) and the 2004 and 2007 maintenance operations placed the maintenance material directly on the shorelines of Indian Beach/Salter Path and Pine Knoll Shores under the authority of Section 933. Based on USACE dredging records (USACE 2001 & USACE 2001a to 2007), and adjusting for the volume of material placed in the near shore berm and directly on the beach under Section 933, the volume of material deposited in the ODMDS since 1936 totals approximately 47.8 million cubic yards.

The ODMDS shown in Figure 13 is the existing approved disposal area for the Morehead City Harbor Project. Prior to the establishment of the existing ODMDS, maintenance material was deposited in areas north of the existing site as well as east of the Beaufort Inlet ocean bar channel. In a study contracted by Carteret County to Olsen Associates, Inc. of Jacksonville, Florida (Olsen 2006), Olsen was able to account for up to 35.5 million cubic yards in both the existing and historic offshore disposal areas. Obviously, development of the existing ODMDS and other historic ocean disposal sites as borrow sites will require additional geotechnical investigations in order to comply with State sediment criteria (15A NCAC 07H.0312). However, based on Olsen's study, and adjusting for the 1.4 million cubic yards removed to restore the beaches following Hurricanes *Isabel* and *Ophelia*, the volume of beach compatible material in or

near the existing ODMDS should total well over 30 million cubic yards. In a Section 111 report prepared by the USACE to evaluate the possible impacts of the Morehead City Harbor Project on the adjacent shorelines, the USACE estimated over 32 million cubic yards of beach compatible material had been deposited in the ODMDS since 1936 (USACE 2001).

Maintenance of the Morehead City Harbor Project will continue over the next 30 years with additional material being deposited in the ODMDS. However, while over one million cubic yards of material is removed from the ocean bar channel of Beaufort Inlet each year, at the urging of Carteret County, the USACE is in the process of reformulating the dredged material management plan for the harbor which could result in less material being placed in the ODMDS and more placed directly on the shorelines of Fort Macon and Atlantic Beach during maintenance dredging operations. In any event, disposal of some of the maintenance material in the ODMDS will likely continue over the next 30 years which could increase the available volume to at least 33 to 36 million cubic yards.

An estimate of the island-wide volumetric erosion that has occurred since April 2003 within the limits of the Bogue Banks Restoration Project is presented in Table 2. The unit volumes of material within each reach along Bogue Banks, measured from the seaward toe of the dune to the -12-foot NAVD depth contour, were derived from the 2007 monitoring report (CSE 2007a) and the 2008 and 2009 monitoring reports (Moffatt & Nichol 2008, Moffatt & Nichol 2009). Adjustments in the volume changes were made for the amount of beach fill placed within each reach from various nourishment operations since April 2003 including: (a) the 2005 initial construction of Emerald Isle West, (b) the 2004 and 2007 post-hurricane restorations, (c) Phase I of the Section 933 project along Indian Beach/Salter Path and Pine Knoll Shores (completed in 2004), and (d) Phase II of the Section 933 project also along portions of Indian Beach/Salter Path and Pine Knoll Shores completed in 2007.

The estimated volumetric erosion rate for the entire Bogue Banks Restoration Project through June 2009 totals 357,100 cubic yards/year. Over the next 30 years, approximately 10.7 million cubic yards of beach compatible material will be needed to maintain the entire Bogue Banks Restoration Project. With over 30 million cubic yards of material currently available in the ODMDS and potentially more material being added from maintenance of the Morehead City Harbor project, the ODMDS has a sufficient volume of material to satisfy nourishment requirements for the entire island-wide project including Emerald Isle East for at least the next 30 years.

Table 2. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[1]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.8	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.2	-4.1
Indian Beach/Salter Path	+181,185	855,952	-674,767	-109,400	30.0	-8.5
Pine Knoll Shores	+418,612	932,658	-514,046	-83,300	24.0	-3.5
Total for Bogue Banks Restoration Project				-357,100	100.0	-4.1

[1] Adjusted volume change = measured profile volume change minus fill added.

The demands for periodic nourishment material from the ODMDS include the section of the project designated as Emerald Isle West. As noted previously, Emerald Isle West was constructed with material removed from Bogue Inlet during the relocation of the inlet bar channel 3,500 feet to the west. Should the inlet bar channel migrate back to the east and pose a renewed threat to development on the extreme west end of Emerald Isle, the Town of Emerald Isle may seek permits to move the channel again. If so, material removed to relocate the channel could be used to nourish the Emerald Isle West portion of the Bogue Banks Restoration Project. Should that occur, the demand for material from the ODMDS over the next 30 years could be reduced by as much as 750,000 cubic yards to 1,000,000 cubic yards.

As mentioned above, the material contained within the existing ODMDS and the material in the other historic offshore disposal sites used for the Morehead City Harbor project will require detailed geotechnical investigations and documentation in accordance with the State Sediment Criteria (15A NCAC 07H.0312) to qualify the areas for use as beach fill borrow sites. However, based on the documented beach compatibility of the material removed from the ODMDS and deposited on the beach during the Hurricane *Isabel* and *Ophelia* restorations, the only issue that needs to be resolved is the exact location and thickness of the deposited material not its quality.

Sampling of material in the northern section of the ODMDS conducted by CSE for the post-Hurricane *Ophelia* Restoration included the collection of 14 vibracores ranging in length from 2.6 feet to 9.2 feet with an average length equal to 5.7 feet.

Grain size analysis of the samples taken from the 14 vibracores resulted in a composite mean of 1.71 phi (0.31 mm) and a standard deviation of 1.06 phi (CSE 2007b). The silt content was generally less than 2%. Comparison of the ODMDS material with the native beach sand resulted in an overfill factor of 1.35 which is considered a reasonably good match.

CSE also sampled the material once it had been placed on the beach, collecting 30 samples from the East Emerald Isle project area. The grain size of the material in place on the beach averaged 1.47 phi (0.36 mm) with an average silt content of only 0.15%. Precise measurements of the silt content in the vibracore samples were not provided by CSE (CSE, 2007), however, based on the extremely low silt content of the in place material and the larger average mean grain size of the in place material compared to the in situ vibracore samples, as noted previously, the filling and placement process associated with the hopper dredge operations apparently flushed much of the finer grained material from the fill prior to sampling. CSE did not analyze the shell content in the vibracore samples taken from the ODMDS but did analyze the calcium carbonate ($CACO_{3)}$ content of the in place material and found an average calcium carbonate content of 22.6%. Sampling of the native beach conducted by CSE prior to the construction of the Bogue Banks Restoration Project yielded an average shell content of the native beach of approximately 15%. The State Sediment Criteria for beach nourishment material allows borrow material to contain 15% more $CACO_3$ than the native beach. Assuming the 15% shell content found along the beach prior to construction of the Bogue Banks Restoration Project as a proxy for $CACO_3$ content, the threshold for $CACO_3$ would be 30%. Therefore, the amount of shell and/or $CACO_3$ in material deposited offshore of the Morehead City Harbor Project appears to fall well within the State Sediment Criteria.

The sampling of the ODMDS material for the post-Hurricane *Ophelia* project as well as visual observations of the material on the beach provides substantial evidence that the ODMDS material and other materials deposited near the existing ODMDS will be able to meet all of the requirements of 15A NCAC 07H.0312 and provide a source of material necessary to sustain not only the Emerald Isle East project but the entire shoreline of Bogue Banks from Pine Knoll Shores west to Bogue Inlet for at least 25 years as required by 15A NCAC 07J .1201 and much longer based on the estimated volume of material in the existing ODMDS and historic disposal sites near the ODMDS.

USACE Borrow Areas. Potential borrow areas identified by the USACE offshore of Bogue Banks are shown in red in Figure 16 (USACE 2009). The other areas identified in this figure represent potential sources of sediment that are under consideration for the long-term plan being formulated by Carteret County.

As indicated in Figure 16, the USACE is also evaluating the ODMDS as well as other areas near Beaufort Inlet as potential borrow areas for the 50-year federal storm damage reduction project. The USACE preliminary assessment of the beach compatible material in the offshore sites is: 6.4 million cubic yards in USACE-West; 17.0 million cubic yards in USACE-Central; and 7.2 million cubic yards in USACE-East for a total of 30.6 million cubic yards. However, the results of the USACE geotechnical investigations are very preliminary and do not meet the USACE sampling standards for project design or the standards contained in 15A NCAC 07H.0312 (State Sediment Criteria). Once detailed sampling is complete, the USACE estimate of the available volume of material will likely be reduced.

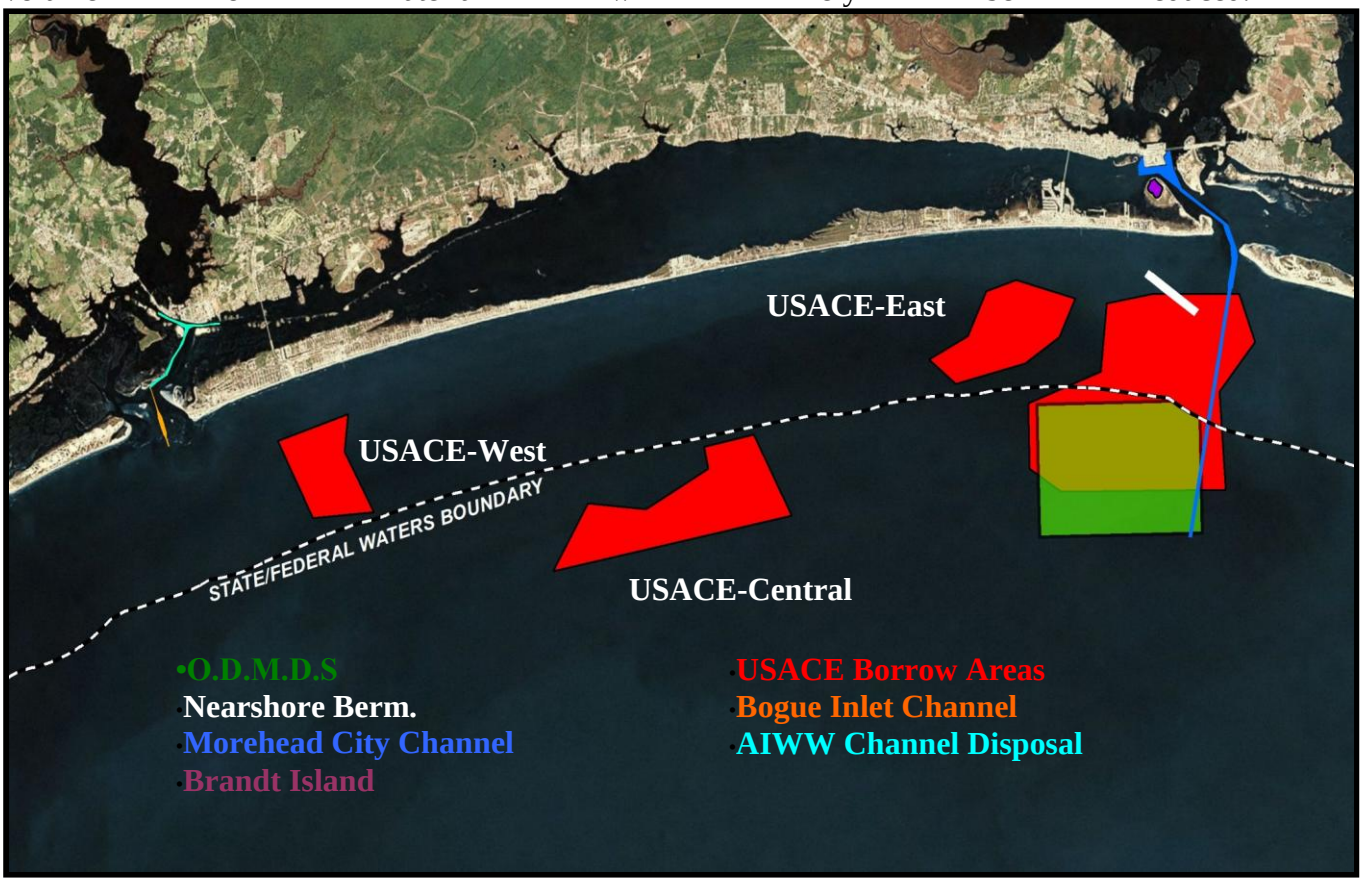


Figure 16. Potential USACE borrow areas (in red) and other sources of sediment near Bogue Banks.

Borrow Area Summary. While additional geotechnical investigations are needed to fully develop the existing ODMDS, the other areas near the existing ODMS, and the USACE sites into acceptable borrow areas for the Bogue Banks Restoration Project, including Emerald Isle East, the shear magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the Emerald Isle East project will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule. This may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined.

***

STAFF'S COMMENTS IN RESPONSE:

The Town's application states that "the shear (sic) magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the island-wide beach management plan will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule." The application continues: "This [ODMDS material] may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined." A full analysis of the ODMDS and additional potential offshore sites have not been conducted to the extent required by 15A NCAC 07H.0312. However, because the ODMDS is considered to have the requisite volume for the island-wide beach management plan for the duration of the plan, and since this material in the ODMDS was removed directly from the navigation channel at the Port of Morehead City, it is considered to be littoral sand from the nearshore system and, for this purpose, compatible.

Financial Resources-
Fourth factor per 15A NCAC 7J.1202(d)(4)

The Town's report, specifically pages 32-38, provide the following information about the financial resources planned for future beach fill projects:

FINANCIAL PLAN.

9.1. Introduction. The Emerald Isle project is one segment of an island-wide Bogue Banks Restoration Project that includes the island communities of Pine Knoll Shores, Indian Beach, Salter Path and Emerald Isle. Funding for the Bogue Banks Restoration Project was provided by each island community as well as Carteret County. As Carteret County moves forward with the formulation of its long-range protection plan, funding for the project would continue to be provided by the individual communities, however, Carteret County would assume a major role in providing the necessary funding for periodic nourishment through distribution of funds from the County Beach Nourishment Fund that is supported by revenues generated by the room occupancy tax. While the Town of Atlantic Beach is not included in the Bogue Banks Restoration Project, Carteret County would provide financial support to assure disposal operations associated with maintenance of the Morehead City Harbor project extend along the full length of the town's shoreline. Financial support for Atlantic Beach from Carteret County would also be derived from the Beach Nourishment Fund.

Since periodic nourishment of all of the projects along Bogue Banks are inter-linked and depend on the County Beach Nourishment Fund as well as funds that would be provided by each community and the State of North Carolina, the financial plan presented here is applicable to each community on Bogue Banks.

9.2. Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 2 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of

the various reaches along the island would be accomplished when the volume of material residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Note this nourishment criteria is more stringent than the one the Town of Emerald Isle and other towns on the island adopted to remain eligible for FEMA post-disaster assistance and will be used to develop funding needs over the next 25 to 30 years. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

9.3. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 3 provides a cost estimate for each operation based on current (2010) dollars.

Table 3. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[(1)]				$175,000
S&A[(1)]				$175,000
Total Cost/Operation				$14,253,000

[(1)] E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004. While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the 2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

9.4. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection, as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget constraints do not allow material to be distributed along the entire Atlantic Beach shoreline. Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

9.5. Funding/Cost Allocation. As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be

sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Emerald Isle.

The balance of necessary beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities.

Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 4.

Table 4. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.
[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

9.6. County Room Occupancy Tax/Beach Nourishment Fund. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 17 (blue line).

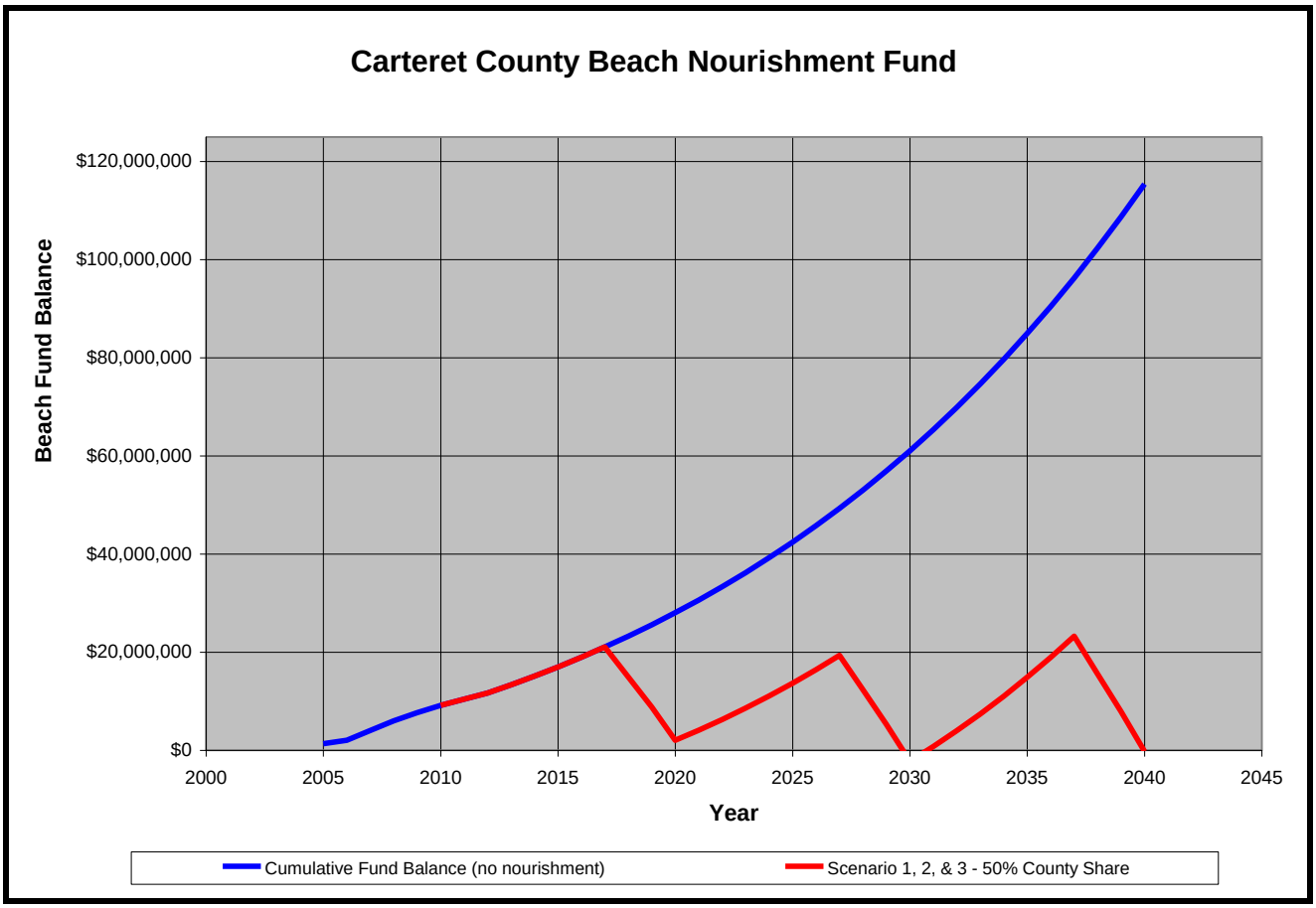


Figure 17. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 17 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

9.7. Emerald Isle Funding Source. As noted above, the Town of Emerald Isle will need to provide $21.2 million over the 30-year time frame for future beach nourishment costs in Emerald Isle. The Town's financial plan, outlined below, is expected to generate approximately $24.2 million over the 30-year planning period.

The Town completed primarily locally-funded beach nourishment projects in 2003 and 2005, and generated more than $19.1 million of local funding for these projects (and also received a $3.8 million State contribution). A total of $17 million was generated through the sale of General Obligation bonds, and approximately $2.1 million was generated through higher than anticipated special district tax revenues. Because the Town issued General Obligation bonds, the voters of the Town were required to approve the issuance of this debt and approved a $17 million bond referendum in 2002. The Town committed to fund the vast majority of debt service payments for these bonds with special district tax revenues levied for this purpose.

These special district taxes have been levied by the Town every year since FY 02-03. These special district taxes were initially established at rates of 48 cents per $100 of assessed value on all oceanfront and inlet-front properties and 3 cents on all other properties (FY 02-03 through FY 06-07), but the rates were decreased to the revenue-neutral rates of 16.2 cents and 1.1 cent after the 2007 Carteret County tax revaluation (and have remained constant since FY 07-08). The Town currently levies special district taxes with rates of 16.2 cents and 1.1 cent, and FY 10-11 is the final year these taxes are necessary to fund debt service payments. It is important to note that these special district taxes have been levied annually in June by the Board of Commissioners as part of the adoption of the Town's official budget ordinance. NC General Statutes do not allow a town to establish multi-year property tax rates, however, the Board of Commissioners has historically levied the same special district tax rates each year. The Town made this commitment to its taxpayers in 2002, and has steadfastly honored that commitment since that time.

The Emerald Isle Board of Commissioners has repeatedly gone on record over the past 2 years with its intent to levy new special district taxes to fund the Town's share of future beach nourishment costs outlined in this report. The Board of Commissioners, by adoption of this plan, has committed to levy new special district taxes beginning in FY 11-12, with a special district tax rate of 3 cents on all oceanfront and inlet-front properties and 1 cent on all other properties (see Resolution in Appendix B). The levy of these new special district taxes will yield annual revenues of approximately $655,000 beginning in FY 11-12. Assuming a 1% annual growth rate in this revenue source, and investment of fund balance with interest earnings of 2% annually, this new tax will generate approximately $24.2 million over the 30-year period, which is approximately $3 million more than the required amount of $21.2 million. These and any other additional funds generated over time, beyond those required, will be retained to cover higher than anticipated costs and/or greater than anticipated nourishment volumes.

The process to establish special tax districts (technical name is "municipal service districts") is outlined in NC General Statutes 160A-535 through 160A-549. The process involves the scheduling of a public hearing, publishing the proper notice, mailing notices to all affected property owners, conducting a public hearing, and the adoption of a Board resolution. No voter approval is required (i.e., referendum) to establish special tax districts. As noted above, the

annual tax rates for special tax districts are determined annually in June by the Board as part of the official budget ordinance. The Town will establish new special tax districts for the future beach nourishment costs outlined in this report in 2011. Because there will be a significant reduction in the special district tax rates (from 16.2 cents to 3 cents, and from 1.1 cent to 1 cent), the Board is confident in the community's acceptance of this tax structure. This plan has been well-publicized in Emerald Isle over the past 2 years, with discussion at numerous Town meetings, articles in the Town's monthly newsletter, articles in local newspapers, and presentations to various groups.

This funding strategy is also intended to provide sufficient cash flows to enable future Emerald Isle beach nourishment costs to be funded on a pay-as-you-go basis, and thus avoid the use of debt financing and the need for a future bond referendum. The Town expects that the timing of future beach nourishment needs, County room occupancy tax revenues, Town special district tax revenues, and State funding will be such that the necessary funding will be in-hand prior to incurring future beach nourishment construction costs.

Detailed County and Town revenue projections are included in Appendix B

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STAFF'S COMMENTS IN RESPONSE:

Half of the Emerald Isle portion of the island-wide beach management project will be covered by Carteret County's beach nourishment monies funded through the Carteret County room occupancy tax. The remainder of the funding is expected to be received through State water resource grants (25% through the Division of Water Resources) and local special tax districts (25% from the Town). DCM is comfortable with this cost-share assumption as it reflects the actual funding percentage that DWR has provided to local governments during the past decade for the State's share in Federal Beach shore protection projects. DCM understands that the special tax district currently in place in the Town must receive annual approval as part of the budget process, but historic performance has shown this tax district to be widely accepted by the Town and effective to pay the debt service on past beach fill projects. Further, the tax rate needed to meet the projections outlined in the Town's static line exception application is lower than the current tax rate in the Town's special tax districts and appears to be a realistic assumption that this method of financing can and will continue to occur for beach management funding. A signed resolution passed by the Town is included as supplemental information, which shows the commitment of local officials to accept this funding scenario as part of the island-wide beach management plan outlined in the Town's static line exception application.

IV. Staff's Recommendation

The Commission, through 15A NCAC 7J.1202(a)(4), directs Staff to provide a recommendation to the Commission whether it should grant or deny the Petitioner's Static Line Exception Request. Based on the Town's report and additional exhibits attached**,** Staff recommends that the Commission **GRANT** the Town's Petition for a Static Line Exception, and authorize the use of the rules at 15A NCAC 7H.0306(a)(8).

ATTACHMENT C
Petitioner's Report

Petitioner's Initial Report is Attached as an electronic file so that the report's photographs and diagrams can be viewed in color.

Emerald Isle, NC
Static Line Exception Application Report

MARCH 2010

Prepared by:
Coastal Planning & Engineering of NC
For:
Town of Emerald Isle, NC

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EMERALD ISLE, NC
STATIC LINE EXCEPTION APPLICATION REPORT

1. PURPOSE.

The Town of Emerald Isle (TOWN) is seeking an exception to the static vegetation line in accordance with the procedures outlined in 15A NCAC 07J .1201. A static vegetation line was established along the eastern 5.9 miles of the town's approximate 11 mile ocean shoreline as a result of a large scale beach nourishment project constructed in 2003. The static vegetation line together with the recently adopted rule establishing graduated setback requirements based on building size (15A NCAC 07h .0306) has rendered 171 ocean front properties non-conforming, 160 of which are occupied with structures ranging in size from less than 1,000 square feet to over 4,000 square feet. Twenty-three (23) of the 160 non-conforming structures have heated floor spaces greater than 2,500 square feet. Note that the number of structures does not include the Ocean Reef and Pier Point Condominiums. Even if the static line exception is granted, 10 of the Ocean Reef buildings and 5 of the Pier Point buildings will continue to be non-conforming under the newly adopted graduated setback rule. The following report provides information in support of the static line exception application as required by 15A NCAC 07J .1201.

2. PROJECT BACKGROUND.

In 1999, Carteret County, acting through its Beach Preservation Task Force (a forerunner to the Shore Protection Office), initiated planning for an island-wide shore protection project aimed at providing interim protection to development and infrastructure along the island until a long-term storm damage reduction project could be designed and implemented by the Corps of Engineers. The island-wide plan developed by the county is called the Bogue Banks Restoration Project. The county contracted Coastal Science & Engineering, PLLC (CSE) of Morehead City, NC to develop the plan. CSE also prepared an Environmental Assessment under the National Environmental Policy Act (CSE 2001a) and an Environmental Impact Statement required by the State Environmental Policy Act (CSE 2001b). The conceptual plan developed for the island-wide project is detailed in a report prepared by CSE entitled "Executive Summary – Shoreline Assessment and Preliminary Beach Restoration Plan, Bogue Banks, North Carolina" (CSE 1999). Following the review and approval of federal and state environmental documents, the project received a CAMA Major Permit Number 124-01 dated October 5, 2001 and a Department of the Army Permit #200000362 dated October 26, 2001. Minor modifications to the CAMA Major Permit were approved on October 4, 2002 with these same modification approved by the Department of the Army on October 22, 2002. The permit modifications were granted prior to the construction of Phase II of the Bogue Banks Restoration Project which covered the eastern 5.9 miles of the Emerald Isle shoreline.

The Bogue Banks Restoration Plan covers approximately 16.8 miles of the 25 mile long island and extends from the Atlantic Beach/Pine Knoll Shores (AB/PKS) town boundary west to approximately one mile east of Bogue Inlet (Figure 1). The project is sponsored by Carteret County with the Towns of Pine Knoll Shores, Indian Beach, and Emerald Isle included in the permits as co-permittees. The Town of Atlantic Beach was not included in the island-wide plan as it is the recipient of navigation maintenance material derived from the Morehead City Harbor federal navigation project.

The Island-wide project was implemented in three phases as shown in Figure 1. Phase I was accomplished in 2001-02 and included 7.4 miles of shoreline extending from the AB/PKS town boundary west to the Indian Beach/Emerald Isle (IB/EI) town boundary (Stations 48 to 76 on Figure 2). Material to construct Phase I was obtained from the offshore borrow areas designated as B1 and A in Figure 1. Phase II, the focus of this static line exception request, was constructed in 2003 and covered the eastern 5.9 miles of Emerald Isle west of the IB/EI town boundary to a point approximately 1.5 miles east of the Bogue Inlet Fishing Pier (Stations 25 to 48 in Figure 2). Material for Phase II was obtained from borrow areas B2 and A (Figure 1). The modifications to the permits mentioned above were associated with changes in the length of Phase II and changes in the limits and dredge depths in borrow area B2. Phase III was constructed during the winter of 2005 with material removed from Bogue Inlet as part of the Bogue Inlet Channel Erosion Response project. Phase III covered the westernmost 4.5 miles of Emerald Isle to within about 1 mile east of Bogue Inlet (Stations 8 to 25 in Figure 2).

The Emerald Isle East (Phase II) Project was constructed in 2003 and included design specifications that triggered a static line and therefore satisfies a requirement of 15A NCAC 07J .1201 whereby the project must have been in place a minimum of 5 years prior to making the exception request.

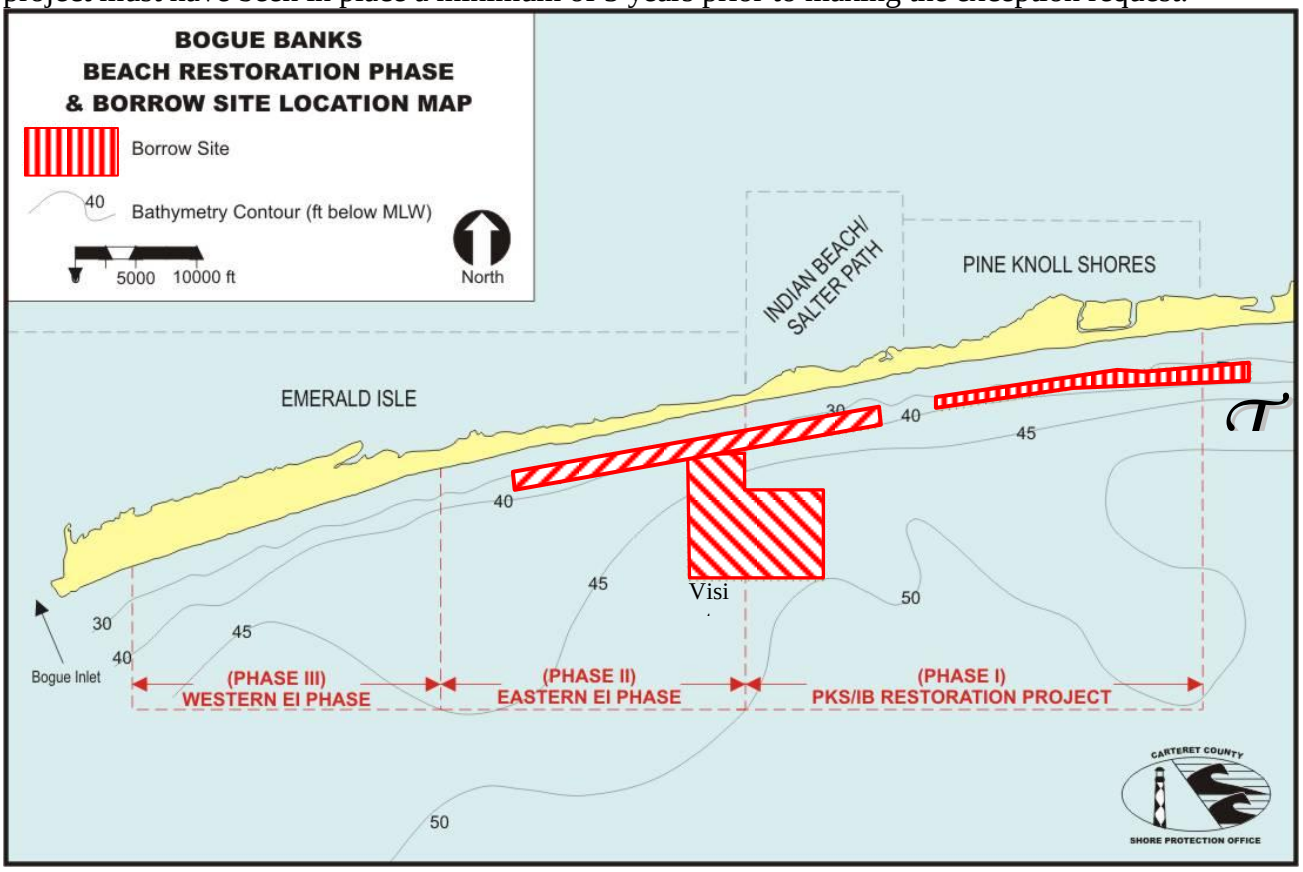

Figure 1. Bogue Banks Restoration Project (Map courtesy of the Carteret County Shore Protection Office).

3. PROJECT DESIGN.

During the active tropical storm period from 1996 to 1999, most areas along Bogue Banks experienced substantial damage to ocean front properties. The one exception was the Town of Atlantic Beach which did not experience any appreciable damage. In this regard, the Town of Atlantic Beach and Fort Macon State Park were the recipients of almost 4.2 million cubic yards of sediment in 1986 and 4.6 million cubic yards in 1994, which were associated with maintenance and new construction of the Morehead City Harbor Project. The 1986 disposal operation included removal of sediment from Brandt Island (termed the Brandt Island pump-out), an upland disposal site for the Morehead City Harbor Project, and from maintenance of the inner harbor channels and turning basin. The 1994 operation included a combination of material from channel maintenance, new channel construction, and the second Brandt Island pump-out. As a result of these two disposal operations, Atlantic Beach had an exceptionally wide beach prior to the onslaught of the storms. Noting the lack of damage to Atlantic Beach, CSE targeted the profile condition along Atlantic Beach as the design template for the remainder of the island.

CSE surveyed 111 transects (Figure 2) spaced approximately every 1,000 feet along the entire island and computed the volume of material residing on each profile between the toe of the dune seaward to the 12-foot NAVD (North American Vertical Datum) depth contour. Based on the volume computations for the profiles located within the town limits of Atlantic Beach (see example profile in Figure 3), CSE adopted a design volume between the toe of the dune and the -12-foot NAVD contour for the remainder of the island of 175 cubic yards/lineal foot. Given this design volume, CSE determined the volume of material that should be added to the shorelines of Pine Knoll Shores, Indian Beach, and Emerald Isle to increase the profile volume in these areas to 175 cubic yards/lineal foot. Since the purpose of the project at that time was to provide interim protection until the federal storm damage reduction project would be implemented, the total volume to be placed along the shoreline was increased by an amount deemed to be sufficient to accommodate 10 years of erosion at each location along the island.

The design profile volume for the Bogue Banks project was subsequently increased to 225 cubic yards per lineal foot to account for the volume of material from the landward toe of the dune to the seaward toe of the dune (CSE 2004).

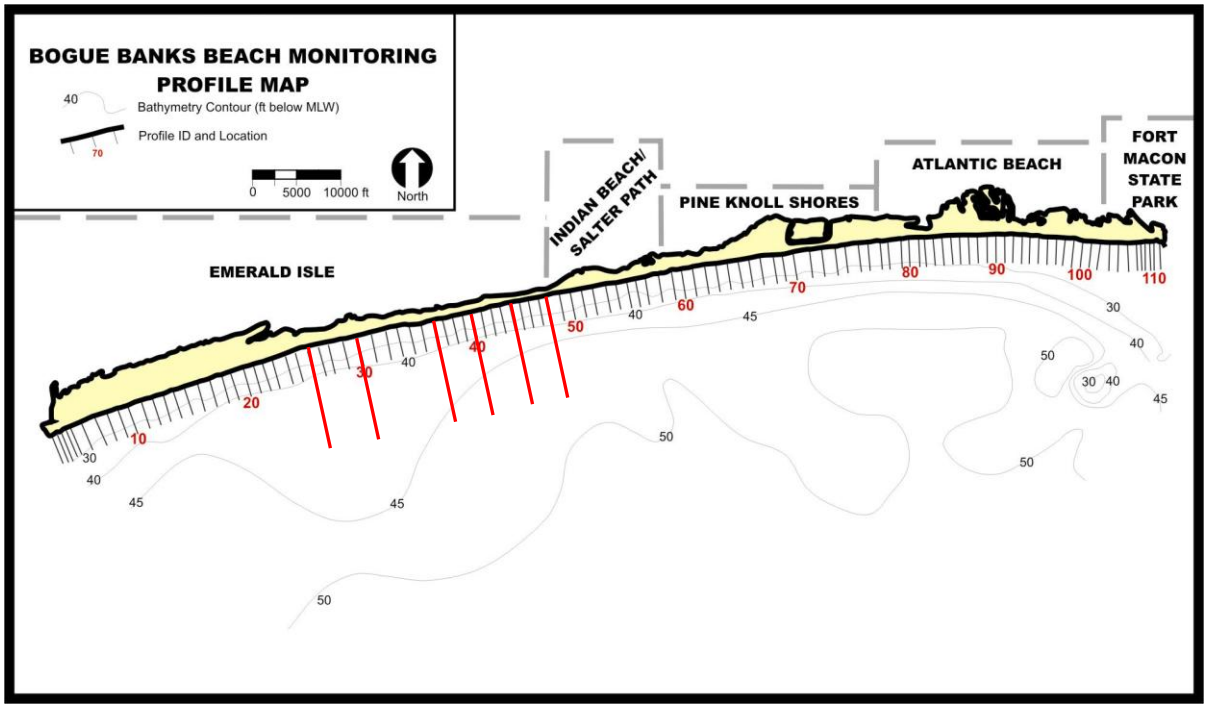

Figure 2. Location of 111 transects surveyed by CSE and location of typical profiles in Phase II – Emerald Isle East (shown in red). (Base map courtesy of the Carteret County Shore Protection Office).

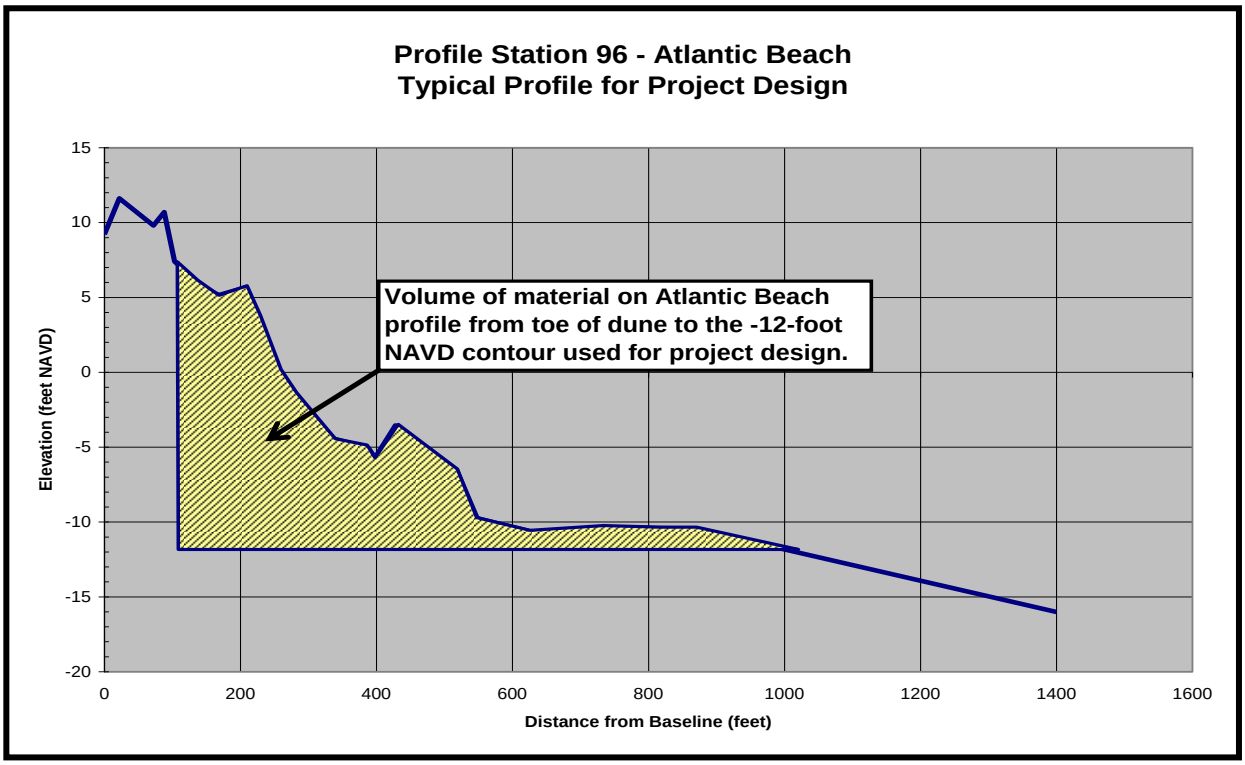

Figure 3. Typical profile on Atlantic Beach used to determine beach fill requirements for the remainder of Bogue Banks.

CSE divided Phase II of project (Emerald Isle East) into an Eastern, Middle, and Western Zone as shown in Figure 4 with different design volumes in each zone based on the volume needed to reach the design volume of 175 cubic yards/lineal foot and an advanced nourishment volume equal to expected volume losses in that zone over the next 10 years. The final design volume for each zone is shown in Figure 4. The Emerald Isle East portion of the project included a dune with a 10-foot wide crest at elevation +14 feet NAVD along the easternmost 2.2 miles of Emerald Isle (between stations 33 and 43). The new dune was only provided in areas where the existing dune was deemed inadequate to provide the desired level of protection. A 959-foot transition or taper section was provided on the east end of the fill and a 531-foot taper on the west end to help control losses of material off the ends of the fill. The plan layout of the Emerald Isle East project is shown on Figure 5. The beach fill was designed as a variable width horizontal berm at elevation +6.0 feet NAVD. Typical profiles showing the pre-nourishment and post-construction conditions are provided in Figures 6 to 11. The location of the typical profiles (Stations 26, 30, 36, 40, 44, & 48) are indicated by red lines in Figure 2.

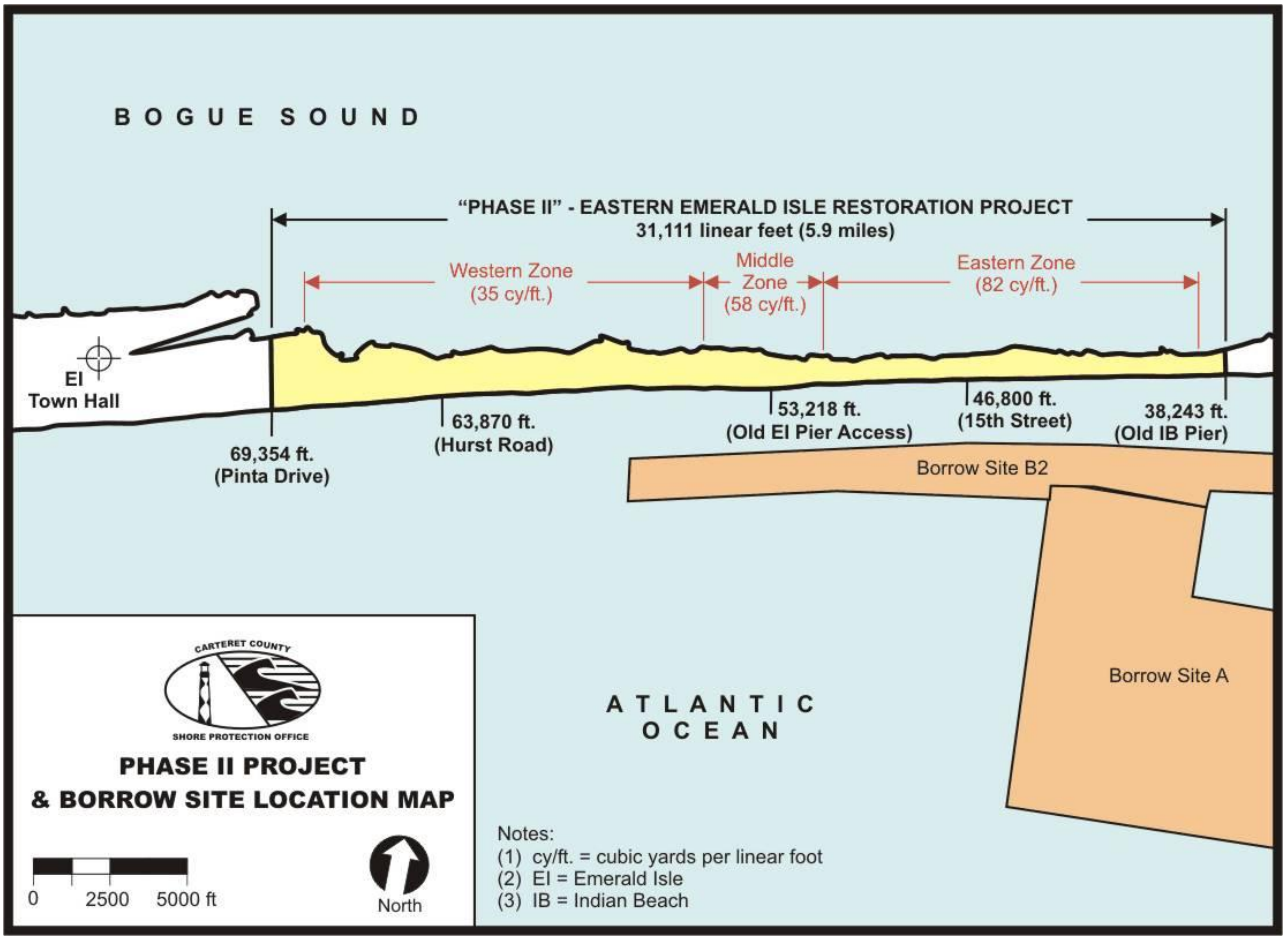

Figure 4. Phase II of the Bogue Banks Restoration Project (Map courtesy of the Carteret County Shore Protection Office).

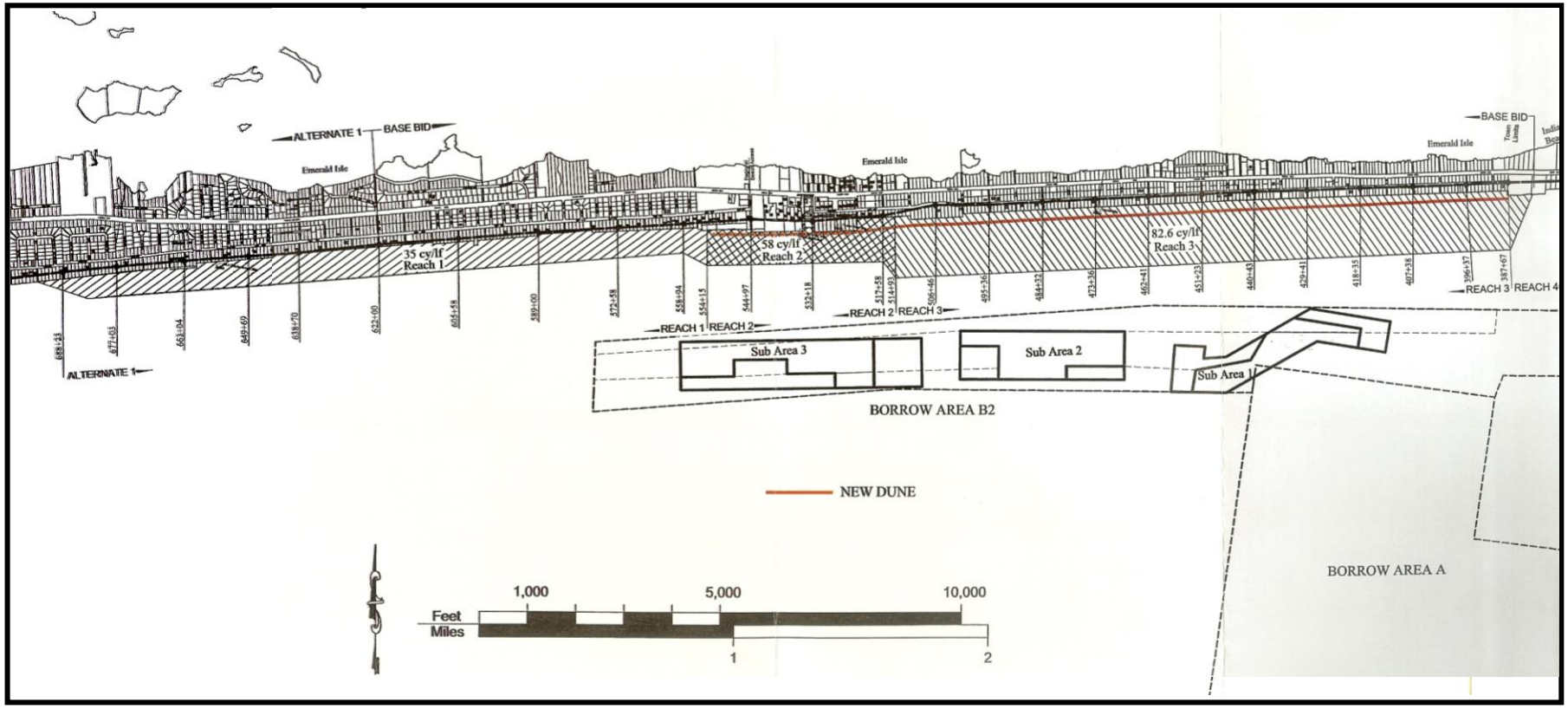

Figure 5. Plan view of Emerald Isle East beach fill project. Drawing adapted from Figure 2 in CSE 2003.

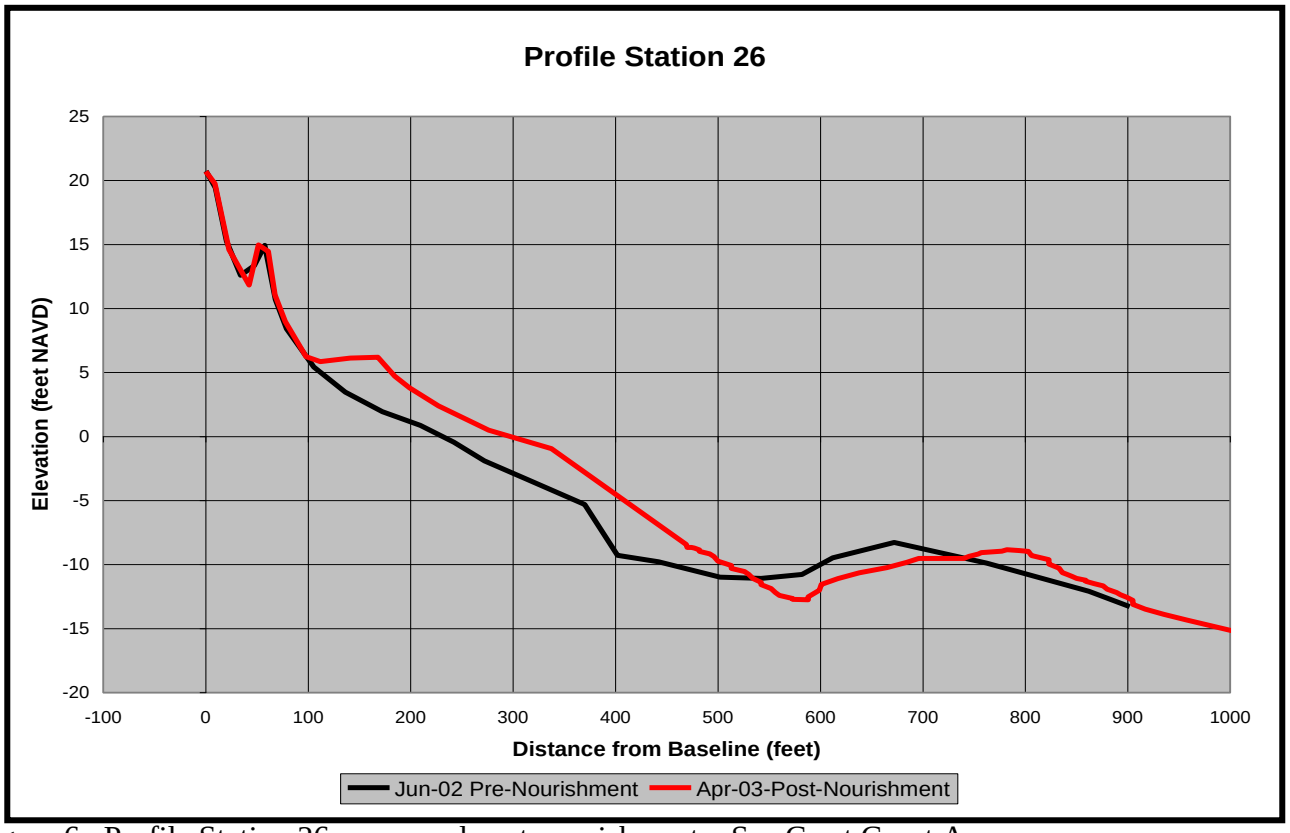

Figure 6. Profile Station 26 – pre- and post-nourishment – Sea Crest Court Access.

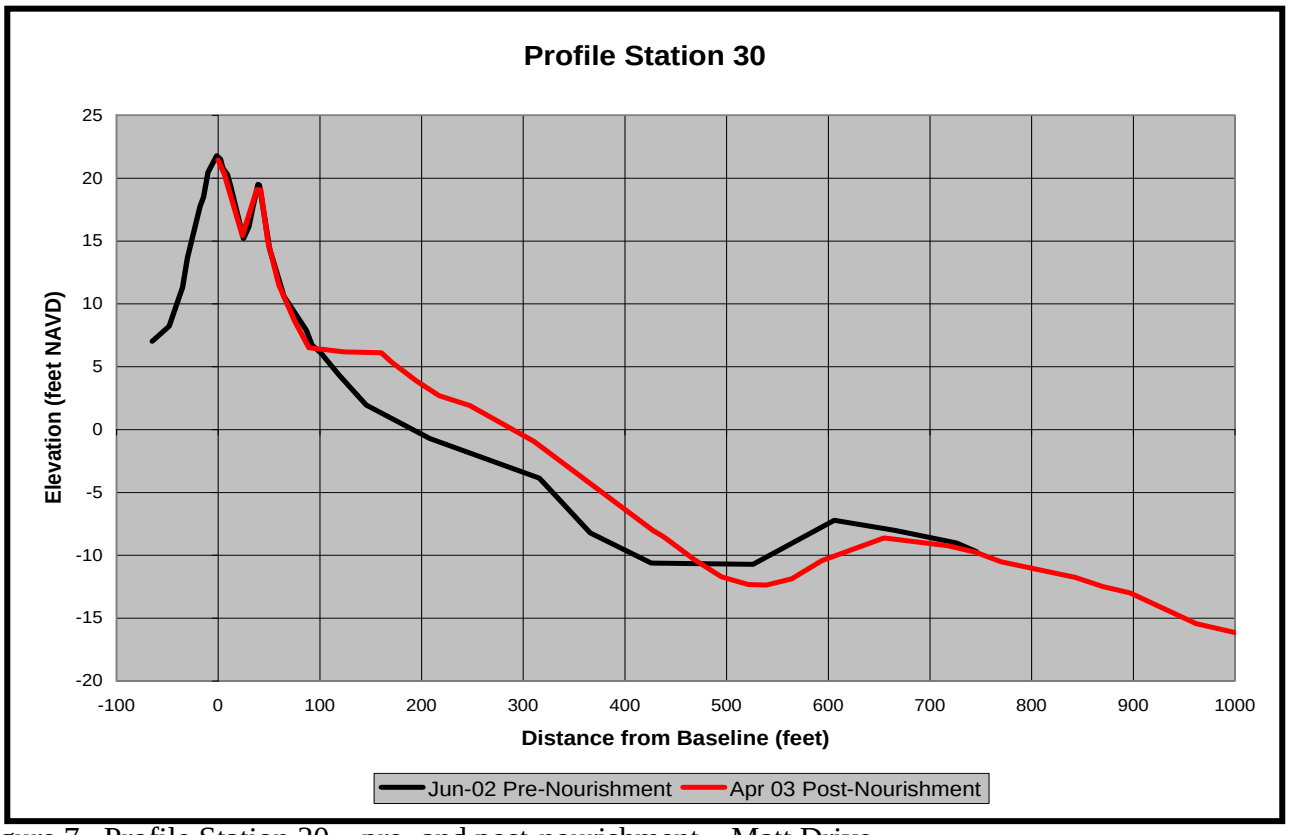

Figure 7. Profile Station 30 – pre- and post-nourishment – Matt Drive.

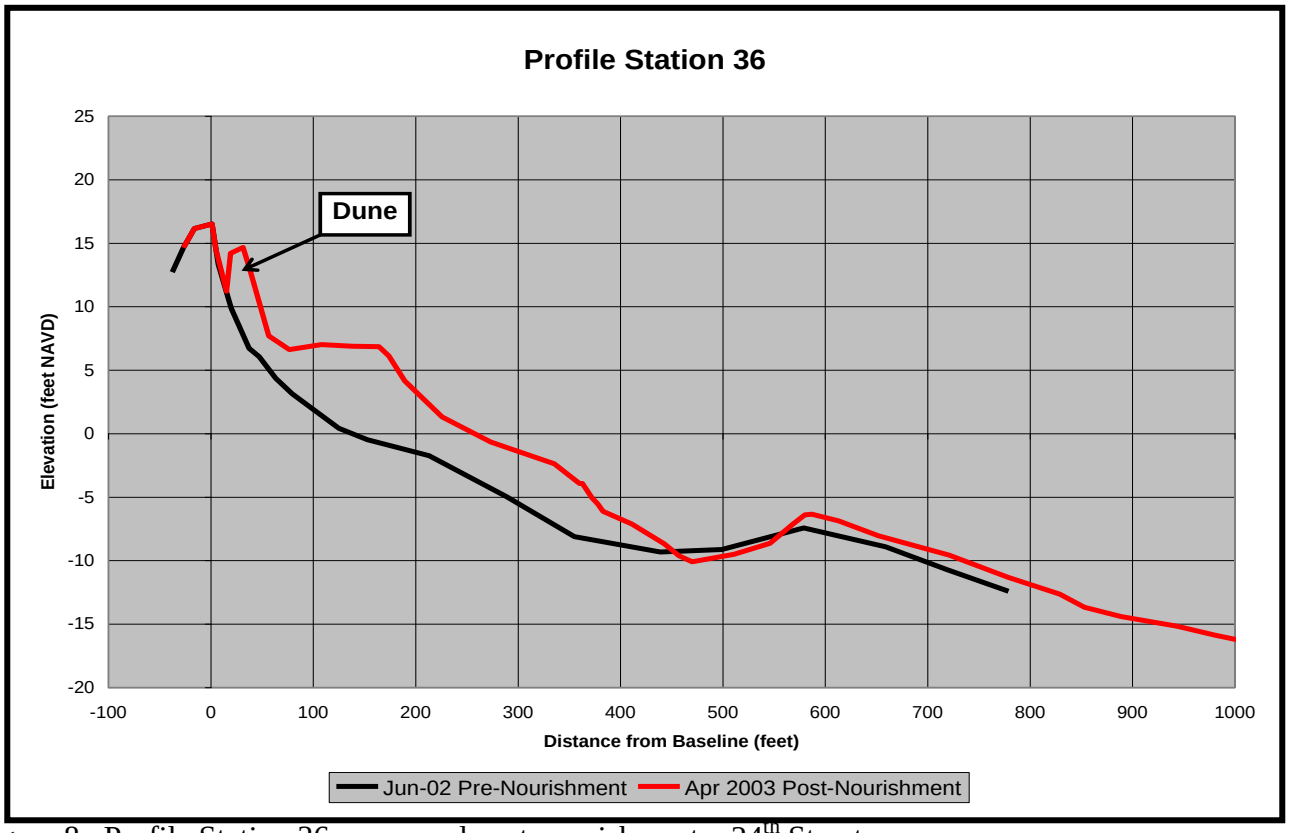

Figure 8. Profile Station 36 – pre- and post-nourishment – 24th Street.

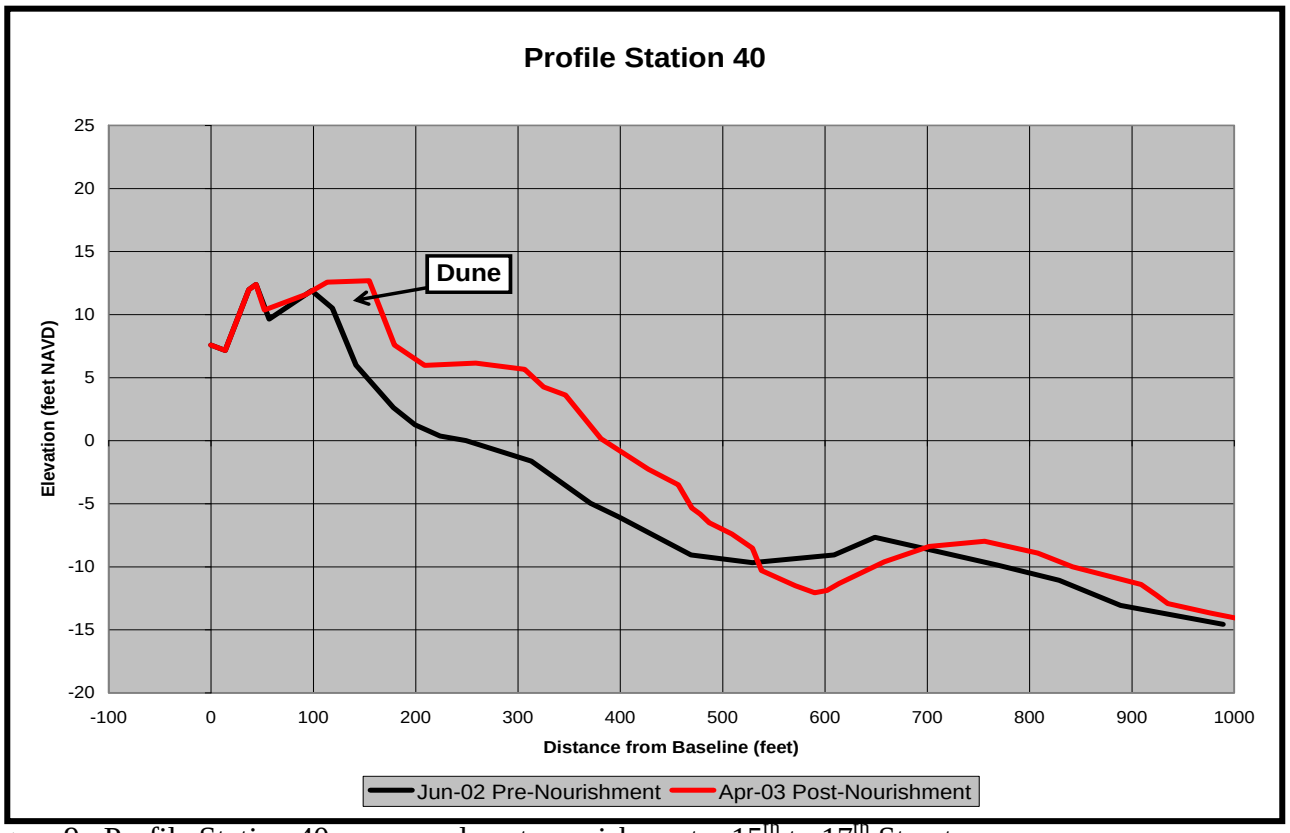

Figure 9. Profile Station 40 – pre- and post-nourishment – 15th to 17th Street.

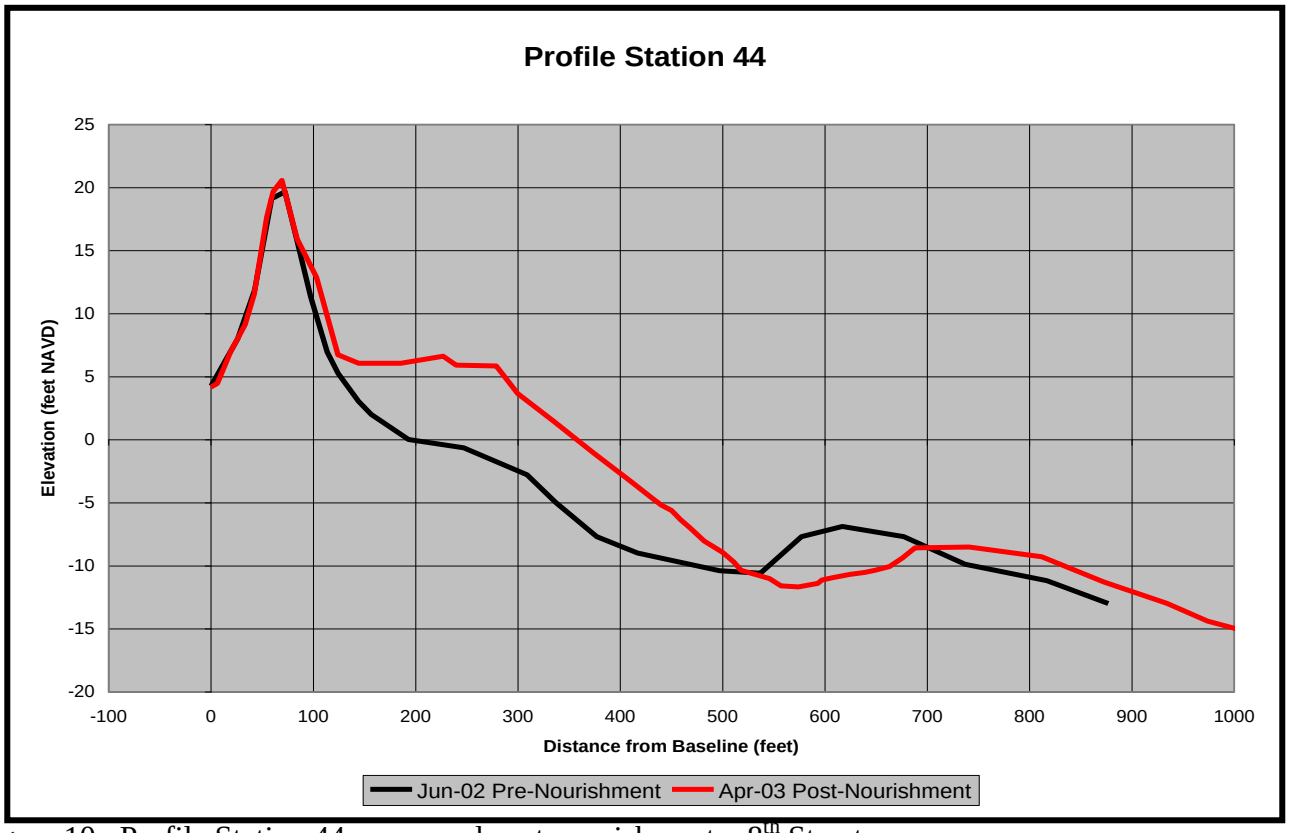

Figure 10. Profile Station 44 – pre- and post-nourishment – 8th Street.

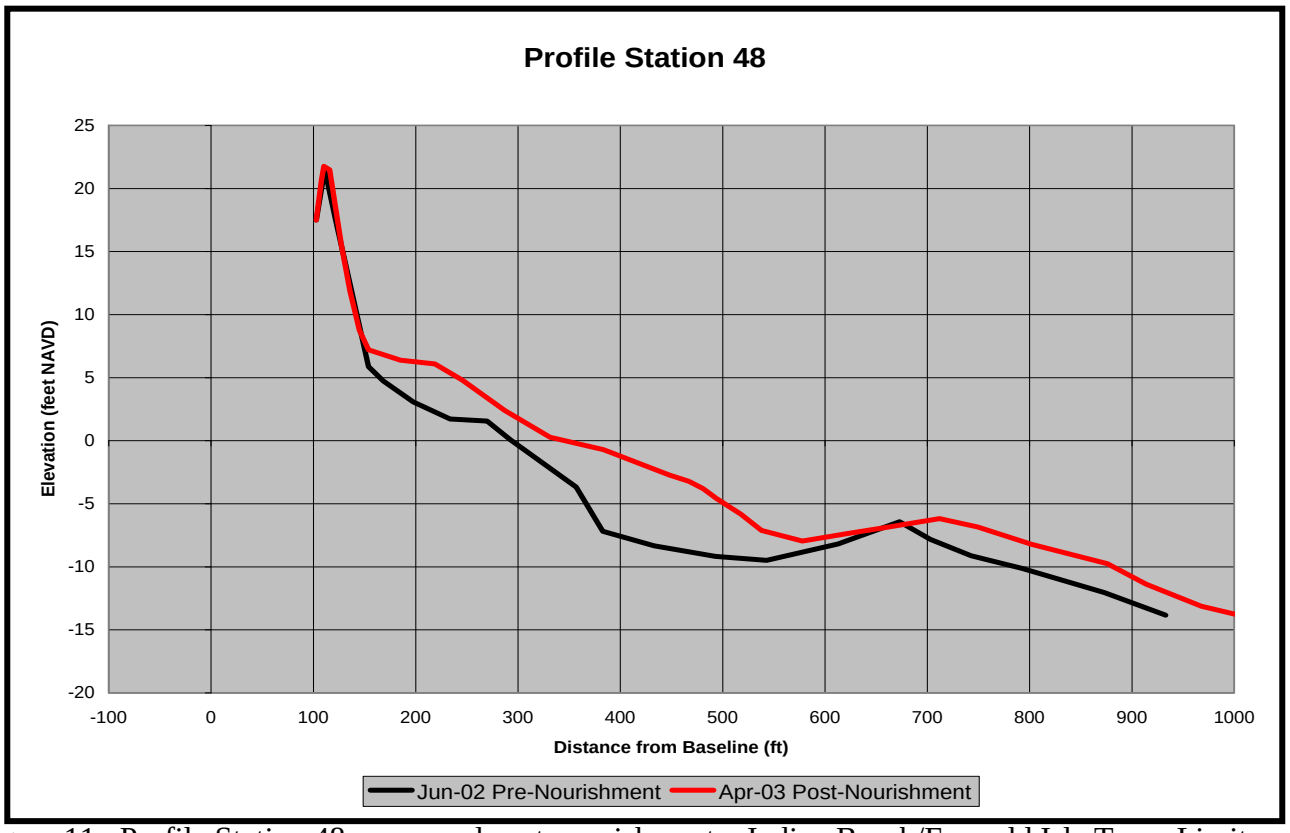

Figure 11. Profile Station 48 – pre- and post-nourishment – Indian Beach/Emerald Isle Town Limits.

4. PROJECT CONSTRUCTION AND ESTABLISHMENT OF STATIC VEGETATION LINE.

The Emerald Isle East portion of the Bogue Banks Restoration Project (Phase II) was constructed between January 13 and March 27, 2003 by Weeks Marine, Inc. which used a combination of two hopper dredges and one cutter-suction pipeline dredge. As previously mentioned, material to construct Emerald Isle East was obtained from borrow areas B2 and A shown on Figure 1. The cutter-suction pipeline dredge, *RS Weeks*, worked exclusively in a portion of borrow area B2 which had been modified to allow excavation to 6 feet below the bottom. The *RS Weeks* delivered a total volume of 877,831 cubic yards and covered 10,479 feet of the project shoreline. The two hopper dredges, *RN Weeks and BE Lindholm*, removed material from various portions of borrow areas A and B2 delivering a total of 989,895 cubic yards that covered the remaining 20,632 feet of the project shoreline. Most of the hopper dredge material (89.2%) was derived from borrow area A. The total volume placed on the 5.9 mile shoreline segment was 1,867,726 cubic yards which is equivalent to 60.0 cubic yards/lineal foot. Of this total volume, 123,938 cubic yards were used for construction of the dune; 85,282 cubic yards were placed in the two taper sections with the balance of 1,658,506 cubic yards used to construct the new beach seaward of the dune. Based on after dredging surveys, the actual volume of material placed in each of the three zones shown in Figure 4 was: 444,800 cubic yards or 34.5 cubic yards/lineal foot in the Western Zone; 212,500 cubic yards or 54.2 cubic yards/lineal foot in the Middle Zone; and 1,001,300 cubic yards or 78.8 cubic yards/lineal foot in the Eastern Zone.

The static line rule in effect at the time the Emerald Isle East project was constructed required a static line be established for beach fills exceeding 250,000 cubic yards and a placement rate greater than 50 cubic yards/lineal foot. Although the placement rate in the Western Zone was less than 50 cubic yards/lineal foot, Emerald Isle East was treated as one project, and since the average placement rate over the 5.9 miles was 60.0 cubic yards/lineal foot, the entire project area was deemed subject to the static line requirement by the Division of Coastal Management (DCM). The existing static vegetation line along the eastern portions of Emerald Isle is shown in Figure 12a to 12k.

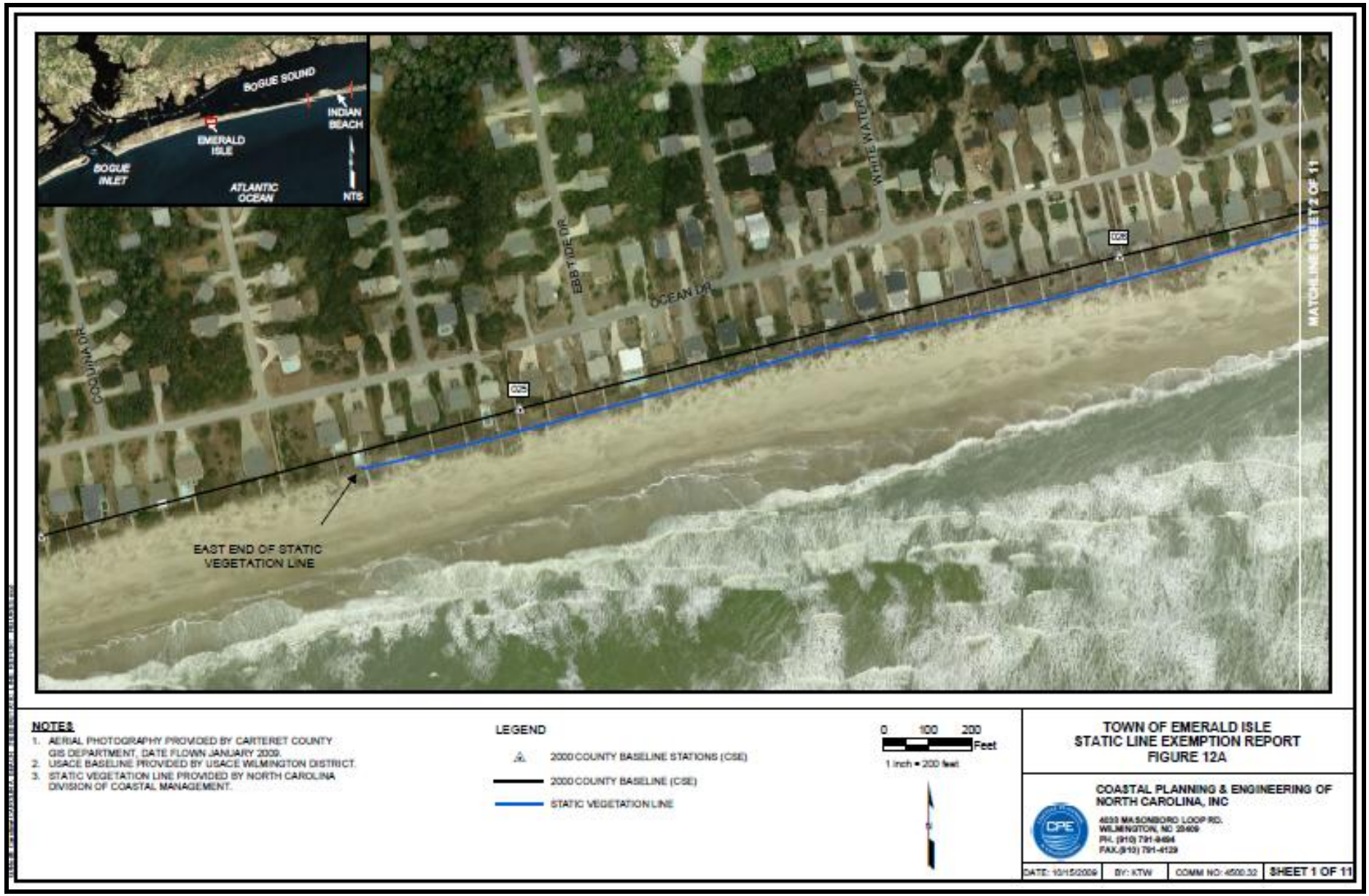

Figure 12a Town of Emerald Isle Static Line & Project Baseline.

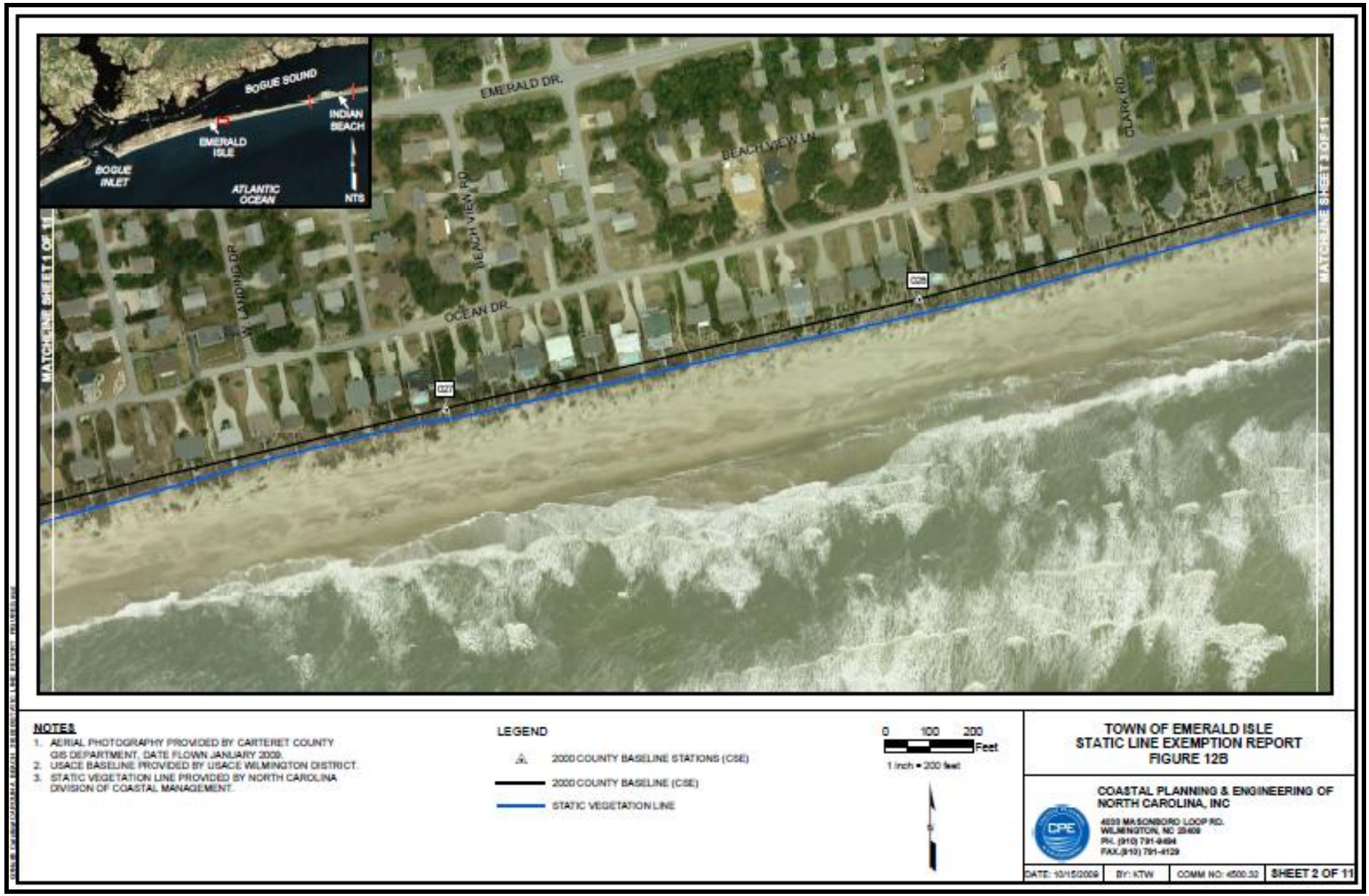

Figure 12b Town of Emerald Isle Static Line & Project Baseline.

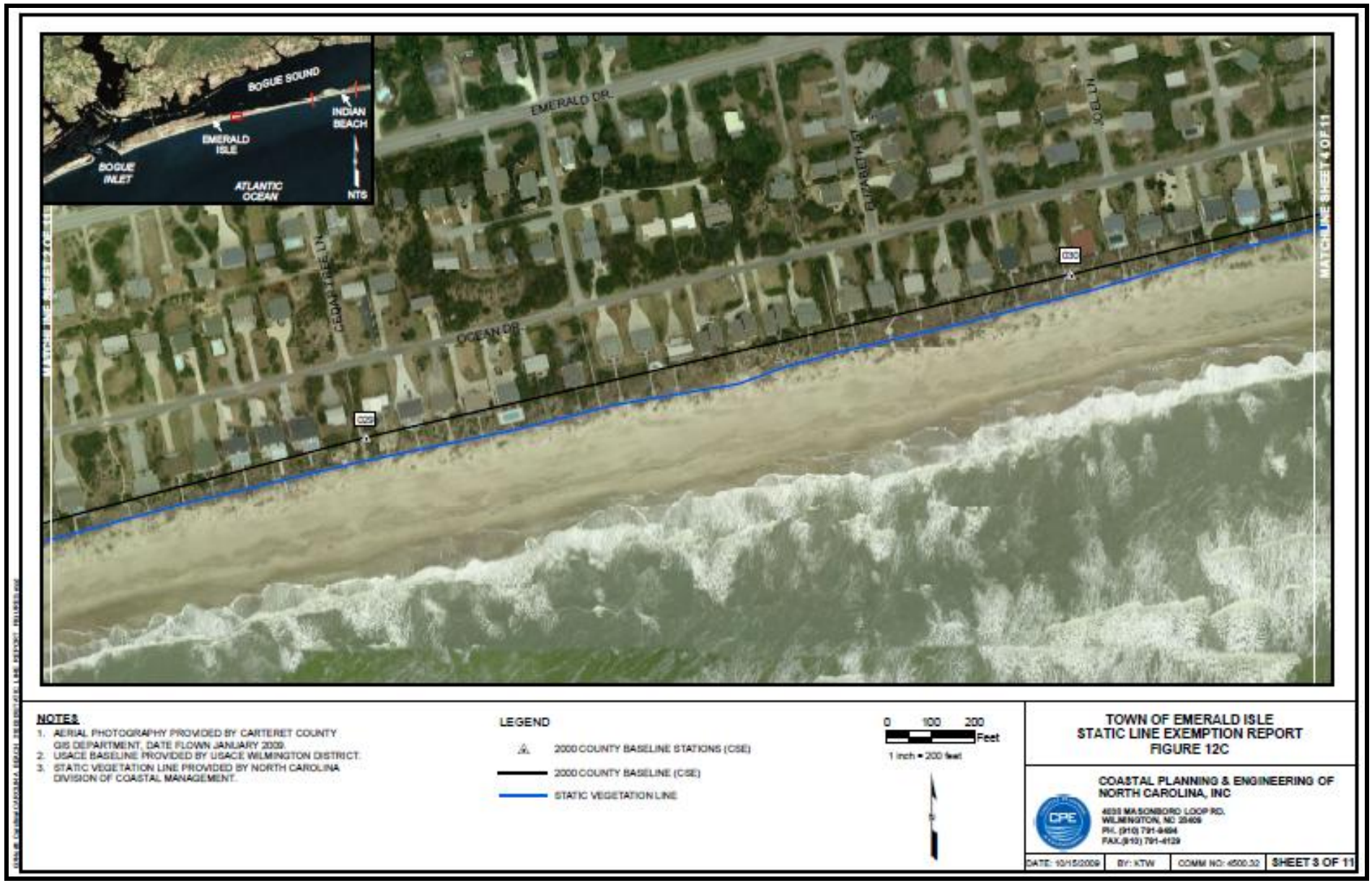

Figure 12c Town of Emerald Isle Static Line & Project Baseline.

Figure 12d Town of Emerald Isle Static Line & Project Baseline.

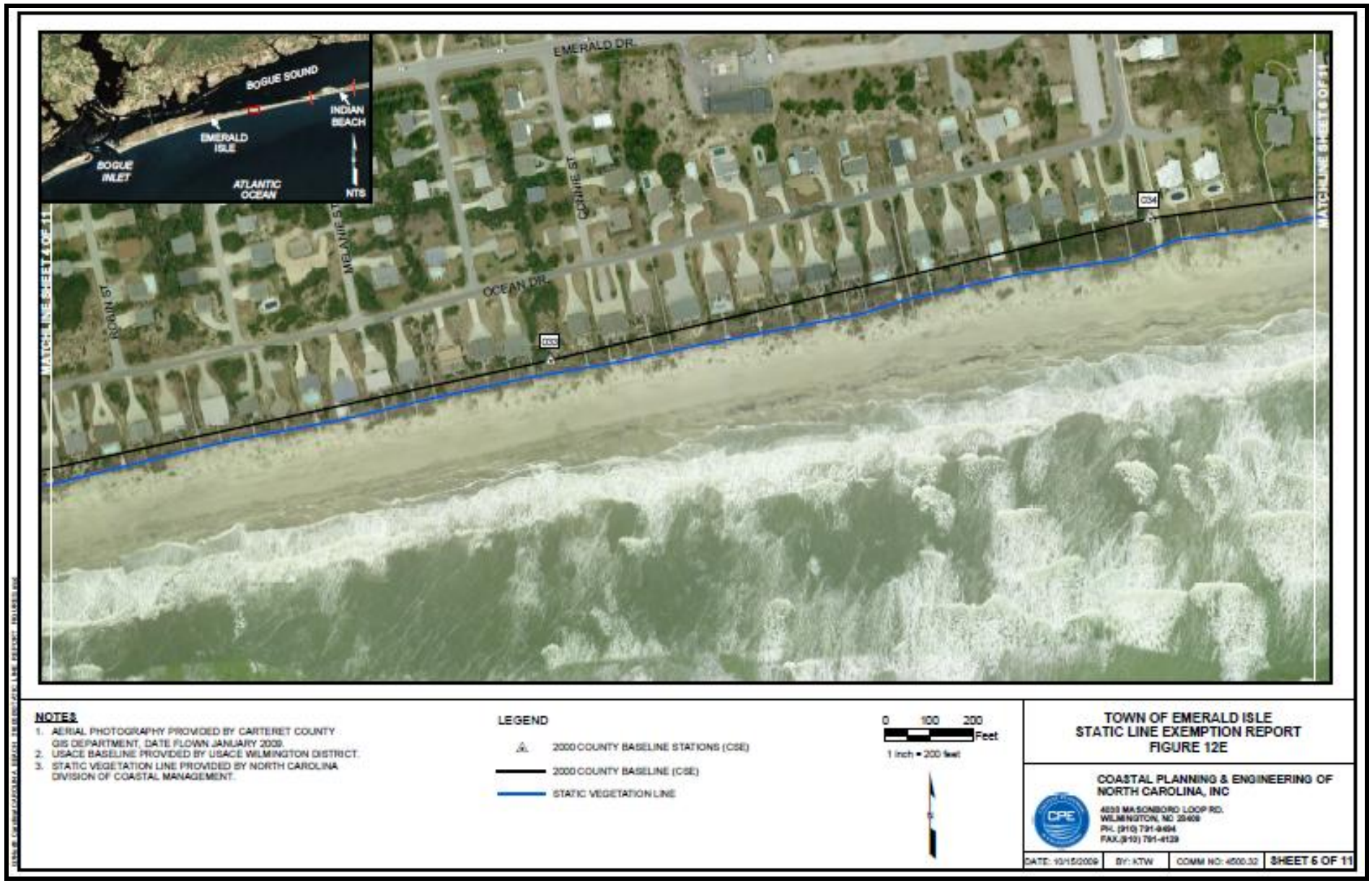

Figure 12e Town of Emerald Isle Static Line & Project Baseline.

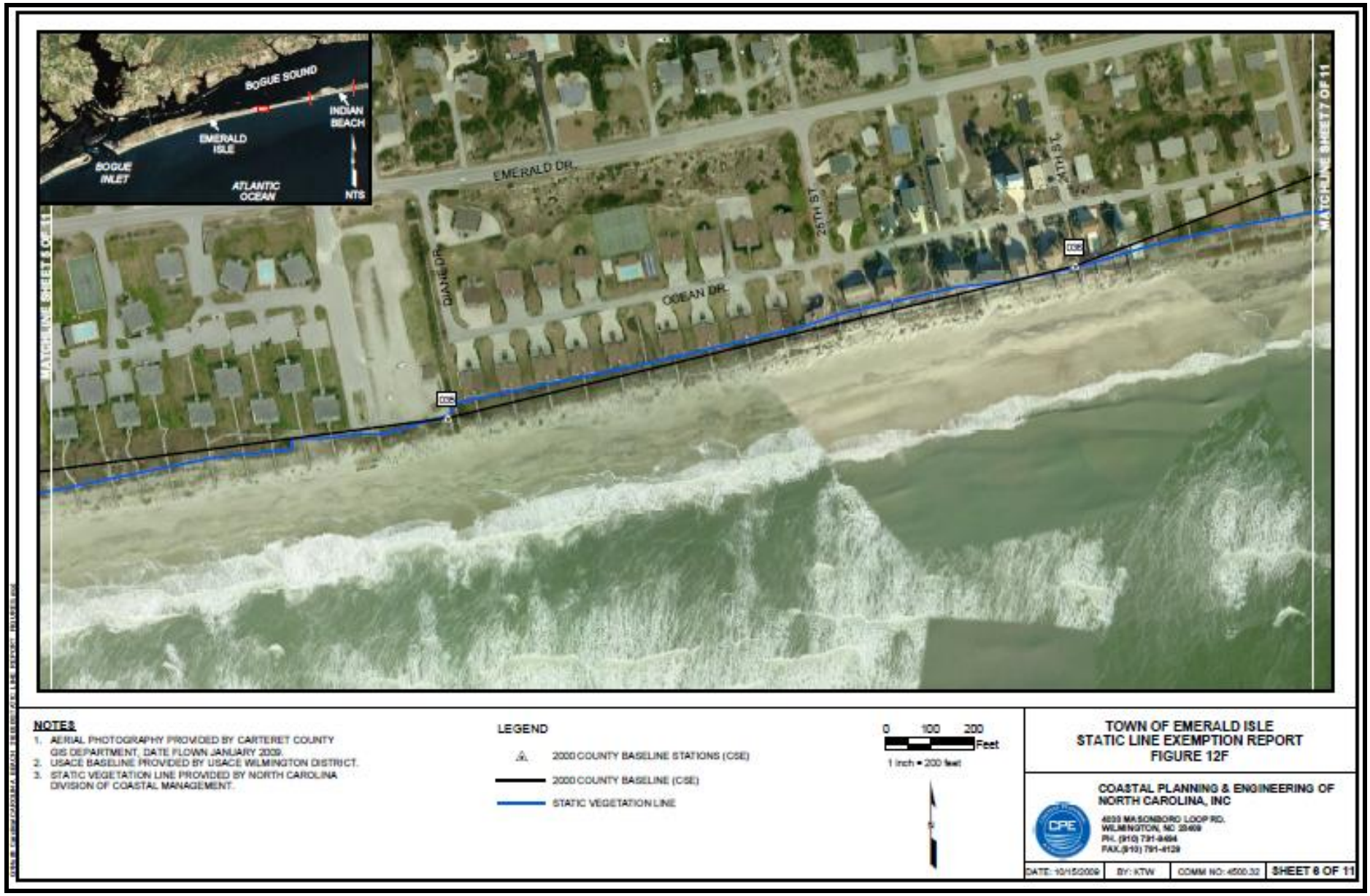

Figure 12f Town of Emerald Isle Static Line & Project Baseline.

Figure 12g Town of Emerald Isle Static Line & Project Baseline.

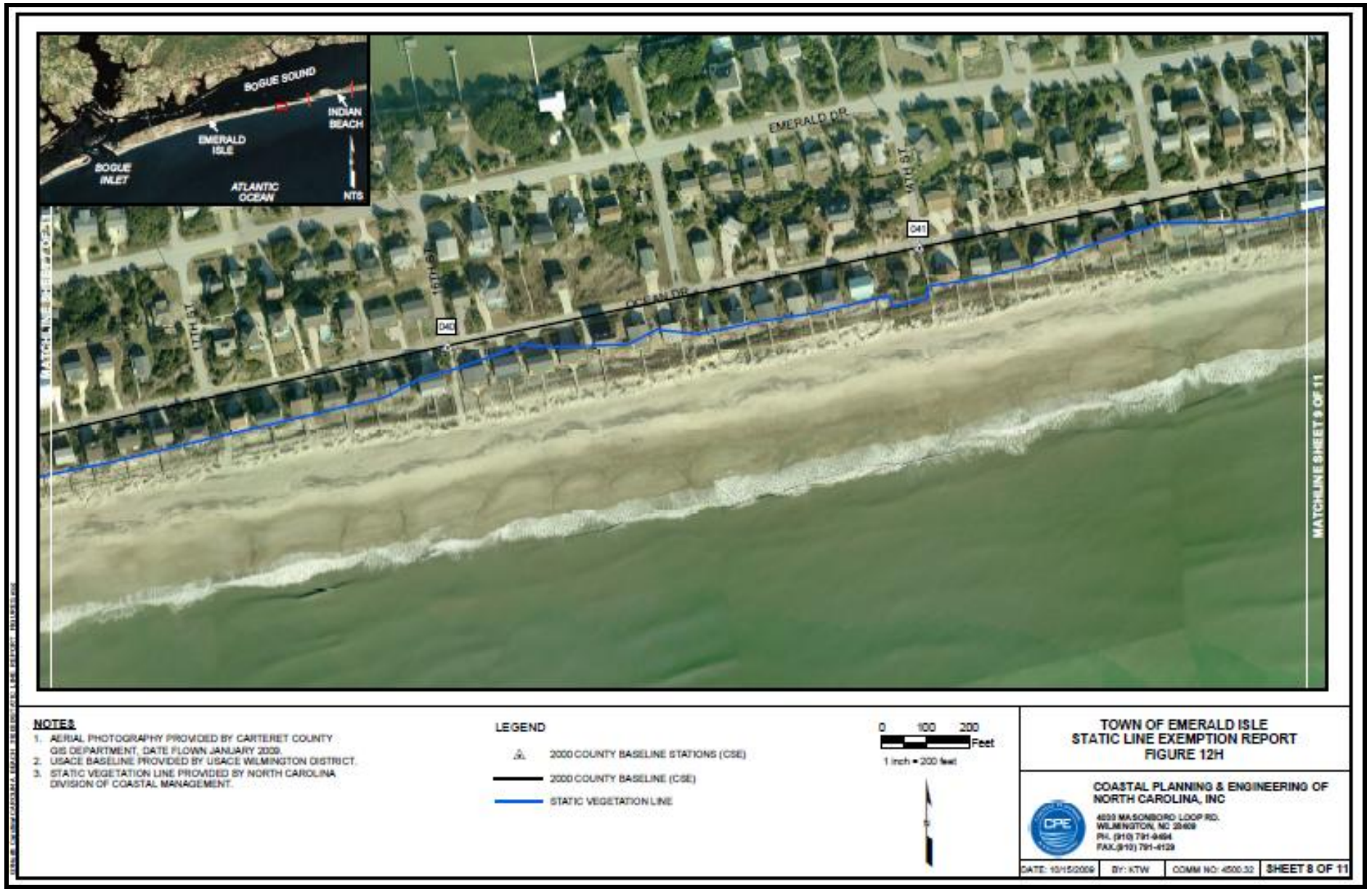

Figure 12h Town of Emerald Isle Static Line & Project Baseline.

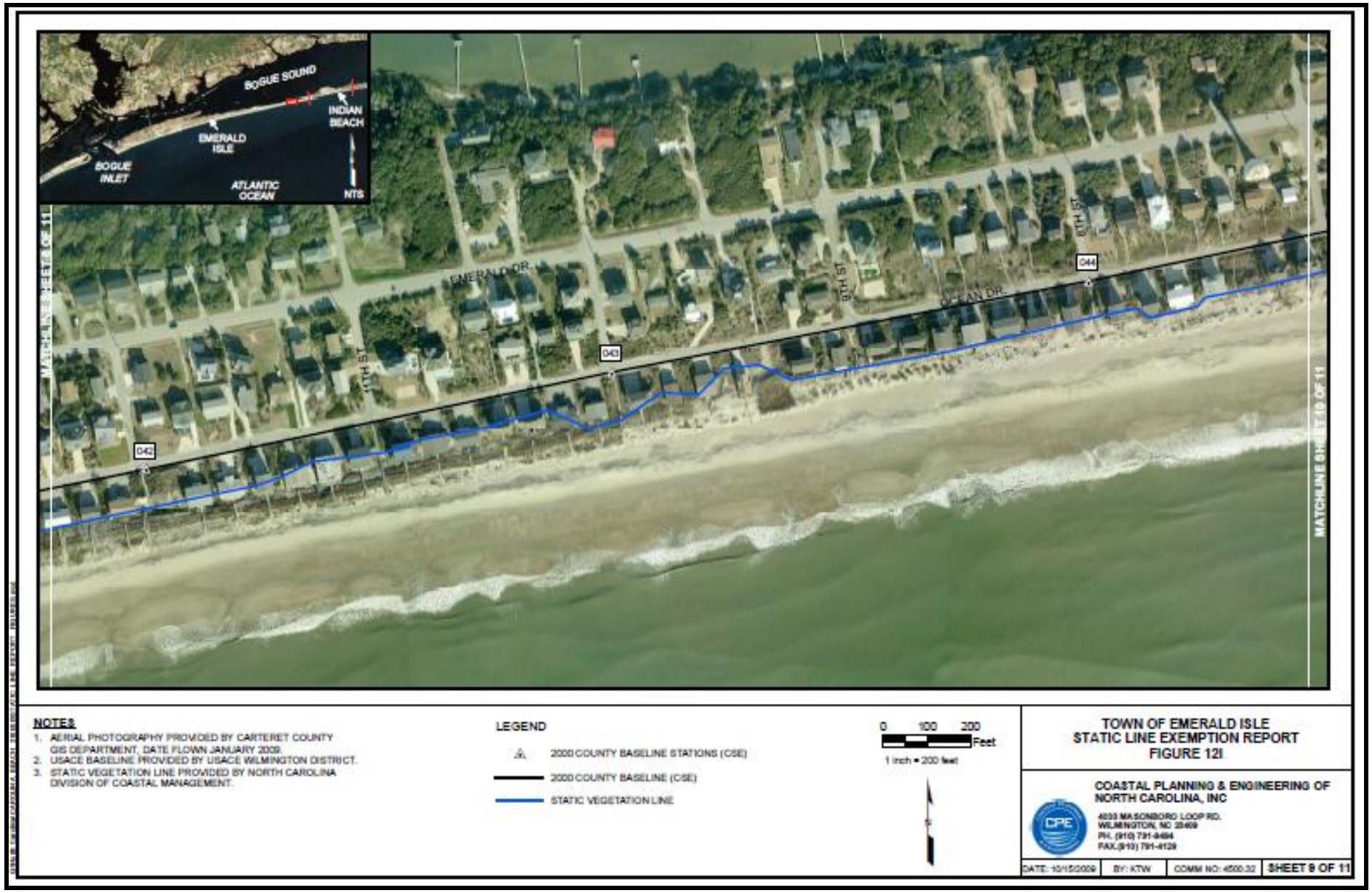

Figure 12i Town of Emerald Isle Static Line & Project Baseline.

Figure 12j Town of Emerald Isle Static Line & Project Baseline.

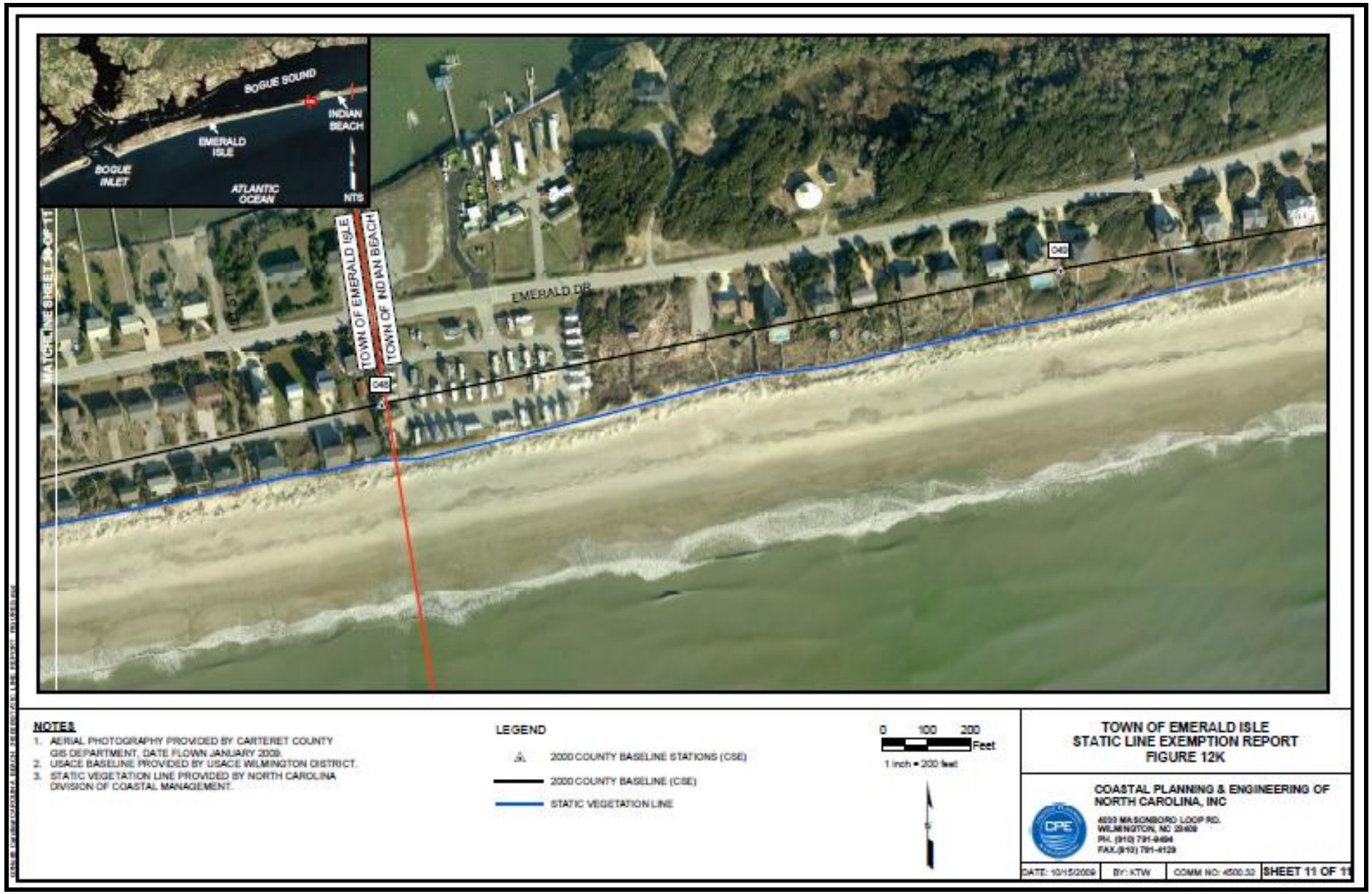

Figure 12k Town of Emerald Isle Static Line & Project Baseline.

5. PERIODIC NOURISHMENT PLAN.

The Bogue Banks Restoration Project was initially intended to be an interim measure aimed at protecting the island until a long-term (50 year) federal storm damage reduction project could be implemented. However, given the uncertainties associated with federal authorization for such a project and concerns over federal funding once federal authorization is attained, each of the island municipalities adopted periodic nourishment plans to assure adequate protection is maintained until the federal project is put in place. Also, Carteret County, acting through the Shore Protection Office, established a detailed beach profile monitoring program to document the condition of the beach fills placed along the island and determine where and when beach nourishment would be required.

Emerald Isle East Periodic Nourishment Plan. For the Phase II reach of the project covering Emerald Isle East, the periodic nourishment plan adopted by the Town of Emerald Isle dictates nourishment would be performed once one-half of the initial fill volume is lost to erosion. This periodic nourishment trigger excludes the volume of material placed in the dune and the volume placed in the two taper sections. Therefore, Emerald Isle will schedule maintenance of the Phase II shoreline when 829,253 cubic yards is lost from the initial fill. This periodic nourishment strategy is also represented in the Town's current FEMA Monitoring & Maintenance Plan that enables the Town to remain eligible for the cost reimbursement of replacing the volume of sand lost during a federally-declared disaster.

Again citing the uncertainties with continued federal involvement in shore protection, Carteret County has initiated a detailed assessment of the long-term shore protection requirements for Bogue Banks in the absence of federal funding that will also include compulsory documentation associated with State and National Environmental Protection Act coordination, and the successful procurement of permits to construct and maintain the Shore Protection Program. This long-term effort is directly related to and compliments the nourishment plan presented in this static line report as it will detail the many logistics required to execute future nourishment events (i.e., geotechnical and remotely-sensed information, habitat mapping, mitigation plans, endangered species considerations, etc.).

6. PROJECT NOURISHMENT HISTORY.

The Emerald Isle East portion (Phase II) of the Bogue Banks Restoration Project has been nourished on two occasions following initial construction, both instances resulting from volume losses associated with declared natural disasters. The first event was Hurricane *Isabel* which impacted the Bogue Banks area in September 2003 or only 5 months after initial construction of Phase II. The second was Hurricane *Ophelia* which passed through the area in September 2005.

Following the advent of Hurricane *Isabel*, the Town of Emerald Isle applied to the Federal Emergency Management Agency (FEMA) for funds to restore the material lost during *Isabel* under Category G of FEMA's Public Assistance Program. Specifically, the Public Assistance Program allows FEMA to provide funds to restore an "improved" or engineered beach providing the applicant can demonstrate the beach fill project had a designed template and grain size, a maintenance plan, and pre- and post-storm beach profile surveys. In its application, the Town of Emerald Isle was able to demonstrate it met all of the FEMA requirements including an engineered beach, a nourishment plan (as described above), and monitoring program and was subsequently approved to receive funds to restore the beach to the pre-storm condition.

Based on profiles of the beach taken before and after Hurricane *Isabel*, the Town of Emerald Isle was able to substantiate the loss of 121,000 cubic yards of material from two sections of Phase II, one located between profile stations 30 and 36 and the other between stations 38 and 43 (Figure 2). Emerald Isle obtained modifications to its original permits from both the Corps of Engineers and the Division of Coastal Management and completed the restoration of the project during March and April 2004. The final volume of material actually placed along the two eroded sections totaled 156,000 cubic yards. One hundred percent (100%) of the approximately $1.8 million cost of the restoration project was paid for by FEMA. In addition to obtaining a permit to restore the eroded material, the permit modification included the
use of material from the northern sections of the Morehead City Harbor Offshore Dredged Material Disposal Site (ODMDS) located seaward of the Beaufort Inlet ocean bar (Figure 13). The decision to use the ODMDS as a borrow site for the post-*Isabel* restoration was based on the desires of Emerald Isle to use only high quality beach compatible material even though the cost of transporting material from the ODMDS via hopper dredges would be more costly than using either borrow areas B2 or A. The Town of Emerald Isle was able to reduce the cost for the post-*Isabel* restoration project by combining the post-storm restoration project with a Section 933 project associated with the Morehead City Harbor federal navigation project which placed material on India Beach located just to the east of the Phase II project shoreline.

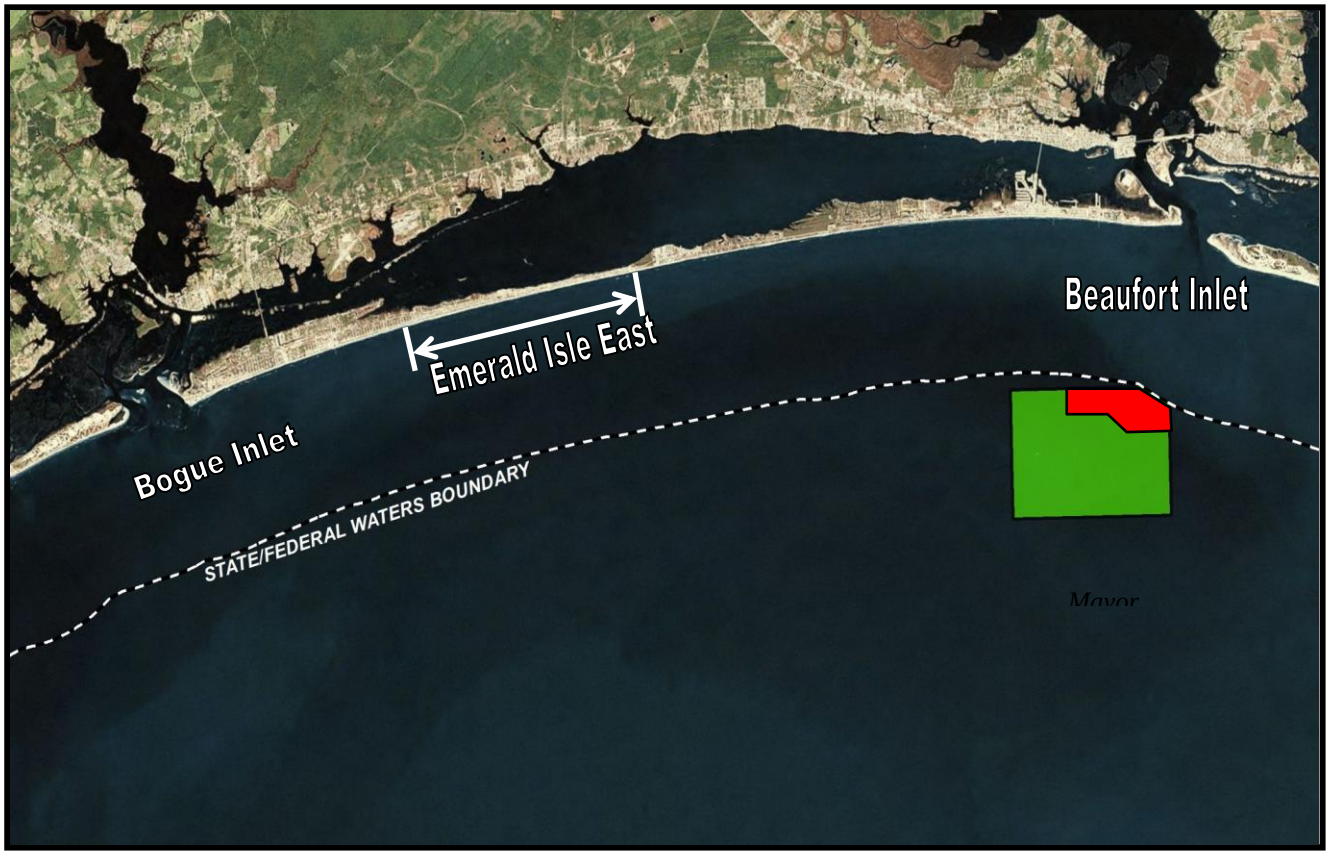

Figure 13. Morehead City Harbor Offshore Dredged Material Disposal Site (ODMDS) with area used for post-storm restorations shown in red.

The material from borrow areas B2 and A used for initial construction of the project had a composite mean grain size of 0.44 mm which was much coarser than the native sand mean grain size of 0.30 mm. In that regard, the borrow material seemed ideal for beach nourishment purposes as material coarser than the native is know to provide a more stable beach fill. However, the coarseness of the material in these two borrow areas was primarily due to relatively high shell or $CaCO_3$ content which averaged 44% based on post-placement samples of the material. In order to avoid placing additional large amounts of shell or $CaCO_3$ along the town's shoreline, the Town of Emerald Isle opted to use the ODMDS for subsequent FEMA nourishment events.

The ODMDS was expected to have compatible material as most of the sediment in the disposal site was derived from maintenance of the Beaufort Inlet ocean bar channel; particularly the landward portions of the channel which is known to accumulate littoral material directly off the adjacent shorelines of Bogue and Shackleford Banks. The quality of the material in the ODMDS and its compatibility with the native beach material was initially based on samples taken from USACE vibracores collected near the proposed borrow site with the compatibility later confirmed visually and statistically once the material was placed on the beach.

The post-Hurricane *Ophelia* restoration within the town limits of Emerald Isle, which was also funded by FEMA, included restoration of the fill between profile stations 33 and 45, located within the Phase II project limits, and between profile stations 10 and 20 located in the Phase III segment of the Bogue Banks Restoration Project. The impacts of Hurricane *Ophelia* were not limited to the Town of Emerald Isle as other sections of the Bogue Banks project along Indian Beach/Salter Path and Pine Knoll Shores experienced significant losses and were also restored with FEMA funding.

As was the case for the Hurricane *Isabel* restoration, the Hurricane *Ophelia* restoration used material from the ODMDS which was transported to the beach via hopper dredges. Geotechnical investigation of the ODMDS conducted by CSE prior to the restoration project yielded an average mean grain size of 0.31 mm which compared favorably with the native beach mean grain size of 0.30 mm. Post-placement sampling of the material on the beach yielded a slightly larger mean grain size of almost 0.36 mm. During the hopper dredge operation, the dredge slurry (water and sediment) is continually pumped into the dredge's hopper and water allowed to overflow back into the ocean until the hopper is full with sediment. As the water overflows the hopper, finer grained material is also discharged back into the ocean leaving only the coarser material to be delivered to the beach. The hopper filling and overflow process combined with the winnowing of fine grain sediments during the actual beach disposal operation are primarily responsible for the coarseness of the material found in place on the beach compared to the in situ samples taken from the vibracores.

The post-Hurricane *Ophelia* restoration was accomplished between January and March 2007 with a total of 1,229,800 cubic yards deposited along various sections of the Bogue Banks, 344,400 cubic yards of which was placed between profile stations 33 and 45 within the limits of Phase II. The total cost of the restoration was $13,773,800 all of which was provided by FEMA. Of this total restoration cost, $3,857,000 can be allocated to the Emerald Isle East project based on the volume of material placed within this reach compared to the total volume placed on Bogue Banks to replace the material lost to Hurricane *Ophelia*. Note that the total cost for the *Ophelia* restoration allocated to the Town of Emerald Isle was $6,569,000 which included restoration of the Emerald Isle West portion.

The sections of the Emerald Isle East project that have not required nourishment since initial construction include a 5,500-foot segment on the west end between stations 25 and 29, a 2,220-foot segment between stations 36 and 38, and easternmost 1,970 feet of the project between stations 46 to 48.

A summary of the initial beach nourishment operation and the two nourishment operations along the eastern half of Emerald Isle is provided in Table 1. The cost shown for the Hurricane *Ophelia* restoration in 2007 for the Phase II portion of the project was pro-rated based on the volume placed within the Phase II shoreline relative to the total volume placed along the entire length of Bogue Banks.

To date, periodic nourishment under the Town adopted nourishment plan has not been required. Additional discussion of the performance of the project is provided below.

Table 1
Emerald Isle East (Phase II) Nourishment History

Event	Dates	Fill Limits (sta. to sta.)	Length (feet)	Borrow Source(s)	Volume (CY)	Cost	
						Local	Federal
Initial Construction	Feb-Apr 2003	25 to 48	31,111	A and B2	1,867,726	$11,700,000	$0
Post-Isabel	Mar-Apr 2004	30 to 36 38 to 43	8,800 5,500	ODMDS	156,000		$1,800,000
Post-Ophelia	Jan-Mar 2007	33 to 45	14,100	ODMDS	344,400		$3,857,000[(1)]

[(1)] Pro-rated based on ratio of volume placed in Phase II shoreline divided by total volume for the whole island.

7. PROJECT PERFORMANCE.

The performance of the Emerald Isle East project has been monitored on an annual basis by the island-wide beach profile monitoring program conducted under the auspices of the Carteret County Shore Protection Office. The profile monitoring program began in June 1999 prior to the construction of the beach fills projects. Annual reports summarizing the results of the monitoring surveys including the performance of the beach nourishment projects along Bogue Banks have been prepared since 2002-03 and are available from the Shore Protection Office website (www.protectthebeach.com).

The Emerald Isle East portion of the Bogue Banks Restoration Project includes a total of 24 profiles, numbered 25 to 48, that are surveyed annually and following significant storm events. Representative plots of the typical profiles 26, 30, 36, 40, 44, and 48, the location of which are indicated in Figure 2, are provided in Appendix A.

A plot of the cumulative changes in the volume of material from the back toe of the dune seaward to the -12-foot NAVD contour for Emerald Isle East is shown in Figure 14. This plot begins in June 1999, prior to the construction of the project, and extends through June 2009. The large jump in the

cumulative volume curve in March 2003 was due to the initial construction of the project which added 1,867,726 cubic yards to the 5.9 mile long segment. Prior to initial construction, the volume of material within Emerald Isle East was only 140,235 cubic yards. The minor fill placed along limited sections of Emerald Isle East following Hurricane *Isabel* (156,000 cubic yards) and the larger fill placed in response to Hurricane *Ophelia* (344,400 cubic yards) are also indicated on the plot.

As discussed above, the periodic nourishment plan for Emerald Isle East calls for nourishment of the project once one-half of the fill placed seaward of the dune is lost to erosion. Based on post-construction surveys, 1,658,506 cubic yards was placed seaward of the dune to create the new beach with the balance of the material used to construct the new dune and the two taper sections. By adding one-half of the nourishment volume (829,253 cubic yards) to the pre-project profile volume within Emerald Isle East (140,235 cubic yards) yields a nourishment trigger volume of 969,488 cubic yards. This is shown by the horizontal red line in Figure 14. Said another way, once the volume of material within the bounds of Emerald Isle East (profile stations 25 to 48) and residing between the landward toe of the dune and the -12-foot NAVD contour is equal to or less than 969,488 cubic yards, the Town of Emerald Isle would perform periodic nourishment.

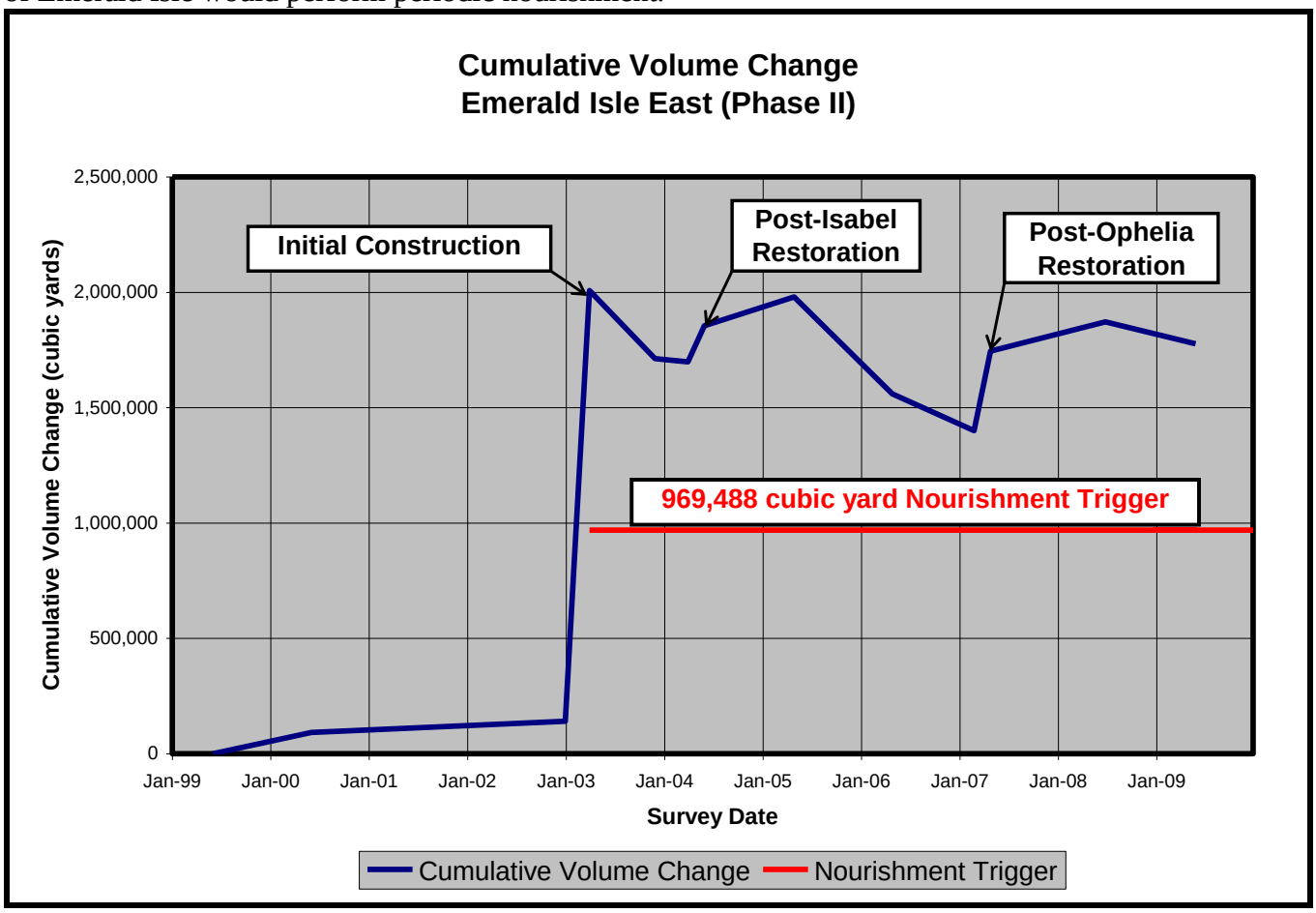

Figure 14. Cumulative beach profile volume change along Emerald Isle East – June 1999 to June 2009.

As of June 2009, the volume of material remaining on the beach within Emerald Isle East was 1,776,117 cubic yards compared to the post-construction volume measured in April 2003 of 2,007,961 cubic yards. This represents a net loss of 231,784 cubic yards over the 6.17 year period.

However, the post-hurricane restorations added a total of 500,400 cubic yards to Emerald Isle East (156,000 cubic yards for *Isabel* and 344,400 cubic yards for *Ophelia*). In the absence of the post-storm fills, Emerald Isle East would have lost 732,184 cubic yards between April 2003 and June 2009. This represents an average annual volumetric loss rate of approximately 118,668 cubic yards/year, or an average loss of 4.1 cy/ft/yr.

The June 2009 profile volume was 806,689 cubic yards above the 969,488 cubic yard nourishment trigger. If the Emerald Isle East project continues to erode at 118,688 cubic yards/year, the volume of material within the project limits could drop to the nourishment trigger within the next 7 to 8 years. Periodic nourishment may not be required along the entire 5.9 mile segment as the profile monitoring surveys show the portion of the project between stations 25 and 36 appears to be more stable than the section from station 36 to 48.

Overall, the Emerald Isle East project has performed very well even with the advent of the two declared natural disasters that occurred within the first 2.5 years following initial construction. The average annual volumetric loss rate of 118,688 cubic yards/year is equivalent to 4.1 cubic yards/lineal foot of beach which is a relatively low loss rate compared to other beach nourishment projects.

8. PLANNED BORROW AREAS.

The Town of Emerald Isle is primarily focusing on the ODMDS as a borrow source for maintenance of the Emerald Isle East project. However, the possible use of borrow sources identified by the USACE during planning for the 50-year federal project, which are closer to the project area, are also included in the town's long-range plans.

ODMDS. All the towns along Bogue Banks, including the Town of Emerald Isle, are targeting the ODMDS (Figure 13) as a future source of beach nourishment material to sustain the beach nourishment projects for at least the next 30 years. Between 1936 and 1994, all of the material removed from the Morehead City Harbor entrance channel through Beaufort Inlet was deposited in the ODMDS. Since 1995, approximately 3.8 million cubic yards of the maintenance material has been deposited in a near shore berm located on the west side of the Beaufort Inlet ebb tide delta (Figure 16) and the 2004 and 2007 maintenance operations placed the maintenance material directly on the shorelines of Indian Beach/Salter Path and Pine Knoll Shores under the authority of Section 933. Based on USACE dredging records (USACE 2001 & USACE 2001a to 2007), and adjusting for the volume of material placed in the near shore berm and directly on the beach under Section 933, the volume of material deposited in the ODMDS since 1936 totals approximately 47.8 million cubic yards.

The ODMDS shown in Figure 13 is the existing approved disposal area for the Morehead City Harbor Project. Prior to the establishment of the existing ODMDS, maintenance material was deposited in areas north of the existing site as well as east of the Beaufort Inlet ocean bar channel. In a study contracted by Carteret County to Olsen Associates, Inc. of Jacksonville, Florida (Olsen 2006), Olsen was able to account for up to 35.5 million cubic yards in both the existing and historic offshore disposal areas. Obviously, development of the existing ODMDS and other historic ocean disposal sites as borrow sites will require additional geotechnical investigations in order to comply with State sediment criteria (15A NCAC 07H.0312). However, based on Olsen's study, and adjusting for the 1.4 million cubic yards removed to restore the beaches following Hurricanes *Isabel* and *Ophelia*, the

volume of beach compatible material in or near the existing ODMDS should total well over 30 million cubic yards. In a Section 111 report prepared by the USACE to evaluate the possible impacts of the Morehead City Harbor Project on the adjacent shorelines, the USACE estimated over 32 million cubic yards of beach compatible material had been deposited in the ODMDS since 1936 (USACE 2001).

Maintenance of the Morehead City Harbor Project will continue over the next 30 years with additional material being deposited in the ODMDS. However, while over one million cubic yards of material is removed from the ocean bar channel of Beaufort Inlet each year, at the urging of Carteret County, the USACE is in the process of reformulating the dredged material management plan for the harbor which could result in less material being placed in the ODMDS and more placed directly on the shorelines of Fort Macon and Atlantic Beach during maintenance dredging operations. In any event, disposal of some of the maintenance material in the ODMDS will likely continue over the next 30 years which could increase the available volume to at least 33 to 36 million cubic yards.

An estimate of the island-wide volumetric erosion that has occurred since April 2003 within the limits of the Bogue Banks Restoration Project is presented in Table 2. The unit volumes of material within each reach along Bogue Banks, measured from the seaward toe of the dune to the -12-foot NAVD depth contour, were derived from the 2007 monitoring report (CSE 2007a) and the 2008 and 2009 monitoring reports (Moffatt & Nichol 2008, Moffatt & Nichol 2009). Adjustments in the volume changes were made for the amount of beach fill placed within each reach from various nourishment operations since April 2003 including: (a) the 2005 initial construction of Emerald Isle West, (b) the 2004 and 2007 post-hurricane restorations, (c) Phase I of the Section 933 project along Indian Beach/Salter Path and Pine Knoll Shores (completed in 2004), and (d) Phase II of the Section 933 project also along portions of Indian Beach/Salter Path and Pine Knoll Shores completed in 2007.

The estimated volumetric erosion rate for the entire Bogue Banks Restoration Project through June 2009 totals 357,100 cubic yards/year. Over the next 30 years, approximately 10.7 million cubic yards of beach compatible material will be needed to maintain the entire Bogue Banks Restoration Project. With over 30 million cubic yards of material currently available in the ODMDS and potentially more material being added from maintenance of the Morehead City Harbor project, the ODMDS has a sufficient volume of material to satisfy nourishment requirements for the entire island-wide project including Emerald Isle East for at least the next 30 years.

Table 2. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[(1)]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.8	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.2	-4.1
Indian Beach/Salter Path	+181,185	855,952	-674,767	-109,400	30.0	-8.5
Pine Knoll Shores	+418,612	932,658	-514,046	-83,300	24.0	-3.5
Total for Bogue Banks Restoration Project				-357,100	100.0	-4.1

(1) Adjusted volume change = measured profile volume change minus fill added.

The demands for periodic nourishment material from the ODMDS include the section of the project designated as Emerald Isle West. As noted previously, Emerald Isle West was constructed with material removed from Bogue Inlet during the relocation of the inlet bar channel 3,500 feet to the west. Should the inlet bar channel migrate back to the east and pose a renewed threat to development on the extreme west end of Emerald Isle, the Town of Emerald Isle may seek permits to move the channel again. If so, material removed to relocate the channel could be used to nourish the Emerald Isle West portion of the Bogue Banks Restoration Project. Should that occur, the demand for material from the ODMDS over the next 30 years could be reduced by as much as 750,000 cubic yards to 1,000,000 cubic yards.

As mentioned above, the material contained within the existing ODMDS and the material in the other historic offshore disposal sites used for the Morehead City Harbor project will require detailed geotechnical investigations and documentation in accordance with the State Sediment Criteria (15A NCAC 07H.0312) to qualify the areas for use as beach fill borrow sites. However, based on the documented beach compatibility of the material removed from the ODMDS and deposited on the beach during the Hurricane *Isabel* and *Ophelia* restorations, the only issue that needs to be resolved is the exact location and thickness of the deposited material not its quality.

Sampling of material in the northern section of the ODMDS conducted by CSE for the post-Hurricane *Ophelia* Restoration included the collection of 14 vibracores ranging in length from 2.6 feet to 9.2 feet with an average length equal to 5.7 feet. The locations of the vibracores used to characterize the material in the ODMDS are indicated by the red dots in Figure 15.

Grain size analysis of the samples taken from the 14 vibracores resulted in a composite mean of 1.71 phi (0.31 mm) and a standard deviation of 1.06 phi (CSE 2007b). The silt content was generally less

than 2%. Comparison of the ODMDS material with the native beach sand resulted in an overfill factor of 1.35 which is considered a reasonably good match.

CSE also sampled the material once it had been placed on the beach, collecting 30 samples from the East Emerald Isle project area. The grain size of the material in place on the beach averaged 1.47 phi (0.36 mm) with an average silt content of only 0.15%. Precise measurements of the silt content in the vibracore samples were not provided by CSE (CSE, 2007), however, based on the extremely low silt content of the in place material and the larger average mean grain size of the in place material compared to the in situ vibracore samples, as noted previously, the filling and placement process associated with the hopper dredge operations apparently flushed much of the finer grained material from the fill prior to sampling. CSE did not analyze the shell content in the vibracore samples taken from the ODMDS but did analyze the calcium carbonate ($CACO_{3)}$ content of the in place material and found an average calcium carbonate content of 22.6%. Sampling of the native beach conducted by CSE prior to the construction of the Bogue Banks Restoration Project yielded an average shell content of the native beach of approximately 15%. The State Sediment Criteria for beach nourishment material allows borrow material to contain 15% more $CACO_3$ than the native beach. Assuming the 15% shell content found along the beach prior to construction of the Bogue Banks Restoration Project as a proxy for $CACO_3$ content, the threshold for $CACO_3$ would be 30%. Therefore, the amount of shell and/or $CACO_3$ in material deposited offshore of the Morehead City Harbor Project appears to fall well within the State Sediment Criteria.

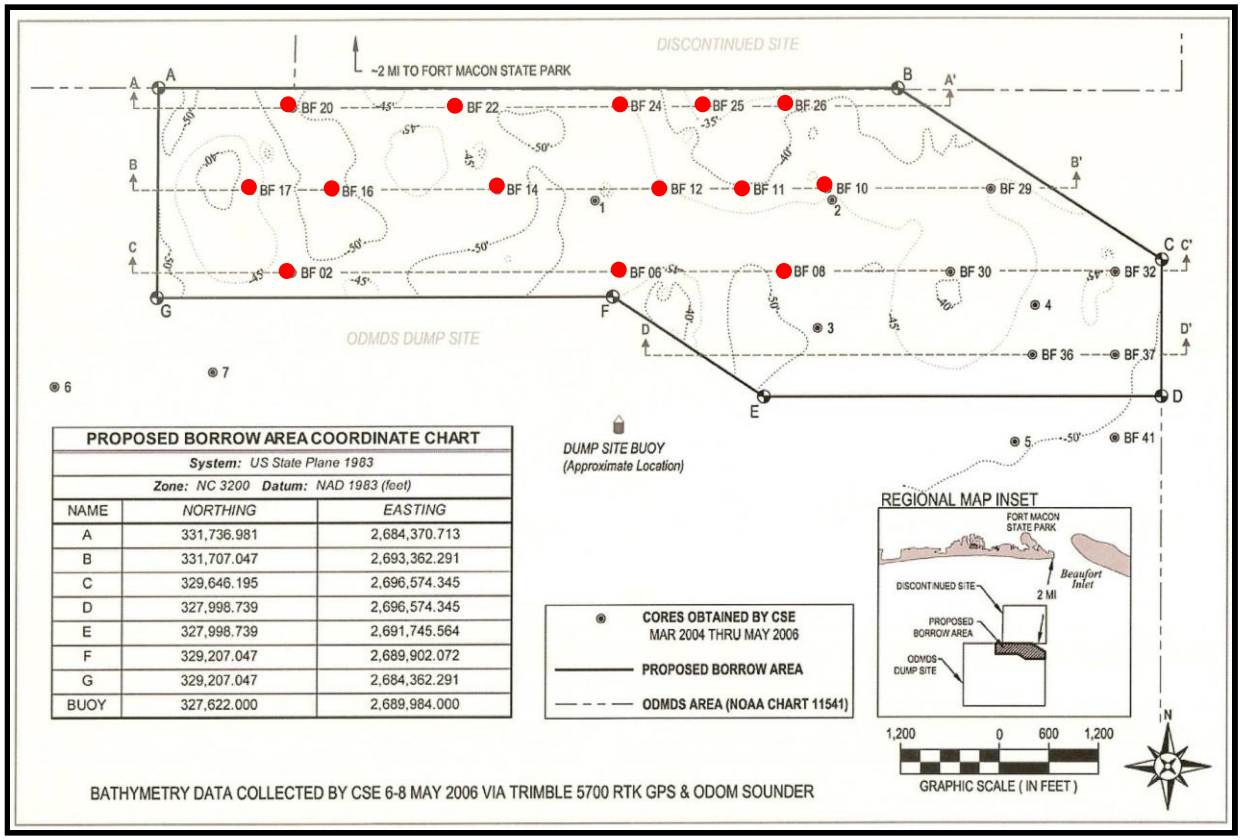

Figure 15. Location of CSE vibracores in the northern portion of the ODMDS. Figure adapted from CSE 2007b.

The sampling of the ODMDS material for the post-Hurricane *Ophelia* project as well as visual observations of the material on the beach provides substantial evidence that the ODMDS material and other materials deposited near the existing ODMDS will be able to meet all of the requirements of 15A NCAC 07H.0312 and provide a source of material necessary to sustain not only the Emerald Isle East project but the entire shoreline of Bogue Banks from Pine Knoll Shores west to Bogue Inlet for at least 25 years as required by 15A NCAC 07J .1201 and much longer based on the estimated volume of material in the existing ODMDS and historic disposal sites near the ODMDS.

USACE Borrow Areas. Potential borrow areas identified by the USACE offshore of Bogue Banks are shown in red in Figure 16 (USACE 2009). The other areas identified in this figure represent potential sources of sediment that are under consideration for the long-term plan being formulated by Carteret County.

As indicated in Figure 16, the USACE is also evaluating the ODMDS as well as other areas near Beaufort Inlet as potential borrow areas for the 50-year federal storm damage reduction project. The USACE preliminary assessment of the beach compatible material in the offshore sites is: 6.4 million cubic yards in USACE-West; 17.0 million cubic yards in USACE-Central; and 7.2 million cubic yards in USACE-East for a total of 30.6 million cubic yards. However, the results of the USACE geotechnical investigations are very preliminary and do not meet the USACE sampling standards for project design or the standards contained in 15A NCAC 07H.0312 (State Sediment Criteria). Once detailed sampling is complete, the USACE estimate of the available volume of material will likely be reduced.

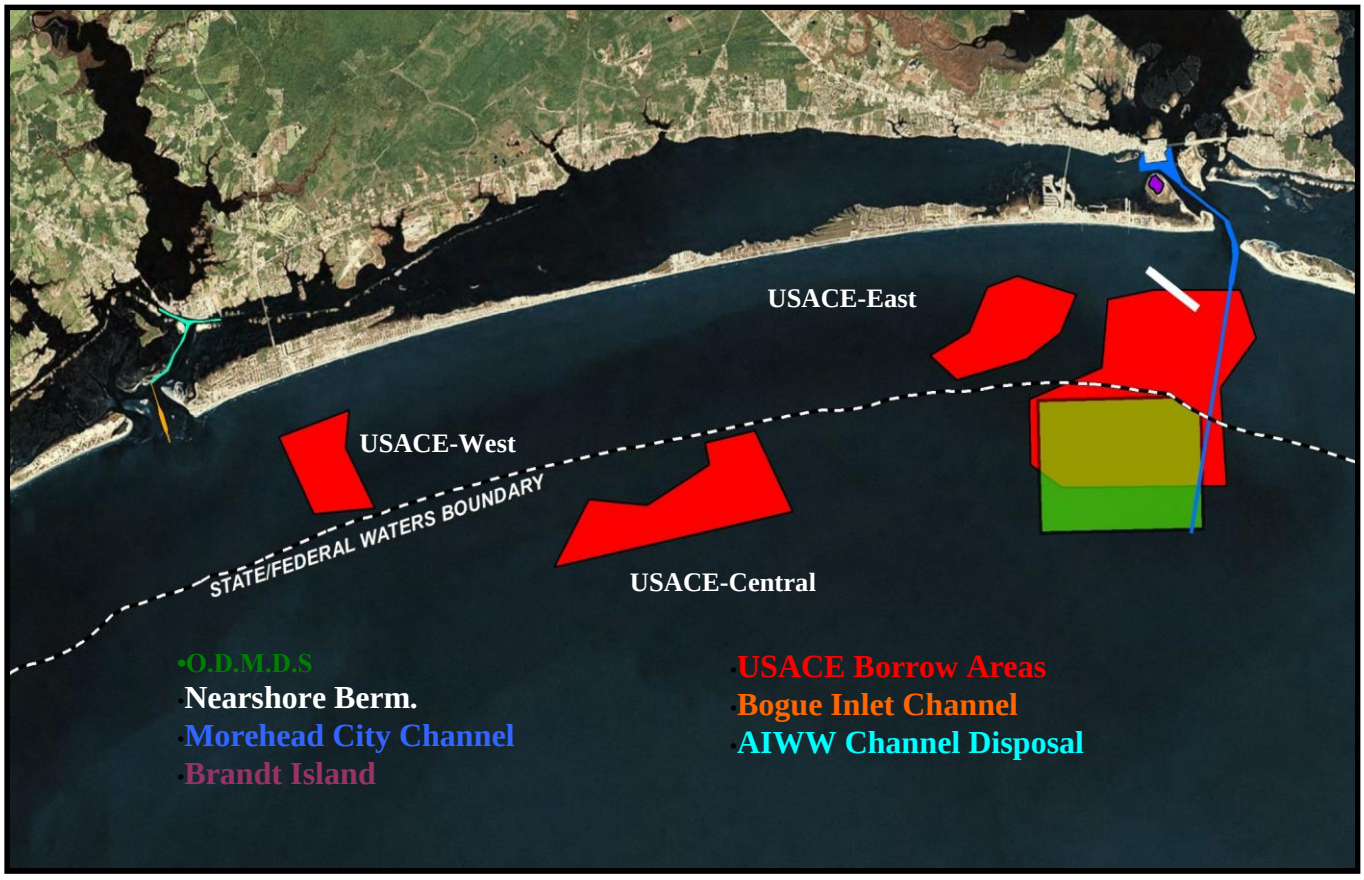

Figure 16. Potential USACE borrow areas (in red) and other sources of sediment near Bogue Banks.

Borrow Area Summary. While additional geotechnical investigations are needed to fully develop the existing ODMDS, the other areas near the existing ODMS, and the USACE sites into acceptable borrow areas for the Bogue Banks Restoration Project, including Emerald Isle East, the shear magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the Emerald Isle East project will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule. This may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined.

9. FINANCIAL PL AN.

9.1. Introduction. The Emerald Isle project is one segment of an island-wide Bogue Banks Restoration Project that includes the island communities of Pine Knoll Shores, Indian Beach, Salter Path and Emerald Isle. Funding for the Bogue Banks Restoration Project was provided by each island community as well as Carteret County. As Carteret County moves forward with the formulation of its long-range protection plan, funding for the project would continue to be provided by the individual communities, however, Carteret County would assume a major role in providing the necessary funding for periodic nourishment through distribution of funds from the County Beach Nourishment Fund that is supported by revenues generated by the room occupancy tax. While the Town of Atlantic Beach is not included in the Bogue Banks Restoration Project, Carteret County would provide financial support to assure disposal operations associated with maintenance of the Morehead City Harbor project extend along the full length of the town's shoreline. Financial support for Atlantic Beach from Carteret County would also be derived from the Beach Nourishment Fund.

Since periodic nourishment of all of the projects along Bogue Banks are inter-linked and depend on the County Beach Nourishment Fund as well as funds that would be provided by each community and the State of North Carolina, the financial plan presented here is applicable to each community on Bogue Banks.

9.2. Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 2 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of the various reaches along the island would be accomplished when the volume of material residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Note this nourishment criteria is more stringent than the one the Town of Emerald Isle and other towns on the island adopted to remain eligible for FEMA post-disaster assistance and will be used to develop funding needs over the next 25 to 30 years. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

9.3. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 3 provides a cost estimate for each operation based on current (2010) dollars.

Table 3. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[(1)]				$175,000
S&A[(1)]				$175,000
Total Cost/Operation				$14,253,000

[(1)] E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004. While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the 2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

9.4. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection, as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget constraints do not allow material to be distributed along the entire Atlantic Beach shoreline.

Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

9.5. Funding/Cost Allocation. As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Emerald Isle.

The balance of necessary beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities.

Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 4.

Table 4. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.
[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

9.6. County Room Occupancy Tax/Beach Nourishment Fund. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 17 (blue line).

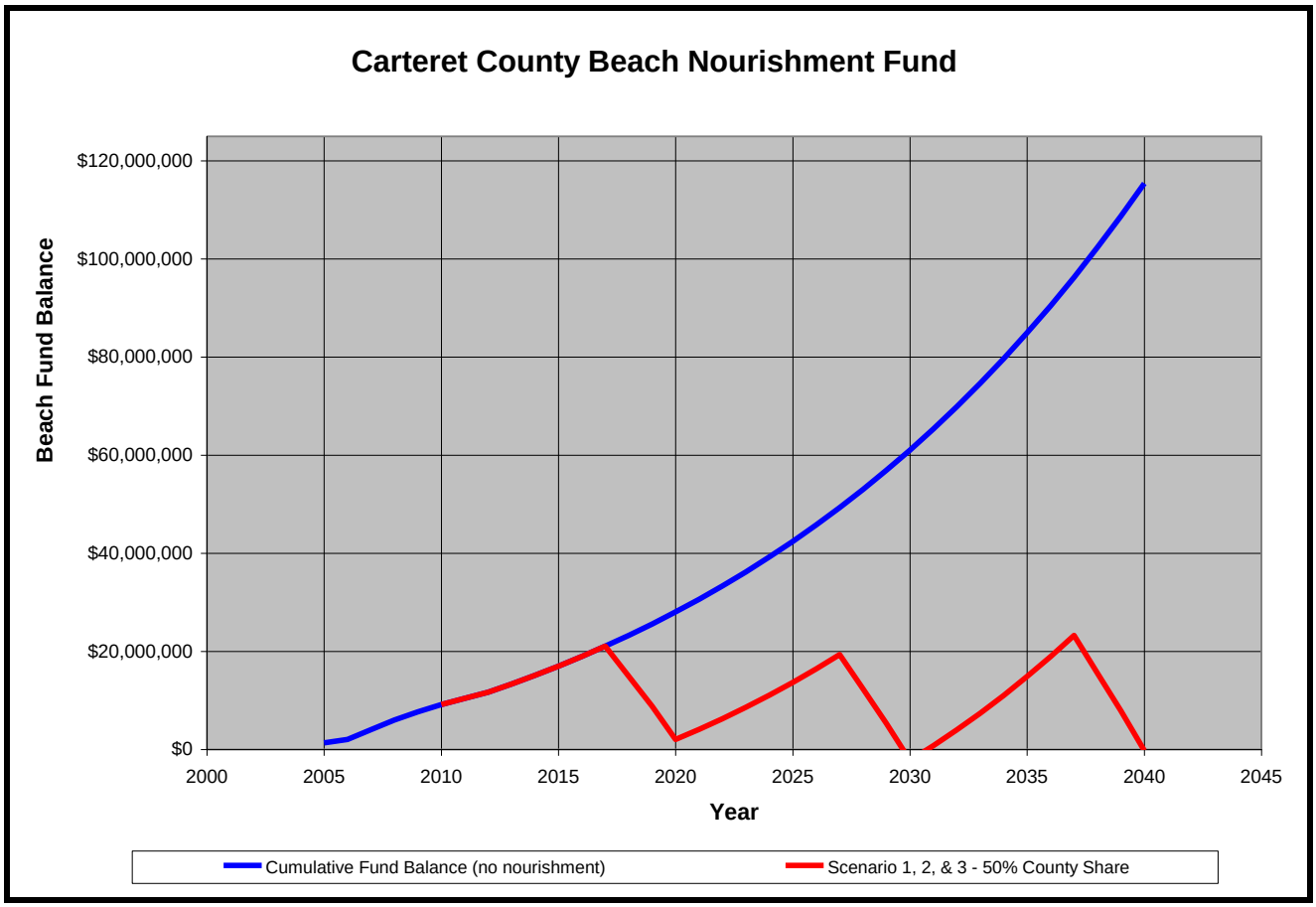

Figure 17. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 17 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

9.7. Emerald Isle Funding Source. As noted above, the Town of Emerald Isle will need to provide $21.2 million over the 30-year time frame for future beach nourishment costs in Emerald Isle. The Town's financial plan, outlined below, is expected to generate approximately $24.2 million over the 30-year planning period.

The Town completed primarily locally-funded beach nourishment projects in 2003 and 2005, and generated more than $19.1 million of local funding for these projects (and also received a $3.8 million State contribution). A total of $17 million was generated through the sale of General Obligation bonds, and approximately $2.1 million was generated through higher than anticipated special district tax revenues. Because the Town issued General Obligation bonds, the voters of the Town were required to approve the issuance of this debt and approved a $17 million bond referendum in 2002. The Town committed to fund the vast majority of debt service payments for these bonds with special district tax revenues levied for this purpose.

These special district taxes have been levied by the Town every year since FY 02-03. These special district taxes were initially established at rates of 48 cents per $100 of assessed value on all oceanfront and inlet-front properties and 3 cents on all other properties (FY 02-03 through FY 06-07), but the rates were decreased to the revenue-neutral rates of 16.2 cents and 1.1 cent after the 2007 Carteret County tax revaluation (and have remained constant since FY 07-08). The Town currently levies special district taxes with rates of 16.2 cents and 1.1 cent, and FY 10-11 is the final year these taxes are necessary to fund debt service payments. It is important to note that these special district taxes have been levied annually in June by the Board of Commissioners as part of the adoption of the Town's official budget ordinance. NC General Statutes do not allow a town to establish multi-year property tax rates, however, the Board of Commissioners has historically levied the same special district tax rates each year. The Town made this commitment to its taxpayers in 2002, and has steadfastly honored that commitment since that time.

The Emerald Isle Board of Commissioners has repeatedly gone on record over the past 2 years with its intent to levy new special district taxes to fund the Town's share of future beach nourishment costs outlined in this report. The Board of Commissioners, by adoption of this plan, has committed to levy new special district taxes beginning in FY 11-12, with a special district tax rate of 3 cents on all oceanfront and inlet-front properties and 1 cent on all other properties (see Resolution in Appendix B). The levy of these new special district taxes will yield annual revenues of approximately $655,000 beginning in FY 11-12. Assuming a 1% annual growth rate in this revenue source, and investment of fund balance with interest earnings of 2% annually, this new tax will generate approximately $24.2 million over the 30-year period, which is approximately $3 million more than the required amount of $21.2 million. These and any other additional funds generated over time, beyond those required, will be retained to cover higher than anticipated costs and/or greater than anticipated nourishment volumes.

The process to establish special tax districts (technical name is "municipal service districts") is outlined in NC General Statutes 160A-535 through 160A-549. The process involves the scheduling of a public hearing, publishing the proper notice, mailing notices to all affected property owners, conducting a public hearing, and the adoption of a Board resolution. No voter approval is required (i.e., referendum) to establish special tax districts. As noted above, the annual tax rates for special tax districts are determined annually in June by the Board as part of the official budget ordinance. The Town will establish new special tax districts for the future beach nourishment costs outlined in this

report in 2011. Because there will be a significant reduction in the special district tax rates (from 16.2 cents to 3 cents, and from 1.1 cent to 1 cent), the Board is confident in the community's acceptance of this tax structure. This plan has been well-publicized in Emerald Isle over the past 2 years, with discussion at numerous Town meetings, articles in the Town's monthly newsletter, articles in local newspapers, and presentations to various groups.

This funding strategy is also intended to provide sufficient cash flows to enable future Emerald Isle beach nourishment costs to be funded on a pay-as-you-go basis, and thus avoid the use of debt financing and the need for a future bond referendum. The Town expects that the timing of future beach nourishment needs, County room occupancy tax revenues, Town special district tax revenues, and State funding will be such that the necessary funding will be in-hand prior to incurring future beach nourishment construction costs.

Detailed County and Town revenue projections are included in Appendix B

10. SUMMARY

By virtue of this report, the Town of Emerald Isle has provided information and supporting documents that satisfy all of the requirements for the consideration of a static line exception stipulated in 15A NCAC 07J .1201. The report documents the design and execution of the project by a registered professional engineering firm licensed to practice in North Carolina, demonstrated the project has been maintained for well over the 5-year minimum, shown the project has an identified source of beach compatible borrow material that will sustain the project for more than the minimum 25 years, and provided a funding plan that will support the project for at least the next 25 years.

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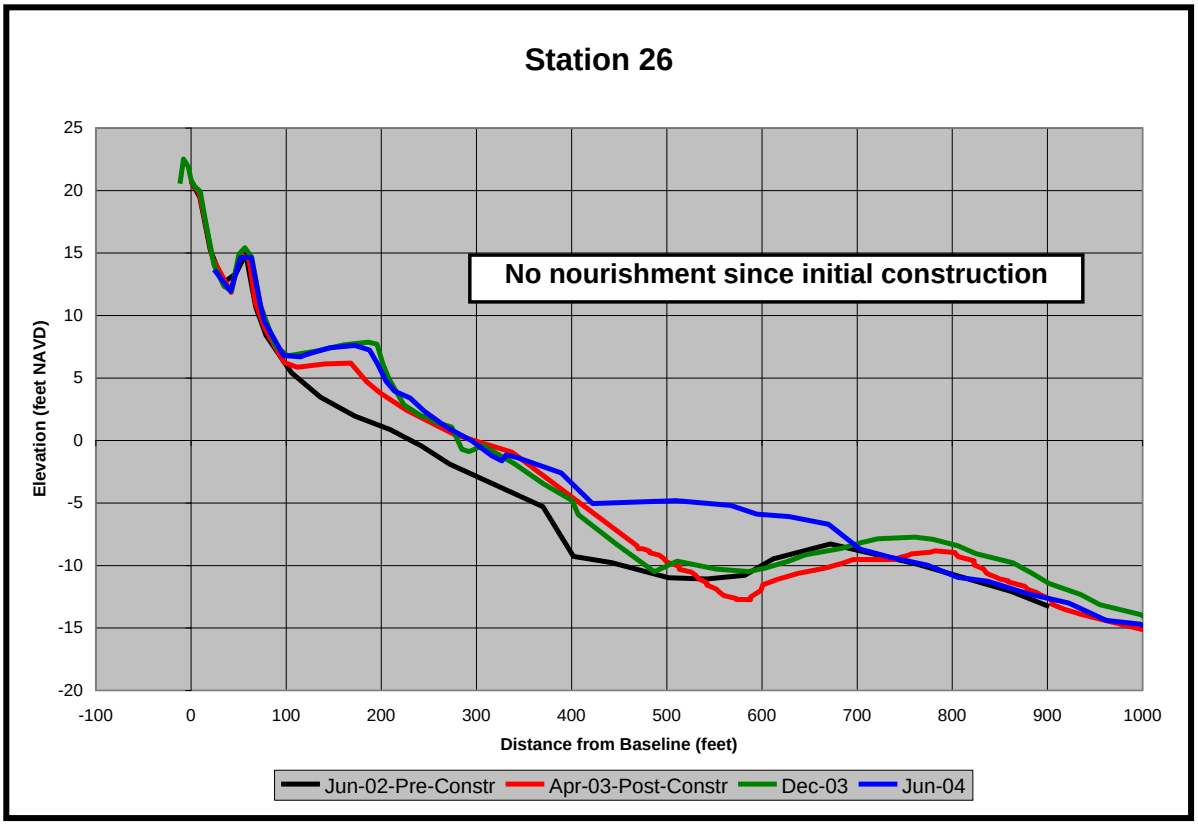
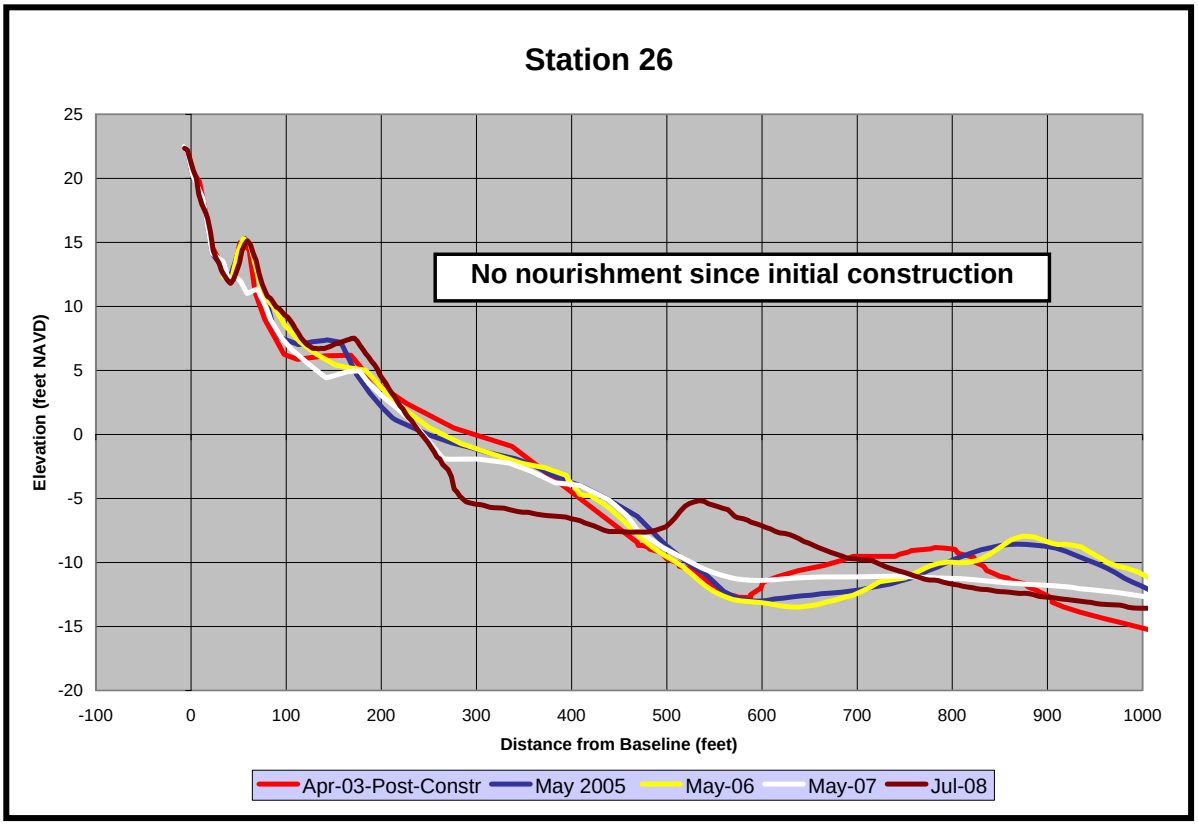
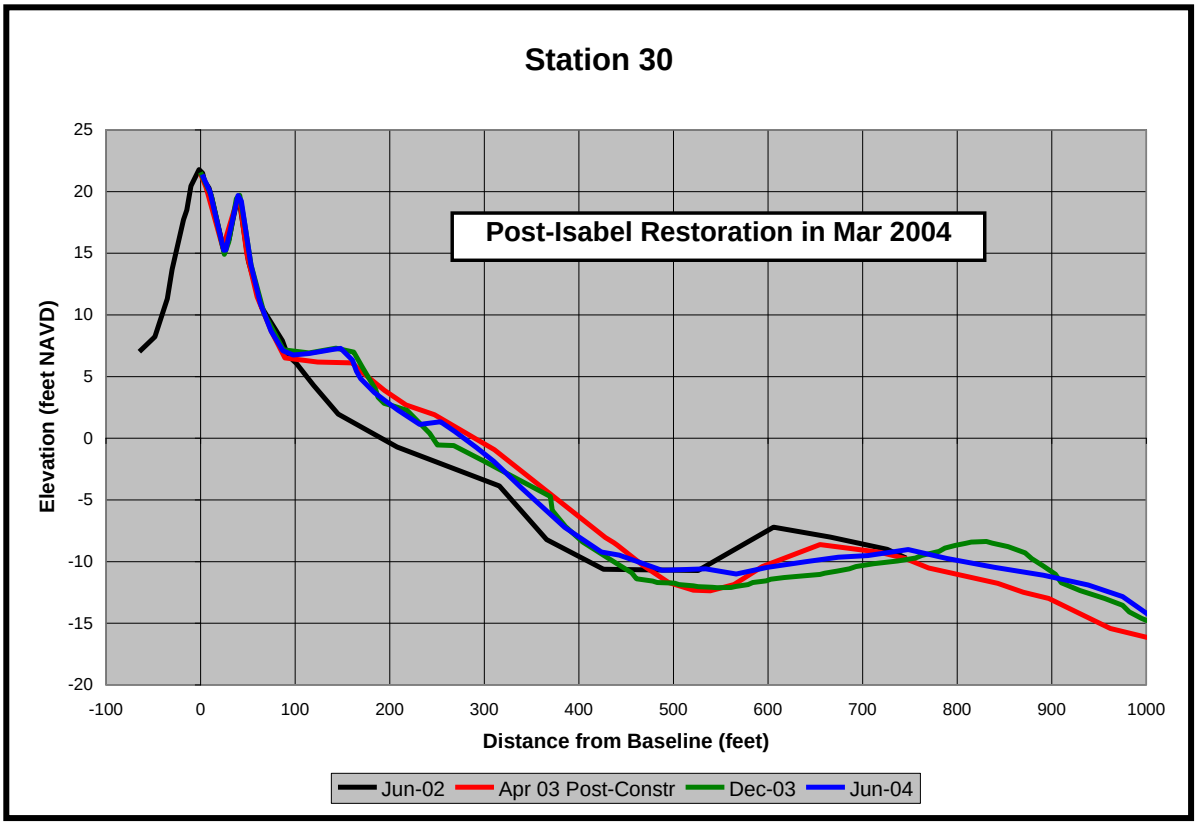
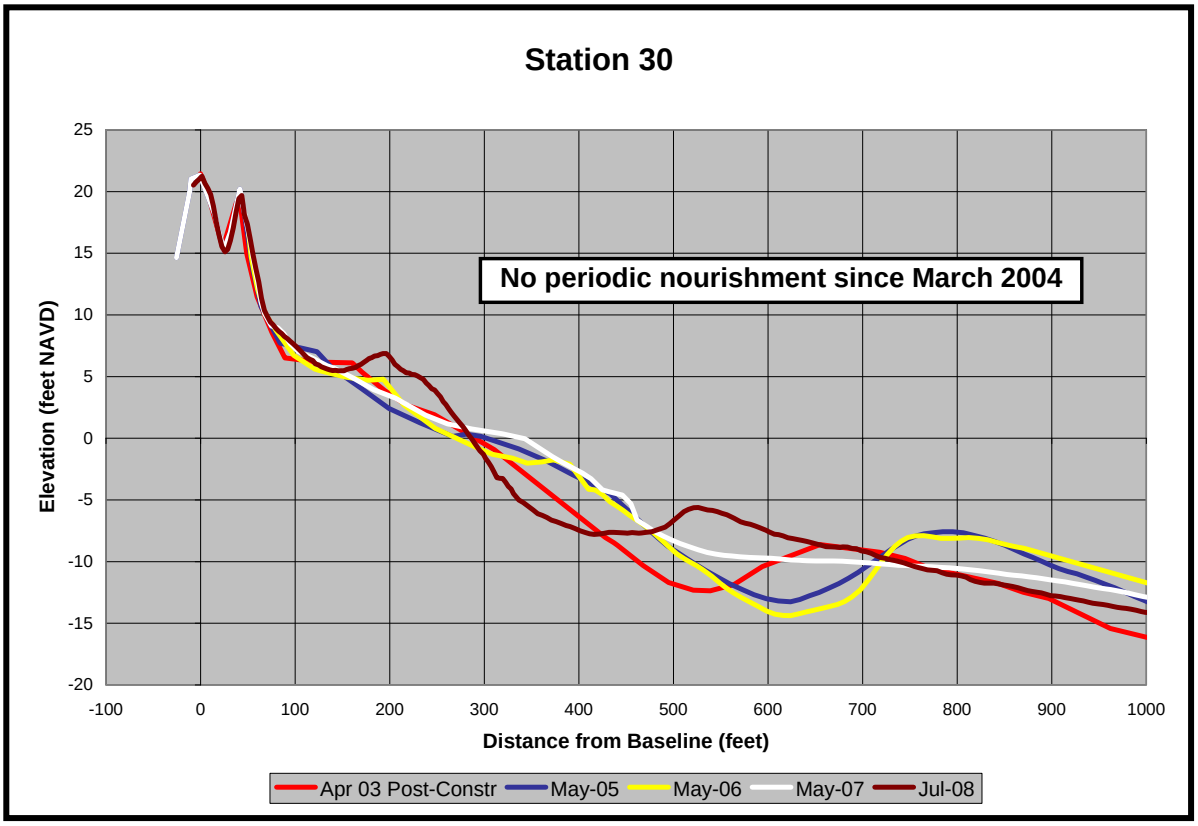
APPENDIX A
PROFILE PLOTS





Station 26 – Profile Comparisons – Jun 1999 to July 2008





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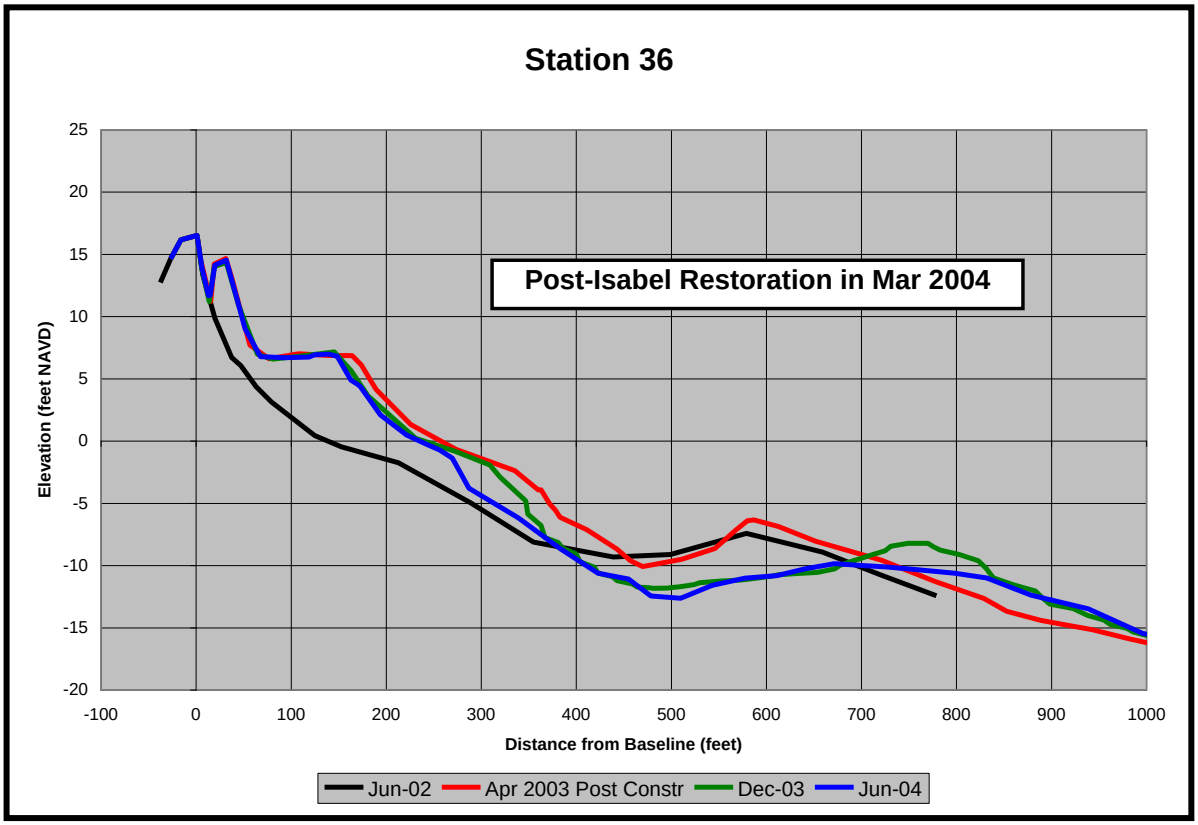

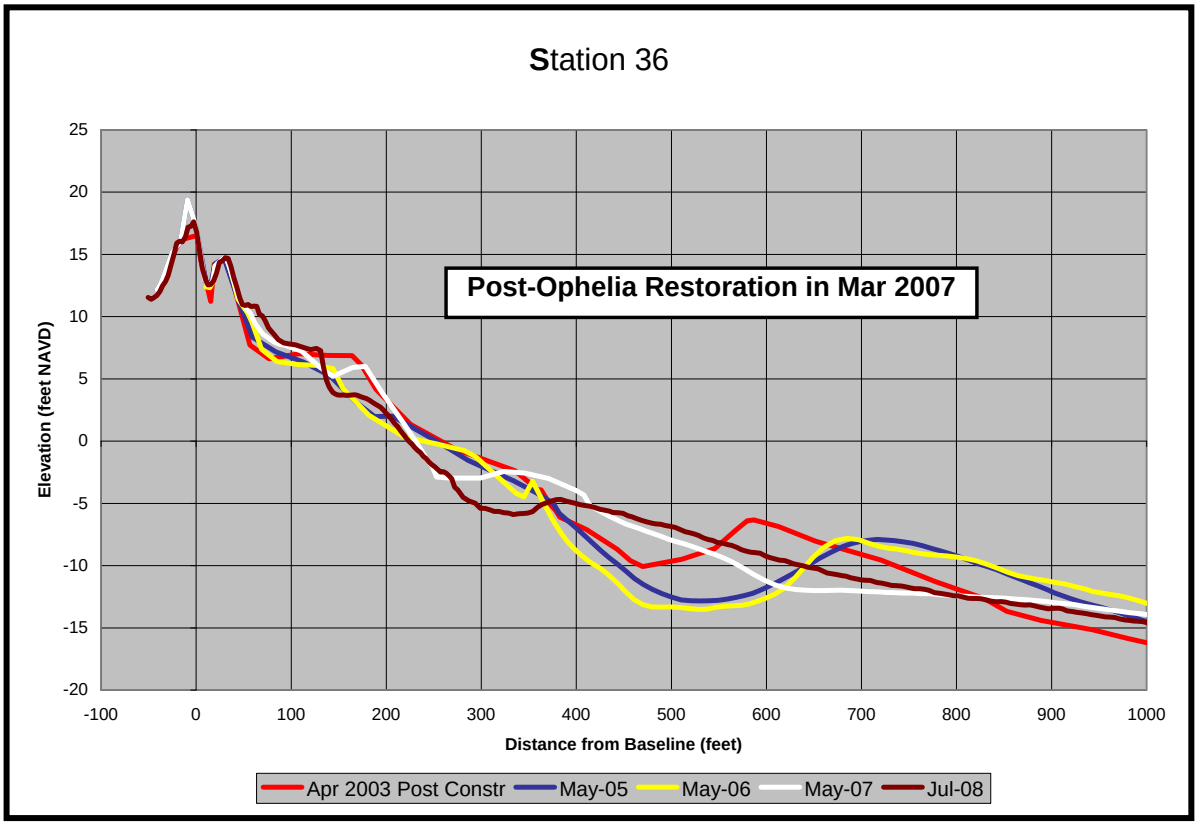

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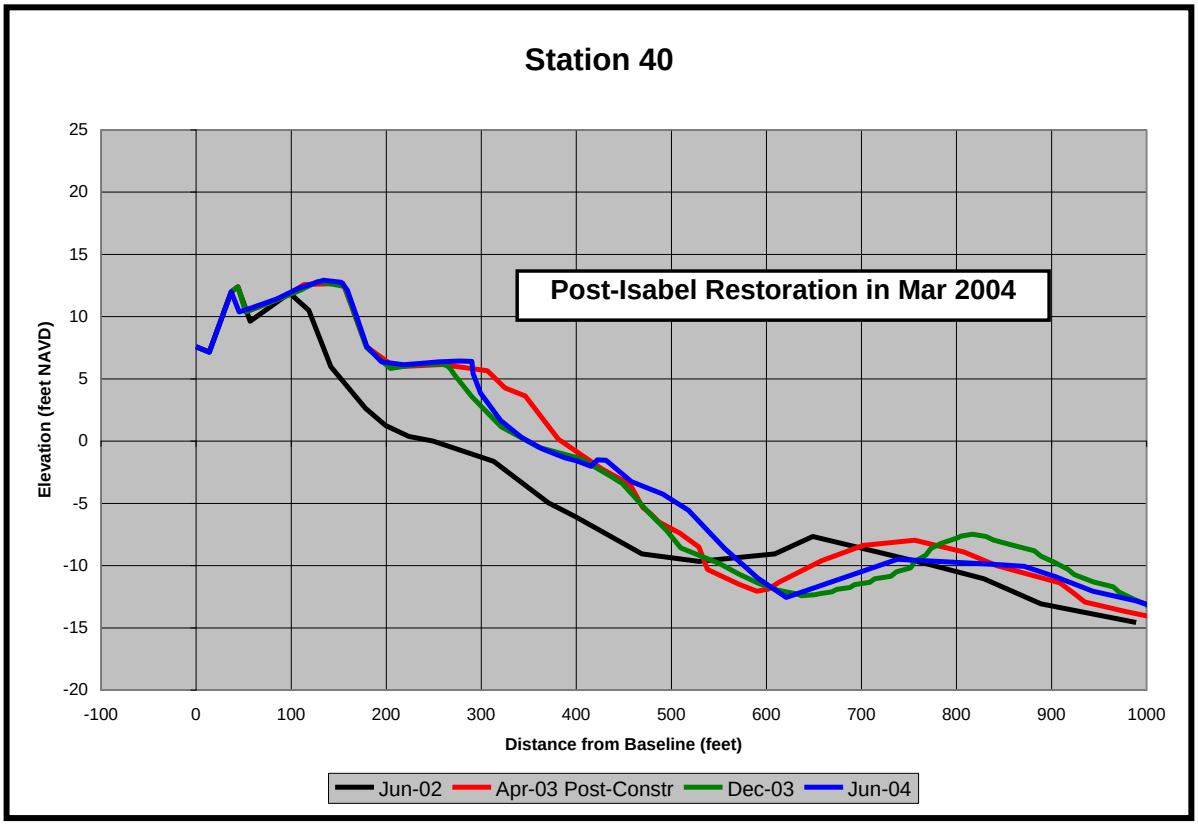

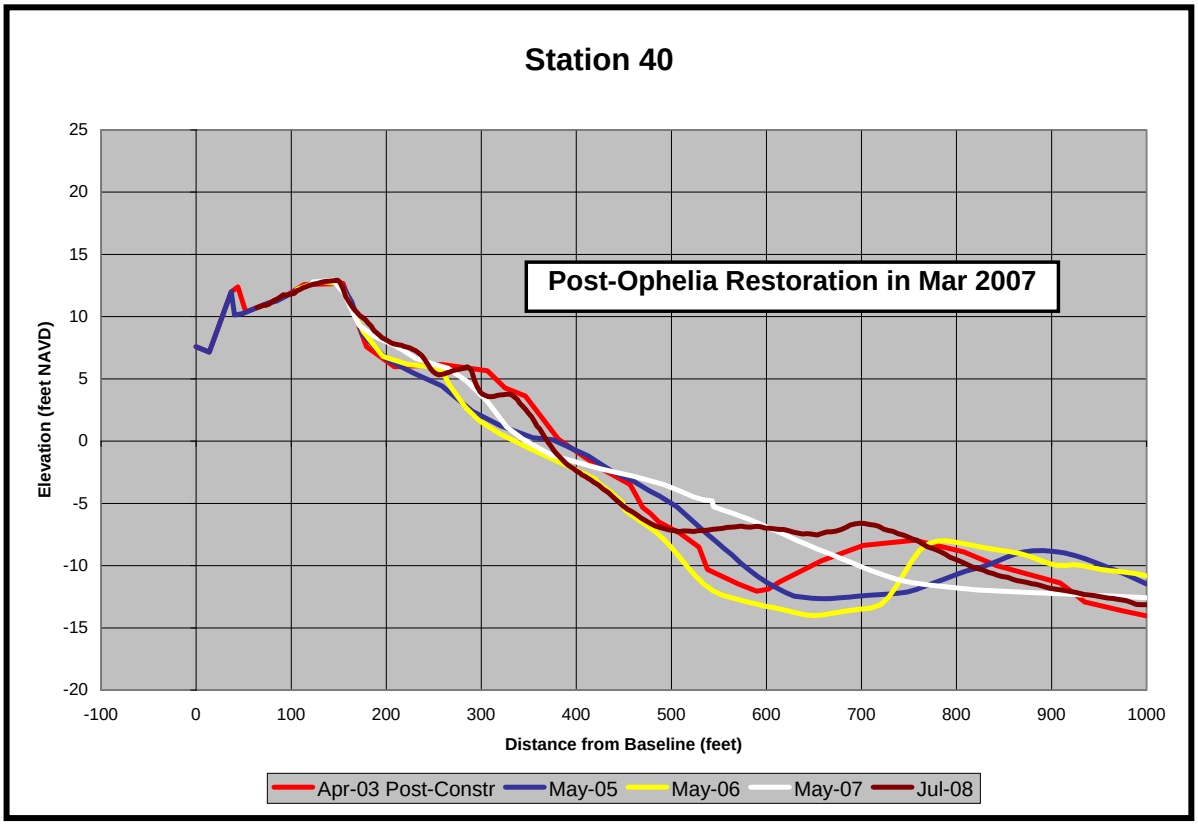

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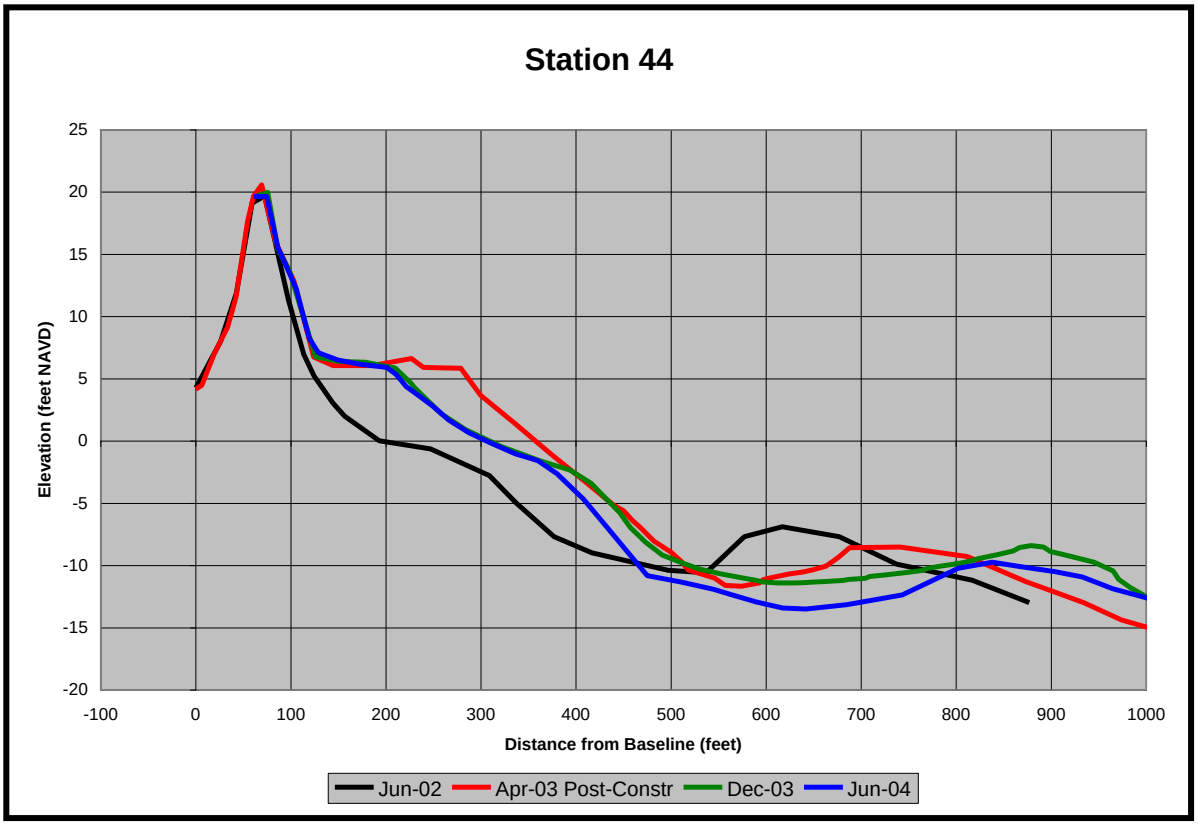

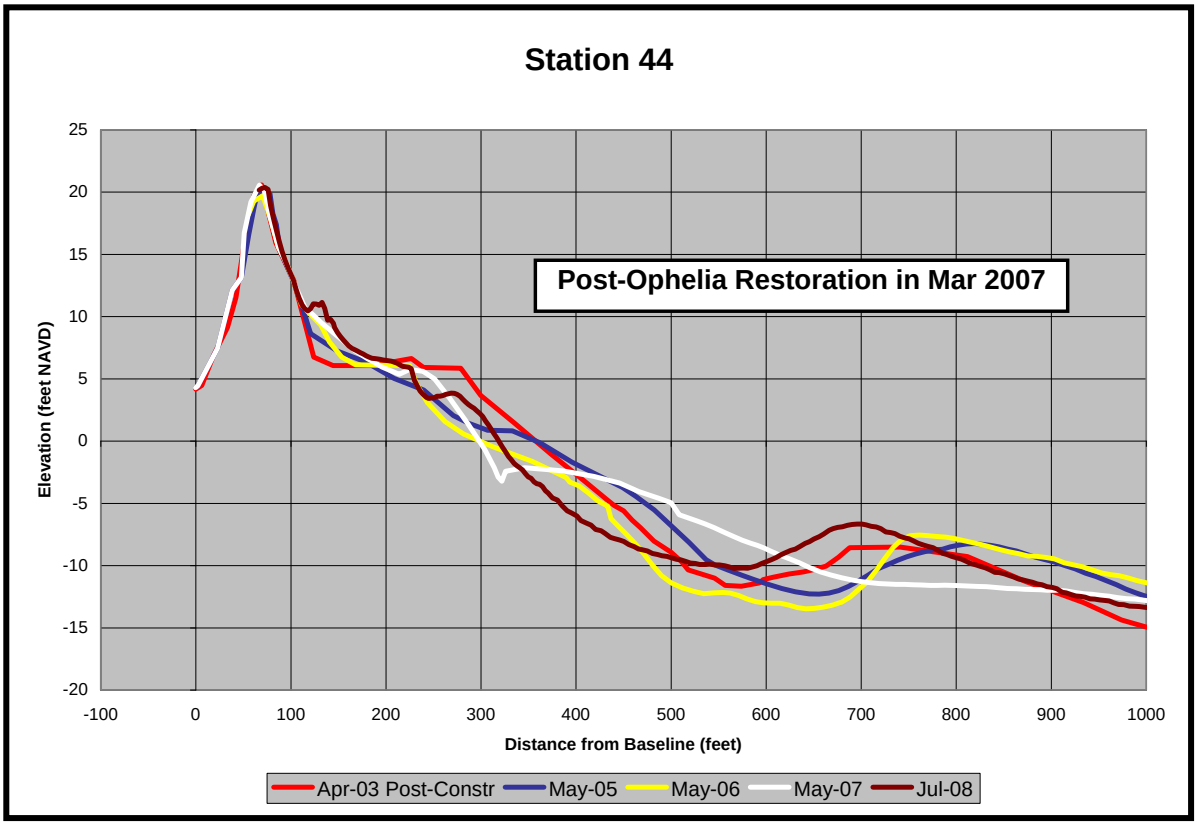

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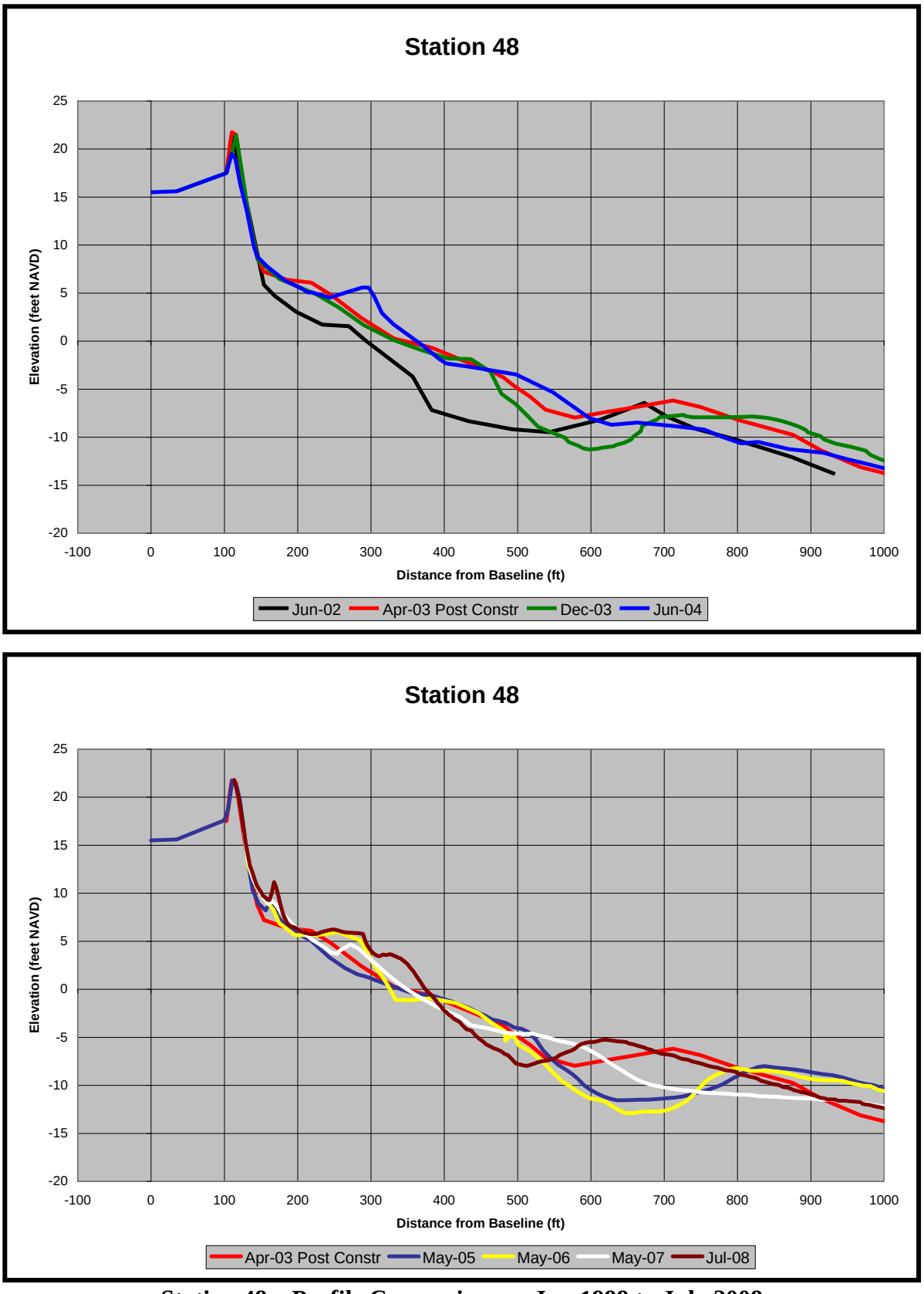


Station 48 – Profile Comparisons – Jun 1999 to July 2008

APPENDIX B

SUPPLEMENTAL FINANCIAL INFORMATION

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2007

SESSION LAW 2007-112
SENATE BILL 465

AN ACT TO CONSOLIDATE AND REWRITE THE CARTERET COUNTY OCCUPANCY TAX LAW AND TO AMEND THE DEADLINE FOR THE DEVELOPMENT OF A CONVENTION CENTER PLAN FOR CARTERET COUNTY.

The General Assembly of North Carolina enacts:

SECTION 1. Sections 1 through 9 of S.L. 2001-381, as amended by S.L. 2005-120 and S.L. 2005-435, are rewritten and recodified as Sections 2 through 4 of this act. This act does not affect the rights or liabilities of the county, a taxpayer, or another person arising under the law rewritten and recodified by this act before the effective date of this act; nor does it affect the right to any refund or credit of a tax that accrued under the law rewritten and recodified by this act before the effective date of this act.

SECTION 2. Occupancy Tax. – (a) Authorization and Scope. – The Carteret County Board of Commissioners may levy a room occupancy and tourism development tax of five percent (5%) of the gross receipts derived from the rental of any room, lodging, or similar accommodation furnished by any hotel, motel, inn, tourist camp, condominium, cottage, campground, rental agency, or other similar place within the county that is subject to sales tax imposed by the State under G.S. 105-164.4(a)(3). This tax is in addition to any State or local sales tax. This tax does not apply to accommodations furnished by the following:

(1) Religious organizations.
(2) Educational organizations.
(3) Any business that offers to rent fewer then five units.
(4) Summer camps.
(5) Charitable, benevolent, and other nonprofit organizations.

SECTION 2.(b) Additional Occupancy Tax. – In addition to the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the Carteret County Board of Commissioners may, no earlier than July 1, 2010, levy an additional room occupancy and tourism development tax of one percent (1%) of the gross receipts derived from the rental of accommodations taxable under subsection (a) of Section 2 of this act only if all of the following conditions have been met:

(1) A development plan for the construction of a convention center has been approved by resolution of the board of county commissioners and the governing board of the municipality where the center is to be located by June 30, 2010.
(2) There is a signed contract between the appropriate local governments and a private developer that includes financing commitments for construction to begin no later than July 1, 2011.
(3) The county is levying the room occupancy and tourism development tax authorized under subsection (a) of Section 2 of this act.

SECTION 2.(c) Repeal of Additional Occupancy Tax. – Carteret County's authority to levy the additional one percent (1%) room occupancy and tourism development tax under subsection (b) of Section 2 of this act is repealed as provided in this section if either of the following events occur:

(1) A cumulative total of ten million dollars ($10,000,000) in proceeds from the additional one percent (1%) room occupancy and tourism development tax is collected, calculated beginning on July 1, 2010. The repeal under this subdivision is effective on the first day of the second month following the date that the cumulative total of ten million dollars ($10,000,000) is collected.

(2) Construction on the convention center has not begun by July 1, 2011. The repeal under this subdivision is effective September 1, 2011. Any funds collected before the repeal date must be redistributed to the Tourism Development Authority and used only to promote travel and tourism.

SECTION 2.(d) Excess Proceeds from Additional Occupancy Tax. – Carteret County must redistribute any excess proceeds from the additional one percent (1%) room occupancy and tourism development tax authorized under subsection (b) of Section 2 of this act to the Tourism Development Authority to be used only to promote travel and tourism. For purposes of this subsection, "excess proceeds" means:

(1) Any proceeds in excess of ten million dollars ($10,000,000) collected prior to the repeal date of the additional tax.

(2) Any proceeds collected but not spent in excess of the actual cost of the convention center.

SECTION 2.(e) Administration. – A tax levied under this act must be levied, administered, collected, and repealed as provided in G.S. 153A-155. The penalties provided in G.S. 153A-155 apply to a tax levied under this act. The Carteret County Tax Collector must establish procedures to periodically audit the businesses subject to the tax levied under this act in order to ensure compliance with this act.

SECTION 2.(f) Definitions. – The following definitions apply in this act:

(1) Beach nourishment. – The placement of sand, from other sand sources, on a beach or dune by mechanical means and other associated activities that are in conformity with the North Carolina Coastal Management Program along the shorelines of the Atlantic Ocean of North Carolina and connecting inlets for the purpose of widening the beach to benefit public recreational use and mitigating damage and erosion from storms to inland property. The term includes expenditures for the following:

a. Costs directly associated with qualifying for projects either contracted through the U.S. Army Corps of Engineers or otherwise permitted by all appropriate federal and State agencies;

b. The nonfederal share of the cost required to construct these projects;

c. The costs associated with providing enhanced public beach access; and

d. The costs of associated nonhardening activities such as the planting of vegetation, the building of dunes, and the placement of sand fences.

(2) Net proceeds. – Gross proceeds less the cost to the county of administering and collecting the tax, as determined by the finance officer, not to exceed three percent (3%) of the first five hundred thousand dollars ($500,000) of gross proceeds collected each year and one percent (1%) of the remaining gross receipts collected each year.

(3) Promote travel and tourism. – To advertise or market an area or activity, publish and distribute pamphlets and other materials, conduct market research, or engage in similar promotional activities that attract tourists or business travelers to the area; the term includes administrative expenses incurred in engaging in these activities.

(4) Tourism-related expenditures. – Expenditures that, in the judgment of the Tourism Development Authority, are designed to increase the use of lodging facilities, meeting facilities, or convention facilities in a county or to attract tourists or business travelers to the county. The term includes tourism-related capital expenditures.

SECTION 2.(g) Use and Distribution of five percent (5%) Occupancy Tax Revenue. – If Carteret County levies only the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the net proceeds of the tax must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret County Tourism Development Authority. Beginning July 1, 2010, if the conditions in subsection (b) of Section 2 of this act are not met, then Carteret County must, on a quarterly basis, remit sixty percent (60%) to the Carteret County Tourism Development Authority. After deducting its administrative expenses, the Authority must use all of the funds remitted to it under this subdivision to promote travel and tourism in Carteret County. Administrative expenses may not exceed ten percent (10%) of the total budget of the Tourism Development Authority and may not include costs associated with the operation of visitor centers.

(2) Beach nourishment. – Carteret County must retain the remainder to be used only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

SECTION 2.(h) Use and Distribution of six percent (6%) Occupancy Tax Revenue. – If the conditions in subsection (b) of Section 2 of this act are met and Carteret County levies the room occupancy tax at a rate of six percent (6%) as authorized by subsections (a) and (b) of Section 2 of this act, the net proceeds must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret Tourism Development Authority to be used to promote travel and tourism.

(2) Beach nourishment. – Carteret County must use thirty-three percent (33%) only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

(3) Convention center financing. – Any remaining proceeds, up to a maximum of ten million dollars ($10,000,000), must be used for the financing of debt service, operating costs, or both associated with the construction of a new convention center in Carteret County.

SECTION 3.(a) Carteret County Tourism Development Authority. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Tourism Development Authority for the purpose of managing the promotion and development of tourism in Carteret County.

SECTION 3.(b) The Authority must consist of nine members and must be appointed by the board of county commissioners by the selection of two members from each list of nominees submitted by the following organizations:

(1) Carteret County Chamber of Commerce.

(2) Crystal Coast Hotel/Motel Association, doing business as Crystal Coast Hospitality Association.
(3) Carteret County Board of Realtors.

The nominees submitted by the Chamber of Commerce, the Hotel/Motel Association, and the Board of Realtors must be individuals who collect the occupancy tax levied under this act. However, notwithstanding the foregoing, the board of county commissioners must appoint those persons named to serve by their respective organizations.

Three additional Authority members must be directly appointed by the board of county commissioners. One of these appointments must be a county commissioner, and one must be a mayor of a Carteret County municipality.

SECTION 3.(c) All members of the Authority must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms.

No member must serve more than two consecutive three-year terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired terms they are appointed to fill.

SECTION 3.(d) The Authority must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 3.(e) The Authority must submit to the board of county commissioners an annual audited financial statement itemizing its receipts and expenditures each year.

SECTION 3.(f) The Authority may contract with any person, firm, or agency to advise, assist, manage, or promote travel and tourism in Carteret County.

SECTION 4.(a) Carteret County Beach Commission. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Beach Commission, which must advise the board on strategies for beach nourishment and on the expenditure of room occupancy tax proceeds dedicated to beach nourishment.

SECTION 4.(b) The Beach Commission must consist of 11 members appointed by the board of county commissioners according to the following formula:

(1) Two individuals who reside within the town limits of Atlantic Beach.
(2) Two individuals who reside within the town limits of Pine Knoll Shores.
(3) Two individuals who reside within the town limits of Emerald Isle.
(4) One individual who resides within the town limits of Indian Beach.
(5) One individual who resides on Bogue Banks.
(6) One individual who resides anywhere in Carteret County.
(7) A member of the board of county commissioners.
(8) A member of the Carteret County Tourism Development Authority.

SECTION 4.(c) All members of the Beach Commission must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired term.

SECTION 4.(d) The Beach Commission must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 4.(e) The Beach Commission may not contract with any person, firm, or agency. The board of commissioners must be bound by the recommendations of the Beach Commission regarding the expenditure of room occupancy tax proceeds dedicated to beach nourishment. The board of commissioners may in its discretion delegate additional responsibilities to the Beach Commission.

SECTION 5. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 27th day of June, 2007.

s/ Beverly E. Perdue
President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

The following three figures show (1) the growth in the Carteret County room occupancy tax collections since its inception in 1993 through 2008, (2) the year-to-year percent change in the in tax collections, and (3) monthly room occupancy tax collections for each year.

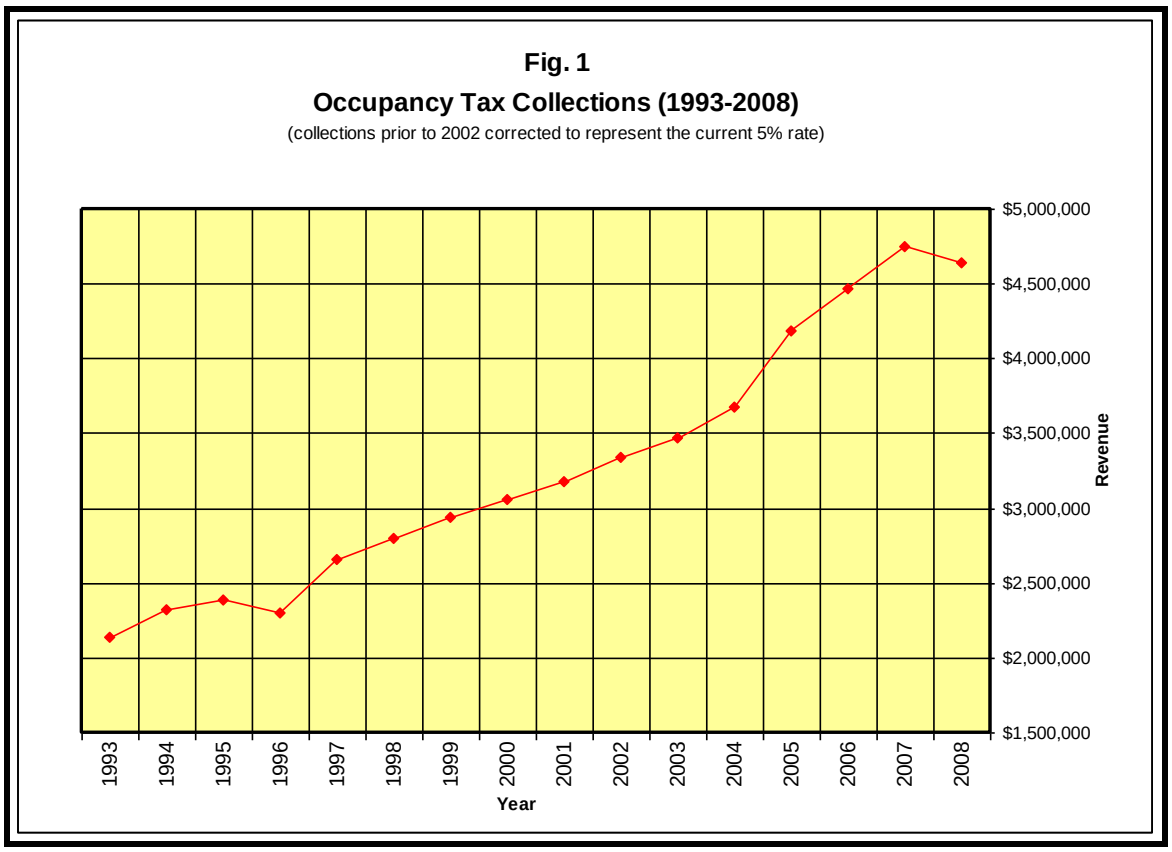


Fig. 2
Percent +/- Compared to Previous Year
Occupancy Tax Collections (1993-2008)
(collections prior to 2002 corrected to represent the current 5% rate)

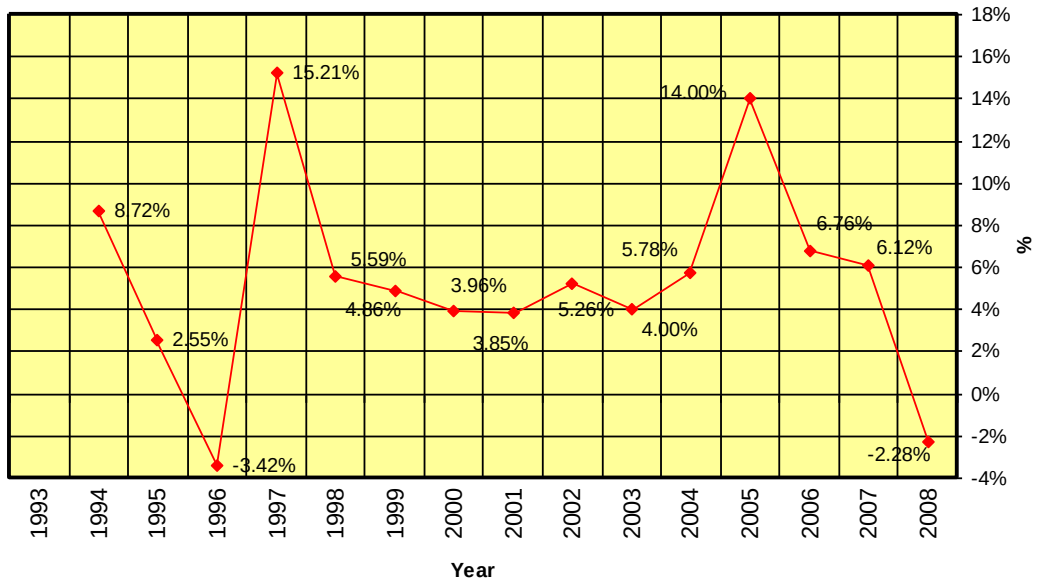
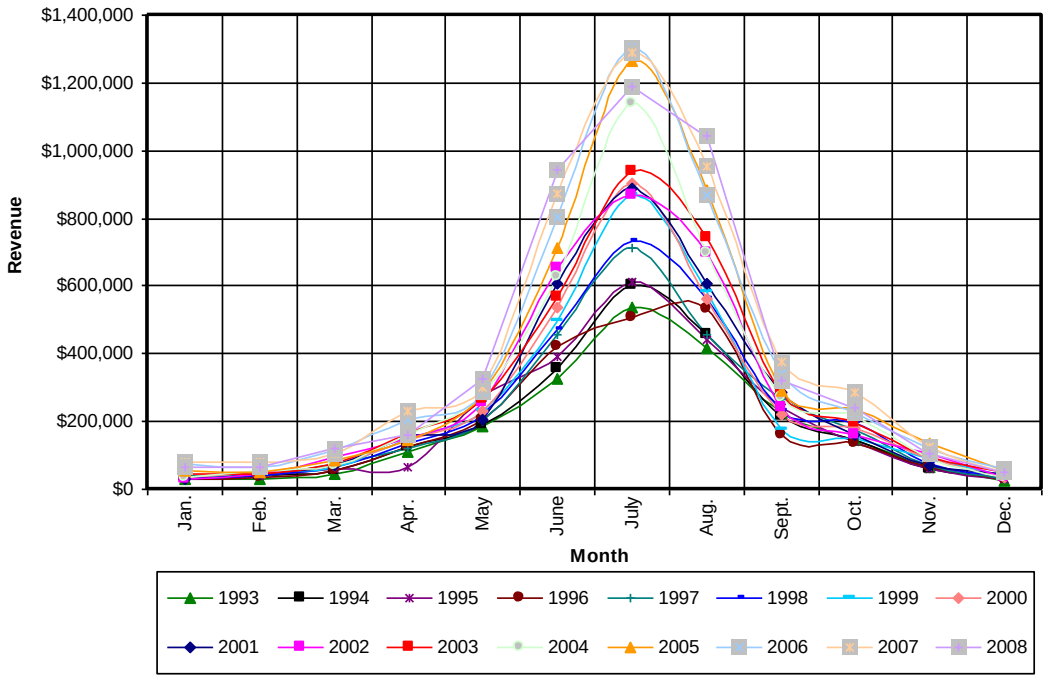


Fig. 3

Monthly Occupancy Tax Collections (1993-2008)

(collections prior to 2002 corrected to represent the current 5% rate)



Computations for the year-end balance in the Carteret County beach nourishment fund is provided in the following spreadsheet. Assumptions used to develop this projection are as follows:

Assumptions:

(1) Occupancy tax collections increase 4% annually beginning in FY 2012.
(2) Interest rate is 2.06%.
(3) Revenues - County beach nourishment is the surplus remaining after administrative costs for the annual occupancy tax collected for beach nourishment, State is 25% of annual nourishment cost, & local match is 25% of annual nourishment cost.
(4) Administrative expenditures increase at a 3% annual rate beginning in FY 2014.
(5) Annual nourishment cost for Bogue Banks is based upon historic erosion rates and volumetric need.

CARTERET COUNTY OCCUPANCY TAX PROJECTION

Portion of S.L. 2007-12 designated for beach nourishment (5% total w/ 50% towards nourishment until FY 2010, 40% thereafter)

25% STATE FUNDING, 50% COUNTY FUNDING, 25% LOCAL FUNDING

		REVENUES			EXPENDITURES			
Fiscal Year (July 1st - June 30th)	**Occupancy Tax** (occ. tax)	interest	State funding	Local match	administrative	nourishment	**Annual surplus or deficit**	**Balance**
2002	$856,091	<=included	$326,500		$863,511			$319,080
2003	$1,641,828	<=included	$179,500		$1,636,724			$503,684
2004	$1,777,409	<=included	$0		$1,391,030			$890,063
2005	$1,908,613	<=included	$85,000		$1,542,807			$1,340,869
2006	$2,217,115	<=included	$141,725		$1,630,665			$2,069,044
2007	$2,548,954	<=included	$55,500		$610,637			$4,062,860
2008	$2,555,364	<=included	$103,250		$724,520			$5,996,953
2009	$2,201,928	$193,510	$0		$729,494			$7,662,898
2010	$2,179,909	$160,050	$150,000		$971,555			$9,181,301
2011	$1,796,245	$188,899	$0	$0	$766,719	$0	$1,218,425	$10,399,727
2012	$1,868,095	$213,967	$0	$0	$789,495	$0	$1,292,567	$11,692,294
2013	$1,942,819	$240,561	$0	$0	$513,400	$0	$1,669,980	$13,362,273
2014	$2,020,532	$274,920	$0	$0	$528,802	$0	$1,766,649	$15,128,922
2015	$2,101,353	$311,267	$0	$0	$544,666	$0	$1,867,954	$16,996,876
2016	$2,185,407	$349,699	$0	$0	$561,006	$0	$1,974,100	$18,970,976
2017	$2,272,823	$390,315	$0	$0	$577,836	$0	$2,085,302	$21,056,277
2018	$2,363,736	$433,218	$4,409,750	$4,409,750	$595,172	$17,639,000	-$6,617,717	$14,438,560
2019	$2,458,286	$297,063	$4,159,750	$4,159,750	$613,027	$16,639,000	-$6,177,178	$8,261,383
2020	$2,556,617	$169,972	$4,159,750	$4,159,750	$631,417	$16,639,000	-$6,224,328	$2,037,055
2021	$2,658,882	$41,911	$0	$0	$650,360	$0	$2,050,433	$4,087,487
2022	$2,765,237	$84,097	$0	$0	$669,871	$0	$2,179,463	$6,266,951
2023	$2,875,846	$128,938	$0	$0	$689,967	$0	$2,314,818	$8,581,768
2024	$2,990,880	$176,564	$0	$0	$710,666	$0	$2,456,778	$11,038,547
2025	$3,110,515	$227,111	$0	$0	$731,986	$0	$2,605,640	$13,644,187
2026	$3,234,936	$280,720	$0	$0	$753,945	$0	$2,761,710	$16,405,897
2027	$3,364,334	$337,540	$250,000	$250,000	$776,564	$1,000,000	$2,425,310	$18,831,207
2028	$3,498,907	$387,439	$5,051,500	$5,051,500	$799,861	$20,206,000	-$7,016,515	$11,814,692
2029	$3,638,863	$243,079	$5,051,500	$5,051,500	$823,857	$20,206,000	-$7,044,914	$4,769,778
2030	$3,784,418	$98,135	$5,051,500	$5,051,500	$848,572	$20,206,000	-$7,069,020	-$2,299,241
2031	$3,935,794	-$47,305	$0	$0	$874,029	$0	$3,014,460	$715,218
2032	$4,093,226	$14,715	$0	$0	$900,250	$0	$3,207,691	$3,922,909
2033	$4,256,955	$80,711	$0	$0	$927,258	$0	$3,410,409	$7,333,318
2034	$4,427,233	$150,878	$0	$0	$955,076	$0	$3,623,036	$10,956,354
2035	$4,604,323	$225,419	$0	$0	$983,728	$0	$3,846,014	$14,802,368
2036	$4,788,496	$304,549	$250,000	$250,000	$1,013,240	$1,000,000	$3,579,805	$18,382,173
2037	$4,980,035	$378,201	$0	$0	$1,043,637	$0	$4,314,599	$22,696,772
2038	$5,179,237	$466,971	$6,138,750	$6,138,750	$1,074,946	$24,555,000	-$7,706,239	$14,990,533
2039	$5,386,406	$308,420	$6,138,750	$6,138,750	$1,107,194	$24,555,000	-$7,689,868	$7,300,665
2040	$5,601,863	$150,206	$6,138,750	$6,138,750	$1,140,410	$24,555,000	-$7,665,841	-$365,176
Totals	$118,629,510	$7,261,741	$47,841,475	$46,800,000	$33,697,902	$187,200,000	-$9,546,477	

Town of Emerald Isle

RESOLUTION ADOPTING STATIC LINE EXCEPTION REPORT

Whereas, the eastern 5.9 miles of oceanfront development in Emerald Isle are subject to a static vegetation line as a result of a large-scale beach nourishment project completed in 2003, and

Whereas, the NC Coastal Resources Commission has adopted new rules that enable a community to petition for a static line "exception", which would again enable the use of the actual first line of stable vegetation for oceanfront setback measurements in this area, and

Whereas, the application of the static vegetation line has rendered more than 171 properties in eastern Emerald Isle non-conforming in perpetuity, resulting in the inability for destroyed homes to be reconstructed, preventing voluntary redevelopment, discouraging large-scale property improvements, and impacting the ability to secure mortgages, and the Town seeks to eliminate these problems, and

Whereas, the ability to again use the actual first line of stable vegetation for oceanfront setback measurements may enable many of the affected properties to regain conforming status, and

Whereas, in order to secure a static line "exception", the Town must present a static line exception report that outlines previous nourishment activities, project performance and monitoring activities, the availability of suitable sand for at least a 25-year period, and the availability of reliable funding for at least a 25-year period, and

Whereas, the Town has retained Coastal Planning & Engineering of NC to prepare such a report for submission to the NC Coastal Resources Commission,

Now, therefore, be it resolved that the Board of Commissioners hereby adopts the Static Line Exception Application Report prepared by Coastal Planning & Engineering of NC dated January 2010, and will comply with the commitments outlined in the report. The Town Manager is hereby authorized to submit the report for consideration by the NC Coastal Resources Commission for a static line exception.

Adopted this the ____ day of _____ , 2010.

_____
Arthur B. Schools, Jr., Mayor

ATTEST:

_____
Rhonda C. Ferebee, CMC, Town Clerk

The following spread sheet shows how the Town of Emerald Isle plans to raise the necessary revenues to support the beach nourishment project.

Town of Emerald Isle						
Local Funding - Beach Nourishment						
New Beach Nourishment Reserve Fund						
	County Share 50%					
Fiscal	**State Share 25%**	**3 cent / 1 cent**	**Interest**	**Fund**		
Year	**Emerald Isle Share 25%**	**Special Tax Districts**	**Earnings**	**Balance**		
2011	-	-	-	200,000	carry-over funds	
2012	-	655,000	4,000	859,000		
2013	-	661,550	17,180	1,537,730		
2014	-	668,166	30,755	2,236,650		
2015	-	674,847	44,733	2,956,230		
2016	-	681,596	59,125	3,696,950		
2017	-	688,412	73,939	4,459,301		
2018	1,913,485	695,296	89,186	3,330,298		
2019	1,913,485	702,249	66,606	2,185,667		
2020	1,913,485	709,271	43,713	1,025,167		
2021	-	716,364	20,503	1,762,034		
2022	-	723,527	35,241	2,520,802		
2023	-	730,763	50,416	3,301,981		
2024	-	738,070	66,040	4,106,091		
2025	-	745,451	82,122	4,933,664		
2026	-	752,906	98,673	5,785,243		
2027	-	760,435	115,705	6,661,382		
2028	2,323,690	768,039	133,228	5,238,959		
2029	2,323,690	775,719	104,779	3,795,768		
2030	2,323,690	783,477	75,915	2,331,470		
2031	-	791,311	46,629	3,169,410		
2032	-	799,224	63,388	4,032,023		
2033	-	807,217	80,640	4,919,880		
2034	-	815,289	98,398	5,833,567		
2035	-	823,442	116,671	6,773,680		
2036	-	831,676	135,474	7,740,830		
2037	-	839,993	154,817	8,735,639		
2038	2,823,825	848,393	174,713	6,934,920		
2039	2,823,825	856,877	138,698	5,106,670		
2040	2,823,825	865,446	102,133	3,250,424		
TOTAL	21,183,000	21,910,004	2,323,420	3,250,424		

Town of Emerald Isle

Visit our web site at www.emeraldisle-nc.org !

Town Manager
Frank A. Rush, Jr.

Mailing Address
7500 Emerald Drive
Emerald Isle, NC 28594

Physical Address
7509 Emerald Drive

Voice 252-354-3424
Fax 252-354-5068

RESOLUTION ADOPTING STATIC LINE EXCEPTION REPORT

Whereas, the eastern 5.9 miles of oceanfront development in Emerald Isle are subject to a static vegetation line as a result of a large-scale beach nourishment project completed in 2003, and

Whereas, the NC Coastal Resources Commission has adopted new rules that enable a community to petition for a static line "exception", which would again enable the use of the actual first line of stable vegetation for oceanfront setback measurements in this area, and

Whereas, the application of the static vegetation line has rendered more than 171 properties in eastern Emerald Isle non-conforming in perpetuity, resulting in the inability for destroyed homes to be reconstructed, preventing voluntary redevelopment, discouraging large-scale property improvements, and impacting the ability to secure mortgages, and the Town seeks to eliminate these problems, and

Whereas, the ability to again use the actual first line of stable vegetation for oceanfront setback measurements may enable many of the affected properties to regain conforming status, and

Whereas, in order to secure a static line "exception", the Town must present a static line exception report that outlines previous nourishment activities, project performance and monitoring activities, the availability of suitable sand for at least a 25-year period, and the availability of reliable funding for at least a 25-year period, and

Whereas, the Town has retained Coastal Planning & Engineering of NC to prepare such a report for submission to the NC Coastal Resources Commission,

Now, therefore, be it resolved that the Board of Commissioners hereby adopts the Static Line Exception Application Report prepared by Coastal Planning & Engineering of NC dated January 2010, and will comply with the commitments outlined in the report. The Town Manager is hereby authorized to submit the report for consideration by the NC Coastal Resources Commission for a static line exception.

Adopted this the 12th day of January, 2010.

Arthur B. Schools, Jr., Mayor

ATTEST:

Rhonda C. Ferebee, CMC, Town Clerk

STATE OF NORTH CAROLINA
DEPARTMENT OF JUSTICE

ROY COOPER
ATTORNEY GENERAL

P.O. BOX 629
RALEIGH, NC 27602

REPLY TO: CHRISTINE A. GOEBEL
ENVIRONMENTAL DIV.
TEL: (919) 716-6600
FAX: (919) 716-6767
Cgoebel@ncdoj.gov

MEMORANDUM

TO: North Carolina Coastal Resources Commission

FROM: Christine A. Goebel, Assistant Attorney General
Dr. Jeff Warren, DCM Coastal Hazards Specialist

DATE: March 12, 2010 (for the March 24-26, 2010 CRC Meeting)

RE: Static Line Exception Request by the **Town of Indian Beach and Salter Path**

Petitioners, the Town of Indian Beach ("Town") and Salter Path (unincorporated Carteret County represented by the County in this request) request an exception from the Town's static vegetation line from the Commission pursuant to N.C.G.S. §§ 113A-107, -113(b)(6), -124, and 15A NCAC 7J.1200 et seq. The granting of such a request by the Commission would result in the application of 15A NCAC 7H.0305(a)(5) and 7H.0306(a)(8) to proposed development projects in the affected area, instead of the current use of the static vegetation line per 7H.0305(a)(6). The Town and Salter Path have had a static vegetation line, used for determining ocean erosion setbacks**,** in place along the entire 2.4 miles of the Town's and County's ocean shoreline since 2001 when the static line rules became effective for the Town and County in connection with their large-scale nourishment project. These two political sub-divisions had their large-scale nourishment project permitted together originally, and so they apply for this exception together now.

Pursuant to the requirements of 15A NCAC 7J.1202(a), this memorandum will contain a description of the area subject to the static line exception request, a summary of the fill projects in this area, a summary of the evidence required from and produced by the Town, and a recommendation by Staff to the Commission.

The following information is attached to this memorandum:
Attachment A: Relevant Rules
Attachment B: Staff's Recommendation
Attachment C: Petitioner's Report

cc: Rhonda Lambert, Indian Beach Town Manager
Greg "Rudi" Rudolph, Carteret County Shore Protection Manager
Jennie W. Hauser, CRC Counsel

ATTACHMENT A
Relevant Rules

SECTION .1200 – STATIC VEGETATION LINE EXCEPTION PROCEDURES

15A NCAC 07J .1201 REQUESTING THE STATIC LINE EXCEPTION

(a) Any local government or permit holder of a large-scale beach fill project, herein referred to as the petitioner, that is subject to a static vegetation line pursuant to 15A NCAC 07H .0305, may petition the Coastal Resources Commission for an exception to the static line in accordance with the provisions of this Section.
(b) A petitioner is eligible to submit a request for a static vegetation line exception after five years have passed since the completion of construction of the initial large-scale beach fill project(s) as defined in 15A NCAC 07H .0305 that required the creation of a static vegetation line(s). For a static vegetation line in existence prior to the effective date of this Rule, the award-of-contract date of the initial large-scale beach fill project, or the date of the aerial photography or other survey data used to define the static vegetation line, whichever is most recent, shall be used in lieu of the completion of construction date.
(c) A static line exception request applies to the entire static vegetation line within the jurisdiction of the petitioner including segments of a static vegetation line that are associated with the same large-scale beach fill project. If multiple static vegetation lines within the jurisdiction of the petitioner are associated with different large-scale beach fill projects, then the static line exception in accordance with 15A NCAC 07H .0306 and the procedures outlined in this Section shall be considered separately for each large-scale beach fill project.
(d) A static line exception request shall be made in writing by the petitioner. A complete static line exception request shall include the following:

(1) A summary of all beach fill projects in the area for which the exception is being requested including the initial large-scale beach fill project associated with the static vegetation line, subsequent maintenance of the initial large-scale projects(s) and beach fill projects occurring prior to the initial large-scale projects(s). To the extent historical data allows, the summary shall include construction dates, contract award dates, volume of sediment excavated, total cost of beach fill project(s), funding sources, maps, design schematics, pre-and post-project surveys and a project footprint;

(2) Plans and related materials including reports, maps, tables and diagrams for the design and construction of the initial large-scale beach fill project that required the static vegetation line, subsequent maintenance that has occurred, and planned maintenance needed to achieve a design life providing no less than 25 years of shore protection from the date of the static line exception request. The plans and related materials shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work;

(3) Documentation, including maps, geophysical, and geological data, to delineate the planned location and volume of compatible sediment as defined in 15A NCAC 07H .0312 necessary to construct and maintain the large-scale beach fill project defined in Subparagraph (d)(2) of this Rule over its design life. This documentation shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work; and

(4) Identification of the financial resources or funding sources necessary to fund the large-scale beach fill project over its design life.

(e) A static line exception request shall be submitted to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. Written acknowledgement of the receipt of a completed static line exception request, including notification of the date of the meeting at which the request will be considered by the Coastal Resources Commission, shall be provided to the petitioner by the Division of Coastal Management.
(f) The Coastal Resources Commission shall consider a static line exception request no later than the second scheduled meeting following the date of receipt of a complete request by the Division of Coastal Management, except when the petitioner and the Division of Coastal Management agree upon a later date.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1202 REVIEW OF THE STATIC LINE EXCEPTION REQUEST

(a) The Division of Coastal Management shall prepare a written report of the static line exception request to be presented to the Coastal Resources Commission. This report shall include:

(1) A description of the area affected by the static line exception request;

(2) A summary of the large-scale beach fill project that required the static vegetation line as well as the completed and planned maintenance of the project(s);

(3) A summary of the evidence required for a static line exception; and

(4) A recommendation to grant or deny the static line exception.

(b) The Division of Coastal Management shall provide the petitioner requesting the static line exception an opportunity to review the report prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff: March 23, 2009.

15A NCAC 07J .1203 PROCEDURES FOR APPROVING THE STATIC LINE EXCEPTION

(a) At the meeting that the static line exception is considered by the Coastal Resources Commission, the following shall occur:

(1) The Division of Coastal Management shall orally present the report described in 15A NCAC 07J .1202.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(b) The Coastal Resources Commission shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J .1201(d)(1) through (d)(4). The final decision of the Coastal Resources Commission shall be made at the meeting at which the matter is heard or in no case later than the next scheduled meeting. The final decision shall be transmitted to the petitioner by registered mail within 10 business days following the meeting at which the decision is reached.

(c) The decision to authorize or deny a static line exception is a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1204 REVIEW OF THE LARGE-SCALE BEACH-FILL PROJECT AND APPROVED STATIC LINE EXCEPTIONS

(a) Progress Reports. The petitioner that received the static line exception shall provide a progress report to the Coastal Resources Commission at intervals no greater than every five years from date the static line exception is authorized. The progress report shall address the criteria defined in 15A NCAC 07J .1201(d)(1) through (d)(4) and be submitted in writing to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. The Division of Coastal Management shall provide written acknowledgement of the receipt of a completed progress report, including notification of the meeting date at which the report will be presented to the Coastal Resources Commission to the petitioner.

(b) The Coastal Resources Commission shall review a static line exception authorized under 15A NCAC 07J .1203 at intervals no greater than every five years from the initial authorization in order to renew its findings for the conditions defined in 15A NCAC 07J .1201(d)(2) through (d)(4). The Coastal Resources Commission shall also consider the following conditions:

(1) Design changes to the initial large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) provided that the changes are designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work;

(2) Design changes to the location and volume of compatible sediment, as defined by 15A NCAC 07H .0312, necessary to construct and maintain the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2), including design changes defined in this Rule provided that the changes have been designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work; and

(3) Changes in the financial resources or funding sources necessary to fund the large-scale beach fill project(s) defined in 15A NCAC 07J .1201(d)(2). If the project has been amended to include design changes defined in this Rule, then the Coastal Resources Commission shall consider the financial resources or funding sources necessary to fund the changes.

(c) The Division of Coastal Management shall prepare a written summary of the progress report and present it to the Coastal Resources Commission no later than the second scheduled meeting following the date the report was received, except when a later meeting is agreed upon by the local government or community submitting the progress report and the Division of Coastal Management. This written summary shall include a recommendation from the Division of Coastal Management on whether the conditions defined in 15A NCAC 07J .1201(d)(1) through (d)(4) have been met. The petitioner submitting the progress report shall be provided an opportunity to review the written summary prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.

(d) The following shall occur at the meeting at which the Coastal Resources Commission reviews the static line exception progress report:

(1) The Division of Coastal Management shall orally present the written summary of the progress report as defined in this Rule.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1205 REVOCATION AND EXPIRATION OF THE STATIC LINE EXCEPTION

(a) The static line exception shall be revoked immediately if the Coastal Resources Commission determines, after the review of the petitioner's progress report identified in 15A NCAC 07J .1204, that any of the criteria under which the static line exception is authorized, as defined in 15A NCAC 07J .1201(d)(2) through (d)(4) are not being met.

(b) The static line exception shall expire immediately at the end of the design life of the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) including subsequent design changes to the project as defined in 15A NCAC 07J .1204(b).

(c) In the event a progress report is not received by the Division of Coastal Management within five years from either the static line exception or the previous progress report, the static line exception shall be revoked automatically at the end of the five-year interval defined in 15A NCAC 07J .1204(b) for which the progress report was not received.

(d) The revocation or expiration of a static line exception is considered a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1206 LOCAL GOVERNMENTS AND COMMUNITIES WITH STATIC VEGETATION LINES AND STATIC LINE EXCEPTIONS

A list of static vegetation lines in place for petitioners and the conditions under which the static vegetation lines exist, including the date(s) the static line was defined, shall be maintained by the Division of Coastal Management. A list of static line exceptions in place for petitioners and the conditions under which the exceptions exist, including the date the exception was granted, the dates the progress reports were received, the design life of the large-scale beach fill project and the potential expiration dates for the static line exception, shall be maintained by the Division of Coastal Management. Both the static vegetation line list and the static line exception list shall be available for inspection at the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557.
History Note: Authority G.S. 113A-107; 113A-113(b)(6), 113A-124 Eff. March 23, 2009.

15A NCAC 7H .0305 GENERAL IDENTIFICATION AND DESCRIPTION OF LANDFORMS

(a) This section describes natural and man-made features that are found within the ocean hazard area of environmental concern.
***

(5) Vegetation Line. The vegetation line refers to the first line of stable and natural vegetation, which shall be used as the reference point for measuring oceanfront setbacks. This line represents the boundary between the normal dry-sand beach, which is subject to constant flux due to waves, tides, storms and wind, and the more stable upland areas. The vegetation line is generally located at or immediately oceanward of the seaward toe of the frontal dune or erosion escarpment. The Division of Coastal Management or Local Permit Officer shall determine the location of the stable and natural vegetation line based on visual observations of plant composition and density. If the vegetation has been planted, it may be considered stable when the majority of the plant stems are from continuous rhizomes rather than planted individual rooted sets. The vegetation may be considered natural when the majority of the plants are mature and additional species native to the region have been recruited, providing stem and rhizome densities that are similar to adjacent areas that are naturally occurring. In areas where there is no stable natural vegetation present, this line may be established by interpolation between the nearest adjacent stable natural vegetation by on ground observations or by aerial photographic interpretation.

(6) Static Vegetation Line. In areas within the boundaries of a large-scale beach fill project, the vegetation line that existed within one year prior to the onset of initial project construction shall be defined as the static vegetation line. A static vegetation line shall be established in coordination with the Division of Coastal Management using on-ground observation and survey or aerial imagery for all areas of oceanfront that undergo a large-scale beach fill project. Once a static vegetation line is established, and after the onset of project construction, this line shall be used as the reference point for measuring oceanfront setbacks in all locations where it is landward of the vegetation line. In all locations where the vegetation line as defined in this Rule is landward of the static vegetation line, the vegetation line shall be used as the reference point for measuring oceanfront setbacks. A static vegetation line shall not be established where a static vegetation line is already in place, including those established by the Division of Coastal Management prior to the effective date of this Rule. A record of all static vegetation lines, including those established by the Division of Coastal Management prior to the effective date of this Rule, shall be maintained by the Division of Coastal Management for determining development standards as set forth in Rule .0306 of this Section. Because the impact of Hurricane Floyd (September 1999) caused significant portions of the vegetation line in the Town of Oak Island and the Town of Ocean Isle Beach to be relocated landward of its pre-storm position, the static line for areas landward of the beach fill construction in the Town of Oak Island and the Town of Ocean Isle Beach, the onset of which occurred in 2000, shall be defined by the general trend of the vegetation line established by the Division of Coastal Management from June 1998 aerial orthophotography.

15A NCAC 07H .0306 GENERAL USE STANDARDS FOR OCEAN HAZARD AREAS

(a) In order to protect life and property, all development not otherwise specifically exempted or allowed by law or elsewhere in the CRC's Rules shall be located according to whichever of the following is applicable:
(1) The ocean hazard setback for development is measured in a landward direction from the vegetation line, the static
vegetation line or the measurement line, whichever is applicable.

***
(8) Beach fill as defined in this Section represents a temporary response to coastal erosion, and compatible beach fill as defined in 15A NCAC 07H .0312 can be expected to erode at least as fast as, if not faster than, the pre-project beach. Furthermore, there is no assurance of future funding or beach-compatible sediment for continued beach fill projects and project maintenance. A vegetation line that becomes established oceanward of the pre-project vegetation line in an area that has received beach fill may be more vulnerable to natural hazards along the oceanfront. A development setback measured from the vegetation line provides less protection from ocean hazards. Therefore, development setbacks in areas that have received large-scale beach fill as defined in 15A NCAC 07H .0305 shall be measured landward from the static vegetation line as defined in this Section. However, in order to allow for development landward of the large-scale beach fill project that is less than 2,500 square feet and cannot meet the setback requirements from the static vegetation line, but can or has the potential to meet the setback requirements from the vegetation line set forth in Subparagraph (1) and (2)(A) of this Paragraph a local government or community may petition the Coastal Resources Commission for a "static line exception" in accordance with 15A NCAC 07J .1200 to allow development of property that lies both within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. This static line exception shall also allow development greater than 5,000 square feet to use the setback provisions defined in Part (a)(2)(K) of this Rule in areas that lie within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. The procedures for a static line exception request are defined in 15A NCAC 07J .1200. If the request is approved, the Coastal Resources Commission shall allow development setbacks to be measured from a vegetation line that is oceanward of the static vegetation line under the following conditions:

(A) Development meets all setback requirements from the vegetation line defined in Subparagraphs (a)(1) and (a)(2)(A) of this Rule;
(B) Total floor area of a building is no greater than 2,500 square feet;
(C) Development setbacks are calculated from the shoreline erosion rate in place at the time of permit issuance;
(D) No portion of a building or structure, including roof overhangs and elevated portions that are cantilevered, knee braced or otherwise extended beyond the support of pilings or footings, extends oceanward of the landward-most adjacent building or structure. When the configuration of a lot precludes the placement of a building or structure in line with the landward-most adjacent building or structure, an average line of construction shall be determined by the Division of Coastal Management on a case-by-case basis in order to determine an ocean hazard setback that is landward of the vegetation line, a distance no less than 30 times the shoreline erosion rate or 60 feet, whichever is greater;
(E) With the exception of swimming pools, the development defined in 15A NCAC 07H .0309(a) is allowed oceanward of the static vegetation line; and
(F) Development is not eligible for the exception defined in 15A NCAC 07H .0309(b).

ATTACHMENT B

Staff's Report to the Commission

I. Description of the affected area

The Town of Indian Beach (Town) is located on a barrier island known as Bogue Banks, located in Carteret County, North Carolina. The Town is approximately 1.5 square miles in size, and is divided into east and west sections, separated by the unincorporated Village of Salter Path. These communities are generally oriented in an east-west direction. They are bounded on the north by the Atlantic Intracoastal Waterway (AIWW) and Bogue Sound, on the south by the Atlantic Ocean, on the west by the Town of Emerald Isle and on the east by the Town of Pine Knoll Shores.

The current portion of the static line, at issue in this request, extends along the entire 2.4 mile ocean shoreline of Indian Beach (65% of total shoreline), Salter Path (13% of total shoreline) and Roosevelt State Park (22% of total shoreline). The static line location was determined by DCM Staff by locating the first line of stable, natural vegetation in the field in November 2001, and then having that line surveyed.

The current average annual erosion setback for the affected area is 2.0 feet per year for the entire area. This ocean shoreline, entirely covered by a static line, has varying amounts of development. The Roosevelt State Natural Area portion has only limited park development, while the Salter Path portion and Town of Indian Beach portion is developed.

II. Summary of past nourishment project and future project maintenance

In 1999, Carteret County, acting through its Beach Preservation Task Force (a forerunner to the Shore Protection Office), initiated planning for an island-wide shore protection project aimed at providing interim protection to development and infrastructure along the island until a long-term storm damage reduction project could be designed and implemented by the Corps of Engineers. The island-wide plan developed by the county is called the Bogue Banks Restoration Project. The county contracted Coastal Science & Engineering, PLLC (CSE) of Morehead City, NC to develop the plan. CSE also prepared an Environmental Assessment under the National Environmental Policy Act (CSE 2001a) and an Environmental Impact Statement required by the State Environmental Policy Act (CSE 2001b). The conceptual plan developed for the island-wide project is detailed in a report prepared by CSE entitled "Executive Summary – Shoreline Assessment and Preliminary Beach Restoration Plan, Bogue Banks, North Carolina" (CSE 1999). Following the review and approval of federal and state environmental documents, the project received a CAMA Major Permit Number 124-01 dated October 5, 2001 and a Department of the Army Permit #200000362 dated October 26, 2001. Minor modifications to the CAMA Major Permit were approved on October 4, 2002 with these same modification approved by the Department of the Army on October 22, 2002. The island-wide project was implemented in three phases and the permit modifications referenced above were granted prior to the construction of Phase II of the project.

The Bogue Banks Restoration Plan covers approximately 16.8 miles of the 25 mile long island and extends from the Atlantic Beach/Pine Knoll Shores (AB/PKS) town boundary west to approximately one mile east of Bogue Inlet (Figure 1). The project is sponsored by Carteret County with the Towns of Pine Knoll Shores, Indian Beach, and Emerald Isle included in the permits as co-permittees.

Phase I was accomplished in 2001-02 and included the 4.5 miles of ocean shoreline fronting the Town of Pine Knoll Shores (the focus of this static line report) and 2.4 miles along the shoreline segment that includes the Town of Indian Beach and the Village of Salter Path. The Indian Beach/Salter Path portion of the Project was constructed between November 2001 and April 2002 as part of Phase I and included design specifications that triggered a static line. The initial date which triggered the static line is 2001, and is more than five years ago, so the request meets the 5-year requirement of 15A NCAC 7J.1201(c).

III. Summary of Petitioner's evidence supporting the four factors

The Commission's rule 15A NCAC 07J.1203(b) indicates that the Commission "shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J.1201(d)(1) through (d)(4)." Specifically, these four criteria require a showing by the Petitioner of (1) a summary of all beach fill projects in the area proposed for the exception, (2) plans and related materials showing the design of the initial fill projects, and any past or planned maintenance work, (3) documentation showing the location and volume of compatible sediment necessary to construct and maintain the project over its design life, and (4) identification of the financial resources or funding sources to fund the project over its design life. (See 15A NCAC 07J.1202(d) for exact rule language). Staff's summary and analysis of Petitioner's response to these four criteria follows.

A. Summary of fill projects in the area- First factor per 15A NCAC 7J.1202(d)(1)

The Town's report, specifically pages 16-20, provides the following information about the history of the beach fill projects that have taken place beginning in 2004:

PROJECT NOURISHMENT HISTORY.

The Indian Beach/Salter Path portion of the Bogue Banks Restoration Project has been nourished on two occasions since initial construction. The first nourishment occurred between February and March 2004 as part of Phase I of the Section 933 project associated with the USACE maintenance of the Morehead City Harbor federal navigation project. Phase I also included a relatively short segment on the west end of Pine Knoll Shores (Figure 13). Section 933 of the Water Resources Development Act of 1986 allows the State and local sponsors to cost share with the federal government in the added cost of depositing material in areas other than the least cost disposal site. Under normal operating conditions, the material removed from the Beaufort Inlet bar channel would be deposited offshore in the Offshore Dredged Material Disposal Site (ODMDS) or in a near shore disposal mound situated immediately west of the inlet's ebb tide delta. For the Section 933 project, Weeks Marine, the firm contracted by USACE to perform the

work, used hopper dredges (*BE Lindholm* and the *RN Weeks*) to haul the material to mooring sites located immediately offshore of Indian Beach/Salter Path and Pine Knoll Shores. From the mooring sites the material was pumped to the beach via a submerged pipeline. Phase I of the Section 933 project placed 630,094 cubic yards of material along the entire shoreline of Indian Beach/Salter Path and 69,189 cubic yards on the western 2,500 feet of Pine Knoll Shores (Figure 13).

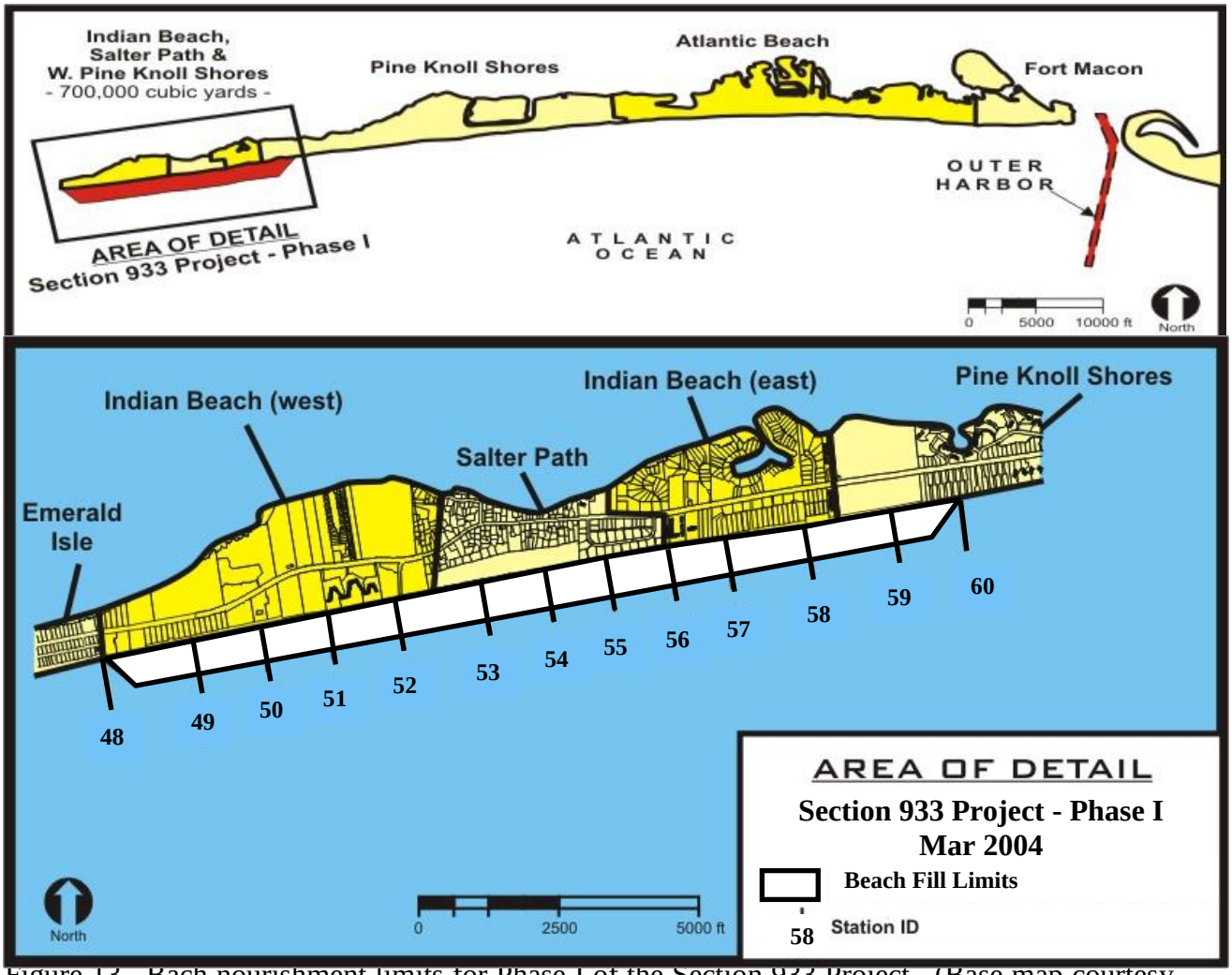


Figure 13. Bach nourishment limits for Phase I of the Section 933 Project. (Base map courtesy of the Carteret County Shore Protection Office).

A second nourishment operation also occurred between January and March 2007 and was carried out to replace material lost during Hurricane *Ophelia* which struck the area in September 2005. Following the advent of Hurricane *Ophelia* in September 2005, Indian Beach/Salter Path, along with the other island communities applied to FEMA for funds to restore the material lost during *Ophelia* under Category G of FEMA's Public Assistance Program. Specifically, the Public Assistance Program allows FEMA to provide funds to restore an "improved" or engineered beach providing the applicant can demonstrate the beach fill project had a designed template and grain size, a maintenance plan, and pre- and post-storm beach profile surveys. In its application,

Indian Beach/Salter Path as well as the other towns along the island included in the Bogue Banks Restoration project were able to demonstrate they met all of the FEMA requirements including an engineered beach, a nourishment plan (as described above), and monitoring program and was subsequently approved to receive reimbursement funds to restore the beach to the pre-storm condition. Carteret County and the three beach towns obtained modifications to its original permits from both the Corps of Engineers and the Division of Coastal Management to allow the use of the Offshore Dredged Material Disposal Site (ODMDS) for the Morehead City Harbor navigation project (Figure 14) as a borrow source for the post-*Ophelia* restoration. The work was contracted to GLDD.

Figure 14. Morehead City Harbor Offshore Dredged Material Disposal Site (ODMDS) with area used for post-storm restorations shown in red.

Profiles of the beach taken before and after Hurricane *Ophelia* indicated a total of 1,107,560 cubic yards had been eroded from the Bogue Banks Restoration Project. Of this total, 298,604 cubic yards was lost from the Indian Beach/Salter Path portion of the project shown in Figure 15.

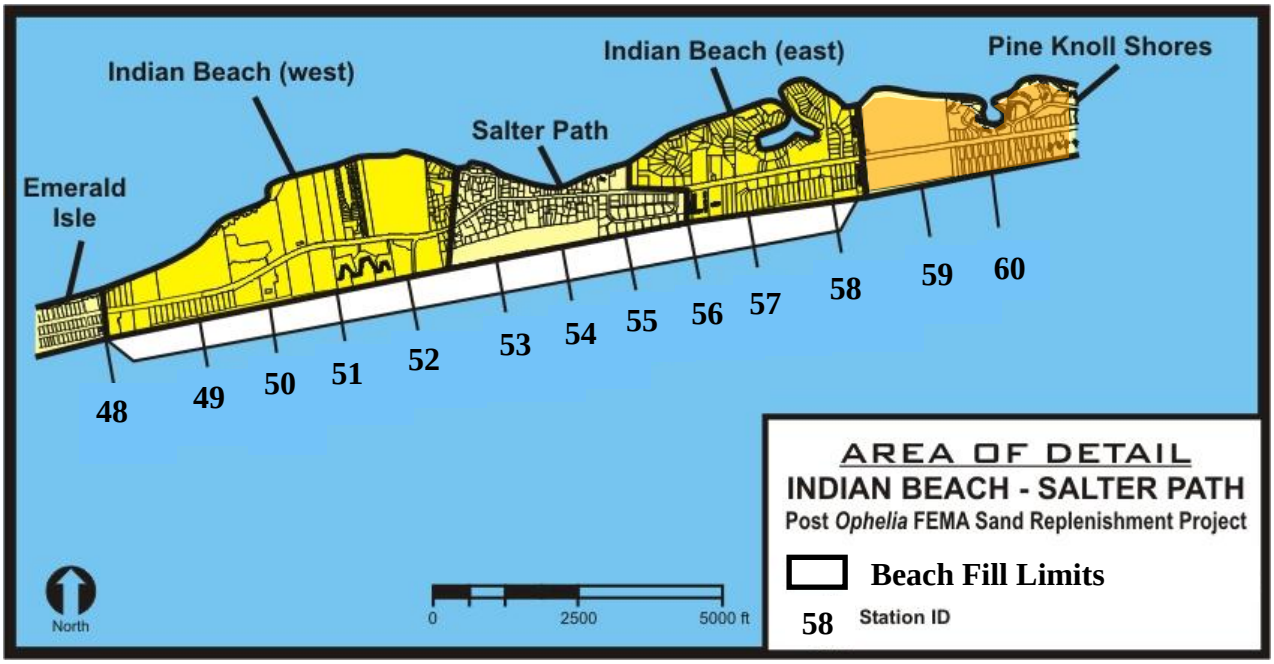


Figure 15. Beach nourishment limits for the post-*Ophelia* Restoration Project – Indian Beach/Salter Path. (Base map courtesy of the Carteret County Shore Protection Office).

Geotechnical investigation of the ODMDS conducted by CSE prior to the Hurricane *Ophelia* restoration project yielded an average mean grain size of 0.31 mm which compared favorably with the native beach mean grain size of 0.30 mm. Post-placement sampling of the material on the beach yielded a slightly larger mean grain size of almost 0.36 mm. During the hopper dredge operation, the dredge slurry (water and sediment) is continually pumped into the dredge's hopper and water is allowed to overflow back into the ocean until the hopper is full with sediment. As the water overflows the hopper, finer grained material is also discharged back into the ocean leaving only the coarser material to be delivered to the beach. The hopper filling and overflow process combined with the winnowing of fine grain sediments during the actual beach disposal operation are primarily responsible for the coarseness of the material found in place on the beach compared to the in situ samples taken from the vibracores.

Based on after-construction surveys of the in place fill, the total volume deposited in Indian Beach/Salter Path was 319,113 cubic yards. The total cost of the restoration was $13,773,800 all of which was provided by FEMA. Of this total restoration cost, $3,893,200 was allocated to Indian Beach/Salter Path.

A summary of the initial beach nourishment operation and the two nourishment operations within the limits of Indian Beach/Salter Path is provided in Table 1. To date, periodic nourishment under the nourishment plan adopted by Indian Beach/Salter Path has not been required.

Table 1
Indian Beach/Salter Path Nourishment History

Event	Date	Fill Limits Approx. Sta Nos.	Length (ft)	Borrow Area	Volume (cy)	Cost-Sharing		
						Local	State	Federal
Initial Construction	Nov 01 – Apr 02	48 to 58.5	12,850	A, B1 & B2	456,994	$4,135,000	$900,000[1]	$0
Phase I – Sec 933 Project	Mar-Apr 2004	48 to 58.5	12,850	Beaufort Inlet	630,094	$394,975 [2]	$1,184,925	$4,814,900
Post-Ophelia	Jan-Mar 2007	48 to 58.5	12,850	ODMDS	319,113	$0	$0	$3,893,200

[1] State funding for Roosevelt State Park.
[2] Indian Beach/Salter Path share of local cost = $328,433.

B. Design of the initial fill projects and past/planned maintenance Second factor per 15A NCAC 7J.1202(d)(2)

The Town's report, specifically pages 3-4, 10, 16, 20-22, has the following information about how the project has performed in the past and the proposed future design of future beach fill projects for Pine Knoll Shores:

PROJECT DESIGN.

During the active tropical storm period from 1996 to 1999, most areas along Bogue Banks experienced substantial damage to ocean front properties. The one exception was the Town of Atlantic Beach which did not experience any appreciable damage. In this regard, the Town of Atlantic Beach and Fort Macon State Park were the recipients of almost 4.2 million cubic yards of sediment in 1986 and 4.6 million cubic yards in 1994, which were associated with maintenance and new construction of the Morehead City Harbor Project. The 1986 disposal operation included removal of sediment from Brandt Island (termed the Brandt Island pump-out), an upland disposal site for the Morehead City Harbor Project, and from maintenance of the inner harbor channels and turning basin. The 1994 operation included a combination of material from channel maintenance, new channel construction, and the second Brandt Island pump-out. As a result of these two disposal operations, Atlantic Beach had an exceptionally wide beach prior to the onslaught of the storms. Noting the lack of damage to Atlantic Beach, CSE targeted the profile condition along Atlantic Beach as the design template for the remainder of the island.

CSE surveyed 111 transects (Figure 3) spaced approximately every 1,000 feet along the entire island and computed the volume of material residing on each profile between the toe of the dune

seaward to the 12-foot NAVD (North American Vertical Datum) depth contour. Based on the volume computations for the profiles located within the town limits of Atlantic Beach (see example profile in Figure 4), CSE adopted a design volume between the seaward toe of the dune and the -12-foot NAVD contour for the remainder of the island of 175 cubic yards/lineal foot. Given this design volume, CSE determined the volume of material that should be added to the shorelines of Pine Knoll Shores, Indian Beach/Salter Path, and Emerald Isle to increase the profile volume in these areas to 175 cubic yards/lineal foot. Since the purpose of the project at that time was to provide interim protection until the federal storm damage reduction project would be implemented, the total volume to be placed along the shoreline was increased by an amount deemed to be sufficient to accommodate 10 years of erosion at each location along the island.

The design profile volume for the Bogue Banks project was subsequently increased to 225 cubic yards per lineal foot to account for the volume of material from the landward toe of the dune to the seaward toe of the dune (CSE 2004).

The plan layout for the Indian Beach/Salter Path portion of the project, which was designated as Reach 4 in the overall plan, is shown in Figure 5. A typical design template for Reach 4 is provided in Figure 6. The beach fill was designed as a variable width horizontal berm at elevation +6.0 feet NAVD. Profiles showing the pre-nourishment and post-construction conditions are provided in Figures 7 to 11. The location of the typical profiles (Stations 50, 52, 54, 56, and 58) are indicated by red lines in Figure 3.

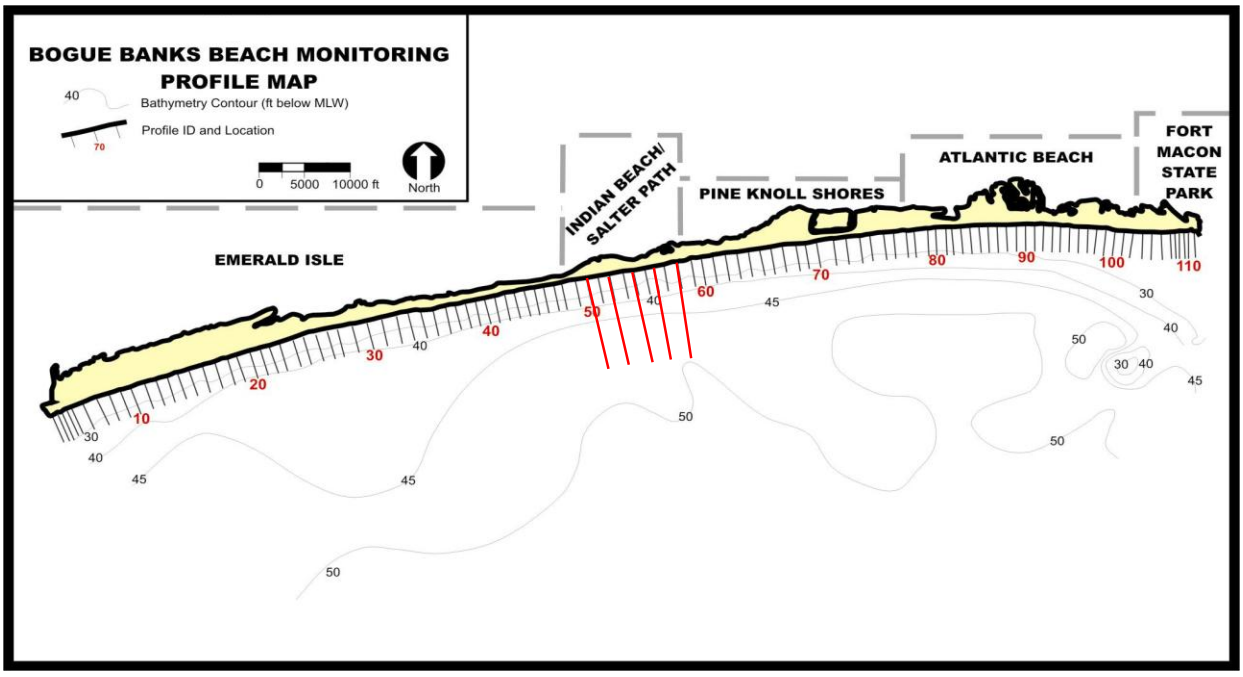


Figure 3. Location of 111 transects surveyed by CSE and location of typical profiles in Indian Beach/Salter Path (shown in red). (Base map courtesy of the Carteret County Shore Protection Office).

PROJECT CONSTRUCTION AND ESTABLISHMENT OF STATIC VEGETATION LINE.

The Indian Beach/Salter Path and the Pine Knoll Shores portions of the Bogue Banks Restoration Project (Phase I) were completed in April 2002 with the work contracted to Great Lakes Dredge & Dock Co. (GLDD). GLDD initially used two hopper dredges (*Manhattan Island* and *Sugar Island)* but delays in the construction progress associated with automobile tires that had broken off an artificial fishing reef and the taking of sea turtles necessitate GLDD to mobilize a third dredge, the *Dodge Island*, in an attempt to complete the project by the April 30 permit deadline. Construction of Phase I was eventually halted on April 11, 2002 due to another turtle take. The previous delays and the work stoppage prior to April 30 resulted in a reduction in the volume of material placed along both Indian Beach/Salter Path and Pine Knoll Shores. Based on after construction profile surveys, the amount surveyed in place along the Indian Beach/Salter Path shorelines totaled 456,994 cubic yards or about 41% less than the contract amount. The Town of Pine Knoll Shores received 1,276,586 cubic yards or about 9% less than the original contract amount. The work stoppage resulted in two areas or "gaps" along the Indian Beach/Salter Path shoreline that did not receive any substantial fill volume. One gap was located approximately between stations 48 and 50 on the west end of Indian Beach and the other approximately between stations 52 and 54 in Salter Path (Figure 3). Most of the gap located between stations 52 and 54 lies within the Roosevelt State Park. Even though fill material was not placed directly in these areas, the two gaps soon equilibrated with material moving into the gaps from the adjacent beach fill areas. As an example, Station 52 is located near one of the areas that did not receive a full complement of fill yet the June 2002 survey, taken about 2 months following the completion of Phase I (Figure 8), shows a substantial amount of material had moved in to the area.

PROJECT PERFORMANCE.

The performance of the Indian Beach/Salter Path project has been monitored on an annual basis by the island-wide beach profile monitoring program conducted under the auspices of the Carteret County Shore Protection Office. The profile monitoring program began in June 1999 prior to the construction of the beach fills projects. Annual reports summarizing the results of the monitoring surveys including the performance of the beach nourishment projects along Bogue Banks have been prepared since 2002-03 and are available from the Shore Protection Office website (http://www.protectthebeach.com/Monitoring/monitoring.htm).

The Indian Beach/Salter Path portion of the Bogue Banks Restoration Project includes a total of 11 profiles, numbered 48 to 58, that are surveyed annually and following significant storm events. Representative plots of the typical profiles 50, 52, 54, 56, and 58, the location of which are indicated in Figure 2, are provided in Appendix A.

A plot of the cumulative changes in the volume of material from the back toe of the dune seaward to the -12-foot NAVD contour for Indian Beach/Salter Path is shown in Figure 16 This plot begins in June 1999, prior to the construction of the project, and extends through June 2009. The large jump in the cumulative volume curve in April 2002 was due to the initial construction

of the project which added 456,994 cubic yards to the 3.5 mile shoreline. Prior to initial construction, the cumulative volume change within Indian Beach/Salter Path since June 1999 had gained 87,380 cubic yards. The other two major jumps in the cumulative volume curve were associated with the Phase I of the Section 933 project completed in March 2004 which added 630,094 cubic yards to the shoreline and the post-*Ophelia* restoration project completed in March 2007 which added 319,113 cubic yards.

The periodic nourishment plan for Indian Beach/Salter Path includes two nourishment triggers, both of which are shown in Figure 16. The "FEMA Nourishment Trigger" is based on the loss of one-half of the initial construction volume or 228,497 cubic yards. The loss of this volume of material would set the nourishment trigger on the cumulative volume curve to 315,877 cubic yards. Again, this volume is measured from the landward toe of the dune to the -12-foot NAVD contour. The second nourishment trigger, designated as the "Design Nourishment Trigger" in Figure 16, is based on maintaining a minimum volume of 225 cubic yards/lineal foot of shoreline between the landward toe of the dune and the -12-foot NAVD contour. For Indian Beach/Salter Path, the Design Nourishment Trigger of 582,538 cubic yards is the larger of the two and would control when nourishment should be performed in order to keep the project up to its design requirements.

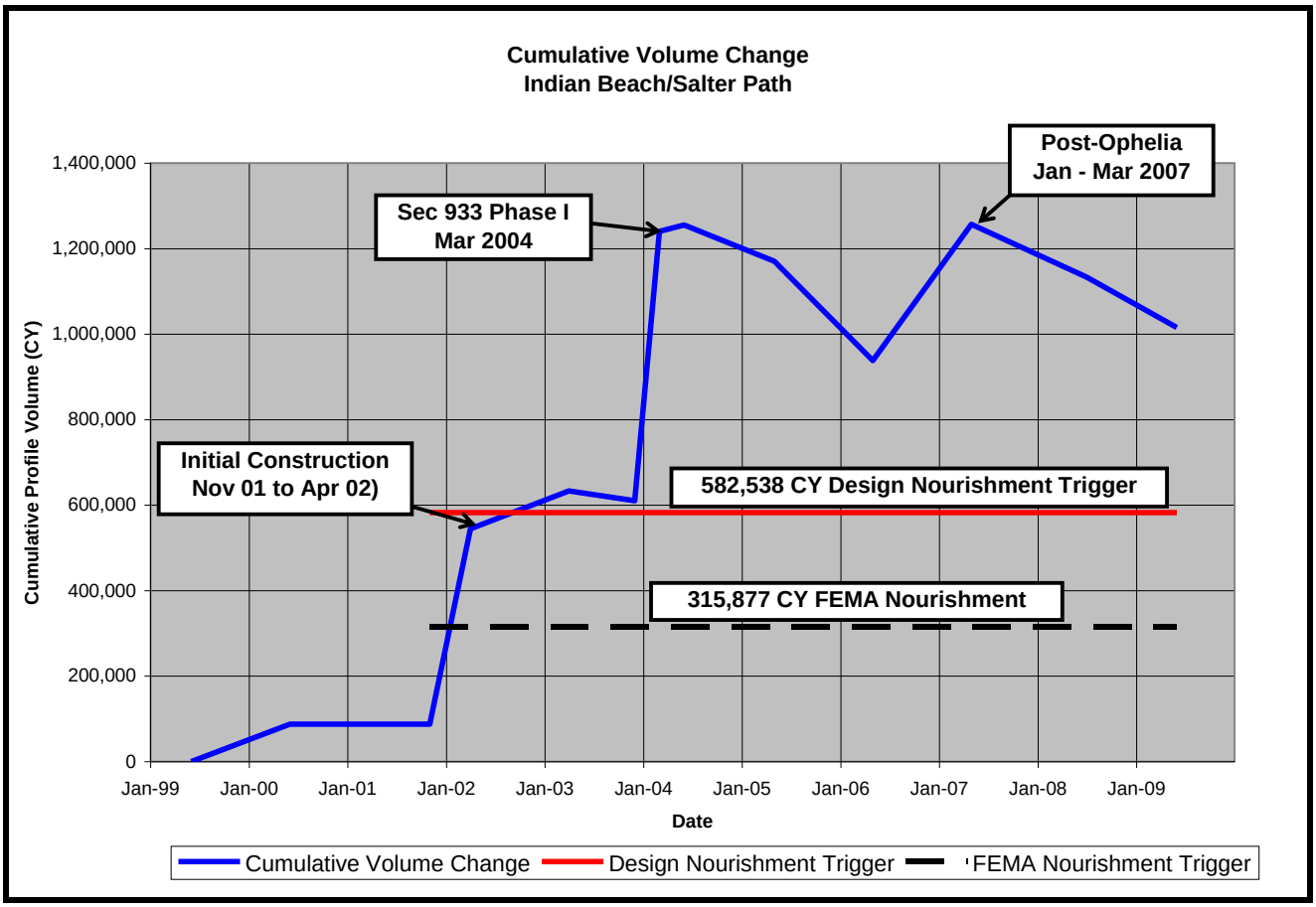


Figure 16. Cumulative beach profile volume change along Indian Beach/Salter Path – June 1999 to June 2009.

The measured change in the volume of material residing on the Indian Beach/Salter Path profile between the landward toe of the dune and the -12-foot NAVD contour between April 2003 and June 2009 was a gain of 181,185 cubic yards. Phase I of the Section 933 project added 630,094 cubic yards of material to Indian Beach/Salter Path and the post-*Ophelia* restoration added 319,113 cubic yards for a total of 949,207 cubic yards having been added to the Indian Beach/Salter Path shoreline since April 2003. In the absence of the two nourishment operations, Indian Beach/Salter Path would have lost 768,022 cubic yards during this time interval. This represents an average annual volumetric loss rate of approximately 124,500 cubic yards/year, or an average loss of 9.7 cubic yards/lineal foot/year.

The volume of material measured on the Indian Beach/Salter Path shoreline in June 2009 was equal to 258.7 cubic yards/lineal foot or 33.7 cubic yards/lineal foot above the 225 cubic yard/lineal foot design volume. If the volume loss along Indian Beach/Salter Path continues at this rate, nourishment would be required within the next 4 to 6 years.

Overall, the Indian Beach/Salter Path project has performed reasonably well even with the advent of Hurricane *Ophelia*. Note that Hurricane *Isabel* also impacted the area in September 2003 but the damage to the Indian Beach/Salter Path portion of the project was not severe enough to warrant federal post-disaster assistance to rebuild the beach project. The average annual volumetric loss rate of 124,500 cubic yards/year is equivalent to 9.7 cubic yards/lineal foot of beach. This rate of loss is higher than any other portion of the Bogue Banks Restoration Project. The causes of the higher rate of loss from the Indian Beach/Salter Path shoreline will be one of the aspects of the project that will be thoroughly evaluated in the development of the island's long-range plan.

PERIODIC NOURISHMENT PLAN.

The Bogue Banks Restoration Project was initially intended to be an interim measure aimed at protecting the island until a long-term (50 year) federal storm damage reduction project could be implemented. However, given the uncertainties associated with federal authorization for such a project and concerns over federal funding once federal authorization is attained, each of the island municipalities adopted periodic nourishment plans to assure adequate protection is maintained until the federal project is put in place. Also, Carteret County, acting through the Shore Protection Office, established a detailed beach profile monitoring program to document the condition of the beach fills placed along the island and determine where and when beach nourishment would be required.

Indian Beach/Salter Path Periodic Nourishment Plan. The periodic nourishment plan adopted by the Indian Beach/Salter Path has two nourishment "triggers", one presented to the Federal Emergency Management Agency (FEMA) to comply with that agency's requirements for federal post-storm reconstruction assistance following a declared federal disaster and the other tied to the engineering formulation of the Bogue Banks Restoration Project. The FEMA nourishment trigger requires nourishment to be accomplished when one-half of the initial construction volume is lost from the fill. For Indian Beach/Salter Path, the initial construction volume (measured in place) was 456,994 cubic yards and the resulting FEMA nourishment trigger is the loss of 228,497 cubic yards from the initial fill. The second nourishment trigger is based on maintaining

a minimum volume of material on the profile from the landward toe of the dune seaward to the -12-foot NAVD depth contour of 225 cubic yards/lineal foot of beach. The existing condition of the beach fill, its past performance, and the relation of the project performance to the two nourishment triggers is provided below in the project performance section.

Again citing the uncertainties with continued federal involvement in shore protection, Carteret County has initiated a detailed assessment of the long-term shore protection requirements for Bogue Banks in the absence of federal funding that will also include compulsory documentation associated with State and National Environmental Protection Act coordination, and the successful procurement of permits to construct and maintain the Shore Protection Program. This long-term effort is directly related to and compliments the nourishment plan presented in this static line report as it will detail the many logistics required to execute future nourishment events (i.e., geotechnical and remotely-sensed information, habitat mapping, mitigation plans, endangered species considerations, etc.).

C. Compatible Sediment
Third factor per 15A NCAC 7J.1202(d)(3)

The Town's report, specifically pages 22-26, provide the following information about the availability of compatible sediment for future beach fill projects:

PLANNED BORROW AREAS.

Indian Beach/Salter Path is primarily focusing on the ODMDS as a borrow source for maintenance of its beach nourishment project. However, the possible use of borrow sources identified by the USACE during planning for the 50-year federal project, which are closer to the project area, are also included in the long-range plans.

ODMDS. All the communities along Bogue Banks, including Indian Beach/Salter Path, are targeting the ODMDS (Figure 14) as a future source of beach nourishment material to sustain the beach nourishment projects for at least the next 30 years. Between 1936 and 1994, all of the material removed from the Morehead City Harbor entrance channel through Beaufort Inlet was deposited in the ODMDS. Since 1995, approximately 3.8 million cubic yards of the maintenance material has been deposited in a near shore berm located on the west side of the Beaufort Inlet ebb tide delta (Figure 18) and the 2004 and 2007 maintenance operations placed the maintenance material directly on the shorelines of Indian Beach/Salter Path and Pine Knoll Shores under the authority of Section 933. Based on USACE dredging records (USACE 2001 & USACE 2001a to 2007), and adjusting for the volume of material placed in the near shore berm and directly on the beach under Section 933, the volume of material deposited in the ODMDS since 1936 totals approximately 47.8 million cubic yards.

The ODMDS shown in Figure 14 is the existing approved disposal area for the Morehead City Harbor Project. Prior to the establishment of the existing ODMDS, maintenance material was deposited in areas north of the existing site as well as east of the Beaufort Inlet ocean bar channel. In a study contracted by Carteret County to Olsen Associates, Inc. of Jacksonville,

Florida (Olsen 2006), Olsen was able to account for up to 35.5 million cubic yards in both the existing and historic offshore disposal areas. Obviously, development of the existing ODMDS and other historic ocean disposal sites as borrow sites will require additional geotechnical investigations in order to comply with State sediment criteria (15A NCAC 07H.0312). However, based on Olsen's study, and adjusting for the 1.4 million cubic yards removed to restore the beaches following Hurricanes *Isabel* and *Ophelia*, the volume of beach compatible material in or near the existing ODMDS should total well over 30 million cubic yards. In a Section 111 report prepared by the USACE to evaluate the possible impacts of the Morehead City Harbor Project on the adjacent shorelines, the USACE estimated over 32 million cubic yards of beach compatible material had been deposited in the ODMDS since 1936 (USACE 2001).

Maintenance of the Morehead City Harbor Project will continue over the next 30 years with additional material being deposited in the ODMDS. However, while over one million cubic yards of material is removed from the ocean bar channel of Beaufort Inlet each year, at the urging of Carteret County, the USACE is in the process of reformulating the dredged material management plan for the harbor which could result in less material being placed in the ODMDS and more placed directly on the shorelines of Fort Macon and Atlantic Beach during maintenance dredging operations. In any event, disposal of some of the maintenance material in the ODMDS will likely continue over the next 30 years which could increase the available volume to at least 33 to 36 million cubic yards.

An estimate of the island-wide volumetric erosion that has occurred since April 2003 within the limits of the Bogue Banks Restoration Project is presented in Table 2. The unit volumes of material within each reach along Bogue Banks, measured from the seaward toe of the dune to the -12-foot NAVD depth contour, were derived from the 2007 monitoring report (CSE 2007a) and the 2008 and 2009 monitoring reports (Moffatt & Nichol 2008, Moffatt & Nichol 2009). Adjustments in the volume changes were made for the amount of beach fill placed within each reach from various nourishment operations since April 2003 including: (a) the 2005 initial construction of Emerald Isle West, (b) the 2004 and 2007 post-hurricane restorations, (c) Phase I of the Section 933 project along Indian Beach/Salter Path and Pine Knoll Shores (completed in 2004), and (d) Phase II of the Section 933 project also along portions of Indian Beach/Salter Path and Pine Knoll Shores completed in 2007.

The estimated volumetric erosion rate for the entire Bogue Banks Restoration Project through June 2009 totals 357,100 cubic yards/year. Over the next 30 years, approximately 10.7 million cubic yards of beach compatible material will be needed to maintain the entire Bogue Banks Restoration Project. With over 30 million cubic yards of material currently available in the ODMDS and potentially more material being added from maintenance of the Morehead City Harbor project, the ODMDS has a sufficient volume of material to satisfy nourishment requirements for the entire island-wide project including Indian Beach/Salter Path for at least the next 30 years.

Table 2. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[(1)]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.8	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.2	-4.1
Indian Beach/Salter Path	+181,185	949,207	-768,022	-124,500	30.0	-9.7
Pine Knoll Shores	+418,612	839,404	-420,792	-68,200	24.0	-2.9
Total for Bogue Banks Restoration Project				-357,100	100.0	-4.1

[(1)] Adjusted volume change = measured profile volume change minus fill added.

The demands for periodic nourishment material from the ODMDS include the section of the project designated as Emerald Isle West. As noted previously, Emerald Isle West was constructed with material removed from Bogue Inlet during the relocation of the inlet bar channel 3,500 feet to the west. Should the inlet bar channel migrate back to the east and pose a renewed threat to development on the extreme west end of Emerald Isle, the Town of Emerald Isle may seek permits to move the channel again. If so, material removed to relocate the channel could be used to nourish the Emerald Isle West portion of the Bogue Banks Restoration Project. Should that occur, the demand for material from the ODMDS over the next 30 years could be reduced by as much as 750,000 cubic yards to 1,000,000 cubic yards.

As mentioned above, the material contained within the existing ODMDS and the material in the other historic offshore disposal sites used for the Morehead City Harbor project will require detailed geotechnical investigations and documentation in accordance with the State Sediment Criteria (15A NCAC 07H.0312) to qualify the areas for use as beach fill borrow sites. However, based on the documented beach compatibility of the material removed from the ODMDS and deposited on the beach during the Hurricane *Isabel* and *Ophelia* restorations, the only issue that needs to be resolved is the exact location and thickness of the deposited material; not its quality.

Sampling of material in the northern section of the ODMDS conducted by CSE for the post-Hurricane *Ophelia* Restoration included the collection of 14 vibracores ranging in length from 2.6 feet to 9.2 feet with an average length equal to 5.7 feet. The locations of the vibracores used to characterize the material in the ODMDS are indicated by the red dots in Figure 17.

Grain size analysis of the samples taken from the 14 vibracores resulted in a composite mean of 1.71 phi (0.31 mm) and a standard deviation of 1.06 phi (CSE 2007b). The silt content was generally less than 2%. Comparison of the ODMDS material with the native beach sand resulted in an overfill factor of 1.35 which is considered a reasonably good match.

CSE collected 34 samples of the material placed on the beach during the post-*Ophelia* restoration project along the Indian Beach/Salter Path shoreline. The grain size of the material in place on the beach averaged 0.35 mm with an average silt content of only 0.11%. Precise measurements of the silt content in the vibracore samples were not provided by CSE (CSE, 2007), however, based on the extremely low silt content of the in place material and the larger average mean grain size of the in place material compared to the in situ vibracore samples, as noted previously, the filling and placement process associated with the hopper dredge operations apparently flushed much of the finer grained material from the fill prior to sampling. CSE did not analyze the shell content in the vibracore samples taken from the ODMDS but did analyze the calcium carbonate ($CACO_{3)}$ content of the in place material and found an average calcium carbonate content of 18.9%. Sampling of the native beach conducted by CSE prior to the construction of the Bogue Banks Restoration Project yielded an average shell content of the native beach of approximately 15%. The State Sediment Criteria for beach nourishment material allows borrow material to contain 15% more $CACO_3$ than the native beach. Assuming the 15% shell content found along the beach prior to construction of the Bogue Banks Restoration Project as a proxy for $CACO_3$ content, the threshold for $CACO_3$ would be 30%. Therefore, the amount of shell and/or $CACO_3$ in material deposited in the Morehead City Harbor ODMDS appears to fall well within the State Sediment Criteria.

The sampling of the ODMDS material for the post-Hurricane *Ophelia* project as well as visual observations of the material on the beach provides substantial evidence that the ODMDS material and other materials deposited near the existing ODMDS will be able to meet all of the requirements of 15A NCAC 07H.0312 and provide a source of material necessary to sustain not only the Indian Beach/Salter Path project but the entire shoreline of Bogue Banks from the Atlantic Beach/Pine Knoll Shore town boundary west to Bogue Inlet for at least 25 years as required by 15A NCAC 07J .1201 and much longer based on the estimated volume of material in the existing ODMDS and historic disposal sites near the ODMDS.

USACE Borrow Areas. Potential borrow areas identified by the USACE offshore of Bogue Banks are shown in red in Figure 18 (USACE 2009). The other areas identified in this figure represent potential sources of sediment that are under consideration for the long-term plan being formulated by Carteret County.

As indicated in Figure 18, the USACE is also evaluating the ODMDS as well as other areas near Beaufort Inlet as potential borrow areas for the 50-year federal storm damage reduction project. The USACE preliminary assessment of the beach compatible material in the offshore sites is: 6.4 million cubic yards in USACE-West; 17.0 million cubic yards in USACE-Central; and 7.2 million cubic yards in USACE-East for a total of 30.6 million cubic yards. However, the results of the USACE geotechnical investigations are very preliminary and do not meet the USACE sampling standards for project design or the standards contained in 15A NCAC 07H.0312 (State Sediment Criteria). Once detailed sampling is complete, the USACE estimate of the available volume of material will likely be reduced.

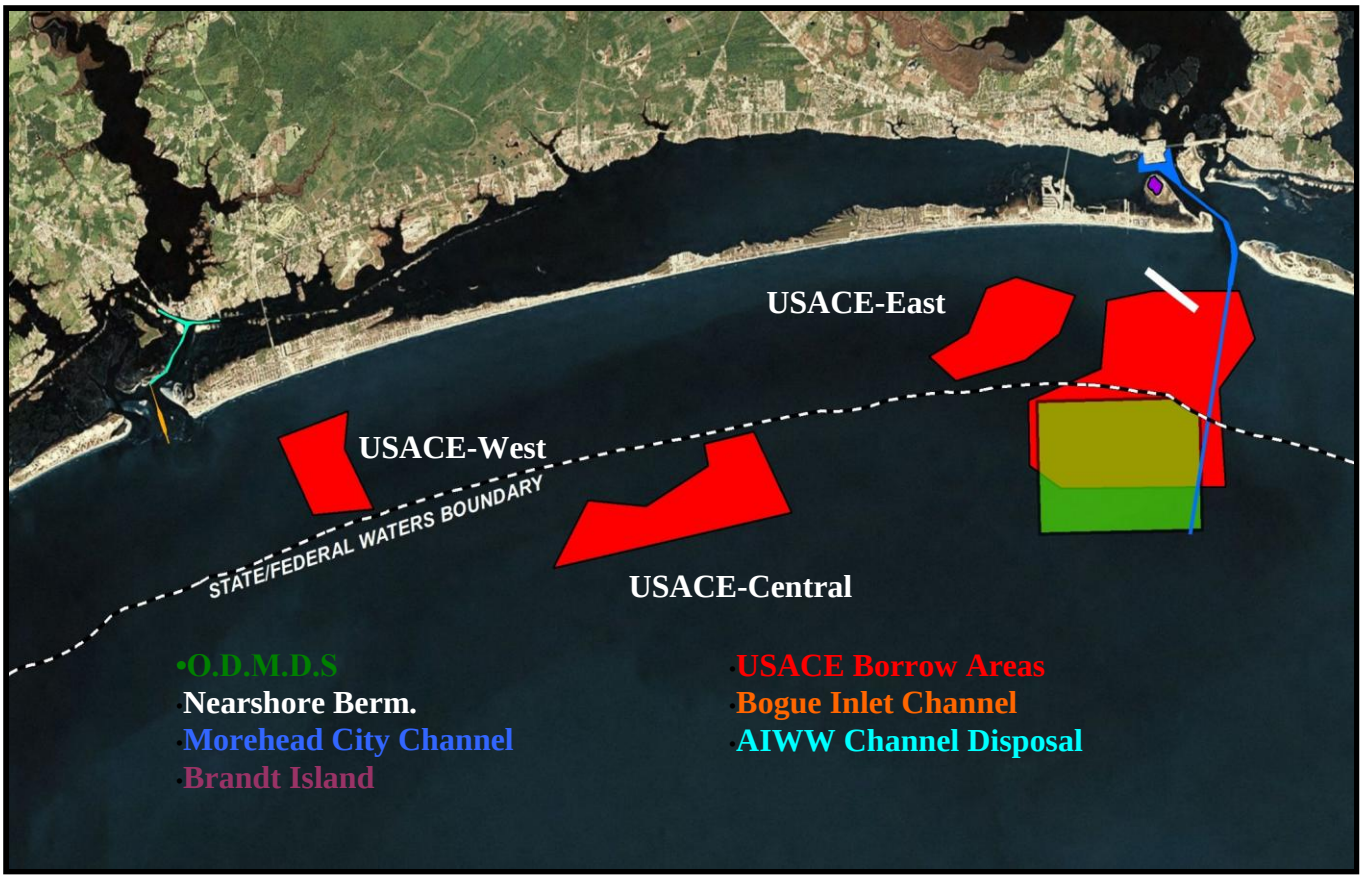


Figure 18. Potential USACE borrow areas (in red) and other sources of sediment near Bogue Banks.

Borrow Area Summary. While additional geotechnical investigations are needed to fully develop the existing ODMDS, the other areas near the existing ODMDS, and the USACE sites into acceptable borrow areas for the Bogue Banks Restoration Project, including Indian Beach/Salter Path, the shear magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the Indian Beach/Salter Path project will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule. This may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined.

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STAFF'S COMMENTS IN RESPONSE:

The Town's application states that "the shear (sic) magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the island-wide beach management plan will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule." The application continues: "This [ODMDS material] may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined." A full analysis of the ODMDS and additional potential offshore sites have not been conducted to the extent required by 15A NCAC 07H.0312. However, because the ODMDS is considered to have the requisite volume for the island-wide beach management plan for the duration of the plan, and since this material in the ODMDS was removed directly from the navigation channel at the Port of Morehead City, it is considered to be littoral sand from the nearshore system and, for this purpose, compatible.

Financial Resources-
Fourth factor per 15A NCAC 7J.1202(d)(4)

The Town's report, specifically pages 26-33, provide the following information about the financial resources planned for future beach fill projects:

FINANCIAL PLAN.

9.1. Introduction. The Indian Beach/Salter Path project is one segment of an island-wide Bogue Banks Restoration Project that includes the island communities of Pine Knoll Shores and Emerald Isle. Funding for the Bogue Banks Restoration Project was provided by each island community as well as Carteret County. As Carteret County moves forward with the formulation of its long-range protection plan, funding for the project would continue to be provided by the individual communities, however, Carteret County would assume a major role in providing the necessary funding for periodic nourishment by means of the County Beach Nourishment Fund that is supported by revenues generated by the room occupancy tax. While the Town of Atlantic Beach is not included in the Bogue Banks Restoration Project, Carteret County would provide financial support to assure disposal operations associated with maintenance of the Morehead City Harbor project extend along the full length of the town's shoreline. Financial support for Atlantic Beach from Carteret County would also be derived from the Beach Nourishment Fund.

Since periodic nourishment of all of the projects along Bogue Banks are inter-linked and depend on the County Beach Nourishment Fund as well as funds that would be provided by each community and the State of North Carolina, the financial plan presented here is applicable to each community on Bogue Banks.

9.2. Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 2 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of the various reaches along the island would be accomplished when the volume of material

residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Note this nourishment criteria is more stringent than the one Indian Beach/Salter Path and other towns on the island adopted to remain eligible for FEMA post-disaster assistance and will be used to develop funding needs over the next 25 to 30 years. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

9.3. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 3 provides a cost estimate for each operation based on current (2010) dollars.

Table 3. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[(1)]				$175,000
S&A[(1)]				$175,000
Total Cost/Operation				$14,253,000

[(1)] E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004. While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the 2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

9.4. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget constraints do not allow material to be distributed along the entire Atlantic Beach shoreline. Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

9.5. Funding/Cost Allocation. As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Indian Beach/Salter Path. The balance of necessary

beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities. Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 4.

Table 4. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.
[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

9.6. County Room Occupancy Tax/Beach Nourishment Fund. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 19 (blue line).

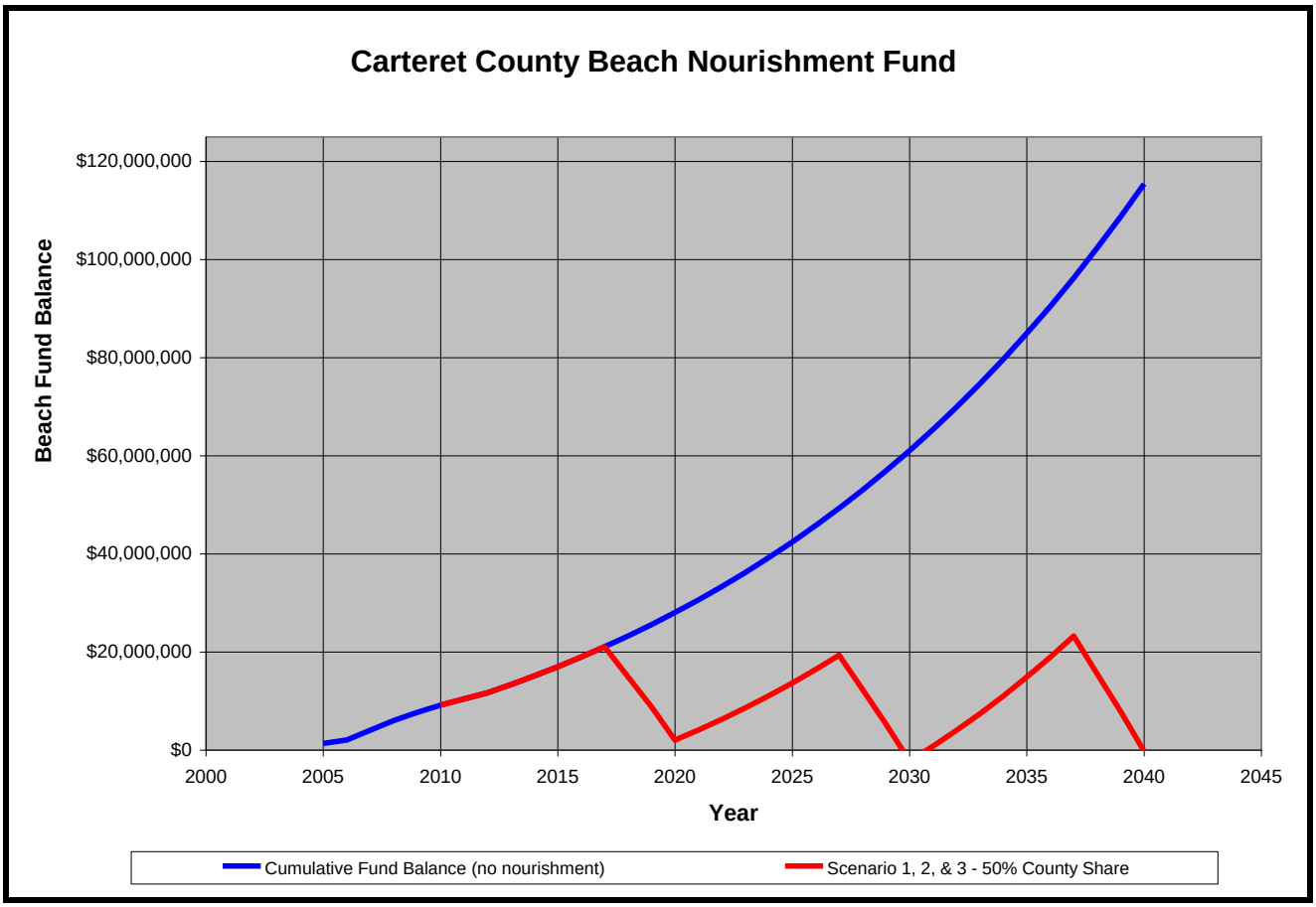


Figure 19. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 19 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

9.7. Indian Beach/Salter Path Funding Source.

The total 30-year cost for nourishing the Indian Beach/Salter Path shoreline segment is $13,815,000 assuming 25% cost-sharing by the State of North Carolina (Table 4). Allocation of this total cost to the three political jurisdictions was based on the percent of shoreline within each jurisdiction; namely, 65% for Indian Beach, 13% for Salter Path (Carteret County), and 22% for the State of North Carolina (Roosevelt State Park). Based on this allocation, the Town of Indian Beach would be responsible for $8,980,000, with Carteret County and the State of North Carolina responsible for $1,796,000 and $3,039,000, respectively.

Indian Beach

As noted above, the Town of Indian Beach will need to provide about $9.0 million over the 30-year time frame for future beach nourishment costs. The Town's financial plan, outlined below, is expected to generate approximately $9.7 million over the 30-year planning period (see supporting spreadsheet in Appendix B). .

The Town completed a beach nourishment project in 2002 funded primarily with local funds. General Obligation bonds were authorized through the USDA in the amount of $3.7 million on February 14, 2001. Because the Town issued General Obligation bonds, the voters of the Town were required to approve the issuance of this debt and overwhelmingly approved a $3.7 million bond referendum on April 24, 2001. The bonds were not issued until August 11, 2004 at which time $1.6 million of these bonds were issued. Use of the full amount of the USDA bonds was not necessary since the town set up a contingency fund in FY 2000-2001 to help with beach nourishment. The Town also set up special tax districts after the bond referendum passed to replace sand on the beach in order to protect property from future storms. The Town committed to fund the vast majority of debt service payments for these bonds with special district tax revenues levied for this purpose.

These special district taxes have been levied by the Town every year since FY 01-02. These special district taxes were initially established at rates of 48 cents per $100 of assessed value on all oceanfront properties and 5 cents on all other properties (FY 01-02 through FY 03-04), but the rates were decreased to 22 cents and 2 cent (FY 04-05 through 07-08). All beach nourishment debt was paid off in 2008.

The Town began levying special district taxes in FY 2008-2009 for future beach nourishment needs and currently levies 1 cent for all properties in town to support the beach nourishment effort. It is important to note that these special district taxes have been levied annually in June by the Board of Commissioners as part of the adoption of the Town's official budget ordinance. NC General Statutes do not allow a town to establish multi-year property tax rates.

The Indian Beach Board of Commissioners intend to increase or make any necessary changes to the special district taxes to fund the Town's share of future beach nourishment costs as outlined in this report (see Resolution in by Town Board of Commissioners in Appendix B). The Board of Commissioners, by adoption of this plan, has committed to levy new special district taxes beginning in FY 11-12, with a special district tax rate of 6.5 cents on all oceanfront properties

and 2.0 cent on all other properties. The levy of these new special district taxes will yield annual revenues of approximately $266,915 beginning in 2011 (FY 11-12). Assuming a 1% annual growth rate in this revenue source and investment of fund balance with interest earnings of 2% annually, the fund will generate $9.7 million over the 30-year planning period.

The process to establish special tax districts (technical name is "municipal service districts") is outlined in NC General Statutes 160A-535 through 160A-549. The process involves the scheduling of a public hearing, publishing the proper notice, mailing notices to all affected property owners, conducting a public hearing, and the adoption of a Board resolution. No voter approval is required (i.e., referendum) to establish special tax districts. As noted above, the annual tax rates for special tax districts are determined annually in June by the Board as part of the official budget ordinance. The Town will establish new special tax districts for the future beach nourishment costs outlined in this report in 2011. The Board is confident in the community's acceptance of this tax structure.

This funding strategy is also intended to provide sufficient cash flows to enable future Indian Beach beach nourishment costs to be funded on a pay-as-you-go basis, and thus avoid the use of debt financing and the need for a future bond referendum. The Town expects that the timing of future beach nourishment needs, County room occupancy tax revenues, Town special district tax revenues, and State funding will be such that the necessary funding will be in-hand prior to incurring future beach nourishment construction costs.

Salter Path (unincorporated County area – "Hoffman Beach")

The corridor of Salter Path shoreline within the jurisdiction of Carteret County is approximately 1,671 lineal feet and is commonly referred to as "Hoffman Beach". This very small portion of shoreline is 2% of the entire shoreline reach utilized to develop the nourishment plan presented in this report (87,098 linea1 feet total including Pine Knoll Shores, Indian Beach/Salter Path, and Emerald Isle). A maximum of $1,795,950 is required over the 30-year time frame for future beach nourishment costs along Hoffman Beach (see appendix B).

The roughly $1.8 million cost is well within the financial capability and authority of the County. For instance, the County's occupancy tax is estimated to generate over $118 million over the next 30 years (Appendix B). Accordingly, the Hoffman Beach (County) nourishment cost is 1% of the entire revenue generated by the occupancy tax over the next 3 decades. Savings from lower than estimated bid prices for any nourishment project the County participates in could very well yield enough additional funds to use for Hoffman Beach nourishment. Likewise, higher than anticipated revenues from the occupancy tax could also be utilized for Hoffman Beach nourishment. For instance, the collection rate is estimated to grow at 4% annually (historical is 5%), thus several years of collection at 6% or greater would yield additional dollars that could be utilized for Hoffman Beach. It should also be noted that in our projections of occupancy tax expenditures (appendix B), the County incorporated the cost for nourishing the State portion of Salter Path (see below) for the sake brevity. In actuality, the County will likely not pay for the nourishment of State shorelines, and this savings also constitutes another source of funding to nourish Hoffman Beach. Moreover, the operating budget from the County's General Fund is ~$75 million per year. The Salter Path cost for nourishment (3 events total) for the entire 30

year timeframe would constitute only 2% of a single year of the County's annual budget. One individual nourishment event would be well less than a 1% of the County's budget for that particular year.

Salter Path (Theodore Roosevelt Natural Area)

The State of North Carolina owns the remaining 2,827 lineal feet of oceanfront encompassing "Salter Path" and nourishment of this section of shoreline, known as the Roosevelt State Park, would be solely at the State's discretion and cost. This area has been nourished three times the past decade; (1) the State provided $900,000 to nourish this reach in 2001-02, (2) the federal government, State, and County participated in a federal Section 933 project in 2004 along this reach and provided 65%, 26.25%, and 8.75% the costs, respectively, and (3) in 2007 the Town of Indian Beach requested and received FEMA reimbursement funds to replace the sand lost along the Roosevelt Park property during hurricane *Ophelia* (2005).

Detailed County and Town revenue projections are included in Appendix B.

***

STAFF'S COMMENTS IN RESPONSE:

Half of the Indian Beach / Salter Path portion of the island-wide beach management project will be covered by Carteret County's beach nourishment monies funded through the Carteret County room occupancy tax. The remainder of the funding is expected to be received through State water resource grants (25% through the Division of Water Resources) and local special tax districts (25% from the Town). DCM is comfortable with this cost-share assumption as it reflects the actual funding percentage that DWR has provided to local governments during the past decade for the State's share in Federal Beach shore protection projects. DCM understands that the special tax district currently in place in the Town must receive annual approval as part of the budget process, but historic performance has shown this tax district to be widely accepted by the Town and effective to pay the debt service on past beach fill projects. One point of concern for DCM is that the current tax rate in place at Indian Beach is less than the tax necessary to carry the burden of the proposed long-term beach management plan. Therefore, the Town would need to raise additional revenues for next fiscal year to meet funding projections outlined in the static line exception application. A signed resolution passed by the Town is included as supplemental information, which shows the commitment of local officials to accept this funding scenario as part of the island-wide beach management plan outlined in the Town's static line exception application. In addition to the Town of Indian Beach, a small portion (574 feet) of the oceanfront shoreline is the unincorporated community of Salter Path. DCM is comfortable with the assumption that this portion of the project will either be covered by the County or adjacent local governments as part of the island-wide sand management project and that a "gap" is unlikely.

IV. Staff's Recommendation

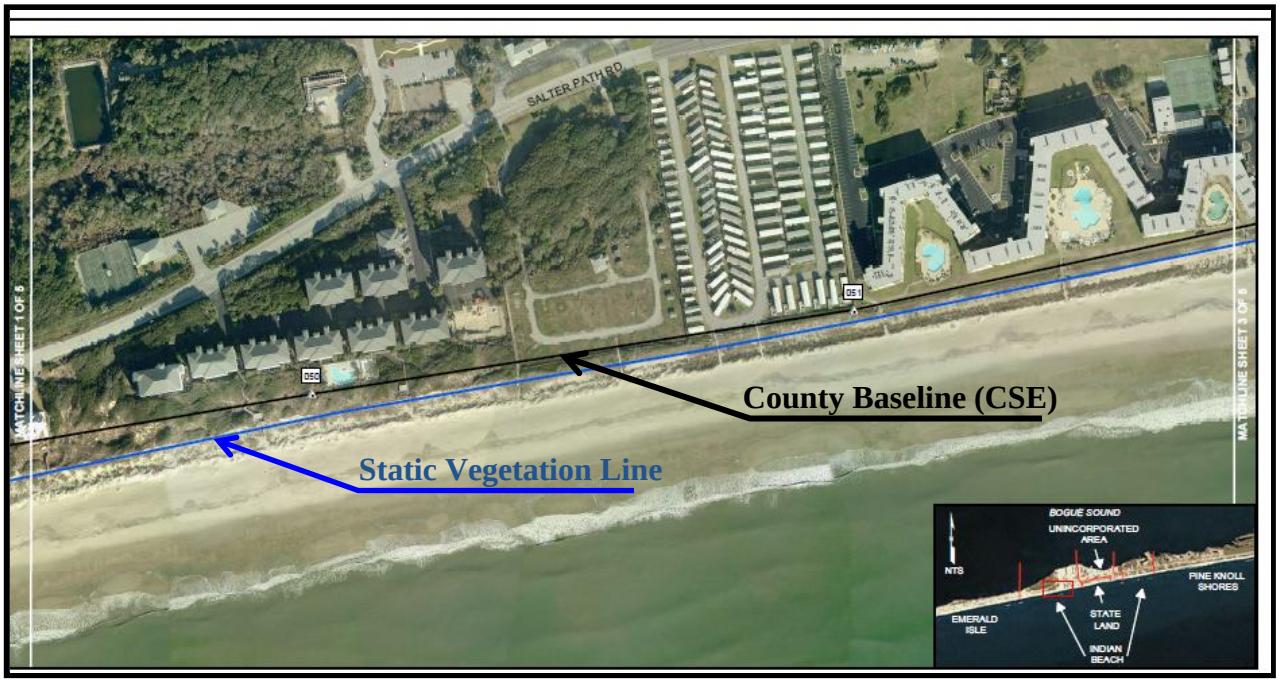
The Commission, through 15A NCAC 7J.1202(a)(4), directs Staff to provide a recommendation to the Commission whether it should grant or deny the Petitioner's Static Line Exception Request. Based on the Town's report and additional exhibits attached**,** Staff recommends that the Commission **GRANT** the Town's Petition for a Static Line Exception, and authorize the use of the rules at 15A NCAC 7H.0306(a)(8).

ATTACHMENT C
Petitioner's Report

Petitioner's Initial Report is Attached as an electronic file so that the report's photographs and diagrams can be viewed in color.

Indian Beach/Salter Path, NC Static Line Exception Application Report

MARCH 2010



Prepared by:
Coastal Planning & Engineering of NC
For
Town of Indian Beach
&
Carteret County, NC

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INDIAN BEACH/SALTER PATH, NC
STATIC LINE EXCEPTION APPLICATION REPORT

1. PURPOSE.

The Town of Indian Beach and the unincorporated area know as Salter Path, which is under the jurisdiction of Carteret County, are seeking exceptions to the static vegetation line in accordance with the procedures outlined in 15A NCAC 07J .1201. In addition to Indian Beach and the Village of Salter Path, the shoreline segment includes Roosevelt State Park. A static vegetation line was established along 2.4 miles (12,850 feet) of shoreline fronting the Town of Indian Beach and the Village of Salter Path as a result of a large scale beach nourishment project constructed in 2001-02 as a joint effort of the two communities, and with Pine Knoll shores, located immediately adjacent to the east of Indian Beach. The Town of Indian Beach occupies 65% of the total segment consisting of two areas separated by the Salter Path and Roosevelt State Park shorelines as shown in Figure 1. The west portion of Indian Beach measures 5,274 feet and the east portion 3,078 feet. The Salter Path shoreline measures 4,498 feet. Approximately 2,827 feet (22%) of the Salter Path shoreline is occupied by the Roosevelt State Park (area with no development in Figure 1) with the remaining 1,671 feet (13%) within the jurisdiction of Carteret County.

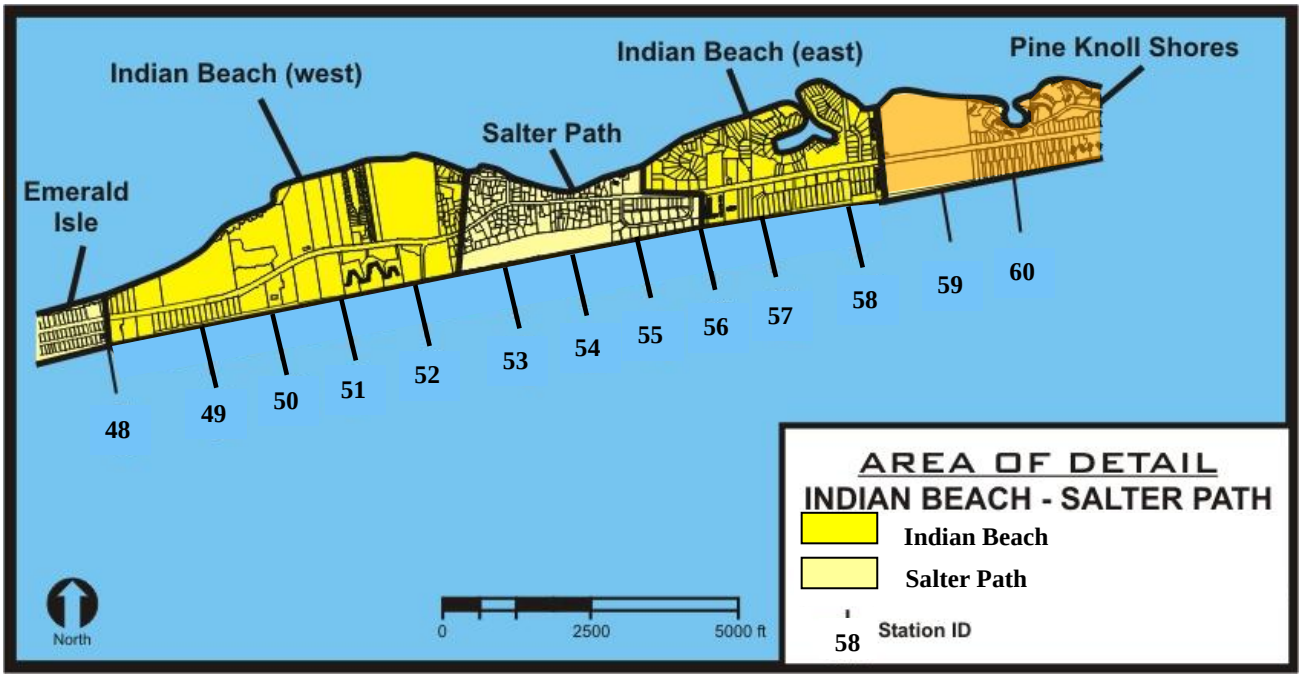

Figure 1. Indian Beach and Salter Path shorelines. (Base map courtesy of Carteret County Shore Protection Office.)

The static vegetation line together with the recently adopted rule establishing graduated setback requirements based on building size (15A NCAC 07h .0306) has rendered over 70 single family homes and 2 large condominiums non-conforming. Approximately 60 of the single family homes are less than 5,000 square feet. The following report provides information in support of the static line exception application as required by 15A NCAC 07J .1201.

2. PROJECT BACKGROUND.

In 1999, Carteret County, acting through its Beach Preservation Task Force (a forerunner to the Shore Protection Office), initiated planning for an island-wide shore protection project aimed at providing interim protection to development and infrastructure along the island until a long-term storm damage reduction project could be designed and implemented by the Corps of Engineers. The island-wide plan developed by the county is called the Bogue Banks Restoration Project. The county contracted Coastal Science & Engineering, PLLC (CSE) of Morehead City, NC to develop the plan. CSE also prepared an Environmental Assessment under the National Environmental Policy Act (CSE 2001a) and an Environmental Impact Statement required by the State Environmental Policy Act (CSE 2001b). The conceptual plan developed for the island-wide project is detailed in a report prepared by CSE entitled "Executive Summary – Shoreline Assessment and Preliminary Beach Restoration Plan, Bogue Banks, North Carolina" (CSE 1999). Following the review and approval of federal and state environmental documents, the project received a CAMA Major Permit Number 124-01 dated October 5, 2001 and a Department of the Army Permit #200000362 dated October 26, 2001. Minor modifications to the CAMA Major Permit were approved on October 4, 2002 with these same modification approved by the Department of the Army on October 22, 2002. The island-wide project was implemented in three phases and the permit modifications referenced above were granted prior to the construction of Phase II of the project (east Emerald Isle).

The Bogue Banks Restoration Plan covers approximately 16.8 miles of the 25-mile long island and extends from the Atlantic Beach/Pine Knoll Shores (AB/PKS) town boundary west to approximately one mile east of Bogue Inlet (Figure 2). The project is sponsored by Carteret County with the Towns of Pine Knoll Shores, Indian Beach, and Emerald Isle included in the permits as co-permittees. The Town of Atlantic Beach was not included in the island-wide plan as it is the recipient of navigation maintenance material derived from the Morehead City Harbor federal navigation project.

The three phases of the island-wide project are shown in Figure 2. Phase I was accomplished in 2001-02 and included the 4.5 miles of ocean shoreline fronting the Town of Pine Knoll Shores and 2.4 miles along the shoreline segment that includes the Town of Indian Beach and the Village of Salter Path (the focus of this static line exception report). Phase I covered the area from stations 48 to 76 shown in Figure 3. Material to construct Phase I was obtained primarily from the offshore borrow areas designated as B1 and B2 in Figure 2. The initial permit condition specified that if material is excavated from Borrow Area A, each cubic yard removed from Borrow Area A had to be matched with 2 cubic yards from Borrow Area B (i.e. B1 or B2). However, this restriction was subsequently removed and material was allowed to be excavated from Borrow Area A without any restrictions. Phase II was constructed in 2003 and covered the eastern 5.9 miles of Emerald Isle west of the Indian Beach/Salter Path town boundary to a point approximately 1.5 miles east of the Bogue Inlet Fishing Pier (Stations 25 to 48 in Figure 3). Material for Phase II was obtained from Borrow Areas B2 and A (Figure 2). The modifications to the permits mentioned above were associated with changes in the length of Phase II and changes in the limits and dredge depths in Borrow Area B2. Phase III was constructed during the winter of 2005 with material removed from Bogue Inlet as part of the Bogue Inlet Channel Erosion Response project. Phase III covered the westernmost 4.5 miles of Emerald Isle to within about 1 mile east of Bogue Inlet (Stations 8 to 25 in Figure 3).

The Indian Beach/Salter Path portion of the Project was constructed between November 2001 and April 2002 as part of Phase I and included design specifications that triggered a static line. With initial construction completed in April 2002, the project satisfies a requirement of 15A NCAC 07J .1201 that the project must have been in place a minimum of 5 years prior to making the exception request.

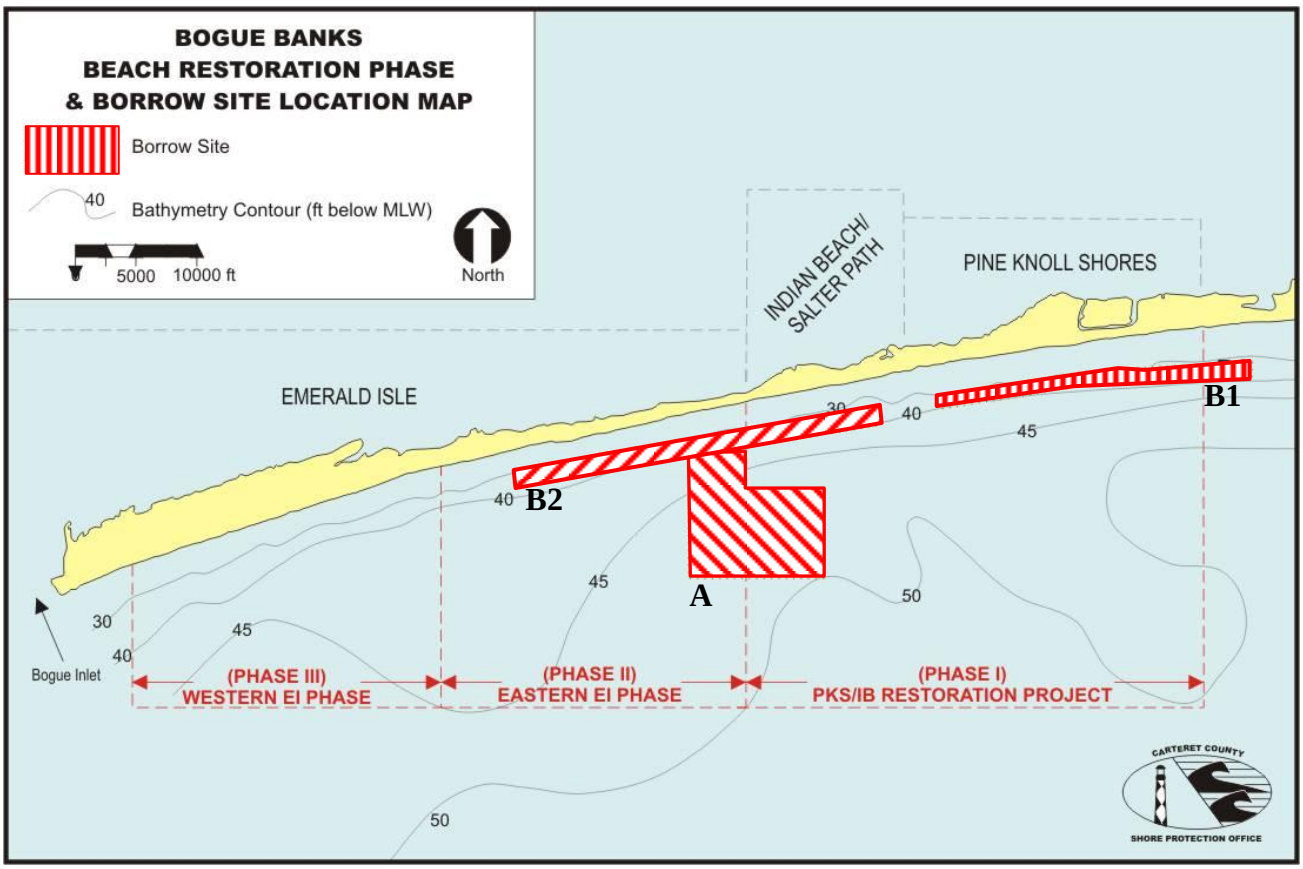

Figure 2. Bogue Banks Restoration Project (Map courtesy of the Carteret County Shore Protection Office).

3. PROJECT DESIGN.

During the active tropical storm period from 1996 to 1999, most areas along Bogue Banks experienced substantial damage to ocean front properties. The one exception was the Town of Atlantic Beach which did not experience any appreciable damage. In this regard, the Town of Atlantic Beach and Fort Macon State Park were the recipients of almost 4.2 million cubic yards of sediment in 1986 and 4.6 million cubic yards in 1994, which were associated with maintenance and new construction of the Morehead City Harbor Project. The 1986 disposal operation included removal of sediment from Brandt Island (termed the Brandt Island pump-out), an upland disposal site for the Morehead City Harbor Project, and from maintenance of the inner harbor channels and turning basin. The 1994 operation included a combination of material from channel maintenance, new channel construction, and the second Brandt Island pump-out. As a result of these two disposal operations, Atlantic Beach had an exceptionally wide beach prior to the onslaught of the storms. Noting the lack of damage to Atlantic Beach, CSE targeted the profile condition along Atlantic Beach as the design template for the remainder of the island.

CSE surveyed 111 transects (Figure 3) spaced approximately every 1,000 feet along the entire island and computed the volume of material residing on each profile between the toe of the dune seaward to the 12-foot NAVD (North American Vertical Datum) depth contour. Based on the volume computations for the profiles located within the town limits of Atlantic Beach (see example profile in Figure 4), CSE adopted a design volume between the seaward toe of the dune and the -12-foot NAVD contour for the remainder of the island of 175 cubic yards/lineal foot. Given this design volume, CSE determined the volume of material that should be added to the shorelines of Pine Knoll Shores, Indian Beach/Salter Path, and Emerald Isle to increase the profile volume in these areas to 175 cubic yards/lineal foot. Since the purpose of the project at that time was to provide interim protection until the federal storm damage reduction project would be implemented, the total volume to be placed along the shoreline was increased by an amount deemed to be sufficient to accommodate 10 years of erosion at each location along the island.

The design profile volume for the Bogue Banks project was subsequently increased to 225 cubic yards per lineal foot to account for the volume of material from the landward toe of the dune to the seaward toe of the dune (CSE 2004).

The plan layout for the Indian Beach/Salter Path portion of the project, which was designated as Reach 4 in the overall plan, is shown in Figure 5. A typical design template for Reach 4 is provided in Figure 6. The beach fill was designed as a variable width horizontal berm at elevation +6.0 feet NAVD. Profiles showing the pre-nourishment and post-construction conditions are provided in Figures 7 to 11. The location of the typical profiles (Stations 50, 52, 54, 56, and 58) are indicated by red lines in Figure 3.

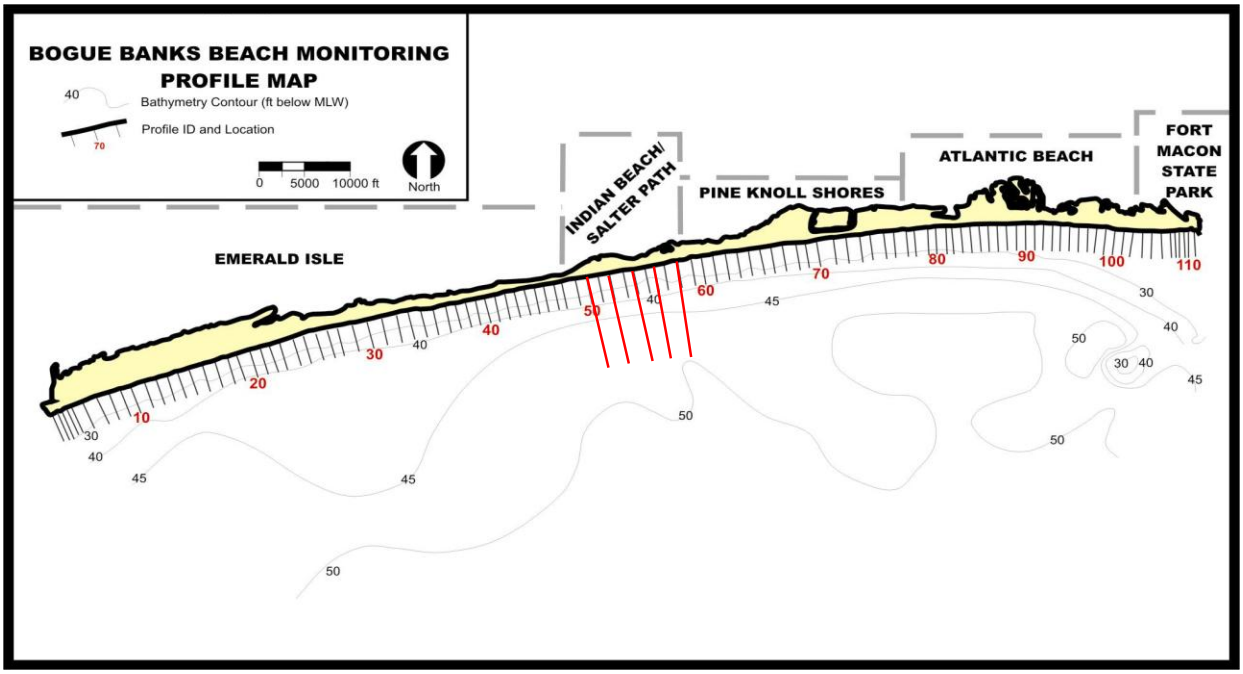

Figure 3. Location of 111 transects surveyed by CSE and location of typical profiles in Indian Beach/Salter Path (shown in red). (Base map courtesy of the Carteret County Shore Protection Office).

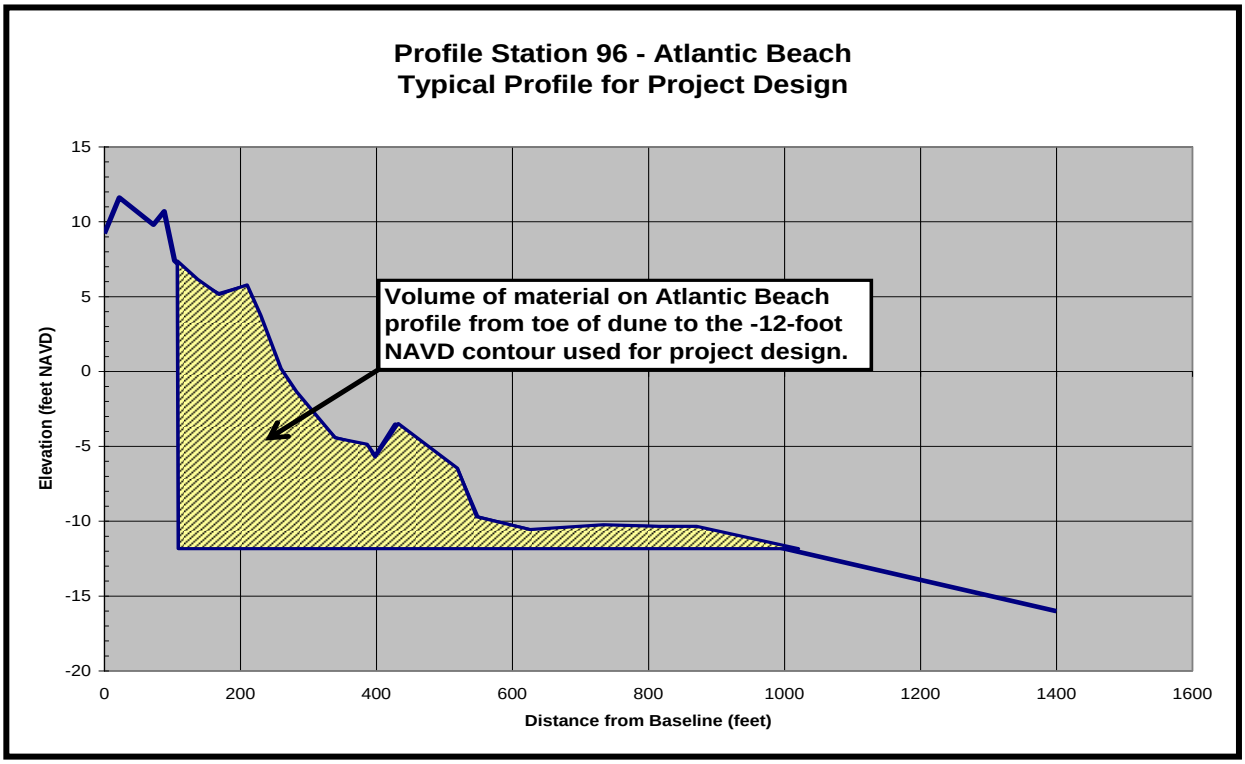

Figure 4. Typical profile on Atlantic Beach used to determine beach fill requirements for the remainder of Bogue Banks.

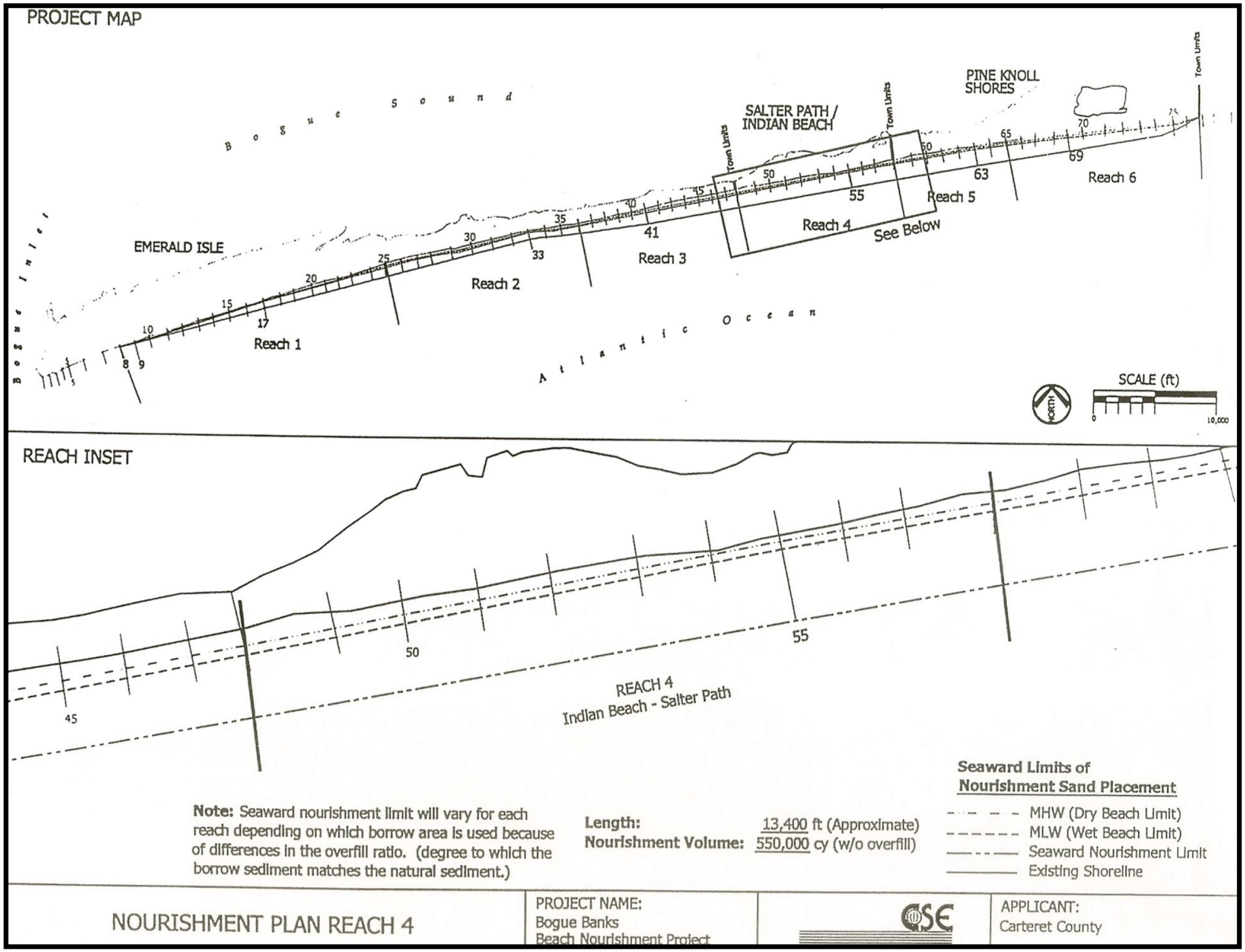

Figure 5. Plan view of Indian Beach/Salter Path beach fill project (Reach 4).

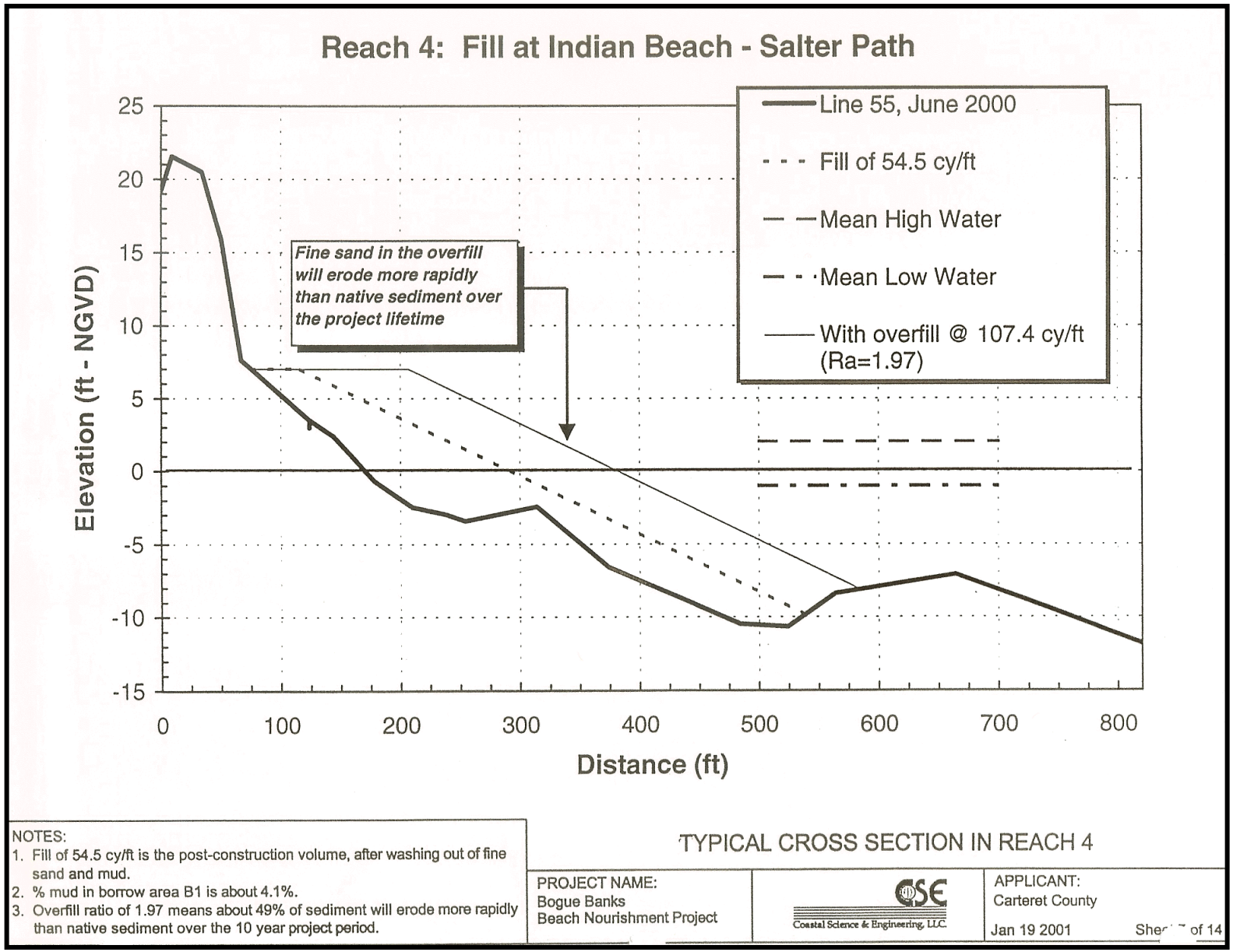

Figure 6. Typical Design Profile – Indian Beach/Salter Path (Reach 4). *Note: NAVD datum = +1.0 ft NGVD.*

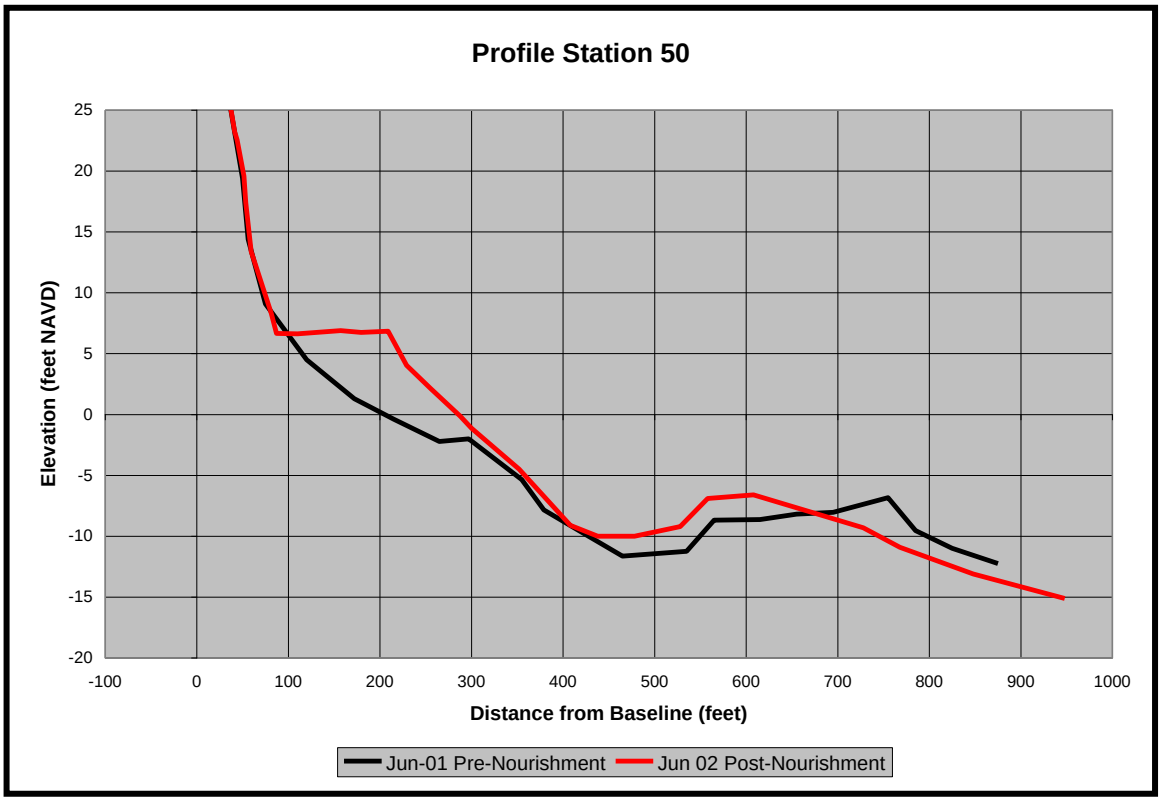

Figure 7. Profile Station 50 – pre- and post-nourishment. Figure 8. Profile Station 52 – pre- and post-nourishment.

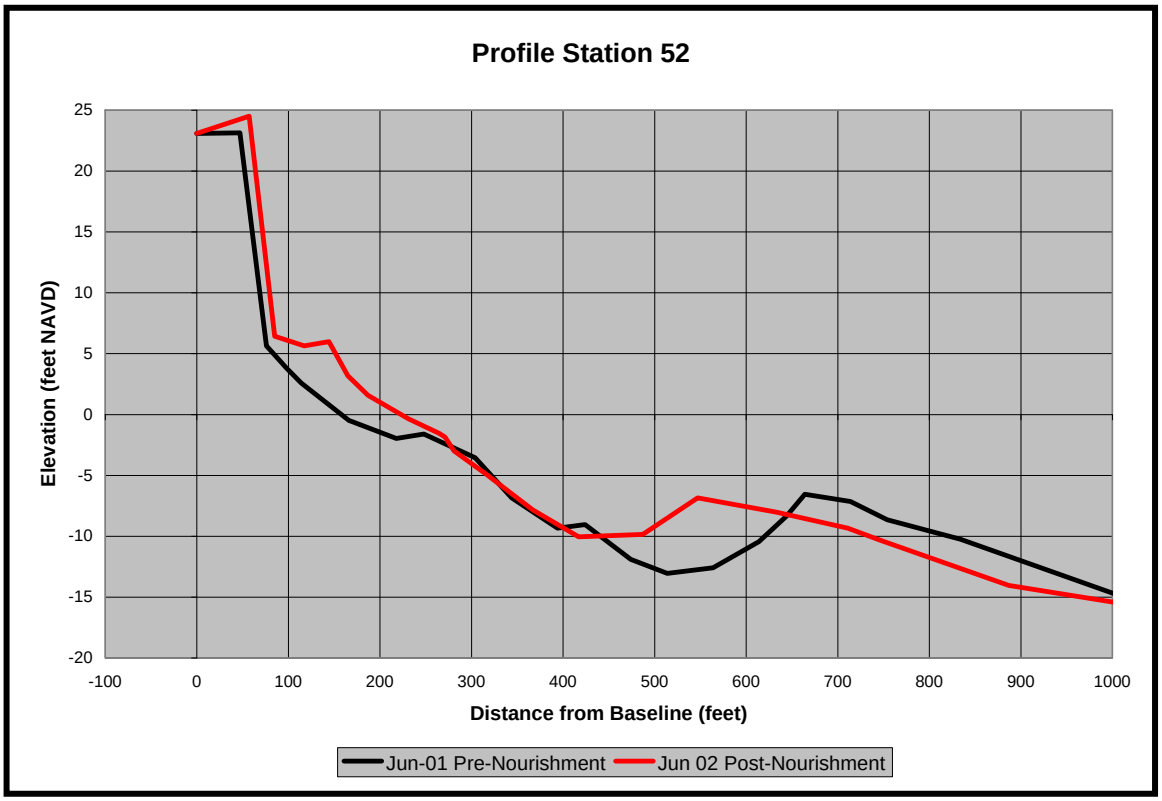

Figure 8. Profile Station 52 – pre- and post-nourishment. Figure 8. Profile Station 52 – pre- and post-nourishment.

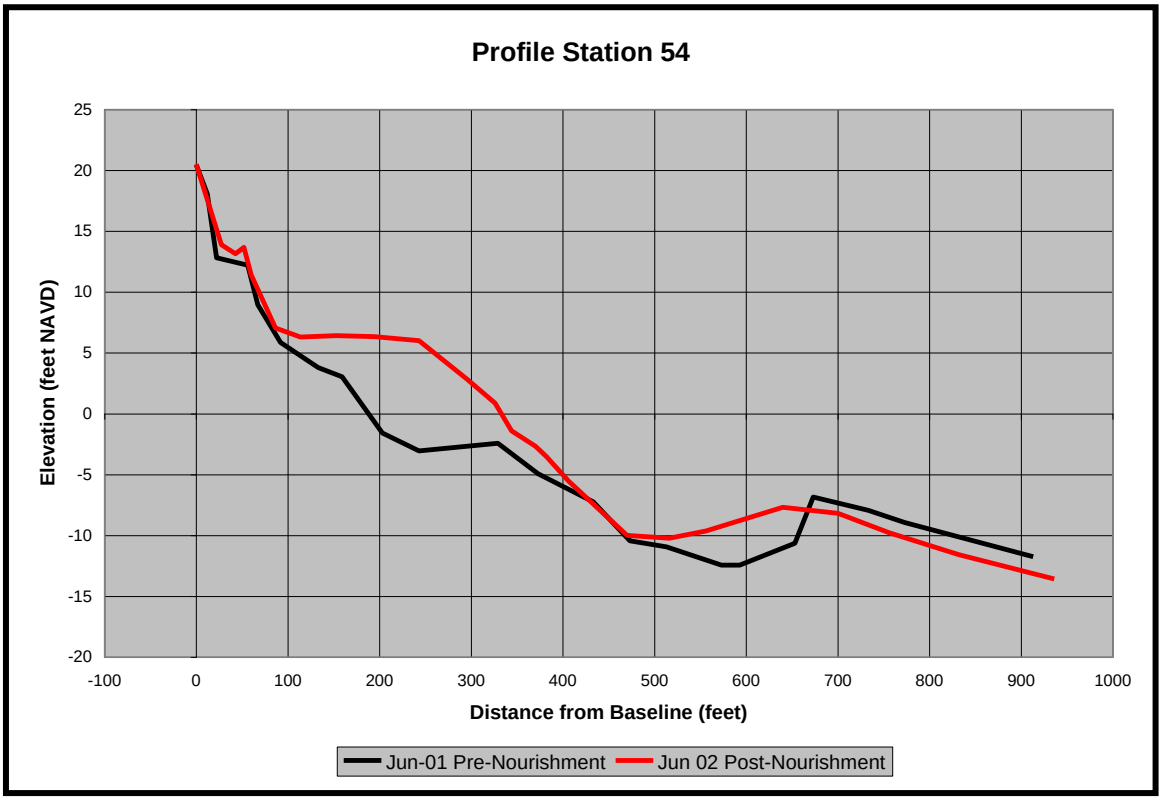

Figure 9. Profile Station 54 – pre- and post-nourishment.

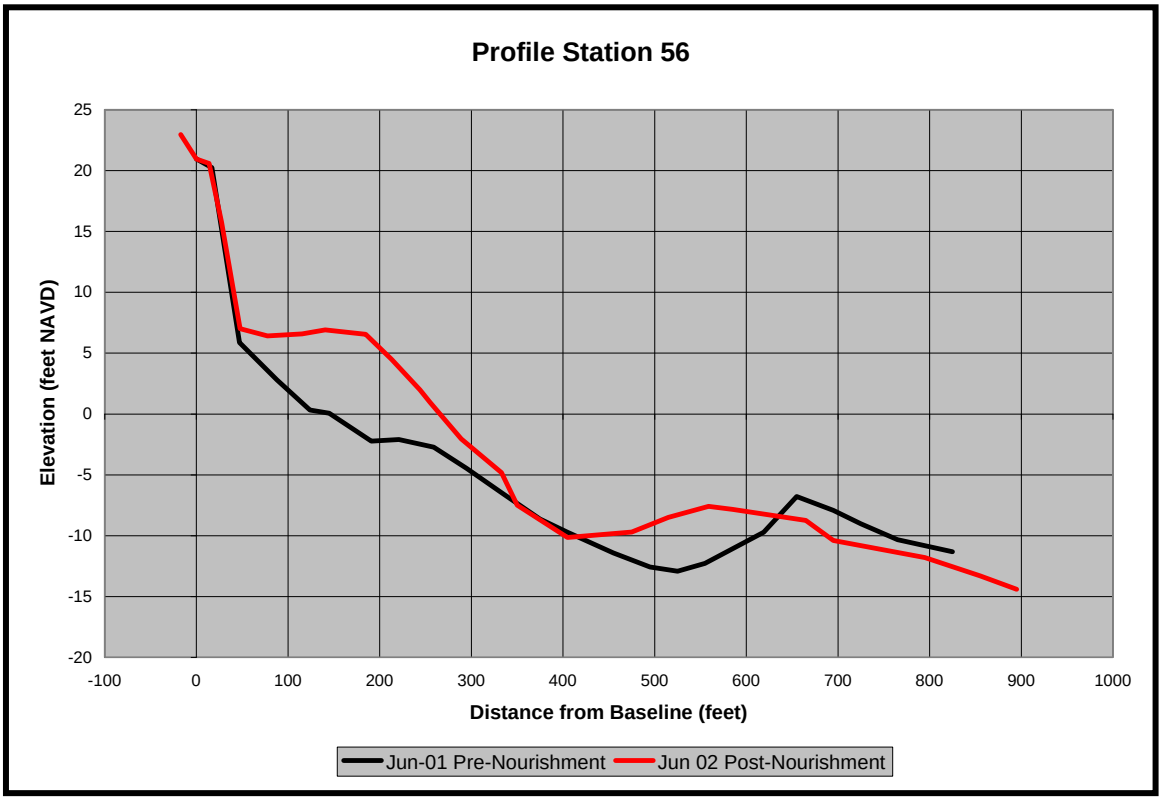

Figure 10. Profile Station 56 – pre- and post-nourishment.

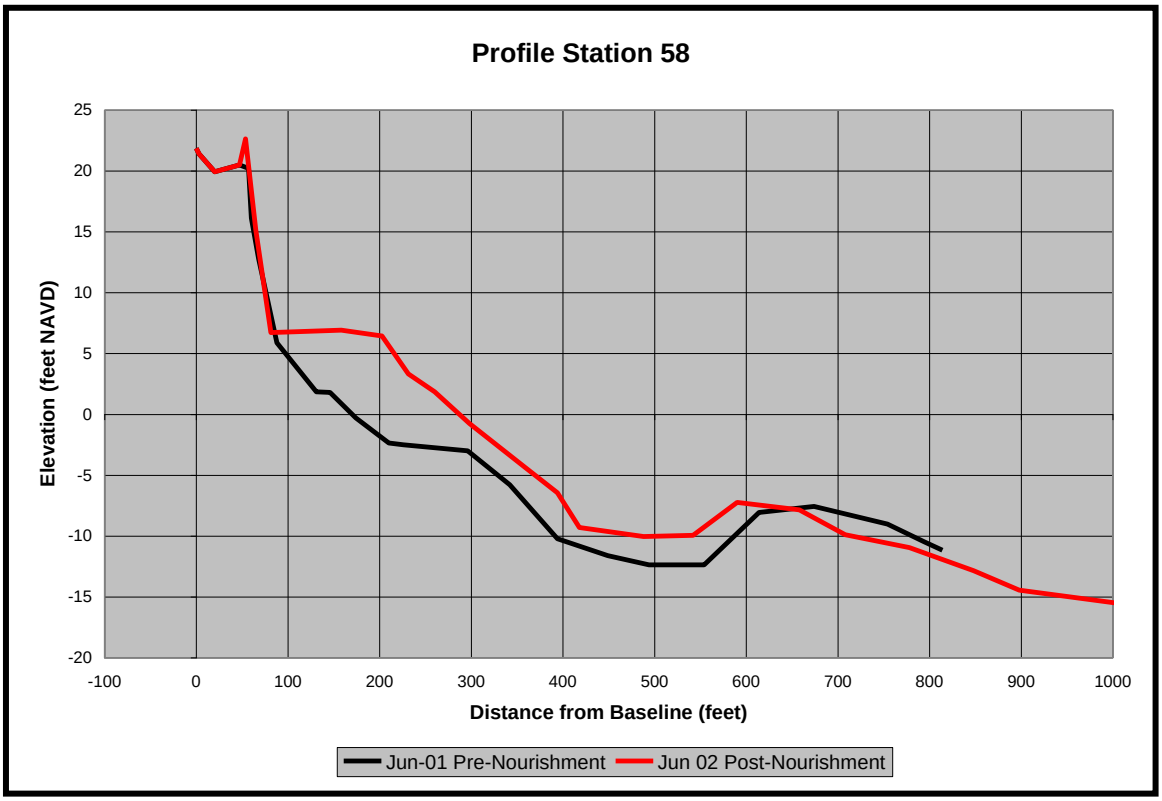

Figure 11. Profile Station 58 – pre- and post-nourishment.

4. PROJECT CONSTRUCTION AND ESTABLISHMENT OF STATIC VEGETATION LINE.

The Indian Beach/Salter Path and the Pine Knoll Shores portions of the Bogue Banks Restoration Project (Phase I) were completed in April 2002 with the work contracted to Great Lakes Dredge & Dock Co. (GLDD). GLDD initially used two hopper dredges (*Manhattan Island* and *Sugar Island)* but delays in the construction progress associated with automobile tires that had broken off an artificial fishing reef and the taking of sea turtles necessitate GLDD to mobilize a third dredge, the *Dodge Island*, in an attempt to complete the project by the April 30 permit deadline. Construction of Phase I was eventually halted on April 11, 2002 due to another turtle take. The previous delays and the work stoppage prior to April 30 resulted in a reduction in the volume of material placed along both Indian Beach/Salter Path and Pine Knoll Shores. Based on after construction profile surveys, the amount surveyed in place along the Indian Beach/Salter Path shorelines totaled 456,994 cubic yards or about 41% less than the contract amount. The Town of Pine Knoll Shores received 1,276,586 cubic yards or about 9% less than the original contract amount. The work stoppage resulted in two areas or "gaps" along the Indian Beach/Salter Path shoreline that did not receive any substantial fill volume. One gap was located approximately between stations 48 and 50 on the west end of Indian Beach and the other approximately between stations 52 and 54 in Salter Path (Figure 3). Most of the gap located between stations 52 and 54 lies within the Roosevelt State Park. Even though fill material was not placed directly in these areas, the two gaps soon equilibrated with material moving into the gaps from the adjacent beach fill areas. As an example, Station 52 is located near one of the areas that did not receive a full complement of fill yet the June 2002 survey, taken about 2 months following the completion of Phase I (Figure 8), shows a substantial amount of material had moved in to the area. The existing static vegetation line established along the Indian Beach/Salter Path shoreline as a result of the Phase I beach nourishment project is shown in Figure 12a to 12e.

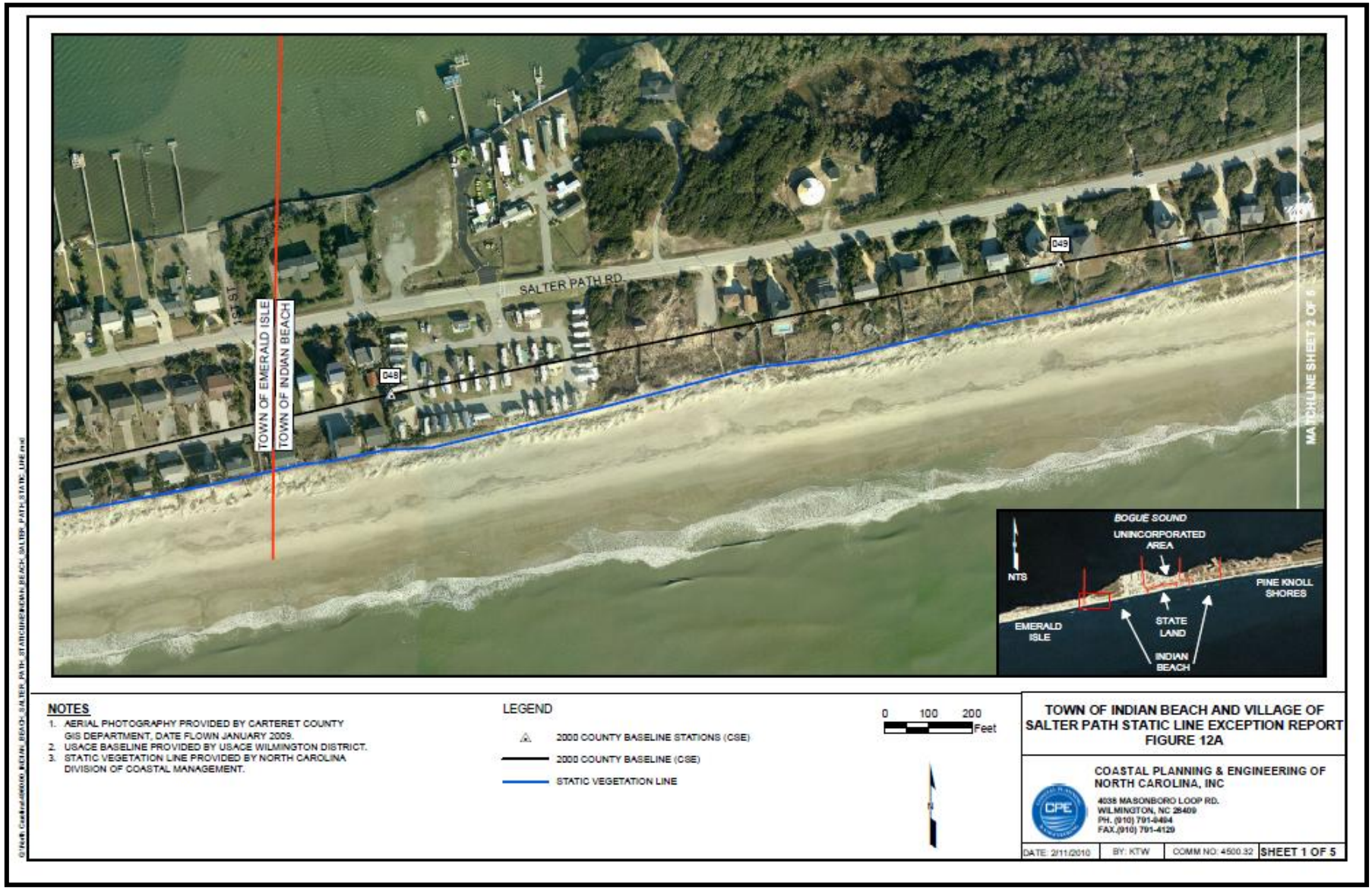

Figure 12a Indian Beach/Salter Path Static Line & Project Baseline.

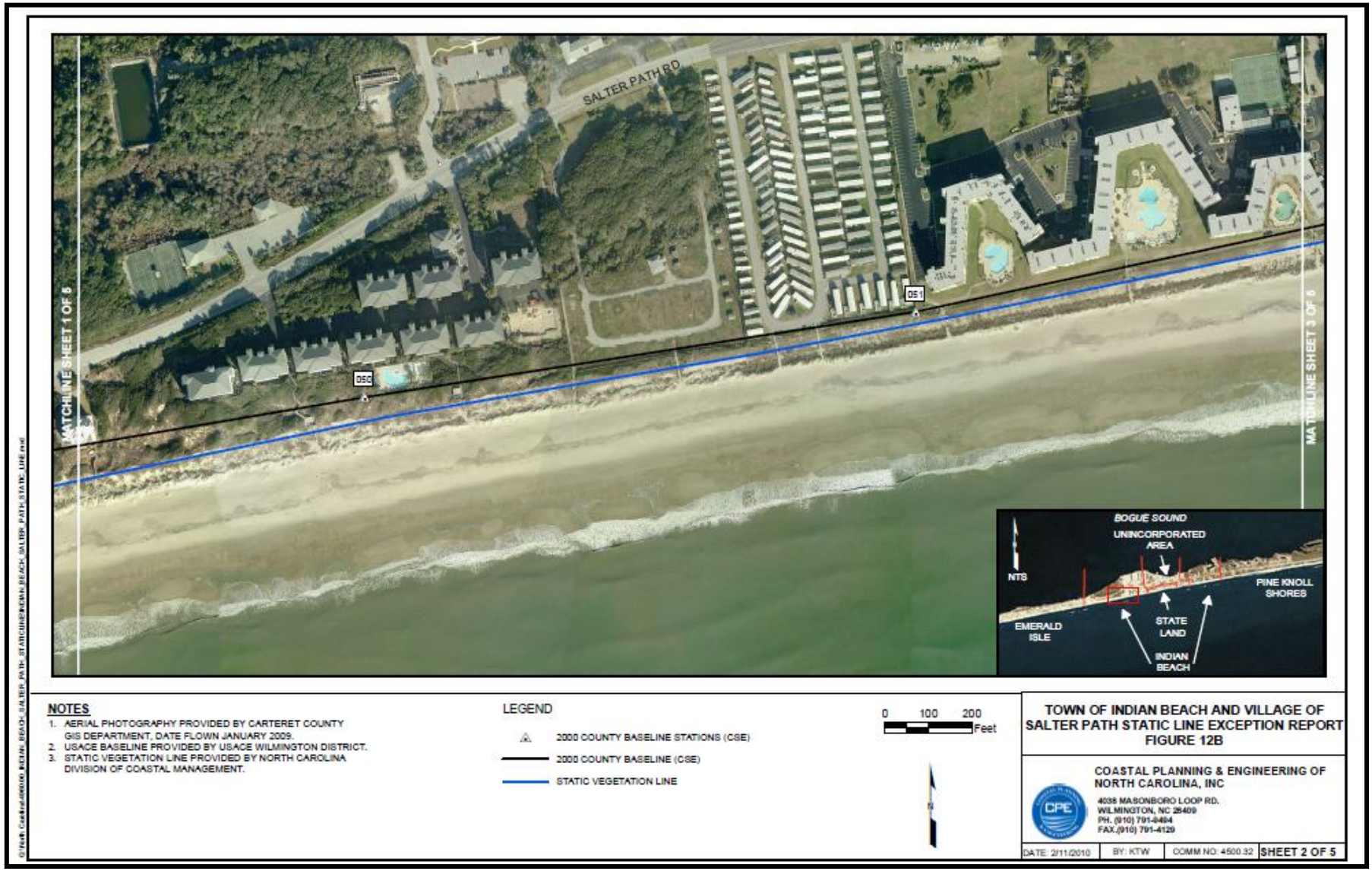

Figure 12b Indian Beach/Salter Path Static Line & Project Baseline.

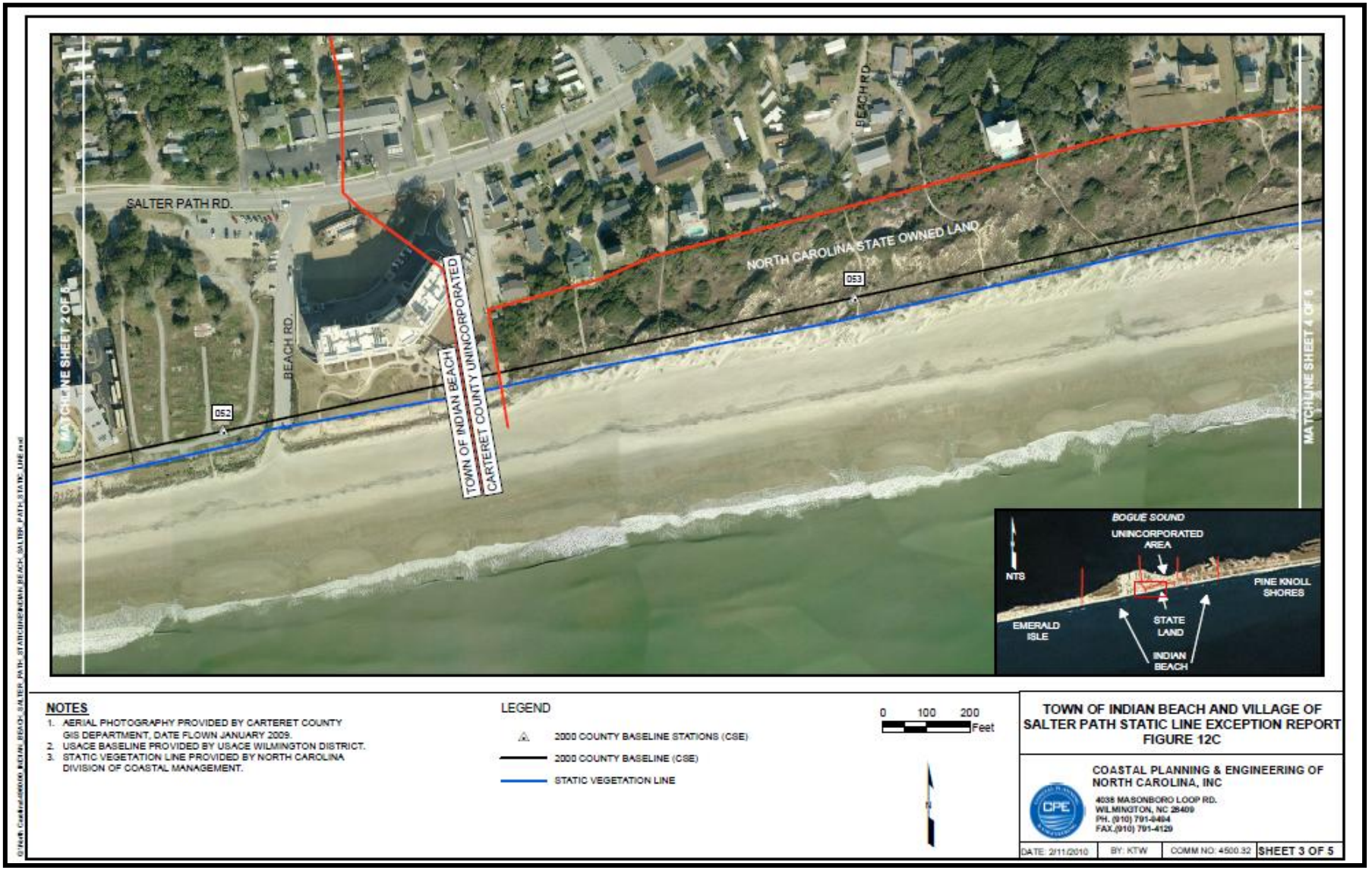

Figure 12c Indian Beach/Salter Path Static Line & Project Baseline.

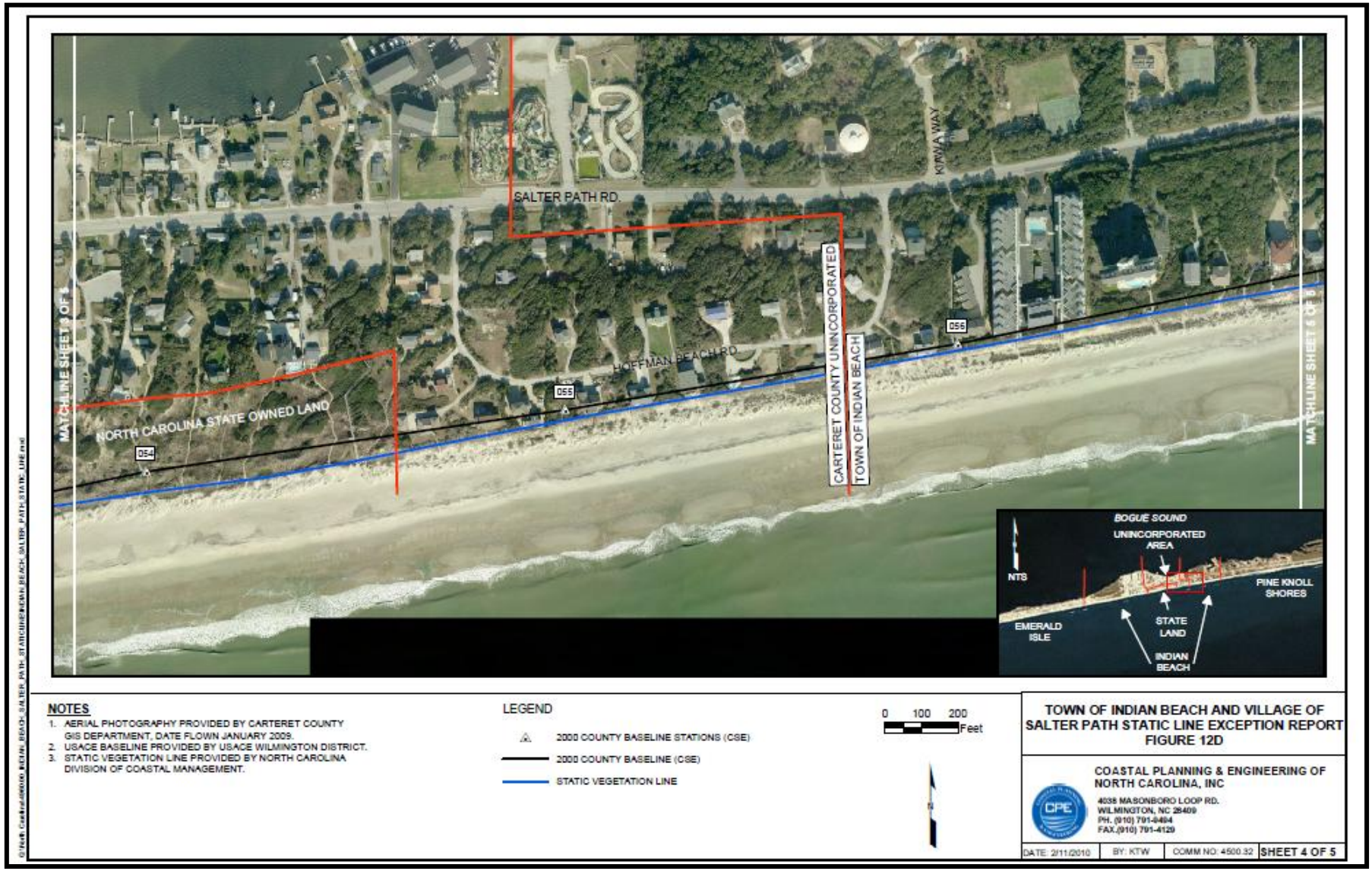

Figure 12d Indian Beach/Salter Path Static Line & Project Baseline.

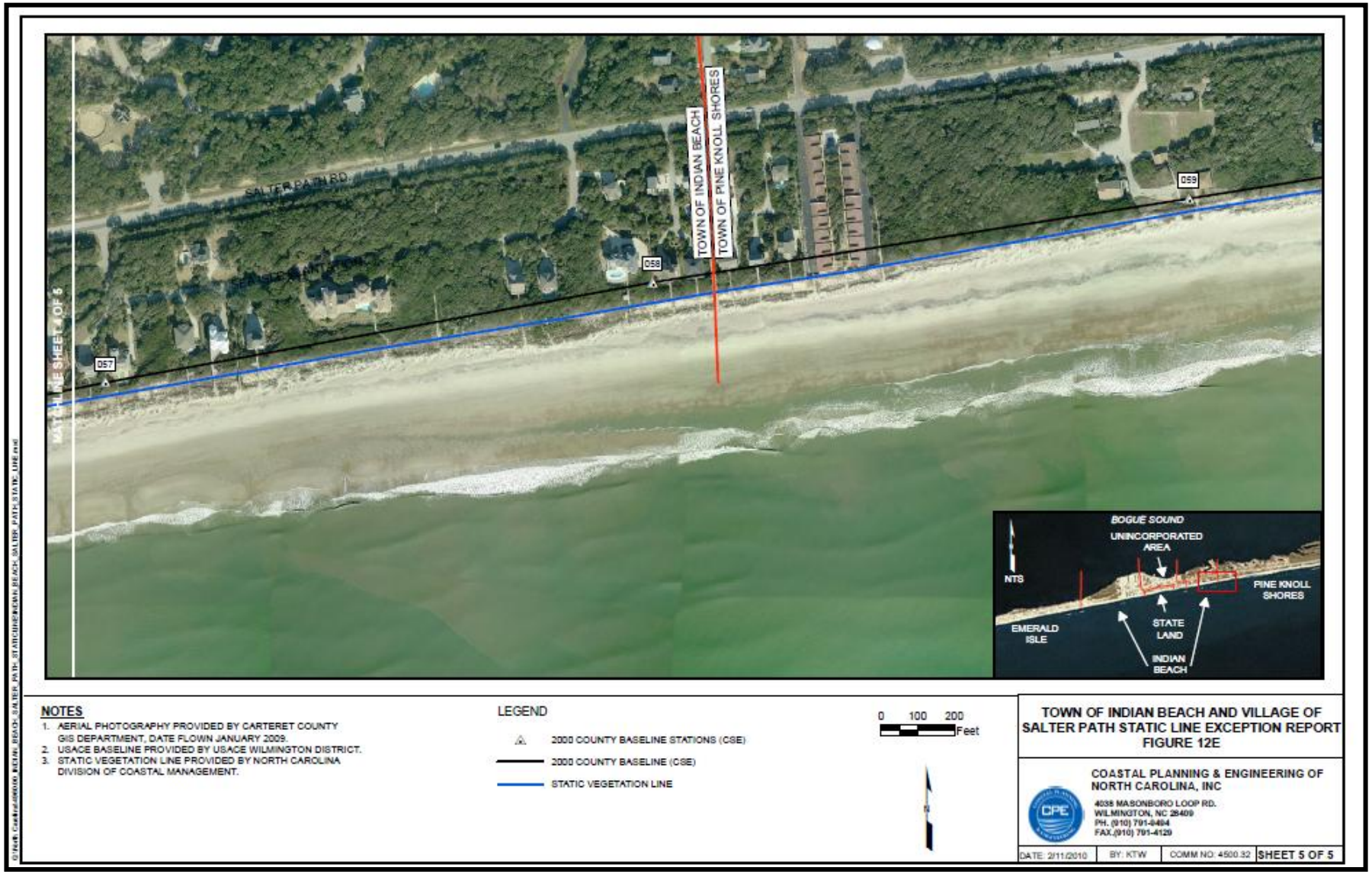

Figure 12e Indian Beach/Salter Path Static Line & Project Baseline.

5. PERIODIC NOURISHMENT PLAN.

The Bogue Banks Restoration Project was initially intended to be an interim measure aimed at protecting the island until a long-term (50 year) federal storm damage reduction project could be implemented. However, given the uncertainties associated with federal authorization for such a project and concerns over federal funding once federal authorization is attained, each of the island municipalities adopted periodic nourishment plans to assure adequate protection is maintained until the federal project is put in place. Also, Carteret County, acting through the Shore Protection Office, established a detailed beach profile monitoring program to document the condition of the beach fills placed along the island and determine where and when beach nourishment would be required.

Indian Beach/Salter Path Periodic Nourishment Plan. The periodic nourishment plan adopted by the Indian Beach/Salter Path has two nourishment "triggers", one presented to the Federal Emergency Management Agency (FEMA) to comply with that agency's requirements for federal post-storm reconstruction assistance following a declared federal disaster and the other tied to the engineering formulation of the Bogue Banks Restoration Project. The FEMA nourishment trigger requires nourishment to be accomplished when one-half of the initial construction volume is lost from the fill. For Indian Beach/Salter Path, the initial construction volume (measured in place) was 456,994 cubic yards and the resulting FEMA nourishment trigger is the loss of 228,497 cubic yards from the initial fill. The second nourishment trigger is based on maintaining a minimum volume of material on the profile from the landward toe of the dune seaward to the -12-foot NAVD depth contour of 225 cubic yards/lineal foot of beach. The existing condition of the beach fill, its past performance, and the relation of the project performance to the two nourishment triggers is provided below in the project performance section.

Again citing the uncertainties with continued federal involvement in shore protection, Carteret County has initiated a detailed assessment of the long-term shore protection requirements for Bogue Banks in the absence of federal funding that will also include compulsory documentation associated with State and National Environmental Protection Act coordination, and the successful procurement of permits to construct and maintain the Shore Protection Program. This long-term effort is directly related to and compliments the nourishment plan presented in this static line report as it will detail the many logistics required to execute future nourishment events (i.e., geotechnical and remotely-sensed information, habitat mapping, mitigation plans, endangered species considerations, etc.).

6. PROJECT NOURISHMENT HISTORY.

The Indian Beach/Salter Path portion of the Bogue Banks Restoration Project has been nourished on two occasions since initial construction. The first nourishment occurred between February and March 2004 as part of Phase I of the Section 933 project associated with the USACE maintenance of the Morehead City Harbor federal navigation project. Phase I also included a relatively short segment on the west end of Pine Knoll Shores (Figure 13). Section 933 of the Water Resources Development Act of 1986 allows the State and local sponsors to cost share with the federal government in the added cost of depositing material in areas other than the least cost disposal site. Under normal operating conditions, the material removed from the Beaufort Inlet bar channel would be deposited offshore in the Offshore Dredged Material Disposal Site (ODMDS) or in a near shore disposal mound situated immediately west of the inlet's ebb tide delta. For the Section 933 project, Weeks Marine, the firm contracted by USACE to perform the work, used hopper dredges (*BE Lindholm* and the *RN Weeks*) to

haul the material to mooring sites located immediately offshore of Indian Beach/Salter Path and Pine Knoll Shores. From the mooring sites the material was pumped to the beach via a submerged pipeline. Phase I of the Section 933 project placed 630,094 cubic yards of material along the entire shoreline of Indian Beach/Salter Path and 69,189 cubic yards on the western 2,500 feet of Pine Knoll Shores (Figure 13).

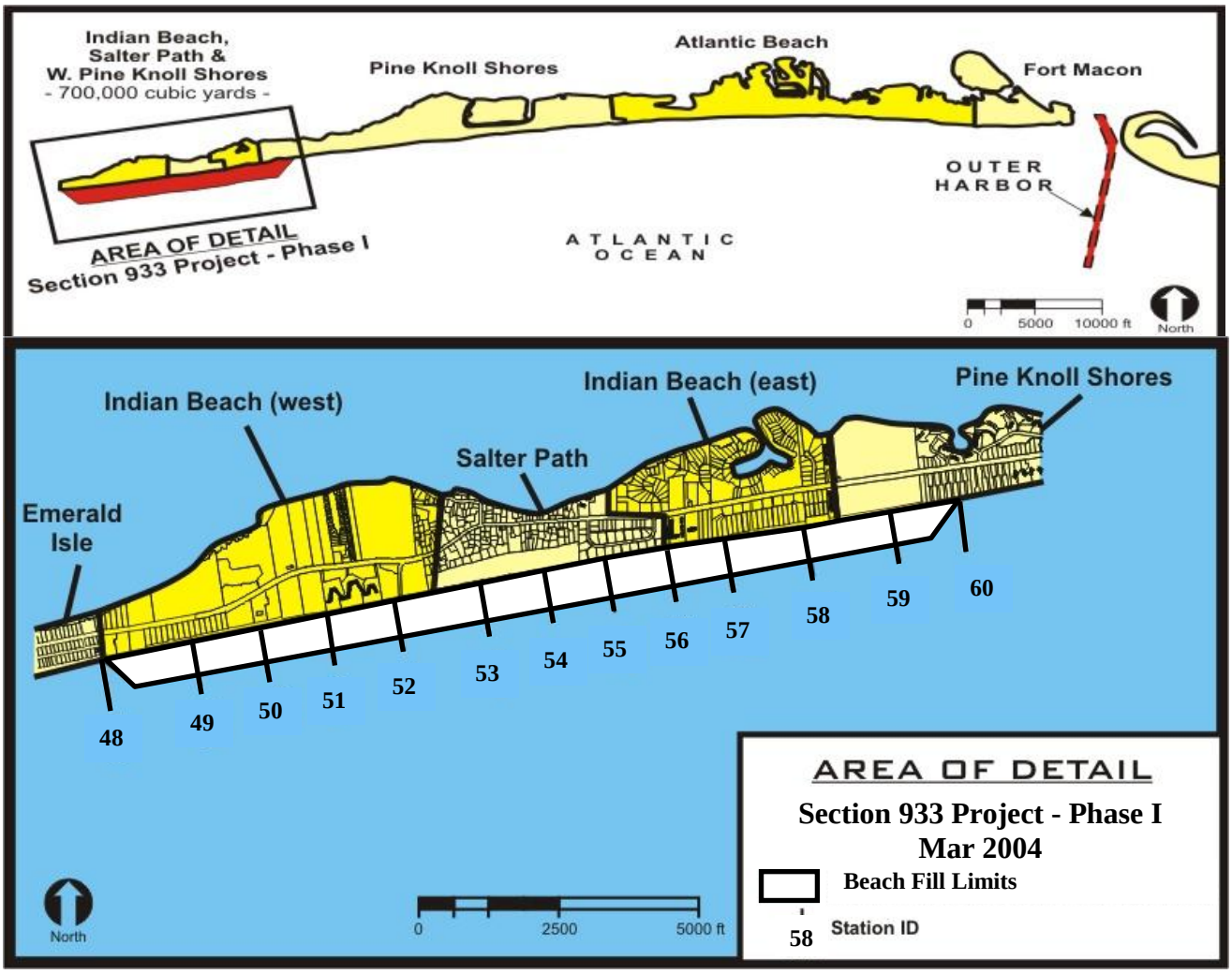

Figure 13. Bach nourishment limits for Phase I of the Section 933 Project. (Base map courtesy of the Carteret County Shore Protection Office).

A second nourishment operation also occurred between January and March 2007 and was carried out to replace material lost during Hurricane *Ophelia* which struck the area in September 2005. Following the advent of Hurricane *Ophelia* in September 2005, Indian Beach/Salter Path, along with the other island communities applied to FEMA for funds to restore the material lost during *Ophelia* under Category G of FEMA's Public Assistance Program. Specifically, the Public Assistance Program allows FEMA to provide funds to restore an "improved" or engineered beach providing the applicant can demonstrate the beach fill project had a designed template and grain size, a maintenance plan, and pre- and post-storm beach profile surveys. In its application, Indian Beach/Salter Path as well as the other towns along the island included in the Bogue Banks Restoration project were able to demonstrate they met all of the FEMA requirements including an engineered beach, a nourishment

plan (as described above), and monitoring program and was subsequently approved to receive reimbursement funds to restore the beach to the pre-storm condition. Carteret County and the three beach towns obtained modifications to its original permits from both the Corps of Engineers and the Division of Coastal Management to allow the use of the Offshore Dredged Material Disposal Site (ODMDS) for the Morehead City Harbor navigation project (Figure 14) as a borrow source for the post-*Ophelia* restoration. The work was contracted to GLDD.

Figure 14. Morehead City Harbor Offshore Dredged Material Disposal Site (ODMDS) with area used for post-storm restorations shown in red.

Profiles of the beach taken before and after Hurricane *Ophelia* indicated a total of 1,107,560 cubic yards had been eroded from the Bogue Banks Restoration Project. Of this total, 298,604 cubic yards was lost from the Indian Beach/Salter Path portion of the project shown in Figure 15.

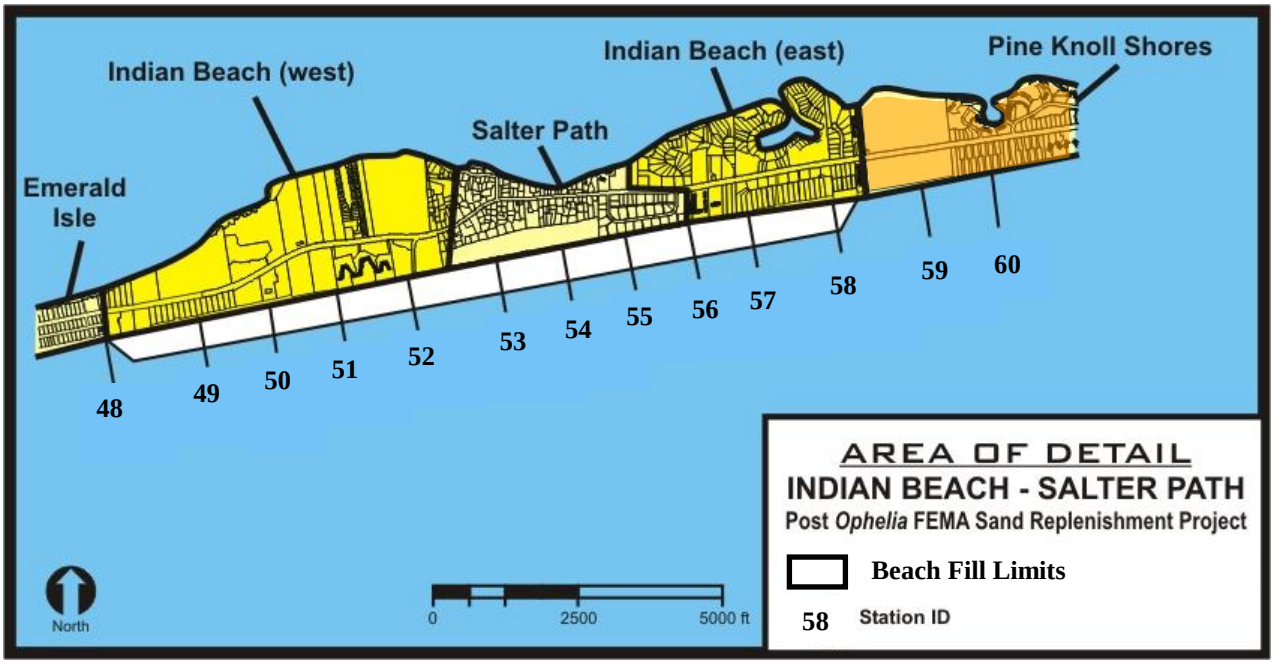

Figure 15. Beach nourishment limits for the post-*Ophelia* Restoration Project – Indian Beach/Salter Path. (Base map courtesy of the Carteret County Shore Protection Office).

Geotechnical investigation of the ODMDS conducted by CSE prior to the Hurricane *Ophelia* restoration project yielded an average mean grain size of 0.31 mm which compared favorably with the native beach mean grain size of 0.30 mm. Post-placement sampling of the material on the beach yielded a slightly larger mean grain size of almost 0.36 mm. During the hopper dredge operation, the dredge slurry (water and sediment) is continually pumped into the dredge's hopper and water is allowed to overflow back into the ocean until the hopper is full with sediment. As the water overflows the hopper, finer grained material is also discharged back into the ocean leaving only the coarser material to be delivered to the beach. The hopper filling and overflow process combined with the winnowing of fine grain sediments during the actual beach disposal operation are primarily responsible for the coarseness of the material found in place on the beach compared to the in situ samples taken from the vibracores.

Based on after-construction surveys of the in place fill, the total volume deposited in Indian Beach/Salter Path was 319,113 cubic yards. The total cost of the restoration was $13,773,800 all of which was provided by FEMA. Of this total restoration cost, $3,893,200 was allocated to Indian Beach/Salter Path.

A summary of the initial beach nourishment operation and the two nourishment operations within the limits of Indian Beach/Salter Path is provided in Table 1.

To date, periodic nourishment under the nourishment plan adopted by Indian Beach/Salter Path has not been required. Additional discussion of the performance of the project is provided below.

Table 1
Indian Beach/Salter Path Nourishment History

Event	Date	Fill Limits Approx. Sta Nos.	Length (ft)	Borrow Area	Volume (cy)	Cost-Sharing		
						Local	State	Federal
Initial Construction	Nov 01 – Apr 02	48 to 58.5	12,850	A, B1 & B2	456,994	$4,135,000	$900,000[(1)]	$0
Phase I – Sec 933 Project	Mar-Apr 2004	48 to 58.5	12,850	Beaufort Inlet	630,094	$394,975 [(2)]	$1,184,925	$4,814,900
Post-Ophelia	Jan-Mar 2007	48 to 58.5	12,850	ODMDS	319,113	$0	$0	$3,893,200

[(1)] State funding for Roosevelt State Park.
[(2)] Indian Beach/Salter Path share of local cost = $328,433.

7. PROJECT PERFORMANCE.

The performance of the Indian Beach/Salter Path project has been monitored on an annual basis by the island-wide beach profile monitoring program conducted under the auspices of the Carteret County Shore Protection Office. The profile monitoring program began in June 1999 prior to the construction of the beach fills projects. Annual reports summarizing the results of the monitoring surveys including the performance of the beach nourishment projects along Bogue Banks have been prepared since 2002-03 and are available from the Shore Protection Office website (http://www.protectthebeach.com/Monitoring/monitoring.htm).

The Indian Beach/Salter Path portion of the Bogue Banks Restoration Project includes a total of 11 profiles, numbered 48 to 58, that are surveyed annually and following significant storm events. Representative plots of the typical profiles 50, 52, 54, 56, and 58, the location of which are indicated in Figure 2, are provided in Appendix A.

A plot of the cumulative changes in the volume of material from the back toe of the dune seaward to the -12-foot NAVD contour for Indian Beach/Salter Path is shown in Figure 16 This plot begins in June 1999, prior to the construction of the project, and extends through June 2009. The large jump in the cumulative volume curve in April 2002 was due to the initial construction of the project which added 456,994 cubic yards to the 3.5 mile shoreline. Prior to initial construction, the cumulative volume change within Indian Beach/Salter Path since June 1999 had gained 87,380 cubic yards. The other two major jumps in the cumulative volume curve were associated with the Phase I of the Section 933 project completed in March 2004 which added 630,094 cubic yards to the shoreline and the post-*Ophelia* restoration project completed in March 2007 which added 319,113 cubic yards.

The periodic nourishment plan for Indian Beach/Salter Path includes two nourishment triggers, both of which are shown in Figure 16. The "FEMA Nourishment Trigger" is based on the loss of one-half of the initial construction volume or 228,497 cubic yards. The loss of this volume of material would set the nourishment trigger on the cumulative volume curve to 315,877 cubic yards. Again, this volume is measured from the landward toe of the dune to the -12-foot NAVD contour. The second nourishment trigger, designated as the "Design Nourishment Trigger" in Figure 16, is based on maintaining a minimum volume of 225 cubic yards/lineal foot of shoreline between the landward toe of the dune and the -12-foot NAVD contour. For Indian Beach/Salter Path, the Design Nourishment

Trigger of 582,538 cubic yards is the larger of the two and would control when nourishment should be performed in order to keep the project up to its design requirements.

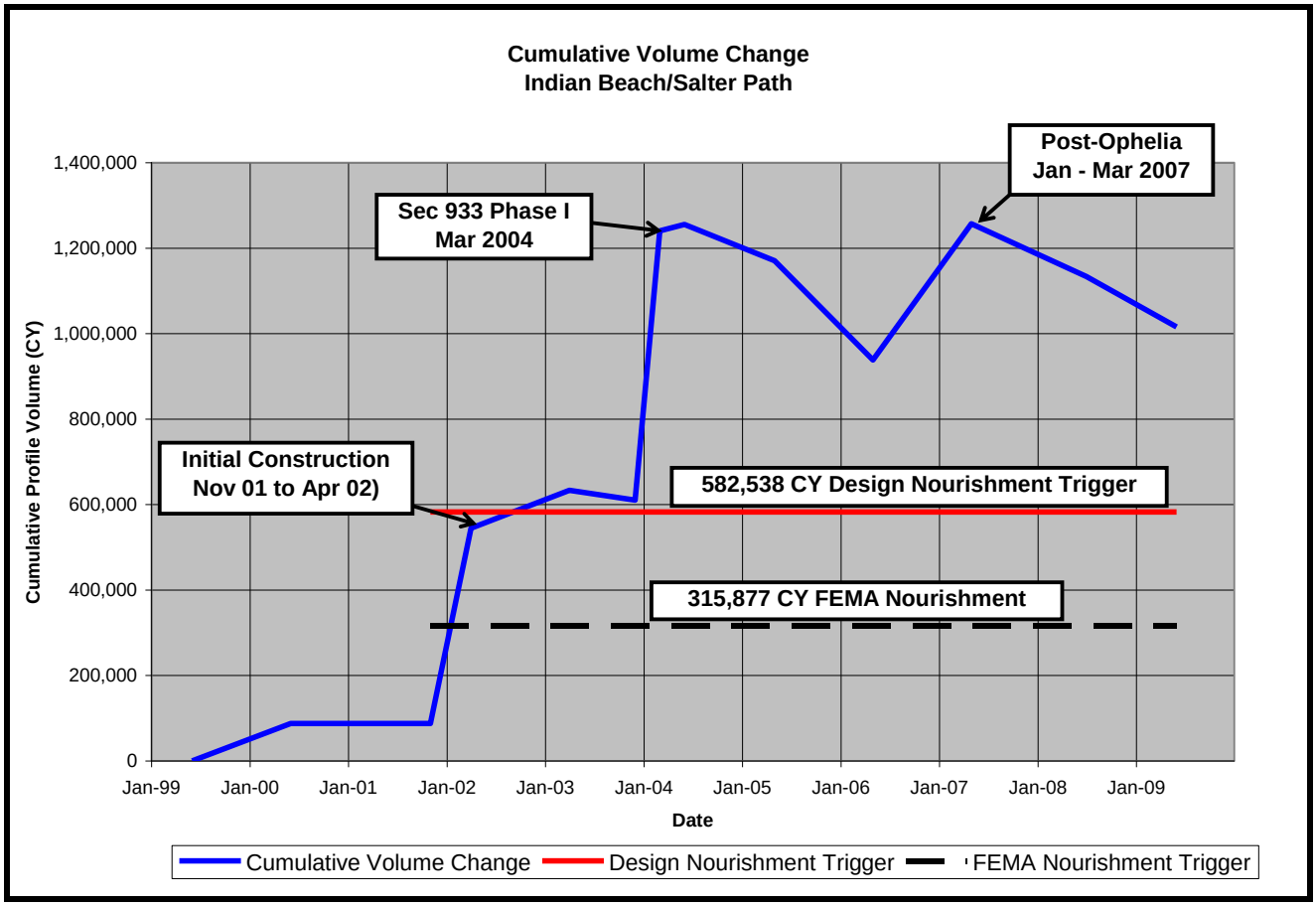

Figure 16. Cumulative beach profile volume change along Indian Beach/Salter Path – June 1999 to June 2009.

The measured change in the volume of material residing on the Indian Beach/Salter Path profile between the landward toe of the dune and the -12-foot NAVD contour between April 2003 and June 2009 was a gain of 181,185 cubic yards. Phase I of the Section 933 project added 630,094 cubic yards of material to Indian Beach/Salter Path and the post-*Ophelia* restoration added 319,113 cubic yards for a total of 949,207 cubic yards having been added to the Indian Beach/Salter Path shoreline since April 2003. In the absence of the two nourishment operations, Indian Beach/Salter Path would have lost 768,022 cubic yards during this time interval. This represents an average annual volumetric loss rate of approximately 124,500 cubic yards/year, or an average loss of 9.7 cubic yards/lineal foot/year.

The volume of material measured on the Indian Beach/Salter Path shoreline in June 2009 was equal to 258.7 cubic yards/lineal foot or 33.7 cubic yards/lineal foot above the 225 cubic yard/lineal foot design volume. If the volume loss along Indian Beach/Salter Path continues at this rate, nourishment would be required within the next 4 to 6 years.

Overall, the Indian Beach/Salter Path project has performed reasonably well even with the advent of Hurricane *Ophelia*. Note that Hurricane *Isabel* also impacted the area in September 2003 but the

damage to the Indian Beach/Salter Path portion of the project was not severe enough to warrant federal post-disaster assistance to rebuild the beach project. The average annual volumetric loss rate of 124,500 cubic yards/year is equivalent to 9.7 cubic yards/lineal foot of beach. This rate of loss is higher than any other portion of the Bogue Banks Restoration Project. The causes of the higher rate of loss from the Indian Beach/Salter Path shoreline will be one of the aspects of the project that will be thoroughly evaluated in the development of the island's long-range plan.

8. PLANNED BORROW AREAS.

Indian Beach/Salter Path is primarily focusing on the ODMDS as a borrow source for maintenance of its beach nourishment project. However, the possible use of borrow sources identified by the USACE during planning for the 50-year federal project, which are closer to the project area, are also included in the long-range plans.

ODMDS. All the communities along Bogue Banks, including Indian Beach/Salter Path, are targeting the ODMDS (Figure 14) as a future source of beach nourishment material to sustain the beach nourishment projects for at least the next 30 years. Between 1936 and 1994, all of the material removed from the Morehead City Harbor entrance channel through Beaufort Inlet was deposited in the ODMDS. Since 1995, approximately 3.8 million cubic yards of the maintenance material has been deposited in a near shore berm located on the west side of the Beaufort Inlet ebb tide delta (Figure 18) and the 2004 and 2007 maintenance operations placed the maintenance material directly on the shorelines of Indian Beach/Salter Path and Pine Knoll Shores under the authority of Section 933. Based on USACE dredging records (USACE 2001 & USACE 2001a to 2007), and adjusting for the volume of material placed in the near shore berm and directly on the beach under Section 933, the volume of material deposited in the ODMDS since 1936 totals approximately 47.8 million cubic yards.

The ODMDS shown in Figure 14 is the existing approved disposal area for the Morehead City Harbor Project. Prior to the establishment of the existing ODMDS, maintenance material was deposited in areas north of the existing site as well as east of the Beaufort Inlet ocean bar channel. In a study contracted by Carteret County to Olsen Associates, Inc. of Jacksonville, Florida (Olsen 2006), Olsen was able to account for up to 35.5 million cubic yards in both the existing and historic offshore disposal areas. Obviously, development of the existing ODMDS and other historic ocean disposal sites as borrow sites will require additional geotechnical investigations in order to comply with State sediment criteria (15A NCAC 07H.0312). However, based on Olsen's study, and adjusting for the 1.4 million cubic yards removed to restore the beaches following Hurricanes *Isabel* and *Ophelia*, the volume of beach compatible material in or near the existing ODMDS should total well over 30 million cubic yards. In a Section 111 report prepared by the USACE to evaluate the possible impacts of the Morehead City Harbor Project on the adjacent shorelines, the USACE estimated over 32 million cubic yards of beach compatible material had been deposited in the ODMDS since 1936 (USACE 2001).

Maintenance of the Morehead City Harbor Project will continue over the next 30 years with additional material being deposited in the ODMDS. However, while over one million cubic yards of material is removed from the ocean bar channel of Beaufort Inlet each year, at the urging of Carteret County, the USACE is in the process of reformulating the dredged material management plan for the harbor which could result in less material being placed in the ODMDS and more placed directly on

the shorelines of Fort Macon and Atlantic Beach during maintenance dredging operations. In any event, disposal of some of the maintenance material in the ODMDS will likely continue over the next 30 years which could increase the available volume to at least 33 to 36 million cubic yards.

An estimate of the island-wide volumetric erosion that has occurred since April 2003 within the limits of the Bogue Banks Restoration Project is presented in Table 2. The unit volumes of material within each reach along Bogue Banks, measured from the seaward toe of the dune to the -12-foot NAVD depth contour, were derived from the 2007 monitoring report (CSE 2007a) and the 2008 and 2009 monitoring reports (Moffatt & Nichol 2008, Moffatt & Nichol 2009). Adjustments in the volume changes were made for the amount of beach fill placed within each reach from various nourishment operations since April 2003 including: (a) the 2005 initial construction of Emerald Isle West, (b) the 2004 and 2007 post-hurricane restorations, (c) Phase I of the Section 933 project along Indian Beach/Salter Path and Pine Knoll Shores (completed in 2004), and (d) Phase II of the Section 933 project also along portions of Indian Beach/Salter Path and Pine Knoll Shores completed in 2007.

The estimated volumetric erosion rate for the entire Bogue Banks Restoration Project through June 2009 totals 357,100 cubic yards/year. Over the next 30 years, approximately 10.7 million cubic yards of beach compatible material will be needed to maintain the entire Bogue Banks Restoration Project. With over 30 million cubic yards of material currently available in the ODMDS and potentially more material being added from maintenance of the Morehead City Harbor project, the ODMDS has a sufficient volume of material to satisfy nourishment requirements for the entire island-wide project including Indian Beach/Salter Path for at least the next 30 years.

Table 2. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[(1)]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.8	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.2	-4.1
Indian Beach/Salter Path	+181,185	949,207	-768,022	-124,500	30.0	-9.7
Pine Knoll Shores	+418,612	839,404	-420,792	-68,200	24.0	-2.9
Total for Bogue Banks Restoration Project				-357,100	100.0	-4.1

(1) Adjusted volume change = measured profile volume change minus fill added.

The demands for periodic nourishment material from the ODMDS include the section of the project designated as Emerald Isle West. As noted previously, Emerald Isle West was constructed with material removed from Bogue Inlet during the relocation of the inlet bar channel 3,500 feet to the west. Should the inlet bar channel migrate back to the east and pose a renewed threat to development on the extreme west end of Emerald Isle, the Town of Emerald Isle may seek permits to move the

channel again. If so, material removed to relocate the channel could be used to nourish the Emerald Isle West portion of the Bogue Banks Restoration Project. Should that occur, the demand for material from the ODMDS over the next 30 years could be reduced by as much as 750,000 cubic yards to 1,000,000 cubic yards.

As mentioned above, the material contained within the existing ODMDS and the material in the other historic offshore disposal sites used for the Morehead City Harbor project will require detailed geotechnical investigations and documentation in accordance with the State Sediment Criteria (15A NCAC 07H.0312) to qualify the areas for use as beach fill borrow sites. However, based on the documented beach compatibility of the material removed from the ODMDS and deposited on the beach during the Hurricane *Isabel* and *Ophelia* restorations, the only issue that needs to be resolved is the exact location and thickness of the deposited material; not its quality.

Sampling of material in the northern section of the ODMDS conducted by CSE for the post-Hurricane *Ophelia* Restoration included the collection of 14 vibracores ranging in length from 2.6 feet to 9.2 feet with an average length equal to 5.7 feet. The locations of the vibracores used to characterize the material in the ODMDS are indicated by the red dots in Figure 17.

Grain size analysis of the samples taken from the 14 vibracores resulted in a composite mean of 1.71 phi (0.31 mm) and a standard deviation of 1.06 phi (CSE 2007b). The silt content was generally less than 2%. Comparison of the ODMDS material with the native beach sand resulted in an overfill factor of 1.35 which is considered a reasonably good match.

CSE collected 34 samples of the material placed on the beach during the post-*Ophelia* restoration project along the Indian Beach/Salter Path shoreline. The grain size of the material in place on the beach averaged 0.35 mm with an average silt content of only 0.11%. Precise measurements of the silt content in the vibracore samples were not provided by CSE (CSE, 2007), however, based on the extremely low silt content of the in place material and the larger average mean grain size of the in place material compared to the in situ vibracore samples, as noted previously, the filling and placement process associated with the hopper dredge operations apparently flushed much of the finer grained material from the fill prior to sampling. CSE did not analyze the shell content in the vibracore samples taken from the ODMDS but did analyze the calcium carbonate ($CACO_{3)}$ content of the in place material and found an average calcium carbonate content of 18.9%. Sampling of the native beach conducted by CSE prior to the construction of the Bogue Banks Restoration Project yielded an average shell content of the native beach of approximately 15%. The State Sediment Criteria for beach nourishment material allows borrow material to contain 15% more $CACO_3$ than the native beach. Assuming the 15% shell content found along the beach prior to construction of the Bogue Banks Restoration Project as a proxy for $CACO_3$ content, the threshold for $CACO_3$ would be 30%. Therefore, the amount of shell and/or $CACO_3$ in material deposited in the Morehead City Harbor ODMDS appears to fall well within the State Sediment Criteria.

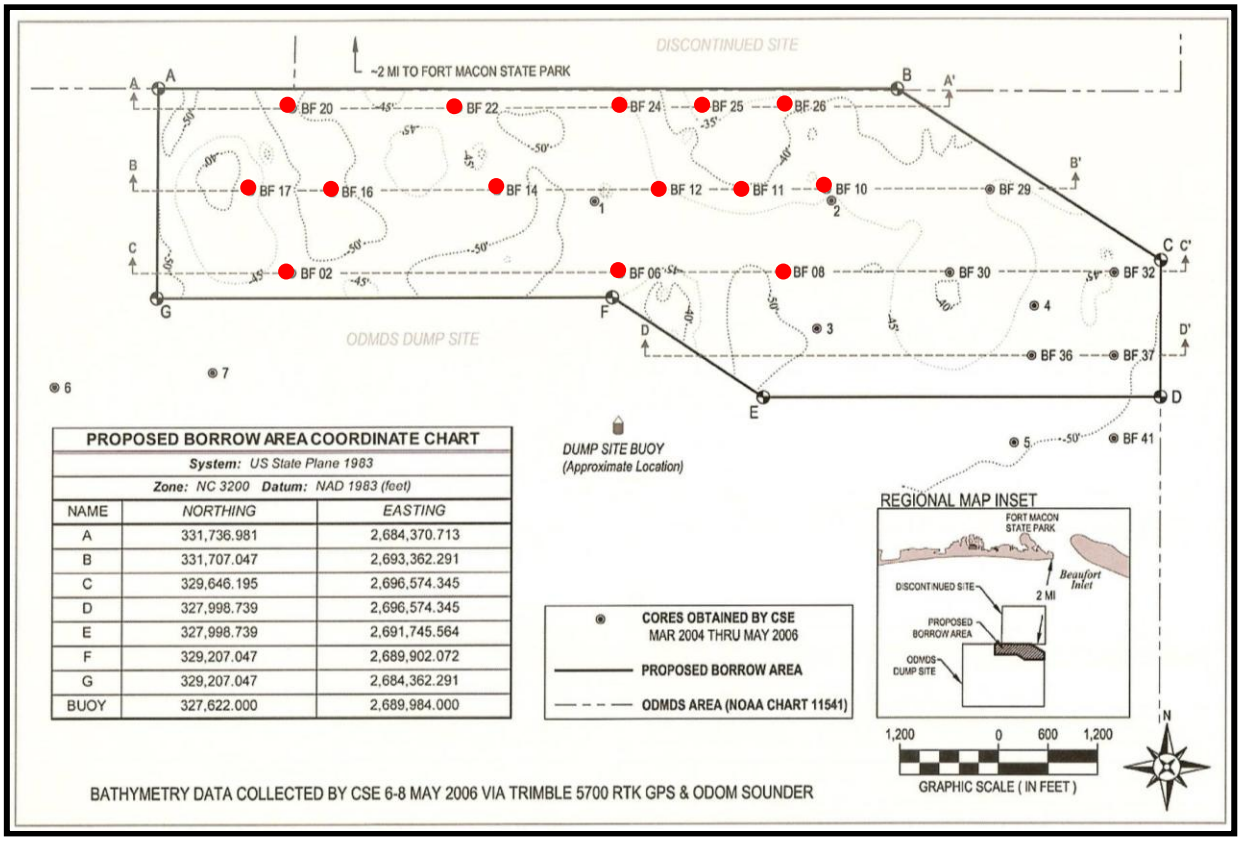

Figure 17. Location of CSE vibracores in the northern portion of the ODMDS. Figure adapted from CSE 2007b.

The sampling of the ODMDS material for the post-Hurricane *Ophelia* project as well as visual observations of the material on the beach provides substantial evidence that the ODMDS material and other materials deposited near the existing ODMDS will be able to meet all of the requirements of 15A NCAC 07H.0312 and provide a source of material necessary to sustain not only the Indian Beach/Salter Path project but the entire shoreline of Bogue Banks from the Atlantic Beach/Pine Knoll Shore town boundary west to Bogue Inlet for at least 25 years as required by 15A NCAC 07J .1201 and much longer based on the estimated volume of material in the existing ODMDS and historic disposal sites near the ODMDS.

USACE Borrow Areas. Potential borrow areas identified by the USACE offshore of Bogue Banks are shown in red in Figure 18 (USACE 2009). The other areas identified in this figure represent potential sources of sediment that are under consideration for the long-term plan being formulated by Carteret County.

As indicated in Figure 18, the USACE is also evaluating the ODMDS as well as other areas near Beaufort Inlet as potential borrow areas for the 50-year federal storm damage reduction project. The USACE preliminary assessment of the beach compatible material in the offshore sites is: 6.4 million cubic yards in USACE-West; 17.0 million cubic yards in USACE-Central; and 7.2 million cubic yards in USACE-East for a total of 30.6 million cubic yards. However, the results of the USACE geotechnical investigations are very preliminary and do not meet the USACE sampling standards for project design or the standards contained in 15A NCAC 07H.0312 (State Sediment Criteria). Once

detailed sampling is complete, the USACE estimate of the available volume of material will likely be reduced.

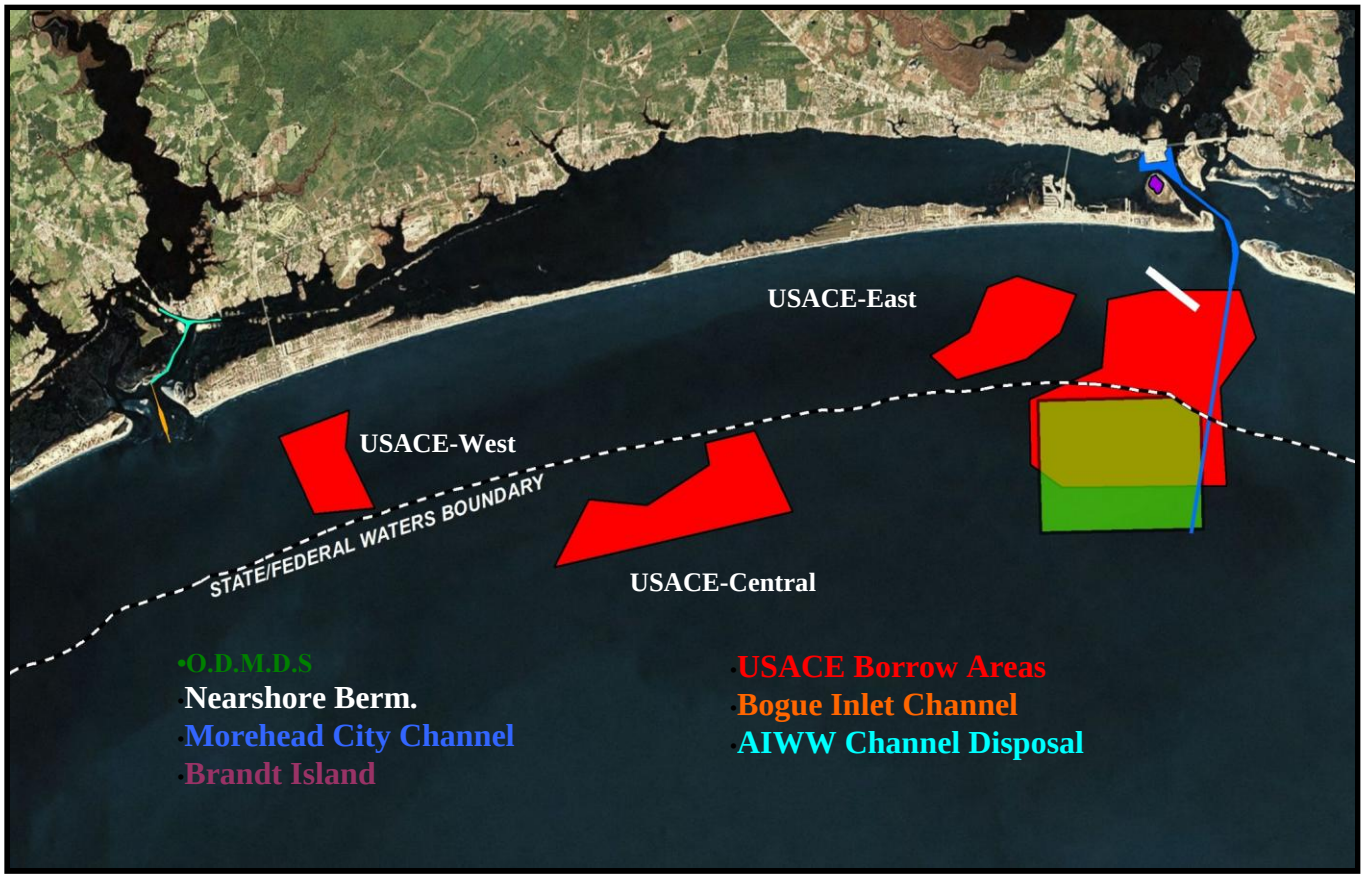

Figure 18. Potential USACE borrow areas (in red) and other sources of sediment near Bogue Banks.

Borrow Area Summary. While additional geotechnical investigations are needed to fully develop the existing ODMDS, the other areas near the existing ODMDS, and the USACE sites into acceptable borrow areas for the Bogue Banks Restoration Project, including Indian Beach/Salter Path, the shear magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the Indian Beach/Salter Path project will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule. This may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined.

9. FINANCIAL PL AN.

9.1. Introduction. The Indian Beach/Salter Path project is one segment of an island-wide Bogue Banks Restoration Project that includes the island communities of Pine Knoll Shores and Emerald Isle. Funding for the Bogue Banks Restoration Project was provided by each island community as

well as Carteret County. As Carteret County moves forward with the formulation of its long-range protection plan, funding for the project would continue to be provided by the individual communities, however, Carteret County would assume a major role in providing the necessary funding for periodic nourishment by means of the County Beach Nourishment Fund that is supported by revenues generated by the room occupancy tax. While the Town of Atlantic Beach is not included in the Bogue Banks Restoration Project, Carteret County would provide financial support to assure disposal operations associated with maintenance of the Morehead City Harbor project extend along the full length of the town's shoreline. Financial support for Atlantic Beach from Carteret County would also be derived from the Beach Nourishment Fund.

Since periodic nourishment of all of the projects along Bogue Banks are inter-linked and depend on the County Beach Nourishment Fund as well as funds that would be provided by each community and the State of North Carolina, the financial plan presented here is applicable to each community on Bogue Banks.

9.2. Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 2 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of the various reaches along the island would be accomplished when the volume of material residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Note this nourishment criteria is more stringent than the one Indian Beach/Salter Path and other towns on the island adopted to remain eligible for FEMA post-disaster assistance and will be used to develop funding needs over the next 25 to 30 years. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

9.3. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 3 provides a cost estimate for each operation based on current (2010) dollars.

Table 3. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[(1)]				$175,000
S&A[(1)]				$175,000
Total Cost/Operation				$14,253,000

(1) E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004. While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the 2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

9.4. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget constraints do not allow material to be distributed along the entire Atlantic Beach shoreline. Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

9.5. Funding/Cost Allocation. As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost

share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Indian Beach/Salter Path. The balance of necessary beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities. Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 4.

Table 4. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.

[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

9.6. County Room Occupancy Tax/Beach Nourishment Fund. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund

earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 19 (blue line).

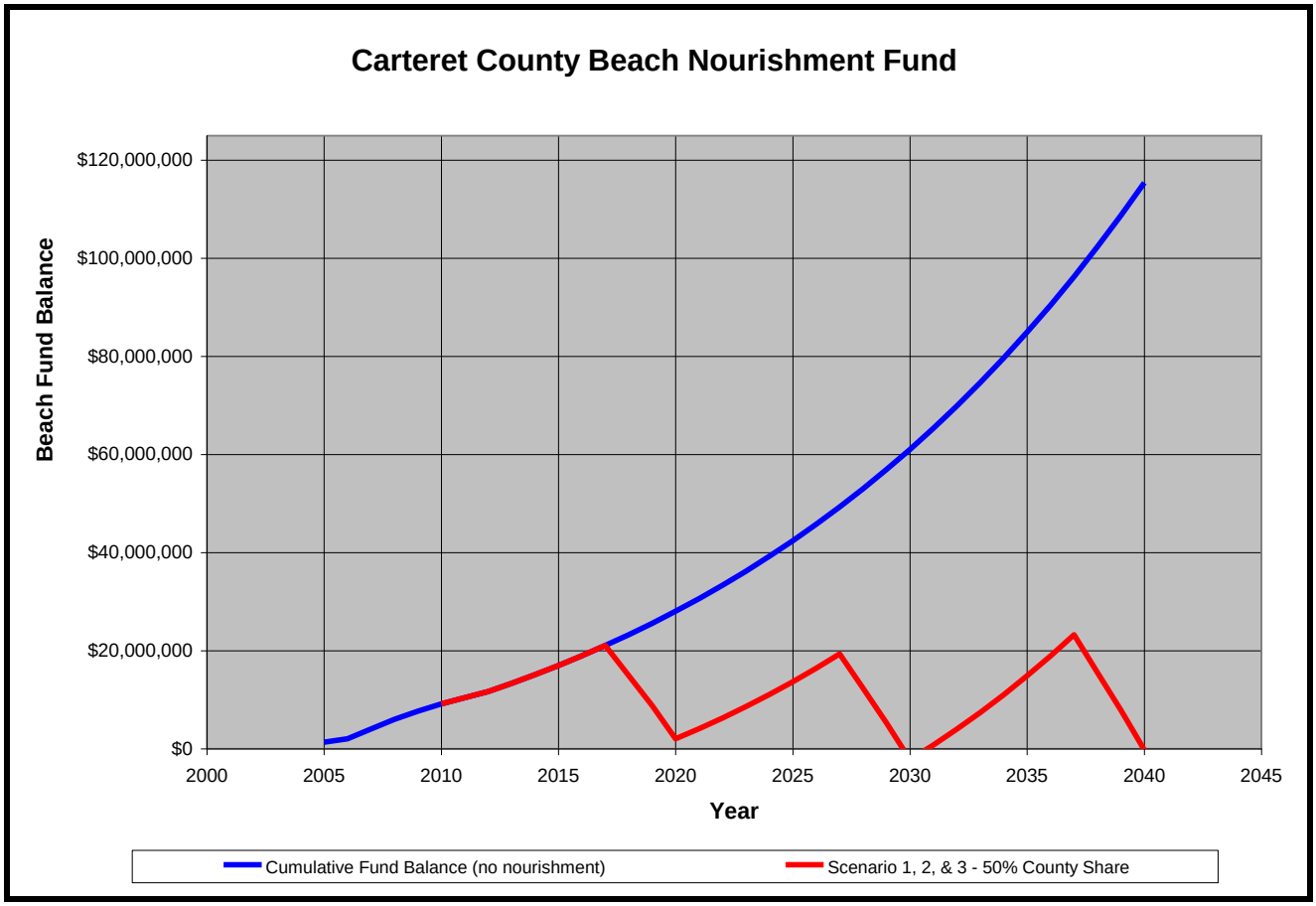

Figure 19. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 19 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

9.7. Indian Beach/Salter Path Funding Source.

The total 30-year cost for nourishing the Indian Beach/Salter Path shoreline segment is $13,815,000 assuming 25% cost-sharing by the State of North Carolina (Table 4). Allocation of this total cost to the three political jurisdictions was based on the percent of shoreline within each jurisdiction; namely, 65% for Indian Beach, 13% for Salter Path (Carteret County), and 22% for the State of North Carolina (Roosevelt State Park). Based on this allocation, the Town of Indian Beach would be responsible for $8,980,000, with Carteret County and the State of North Carolina responsible for $1,796,000 and $3,039,000, respectively.

Indian Beach

As noted above, the Town of Indian Beach will need to provide about $9.0 million over the 30-year time frame for future beach nourishment costs. The Town's financial plan, outlined below, is expected to generate approximately $9.7 million over the 30-year planning period (see supporting spreadsheet in Appendix B). .

The Town completed a beach nourishment project in 2002 funded primarily with local funds. General Obligation bonds were authorized through the USDA in the amount of $3.7 million on February 14, 2001. Because the Town issued General Obligation bonds, the voters of the Town were required to approve the issuance of this debt and overwhelmingly approved a $3.7 million bond referendum on April 24, 2001. The bonds were not issued until August 11, 2004 at which time $1.6 million of these bonds were issued. Use of the full amount of the USDA bonds was not necessary since the town set up a contingency fund in FY 2000-2001 to help with beach nourishment. The Town also set up special tax districts after the bond referendum passed to replace sand on the beach in order to protect property from future storms. The Town committed to fund the vast majority of debt service payments for these bonds with special district tax revenues levied for this purpose.

These special district taxes have been levied by the Town every year since FY 01-02. These special district taxes were initially established at rates of 48 cents per $100 of assessed value on all oceanfront properties and 5 cents on all other properties (FY 01-02 through FY 03-04), but the rates were decreased to 22 cents and 2 cent (FY 04-05 through 07-08). All beach nourishment debt was paid off in 2008.

The Town began levying special district taxes in FY 2008-2009 for future beach nourishment needs and currently levies 1 cent for all properties in town to support the beach nourishment effort. It is important to note that these special district taxes have been levied annually in June by the Board of Commissioners as part of the adoption of the Town's official budget ordinance. NC General Statutes do not allow a town to establish multi-year property tax rates.

The Indian Beach Board of Commissioners intend to increase or make any necessary changes to the special district taxes to fund the Town's share of future beach nourishment costs as outlined in this report (see Resolution in by Town Board of Commissioners in Appendix B). The Board of Commissioners, by adoption of this plan, has committed to levy new special district taxes beginning in FY 11-12, with a special district tax rate of 6.5 cents on all oceanfront properties and 2.0 cent on all other properties. The levy of these new special district taxes will yield annual revenues of approximately $266,915 beginning in 2011 (FY 11-12). Assuming a 1% annual growth rate in this

revenue source and investment of fund balance with interest earnings of 2% annually, the fund will generate $9.7 million over the 30-year planning period.

The process to establish special tax districts (technical name is "municipal service districts") is outlined in NC General Statutes 160A-535 through 160A-549. The process involves the scheduling of a public hearing, publishing the proper notice, mailing notices to all affected property owners, conducting a public hearing, and the adoption of a Board resolution. No voter approval is required (i.e., referendum) to establish special tax districts. As noted above, the annual tax rates for special tax districts are determined annually in June by the Board as part of the official budget ordinance. The Town will establish new special tax districts for the future beach nourishment costs outlined in this report in 2011. The Board is confident in the community's acceptance of this tax structure.

This funding strategy is also intended to provide sufficient cash flows to enable future Indian Beach beach nourishment costs to be funded on a pay-as-you-go basis, and thus avoid the use of debt financing and the need for a future bond referendum. The Town expects that the timing of future beach nourishment needs, County room occupancy tax revenues, Town special district tax revenues, and State funding will be such that the necessary funding will be in-hand prior to incurring future beach nourishment construction costs.

Salter Path (unincorporated County area – "Hoffman Beach")

The corridor of Salter Path shoreline within the jurisdiction of Carteret County is approximately 1,671 lineal feet and is commonly referred to as "Hoffman Beach". This very small portion of shoreline is 2% of the entire shoreline reach utilized to develop the nourishment plan presented in this report (87,098 linea1 feet total including Pine Knoll Shores, Indian Beach/Salter Path, and Emerald Isle). A maximum of $1,795,950 is required over the 30-year time frame for future beach nourishment costs along Hoffman Beach (see appendix B).

The roughly $1.8 million cost is well within the financial capability and authority of the County. For instance, the County's occupancy tax is estimated to generate over $118 million over the next 30 years (Appendix B). Accordingly, the Hoffman Beach (County) nourishment cost is 1% of the entire revenue generated by the occupancy tax over the next 3 decades. Savings from lower than estimated bid prices for any nourishment project the County participates in could very well yield enough additional funds to use for Hoffman Beach nourishment. Likewise, higher than anticipated revenues from the occupancy tax could also be utilized for Hoffman Beach nourishment. For instance, the collection rate is estimated to grow at 4% annually (historical is 5%), thus several years of collection at 6% or greater would yield additional dollars that could be utilized for Hoffman Beach. It should also be noted that in our projections of occupancy tax expenditures (appendix B), the County incorporated the cost for nourishing the State portion of Salter Path (see below) for the sake brevity. In actuality, the County will likely not pay for the nourishment of State shorelines, and this savings also constitutes another source of funding to nourish Hoffman Beach. Moreover, the operating budget from the County's General Fund is ~$75 million per year. The Salter Path cost for nourishment (3 events total) for the entire 30 year timeframe would constitute only 2% of a single year of the County's annual budget. One individual nourishment event would be well less than a 1% of the County's budget for that particular year.

Salter Path (Theodore Roosevelt Natural Area)

The State of North Carolina owns the remaining 2,827 lineal feet of oceanfront encompassing "Salter Path" and nourishment of this section of shoreline, known as the Roosevelt State Park, would be solely at the State's discretion and cost. This area has been nourished three times the past decade; (1) the State provided $900,000 to nourish this reach in 2001-02, (2) the federal government, State, and County participated in a federal Section 933 project in 2004 along this reach and provided 65%, 26.25%, and 8.75% the costs, respectively, and (3) in 2007 the Town of Indian Beach requested and received FEMA reimbursement funds to replace the sand lost along the Roosevelt Park property during hurricane *Ophelia* (2005).

Detailed County and Town revenue projections are included in Appendix B.

10. SUMMARY

By virtue of this report, the Town Indian Beach and the Village of Salter Path have provided information and supporting documents that satisfy all of the requirements for the consideration of a static line exception stipulated in 15A NCAC 07J .1201. The report documents the design and execution of the project by a registered professional engineering firm licensed to practice in North Carolina, demonstrated the project has been maintained for well over the 5-year minimum, shown the project has an identified source of beach compatible borrow material that will sustain the project for more than the minimum 25 years, and provided a funding plan that will support the project for at least the next 25 years.

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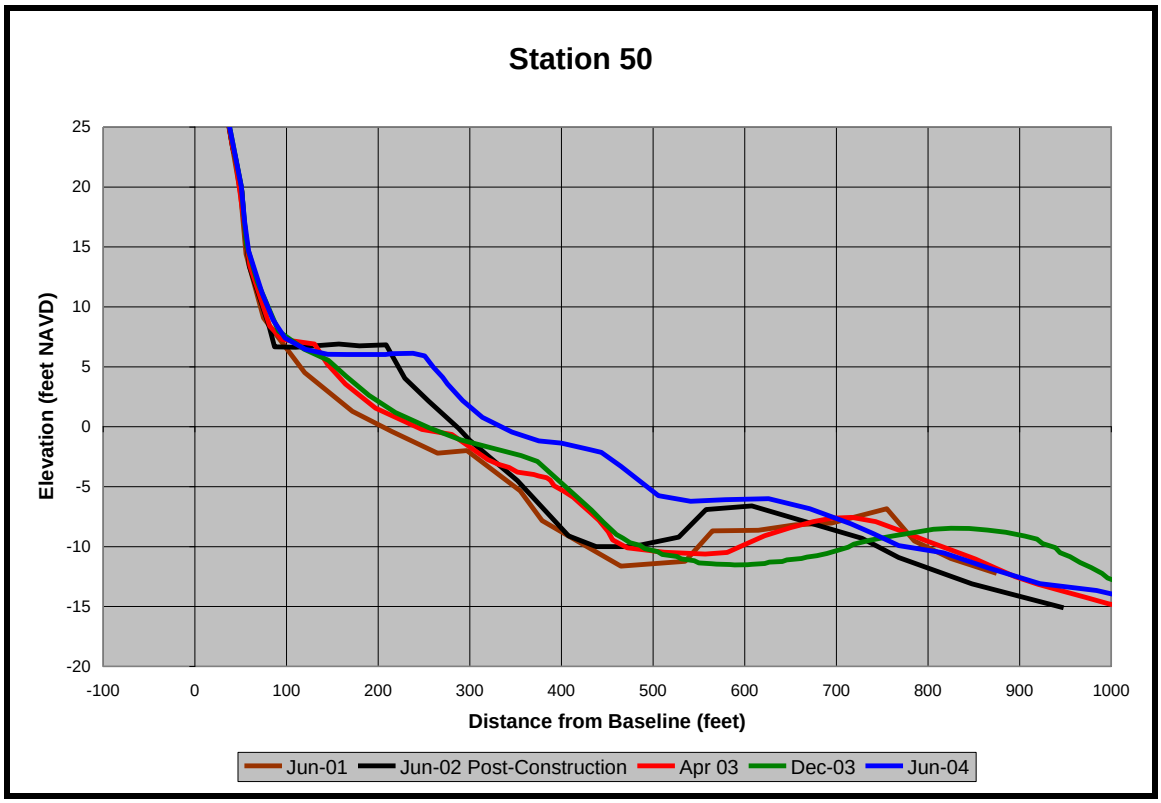
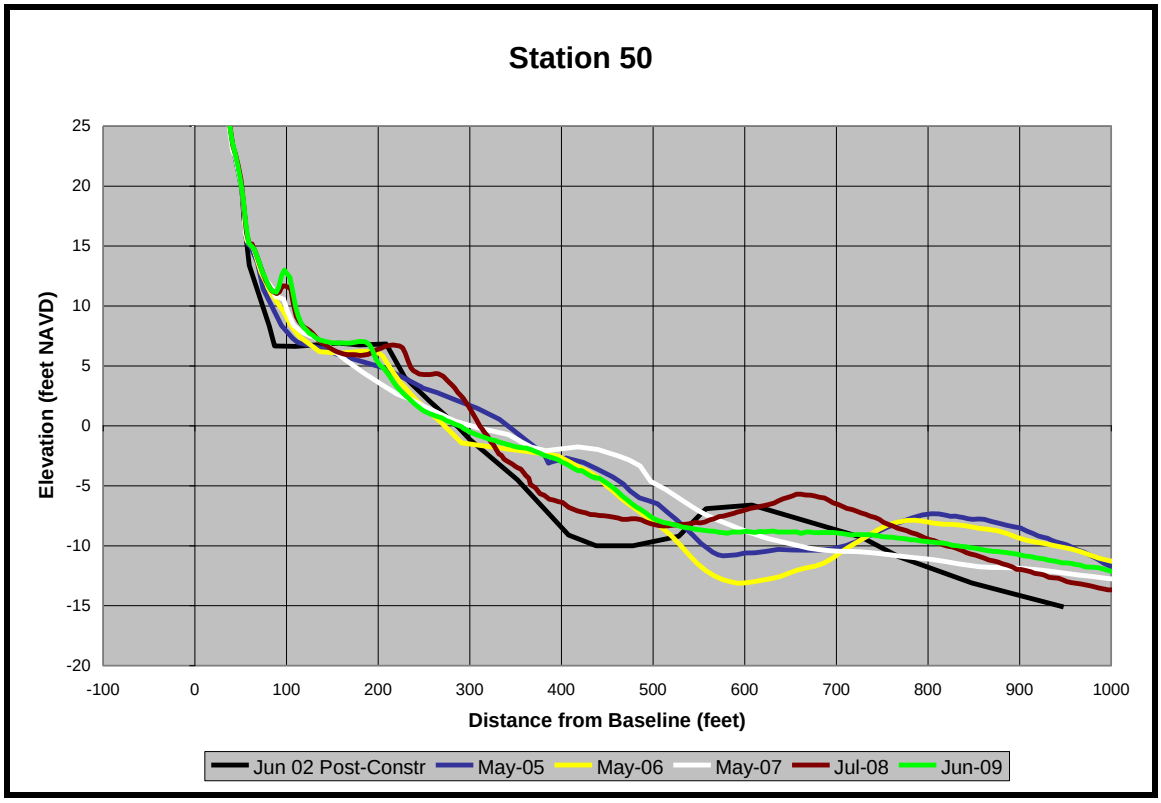
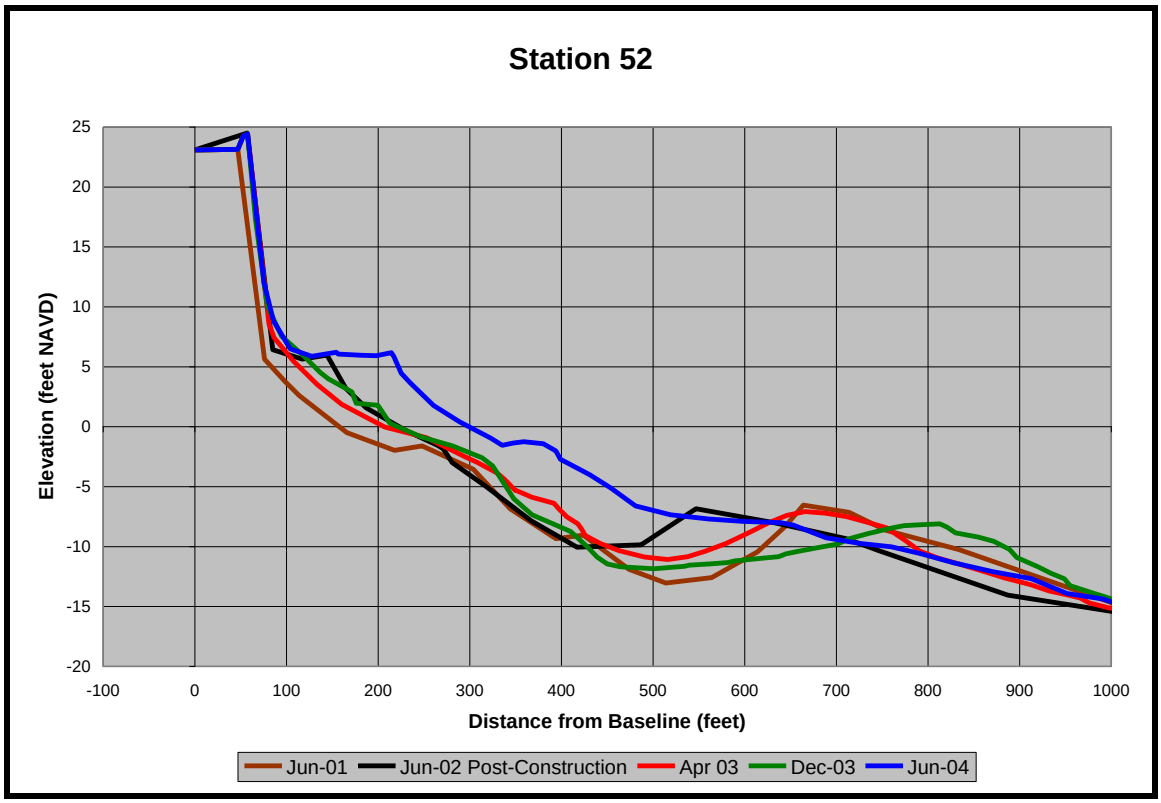
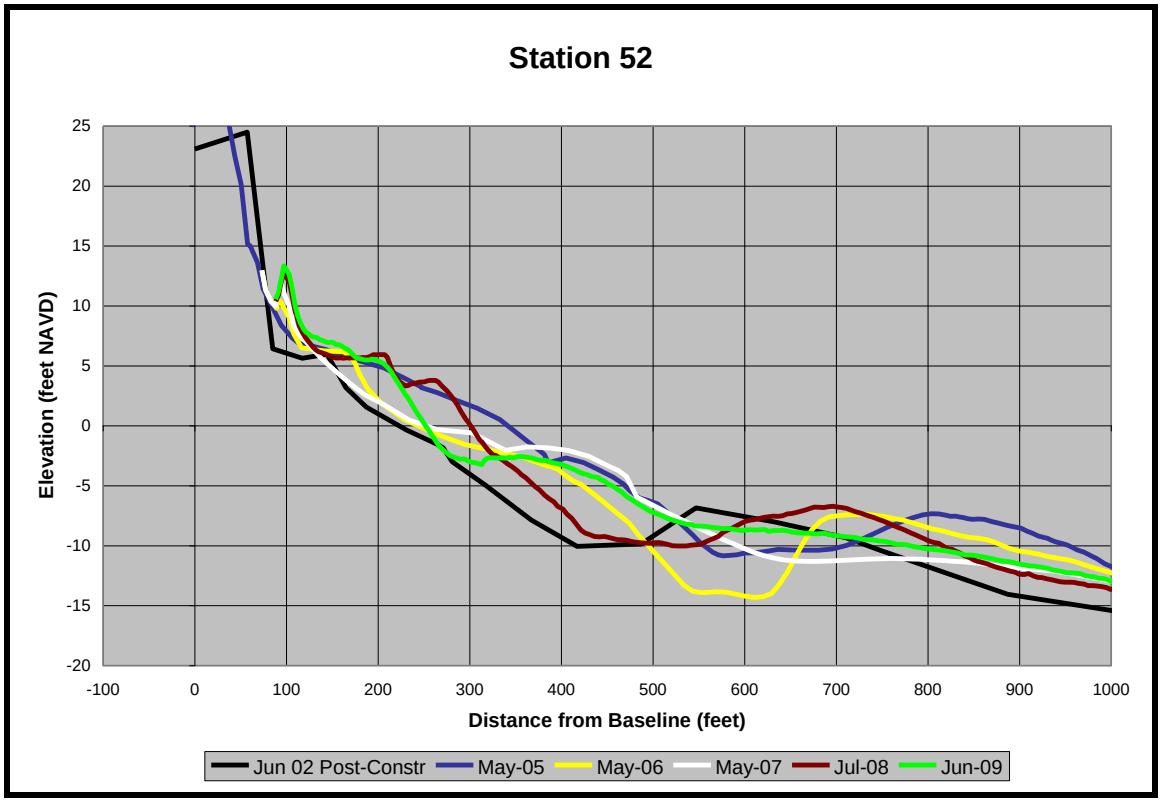
APPENDIX A
PROFILE PLOTS





Station 50 – Profile Comparisons – Jun 1999 to Jun 2009





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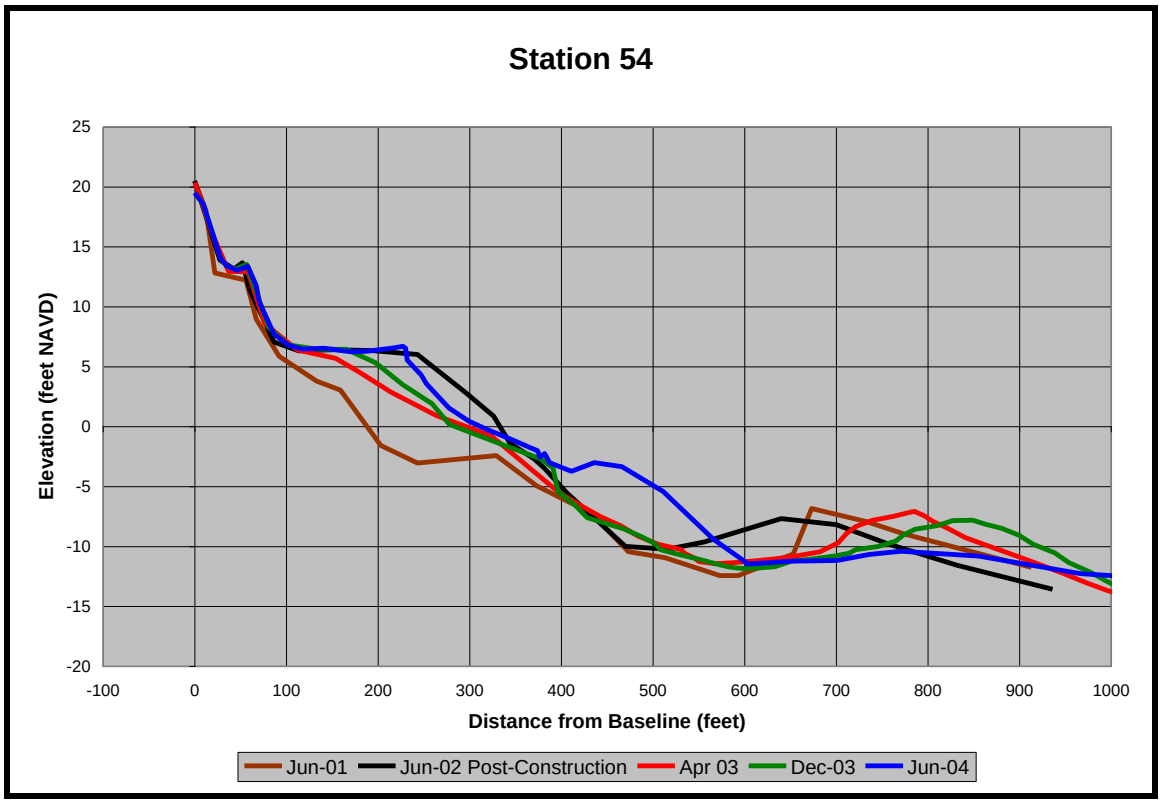

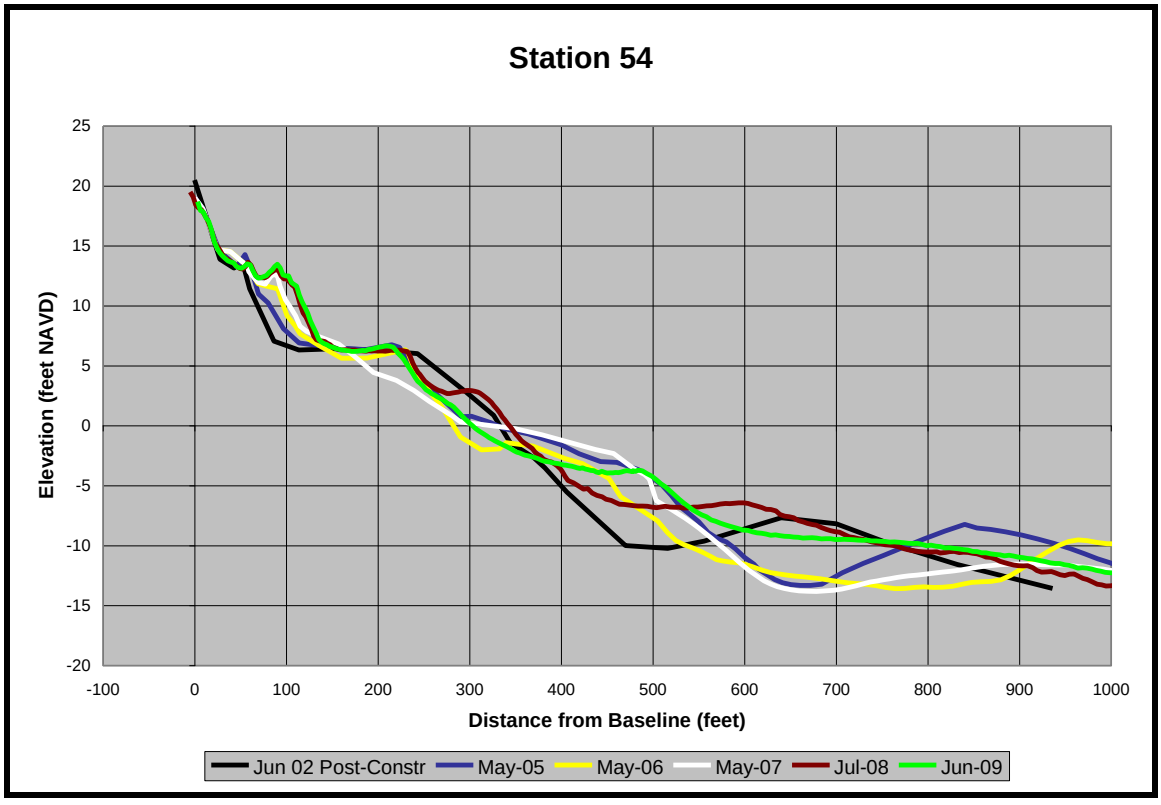

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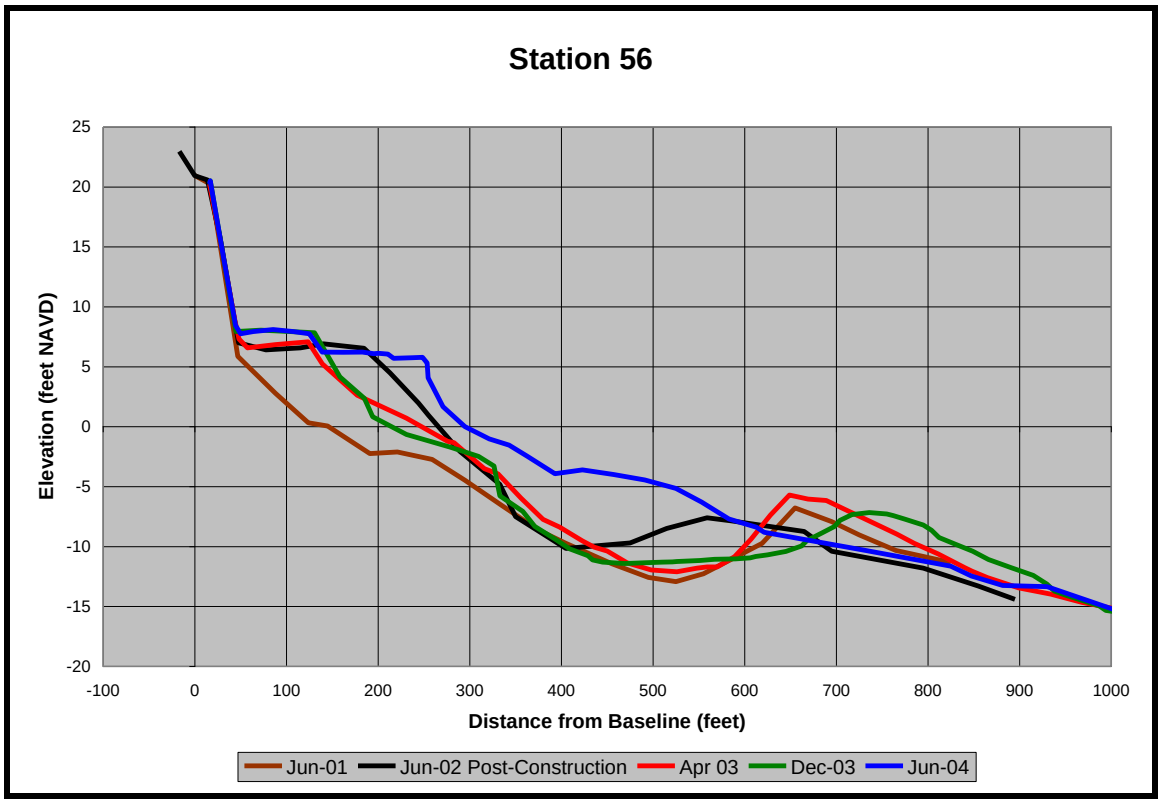
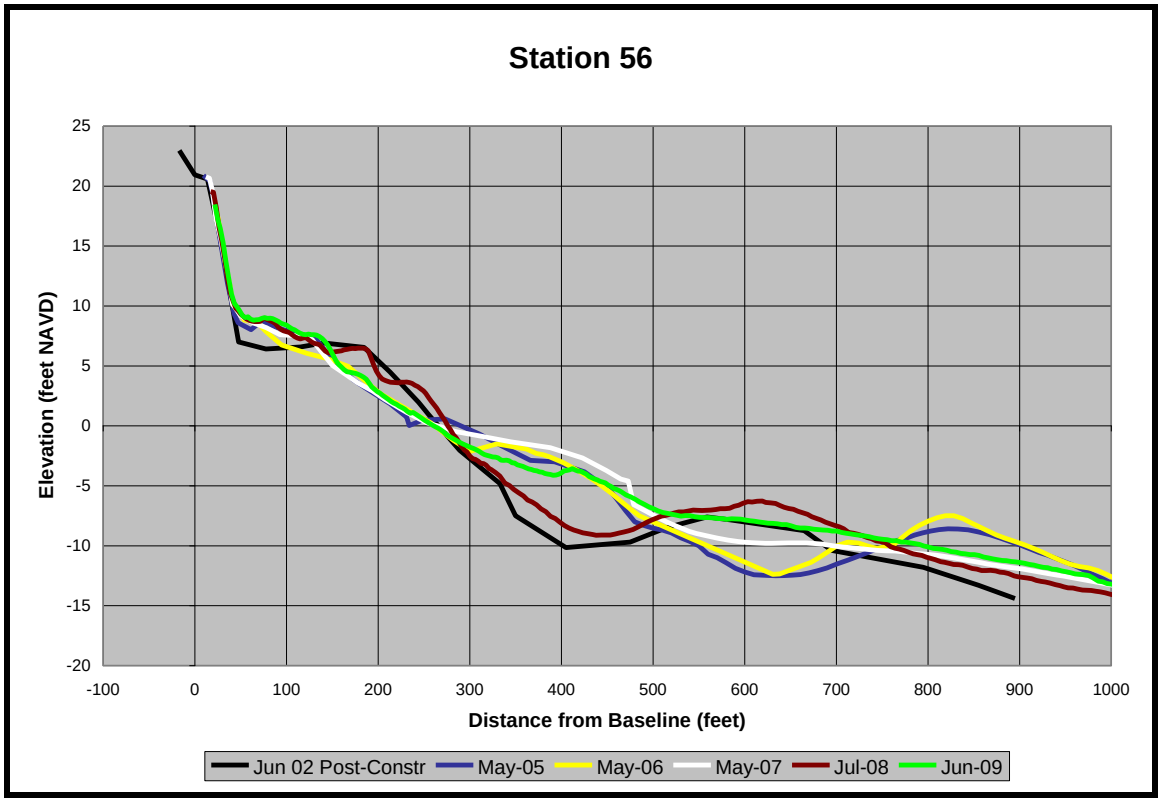
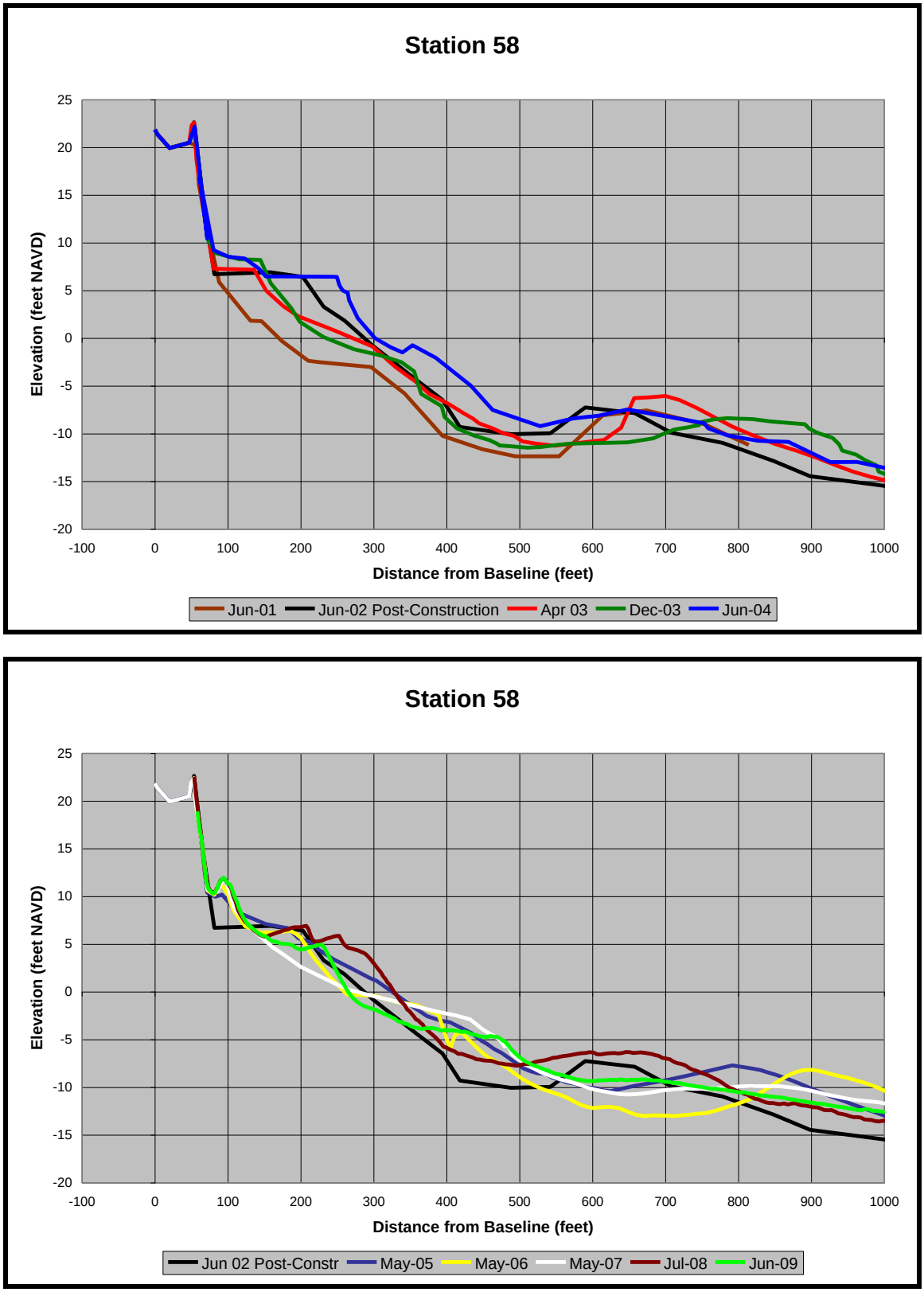




Station 56 – Profile Comparisons – Jun 1999 to Jun 2009



Station 58 – Profile Comparisons – Jun 1999 to Jun 2009

APPENDIX B

SUPPLEMENTAL FINANCIAL INFORMATION

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2007

SESSION LAW 2007-112
SENATE BILL 465

AN ACT TO CONSOLIDATE AND REWRITE THE CARTERET COUNTY OCCUPANCY TAX LAW AND TO AMEND THE DEADLINE FOR THE DEVELOPMENT OF A CONVENTION CENTER PLAN FOR CARTERET COUNTY.

The General Assembly of North Carolina enacts:

SECTION 1. Sections 1 through 9 of S.L. 2001-381, as amended by S.L. 2005-120 and S.L. 2005-435, are rewritten and recodified as Sections 2 through 4 of this act. This act does not affect the rights or liabilities of the county, a taxpayer, or another person arising under the law rewritten and recodified by this act before the effective date of this act; nor does it affect the right to any refund or credit of a tax that accrued under the law rewritten and recodified by this act before the effective date of this act.

SECTION 2. Occupancy Tax. – (a) Authorization and Scope. – The Carteret County Board of Commissioners may levy a room occupancy and tourism development tax of five percent (5%) of the gross receipts derived from the rental of any room, lodging, or similar accommodation furnished by any hotel, motel, inn, tourist camp, condominium, cottage, campground, rental agency, or other similar place within the county that is subject to sales tax imposed by the State under G.S. 105-164.4(a)(3). This tax is in addition to any State or local sales tax. This tax does not apply to accommodations furnished by the following:

(1) Religious organizations.
(2) Educational organizations.
(3) Any business that offers to rent fewer then five units.
(4) Summer camps.
(5) Charitable, benevolent, and other nonprofit organizations.

SECTION 2.(b) Additional Occupancy Tax. – In addition to the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the Carteret County Board of Commissioners may, no earlier than July 1, 2010, levy an additional room occupancy and tourism development tax of one percent (1%) of the gross receipts derived from the rental of accommodations taxable under subsection (a) of Section 2 of this act only if all of the following conditions have been met:

(1) A development plan for the construction of a convention center has been approved by resolution of the board of county commissioners and the governing board of the municipality where the center is to be located by June 30, 2010.
(2) There is a signed contract between the appropriate local governments and a private developer that includes financing commitments for construction to begin no later than July 1, 2011.
(3) The county is levying the room occupancy and tourism development tax authorized under subsection (a) of Section 2 of this act.

SECTION 2.(c) Repeal of Additional Occupancy Tax. – Carteret County's authority to levy the additional one percent (1%) room occupancy and tourism development tax under subsection (b) of Section 2 of this act is repealed as provided in this section if either of the following events occur:

(1) A cumulative total of ten million dollars ($10,000,000) in proceeds from the additional one percent (1%) room occupancy and tourism development tax is collected, calculated beginning on July 1, 2010. The repeal under this subdivision is effective on the first day of the second month following the date that the cumulative total of ten million dollars ($10,000,000) is collected.

(2) Construction on the convention center has not begun by July 1, 2011. The repeal under this subdivision is effective September 1, 2011. Any funds collected before the repeal date must be redistributed to the Tourism Development Authority and used only to promote travel and tourism.

SECTION 2.(d) Excess Proceeds from Additional Occupancy Tax. – Carteret County must redistribute any excess proceeds from the additional one percent (1%) room occupancy and tourism development tax authorized under subsection (b) of Section 2 of this act to the Tourism Development Authority to be used only to promote travel and tourism. For purposes of this subsection, "excess proceeds" means:

(1) Any proceeds in excess of ten million dollars ($10,000,000) collected prior to the repeal date of the additional tax.

(2) Any proceeds collected but not spent in excess of the actual cost of the convention center.

SECTION 2.(e) Administration. – A tax levied under this act must be levied, administered, collected, and repealed as provided in G.S. 153A-155. The penalties provided in G.S. 153A-155 apply to a tax levied under this act. The Carteret County Tax Collector must establish procedures to periodically audit the businesses subject to the tax levied under this act in order to ensure compliance with this act.

SECTION 2.(f) Definitions. – The following definitions apply in this act:

(1) Beach nourishment. – The placement of sand, from other sand sources, on a beach or dune by mechanical means and other associated activities that are in conformity with the North Carolina Coastal Management Program along the shorelines of the Atlantic Ocean of North Carolina and connecting inlets for the purpose of widening the beach to benefit public recreational use and mitigating damage and erosion from storms to inland property. The term includes expenditures for the following:

a. Costs directly associated with qualifying for projects either contracted through the U.S. Army Corps of Engineers or otherwise permitted by all appropriate federal and State agencies;

b. The nonfederal share of the cost required to construct these projects;

c. The costs associated with providing enhanced public beach access; and

d. The costs of associated nonhardening activities such as the planting of vegetation, the building of dunes, and the placement of sand fences.

(2) Net proceeds. – Gross proceeds less the cost to the county of administering and collecting the tax, as determined by the finance officer, not to exceed three percent (3%) of the first five hundred thousand dollars ($500,000) of gross proceeds collected each year and one percent (1%) of the remaining gross receipts collected each year.

(3) Promote travel and tourism. – To advertise or market an area or activity, publish and distribute pamphlets and other materials, conduct market research, or engage in similar promotional activities that attract tourists or business travelers to the area; the term includes administrative expenses incurred in engaging in these activities.

(4) Tourism-related expenditures. – Expenditures that, in the judgment of the Tourism Development Authority, are designed to increase the use of lodging facilities, meeting facilities, or convention facilities in a county or to attract tourists or business travelers to the county. The term includes tourism-related capital expenditures.

SECTION 2.(g) Use and Distribution of five percent (5%) Occupancy Tax Revenue. – If Carteret County levies only the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the net proceeds of the tax must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret County Tourism Development Authority. Beginning July 1, 2010, if the conditions in subsection (b) of Section 2 of this act are not met, then Carteret County must, on a quarterly basis, remit sixty percent (60%) to the Carteret County Tourism Development Authority. After deducting its administrative expenses, the Authority must use all of the funds remitted to it under this subdivision to promote travel and tourism in Carteret County. Administrative expenses may not exceed ten percent (10%) of the total budget of the Tourism Development Authority and may not include costs associated with the operation of visitor centers.

(2) Beach nourishment. – Carteret County must retain the remainder to be used only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

SECTION 2.(h) Use and Distribution of six percent (6%) Occupancy Tax Revenue. – If the conditions in subsection (b) of Section 2 of this act are met and Carteret County levies the room occupancy tax at a rate of six percent (6%) as authorized by subsections (a) and (b) of Section 2 of this act, the net proceeds must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret Tourism Development Authority to be used to promote travel and tourism.

(2) Beach nourishment. – Carteret County must use thirty-three percent (33%) only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

(3) Convention center financing. – Any remaining proceeds, up to a maximum of ten million dollars ($10,000,000), must be used for the financing of debt service, operating costs, or both associated with the construction of a new convention center in Carteret County.

SECTION 3.(a) Carteret County Tourism Development Authority. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Tourism Development Authority for the purpose of managing the promotion and development of tourism in Carteret County.

SECTION 3.(b) The Authority must consist of nine members and must be appointed by the board of county commissioners by the selection of two members from each list of nominees submitted by the following organizations:

(1) Carteret County Chamber of Commerce.

(2) Crystal Coast Hotel/Motel Association, doing business as Crystal Coast Hospitality Association.
(3) Carteret County Board of Realtors.

The nominees submitted by the Chamber of Commerce, the Hotel/Motel Association, and the Board of Realtors must be individuals who collect the occupancy tax levied under this act. However, notwithstanding the foregoing, the board of county commissioners must appoint those persons named to serve by their respective organizations.

Three additional Authority members must be directly appointed by the board of county commissioners. One of these appointments must be a county commissioner, and one must be a mayor of a Carteret County municipality.

SECTION 3.(c) All members of the Authority must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms.

No member must serve more than two consecutive three-year terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired terms they are appointed to fill.

SECTION 3.(d) The Authority must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 3.(e) The Authority must submit to the board of county commissioners an annual audited financial statement itemizing its receipts and expenditures each year.

SECTION 3.(f) The Authority may contract with any person, firm, or agency to advise, assist, manage, or promote travel and tourism in Carteret County.

SECTION 4.(a) Carteret County Beach Commission. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Beach Commission, which must advise the board on strategies for beach nourishment and on the expenditure of room occupancy tax proceeds dedicated to beach nourishment.

SECTION 4.(b) The Beach Commission must consist of 11 members appointed by the board of county commissioners according to the following formula:

(1) Two individuals who reside within the town limits of Atlantic Beach.
(2) Two individuals who reside within the town limits of Pine Knoll Shores.
(3) Two individuals who reside within the town limits of Emerald Isle.
(4) One individual who resides within the town limits of Indian Beach.
(5) One individual who resides on Bogue Banks.
(6) One individual who resides anywhere in Carteret County.
(7) A member of the board of county commissioners.
(8) A member of the Carteret County Tourism Development Authority.

SECTION 4.(c) All members of the Beach Commission must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired term.

SECTION 4.(d) The Beach Commission must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 4.(e) The Beach Commission may not contract with any person, firm, or agency. The board of commissioners must be bound by the recommendations of the Beach Commission regarding the expenditure of room occupancy tax proceeds dedicated to beach nourishment. The board of commissioners may in its discretion delegate additional responsibilities to the Beach Commission.

SECTION 5. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 27th day of June, 2007.

s/ Beverly E. Perdue
President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

The following three figures show (1) the growth in the Carteret County room occupancy tax collections since its inception in 1993 through 2008, (2) the year-to-year percent change in the in tax collections, and (3) monthly room occupancy tax collections for each year.

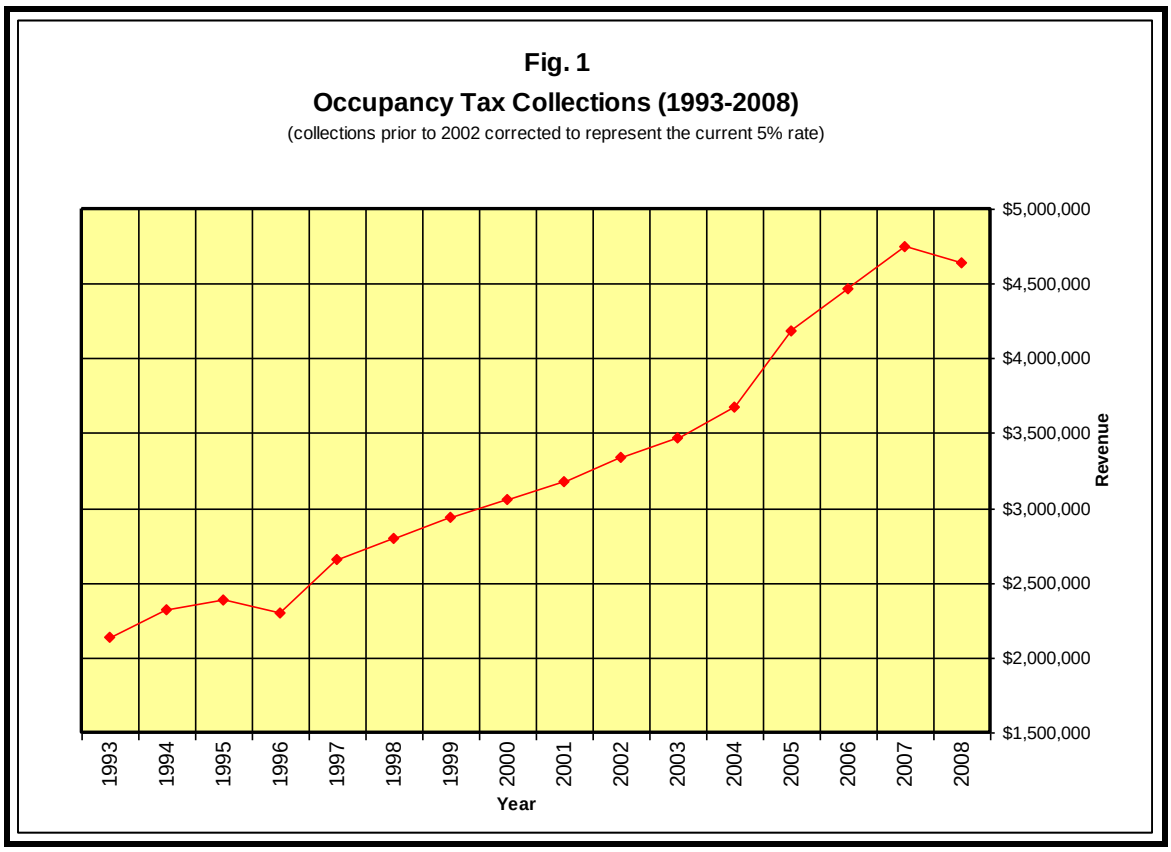


Fig. 2
Percent +/- Compared to Previous Year
Occupancy Tax Collections (1993-2008)
(collections prior to 2002 corrected to represent the current 5% rate)

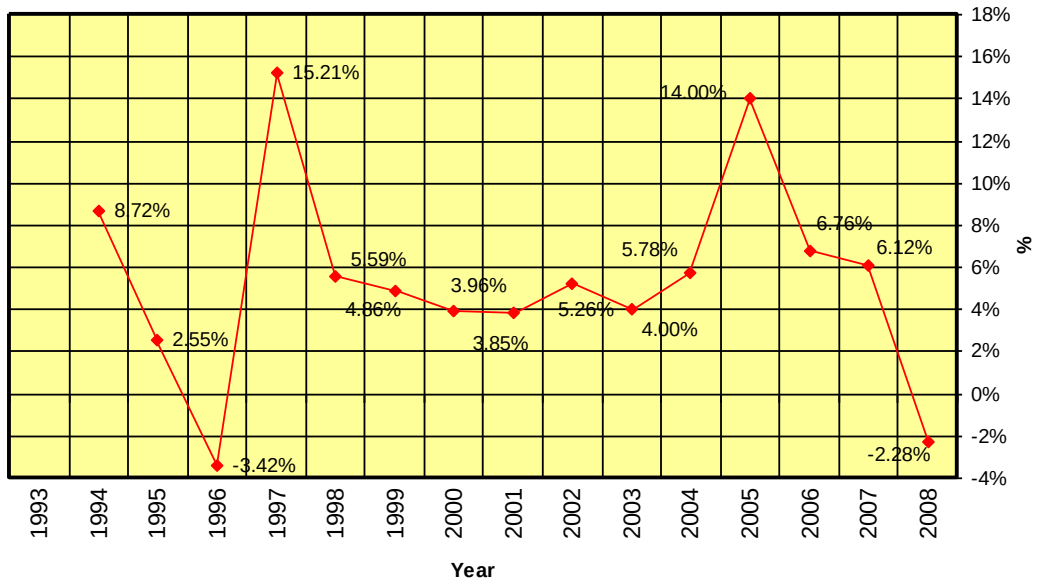
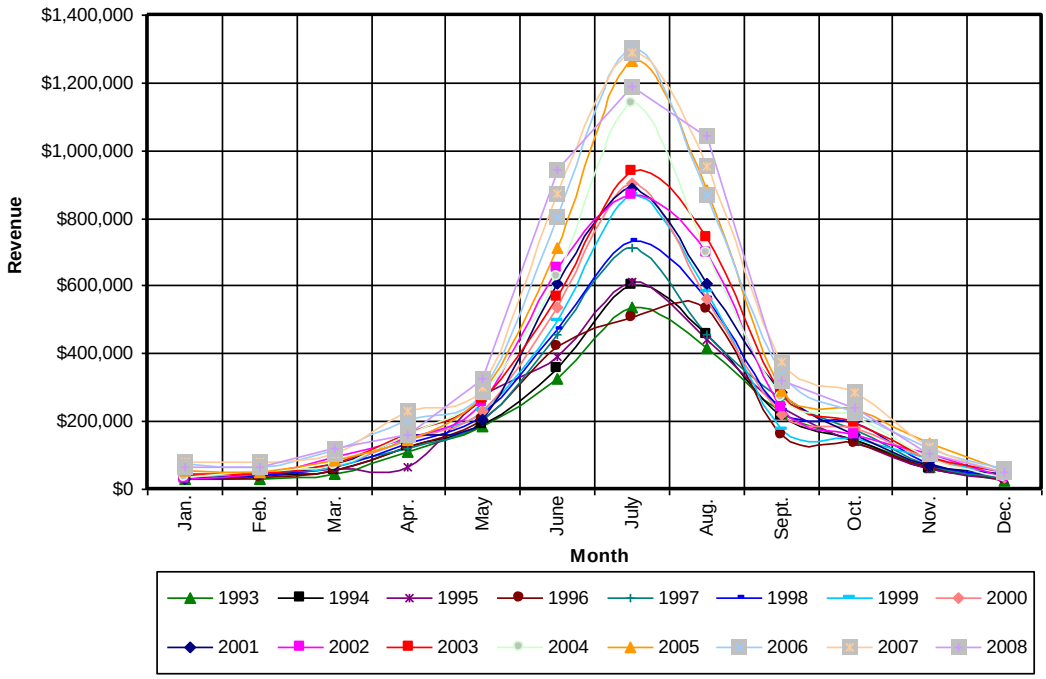


Fig. 3

Monthly Occupancy Tax Collections (1993-2008)

(collections prior to 2002 corrected to represent the current 5% rate)



Computations for the year-end balance in the Carteret County beach nourishment fund is provided in the following spreadsheet. Assumptions used to develop this projection are as follows:

Assumptions:

(1) Occupancy tax collections increase 4% annually beginning in FY 2012.
(2) Interest rate is 2.06%.
(3) Revenues - County beach nourishment is the surplus remaining after administrative costs for the annual occupancy tax collected for beach nourishment, State is 25% of annual nourishment cost, & local match is 25% of annual nourishment cost.
(4) Administrative expenditures increase at a 3% annual rate beginning in FY 2014.
(5) Annual nourishment cost for Bogue Banks is based upon historic erosion rates and volumetric need.

CARTERET COUNTY OCCUPANCY TAX PROJECTION

Portion of S.L. 2007-12 designated for beach nourishment (5% total w/ 50% towards nourishment until FY 2010, 40% thereafter)

25% STATE FUNDING, 50% COUNTY FUNDING, 25% LOCAL FUNDING

		REVENUES			EXPENDITURES			
Fiscal Year (July 1st - June 30th)	**Occupancy Tax** (occ. tax)	interest	State funding	Local match	administrative	nourishment	**Annual surplus or deficit**	**Balance**
2002	$856,091	<=included	$326,500		$863,511			$319,080
2003	$1,641,828	<=included	$179,500		$1,636,724			$503,684
2004	$1,777,409	<=included	$0		$1,391,030			$890,063
2005	$1,908,613	<=included	$85,000		$1,542,807			$1,340,869
2006	$2,217,115	<=included	$141,725		$1,630,665			$2,069,044
2007	$2,548,954	<=included	$55,500		$610,637			$4,062,860
2008	$2,555,364	<=included	$103,250		$724,520			$5,996,953
2009	$2,201,928	$193,510	$0		$729,494			$7,662,898
2010	$2,179,909	$160,050	$150,000		$971,555			$9,181,301
2011	$1,796,245	$188,899	$0	$0	$766,719	$0	$1,218,425	$10,399,727
2012	$1,868,095	$213,967	$0	$0	$789,495	$0	$1,292,567	$11,692,294
2013	$1,942,819	$240,561	$0	$0	$513,400	$0	$1,669,980	$13,362,273
2014	$2,020,532	$274,920	$0	$0	$528,802	$0	$1,766,649	$15,128,922
2015	$2,101,353	$311,267	$0	$0	$544,666	$0	$1,867,954	$16,996,876
2016	$2,185,407	$349,699	$0	$0	$561,006	$0	$1,974,100	$18,970,976
2017	$2,272,823	$390,315	$0	$0	$577,836	$0	$2,085,302	$21,056,277
2018	$2,363,736	$433,218	$4,409,750	$4,409,750	$595,172	$17,639,000	-$6,617,717	$14,438,560
2019	$2,458,286	$297,063	$4,159,750	$4,159,750	$613,027	$16,639,000	-$6,177,178	$8,261,383
2020	$2,556,617	$169,972	$4,159,750	$4,159,750	$631,417	$16,639,000	-$6,224,328	$2,037,055
2021	$2,658,882	$41,911	$0	$0	$650,360	$0	$2,050,433	$4,087,487
2022	$2,765,237	$84,097	$0	$0	$669,871	$0	$2,179,463	$6,266,951
2023	$2,875,846	$128,938	$0	$0	$689,967	$0	$2,314,818	$8,581,768
2024	$2,990,880	$176,564	$0	$0	$710,666	$0	$2,456,778	$11,038,547
2025	$3,110,515	$227,111	$0	$0	$731,986	$0	$2,605,640	$13,644,187
2026	$3,234,936	$280,720	$0	$0	$753,945	$0	$2,761,710	$16,405,897
2027	$3,364,334	$337,540	$250,000	$250,000	$776,564	$1,000,000	$2,425,310	$18,831,207
2028	$3,498,907	$387,439	$5,051,500	$5,051,500	$799,861	$20,206,000	-$7,016,515	$11,814,692
2029	$3,638,863	$243,079	$5,051,500	$5,051,500	$823,857	$20,206,000	-$7,044,914	$4,769,778
2030	$3,784,418	$98,135	$5,051,500	$5,051,500	$848,572	$20,206,000	-$7,069,020	-$2,299,241
2031	$3,935,794	-$47,305	$0	$0	$874,029	$0	$3,014,460	$715,218
2032	$4,093,226	$14,715	$0	$0	$900,250	$0	$3,207,691	$3,922,909
2033	$4,256,955	$80,711	$0	$0	$927,258	$0	$3,410,409	$7,333,318
2034	$4,427,233	$150,878	$0	$0	$955,076	$0	$3,623,036	$10,956,354
2035	$4,604,323	$225,419	$0	$0	$983,728	$0	$3,846,014	$14,802,368
2036	$4,788,496	$304,549	$250,000	$250,000	$1,013,240	$1,000,000	$3,579,805	$18,382,173
2037	$4,980,035	$378,201	$0	$0	$1,043,637	$0	$4,314,599	$22,696,772
2038	$5,179,237	$466,971	$6,138,750	$6,138,750	$1,074,946	$24,555,000	-$7,706,239	$14,990,533
2039	$5,386,406	$308,420	$6,138,750	$6,138,750	$1,107,194	$24,555,000	-$7,689,868	$7,300,665
2040	$5,601,863	$150,206	$6,138,750	$6,138,750	$1,140,410	$24,555,000	-$7,665,841	-$365,176
Totals	$118,629,510	$7,261,741	$47,841,475	$46,800,000	$33,697,902	$187,200,000	-$9,546,477	

Town of Indian Beach

PO Box 306
1400 Salter Path Rd.
Salter Path, NC 28575
Phone: 252.247.3344
Fax: 252.247.0513

RESOLUTION ADOPTING STATIC LINE EXCEPTION REPORT

Whereas, 2.4 miles of oceanfront development in Indian Beach and the Village of Salter Path are subject to a static vegetation line as a result of an island-wide beach nourishment project completed in 2003, and

Whereas, the NC Coastal Resources Commission has adopted new rules that enable a community to petition for a static line "exception", which would again enable the use of the actual first line of stable vegetation for oceanfront setback measurements in this area, and

Whereas, the application of the static vegetation line has rendered properties in Indian Beach non-conforming in perpetuity, resulting in the inability for destroyed homes to be reconstructed, preventing voluntary redevelopment, discouraging large-scale property improvements, and impacting the ability to secure mortgages, and the Town seeks to eliminate these problems, and

Whereas, the ability to again use the actual first line of stable vegetation for oceanfront setback measurements may enable many of the affected properties to regain conforming status, and

Whereas, in order to secure a static line "exception", the Town must present a static line exception report that outlines previous nourishment activities, project performance and monitoring activities, the availability of suitable sand for at least a 25-year period, and the availability of reliable funding for at least a 25-year period, and

Whereas, the Town has retained Coastal Planning & Engineering of NC to prepare such a report for submission to the NC Coastal Resources Commission,

Now, therefore, be it resolved that the Board of Commissioners hereby adopts the Static Line Exception Application Report prepared by Coastal Planning & Engineering of NC dated February 2010, and will comply with the commitments outlined in the report. The Town Administrator is hereby authorized to submit the report for consideration by the NC Coastal Resources Commission for a static line exception.

Adopted this the 10th day of March, 2010.

ATTEST:

_____
Stewart M. Pickett, Mayor

_____
Ronda G. Lambert, MMC, Town Administrator

The following spread sheet shows how the Town of Indian Beach plans to raise the necessary revenues to support the beach nourishment project.

Town of Indian Beach
Local Funding - Beach Nourishment
New Beach Nourishment Reserve Fund

Fiscal Year	State 25% IB / SP Share 25%				INDIAN BEACH		
	INDIAN BEACH 65%	Salter Path Hoffman Beach 13%	Salter Path State Park 22%	Total	6.5 cent / 2 cen Special Tax Districts	Interest Earnings	Fund Balance
2011	-	-	-	-	-	-	-
2012	-	-	-	-	266,915	-	266,915
2013	-	-	-	-	269,585	5,338	541,838
2014	-	-	-	-	272,280	10,837	824,955
2015	-	-	-	-	275,003	16,499	1,116,458
2016	-	-	-	-	277,753	22,329	1,416,540
2017	-	-	-	-	280,531	28,331	1,725,402
2018	811,151	162,230	274,544	1,247,925	283,336	34,508	1,232,095
2019	811,151	162,230	274,544	1,247,925	286,169	24,642	731,755
2020	811,151	162,230	274,544	1,247,925	289,031	14,635	224,270
2021	-	-	-	-	291,921	4,485	520,677
2022	-	-	-	-	294,841	10,414	825,931
2023	-	-	-	-	297,789	16,519	1,140,238
2024	-	-	-	-	300,767	22,805	1,463,810
2025	-	-	-	-	303,775	29,276	1,796,861
2026	-	-	-	-	306,812	35,937	2,139,611
2027	-	-	-	-	309,881	42,792	2,492,283
2028	985,043	197,009	333,399	1,515,450	312,979	49,846	1,870,066
2029	985,043	197,009	333,399	1,515,450	316,109	37,401	1,238,534
2030	985,043	197,009	333,399	1,515,450	319,270	24,771	597,532
2031	-	-	-	-	322,463	11,951	931,946
2032	-	-	-	-	325,688	18,639	1,276,272
2033	-	-	-	-	328,944	25,525	1,630,742
2034	-	-	-	-	332,234	32,615	1,995,591
2035	-	-	-	-	335,556	39,912	2,371,059
2036	-	-	-	-	338,912	47,421	2,757,392
2037	-	-	-	-	342,301	55,148	3,154,840
2038	1,197,056	239,411	405,158	1,841,625	345,724	63,097	2,366,605
2039	1,197,056	239,411	405,158	1,841,625	349,181	47,332	1,566,062
2040	1,197,056	239,411	405,158	368,325	352,673	31,321	753,000
TOTAL	**8,979,750**	1,795,950	3,039,300	12,341,700	**8,928,424**	804,326	**753,000**

Town of Indian Beach

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Whereas, the ability to again use the actual first line of stable vegetation for oceanfront setback measurements may enable many of the affected properties to regain conforming status, and

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Adopted this the 10th day of March, 2010.

Stewart M. Pickett, Mayor

ATTEST:

Ronda G. Lambert, MMC, Town Administrator

STATE OF NORTH CAROLINA
DEPARTMENT OF JUSTICE

ROY COOPER
ATTORNEY GENERAL

P.O. BOX 629
RALEIGH, NC 27602

REPLY TO: CHRISTINE A. GOEBEL
ENVIRONMENTAL DIV.
TEL: (919) 716-6600
FAX: (919) 716-6767
Cgoebel@ncdoj.gov

MEMORANDUM

TO: North Carolina Coastal Resources Commission

FROM: Christine A. Goebel, Assistant Attorney General
Dr. Jeff Warren, DCM Coastal Hazards Specialist

DATE: March 12, 2010 (for the March 24-26, 2010 CRC Meeting)

RE: Static Line Exception Request by the **Town of Pine Knoll Shores**

Petitioner, the Town of Pine Knoll Shores ("Town") requests an exception from the Town's static vegetation line from the Commission pursuant to N.C.G.S. §§ 113A-107, -113(b)(6), -124, and 15A NCAC 7J.1200 et seq. The granting of such a request by the Commission would result in the application of 15A NCAC 7H.0305(a)(5) and 7H.0306(a)(8) to proposed development projects in the Town, instead of the current use of the static vegetation line per 7H.0305(a)(6). The Town has had a static vegetation line, used for determining ocean erosion setbacks**,** in place along the entire 4.5 miles of the Town's ocean shoreline since 2001 when the static line rules became effective for the Town in connection with their large-scale nourishment project.

Pursuant to the requirements of 15A NCAC 7J.1202(a), this memorandum will contain a description of the area subject to the static line exception request, a summary of the fill projects in this area, a summary of the evidence required from and produced by the Town, and a recommendation by Staff to the Commission.

The following information is attached to this memorandum:
Attachment A: Relevant Rules
Attachment B: Staff's Recommendation
Attachment C: Petitioner's Report

cc: Brian Kramer, Pine Knoll Shores Town Manager
Jennie W. Hauser, CRC Counsel

ATTACHMENT A
Relevant Rules

SECTION .1200 – STATIC VEGETATION LINE EXCEPTION PROCEDURES

15A NCAC 07J .1201 REQUESTING THE STATIC LINE EXCEPTION

(a) Any local government or permit holder of a large-scale beach fill project, herein referred to as the petitioner, that is subject to a static vegetation line pursuant to 15A NCAC 07H .0305, may petition the Coastal Resources Commission for an exception to the static line in accordance with the provisions of this Section.
(b) A petitioner is eligible to submit a request for a static vegetation line exception after five years have passed since the completion of construction of the initial large-scale beach fill project(s) as defined in 15A NCAC 07H .0305 that required the creation of a static vegetation line(s). For a static vegetation line in existence prior to the effective date of this Rule, the award-of-contract date of the initial large-scale beach fill project, or the date of the aerial photography or other survey data used to define the static vegetation line, whichever is most recent, shall be used in lieu of the completion of construction date.
(c) A static line exception request applies to the entire static vegetation line within the jurisdiction of the petitioner including segments of a static vegetation line that are associated with the same large-scale beach fill project. If multiple static vegetation lines within the jurisdiction of the petitioner are associated with different large-scale beach fill projects, then the static line exception in accordance with 15A NCAC 07H .0306 and the procedures outlined in this Section shall be considered separately for each large-scale beach fill project.
(d) A static line exception request shall be made in writing by the petitioner. A complete static line exception request shall include the following:

(1) A summary of all beach fill projects in the area for which the exception is being requested including the initial large-scale beach fill project associated with the static vegetation line, subsequent maintenance of the initial large-scale projects(s) and beach fill projects occurring prior to the initial large-scale projects(s). To the extent historical data allows, the summary shall include construction dates, contract award dates, volume of sediment excavated, total cost of beach fill project(s), funding sources, maps, design schematics, pre-and post-project surveys and a project footprint;

(2) Plans and related materials including reports, maps, tables and diagrams for the design and construction of the initial large-scale beach fill project that required the static vegetation line, subsequent maintenance that has occurred, and planned maintenance needed to achieve a design life providing no less than 25 years of shore protection from the date of the static line exception request. The plans and related materials shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work;

(3) Documentation, including maps, geophysical, and geological data, to delineate the planned location and volume of compatible sediment as defined in 15A NCAC 07H .0312 necessary to construct and maintain the large-scale beach fill project defined in Subparagraph (d)(2) of this Rule over its design life. This documentation shall be designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for said work; and

(4) Identification of the financial resources or funding sources necessary to fund the large-scale beach fill project over its design life.

(e) A static line exception request shall be submitted to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. Written acknowledgement of the receipt of a completed static line exception request, including notification of the date of the meeting at which the request will be considered by the Coastal Resources Commission, shall be provided to the petitioner by the Division of Coastal Management.
(f) The Coastal Resources Commission shall consider a static line exception request no later than the second scheduled meeting following the date of receipt of a complete request by the Division of Coastal Management, except when the petitioner and the Division of Coastal Management agree upon a later date.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1202 REVIEW OF THE STATIC LINE EXCEPTION REQUEST

(a) The Division of Coastal Management shall prepare a written report of the static line exception request to be presented to the Coastal Resources Commission. This report shall include:

(1) A description of the area affected by the static line exception request;

(2) A summary of the large-scale beach fill project that required the static vegetation line as well as the completed and planned maintenance of the project(s);

(3) A summary of the evidence required for a static line exception; and

(4) A recommendation to grant or deny the static line exception.

(b) The Division of Coastal Management shall provide the petitioner requesting the static line exception an opportunity to review the report prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff: March 23, 2009.

15A NCAC 07J .1203 PROCEDURES FOR APPROVING THE STATIC LINE EXCEPTION

(a) At the meeting that the static line exception is considered by the Coastal Resources Commission, the following shall occur:

(1) The Division of Coastal Management shall orally present the report described in 15A NCAC 07J .1202.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception request. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(b) The Coastal Resources Commission shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J .1201(d)(1) through (d)(4). The final decision of the Coastal Resources Commission shall be made at the meeting at which the matter is heard or in no case later than the next scheduled meeting. The final decision shall be transmitted to the petitioner by registered mail within 10 business days following the meeting at which the decision is reached.

(c) The decision to authorize or deny a static line exception is a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1204 REVIEW OF THE LARGE-SCALE BEACH-FILL PROJECT AND APPROVED STATIC LINE EXCEPTIONS

(a) Progress Reports. The petitioner that received the static line exception shall provide a progress report to the Coastal Resources Commission at intervals no greater than every five years from date the static line exception is authorized. The progress report shall address the criteria defined in 15A NCAC 07J .1201(d)(1) through (d)(4) and be submitted in writing to the Director of the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557. The Division of Coastal Management shall provide written acknowledgement of the receipt of a completed progress report, including notification of the meeting date at which the report will be presented to the Coastal Resources Commission to the petitioner.

(b) The Coastal Resources Commission shall review a static line exception authorized under 15A NCAC 07J .1203 at intervals no greater than every five years from the initial authorization in order to renew its findings for the conditions defined in 15A NCAC 07J .1201(d)(2) through (d)(4). The Coastal Resources Commission shall also consider the following conditions:

(1) Design changes to the initial large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) provided that the changes are designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work;

(2) Design changes to the location and volume of compatible sediment, as defined by 15A NCAC 07H .0312, necessary to construct and maintain the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2), including design changes defined in this Rule provided that the changes have been designed and prepared by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements for the work; and

(3) Changes in the financial resources or funding sources necessary to fund the large-scale beach fill project(s) defined in 15A NCAC 07J .1201(d)(2). If the project has been amended to include design changes defined in this Rule, then the Coastal Resources Commission shall consider the financial resources or funding sources necessary to fund the changes.

(c) The Division of Coastal Management shall prepare a written summary of the progress report and present it to the Coastal Resources Commission no later than the second scheduled meeting following the date the report was received, except when a later meeting is agreed upon by the local government or community submitting the progress report and the Division of Coastal Management. This written summary shall include a recommendation from the Division of Coastal Management on whether the conditions defined in 15A NCAC 07J .1201(d)(1) through (d)(4) have been met. The petitioner submitting the progress report shall be provided an opportunity to review the written summary prepared by the Division of Coastal Management no less than 10 days prior to the meeting at which it is to be considered by the Coastal Resources Commission.
(d) The following shall occur at the meeting at which the Coastal Resources Commission reviews the static line exception progress report:

(1) The Division of Coastal Management shall orally present the written summary of the progress report as defined in this Rule.

(2) A representative for the petitioner may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

(3) Additional parties may provide written or oral comments relevant to the static line exception progress report. The Chairman of the Coastal Resources Commission may limit the time allowed for oral comments.

History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1205 REVOCATION AND EXPIRATION OF THE STATIC LINE EXCEPTION

(a) The static line exception shall be revoked immediately if the Coastal Resources Commission determines, after the review of the petitioner's progress report identified in 15A NCAC 07J .1204, that any of the criteria under which the static line exception is authorized, as defined in 15A NCAC 07J .1201(d)(2) through (d)(4) are not being met.
(b) The static line exception shall expire immediately at the end of the design life of the large-scale beach fill project defined in 15A NCAC 07J .1201(d)(2) including subsequent design changes to the project as defined in 15A NCAC 07J .1204(b).
(c) In the event a progress report is not received by the Division of Coastal Management within five years from either the static line exception or the previous progress report, the static line exception shall be revoked automatically at the end of the five-year interval defined in 15A NCAC 07J .1204(b) for which the progress report was not received.
(d) The revocation or expiration of a static line exception is considered a final agency decision and is subject to judicial review in accordance with G.S. 113A-123.
History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124 Eff. March 23, 2009.

15A NCAC 07J .1206 LOCAL GOVERNMENTS AND COMMUNITIES WITH STATIC VEGETATION LINES AND STATIC LINE EXCEPTIONS

A list of static vegetation lines in place for petitioners and the conditions under which the static vegetation lines exist, including the date(s) the static line was defined, shall be maintained by the Division of Coastal Management. A list of static line exceptions in place for petitioners and the conditions under which the exceptions exist, including the date the exception was granted, the dates the progress reports were received, the design life of the large-scale beach fill project and the potential expiration dates for the static line exception, shall be maintained by the Division of Coastal Management. Both the static vegetation line list and the static line exception list shall be available for inspection at the Division of Coastal Management, 400 Commerce Avenue, Morehead City, NC 28557.
History Note: Authority G.S. 113A-107; 113A-113(b)(6), 113A-124 Eff. March 23, 2009.

15A NCAC 7H .0305 GENERAL IDENTIFICATION AND DESCRIPTION OF LANDFORMS

(a) This section describes natural and man-made features that are found within the ocean hazard area of environmental concern.
***

(5) Vegetation Line. The vegetation line refers to the first line of stable and natural vegetation, which shall be used as the reference point for measuring oceanfront setbacks. This line represents the boundary between the normal dry-sand beach, which is subject to constant flux due to waves, tides, storms and wind, and the more stable upland areas. The vegetation line is generally located at or immediately oceanward of the seaward toe of the frontal dune or erosion escarpment. The Division of Coastal Management or Local Permit Officer shall determine the location of the stable and natural vegetation line based on visual observations of plant composition and density. If the vegetation has been planted, it may be considered stable when the majority of the plant stems are from continuous rhizomes rather than planted individual rooted sets. The vegetation may be considered natural when the majority of the plants are mature and additional species native to the region have been recruited, providing stem and rhizome densities that are similar to adjacent areas that are naturally occurring. In areas where there is no stable natural vegetation present, this line may be established by interpolation between the nearest adjacent stable natural vegetation by on ground observations or by aerial photographic interpretation.

(6) Static Vegetation Line. In areas within the boundaries of a large-scale beach fill project, the vegetation line that existed within one year prior to the onset of initial project construction shall be defined as the static vegetation line. A static vegetation line shall be established in coordination with the Division of Coastal Management using on-ground observation and survey or aerial imagery for all areas of oceanfront that undergo a large-scale beach fill project. Once a static vegetation line is established, and after the onset of project construction, this line shall be used as the reference point for measuring oceanfront setbacks in all locations where it is landward of the vegetation line. In all locations where the vegetation line as defined in this Rule is landward of the static vegetation line, the vegetation line shall be used as the reference point for measuring oceanfront setbacks. A static vegetation line shall not be established where a static vegetation line is already in place, including those established by the Division of Coastal Management prior to the effective date of this Rule. A record of all static vegetation lines, including those established by the Division of Coastal Management prior to the effective date of this Rule, shall be maintained by the Division of Coastal Management for determining development standards as set forth in Rule .0306 of this Section. Because the impact of Hurricane Floyd (September 1999) caused significant portions of the vegetation line in the Town of Oak Island and the Town of Ocean Isle Beach to be relocated landward of its pre-storm position, the static line for areas landward of the beach fill construction in the Town of Oak Island and the Town of Ocean Isle Beach, the onset of which occurred in 2000, shall be defined by the general trend of the vegetation line established by the Division of Coastal Management from June 1998 aerial orthophotography.

15A NCAC 07H .0306 GENERAL USE STANDARDS FOR OCEAN HAZARD AREAS

(a) In order to protect life and property, all development not otherwise specifically exempted or allowed by law or elsewhere in the CRC's Rules shall be located according to whichever of the following is applicable:
(1) The ocean hazard setback for development is measured in a landward direction from the vegetation line, the static vegetation line or the measurement line, whichever is applicable.

***
(8) Beach fill as defined in this Section represents a temporary response to coastal erosion, and compatible beach fill as defined in 15A NCAC 07H .0312 can be expected to erode at least as fast as, if not faster than, the pre-project beach. Furthermore, there is no assurance of future funding or beach-compatible sediment for continued beach fill projects and project maintenance. A vegetation line that becomes established oceanward of the pre-project vegetation line in an area that has received beach fill may be more vulnerable to natural hazards along the oceanfront. A development setback measured from the vegetation line provides less protection from ocean hazards. Therefore, development setbacks in areas that have received large-scale beach fill as defined in 15A NCAC 07H .0305 shall be measured landward from the static vegetation line as defined in this Section. However, in order to allow for development landward of the large-scale beach fill project that is less than 2,500 square feet and cannot meet the setback requirements from the static vegetation line, but can or has the potential to meet the setback requirements from the vegetation line set forth in Subparagraph (1) and (2)(A) of this Paragraph a local government or community may petition the Coastal Resources Commission for a "static line exception" in accordance with 15A NCAC 07J .1200 to allow development of property that lies both within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. This static line exception shall also allow development greater than 5,000 square feet to use the setback provisions defined in Part (a)(2)(K) of this Rule in areas that lie within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. The procedures for a static line exception request are defined in 15A NCAC 07J .1200. If the request is approved, the Coastal Resources Commission shall allow development setbacks to be measured from a vegetation line that is oceanward of the static vegetation line under the following conditions:

(A) Development meets all setback requirements from the vegetation line defined in Subparagraphs (a)(1) and (a)(2)(A) of this Rule;
(B) Total floor area of a building is no greater than 2,500 square feet;
(C) Development setbacks are calculated from the shoreline erosion rate in place at the time of permit issuance;
(D) No portion of a building or structure, including roof overhangs and elevated portions that are cantilevered, knee braced or otherwise extended beyond the support of pilings or footings, extends oceanward of the landward-most adjacent building or structure. When the configuration of a lot precludes the placement of a building or structure in line with the landward-most adjacent building or structure, an average line of construction shall be determined by the Division of Coastal Management on a case-by-case basis in order to determine an ocean hazard setback that is landward of the vegetation line, a distance no less than 30 times the shoreline erosion rate or 60 feet, whichever is greater;
(E) With the exception of swimming pools, the development defined in 15A NCAC 07H .0309(a) is allowed oceanward of the static vegetation line; and
(F) Development is not eligible for the exception defined in 15A NCAC 07H .0309(b).

ATTACHMENT B

Staff's Report to the Commission

I. Description of the affected area

The Town of Pine Knoll Shores (Town) is located on a barrier island known as Bogue Banks, located in Carteret County, North Carolina. The Town is approximately 2.3 square miles in size, and is approximately 4.5 miles long and nearly 0.77 miles wide at the widest point. It is generally oriented in an east-west direction. It is bounded on the north by the Atlantic Intracoastal Waterway (AIWW) and Bogue Sound, on the south by the Atlantic Ocean, on the west by the Town of Indian Beach and on the east by the Town of Atlantic Beach.

The current portion of the static line, at issue in this request, extends along the Town's entire 4.5 mile ocean shoreline. The static line location was determined by DCM Staff by locating the first line of stable, natural vegetation in the field in November 2001, and then having that line surveyed.

The current average annual erosion setback for the affected area is 2.0 feet per year for the entire area. The Town's ocean shoreline, entirely covered by a static line, is a developed area. Based on the Town's estimates, approximately 24 of 71 developed oceanfront lots which are now non-conforming could become conforming, and none of the 22 multi-family buildings which are non-conforming would become conforming if this exception is granted.

II. Summary of past nourishment project and future project maintenance

In 1999, Carteret County, acting through its Beach Preservation Task Force (a forerunner to the Shore Protection Office), initiated planning for an island-wide shore protection project aimed at providing interim protection to development and infrastructure along the island until a long-term storm damage reduction project could be designed and implemented by the Corps of Engineers. The island-wide plan developed by the county is called the Bogue Banks Restoration Project. The county contracted Coastal Science & Engineering, PLLC (CSE) of Morehead City, NC to develop the plan. CSE also prepared an Environmental Assessment under the National Environmental Policy Act (CSE 2001a) and an Environmental Impact Statement required by the State Environmental Policy Act (CSE 2001b). The conceptual plan developed for the island-wide project is detailed in a report prepared by CSE entitled "Executive Summary – Shoreline Assessment and Preliminary Beach Restoration Plan, Bogue Banks, North Carolina" (CSE 1999). Following the review and approval of federal and state environmental documents, the project received a CAMA Major Permit Number 124-01 dated October 5, 2001 and a Department of the Army Permit #200000362 dated October 26, 2001. Minor modifications to the CAMA Major Permit were approved on October 4, 2002 with these same modification approved by the Department of the Army on October 22, 2002. The island-wide project was implemented in three phases and the permit modifications referenced above were granted prior to the construction of Phase II of the project.

The Bogue Banks Restoration Plan covers approximately 16.8 miles of the 25 mile long island and extends from the Atlantic Beach/Pine Knoll Shores (AB/PKS) town boundary west to approximately one mile east of Bogue Inlet (Figure 1). The project is sponsored by Carteret County with the Towns of Pine Knoll Shores, Indian Beach, and Emerald Isle included in the permits as co-permittees.

Phase I was accomplished in 2001-02 and included the 4.5 miles of ocean shoreline fronting the Town of Pine Knoll Shores (the focus of this static line report) and 2.4 miles along the shoreline segment that includes the Town of Indian Beach and the Village of Salter Path. The Pine Knoll Shores portion of the Project was constructed between November 2001 and April 2002 as part of Phase I and included design specifications that triggered a static line. The initial date which triggered the static line is 2001, and is more than five years ago, so the request meets the 5-year requirement of 15A NCAC 7J.1201(c).

III. Summary of Petitioner's evidence supporting the four factors

The Commission's rule 15A NCAC 07J.1203(b) indicates that the Commission "shall authorize a static line exception request following affirmative findings on each of the criteria presented in 15A NCAC 07J.1201(d)(1) through (d)(4)." Specifically, these four criteria require a showing by the Petitioner of (1) a summary of all beach fill projects in the area proposed for the exception, (2) plans and related materials showing the design of the initial fill projects, and any past or planned maintenance work, (3) documentation showing the location and volume of compatible sediment necessary to construct and maintain the project over its design life, and (4) identification of the financial resources or funding sources to fund the project over its design life. (See 15A NCAC 07J.1202(d) for exact rule language). Staff's summary and analysis of Petitioner's response to these four criteria follows.

A. Summary of fill projects in the area- First factor per 15A NCAC 7J.1202(d)(1)

The Town's report, specifically pages 20-24, provides the following information about the history of the beach fill projects that have taken place beginning in 2004:

PROJECT NOURISHMENT HISTORY.

The Pine Knoll Shores portion of the Bogue Banks Restoration Project has been nourished on three occasions since initial construction. The first nourishment occurred between February and March 2004 as part of Phase I of the Section 933 project associated with the USACE maintenance of the Morehead City Harbor federal navigation project. Phase I also included the Indian Beach/Salter Path shoreline (Figure 14). Section 933 of the Water Resources Development Act of 1986 allows the State and local sponsors to cost share with the federal government in the added cost of depositing material in areas other than the least cost disposal site. Under normal operating conditions, the material removed from the Beaufort Inlet bar channel would be deposited offshore in the Offshore Dredged Material Disposal Site (ODMDS) or in a near shore disposal mound situated immediately west of the inlet's ebb tide delta. For the Section 933 project, Weeks Marine, the firm contracted by USACE to perform the work, used a hopper dredge to haul the material to mooring sites located immediately offshore of Pine Knoll Shores and Indian Beach/Salter Path. From the mooring sites the material was pumped to the beach via a submerged pipeline. Phase I of the Section 933 project placed 630,094 cubic yards of material along the entire shoreline of Indian Beach and Salter Path and 69,189 cubic yards on the western 2,500 feet of Pine Knoll Shores (Figure 14).

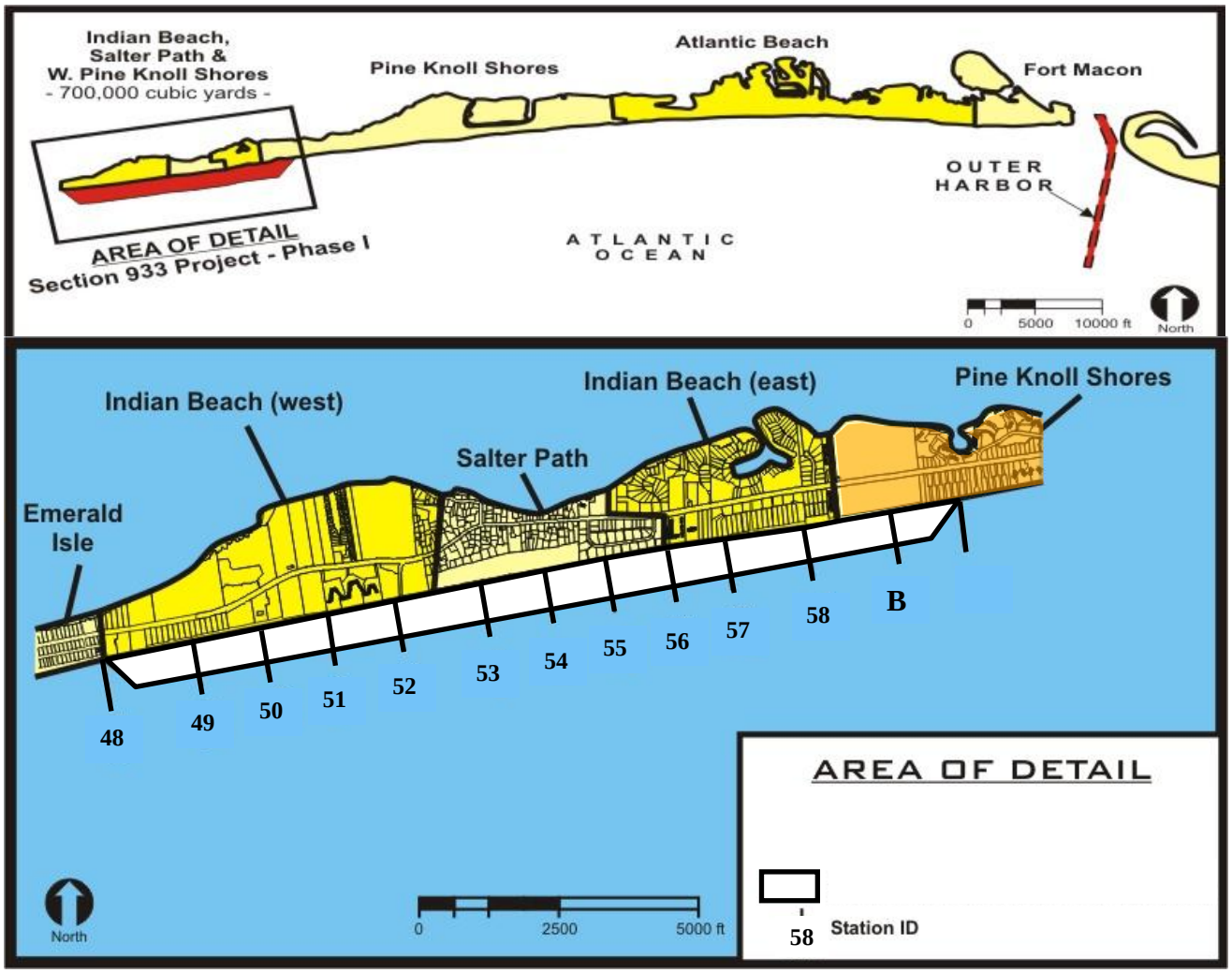

Figure 14. Beach nourishment limits for Phase I of the Section 933 Project. (Base map courtesy of the Carteret County Shore Protection Office).

The second nourishment operation occurred between January and March 2007 as Phase II of the Section 933 project. The work was also contracted to Weeks Marine by the USACE. All of the material removed from the bar channel during Phase II of the Section 933 project was deposited on the beach in two locations within the town limits of Pine Knoll Shores. The locations of the two beach nourishment areas are shown in Figure 15 (red bars).

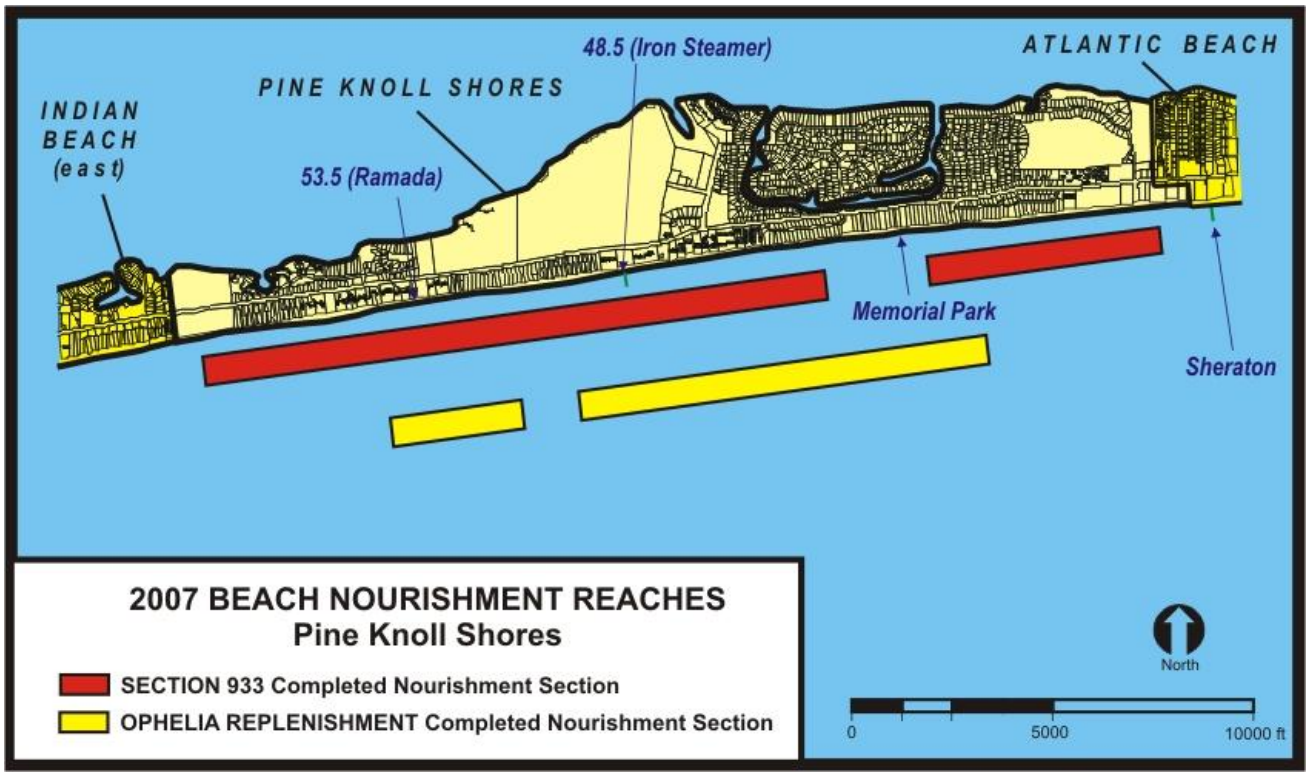

Figure 15. Location of nourishment areas for the Hurricane *Ophelia* restoration and Phase II of the Section 933 Project (Map courtesy of the Carteret County Shore Protection Office).

The third nourishment operation also occurred between January and March 2007 and was carried out to replace material lost during Hurricane *Ophelia* which struck the area in September 2005. Following the advent of Hurricane *Ophelia* in September 2005, the Town of Pine Knoll Shores along with the other island communities applied to FEMA for funds to restore the material lost during *Ophelia* under Category G of FEMA's Public Assistance Program. Specifically, the Public Assistance Program allows FEMA to provide funds to restore an "improved" or engineered beach providing the applicant can demonstrate the beach fill project had a designed template and grain size, a maintenance plan, and pre- and post-storm beach profile surveys. In its application, the Town of Pine Knoll Shores as well as the other towns along the island included in the Bogue Banks Restoration project were able to demonstrate they met all of the FEMA requirements including an engineered beach, a nourishment plan (as described above), and monitoring program and was subsequently approved to receive reimbursement funds to restore the beach to the pre-storm condition. Carteret County and the three beach towns obtained modifications to its original permits from both the Corps of Engineers and the Division of Coastal Management to allow the use of the Offshore Dredged Material Disposal Site (ODMDS) for the Morehead City Harbor navigation project as a borrow source for the post-*Ophelia* restoration. The work was contracted to GLDD.

Profiles of the beach taken before and after Hurricane *Ophelia* indicated a total of 1,107,560 cubic yards had been eroded from the Bogue Banks Restoration Project. Of this total, 239,796 cubic yards was lost from the two sections of the Pine Knoll Shores portion of the project shown in Figure 15 (yellow bars). The measured loss in the western section was 59,560 cubic yards while the central portion lost 180,236 cubic yards.

Geotechnical investigation of the ODMDS conducted by CSE prior to the Hurricane *Ophelia* restoration project yielded an average mean grain size of 0.31 mm which compared favorably with the native beach mean grain size of 0.30 mm. Post-placement sampling of the material on the beach yielded a slightly larger mean grain size of almost 0.36 mm. During the hopper dredge operation, the dredge slurry (water and sediment) is continually pumped into the dredge's hopper and water is allowed to overflow back into the ocean until the hopper is full with sediment. As the water overflows the hopper, finer grained material is also discharged back into the ocean leaving only the coarser material to be delivered to the beach. The hopper filling and overflow process combined with the winnowing of fine grain sediments during the actual beach disposal operation are primarily responsible for the coarseness of the material found in place on the beach compared to the in situ samples taken from the vibracores.

Based on after-construction surveys of the in place fill, the total volume deposited in Pine Knoll Shores was 262,276 cubic yards with 73,387 cubic yards measured in place in the western section and 188,879 cubic yards measured in place in the central section (yellow bars depicted on Figure 15). The total cost of the restoration was $13,773,800 all of which was provided by FEMA. Of this total restoration cost, $3,311,582 was allocated to Pine Knoll Shores.

A summary of the initial beach nourishment operation and the three nourishment operations within the town limits of Pine Knoll Shores is provided in Table 1.

To date, periodic nourishment under the Town adopted nourishment plan has not been required.

Table 1
Pine Knoll Shores Nourishment History

Event	Date	Fill Limits Approx. Sta Nos.	Length (ft)	Borrow Area	Volume (cy)	Cost-Sharing		
						Local	State	Federal
Initial Construction	Nov 01 – Apr 02	59 to 76	23,875	A, B1 & B2	1,276,586	$7,550,000	$0	$0
Phase I – Sec 933 Project	Mar-Apr 2004	59 to 61	2,500	Beaufort Inlet	162,443	$394,975[(1)]	$1,184,925	$4,814,900
Phase II – Sec 933 Project	Jan – Mar 2007	58 to 70 73 to 77	16,141 5,640	Beaufort Inlet	432,820 75,119	$678,000[(2)]	$2,000,000	$7,600,000
Post-Ophelia	Jan-Mar 2007	62 to 65 66 to 73	3,454 10,124	ODMDS	73,397 188,879	$0	$0	$3,311,600

[(1)] Pine Knoll Shores share of local cost = $66,542
[(2)] Local share provided by the Town of Pine Knoll Shores.

B. Design of the initial fill projects and past/planned maintenance Second factor per 15A NCAC 7J.1202(d)(2)

The Town's report, specifically pages 2-11, 20, 24-26, has the following information about how the project has performed in the past and the proposed future design of future beach fill projects for Pine Knoll Shores:

PROJECT DESIGN.

During the active tropical storm period from 1996 to 1999, most areas along Bogue Banks experienced substantial damage to ocean front properties. The one exception was the Town of Atlantic Beach which did not experience any appreciable damage. In this regard, the Town of Atlantic Beach and Fort Macon State Park were the recipients of almost 4.2 million cubic yards of sediment in 1986 and 4.6 million cubic yards in 1994, which were associated with maintenance and new construction of the Morehead City Harbor Project. The 1986 disposal operation included removal of sediment from Brandt Island (termed the Brandt Island pump-out), an upland disposal site for the Morehead City Harbor Project, and from maintenance of the inner harbor channels and turning basin. The 1994 operation included a combination of material from channel maintenance, new channel construction, and the second Brandt Island pump-out. As a result of these two disposal operations, Atlantic Beach had an exceptionally wide beach prior to the onslaught of the storms. Noting the lack of damage to Atlantic Beach, CSE targeted the profile condition along Atlantic Beach as the design template for the remainder of the island.

CSE surveyed 111 transects (Figure 2) spaced approximately every 1,000 feet along the entire island and computed the volume of material residing on each profile between the toe of the dune seaward to the 12-foot NAVD (North American Vertical Datum) depth contour. Based on the volume computations for the profiles located within the town limits of Atlantic Beach (see example profile in Figure 3), CSE adopted a design volume between the seaward toe of the dune and the -12-foot NAVD contour for the remainder of the island of 175 cubic yards/lineal foot. Given this design volume, CSE determined the volume of material that should be added to the shorelines of Pine Knoll Shores, Indian Beach, and Emerald Isle to increase the profile volume in these areas to 175 cubic yards/lineal foot. Since the purpose of the project at that time was to provide interim protection until the federal storm damage reduction project would be implemented, the total volume to be placed along the shoreline was increased by an amount deemed to be sufficient to accommodate 10 years of erosion at each location along the island.

The design profile volume for the Bogue Banks project was subsequently increased to 225 cubic yards per lineal foot to account for the volume of material from the landward toe of the dune to the seaward toe of the dune (CSE 2004).

The plan layout for the Pine Knoll Shores portion of the project, which was designated as Reach 5 and 6 in the overall plan, is shown in Figures 4 and 5. A 1,000-foot transition or taper section was provided on the east end of the fill. A taper section was not required on the west end of the fill as the project was constructed as a continuous fill through Indian Beach/Salter Path. Typical design templates for Reach 5 and 6 are provided in Figures 6 and 7, respectively. The beach fill was designed as a variable width horizontal berm at elevation +6.0 feet NAVD. Profiles showing the pre-nourishment and post-construction conditions are provided in Figures 8 to 12. The location of the typical profiles (Stations 60, 64, 68, 72, and 76) are indicated by red lines in Figure 2.

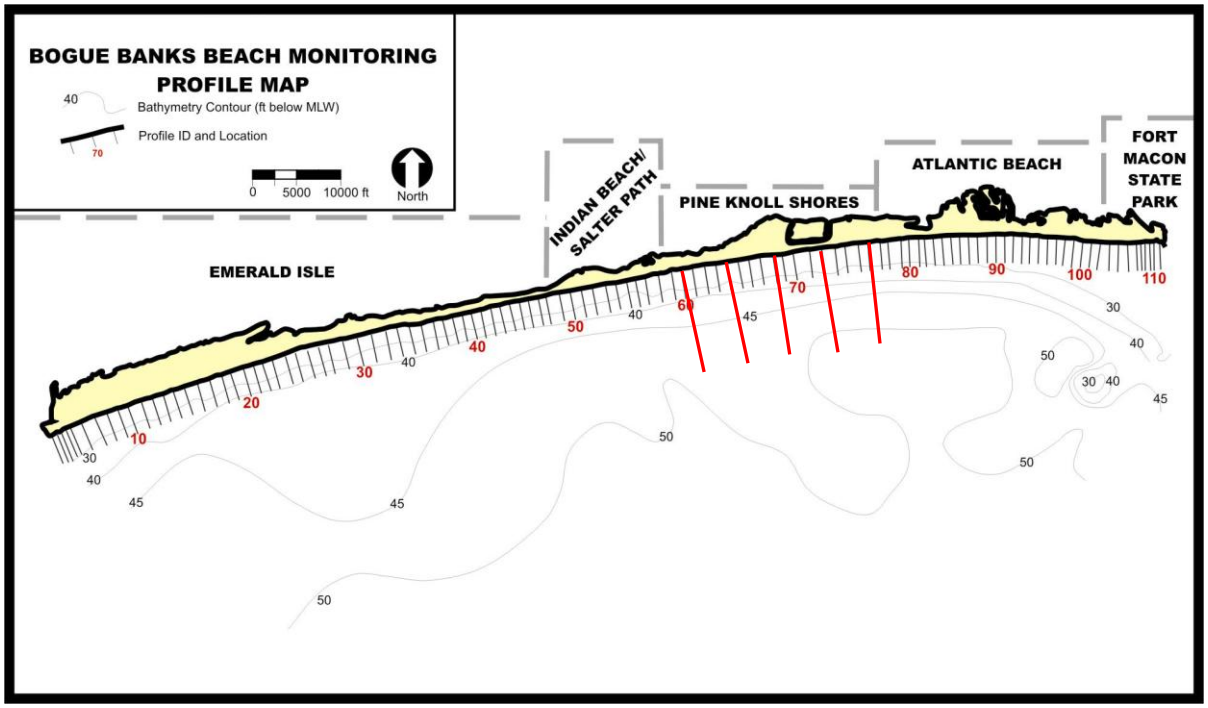

Figure 2. Location of 111 transects surveyed by CSE and location of typical profiles in Pine Knoll Shores (shown in red). (Base map courtesy of the Carteret County Shore Protection Office.

PROJECT CONSTRUCTION AND ESTABLISHMENT OF STATIC VEGETATION LINE.

The Pine Knoll Shores and Indian Beach/Salter Path portions of the Bogue Banks Restoration Project (Phase I) were completed in April 2002 with the work contracted to Great Lakes Dredge & Dock Co. (GLDD). GLDD initially used two hopper dredges (*Manhattan Island and Sugar Island)* but delays in the construction progress associated with automobile tires that had broken off an artificial fishing reef and the taking of sea turtles required GLDD to mobilize a third dredge, the *Dodge Island*, in an attempt to complete the project by the April 30 permit deadline. Construction of Phase I was eventually halted on April 11, 2002 due to another turtle take. The previous delays and the work stoppage prior to April 30 resulted in a reduction in the volume of material placed along both Pine Knoll Shores and Indian Beach/Salter Path. Based on after construction profile surveys, the Town of Pine Knoll Shores received 1,276,586 cubic yards or about 9% less than the original contract amount. The amount surveyed in place along the Indian Beach/Salter Path shorelines totaled 456,994 cubic yards or about 41% less than the contract amount. The work stoppage resulted in two areas or "gaps" along the Indian Beach/Salter Path shoreline that did not receive any substantial fill volume. One gap was located approximately between stations 48 and 50 on the west end of Indian Beach and the other approximately between stations 52 and 54 in Salter Path (Figure 2). Most of the gap located between stations 52 and 54 lies within the Roosevelt State Park. Even though fill material was not placed directly in these areas, the two gaps soon equilibrated with material moving into the gaps from the adjacent beach fill areas.

PROJECT PERFORMANCE.

The performance of the Pine Knoll Shores project has been monitored on an annual basis by the island-wide beach profile monitoring program conducted under the auspices of the Carteret County Shore Protection Office. The profile monitoring program began in June 1999 prior to the construction of the beach fills projects. Annual reports summarizing the results of the monitoring surveys including the performance of the beach nourishment projects along Bogue Banks have been prepared since 2002-03 and are available from the Shore Protection Office website (http://www.protectthebeach.com/Monitoring/monitoring.htm).

The Pine Knoll Shores portion of the Bogue Banks Restoration Project includes a total of 18 profiles, numbered 59 to 76, that are surveyed annually and following significant storm events. Representative plots of the typical profiles 60, 64, 68, 72, and 76, the location of which are indicated in Figure 2, are provided in Appendix A.

A plot of the cumulative changes in the volume of material from the back toe of the dune seaward to the -12-foot NAVD contour for Pine Knoll Shores is shown in Figure 17 This plot begins in June 1999, prior to the construction of the project, and extends through June 2009. The large jump in the cumulative volume curve in April 2002 was due to the initial construction of the project which added 1,276,586 cubic yards to the 4.5 mile shoreline. Prior to initial construction, the cumulative volume change within Pine Knoll Shores since June 1999 had

dropped to -120,470 cubic yards. The minor fill placed along the western 2,500 feet of Pine Knoll Shores during construction of Phase I of the Section 933 project is indicated in Figure 17 as well as the total volume added by both the Phase II Section 933 and the post-Hurricane *Ophelia* restoration projects completed in March 2007.

The periodic nourishment plan for Pine Knoll Shores includes two nourishment triggers, both of which are shown in Figure 17. The "FEMA Nourishment Trigger" is based on the loss of one-half of the initial construction volume or 638,293 cubic yards. The loss of this volume of material would lower the cumulative volume since June 1999 to 517,823 cubic yards. Again, this volume is measured from the landward toe of the dune to the -12-foot NAVD contour. The second nourishment trigger, designated as the "Design Nourishment Trigger" in Figure 17, is based on maintaining a minimum volume of 225 cubic yards/lineal foot of shoreline between the landward toe of the dune and the -12-foot NAVD contour. For Pine Knoll Shores, the Design Nourishment Trigger is the larger and would therefore dictate when nourishment should be performed in order to keep the project up to its design requirements.

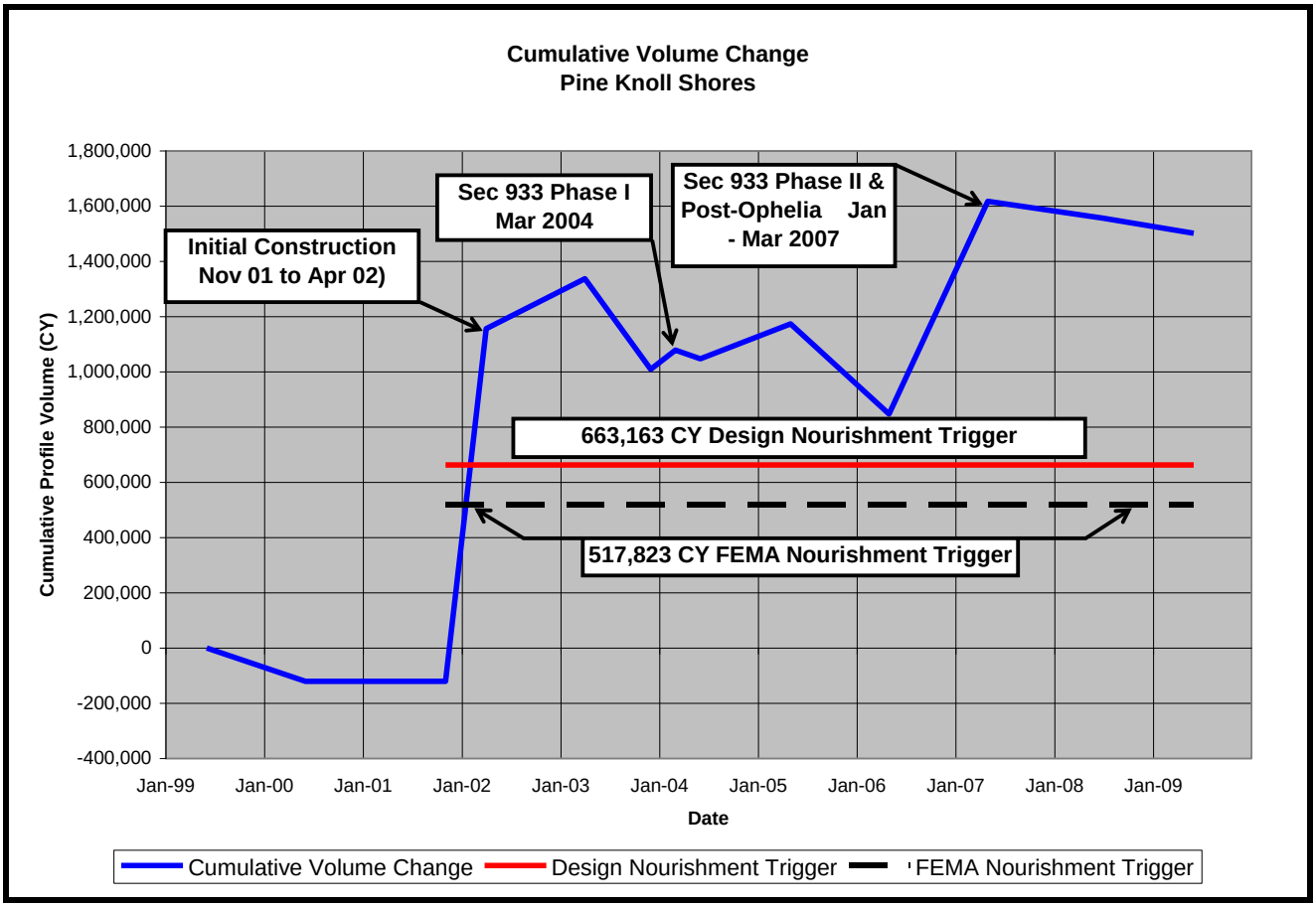

Figure 17. Cumulative beach profile volume change along Pine Knoll Shores – June 1999 to June 2009.

As of June 2009, the volume of material remaining on the beach within the town limits of Pine Knoll Shores was 1,501,732 cubic yards compared to the volume measured in April 2003 of 1,336,820 cubic yards. This represents a net gain of 164,912 cubic yards over the 6.17 year period. Phase I of the Section 933 project added 69,189 cubic yards of material to the Pine Knoll Shores shoreline and the combination of Phase II of the Section 933 project and the post-Hurricane *Ophelia* restoration added a total of 770,215 cubic yards between January and March 2007. Thus, between April 2003 and June 2009, a total of 839,404 cubic yards of material has been added to the Pine Knoll Shores shoreline. In the absence of the three periodic nourishment operations, Pine Knoll Shores would have lost 420,792 cubic yards during this time interval. This represents an average annual volumetric loss rate of approximately 68,200 cubic yards/year, or an average loss of 2.9 cubic yards/lineal foot/year.

The volume of material measured on the Pine Knoll Shores shoreline in June 2009 was equal to 260.1 cubic yards/lineal foot or 35.1 cubic yards/lineal foot above the 225 cubic yard/lineal foot design volume. If the volume loss along Pine Knoll Shores continues at this rate, nourishment would be required within the next 10 to 12 years.

Overall, the Pine Knoll Shores project has performed very well even with the advent of Hurricane *Ophelia*. Note that Hurricane *Isabel* also impacted the area in September 2003 but the damage to the Pine Knoll Shores portion of the project was not severe enough to warrant federal post-disaster assistance to rebuild the beach project. The average annual volumetric loss rate of 68,200 cubic yards/year is equivalent to 2.9 cubic yards/lineal foot of beach which is a relatively low loss rate compared to other beach nourishment projects.

PERIODIC NOURISHMENT PLAN.

The Bogue Banks Restoration Project was initially intended to be an interim measure aimed at protecting the island until a long-term (50 year) federal storm damage reduction project could be implemented. However, given the uncertainties associated with federal authorization for such a project and concerns over federal funding once federal authorization is attained, each of the island municipalities adopted periodic nourishment plans to assure adequate protection is maintained until the federal project is put in place. Also, Carteret County, acting through the Shore Protection Office, established a detailed beach profile monitoring program to document the condition of the beach fills placed along the island and determine where and when beach nourishment would be required.

Pine Knoll Shores Periodic Nourishment Plan. The periodic nourishment plan adopted by the Town of Pine Knoll Shores has two nourishment "triggers", one presented to the Federal Emergency Management Agency (FEMA) to comply with that agency's requirements for federal post-storm reconstruction assistance following a declared federal disaster and the other tied to the engineering formulation of the Bogue Banks Restoration Project. The FEMA nourishment trigger requires nourishment to be accomplished when one-half of the initial construction volume is lost from the fill. For Pine Knoll Shores, the initial construction volume (measured in place) was 1,276,586 cubic yards and the resulting FEMA nourishment trigger is the loss of 638,293 cubic yards from the initial fill. The second nourishment trigger is based on maintaining a minimum volume of material on the profile from the landward toe of the dune seaward to the -12-foot NAVD depth contour of 225 cubic yards/lineal foot of beach. The existing condition of

the beach fill, its past performance, and the relation of the project performance to the two nourishment triggers is provided below in the project performance section.

Again citing the uncertainties with continued federal involvement in shore protection, Carteret County has initiated a detailed assessment of the long-term shore protection requirements for Bogue Banks in the absence of federal funding that will also include compulsory documentation associated with State and National Environmental Protection Act coordination, and the successful procurement of permits to construct and maintain the Shore Protection Program. This long-term effort is directly related to and compliments the nourishment plan presented in this static line report as it will detail the many logistics required to execute future nourishment events (i.e., geotechnical and remotely-sensed information, habitat mapping, mitigation plans, endangered species considerations, etc.).

C. Compatible Sediment
Third factor per 15A NCAC 7J.1202(d)(3)

The Town's report, specifically pages 26-30, provide the following information about the availability of compatible sediment for future beach fill projects:

PLANNED BORROW AREAS.

The Town of Pine Knoll Shores, as well as the other island communities, are primarily focusing on the ODMDS as a borrow source for maintenance of their beach nourishment project. However, the possible use of borrow sources identified by the USACE during planning for the 50-year federal project, which are closer to the project area, are also included in the town's long-range plans.

ODMDS. All the towns along Bogue Banks, including Pine Knoll Shores, are targeting the ODMDS (Figure 16) as a future source of beach nourishment material to sustain the beach nourishment projects for at least the next 30 years. Between 1936 and 1994, all of the material removed from the Morehead City Harbor entrance channel through Beaufort Inlet was deposited in the ODMDS. Since 1995, approximately 3.8 million cubic yards of the maintenance material has been deposited in a near shore berm located on the west side of the Beaufort Inlet ebb tide delta (Figure 19) and the 2004 and 2007 maintenance operations placed the maintenance material directly on the shorelines of Indian Beach/Salter Path and Pine Knoll Shores under the authority of Section 933. Based on USACE dredging records (USACE 2001 & USACE 2001a to 2007), and adjusting for the volume of material placed in the near shore berm and directly on the beach under Section 933, the volume of material deposited in the ODMDS since 1936 totals approximately 47.8 million cubic yards.

The ODMDS shown in Figure 16 is the existing approved disposal area for the Morehead City Harbor Project. Prior to the establishment of the existing ODMDS, maintenance material was deposited in areas north of the existing site as well as east of the Beaufort Inlet ocean bar channel. In a study contracted by Carteret County to Olsen Associates, Inc. of Jacksonville, Florida (Olsen 2006), Olsen was able to account for up to 35.5 million cubic yards in both the existing and historic offshore disposal areas. Obviously, development of the existing ODMDS

and other historic ocean disposal sites as borrow sites will require additional geotechnical investigations in order to comply with State sediment criteria (15A NCAC 07H.0312). However, based on Olsen's study, and adjusting for the 1.4 million cubic yards removed to restore the beaches following Hurricanes *Isabel* and *Ophelia*, the volume of beach compatible material in or near the existing ODMDS should total well over 30 million cubic yards. In a Section 111 report prepared by the USACE to evaluate the possible impacts of the Morehead City Harbor Project on the adjacent shorelines, the USACE estimated over 32 million cubic yards of beach compatible material had been deposited in the ODMDS since 1936 (USACE 2001).

Maintenance of the Morehead City Harbor Project will continue over the next 30 years with additional material being deposited in the ODMDS. However, while over one million cubic yards of material is removed from the ocean bar channel of Beaufort Inlet each year, at the urging of Carteret County, the USACE is in the process of reformulating the dredged material management plan for the harbor which could result in less material being placed in the ODMDS and more placed directly on the shorelines of Fort Macon and Atlantic Beach during maintenance dredging operations. In any event, disposal of some of the maintenance material in the ODMDS will likely continue over the next 30 years which could increase the available volume to at least 33 to 36 million cubic yards.

An estimate of the island-wide volumetric erosion that has occurred since April 2003 within the limits of the Bogue Banks Restoration Project is presented in Table 2. The unit volumes of material within each reach along Bogue Banks, measured from the seaward toe of the dune to the -12-foot NAVD depth contour, were derived from the 2007 monitoring report (CSE 2007a) and the 2008 and 2009 monitoring reports (Moffatt & Nichol 2008, Moffatt & Nichol 2009). Adjustments in the volume changes were made for the amount of beach fill placed within each reach from various nourishment operations since April 2003 including: (a) the 2005 initial construction of Emerald Isle West, (b) the 2004 and 2007 post-hurricane restorations, (c) Phase I of the Section 933 project along Indian Beach/Salter Path and Pine Knoll Shores (completed in 2004), and (d) Phase II of the Section 933 project also along portions of Indian Beach/Salter Path and Pine Knoll Shores completed in 2007.

The estimated volumetric erosion rate for the entire Bogue Banks Restoration Project through June 2009 totals 357,100 cubic yards/year. Over the next 30 years, approximately 10.7 million cubic yards of beach compatible material will be needed to maintain the entire Bogue Banks Restoration Project. With over 30 million cubic yards of material currently available in the ODMDS and potentially more material being added from maintenance of the Morehead City Harbor project, the ODMDS has a sufficient volume of material to satisfy nourishment requirements for the entire island-wide project including Pine Knoll Shores for at least the next 30 years.

Table 2. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[1]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.8	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.2	-4.1
Indian Beach/Salter Path	+181,185	949,207	-768,022	-124,500	30.0	-9.7
Pine Knoll Shores	+418,612	839,404	-420,792	-68,200	24.0	-2.9
Total for Bogue Banks Restoration Project				-357,100	100.0	-4.1

[1] Adjusted volume change = measured profile volume change minus fill added.

The demands for periodic nourishment material from the ODMDS include the section of the project designated as Emerald Isle West. As noted previously, Emerald Isle West was constructed with material removed from Bogue Inlet during the relocation of the inlet bar channel 3,500 feet to the west. Should the inlet bar channel migrate back to the east and pose a renewed threat to development on the extreme west end of Emerald Isle, the Town of Emerald Isle may seek permits to move the channel again. If so, material removed to relocate the channel could be used to nourish the Emerald Isle West portion of the Bogue Banks Restoration Project. Should that occur, the demand for material from the ODMDS over the next 30 years could be reduced by as much as 750,000 cubic yards to 1,000,000 cubic yards.

As mentioned above, the material contained within the existing ODMDS and the material in the other historic offshore disposal sites used for the Morehead City Harbor project will require detailed geotechnical investigations and documentation in accordance with the State Sediment Criteria (15A NCAC 07H.0312) to qualify the areas for use as beach fill borrow sites. However, based on the documented beach compatibility of the material removed from the ODMDS and deposited on the beach during the Hurricane *Isabel* and *Ophelia* restorations, the only issue that needs to be resolved is the exact location and thickness of the deposited material; not its quality.

Sampling of material in the northern section of the ODMDS conducted by CSE for the post-Hurricane *Ophelia* Restoration included the collection of 14 vibracores ranging in length from 2.6 feet to 9.2 feet with an average length equal to 5.7 feet.

Grain size analysis of the samples taken from the 14 vibracores resulted in a composite mean of 1.71 phi (0.31 mm) and a standard deviation of 1.06 phi (CSE 2007b). The silt content was generally less than 2%. Comparison of the ODMDS material with the native beach sand resulted in an overfill factor of 1.35 which is considered a reasonably good match.

CSE also sampled the material once it had been placed on the beach, collecting 25 samples from the two sections of Pine Knoll Shores that received material during the post-*Ophelia* restoration project. The grain size of the material in place on the beach averaged 0.32 mm with an average silt content of only 0.07%. Precise measurements of the silt content in the vibracore samples were not provided by CSE (CSE, 2007), however, based on the extremely low silt content of the in place material and the larger average mean grain size of the in place material compared to the in situ vibracore samples, as noted previously, the filling and placement process associated with the hopper dredge operations apparently flushed much of the finer grained material from the fill prior to sampling. CSE did not analyze the shell content in the vibracore samples taken from the ODMDS but did analyze the calcium carbonate ($CACO_{3)}$ content of the in place material and found an average calcium carbonate content of 14.9%. Sampling of the native beach conducted by CSE prior to the construction of the Bogue Banks Restoration Project yielded an average shell content of the native beach of approximately 15%. The State Sediment Criteria for beach nourishment material allows borrow material to contain 15% more $CACO_3$ than the native beach. Assuming the 15% shell content found along the beach prior to construction of the Bogue Banks Restoration Project as a proxy for $CACO_3$ content, the threshold for $CACO_3$ would be 30%. Therefore, the amount of shell and/or $CACO_3$ in material deposited in the Morehead City Harbor ODMDS appears to fall well within the State Sediment Criteria.

The sampling of the ODMDS material for the post-Hurricane *Ophelia* project as well as visual observations of the material on the beach provides substantial evidence that the ODMDS material and other materials deposited near the existing ODMDS will be able to meet all of the requirements of 15A NCAC 07H.0312 and provide a source of material necessary to sustain not only the Pine Knoll Shores project but the entire shoreline of Bogue Banks from the Atlantic Beach/Pine Knoll Shores town boundary west to Bogue Inlet for at least 25 years as required by 15A NCAC 07J .1201 and much longer based on the estimated volume of material in the existing ODMDS and historic disposal sites near the ODMDS.

USACE Borrow Areas. Potential borrow areas identified by the USACE offshore of Bogue Banks are shown in red in Figure 19 (USACE 2009). The other areas identified in this figure represent potential sources of sediment that are under consideration for the long-term plan being formulated by Carteret County.

As indicated in Figure 19, the USACE is also evaluating the ODMDS as well as other areas near Beaufort Inlet as potential borrow areas for the 50-year federal storm damage reduction project. The USACE preliminary assessment of the beach compatible material in the offshore sites is: 6.4 million cubic yards in USACE-West; 17.0 million cubic yards in USACE-Central; and 7.2 million cubic yards in USACE-East for a total of 30.6 million cubic yards. However, the results

of the USACE geotechnical investigations are very preliminary and do not meet the USACE sampling standards for project design or the standards contained in 15A NCAC 07H.0312 (State Sediment Criteria). Once detailed sampling is complete, the USACE estimate of the available volume of material will likely be reduced.

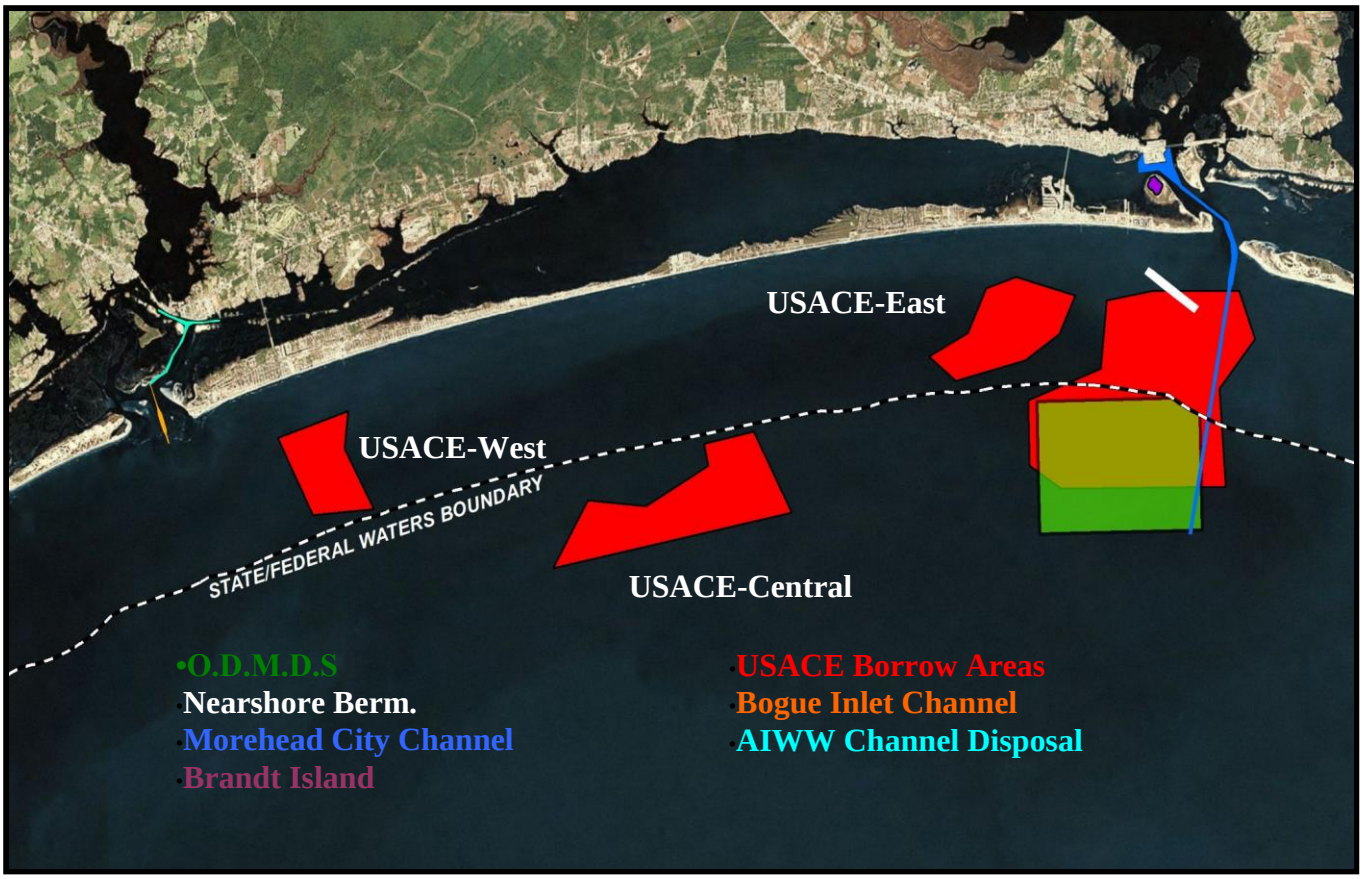

Figure 19. Potential USACE borrow areas (in red) and other sources of sediment near Bogue Banks.

Borrow Area Summary. While additional geotechnical investigations are needed to fully develop the existing ODMDS, the other areas near the existing ODMDS, and the USACE sites into acceptable borrow areas for the Bogue Banks Restoration Project, including Pine Knoll Shores, the shear magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the Pine Knoll Shores project will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule. This may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined.

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STAFF'S COMMENTS IN RESPONSE:

The Town's application states that "the shear (sic) magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the island-wide beach management plan will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule." The application continues: "This [ODMDS material] may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined." A full analysis of the ODMDS and additional potential offshore sites have not been conducted to the extent required by 15A NCAC 07H.0312. However, because the ODMDS is considered to have the requisite volume for the island-wide beach management plan for the duration of the plan, and since this material in the ODMDS was removed directly from the navigation channel at the Port of Morehead City, it is considered to be littoral sand from the nearshore system and, for this purpose, compatible.

Financial Resources-
Fourth factor per 15A NCAC 7J.1202(d)(4)

The Town's report, specifically pages 30-35, provide the following information about the financial resources planned for future beach fill projects:

FINANCIAL PLAN.

9.1. Introduction. The Pine Knoll Shores project is one segment of an island-wide Bogue Banks Restoration Project that includes the island communities of Pine Knoll Shores, Indian Beach, Salter Path and Emerald Isle. Funding for the Bogue Banks Restoration Project was provided by each island community as well as Carteret County. As Carteret County moves forward with the formulation of its long-range protection plan, funding for the project would continue to be provided by the individual communities, however, Carteret County would assume a major role in providing the necessary funding for periodic nourishment by means of the County Beach Nourishment Fund that is supported by revenues generated by the room occupancy tax. While the Town of Atlantic Beach is not included in the Bogue Banks Restoration Project, Carteret County would provide financial support to assure disposal operations associated with maintenance of the Morehead City Harbor project extend along the full length of the town's shoreline. Financial support for Atlantic Beach from Carteret County would also be derived from the Beach Nourishment Fund.

Since periodic nourishment of all of the projects along Bogue Banks are inter-linked and depend on the County Beach Nourishment Fund as well as funds that would be provided by each community and the State of North Carolina, the financial plan presented here is applicable to each community on Bogue Banks.

9.2. Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 2 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of the various reaches along the island would be accomplished when the volume of material residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Note this nourishment criteria is more stringent than the one the Town of Pine Knoll Shores and other towns on the island adopted to remain eligible for FEMA post-disaster assistance and will be used to develop funding needs over the next 25 to 30 years. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

9.3. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 3 provides a cost estimate for each operation based on current (2010) dollars.

Table 3. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[(1)]				$175,000
S&A[(1)]				$175,000
Total Cost/Operation				$14,253,000

[(1)] E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004. While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the

2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

9.4. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection, as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget constraints do not allow material to be distributed along the entire Atlantic Beach shoreline. Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

9.5. Funding/Cost Allocation. As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Pine Knoll Shores.

The balance of necessary beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities.

Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 4.

Table 4. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.
[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

9.6. <u>County Room Occupancy Tax/Beach Nourishment Fund</u>. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 20 (blue line).

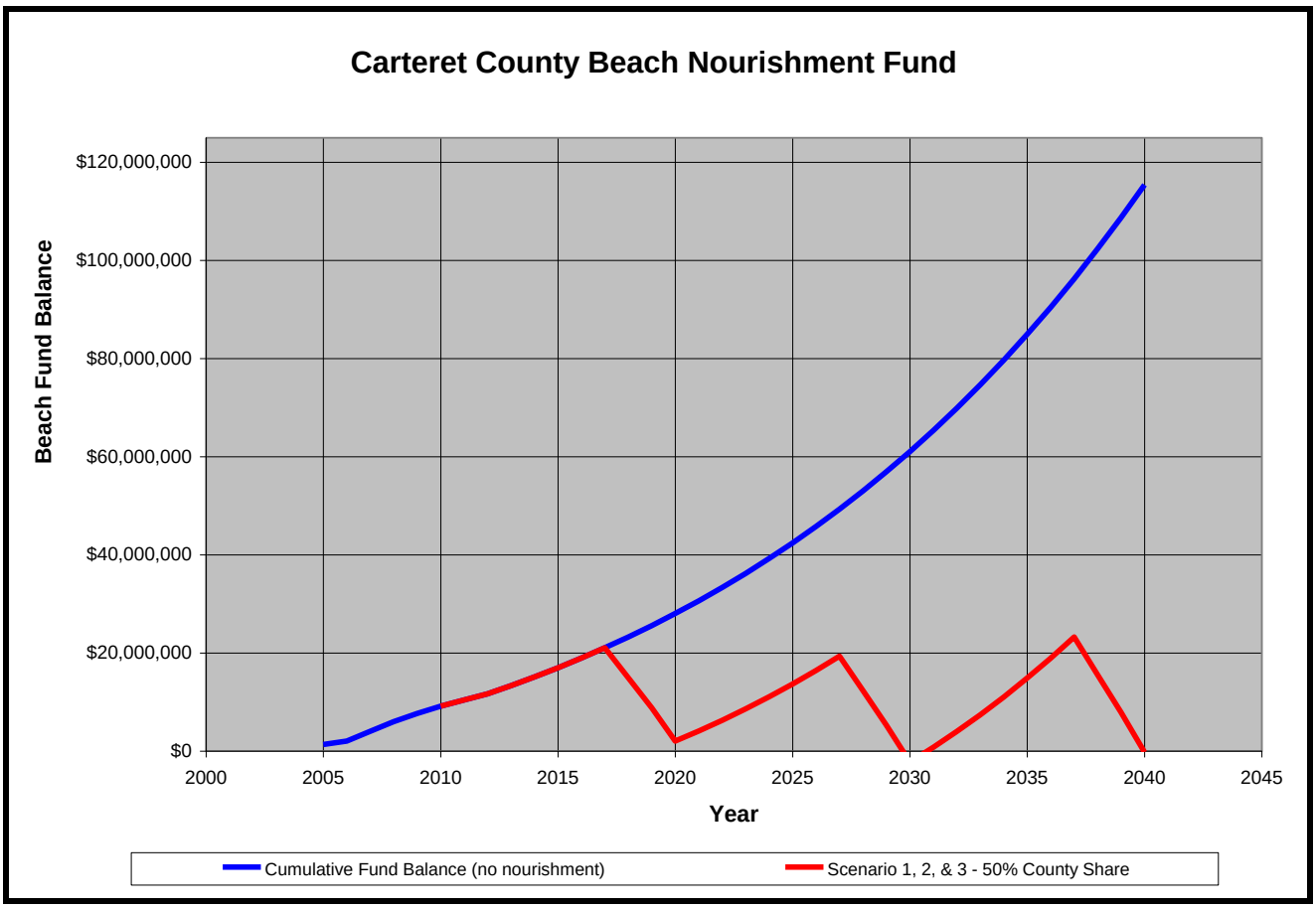

Figure 20. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 20 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

9.7. Pine Knoll Shores Funding Source

The Town of Pine Knoll Shores will need to provide $11.1 million over the 30-year time frame for future beach nourishment costs. The Town's financial plan would generate approximately $12.7 million over the 30-year planning period. The Pine Knoll Shores Board of Commissioners, by adoption of static line application report, has committed to levy new taxes, either through its General Fund or new special tax districts, beginning in 2011.

In 2001 Pine Knoll Shores generated $8 million through the sale of General Obligation bonds to support a beach nourishment project completed in April of 2002. The voters of the Town approved the issuance of this debt through a referendum. The Town committed to fund the debt service payments for these bonds with special district tax revenues levied for this purpose.

These special district taxes have been levied by the Town every year since FY 01-02. These special district taxes were initially established at rates of 40 cents per $100 of assessed value on all oceanfront properties and 4 cents on non-oceanfront properties. These rates were raised to 42 cents (ocean) and 6 cents (non-ocean) two years later to provide funding for a subsequent renourishment project. These rates were adjusted to the revenue-neutral rates of 16 cents (ocean) and 2.6 cents (non-ocean) after the 2007 Carteret County tax revaluation. In FY 09-10 the Town established a rate of 10.5 cents (ocean), and 1.5 cents (non-ocean).

FY 10-11 is the final year these taxes are necessary to fund debt service payments. These special district taxes have been levied annually in June by the Board of Commissioners as part of the adoption of the Town's official budget ordinance. NC General Statutes do not allow a town to establish multi-year property tax rates.

In its most recent Strategic planning session, The Board of Commissioners restated its intent to fund future beach renourishment activities through a future tax structure. Providing for future renourishment projects remains one of this Town's most important objectives.

Detailed County and Town revenue projections are included in Appendix B

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STAFF'S COMMENTS IN RESPONSE:

Half of the Pine Knoll Shores portion of the island-wide beach management project will be covered by Carteret County's beach nourishment monies funded through the Carteret County room occupancy tax. The remainder of the funding is expected to be received through State water resource grants (25% through the Division of Water Resources) and local special tax districts (25% from the Town). DCM is comfortable with this cost-share assumption as it reflects the actual funding percentage that DWR has provided to local governments during the past decade for the State's share in Federal Beach shore protection projects. DCM understands that the special tax district currently in place in the Town must receive annual approval as part of the budget process, but historic performance has shown this tax district to be widely accepted by

the Town and effective to pay the debt service on past beach fill projects. Further, the tax rate needed to meet the projections outlined in the Town's static line exception application is lower than the current tax rate in the Town's special tax districts and appears to be a realistic assumption that this method of financing can and will continue to occur for beach management funding. A signed resolution passed by the Town is included as supplemental information, which shows the commitment of local officials to accept this funding scenario as part of the island-wide beach management plan outlined in the Town's static line exception application.

IV. Staff's Recommendation

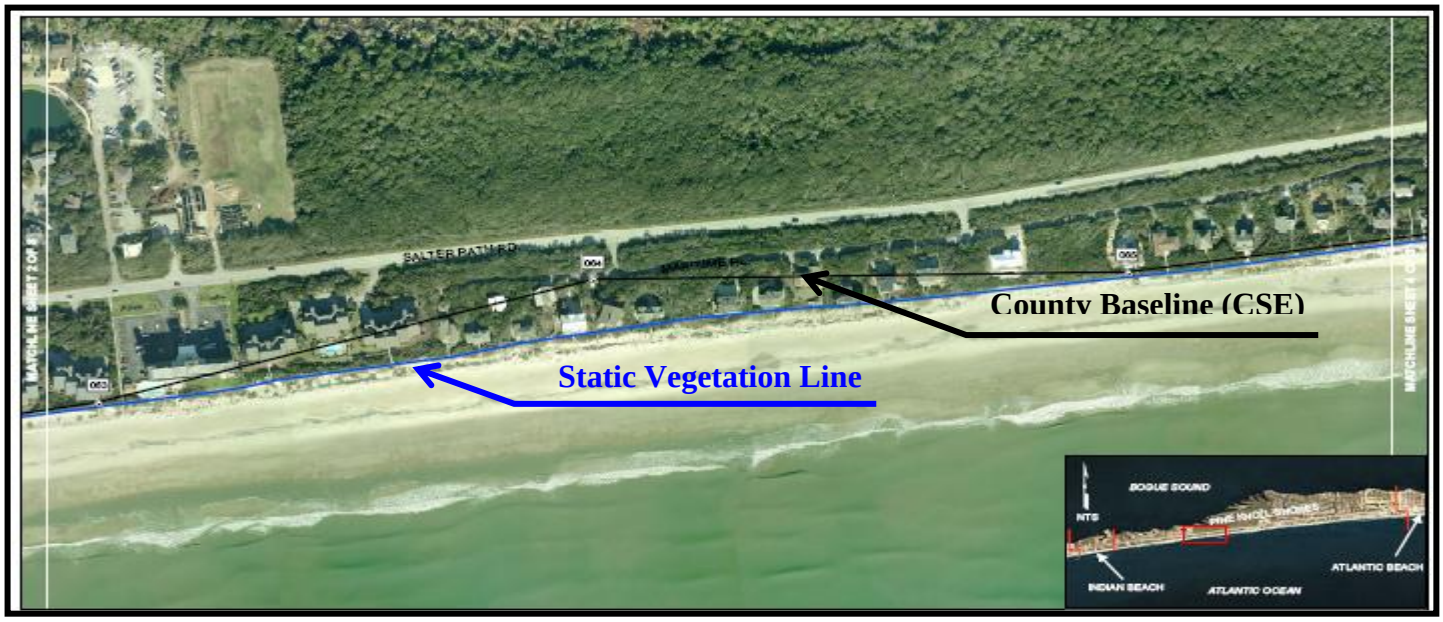
The Commission, through 15A NCAC 7J.1202(a)(4), directs Staff to provide a recommendation to the Commission whether it should grant or deny the Petitioner's Static Line Exception Request. Based on the Town's report and additional exhibits attached**,** Staff recommends that the Commission **GRANT** the Town's Petition for a Static Line Exception, and authorize the use of the rules at 15A NCAC 7H.0306(a)(8).

ATTACHMENT C
Petitioner's Report

Petitioner's Initial Report is Attached as an electronic file so that the report's photographs and diagrams can be viewed in color.

Pine Knoll Shores, NC
Static Line Exception Application Report

MARCH 2010



Prepared by:

Coastal Planning & Engineering of NC

For:

Town of Pine Knoll Shores, NC

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PINE KNOLL SHORES, NC
STATIC LINE EXCEPTION APPLICATION REPORT

1. PURPOSE.

The Town of Pine Knoll Shores is seeking an exception to the static vegetation line in accordance with the procedures outlined in 15A NCAC 07J .1201. A static vegetation line was established along the entire 4.5 miles of the town's ocean shoreline as a result of a large scale beach nourishment project constructed in 2001-02. The static vegetation line together with the recently adopted rule establishing graduated setback requirements based on building size (15A NCAC 07h .0306) has rendered 22 ocean front condominiums and 72 ocean front single family dwellings non-conforming. The following report provides information in support of the static line exception application as required by 15A NCAC 07J .1201.

2. PROJECT BACKGROUND.

In 1999, Carteret County, acting through its Beach Preservation Task Force (a forerunner to the Shore Protection Office), initiated planning for an island-wide shore protection project aimed at providing interim protection to development and infrastructure along the island until a long-term storm damage reduction project could be designed and implemented by the Corps of Engineers. The island-wide plan developed by the county is called the Bogue Banks Restoration Project. The county contracted Coastal Science & Engineering, PLLC (CSE) of Morehead City, NC to develop the plan. CSE also prepared an Environmental Assessment under the National Environmental Policy Act (CSE 2001a) and an Environmental Impact Statement required by the State Environmental Policy Act (CSE 2001b). The conceptual plan developed for the island-wide project is detailed in a report prepared by CSE entitled "Executive Summary – Shoreline Assessment and Preliminary Beach Restoration Plan, Bogue Banks, North Carolina" (CSE 1999). Following the review and approval of federal and state environmental documents, the project received a CAMA Major Permit Number 124-01 dated October 5, 2001 and a Department of the Army Permit #200000362 dated October 26, 2001. Minor modifications to the CAMA Major Permit were approved on October 4, 2002 with these same modification approved by the Department of the Army on October 22, 2002. The island-wide project was implemented in three phases and the permit modifications referenced above were granted prior to the construction of Phase II of the project.

The Bogue Banks Restoration Plan covers approximately 16.8 miles of the 25 mile long island and extends from the Atlantic Beach/Pine Knoll Shores (AB/PKS) town boundary west to approximately one mile east of Bogue Inlet (Figure 1). The project is sponsored by Carteret County with the Towns of Pine Knoll Shores, Indian Beach, and Emerald Isle included in the permits as co-permittees. The Town of Atlantic Beach was not included in the island-wide plan as it is the recipient of navigation maintenance material derived from the Morehead City Harbor federal navigation project.

The three phases of the island-wide project are shown in Figure 1. Phase I was accomplished in 2001-02 and included the 4.5 miles of ocean shoreline fronting the Town of Pine Knoll Shores (the focus of this static line report) and 2.4 miles along the shoreline segment that includes the Town of Indian Beach and the Village of Salter Path (Stations 48 to 76 in Figure 2). Material to construct Phase I was obtained primarily from the offshore borrow areas designated as B1 and B2 in Figure 1. The initial permit condition specified that if material is excavated from Borrow Area A, each cubic

yard removed from Borrow Area A had to be matched with 2 cubic yards from Borrow Area B (i.e. B1 or B2). However, this restriction was subsequently removed and material was allowed to be excavated from Borrow Area A without any restrictions. Phase II was constructed in 2003 and covered the eastern 5.9 miles of Emerald Isle west of the Indian Beach/Salter Path town boundary to a point approximately 1.5 miles east of the Bogue Inlet Fishing Pier (Stations 25 to 48 in Figure 2). Material for Phase II was obtained from Borrow Areas B2 and A (Figure 1). The modifications to the permits mentioned above were associated with changes in the length of Phase II and changes in the limits and dredge depths in Borrow Area B2. Phase III was constructed during the winter of 2005 with material removed from Bogue Inlet as part of the Bogue Inlet Channel Erosion Response project. Phase III covered the westernmost 4.5 miles of Emerald Isle to within about 1 mile east of Bogue Inlet (Stations 8 to 25 in Figure 2).

The Pine Knoll Shores portion of the Project was constructed between November 2001 and April 2002 as part of Phase I and included design specifications that triggered a static line. With initial construction completed in April 2002, the project satisfies a requirement of 15A NCAC 07J .1201 that the project must have been in place a minimum of 5 years prior to making the exception request.

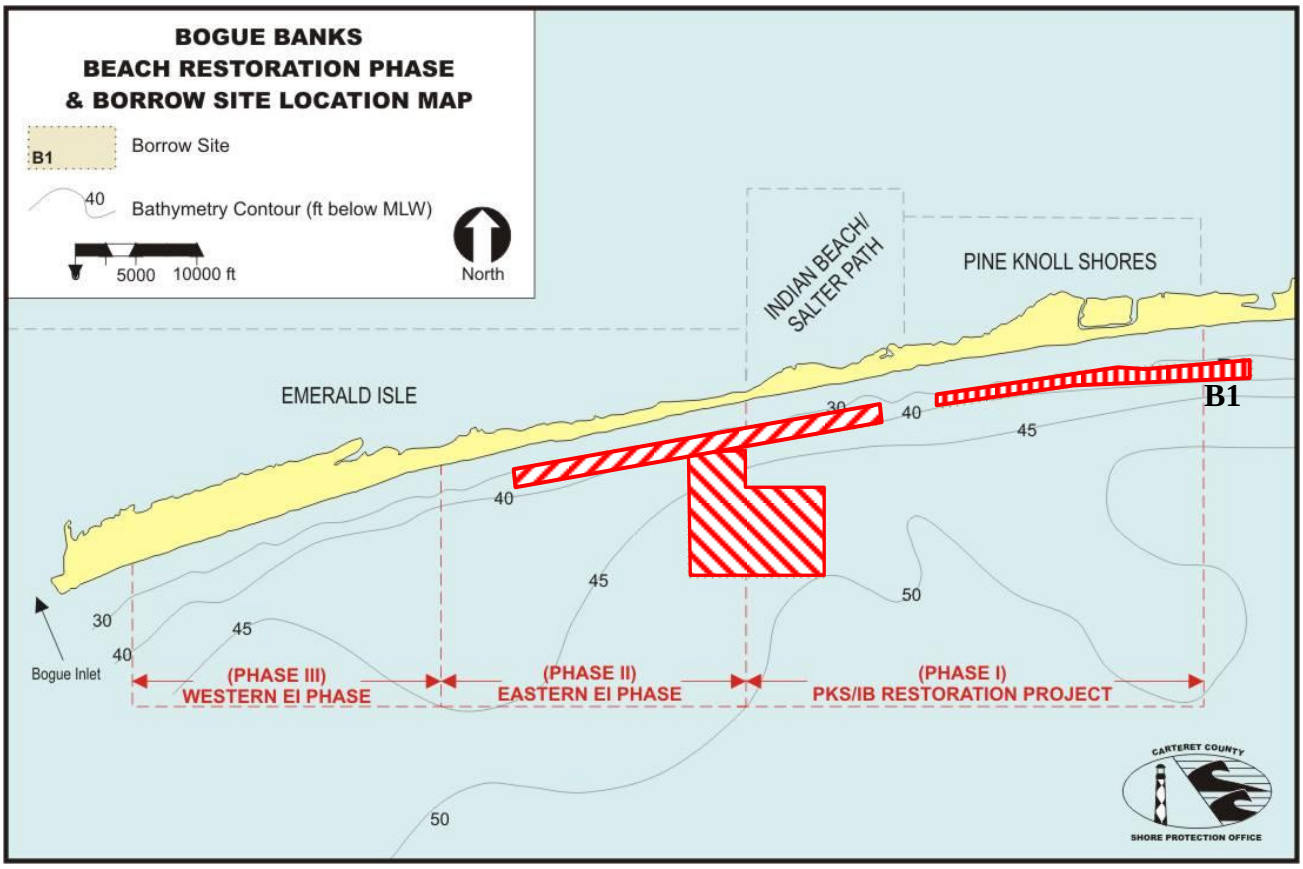

Figure 1. Bogue Banks Restoration Project (Map courtesy of the Carteret County Shore Protection Office).

3. PROJECT DESIGN.

During the active tropical storm period from 1996 to 1999, most areas along Bogue Banks experienced substantial damage to ocean front properties. The one exception was the Town of

Atlantic Beach which did not experience any appreciable damage. In this regard, the Town of Atlantic Beach and Fort Macon State Park were the recipients of almost 4.2 million cubic yards of sediment in 1986 and 4.6 million cubic yards in 1994, which were associated with maintenance and new construction of the Morehead City Harbor Project. The 1986 disposal operation included removal of sediment from Brandt Island (termed the Brandt Island pump-out), an upland disposal site for the Morehead City Harbor Project, and from maintenance of the inner harbor channels and turning basin. The 1994 operation included a combination of material from channel maintenance, new channel construction, and the second Brandt Island pump-out. As a result of these two disposal operations, Atlantic Beach had an exceptionally wide beach prior to the onslaught of the storms. Noting the lack of damage to Atlantic Beach, CSE targeted the profile condition along Atlantic Beach as the design template for the remainder of the island.

CSE surveyed 111 transects (Figure 2) spaced approximately every 1,000 feet along the entire island and computed the volume of material residing on each profile between the toe of the dune seaward to the 12-foot NAVD (North American Vertical Datum) depth contour. Based on the volume computations for the profiles located within the town limits of Atlantic Beach (see example profile in Figure 3), CSE adopted a design volume between the seaward toe of the dune and the -12-foot NAVD contour for the remainder of the island of 175 cubic yards/lineal foot. Given this design volume, CSE determined the volume of material that should be added to the shorelines of Pine Knoll Shores, Indian Beach, and Emerald Isle to increase the profile volume in these areas to 175 cubic yards/lineal foot. Since the purpose of the project at that time was to provide interim protection until the federal storm damage reduction project would be implemented, the total volume to be placed along the shoreline was increased by an amount deemed to be sufficient to accommodate 10 years of erosion at each location along the island.

The design profile volume for the Bogue Banks project was subsequently increased to 225 cubic yards per lineal foot to account for the volume of material from the landward toe of the dune to the seaward toe of the dune (CSE 2004).

The plan layout for the Pine Knoll Shores portion of the project, which was designated as Reach 5 and 6 in the overall plan, is shown in Figures 4 and 5. A 1,000-foot transition or taper section was provided on the east end of the fill. A taper section was not required on the west end of the fill as the project was constructed as a continuous fill through Indian Beach/Salter Path. Typical design templates for Reach 5 and 6 are provided in Figures 6 and 7, respectively. The beach fill was designed as a variable width horizontal berm at elevation +6.0 feet NAVD. Profiles showing the pre-nourishment and post-construction conditions are provided in Figures 8 to 12. The location of the typical profiles (Stations 60, 64, 68, 72, and 76) are indicated by red lines in Figure 2.

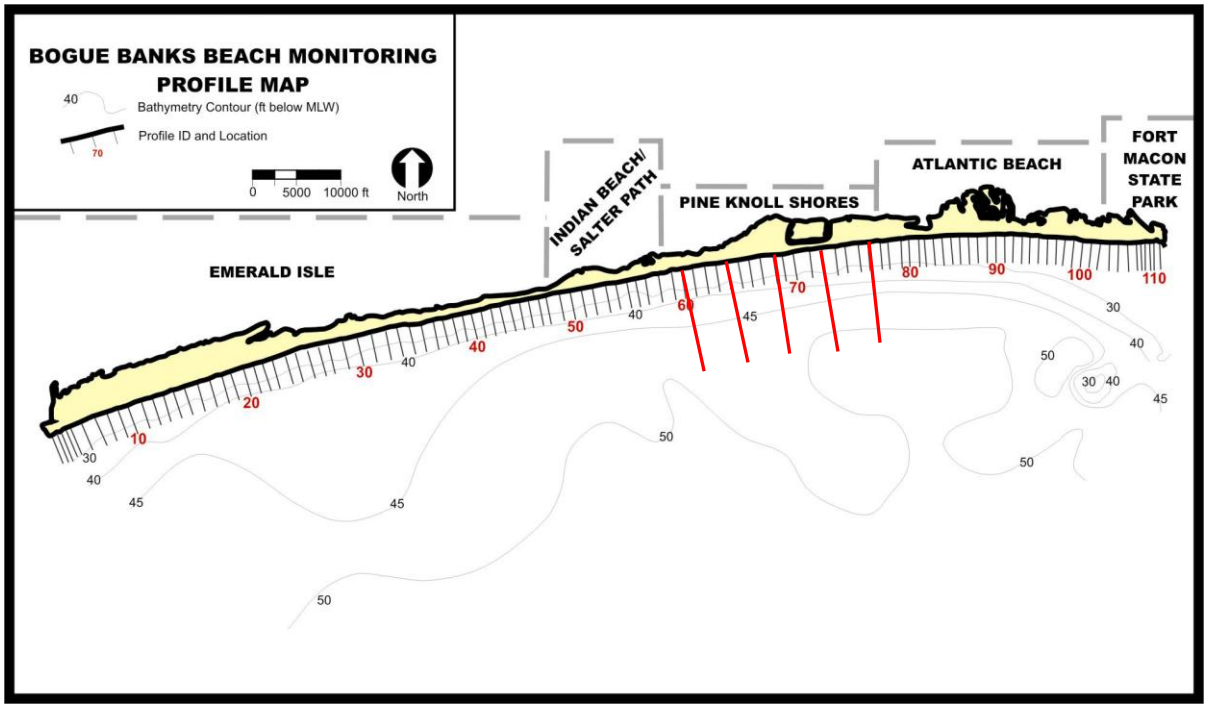

Figure 2. Location of 111 transects surveyed by CSE and location of typical profiles in Pine Knoll Shores (shown in red). (Base map courtesy of the Carteret County Shore Protection Office).

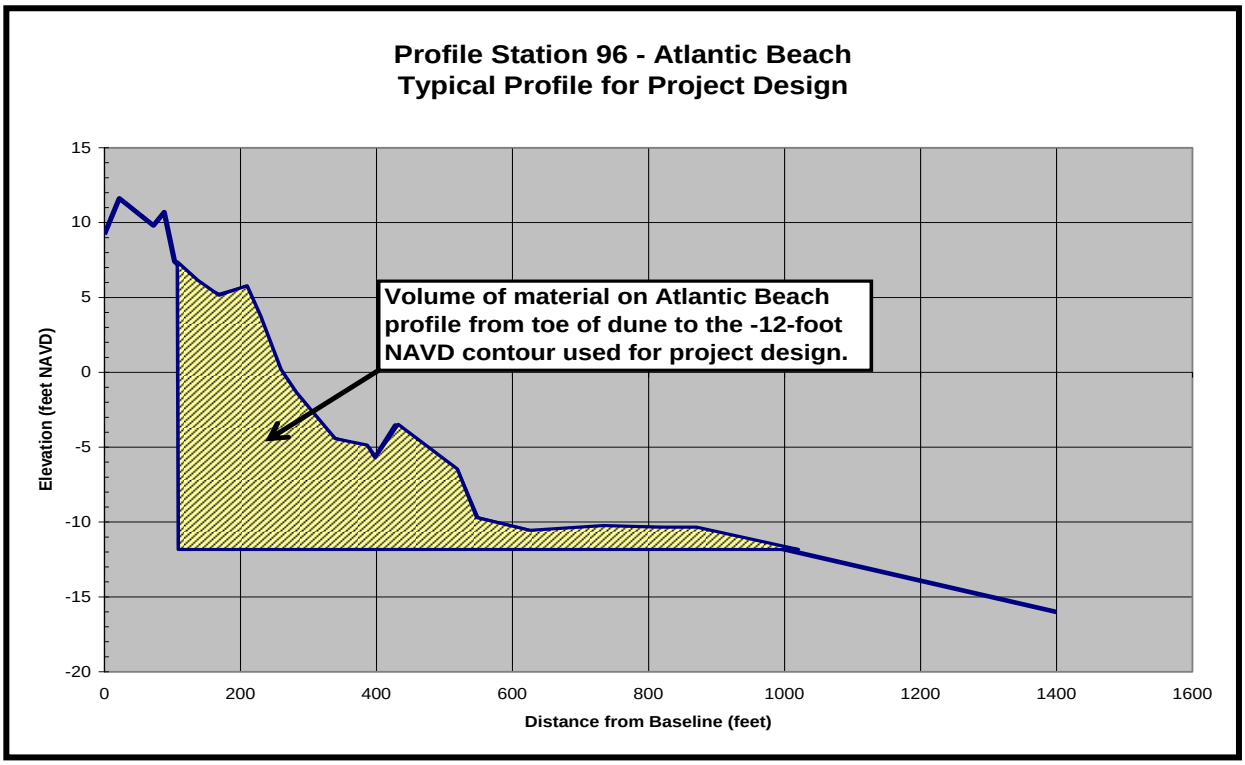

Figure 3. Typical profile on Atlantic Beach used to determine beach fill requirements for the remainder of Bogue Banks.

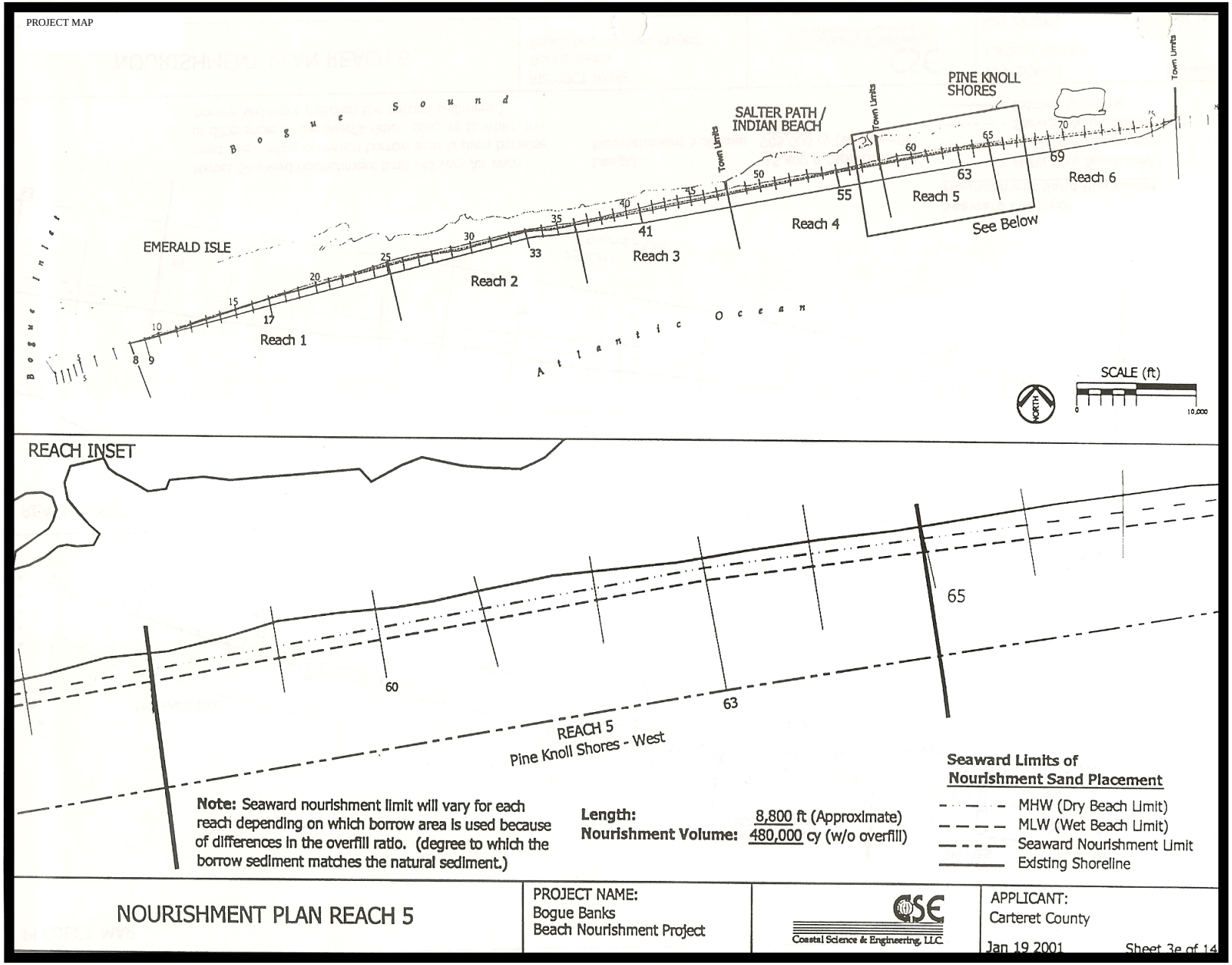

Figure 4. Plan view of Pine Knoll Shores beach fill project (Reach 5).

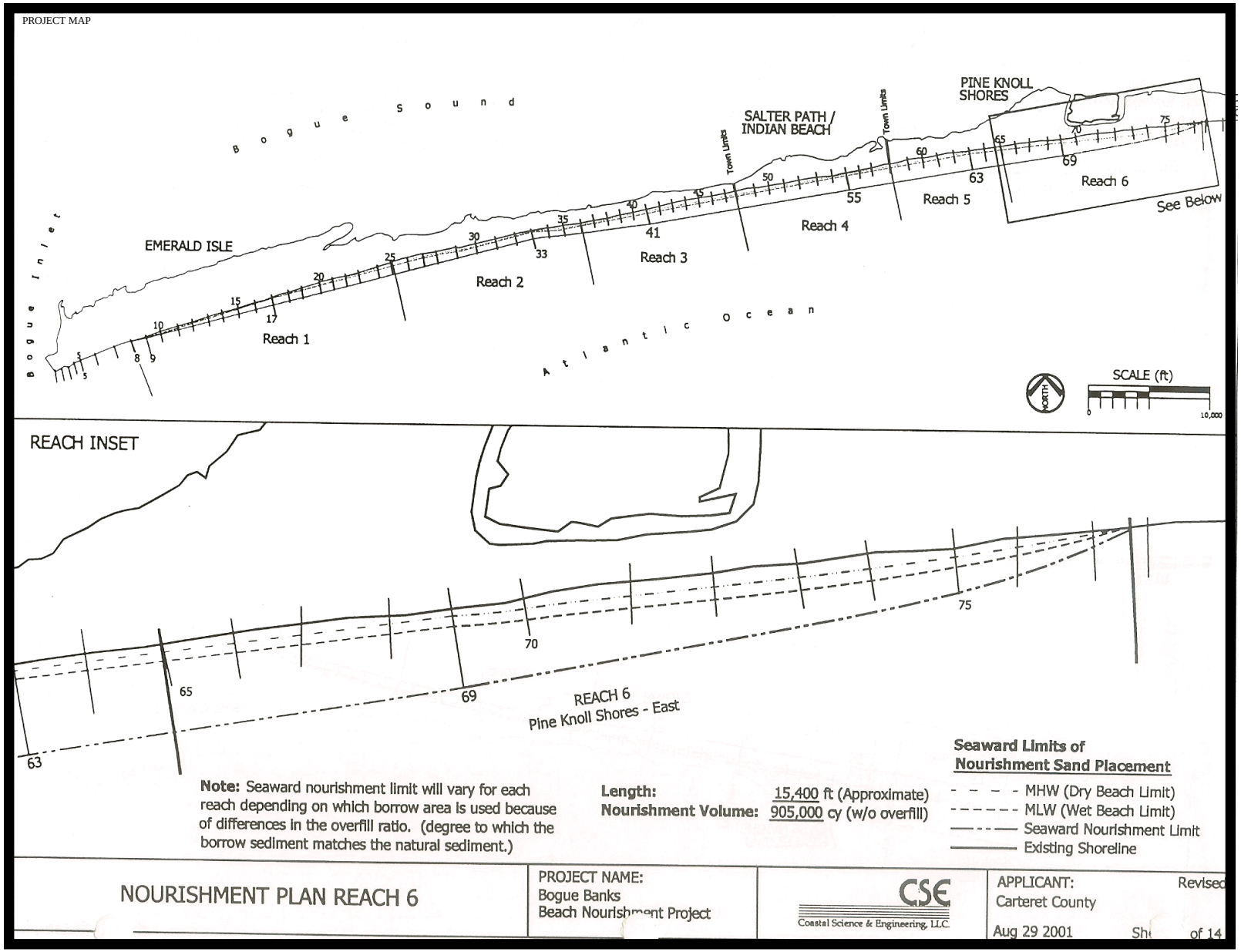

Figure 5. Plan view of Pine Knoll Shores beach fill project (Reach 6).

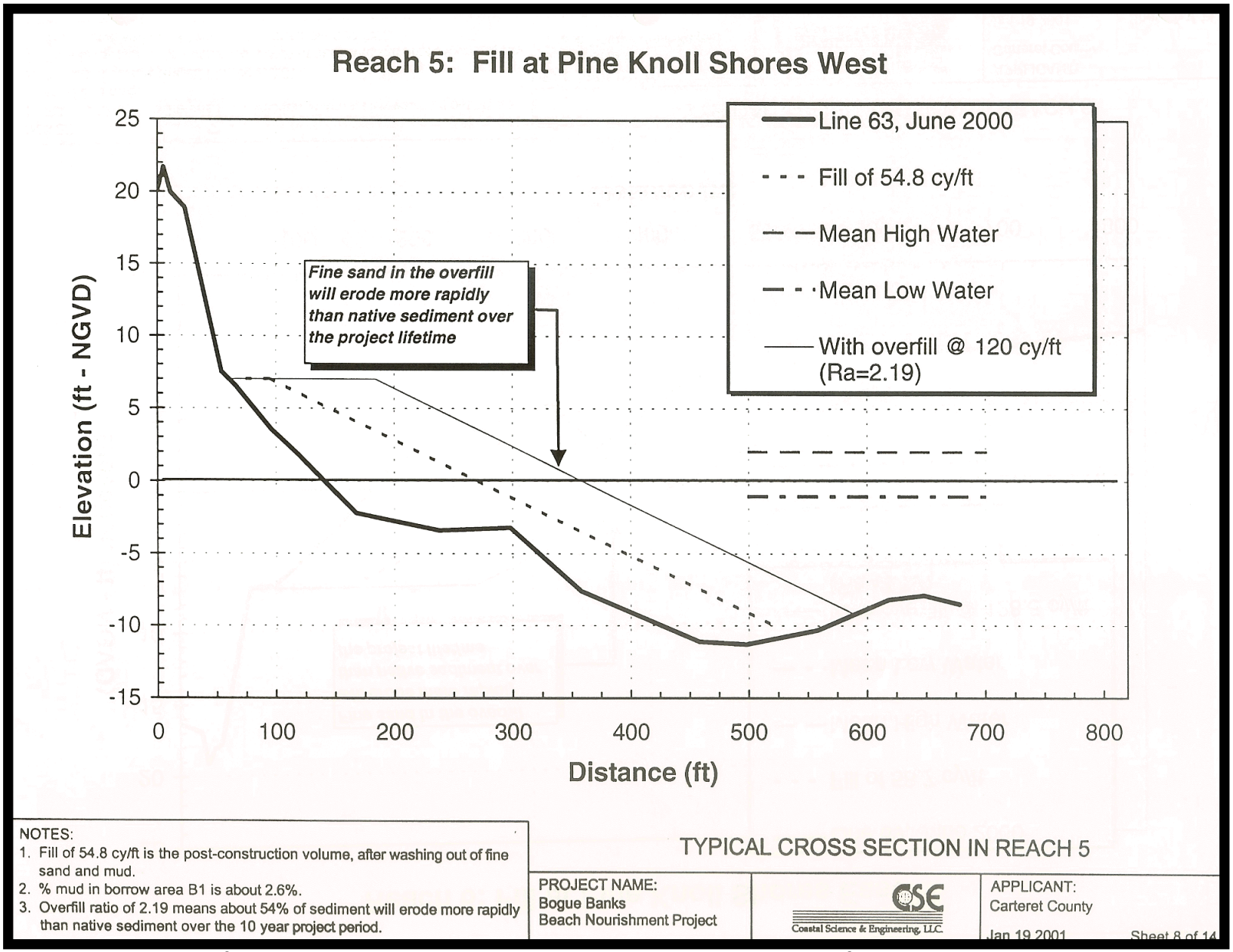

Figure 6. Typical Design Profile – Pine Knoll Shores (Reach 5). *Note: NAVD datum = +1.0 ft NGVD.*

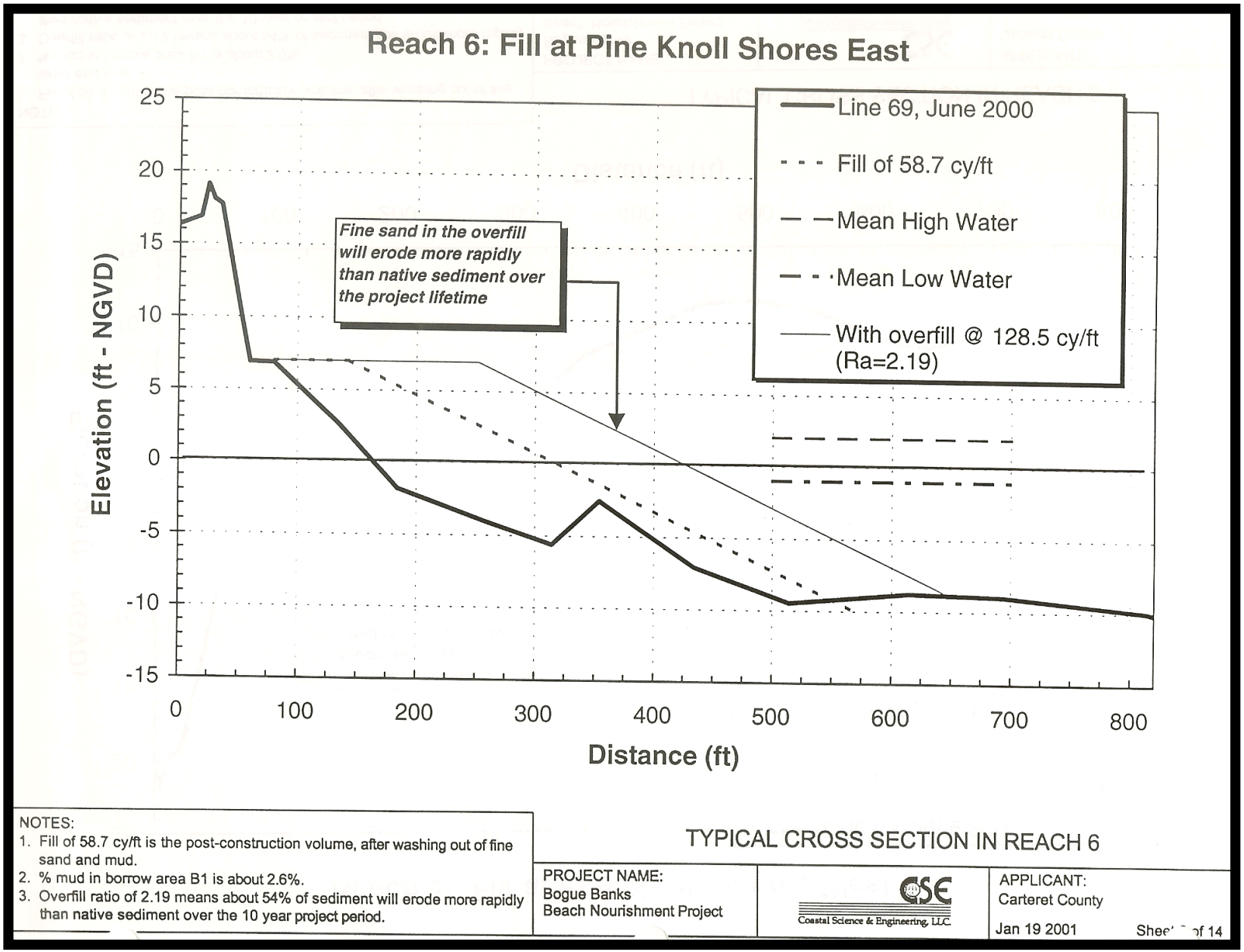

Figure 7. Typical Design Profile – Pine Knoll Shores (Reach 6). *Note: NAVD datum = +1.0 ft NGVD.*

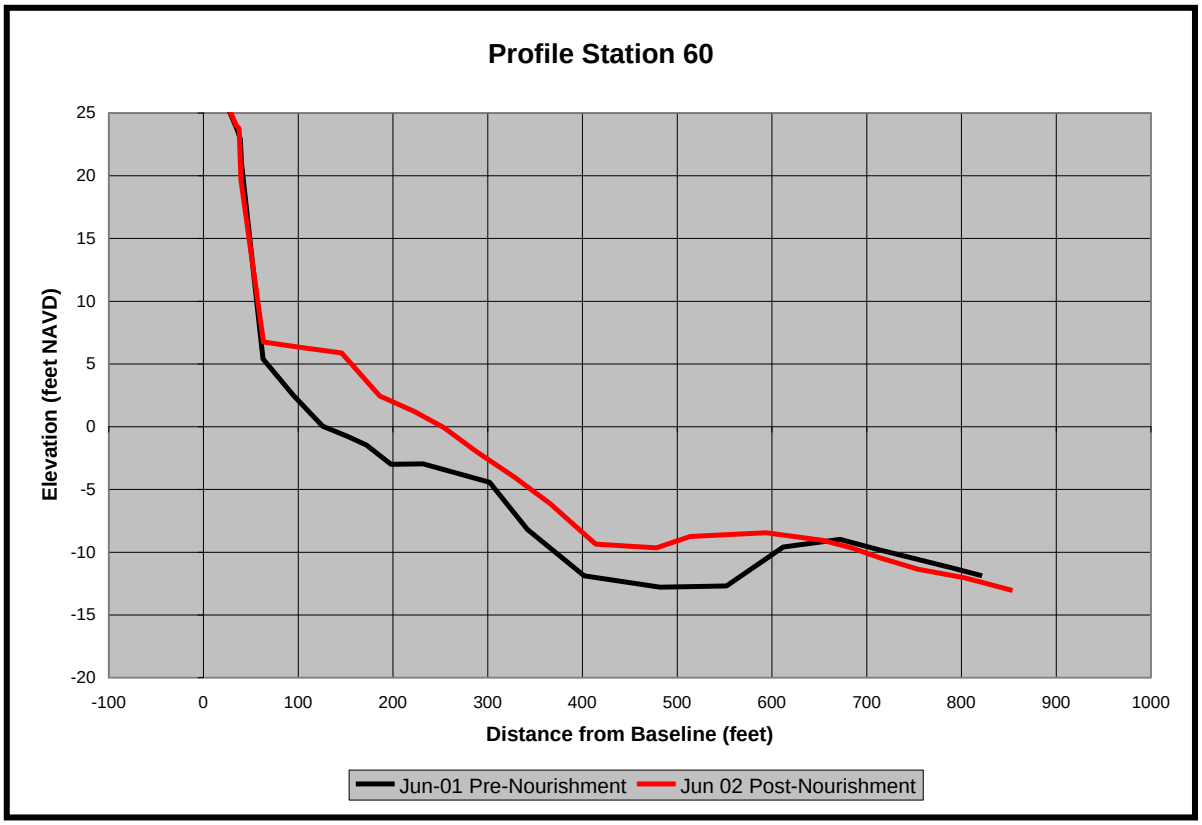

Figure 8. Profile Station 60 – pre- and post-nourishment.

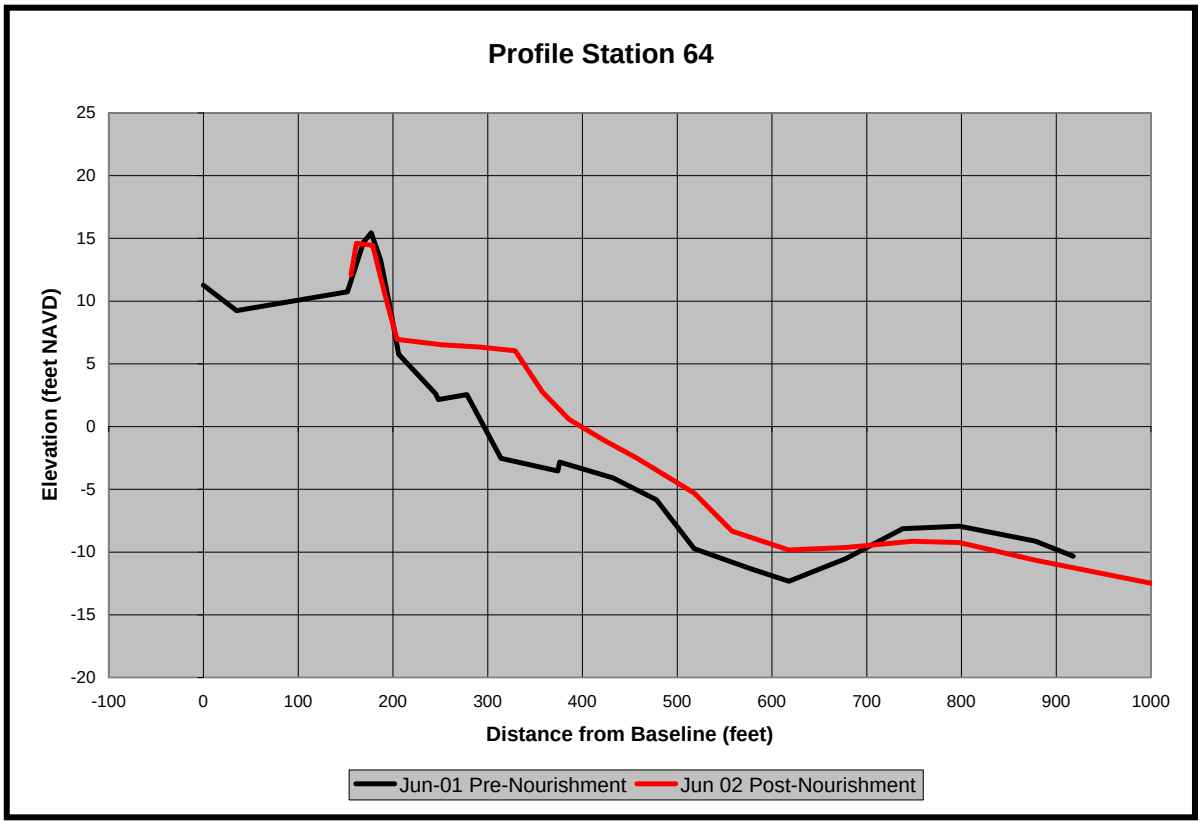

Figure 9. Profile Station 64 – pre- and post-nourishment.

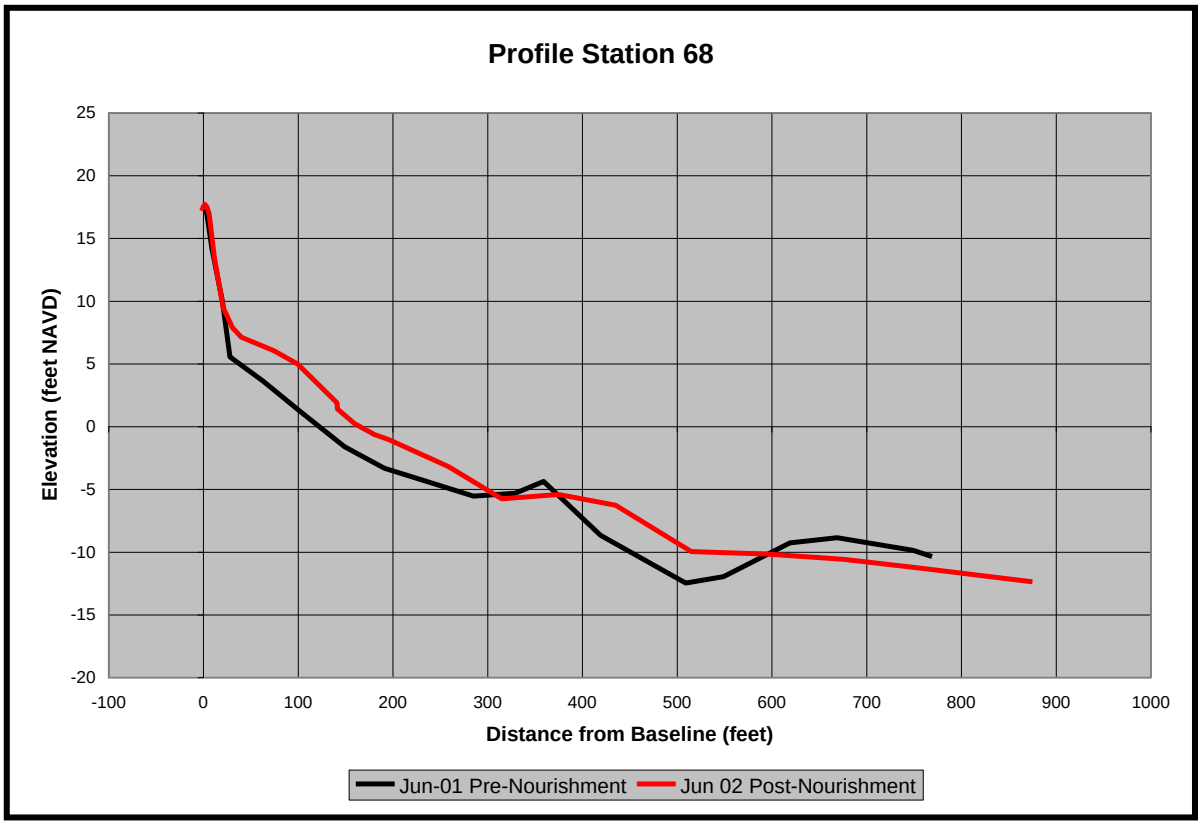

Figure 10. Profile Station 68 – pre- and post-nourishment.

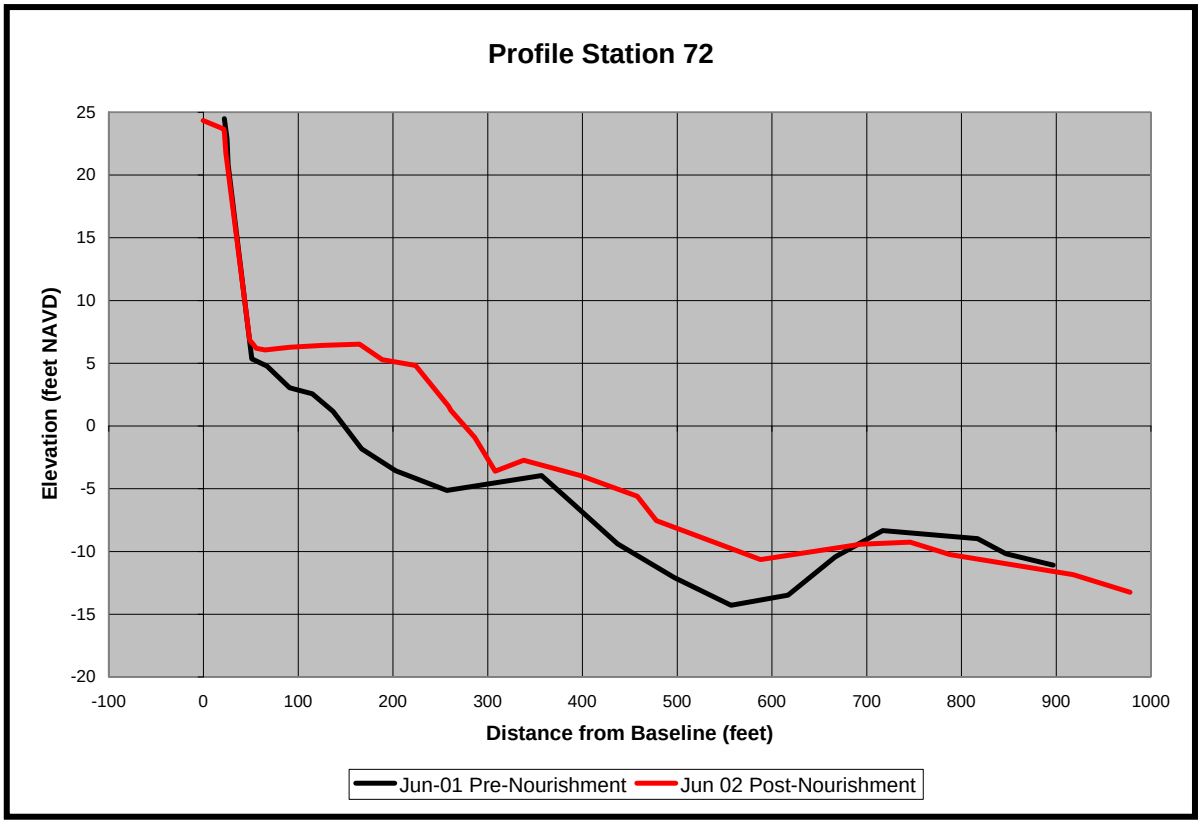

Figure 11. Profile Station 72 – pre- and post-nourishment.

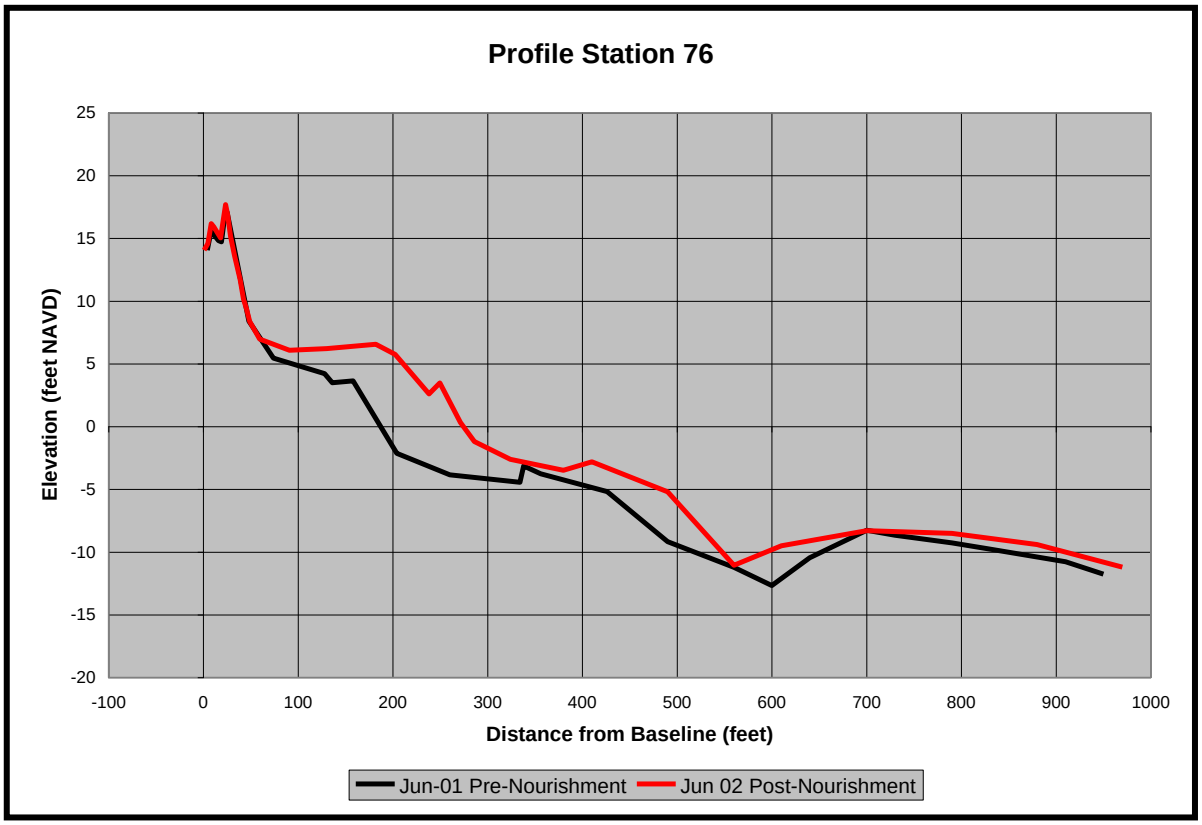

Figure 12. Profile Station 76 – pre- and post-nourishment.

4. PROJECT CONSTRUCTION AND ESTABLISHMENT OF STATIC VEGETATION LINE.

The Pine Knoll Shores and Indian Beach/Salter Path portions of the Bogue Banks Restoration Project (Phase I) were completed in April 2002 with the work contracted to Great Lakes Dredge & Dock Co. (GLDD). GLDD initially used two hopper dredges (*Manhattan Island and Sugar Island)* but delays in the construction progress associated with automobile tires that had broken off an artificial fishing reef and the taking of sea turtles required GLDD to mobilize a third dredge, the *Dodge Island*, in an attempt to complete the project by the April 30 permit deadline. Construction of Phase I was eventually halted on April 11, 2002 due to another turtle take. The previous delays and the work stoppage prior to April 30 resulted in a reduction in the volume of material placed along both Pine Knoll Shores and Indian Beach/Salter Path. Based on after construction profile surveys, the Town of Pine Knoll Shores received 1,276,586 cubic yards or about 9% less than the original contract amount. The amount surveyed in place along the Indian Beach/Salter Path shorelines totaled 456,994 cubic yards or about 41% less than the contract amount. The work stoppage resulted in two areas or "gaps" along the Indian Beach/Salter Path shoreline that did not receive any substantial fill volume. One gap was located approximately between stations 48 and 50 on the west end of Indian Beach and the other approximately between stations 52 and 54 in Salter Path (Figure 2). Most of the gap located between stations 52 and 54 lies within the Roosevelt State Park. Even though fill material was not placed directly in these areas, the two gaps soon equilibrated with material moving into the gaps from the adjacent beach fill areas.

The existing static vegetation line established along the Pine Knoll Shores shoreline as a result of the Phase I beach nourishment project is shown in Figure 13a to 13h.

Figure 13a Town of Pine Knoll Shores Static Line & Project Baseline.

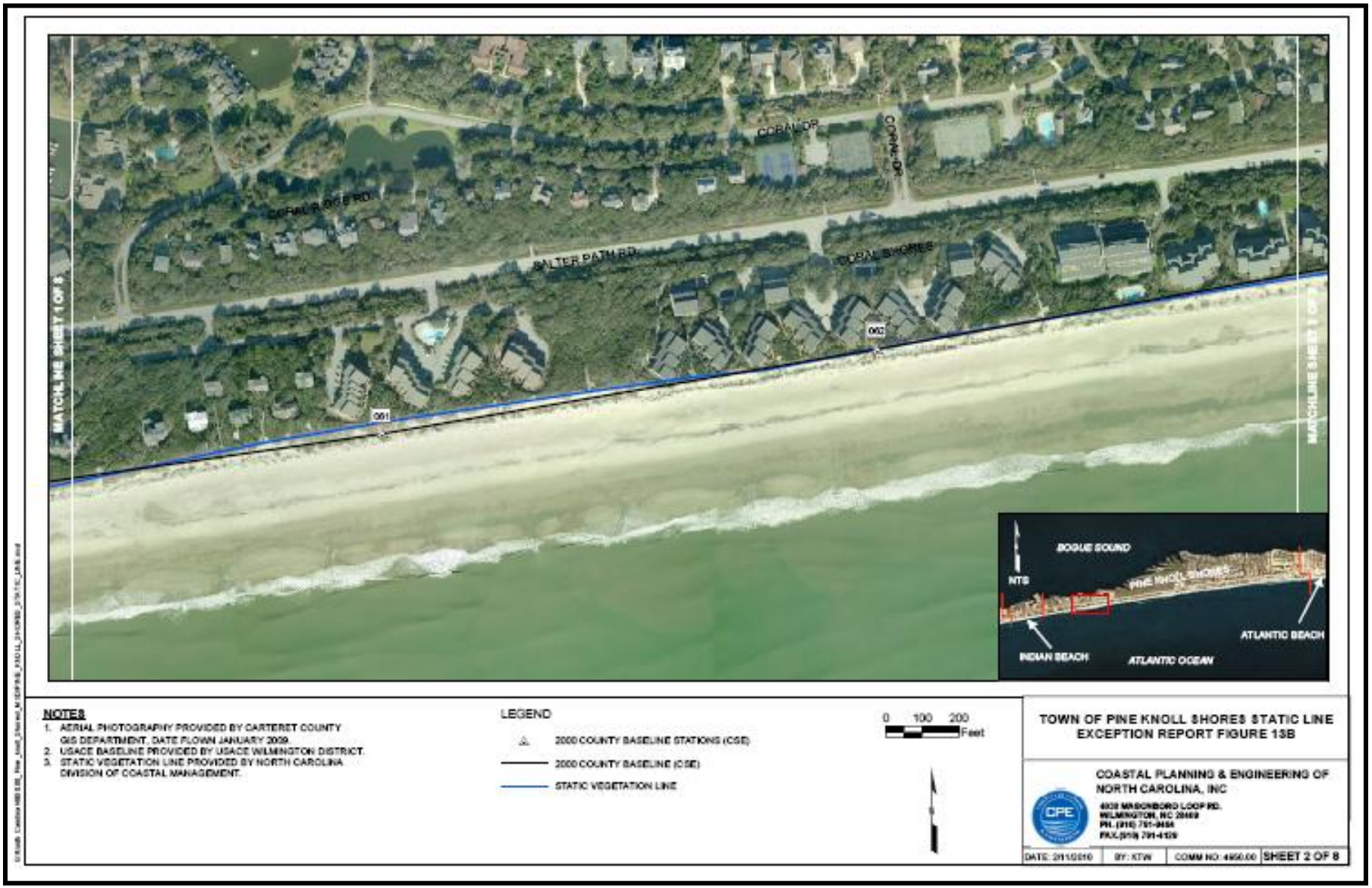

Figure 13b Town of Pine Knoll Shores Static Line & Project Baseline.

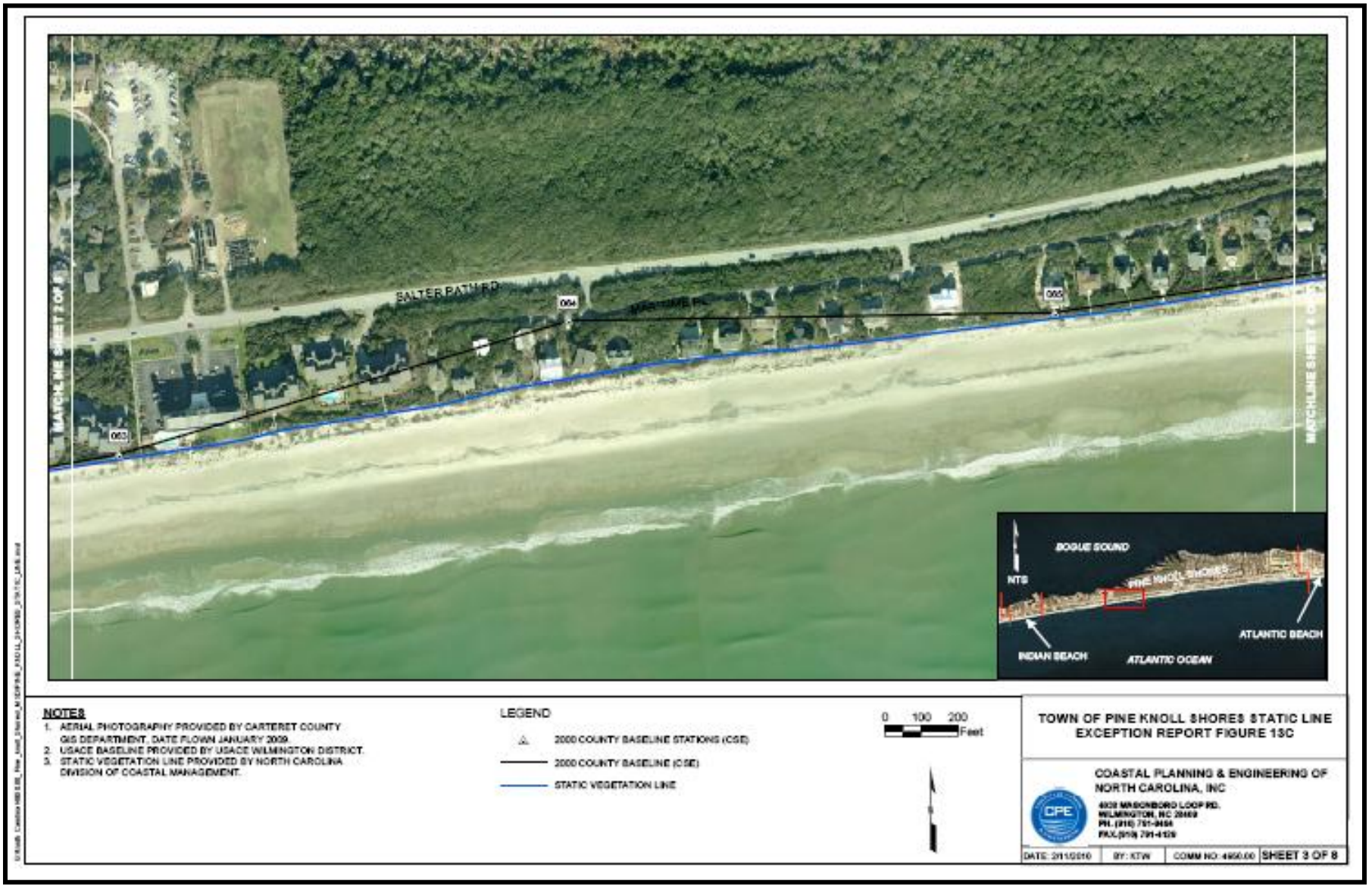

Figure 13c Town of Pine Knoll Shores Static Line & Project Baseline.

Figure 13d Town of Pine Knoll Shores Static Line & Project Baseline.

Figure 13e Town of Pine Knoll Shores Static Line & Project Baseline.

Figure 13f Town of Pine Knoll Shores Static Line & Project Baseline.

Figure 13g Town of Pine Knoll Shores Static Line & Project Baseline.

Figure 13h Town of Pine Knoll Shores Static Line & Project Baseline.

5. PERIODIC NOURISHMENT PLAN.

The Bogue Banks Restoration Project was initially intended to be an interim measure aimed at protecting the island until a long-term (50 year) federal storm damage reduction project could be implemented. However, given the uncertainties associated with federal authorization for such a project and concerns over federal funding once federal authorization is attained, each of the island municipalities adopted periodic nourishment plans to assure adequate protection is maintained until the federal project is put in place. Also, Carteret County, acting through the Shore Protection Office, established a detailed beach profile monitoring program to document the condition of the beach fills placed along the island and determine where and when beach nourishment would be required.

Pine Knoll Shores Periodic Nourishment Plan. The periodic nourishment plan adopted by the Town of Pine Knoll Shores has two nourishment "triggers", one presented to the Federal Emergency Management Agency (FEMA) to comply with that agency's requirements for federal post-storm reconstruction assistance following a declared federal disaster and the other tied to the engineering formulation of the Bogue Banks Restoration Project. The FEMA nourishment trigger requires nourishment to be accomplished when one-half of the initial construction volume is lost from the fill. For Pine Knoll Shores, the initial construction volume (measured in place) was 1,276,586 cubic yards and the resulting FEMA nourishment trigger is the loss of 638,293 cubic yards from the initial fill. The second nourishment trigger is based on maintaining a minimum volume of material on the profile from the landward toe of the dune seaward to the -12-foot NAVD depth contour of 225 cubic yards/lineal foot of beach. The existing condition of the beach fill, its past performance, and the relation of the project performance to the two nourishment triggers is provided below in the project performance section.

Again citing the uncertainties with continued federal involvement in shore protection, Carteret County has initiated a detailed assessment of the long-term shore protection requirements for Bogue Banks in the absence of federal funding that will also include compulsory documentation associated with State and National Environmental Protection Act coordination, and the successful procurement of permits to construct and maintain the Shore Protection Program. This long-term effort is directly related to and compliments the nourishment plan presented in this static line report as it will detail the many logistics required to execute future nourishment events (i.e., geotechnical and remotely-sensed information, habitat mapping, mitigation plans, endangered species considerations, etc.).

6. PROJECT NOURISHMENT HISTORY.

The Pine Knoll Shores portion of the Bogue Banks Restoration Project has been nourished on three occasions since initial construction. The first nourishment occurred between February and March 2004 as part of Phase I of the Section 933 project associated with the USACE maintenance of the Morehead City Harbor federal navigation project. Phase I also included the Indian Beach/Salter Path shoreline (Figure 14). Section 933 of the Water Resources Development Act of 1986 allows the State and local sponsors to cost share with the federal government in the added cost of depositing material in areas other than the least cost disposal site. Under normal operating conditions, the material removed from the Beaufort Inlet bar channel would be deposited offshore in the Offshore Dredged Material Disposal Site (ODMDS) or in a near shore disposal mound situated immediately west of the inlet's ebb tide delta. For the Section 933 project, Weeks Marine, the firm contracted by USACE to perform the work, used a hopper dredge to haul the material to mooring sites located immediately

offshore of Pine Knoll Shores and Indian Beach/Salter Path. From the mooring sites the material was pumped to the beach via a submerged pipeline. Phase I of the Section 933 project placed 630,094 cubic yards of material along the entire shoreline of Indian Beach and Salter Path and 69,189 cubic yards on the western 2,500 feet of Pine Knoll Shores (Figure 14).

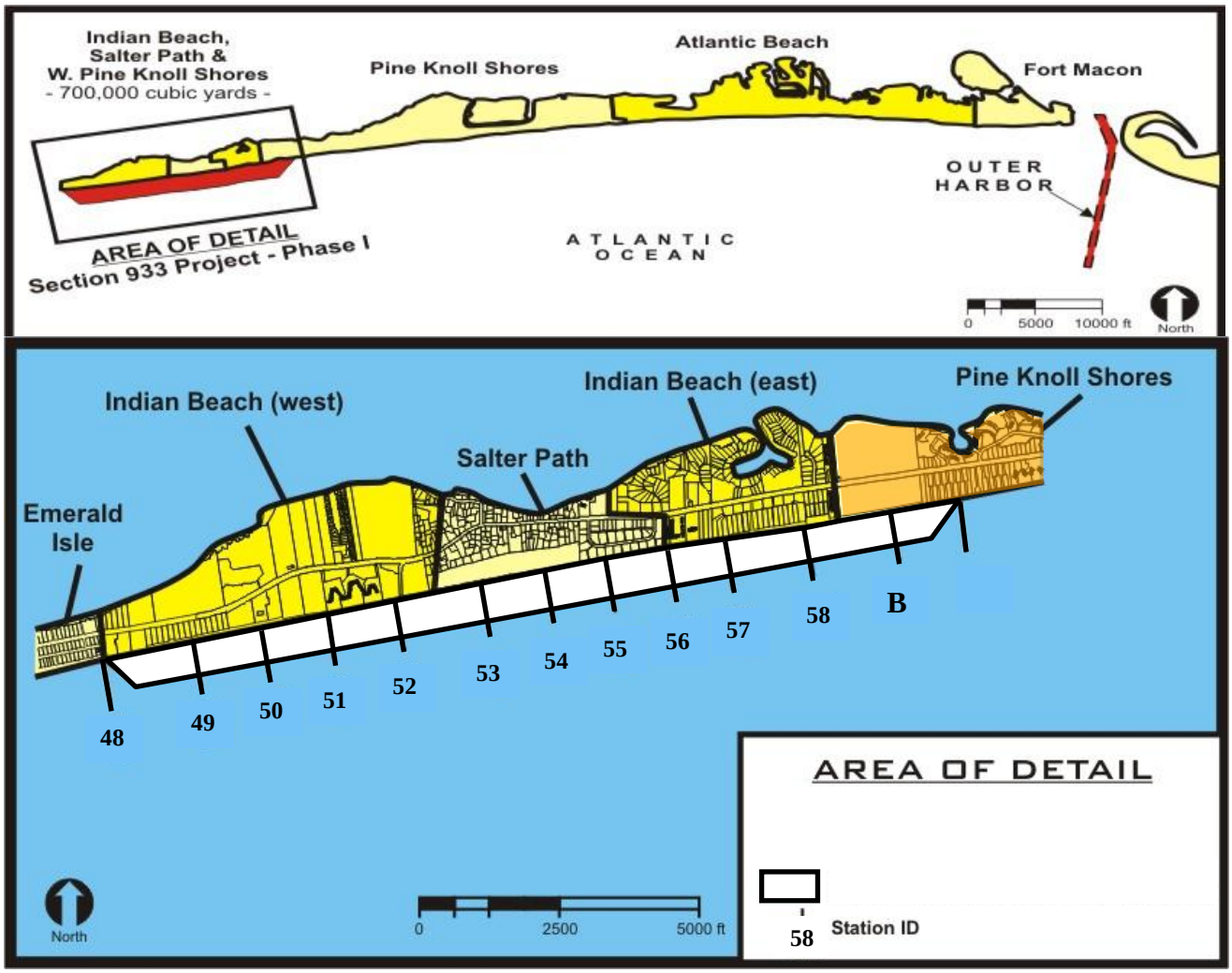

Figure 14. Beach nourishment limits for Phase I of the Section 933 Project. (Base map courtesy of the Carteret County Shore Protection Office).

The second nourishment operation occurred between January and March 2007 as Phase II of the Section 933 project. The work was also contracted to Weeks Marine by the USACE. All of the material removed from the bar channel during Phase II of the Section 933 project was deposited on the beach in two locations within the town limits of Pine Knoll Shores. The locations of the two beach nourishment areas are shown in Figure 15 (red bars).

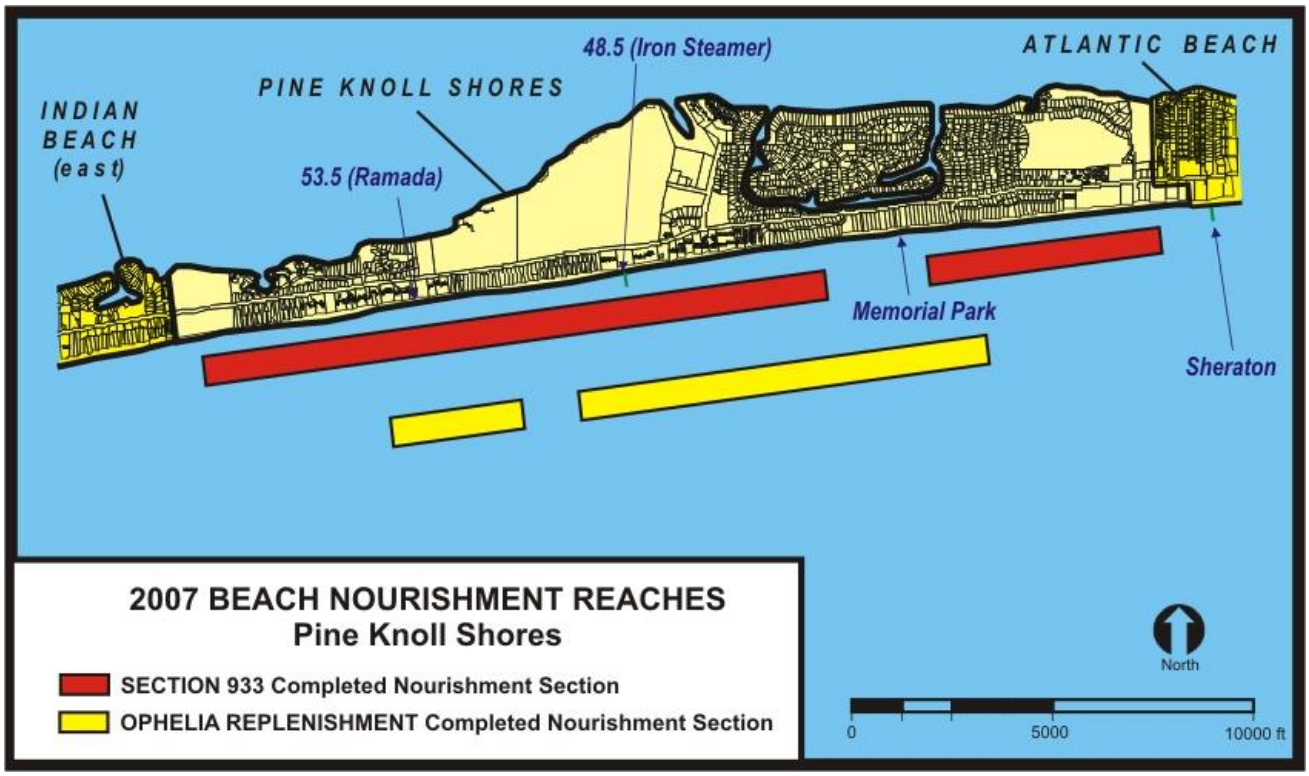

Figure 15. Location of nourishment areas for the Hurricane *Ophelia* restoration and Phase II of the Section 933 Project (Map courtesy of the Carteret County Shore Protection Office).

The third nourishment operation also occurred between January and March 2007 and was carried out to replace material lost during Hurricane *Ophelia* which struck the area in September 2005. Following the advent of Hurricane *Ophelia* in September 2005, the Town of Pine Knoll Shores along with the other island communities applied to FEMA for funds to restore the material lost during *Ophelia* under Category G of FEMA's Public Assistance Program. Specifically, the Public Assistance Program allows FEMA to provide funds to restore an "improved" or engineered beach providing the applicant can demonstrate the beach fill project had a designed template and grain size, a maintenance plan, and pre- and post-storm beach profile surveys. In its application, the Town of Pine Knoll Shores as well as the other towns along the island included in the Bogue Banks Restoration project were able to demonstrate they met all of the FEMA requirements including an engineered beach, a nourishment plan (as described above), and monitoring program and was subsequently approved to receive reimbursement funds to restore the beach to the pre-storm condition. Carteret County and the three beach towns obtained modifications to its original permits from both the Corps of Engineers and the Division of Coastal Management to allow the use of the Offshore Dredged Material Disposal Site (ODMDS) for the Morehead City Harbor navigation project (Figure 16) as a borrow source for the post-*Ophelia* restoration. The work was contracted to GLDD.

Profiles of the beach taken before and after Hurricane *Ophelia* indicated a total of 1,107,560 cubic yards had been eroded from the Bogue Banks Restoration Project. Of this total, 239,796 cubic yards was lost from the two sections of the Pine Knoll Shores portion of the project shown in Figure 15 (yellow bars). The measured loss in the western section was 59,560 cubic yards while the central portion lost 180,236 cubic yards.

Figure 16. Morehead City Harbor Offshore Dredged Material Disposal Site (ODMDS) with area used for post-storm restorations shown in red.

Geotechnical investigation of the ODMDS conducted by CSE prior to the Hurricane *Ophelia* restoration project yielded an average mean grain size of 0.31 mm which compared favorably with the native beach mean grain size of 0.30 mm. Post-placement sampling of the material on the beach yielded a slightly larger mean grain size of almost 0.36 mm. During the hopper dredge operation, the dredge slurry (water and sediment) is continually pumped into the dredge's hopper and water is allowed to overflow back into the ocean until the hopper is full with sediment. As the water overflows the hopper, finer grained material is also discharged back into the ocean leaving only the coarser material to be delivered to the beach. The hopper filling and overflow process combined with the winnowing of fine grain sediments during the actual beach disposal operation are primarily responsible for the coarseness of the material found in place on the beach compared to the in situ samples taken from the vibracores.

Based on after-construction surveys of the in place fill, the total volume deposited in Pine Knoll Shores was 262,276 cubic yards with 73,387 cubic yards measured in place in the western section and 188,879 cubic yards measured in place in the central section (yellow bars depicted on Figure 15). The total cost of the restoration was $13,773,800 all of which was provided by FEMA. Of this total restoration cost, $3,311,582 was allocated to Pine Knoll Shores.

A summary of the initial beach nourishment operation and the three nourishment operations within the town limits of Pine Knoll Shores is provided in Table 1.

To date, periodic nourishment under the Town adopted nourishment plan has not been required. Additional discussion of the performance of the project is provided below.

Table 1
Pine Knoll Shores Nourishment History

Event	Date	Fill Limits Approx. Sta Nos.	Length (ft)	Borrow Area	Volume (cy)	Cost-Sharing		
						Local	State	Federal
Initial Construction	Nov 01 – Apr 02	59 to 76	23,875	A, B1 & B2	1,276,586	$7,550,000	$0	$0
Phase I – Sec 933 Project	Mar-Apr 2004	59 to 61	2,500	Beaufort Inlet	162,443	$394,975[(1)]	$1,184,925	$4,814,900
Phase II – Sec 933 Project	Jan – Mar 2007	58 to 70 73 to 77	16,141 5,640	Beaufort Inlet	432,820 75,119	$678,000[(2)]	$2,000,000	$7,600,000
Post-Ophelia	Jan-Mar 2007	62 to 65 66 to 73	3,454 10,124	ODMDS	73,397 188,879	$0	$0	$3,311,600

[(1)] Pine Knoll Shores share of local cost = $66,542
[(2)] Local share provided by the Town of Pine Knoll Shores.

7. PROJECT PERFORMANCE.

The performance of the Pine Knoll Shores project has been monitored on an annual basis by the island-wide beach profile monitoring program conducted under the auspices of the Carteret County Shore Protection Office. The profile monitoring program began in June 1999 prior to the construction of the beach fills projects. Annual reports summarizing the results of the monitoring surveys including the performance of the beach nourishment projects along Bogue Banks have been prepared since 2002-03 and are available from the Shore Protection Office website (http://www.protectthebeach.com/Monitoring/monitoring.htm).

The Pine Knoll Shores portion of the Bogue Banks Restoration Project includes a total of 18 profiles, numbered 59 to 76, that are surveyed annually and following significant storm events. Representative plots of the typical profiles 60, 64, 68, 72, and 76, the location of which are indicated in Figure 2, are provided in Appendix A.

A plot of the cumulative changes in the volume of material from the back toe of the dune seaward to the -12-foot NAVD contour for Pine Knoll Shores is shown in Figure 17 This plot begins in June 1999, prior to the construction of the project, and extends through June 2009. The large jump in the cumulative volume curve in April 2002 was due to the initial construction of the project which added 1,276,586 cubic yards to the 4.5 mile shoreline. Prior to initial construction, the cumulative volume change within Pine Knoll Shores since June 1999 had dropped to -120,470 cubic yards. The minor fill placed along the western 2,500 feet of Pine Knoll Shores during construction of Phase I of the Section 933 project is indicated in Figure 17 as well as the total volume added by both the Phase II Section 933 and the post-Hurricane *Ophelia* restoration projects completed in March 2007.

The periodic nourishment plan for Pine Knoll Shores includes two nourishment triggers, both of which are shown in Figure 17. The "FEMA Nourishment Trigger" is based on the loss of one-half of the initial construction volume or 638,293 cubic yards. The loss of this volume of material would

lower the cumulative volume since June 1999 to 517,823 cubic yards. Again, this volume is measured from the landward toe of the dune to the -12-foot NAVD contour. The second nourishment trigger, designated as the "Design Nourishment Trigger" in Figure 17, is based on maintaining a minimum volume of 225 cubic yards/lineal foot of shoreline between the landward toe of the dune and the -12-foot NAVD contour. For Pine Knoll Shores, the Design Nourishment Trigger is the larger and would therefore dictate when nourishment should be performed in order to keep the project up to its design requirements.

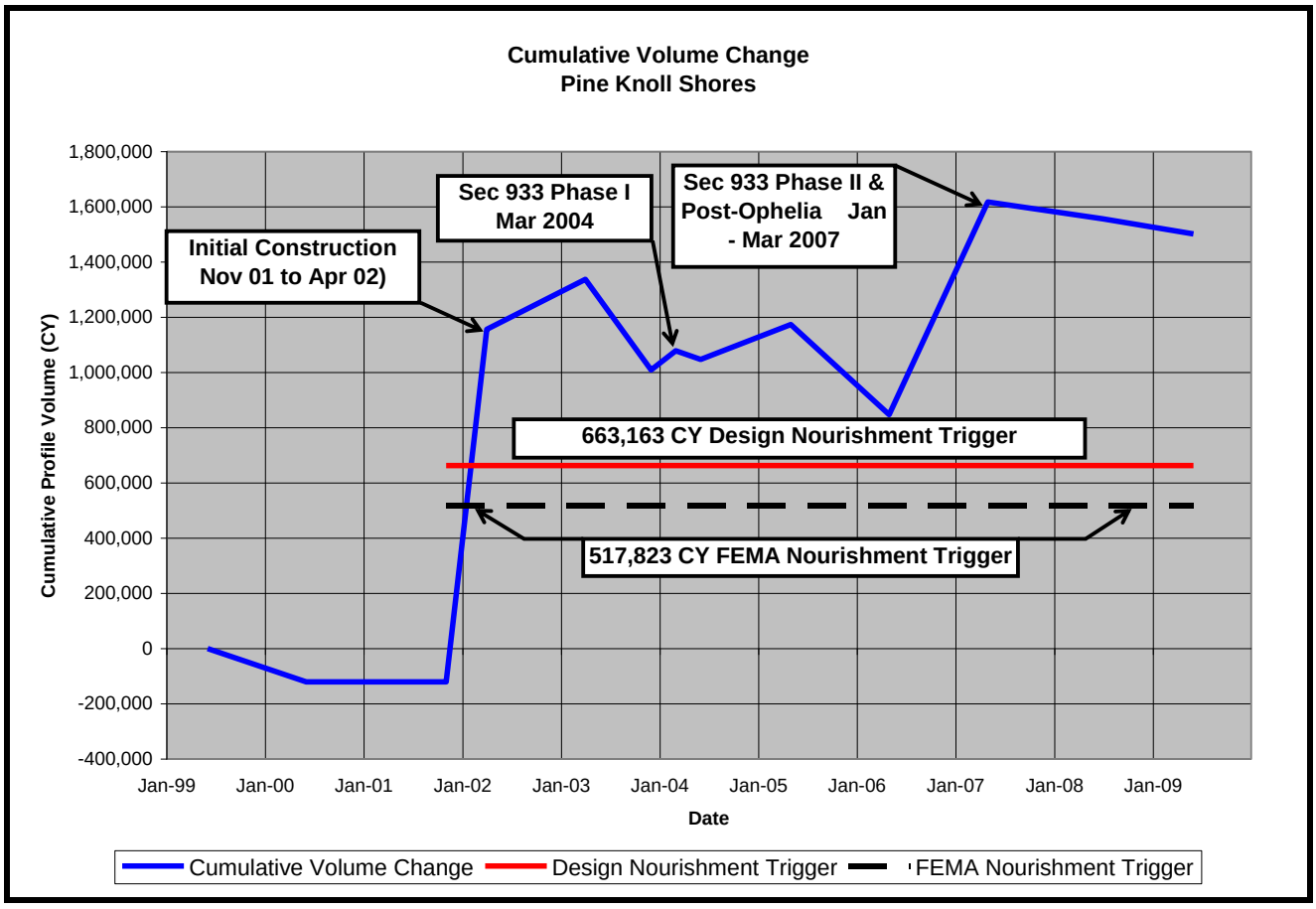

Figure 17. Cumulative beach profile volume change along Pine Knoll Shores – June 1999 to June 2009.

As of June 2009, the volume of material remaining on the beach within the town limits of Pine Knoll Shores was 1,501,732 cubic yards compared to the volume measured in April 2003 of 1,336,820 cubic yards. This represents a net gain of 164,912 cubic yards over the 6.17 year period. Phase I of the Section 933 project added 69,189 cubic yards of material to the Pine Knoll Shores shoreline and the combination of Phase II of the Section 933 project and the post-Hurricane *Ophelia* restoration added a total of 770,215 cubic yards between January and March 2007. Thus, between April 2003 and June 2009, a total of 839,404 cubic yards of material has been added to the Pine Knoll Shores shoreline. In the absence of the three periodic nourishment operations, Pine Knoll Shores would have lost 420,792 cubic yards during this time interval. This represents an average annual volumetric loss rate of approximately 68,200 cubic yards/year, or an average loss of 2.9 cubic yards/lineal foot/year.

The volume of material measured on the Pine Knoll Shores shoreline in June 2009 was equal to 260.1 cubic yards/lineal foot or 35.1 cubic yards/lineal foot above the 225 cubic yard/lineal foot design volume. If the volume loss along Pine Knoll Shores continues at this rate, nourishment would be required within the next 10 to 12 years.

Overall, the Pine Knoll Shores project has performed very well even with the advent of Hurricane *Ophelia*. Note that Hurricane *Isabel* also impacted the area in September 2003 but the damage to the Pine Knoll Shores portion of the project was not severe enough to warrant federal post-disaster assistance to rebuild the beach project. The average annual volumetric loss rate of 68,200 cubic yards/year is equivalent to 2.9 cubic yards/lineal foot of beach which is a relatively low loss rate compared to other beach nourishment projects.

8. PLANNED BORROW AREAS.

The Town of Pine Knoll Shores, as well as the other island communities, are primarily focusing on the ODMDS as a borrow source for maintenance of their beach nourishment project. However, the possible use of borrow sources identified by the USACE during planning for the 50-year federal project, which are closer to the project area, are also included in the town's long-range plans.

ODMDS. All the towns along Bogue Banks, including Pine Knoll Shores, are targeting the ODMDS (Figure 16) as a future source of beach nourishment material to sustain the beach nourishment projects for at least the next 30 years. Between 1936 and 1994, all of the material removed from the Morehead City Harbor entrance channel through Beaufort Inlet was deposited in the ODMDS. Since 1995, approximately 3.8 million cubic yards of the maintenance material has been deposited in a near shore berm located on the west side of the Beaufort Inlet ebb tide delta (Figure 19) and the 2004 and 2007 maintenance operations placed the maintenance material directly on the shorelines of Indian Beach/Salter Path and Pine Knoll Shores under the authority of Section 933. Based on USACE dredging records (USACE 2001 & USACE 2001a to 2007), and adjusting for the volume of material placed in the near shore berm and directly on the beach under Section 933, the volume of material deposited in the ODMDS since 1936 totals approximately 47.8 million cubic yards.

The ODMDS shown in Figure 16 is the existing approved disposal area for the Morehead City Harbor Project. Prior to the establishment of the existing ODMDS, maintenance material was deposited in areas north of the existing site as well as east of the Beaufort Inlet ocean bar channel. In a study contracted by Carteret County to Olsen Associates, Inc. of Jacksonville, Florida (Olsen 2006), Olsen was able to account for up to 35.5 million cubic yards in both the existing and historic offshore disposal areas. Obviously, development of the existing ODMDS and other historic ocean disposal sites as borrow sites will require additional geotechnical investigations in order to comply with State sediment criteria (15A NCAC 07H.0312). However, based on Olsen's study, and adjusting for the 1.4 million cubic yards removed to restore the beaches following Hurricanes *Isabel* and *Ophelia*, the volume of beach compatible material in or near the existing ODMDS should total well over 30 million cubic yards. In a Section 111 report prepared by the USACE to evaluate the possible impacts of the Morehead City Harbor Project on the adjacent shorelines, the USACE estimated over 32 million cubic yards of beach compatible material had been deposited in the ODMDS since 1936 (USACE 2001).

Maintenance of the Morehead City Harbor Project will continue over the next 30 years with additional material being deposited in the ODMDS. However, while over one million cubic yards of material is removed from the ocean bar channel of Beaufort Inlet each year, at the urging of Carteret County, the USACE is in the process of reformulating the dredged material management plan for the harbor which could result in less material being placed in the ODMDS and more placed directly on the shorelines of Fort Macon and Atlantic Beach during maintenance dredging operations. In any event, disposal of some of the maintenance material in the ODMDS will likely continue over the next 30 years which could increase the available volume to at least 33 to 36 million cubic yards.

An estimate of the island-wide volumetric erosion that has occurred since April 2003 within the limits of the Bogue Banks Restoration Project is presented in Table 2. The unit volumes of material within each reach along Bogue Banks, measured from the seaward toe of the dune to the -12-foot NAVD depth contour, were derived from the 2007 monitoring report (CSE 2007a) and the 2008 and 2009 monitoring reports (Moffatt & Nichol 2008, Moffatt & Nichol 2009). Adjustments in the volume changes were made for the amount of beach fill placed within each reach from various nourishment operations since April 2003 including: (a) the 2005 initial construction of Emerald Isle West, (b) the 2004 and 2007 post-hurricane restorations, (c) Phase I of the Section 933 project along Indian Beach/Salter Path and Pine Knoll Shores (completed in 2004), and (d) Phase II of the Section 933 project also along portions of Indian Beach/Salter Path and Pine Knoll Shores completed in 2007.

The estimated volumetric erosion rate for the entire Bogue Banks Restoration Project through June 2009 totals 357,100 cubic yards/year. Over the next 30 years, approximately 10.7 million cubic yards of beach compatible material will be needed to maintain the entire Bogue Banks Restoration Project. With over 30 million cubic yards of material currently available in the ODMDS and potentially more material being added from maintenance of the Morehead City Harbor project, the ODMDS has a sufficient volume of material to satisfy nourishment requirements for the entire island-wide project including Pine Knoll Shores for at least the next 30 years.

Table 2. Estimate of Bogue Banks Restoration Project volumetric erosion rate.

Reach	Measured Profile Volume Change Apr 2003 to Jun 2009 (CY)	Fill Added Since Apr 2003 (CY)	Adjusted Volume Change (CY)[(1)]	Equivalent Annual Rate (CY/YR)	Percent of Total Project Volume Change	Volume Rate per foot of Shoreline (CY/YR/FT)
Emerald Isle West	712,774	994,895	-282,121	-45,700	12.8	-2.0
Emerald Isle East	-231,784	500,410	-732,194	-118,700	33.2	-4.1
Indian Beach/Salter Path	+181,185	949,207	-768,022	-124,500	30.0	-9.7
Pine Knoll Shores	+418,612	839,404	-420,792	-68,200	24.0	-2.9
Total for Bogue Banks Restoration Project				-357,100	100.0	-4.1

(1) Adjusted volume change = measured profile volume change minus fill added.

The demands for periodic nourishment material from the ODMDS include the section of the project designated as Emerald Isle West. As noted previously, Emerald Isle West was constructed with material removed from Bogue Inlet during the relocation of the inlet bar channel 3,500 feet to the west. Should the inlet bar channel migrate back to the east and pose a renewed threat to development on the extreme west end of Emerald Isle, the Town of Emerald Isle may seek permits to move the channel again. If so, material removed to relocate the channel could be used to nourish the Emerald Isle West portion of the Bogue Banks Restoration Project. Should that occur, the demand for material from the ODMDS over the next 30 years could be reduced by as much as 750,000 cubic yards to 1,000,000 cubic yards.

As mentioned above, the material contained within the existing ODMDS and the material in the other historic offshore disposal sites used for the Morehead City Harbor project will require detailed geotechnical investigations and documentation in accordance with the State Sediment Criteria (15A NCAC 07H.0312) to qualify the areas for use as beach fill borrow sites. However, based on the documented beach compatibility of the material removed from the ODMDS and deposited on the beach during the Hurricane *Isabel* and *Ophelia* restorations, the only issue that needs to be resolved is the exact location and thickness of the deposited material; not its quality.

Sampling of material in the northern section of the ODMDS conducted by CSE for the post-Hurricane *Ophelia* Restoration included the collection of 14 vibracores ranging in length from 2.6 feet to 9.2 feet with an average length equal to 5.7 feet. The locations of the vibracores used to characterize the material in the ODMDS are indicated by the red dots in Figure 18.

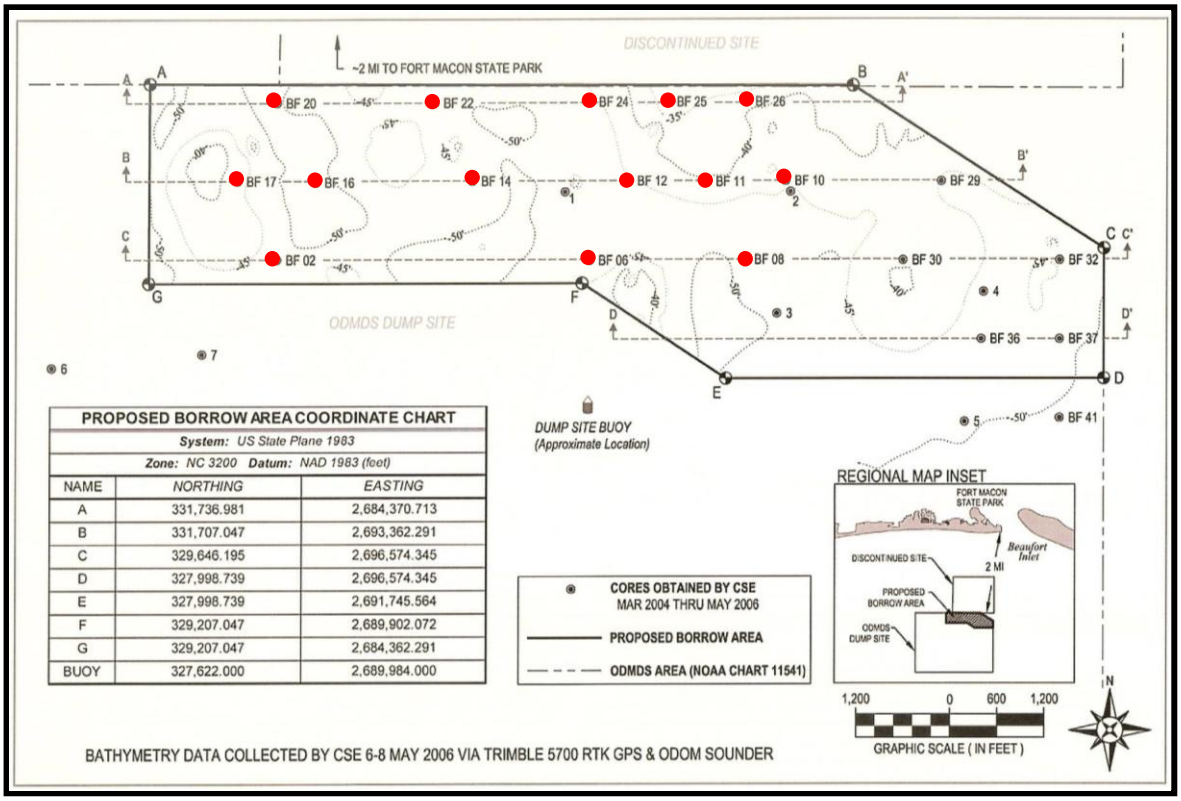

Figure 18. Location of CSE vibracores in the northern portion of the ODMDS. Figure adapted from CSE 2007b.

Grain size analysis of the samples taken from the 14 vibracores resulted in a composite mean of 1.71 phi (0.31 mm) and a standard deviation of 1.06 phi (CSE 2007b). The silt content was generally less than 2%. Comparison of the ODMDS material with the native beach sand resulted in an overfill factor of 1.35 which is considered a reasonably good match.

CSE also sampled the material once it had been placed on the beach, collecting 25 samples from the two sections of Pine Knoll Shores that received material during the post-*Ophelia* restoration project. The grain size of the material in place on the beach averaged 0.32 mm with an average silt content of only 0.07%. Precise measurements of the silt content in the vibracore samples were not provided by CSE (CSE, 2007), however, based on the extremely low silt content of the in place material and the larger average mean grain size of the in place material compared to the in situ vibracore samples, as noted previously, the filling and placement process associated with the hopper dredge operations apparently flushed much of the finer grained material from the fill prior to sampling. CSE did not analyze the shell content in the vibracore samples taken from the ODMDS but did analyze the calcium carbonate ($CACO_{3)}$ content of the in place material and found an average calcium carbonate content of 14.9%. Sampling of the native beach conducted by CSE prior to the construction of the Bogue Banks Restoration Project yielded an average shell content of the native beach of approximately 15%. The State Sediment Criteria for beach nourishment material allows borrow material to contain 15% more $CACO_3$ than the native beach. Assuming the 15% shell content found along the beach prior to construction of the Bogue Banks Restoration Project as a proxy for $CACO_3$ content, the threshold for $CACO_3$ would be 30%. Therefore, the amount of shell and/or $CACO_3$ in material deposited in the Morehead City Harbor ODMDS appears to fall well within the State Sediment Criteria.

The sampling of the ODMDS material for the post-Hurricane *Ophelia* project as well as visual observations of the material on the beach provides substantial evidence that the ODMDS material and other materials deposited near the existing ODMDS will be able to meet all of the requirements of 15A NCAC 07H.0312 and provide a source of material necessary to sustain not only the Pine Knoll Shores project but the entire shoreline of Bogue Banks from the Atlantic Beach/Pine Knoll Shores town boundary west to Bogue Inlet for at least 25 years as required by 15A NCAC 07J .1201 and much longer based on the estimated volume of material in the existing ODMDS and historic disposal sites near the ODMDS.

USACE Borrow Areas. Potential borrow areas identified by the USACE offshore of Bogue Banks are shown in red in Figure 19 (USACE 2009). The other areas identified in this figure represent potential sources of sediment that are under consideration for the long-term plan being formulated by Carteret County.

As indicated in Figure 19, the USACE is also evaluating the ODMDS as well as other areas near Beaufort Inlet as potential borrow areas for the 50-year federal storm damage reduction project. The USACE preliminary assessment of the beach compatible material in the offshore sites is: 6.4 million cubic yards in USACE-West; 17.0 million cubic yards in USACE-Central; and 7.2 million cubic yards in USACE-East for a total of 30.6 million cubic yards. However, the results of the USACE geotechnical investigations are very preliminary and do not meet the USACE sampling standards for project design or the standards contained in 15A NCAC 07H.0312 (State Sediment Criteria). Once

detailed sampling is complete, the USACE estimate of the available volume of material will likely be reduced.

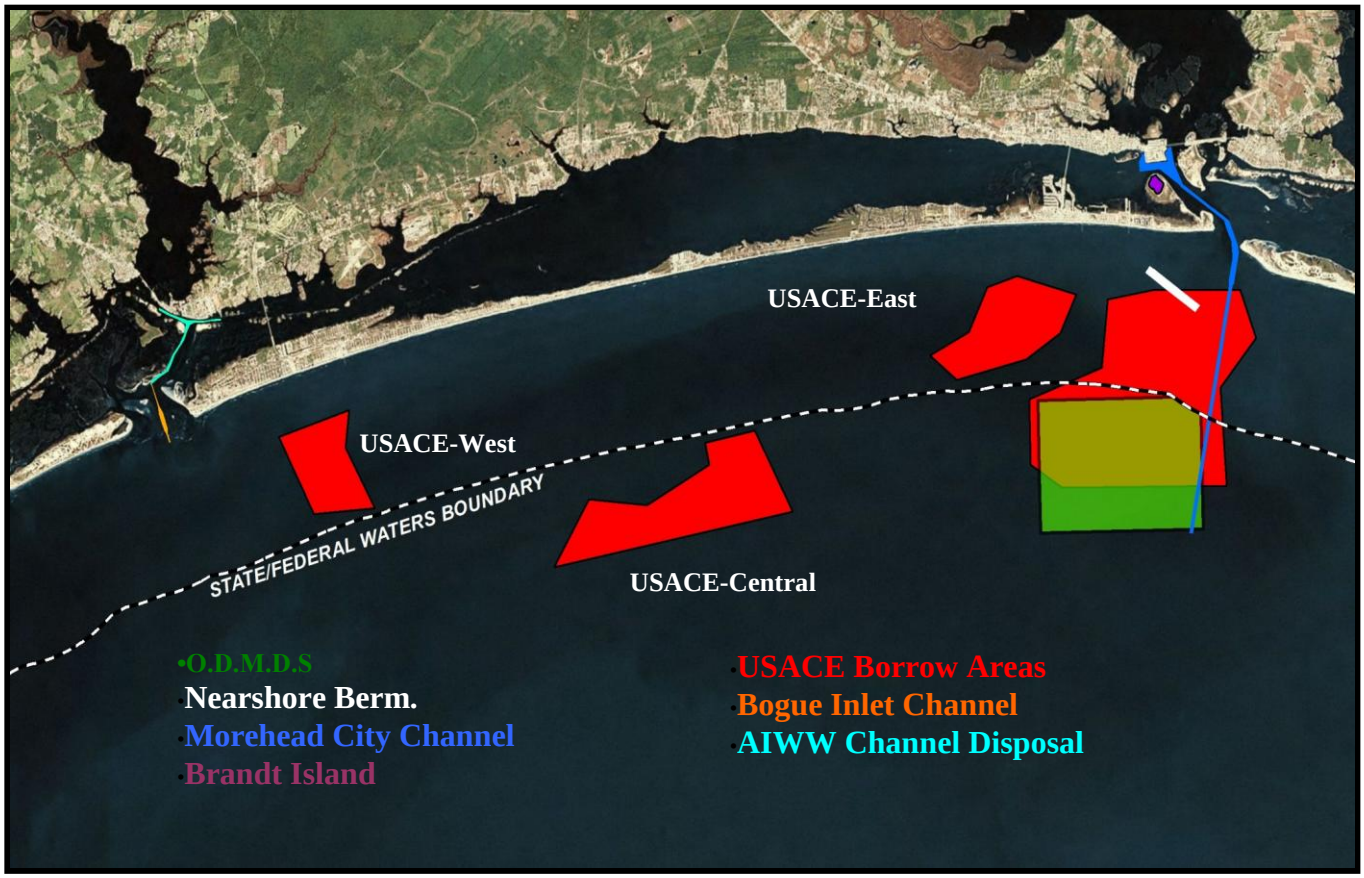

Figure 19. Potential USACE borrow areas (in red) and other sources of sediment near Bogue Banks.

Borrow Area Summary. While additional geotechnical investigations are needed to fully develop the existing ODMDS, the other areas near the existing ODMDS, and the USACE sites into acceptable borrow areas for the Bogue Banks Restoration Project, including Pine Knoll Shores, the shear magnitude of the potential volume of sediment available in the existing ODMDS and historic disposal sites near the ODMDS assures the Pine Knoll Shores project will have sufficient borrow material to maintain the project for a minimum of 25 years required by the static line exception rule. This may be augmented by additional offshore borrow resources identified by the USACE once the quality and quantity of the material in the USACE potential borrow sites is better defined.

9. FINANCIAL PLAN.

9.1. Introduction. The Pine Knoll Shores project is one segment of an island-wide Bogue Banks Restoration Project that includes the island communities of Pine Knoll Shores, Indian Beach, Salter Path and Emerald Isle. Funding for the Bogue Banks Restoration Project was provided by each island community as well as Carteret County. As Carteret County moves forward with the formulation of its long-range protection plan, funding for the project would continue to be provided by the individual communities, however, Carteret County would assume a major role in providing the necessary funding for periodic nourishment by means of the County Beach Nourishment Fund that is supported by revenues generated by the room occupancy tax. While the Town of Atlantic Beach is not included

in the Bogue Banks Restoration Project, Carteret County would provide financial support to assure disposal operations associated with maintenance of the Morehead City Harbor project extend along the full length of the town's shoreline. Financial support for Atlantic Beach from Carteret County would also be derived from the Beach Nourishment Fund.

Since periodic nourishment of all of the projects along Bogue Banks are inter-linked and depend on the County Beach Nourishment Fund as well as funds that would be provided by each community and the State of North Carolina, the financial plan presented here is applicable to each community on Bogue Banks.

9.2. Periodic Nourishment Requirements. Volumetric erosion rates for each shoreline reach along Bogue Banks are provided in Table 2 and these rates form the basis of the periodic nourishment requirement for each community. On an island-wide basis, periodic nourishment of the various reaches along the island would be accomplished when the volume of material residing on the profile between the landward toe of the dune and the -12-foot NAVD depth contour falls below 225 cubic yards/lineal foot. Note this nourishment criteria is more stringent than the one the Town of Pine Knoll Shores and other towns on the island adopted to remain eligible for FEMA post-disaster assistance and will be used to develop funding needs over the next 25 to 30 years. Based on this criteria and the performance of the fills within each shoreline reach, the time interval between beach nourishment operations for each reach averages about 10 years. The 10-year nourishment volume for all of the shoreline reaches totals 3,571,000 cubic yards. Due to the limited dredging window (16 Nov to 31 Mar), nourishment would have to be accomplished in three phases over a three year period with each operation placing an average of 1,190,300 cubic yards along the shoreline.

Based on the volume of material remaining on the beach profiles along the island in June 2009, the first 3-year nourishment operation should occur between 2018 and 2020. Subsequent operations would occur during the three-year periods 2028 - 2030 and 2038-2040, respectively.

9.3. Cost Estimate. The cost for each nourishment operation was estimated from the cost associated with the post-Hurricane *Ophelia* restoration project which borrowed material from the ODMDS of the Morehead City Harbor navigation project and distributed the fill material along the entire Bogue Banks project area. Table 3 provides a cost estimate for each operation based on current (2010) dollars.

Table 3. Cost Estimate for Each Nourishment Operation

Item	unit	quantity	Unit cost	Cost
Mob & Demob	Job	1	$2,000,000	$2,000,000
Dredging	CY	1,190,300	$10.00	$11,903,000
Sub Total				$13,903,000
E&D[(1)]				$175,000
S&A[(1)]				$175,000
Total Cost/Operation				$14,253,000

[(1)] E&D = engineering and design, S&A = supervision and administration during construction.

Future dredging costs including mobilization & demobilization were assumed to increase at a rate of 2% per year. This rate of increase was based on actual experience of dredging cost for the Carolina Beach and Wrightsville Beach federal storm damage reduction projects between 1965 and 2004.

While cost and bids experienced since 2004 have not followed this historic trend, this has been primarily the result of post-storm recovery efforts in 2004 which put a high demand on available dredging equipment and federal stimulus funds which have flooded the market in 2009. Based on the assumed 2% per year increase in dredging cost, each of the nourishment operations projected to occur between 2018 and 2020 would cost an estimated $16,639,000 each or a total of $49,917,000 for all three operations. Similarly, the projected inflated costs for the three operations in 2028 to 2030 would be $20,206,000 each for a total cost of $60,618,000 and the 2038 to 2040 operations would cost $24,555,000 each for a total of $73,665,000 for all three operations.

Over the 30-year period included in this analysis, the total cost of nourishing all of the communities along Bogue Banks totals $184,200,000.

9.4. Future Beach Nourishment Cost Projections**.**

The projected inflated costs outlined above were projected out for the next 30 years, resulting in a total future nourishment cost of $184,200,000 to be shared between the State, Carteret County, and the towns on Bogue Banks. Beach nourishment events would occur when the established 225 cy/ lineal foot threshold is actually being approached, however, the future beach nourishment cost projections included herein adhere to the schedule outlined above.

Atlantic Beach is not included in this total future nourishment cost projection, as material to maintain the Atlantic Beach project would be derived from maintenance dredging activities associated with the Morehead City Harbor navigation project. In this regard, the revised dredged material management plan for the harbor project presently being developed by the US Army Corps of Engineers (USACE) would place material along Atlantic Beach every three years. While the Town of Atlantic Beach in not required to cost share in the disposal operation, some additional cost may be involved to assure material is placed along the entire length of the town's shoreline in the event federal budget constraints do not allow material to be distributed along the entire Atlantic Beach shoreline. Supplemental funding for the Town of Atlantic Beach, in the amount of $1,000,000, would be needed about once every 9 years to assure complete coverage of the town's shoreline. Revenue projections indicate that there will be sufficient Carteret County room occupancy tax collections to meet these costs in the future, in addition to the County contribution for the other Bogue Banks towns.

9.5. Funding/Cost Allocation. As mentioned previously, funding for periodic nourishment would be obtained from (a) the Carteret County Beach Nourishment Fund, which is financed through the collection of room occupancy taxes as stipulated in S.L. 2007-112 (a copy of S.L.2007-112 is provided in Appendix B); (b) contributions from the State of North Carolina; and (c) contributions for each local community.

State funding for future maintenance of the projects along Bogue Banks was assumed to be consistent with existing State statues (GS 143-215.70 - 215.73) and NC Administrative Code – Subchapter 2G. The State statute allows the NC Department Environment and Natural Resources (DENR) to cost share up to 75% of the non-federal cost for beach protection projects. Most of the cost sharing experience in the State for coastal protection projects has been for federal storm damage reduction projects constructed by the USACE. For these projects, the normal federal share of the total project cost is 65% with non-federal interests responsible for the remaining 35%. Generally, the State has contributed 75% of the non-federal share which is equivalent to 26.25% (75% x 35%) of the total

project cost. For purposes of developing the financial plan for this static line exception application, State funding for the projects along Bogue Banks was assumed to be 25%, or slightly below the traditional level of State support.

The Carteret County share (derived from room occupancy taxes statutorily earmarked for beach nourishment activities) of the total nourishment cost is 50%. Detailed long-range financial projections (discussed below) indicate that Carteret County room occupancy tax revenues will be sufficient to provide necessary County beach nourishment funding for each of the beachfront municipalities on Bogue Banks, including Pine Knoll Shores.

The balance of necessary beach nourishment funding, which is equal to 25% of the total project cost, will be provided by each of the local communities.

Allocation of the $184,200,000 total cost for beach nourishment over the 30-year analysis period to Emerald Isle, Indian Beach/Salter Path, and Pine Knoll Shores was based on the percent of the total annual volume change along the project assigned to each community as provided in Table 2. Also shown in each of the tables is the allocation of the cost to extend the fill along Atlantic Beach which would total $3,000,000 over the 30-year analysis period. The resulting cost allocation is provided in Table 4.

Table 4. Allocation of total nourishment costs to the island communities based on 25% State cost sharing.

Shoreline Reach	Nourishment cost allocated to each Reach[(1)]	State Funds (25%)	Local Funds (25%)	County Funds (50%)
EI West	$23,578,000	$5,894,000	$5,894,000	$11,789,000
EI East	$61,154,000	$15,289,000	$15,289,000	$30,577,000
Total EI	**$84,732,000**	**$21,183,000**	**$21,183,000**	**$42,366,000**
IB/SP	**$55,260,000**	**$13,815,000**	**$13,815,000**	**$27,630,000**
PKS	**$44,208,000**	**$11,052,000**	**$11,052,000**	**$22,104,000**
AB	**$3,000,000**	**$750,000**	**$750,000**	**$1,500,000**
Island Total	**$187,200,000[(2)]**	**$46,800,000**	**$46,800,000**	**$93,600,000**

[(1)] Total cost for island-wide nourishment over 30 years = $184,200,000. Nourishment cost allocated to each community based on the percent of project volume change given in Table 2.
[(2)] Island total includes cost to extend beach disposal along the entire length of Atlantic Beach once every 9 years.

9.6. County Room Occupancy Tax/Beach Nourishment Fund. Currently, the balance in the Carteret County Beach Nourishment Fund is approximately $9.2 million. Future revenue collections were assumed to grow at a rate of 4% per year. This assumed rate of growth is conservatively low compared to the actual rate of growth of approximately 5.4% per year experienced between 1993 and 2008. The history of the growth in the Carteret County Beach Nourishment Fund between 1993 and 2008 is provided in Appendix B. In addition to the annual increase in revenue collections, the fund

earns interest of about 2% per year. The projected growth in the fund over the next 30 years (assuming no beach nourishment cost) is shown in Figure 20 (blue line).

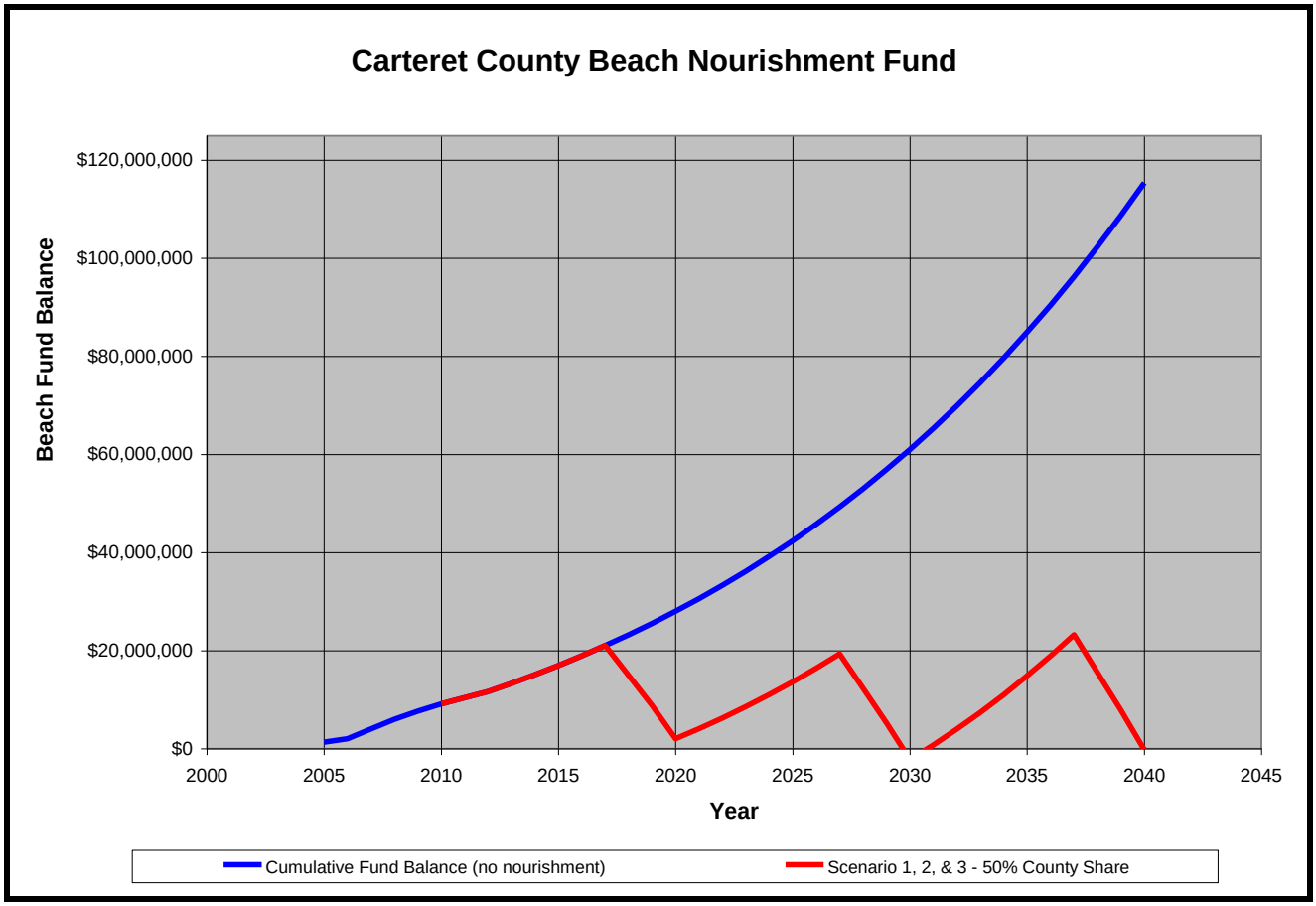

Figure 20. Carteret County beach fund revenues and annual beach fund balance for 50% County share of periodic nourishment cost.

The projected year-end balance in the County beach nourishment fund was computed by deducting the cost of each periodic nourishment operation and the cost of extending the fill along the Town of Atlantic Beach in the year in which it is projected to occur. The year-end balance in the County Beach Nourishment Fund was computed for a County contribution of 50% of total construction costs for each of the Bogue Banks towns and the extension of the Atlantic Beach fill. A plot of the year-end balance in the County's beach nourishment fund with a 50% contribution is shown on Figure 20 (red line). A spreadsheet is provided in Appendix B to show how the year-end balance in the fund was computed.

Based on these projections, the County beach nourishment fund would remain solvent throughout the entire 30-year period except in year 2030 when the fund balance is projected to experience a deficit of about $2.3 million. The fund balance would quickly rebound and become positive again in the following year (2031). Because this projected deficit is well into the future and since the county fund projections is based on a conservative 4% annual growth rate compared to the historic growth rate of 5.4%, a negative balance in the year 2030 may never occur. If it does, the local and county governments could seek a loan to cover this projected deficit.

9.7. Pine Knoll Shores Funding Source

The Town of Pine Knoll Shores will need to provide $11.1 million over the 30-year time frame for future beach nourishment costs. The Town's financial plan would generate approximately $12.7 million over the 30-year planning period. The Pine Knoll Shores Board of Commissioners, by adoption of static line application report, has committed to levy new taxes, either through its General Fund or new special tax districts, beginning in 2011.

In 2001 Pine Knoll Shores generated $8 million through the sale of General Obligation bonds to support a beach nourishment project completed in April of 2002. The voters of the Town approved the issuance of this debt through a referendum. The Town committed to fund the debt service payments for these bonds with special district tax revenues levied for this purpose.

These special district taxes have been levied by the Town every year since FY 01-02. These special district taxes were initially established at rates of 40 cents per $100 of assessed value on all oceanfront properties and 4 cents on non-oceanfront properties. These rates were raised to 42 cents (ocean) and 6 cents (non-ocean) two years later to provide funding for a subsequent renourishment project. These rates were adjusted to the revenue-neutral rates of 16 cents (ocean) and 2.6 cents (non-ocean) after the 2007 Carteret County tax revaluation. In FY 09-10 the Town established a rate of 10.5 cents (ocean), and 1.5 cents (non-ocean).

FY 10-11 is the final year these taxes are necessary to fund debt service payments. These special district taxes have been levied annually in June by the Board of Commissioners as part of the adoption of the Town's official budget ordinance. NC General Statutes do not allow a town to establish multi-year property tax rates.

In its most recent Strategic planning session, The Board of Commissioners restated its intent to fund future beach renourishment activities through a future tax structure. Providing for future renourishment projects remains one of this Town's most important objectives.

Detailed County and Town revenue projections are included in Appendix B

10. SUMMARY

By virtue of this report, the Town of Pine Knoll Shores has provided information and supporting documents that satisfy all of the requirements for the consideration of a static line exception stipulated in 15A NCAC 07J .1201. The report documents the design and execution of the project by a registered professional engineering firm licensed to practice in North Carolina, demonstrated the project has been maintained for well over the 5-year minimum, shown the project has an identified source of beach compatible borrow material that will sustain the project for more than the minimum 25 years, and provided a funding plan that will support the project for at least the next 25 years.

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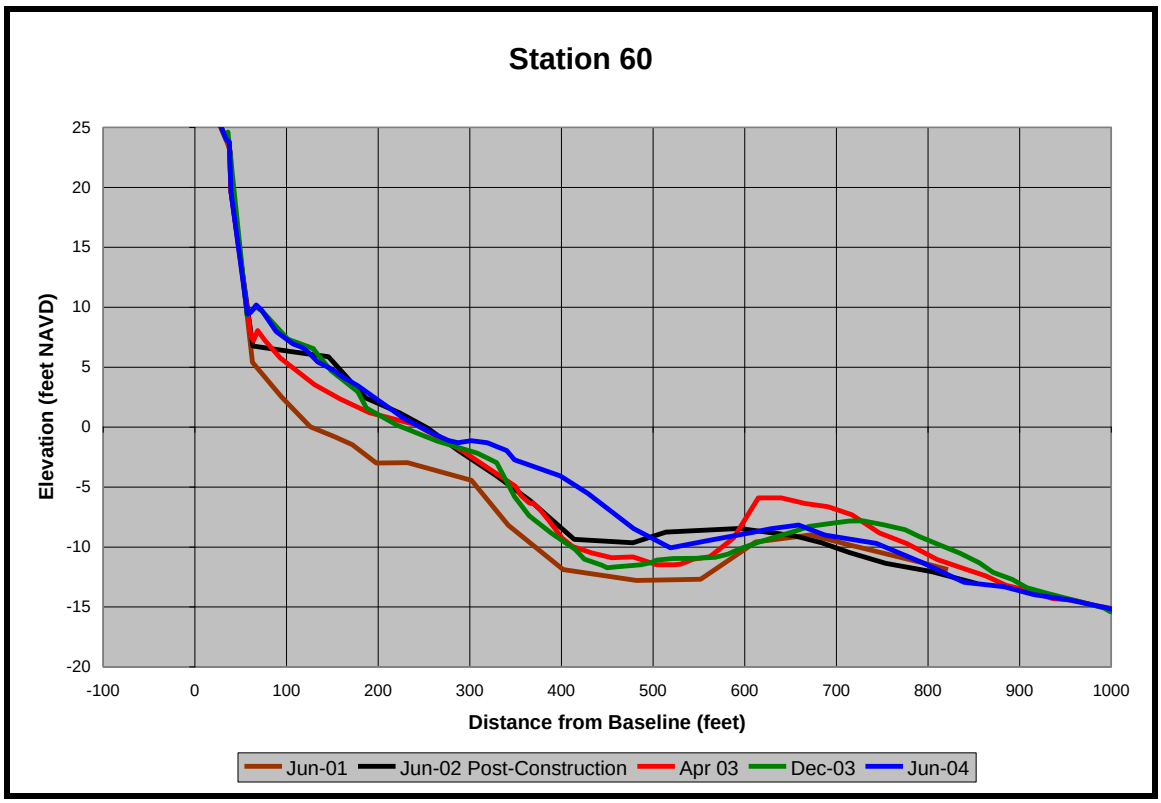
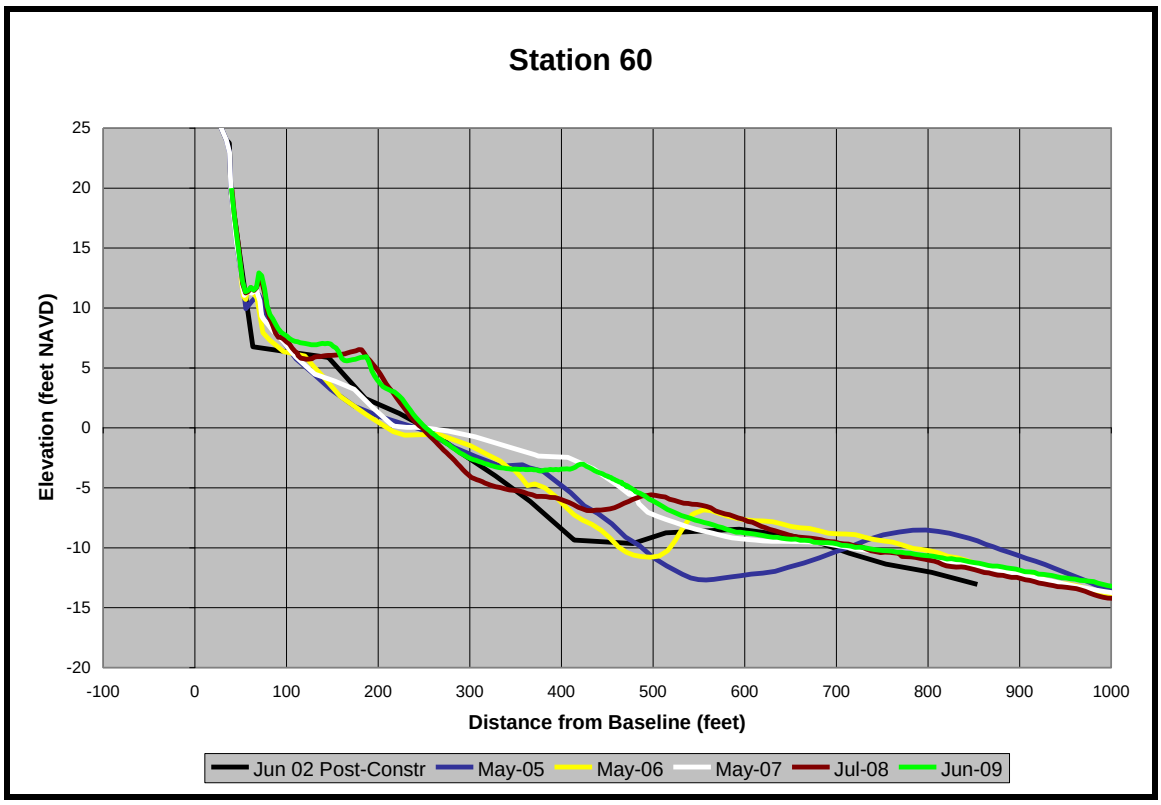
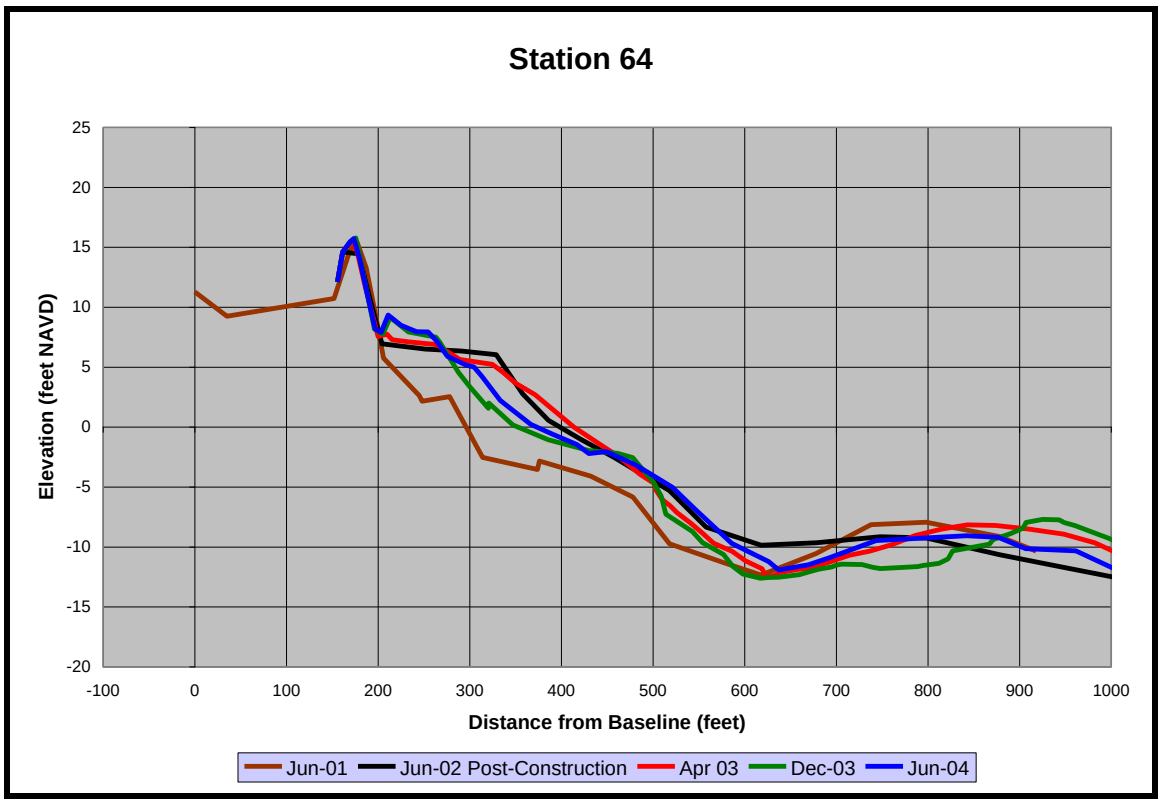
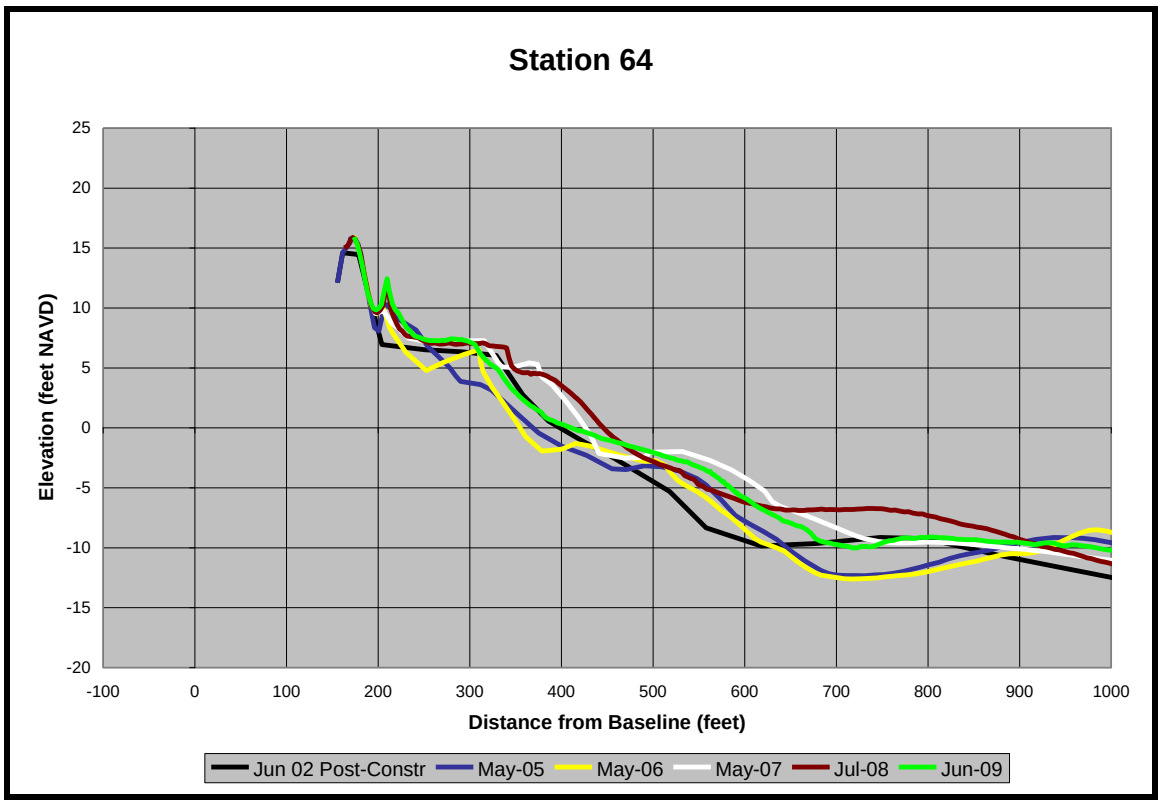
APPENDIX A
PROFILE PLOTS



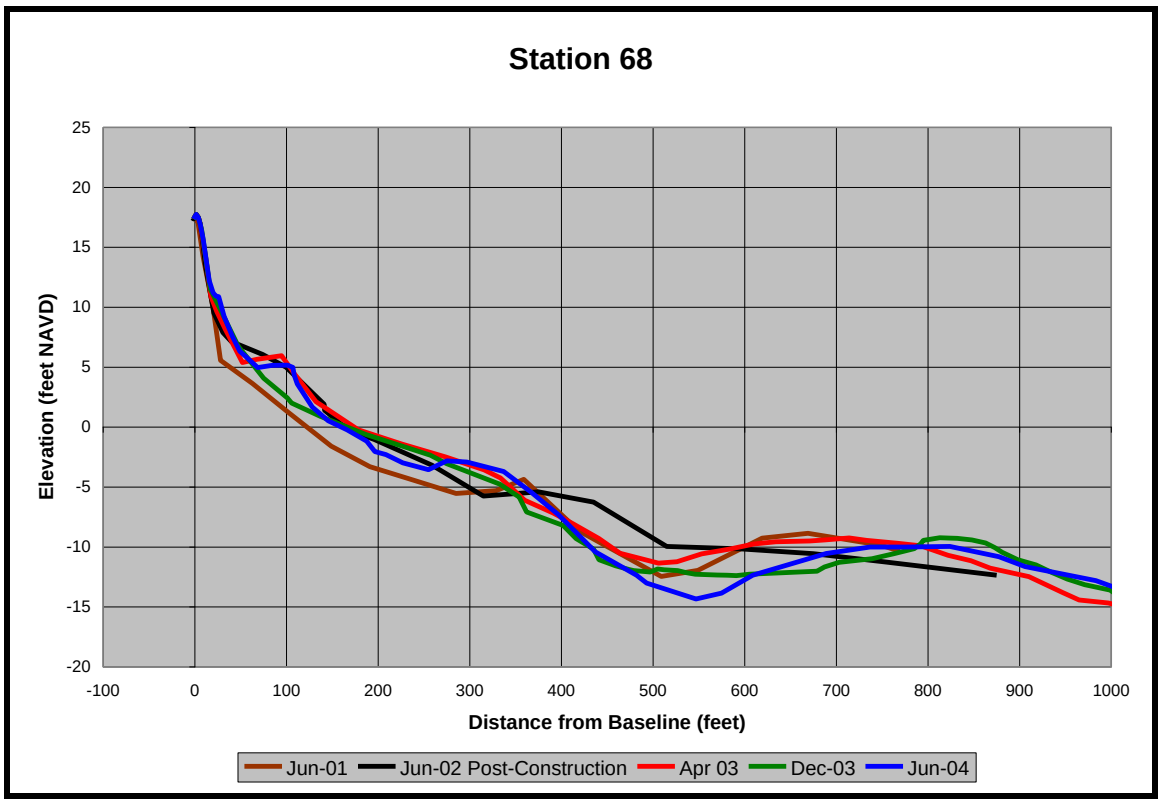


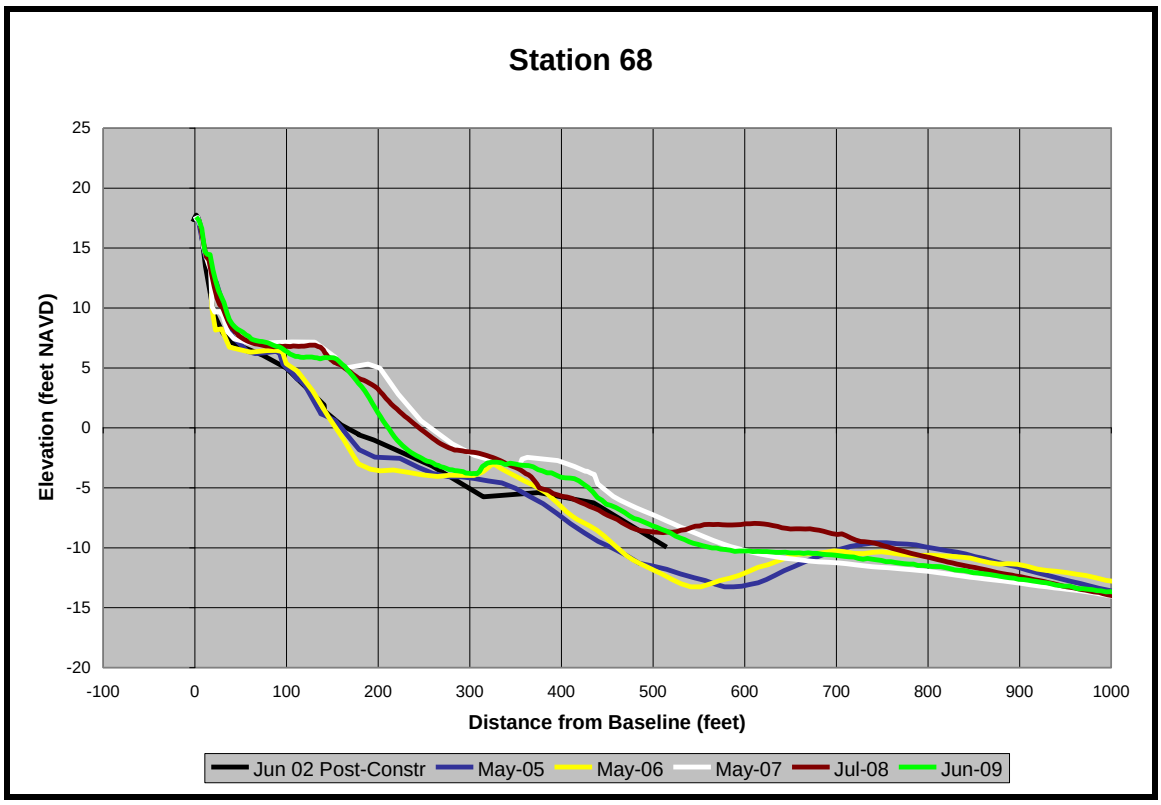
Station 60 – Profile Comparisons – Jun 1999 to Jun 2009



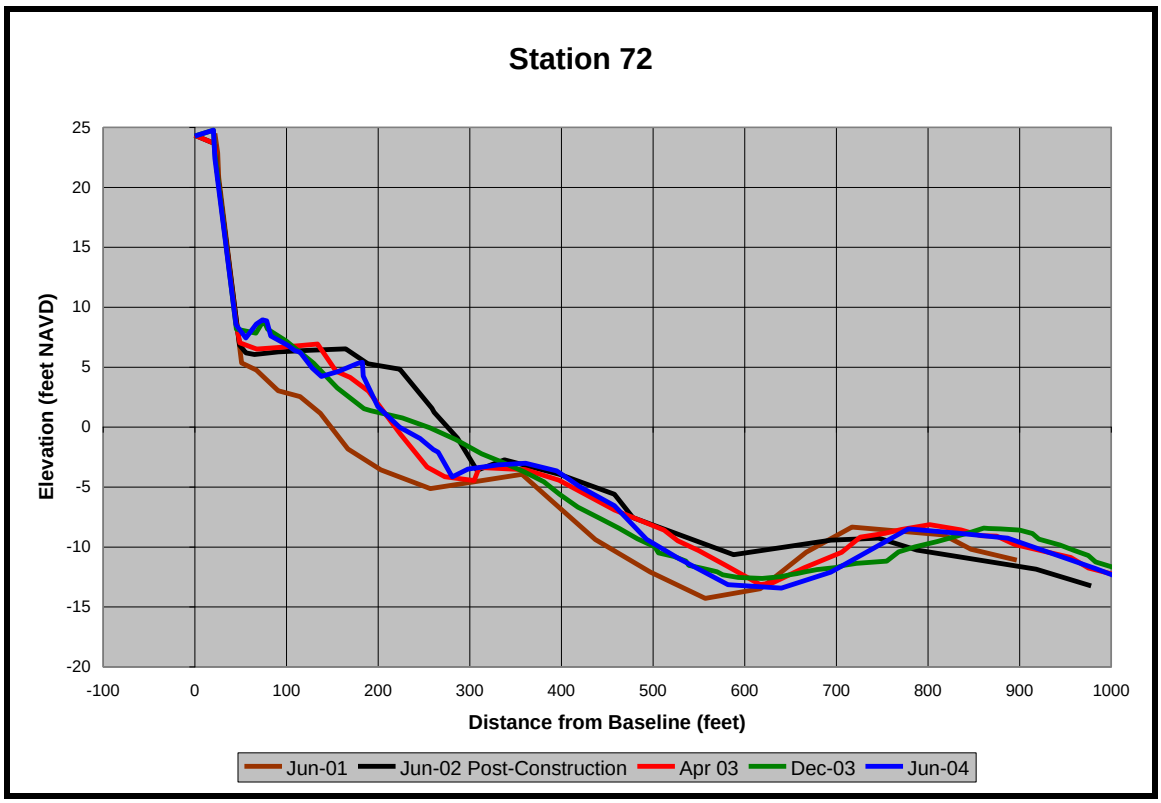


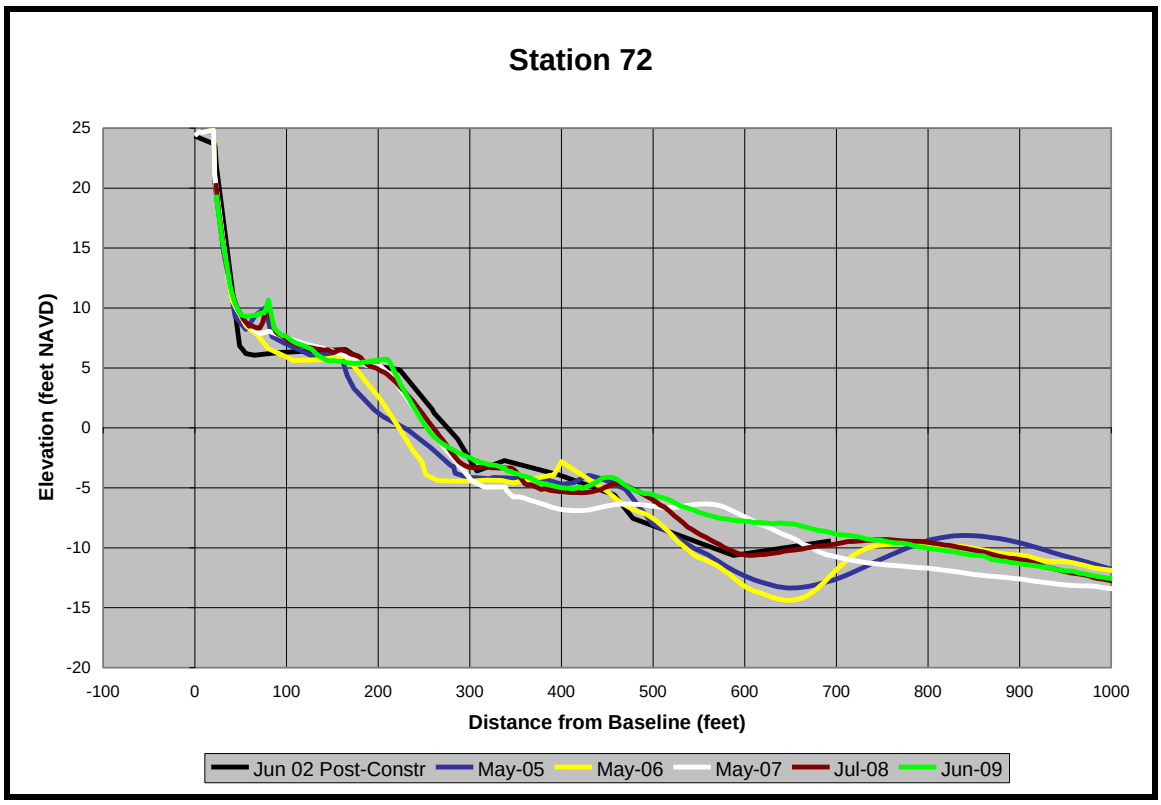
Station 64 – Profile Comparisons – Jun 1999 to Jun 2009



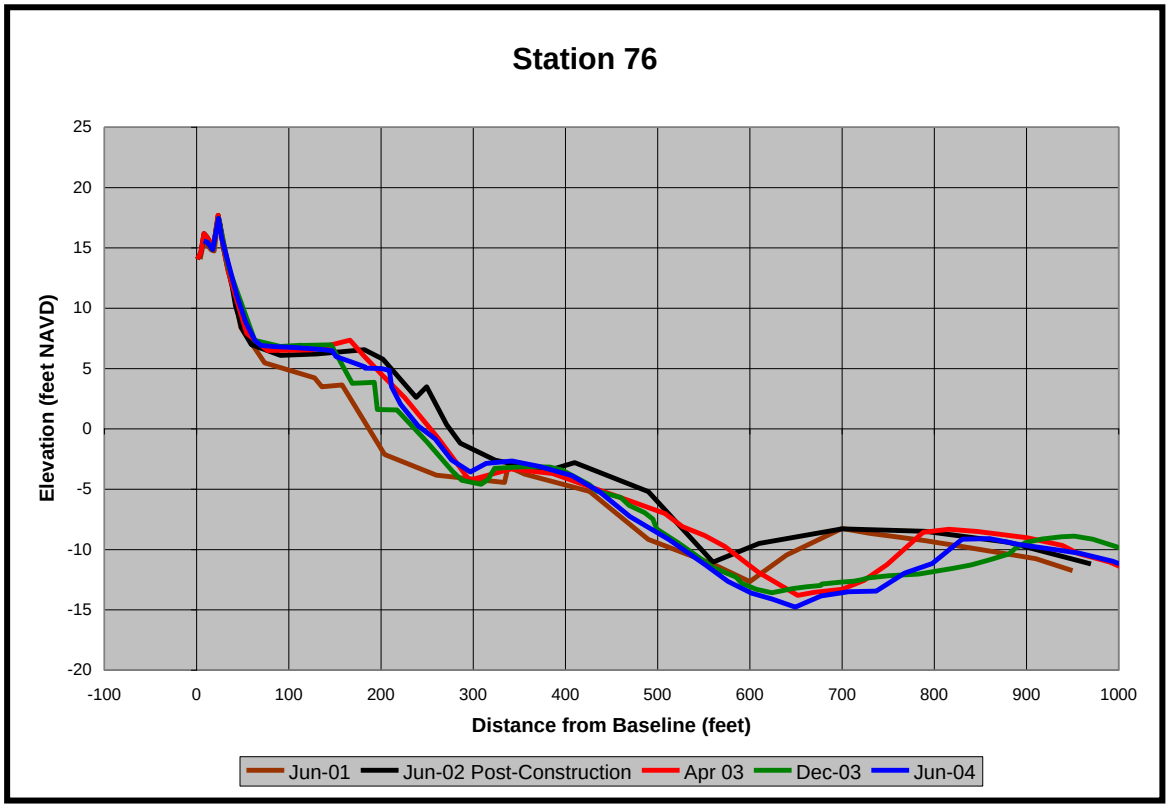


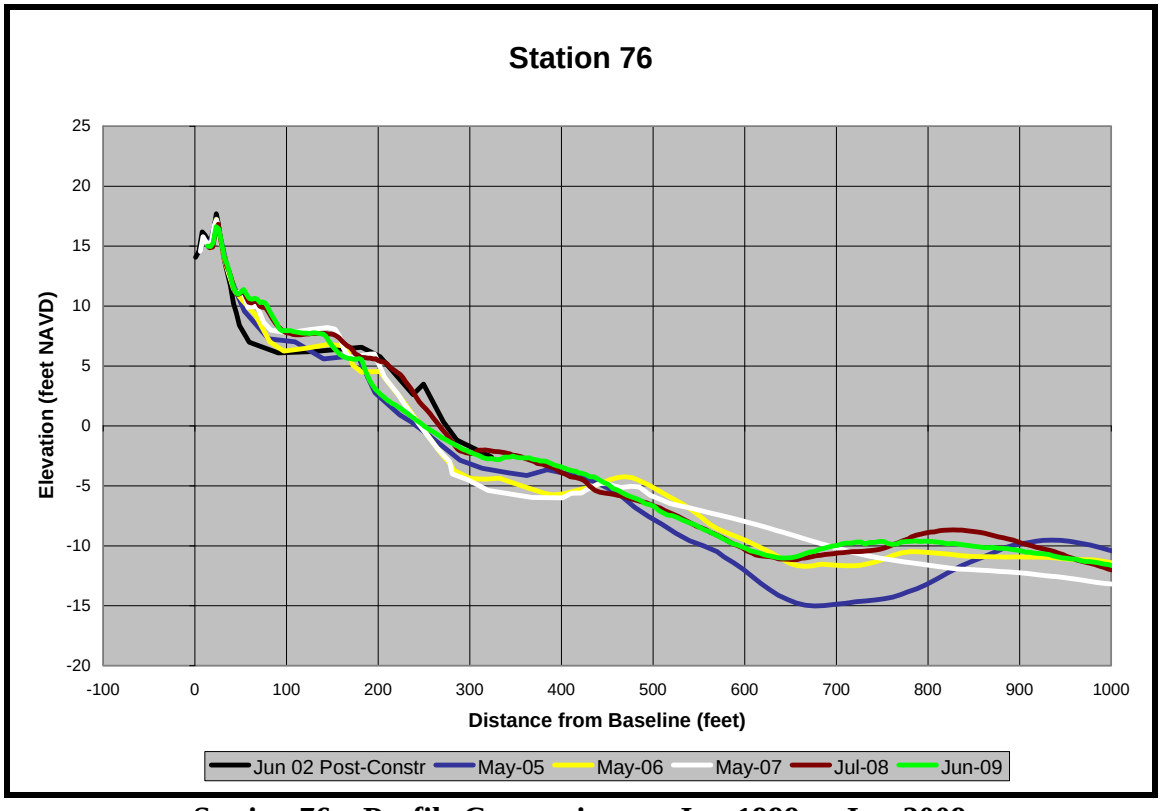
Station 68 – Profile Comparisons – Jun 1999 to Jul 2009





Station 72 – Profile Comparisons – Jun 1999 to Jun 2009





Station 76 – Profile Comparisons – Jun 1999 to Jun 2009

APPENDIX B

SUPPLEMENTAL FINANCIAL INFORMATION

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2007

SESSION LAW 2007-112
SENATE BILL 465

AN ACT TO CONSOLIDATE AND REWRITE THE CARTERET COUNTY OCCUPANCY TAX LAW AND TO AMEND THE DEADLINE FOR THE DEVELOPMENT OF A CONVENTION CENTER PLAN FOR CARTERET COUNTY.

The General Assembly of North Carolina enacts:

SECTION 1. Sections 1 through 9 of S.L. 2001-381, as amended by S.L. 2005-120 and S.L. 2005-435, are rewritten and recodified as Sections 2 through 4 of this act. This act does not affect the rights or liabilities of the county, a taxpayer, or another person arising under the law rewritten and recodified by this act before the effective date of this act; nor does it affect the right to any refund or credit of a tax that accrued under the law rewritten and recodified by this act before the effective date of this act.

SECTION 2. Occupancy Tax. – (a) Authorization and Scope. – The Carteret County Board of Commissioners may levy a room occupancy and tourism development tax of five percent (5%) of the gross receipts derived from the rental of any room, lodging, or similar accommodation furnished by any hotel, motel, inn, tourist camp, condominium, cottage, campground, rental agency, or other similar place within the county that is subject to sales tax imposed by the State under G.S. 105-164.4(a)(3). This tax is in addition to any State or local sales tax. This tax does not apply to accommodations furnished by the following:

(1) Religious organizations.
(2) Educational organizations.
(3) Any business that offers to rent fewer then five units.
(4) Summer camps.
(5) Charitable, benevolent, and other nonprofit organizations.

SECTION 2.(b) Additional Occupancy Tax. – In addition to the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the Carteret County Board of Commissioners may, no earlier than July 1, 2010, levy an additional room occupancy and tourism development tax of one percent (1%) of the gross receipts derived from the rental of accommodations taxable under subsection (a) of Section 2 of this act only if all of the following conditions have been met:

(1) A development plan for the construction of a convention center has been approved by resolution of the board of county commissioners and the governing board of the municipality where the center is to be located by June 30, 2010.
(2) There is a signed contract between the appropriate local governments and a private developer that includes financing commitments for construction to begin no later than July 1, 2011.
(3) The county is levying the room occupancy and tourism development tax authorized under subsection (a) of Section 2 of this act.

SECTION 2.(c) Repeal of Additional Occupancy Tax. – Carteret County's authority to levy the additional one percent (1%) room occupancy and tourism development tax under subsection (b) of Section 2 of this act is repealed as provided in this section if either of the following events occur:

(1) A cumulative total of ten million dollars ($10,000,000) in proceeds from the additional one percent (1%) room occupancy and tourism development tax is collected, calculated beginning on July 1, 2010. The repeal under this subdivision is effective on the first day of the second month following the date that the cumulative total of ten million dollars ($10,000,000) is collected.

(2) Construction on the convention center has not begun by July 1, 2011. The repeal under this subdivision is effective September 1, 2011. Any funds collected before the repeal date must be redistributed to the Tourism Development Authority and used only to promote travel and tourism.

SECTION 2.(d) Excess Proceeds from Additional Occupancy Tax. – Carteret County must redistribute any excess proceeds from the additional one percent (1%) room occupancy and tourism development tax authorized under subsection (b) of Section 2 of this act to the Tourism Development Authority to be used only to promote travel and tourism. For purposes of this subsection, "excess proceeds" means:

(1) Any proceeds in excess of ten million dollars ($10,000,000) collected prior to the repeal date of the additional tax.

(2) Any proceeds collected but not spent in excess of the actual cost of the convention center.

SECTION 2.(e) Administration. – A tax levied under this act must be levied, administered, collected, and repealed as provided in G.S. 153A-155. The penalties provided in G.S. 153A-155 apply to a tax levied under this act. The Carteret County Tax Collector must establish procedures to periodically audit the businesses subject to the tax levied under this act in order to ensure compliance with this act.

SECTION 2.(f) Definitions. – The following definitions apply in this act:

(1) Beach nourishment. – The placement of sand, from other sand sources, on a beach or dune by mechanical means and other associated activities that are in conformity with the North Carolina Coastal Management Program along the shorelines of the Atlantic Ocean of North Carolina and connecting inlets for the purpose of widening the beach to benefit public recreational use and mitigating damage and erosion from storms to inland property. The term includes expenditures for the following:

a. Costs directly associated with qualifying for projects either contracted through the U.S. Army Corps of Engineers or otherwise permitted by all appropriate federal and State agencies;

b. The nonfederal share of the cost required to construct these projects;

c. The costs associated with providing enhanced public beach access; and

d. The costs of associated nonhardening activities such as the planting of vegetation, the building of dunes, and the placement of sand fences.

(2) Net proceeds. – Gross proceeds less the cost to the county of administering and collecting the tax, as determined by the finance officer, not to exceed three percent (3%) of the first five hundred thousand dollars ($500,000) of gross proceeds collected each year and one percent (1%) of the remaining gross receipts collected each year.

(3) Promote travel and tourism. – To advertise or market an area or activity, publish and distribute pamphlets and other materials, conduct market research, or engage in similar promotional activities that attract tourists or business travelers to the area; the term includes administrative expenses incurred in engaging in these activities.

(4) Tourism-related expenditures. – Expenditures that, in the judgment of the Tourism Development Authority, are designed to increase the use of lodging facilities, meeting facilities, or convention facilities in a county or to attract tourists or business travelers to the county. The term includes tourism-related capital expenditures.

SECTION 2.(g) Use and Distribution of five percent (5%) Occupancy Tax Revenue. – If Carteret County levies only the room occupancy and tourism development tax authorized by subsection (a) of Section 2 of this act, the net proceeds of the tax must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret County Tourism Development Authority. Beginning July 1, 2010, if the conditions in subsection (b) of Section 2 of this act are not met, then Carteret County must, on a quarterly basis, remit sixty percent (60%) to the Carteret County Tourism Development Authority. After deducting its administrative expenses, the Authority must use all of the funds remitted to it under this subdivision to promote travel and tourism in Carteret County. Administrative expenses may not exceed ten percent (10%) of the total budget of the Tourism Development Authority and may not include costs associated with the operation of visitor centers.

(2) Beach nourishment. – Carteret County must retain the remainder to be used only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

SECTION 2.(h) Use and Distribution of six percent (6%) Occupancy Tax Revenue. – If the conditions in subsection (b) of Section 2 of this act are met and Carteret County levies the room occupancy tax at a rate of six percent (6%) as authorized by subsections (a) and (b) of Section 2 of this act, the net proceeds must be distributed as follows:

(1) Travel and tourism promotion. – Carteret County must, on a quarterly basis, remit fifty percent (50%) to the Carteret Tourism Development Authority to be used to promote travel and tourism.

(2) Beach nourishment. – Carteret County must use thirty-three percent (33%) only for beach nourishment on Bogue Banks. Any idle funds that are not spent for beach nourishment must be remitted to the Carteret County Tourism Development Authority and must be used only to promote travel and tourism in Carteret County. The county may not accumulate a balance of tax proceeds for beach nourishment in excess of fifteen million dollars ($15,000,000).

(3) Convention center financing. – Any remaining proceeds, up to a maximum of ten million dollars ($10,000,000), must be used for the financing of debt service, operating costs, or both associated with the construction of a new convention center in Carteret County.

SECTION 3.(a) Carteret County Tourism Development Authority. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Tourism Development Authority for the purpose of managing the promotion and development of tourism in Carteret County.

SECTION 3.(b) The Authority must consist of nine members and must be appointed by the board of county commissioners by the selection of two members from each list of nominees submitted by the following organizations:

(1) Carteret County Chamber of Commerce.

(2) Crystal Coast Hotel/Motel Association, doing business as Crystal Coast Hospitality Association.
(3) Carteret County Board of Realtors.

The nominees submitted by the Chamber of Commerce, the Hotel/Motel Association, and the Board of Realtors must be individuals who collect the occupancy tax levied under this act. However, notwithstanding the foregoing, the board of county commissioners must appoint those persons named to serve by their respective organizations.

Three additional Authority members must be directly appointed by the board of county commissioners. One of these appointments must be a county commissioner, and one must be a mayor of a Carteret County municipality.

SECTION 3.(c) All members of the Authority must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms.

No member must serve more than two consecutive three-year terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired terms they are appointed to fill.

SECTION 3.(d) The Authority must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 3.(e) The Authority must submit to the board of county commissioners an annual audited financial statement itemizing its receipts and expenditures each year.

SECTION 3.(f) The Authority may contract with any person, firm, or agency to advise, assist, manage, or promote travel and tourism in Carteret County.

SECTION 4.(a) Carteret County Beach Commission. – The Carteret County Board of Commissioners, upon adopting a resolution levying a room occupancy tax under this act, must adopt a resolution creating the Carteret County Beach Commission, which must advise the board on strategies for beach nourishment and on the expenditure of room occupancy tax proceeds dedicated to beach nourishment.

SECTION 4.(b) The Beach Commission must consist of 11 members appointed by the board of county commissioners according to the following formula:

(1) Two individuals who reside within the town limits of Atlantic Beach.
(2) Two individuals who reside within the town limits of Pine Knoll Shores.
(3) Two individuals who reside within the town limits of Emerald Isle.
(4) One individual who resides within the town limits of Indian Beach.
(5) One individual who resides on Bogue Banks.
(6) One individual who resides anywhere in Carteret County.
(7) A member of the board of county commissioners.
(8) A member of the Carteret County Tourism Development Authority.

SECTION 4.(c) All members of the Beach Commission must serve without compensation. The term for each appointment must be for three years, except that in making the initial appointments, the board of county commissioners must provide for staggered terms. Members appointed to fill unexpired terms must serve for the remainder of the unexpired term.

SECTION 4.(d) The Beach Commission must select a chair, must meet at the call of the chair, and must adopt bylaws and rules of procedure to govern its meetings.

SECTION 4.(e) The Beach Commission may not contract with any person, firm, or agency. The board of commissioners must be bound by the recommendations of the Beach Commission regarding the expenditure of room occupancy tax proceeds dedicated to beach nourishment. The board of commissioners may in its discretion delegate additional responsibilities to the Beach Commission.

SECTION 5. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 27th day of June, 2007.

s/ Beverly E. Perdue
President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

The following three figures show (1) the growth in the Carteret County room occupancy tax collections since its inception in 1993 through 2008, (2) the year-to-year percent change in the in tax collections, and (3) monthly room occupancy tax collections for each year.

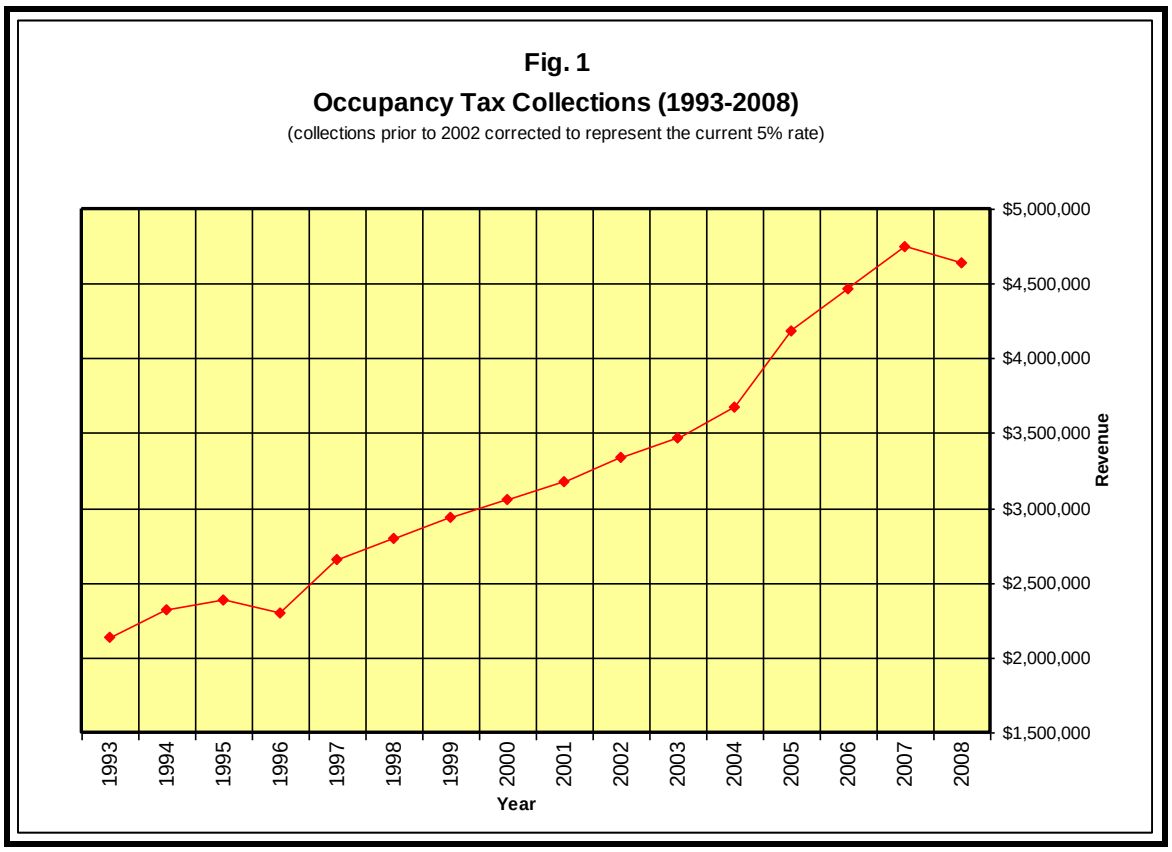


Fig. 2
Percent +/- Compared to Previous Year
Occupancy Tax Collections (1993-2008)
(collections prior to 2002 corrected to represent the current 5% rate)

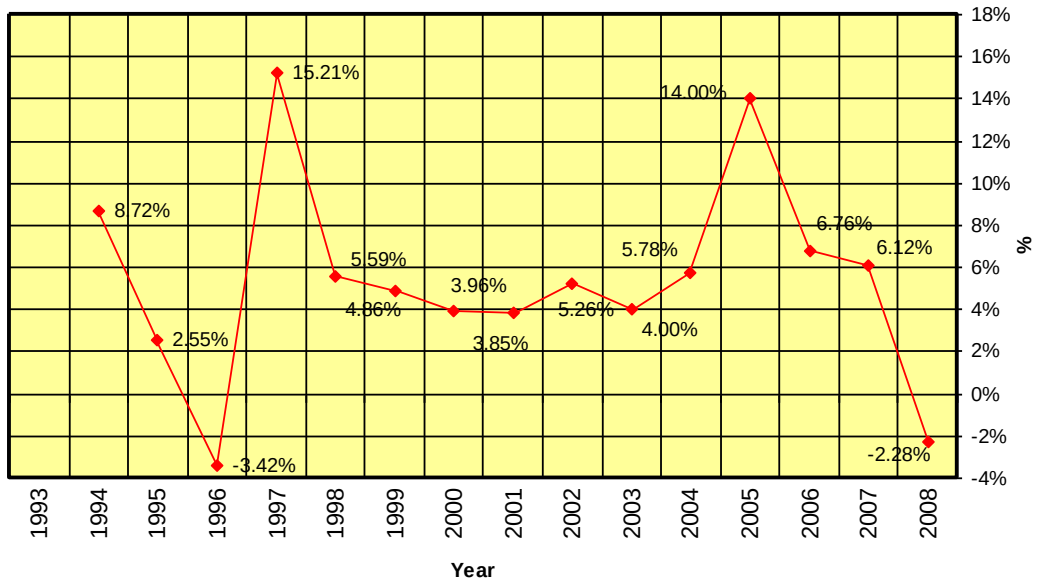
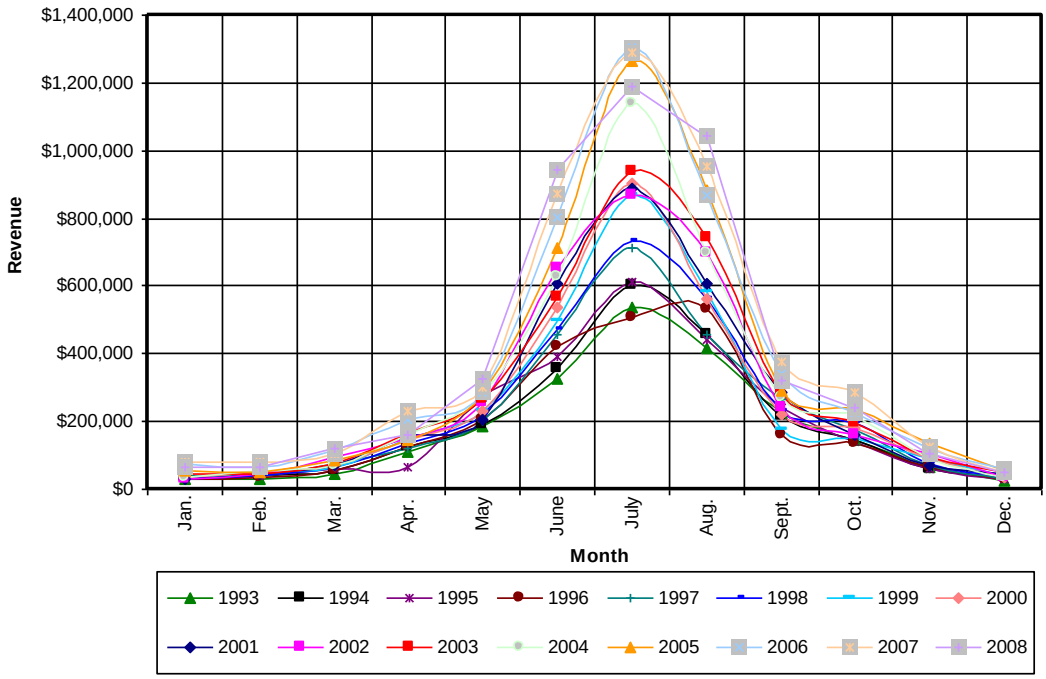


Fig. 3

Monthly Occupancy Tax Collections (1993-2008)

(collections prior to 2002 corrected to represent the current 5% rate)



Computations for the year-end balance in the Carteret County beach nourishment fund is provided in the following spreadsheet. Assumptions used to develop this projection are as follows:

Assumptions:

(1) Occupancy tax collections increase 4% annually beginning in FY 2012.
(2) Interest rate is 2.06%.
(3) Revenues - County beach nourishment is the surplus remaining after administrative costs for the annual occupancy tax collected for beach nourishment, State is 45% of annual nourishment cost, & local match is 5% of annual nourishment cost.
(4) Administrative expenditures increase at a 3% annual rate beginning in FY 2014.
(5) Annual nourishment cost for Bogue Banks is based upon historic erosion rates and volumetric need.

CARTERET COUNTY OCCUPANCY TAX PROJECTION

Portion of S.L. 2007-12 designated for beach nourishment (5% total w/ 50% towards nourishment until FY 2010, 40% thereafter)

25% STATE FUNDING, 50% COUNTY FUNDING, 25% LOCAL FUNDING

			REVENUES		**EXPENDITURES**			
Fiscal Year (July 1st - June 30th)	**Occupancy Tax** (occ. tax)	interest	State funding	Local match	administrative	nourishment	**Annual surplus or deficit**	**Balance**
2002	$856,091	<=included	$326,500		$863,511			$319,080
2003	$1,641,828	<=included	$179,500		$1,636,724			$503,684
2004	$1,777,409	<=included	$0		$1,391,030			$890,063
2005	$1,908,613	<=included	$85,000		$1,542,807			$1,340,869
2006	$2,217,115	<=included	$141,725		$1,630,665			$2,069,044
2007	$2,548,954	<=included	$55,500		$610,637			$4,062,860
2008	$2,555,364	<=included	$103,250		$724,520			$5,996,953
2009	$2,201,928	$193,510	$0		$729,494			$7,662,898
2010	$2,179,909	$160,050	$150,000		$971,555			$9,181,301
2011	$1,796,245	$188,899	$0	$0	$766,719	$0	$1,218,425	$10,399,727
2012	$1,868,095	$213,967	$0	$0	$789,495	$0	$1,292,567	$11,692,294
2013	$1,942,819	$240,561	$0	$0	$513,400	$0	$1,669,980	$13,362,273
2014	$2,020,532	$274,920	$0	$0	$528,802	$0	$1,766,649	$15,128,922
2015	$2,101,353	$311,267	$0	$0	$544,666	$0	$1,867,954	$16,996,876
2016	$2,185,407	$349,699	$0	$0	$561,006	$0	$1,974,100	$18,970,976
2017	$2,272,823	$390,315	$0	$0	$577,836	$0	$2,085,302	$21,056,277
2018	$2,363,736	$433,218	$4,409,750	$4,409,750	$595,172	$17,639,000	-$6,617,717	$14,438,560
2019	$2,458,286	$297,063	$4,159,750	$4,159,750	$613,027	$16,639,000	-$6,177,178	$8,261,383
2020	$2,556,617	$169,972	$4,159,750	$4,159,750	$631,417	$16,639,000	-$6,224,328	$2,037,055
2021	$2,658,882	$41,911	$0	$0	$650,360	$0	$2,050,433	$4,087,487
2022	$2,765,237	$84,097	$0	$0	$669,871	$0	$2,179,463	$6,266,951
2023	$2,875,846	$128,938	$0	$0	$689,967	$0	$2,314,818	$8,581,768
2024	$2,990,880	$176,564	$0	$0	$710,666	$0	$2,456,778	$11,038,547
2025	$3,110,515	$227,111	$0	$0	$731,986	$0	$2,605,640	$13,644,187
2026	$3,234,936	$280,720	$0	$0	$753,945	$0	$2,761,710	$16,405,897
2027	$3,364,334	$337,540	$250,000	$250,000	$776,564	$1,000,000	$2,425,310	$18,831,207
2028	$3,498,907	$387,439	$5,051,500	$5,051,500	$799,861	$20,206,000	-$7,016,515	$11,814,692
2029	$3,638,863	$243,079	$5,051,500	$5,051,500	$823,857	$20,206,000	-$7,044,914	$4,769,778
2030	$3,784,418	$98,135	$5,051,500	$5,051,500	$848,572	$20,206,000	-$7,069,020	-$2,299,241
2031	$3,935,794	-$47,305	$0	$0	$874,029	$0	$3,014,460	$715,218
2032	$4,093,226	$14,715	$0	$0	$900,250	$0	$3,207,691	$3,922,909
2033	$4,256,955	$80,711	$0	$0	$927,258	$0	$3,410,409	$7,333,318
2034	$4,427,233	$150,878	$0	$0	$955,076	$0	$3,623,036	$10,956,354
2035	$4,604,323	$225,419	$0	$0	$983,728	$0	$3,846,014	$14,802,368
2036	$4,788,496	$304,549	$250,000	$250,000	$1,013,240	$1,000,000	$3,579,805	$18,382,173
2037	$4,980,035	$378,201	$0	$0	$1,043,637	$0	$4,314,599	$22,696,772
2038	$5,179,237	$466,971	$6,138,750	$6,138,750	$1,074,946	$24,555,000	-$7,706,239	$14,990,533
2039	$5,386,406	$308,420	$6,138,750	$6,138,750	$1,107,194	$24,555,000	-$7,689,868	$7,300,665
2040	$5,601,863	$150,206	$6,138,750	$6,138,750	$1,140,410	$24,555,000	-$7,665,841	-$365,176
Totals	$118,629,510	$7,261,741	$47,841,475	$46,800,000	$33,697,902	$187,200,000	-$9,546,477	

The following spread sheets show how the Town of Pine Knoll Shores plans to raise the necessary revenues to support the three State funding scenarios.

Town of Pine Knoll Shores
Local Funding - Beach Nourishment
New Beach Nourishment Reserve Fund

Fiscal Year	State 25% PKS Share 25%	4 cent / 1 cent Special Tax Districts	Interest Earnings	Fund Balance
2011	-	-	-	-
2012	-	345,000	-	345,000
2013	-	348,450	6,900	700,350
2014	-	351,935	14,007	1,066,292
2015	-	355,454	21,326	1,443,071
2016	-	359,008	28,861	1,830,941
2017	-	362,598	36,619	2,230,158
2018	998,340	366,224	44,603	1,642,646
2019	998,340	369,887	32,853	1,047,046
2020	998,340	373,586	20,941	443,232
2021	-	377,321	8,865	829,418
2022	-	381,095	16,588	1,227,101
2023	-	384,906	24,542	1,636,549
2024	-	388,755	32,731	2,058,034
2025	-	392,642	41,161	2,491,837
2026	-	396,569	49,837	2,938,242
2027	-	400,534	58,765	3,397,542
2028	1,212,360	404,540	67,951	2,657,672
2029	1,212,360	408,585	53,153	1,907,051
2030	1,212,360	412,671	38,141	1,145,502
2031	-	416,798	22,910	1,585,210
2032	-	420,966	31,704	2,037,880
2033	-	425,175	40,758	2,503,813
2034	-	429,427	50,076	2,983,316
2035	-	433,721	59,666	3,476,703
2036	-	438,058	69,534	3,984,296
2037	-	442,439	79,686	4,506,421
2038	1,473,300	446,863	90,128	3,570,113
2039	1,473,300	451,332	71,402	2,619,547
2040	1,473,300	455,845	52,391	1,654,483
TOTAL	11,052,000	11,540,384	1,166,100	1,654,483

The Town of Pine Knoll Shores

RESOLUTION ADOPTING STATIC LINE EXCEPTION REPORT

Whereas, 4.5 miles of oceanfront development in Pine Knoll Shores are subject to a static vegetation line as a result of a large-scale beach nourishment project completed in 2003, and

Whereas, the NC Coastal Resources Commission has adopted new rules that enable a community to petition for a static line "exception", which would again enable the use of the actual first line of stable vegetation for oceanfront setback measurements in this area, and

Whereas, the application of the static vegetation line has rendered some properties in Pine Knoll Shores non-conforming in perpetuity, resulting in the inability for destroyed homes to be reconstructed, preventing voluntary reconstruction, and the Town seeks to eliminate these problems, and

Whereas, the ability to again use the actual first line of stable vegetation for oceanfront setback measurements may enable many of the affected properties to regain conforming status, and

Whereas, in order to secure a static line "exception", the Town must present a static line exception report that outlines previous nourishment activities, project performance and monitoring activities, the availability of suitable sand for at least a 25-year period, and the availability of reliable funding for at least a 25-year period, and

Whereas, the Town has retained Coastal Planning & Engineering of NC to prepare such a report for submission to the NC Coastal Resources Commission,

Now, therefore, be it resolved that the Pine Knoll Shores Board of Commissioners hereby adopts the Static Line Exception Application Report prepared by Coastal Planning & Engineering of NC dated March 2010, and will comply with the commitments outlined in the report. The Town Manager is hereby authorized to submit the report for consideration by the NC Coastal Resources Commission for a static line exception.

Adopted this the 9th day of March, 2010.

Kendall W. Jones., Mayor

Attest:

Janet H. Thomas, Town Clerk

100 Municipal Circle ♦ Pine Knoll Shores, North Carolina 28512 ♦ tele: 252-247-4353
fax: 252-247-4355 ♦ e-mail: admin@townofpks.com ♦ website: www.townofpks.com

NC COASTAL RESOURCES COMMISSION (CRC)
February 17, 2010
New Hanover County Government Complex
Wilmington, N.C.

Present CRC Members
Bob Emory, Chairman
Joan Weld, Vice-Chair

James Leutze
Chuck Bissette
Charles Elam
David Webster
Veronica Carter
Ed Mitchell
Bob Wilson (present at 10:15 a.m.)
Lee Wynns
Benjamin Simmons

Present CRAC Members
Dara Royal, Chair
Frank Rush, Vice-Chair

Webb Fuller
Joseph Beck
Bob Shupe
Bill Morrison
Michael Moore
Tracy Skrabal
Missy Baskerville
Debbie Smith
Wayne Howell
Rhett White
Bill Gardner, Jr.
Eddy Davis
Lee Padrick
Tim Tabak
Charles Jones
Judy Hills
Anne Deaton
Debbie Smith
Phil Harris
William Wescott
Cyndi Karoly
Harry Simmons

Present Attorney General's Office Members
Jennie Hauser
Christine Goebel

CALL TO ORDER/ROLL CALL

Chairman Emory called the meeting to order and reminded Commissioners of the need to state any conflicts due to Executive Order Number One and also the State Government Ethics Act.

Angela Willis called the roll. Renee Cahoon, Jerry Old, Bill Peele, and Melvin Shepard were absent. There were no conflicts or appearances of conflict stated by Commissioners. Based upon this roll call, Chairman Emory declared a quorum.

MINUTES

Jim Leutze made a motion to approve the minutes of the January 2010 Coastal Resources Commission meeting. Ed Mitchell seconded the motion. The motion passed unanimously (Weld, Leutze, Bissette, Elam, Webster, Carter, Mitchell) (Wilson absent for vote) (Wynns, Simmons abstained).

EXECUTIVE SECRETARY'S REPORT

DCM Director Jim Gregson gave the following report.

New Commissioner

I would like to welcome the newest member of the CRC, Jamin Simmons and thank him for being able to come to the Morehead City office for orientation.

SLR Forum

I want to congratulate and thank Tancred Miller for a very successful Sea Level Rise Science Forum, which took place at the January CRC meeting. The forum attracted several national and state experts as speakers who discussed past and potential future sea level rise impacts for North Carolina. More than 250 stakeholders from the public, academic and policy institutions and state and federal agencies were in attendance. The Forum culminated with the Coastal Resources Commission's Science Panel giving its preliminary report of data on current and projected rates of sea level rise within the state. A final report from the Science Panel is expected within the next few weeks. The CRC and DENR plan to use these metrics as the foundation for education, policy development, and adaptation planning in the state.

Training Opportunity

On April 7, the Coastal Reserve's Coastal Training Program will present a free workshop in Beaufort on Controlling Microbial Pollution in Your Community. This workshop will address why microbial pollution is a threat to water quality, public health and local economies; discuss how the Coastal Stormwater Rules and stormwater structural best management practices can control microbial pollution; introduce emerging technology in detecting microbial pollution; and demonstrate through a case study how you can become actively involved in controlling microbial pollution in your community.

This event is designed for local elected and appointed officials, local government staff, and local health department staff.

Staff News

DCM's IT Manager, Josh Shepherd, will be leaving the Division at the end of February for a position with the N.C. Dept. of Agriculture. Josh has been with the Department for more than 13 years. Josh will be missed by all in the Division.

CHAIRMAN'S COMMENTS

Chairman Emory stated the Sea Level Rise Science Forum was very successful. I was impressed with the information that we were presented and would like to offer my congratulations to Tancred on a job well done in planning it. It provided us some very valuable information that we will be able to use as we move forward. One of our strategic goals on how we would spend our time was to begin to try to get our arms around what sea level rise means to the coastal area of North Carolina. Along with some rule changes that we have done, this was a big first step in trying to understand the impact of sea level rise. There has been a lot of activity associated with the study on terminal groins that the Legislature tasked the CRC with. There has been a lot of effort on the part of the Division Staff, CRAC members, CRC members, as well as the contractor and the Science Panel.

CRAC REPORT

Dara Royal welcomed Commissioner Simmons. She also welcomed Ocean Isle Beach Mayor Debbie Smith, the newest member of the CRAC. Debbie represents the Cape Fear Council of Government. The Advisory Council began discussion in October about updating the 7B land use

planning guidelines. The update was one of the priorities identified by the joint CRC-CRAC strategic planning exercise in January 2008. The Council has worked with Staff to outline the role we can play in updating the rules. We recommend the CRC appoint a joint CRC-CRAC subcommittee that can begin the work of reviewing the guidelines and preparing recommendations for consideration by the full Commission. Other specific recommendations relative to this topic are as follows: the subcommittee should be kept small and consist of three CRC members and five CRAC members; the Advisory Council nominated Dara Royal, Frank Rush, Tim Tabak, Christine Mele, and Lee Padrick to serve. We felt these folks represent a good cross section of the CRAC membership. DCM Staff should be directed to support the work of the subcommittee. The subcommittee plans on spending about one year to gather stakeholder input and prepare recommendations. The subcommittee engages the participation of NOAA OCRM as a way to smooth the process of having CRC approved land use plans incorporated into the state's federally approved coastal program. The subcommittee plans and implements a program for education for local governments about the CAMA land use planning program. These recommendations were approved unanimously for the CRC's consideration.

Charles Elam made a motion to accept the CRAC's recommendations. The motion passed unanimously (Elam, Wynns, Weld, Bissette, Carter, Leutze, Mitchell, Webster) (Simmons abstained) (Wilson absent for vote).

Chairman Emory nominated Bill Peele to the subcommittee. Ed Mitchell and Charles Elam volunteered to be on the subcommittee.

Dara stated the other item of business results from an extensive discussion about the challenges that local governments continue to face in completing some beach, inlet and waterway projects. The Town of Carolina Beach recently had to scale back the nourishment project at the last minute because of an unanticipated reduction in federal funding share. The Town had its own funds available to make up the shortfall, but was unable to use those funds because no mechanism exists in the regulatory framework to allow the Town to do this. One way to have addressed the Carolina Beach problem would have been to grant the Town a permit to complete the rest of the project as already designed and approved using the Army Corps of Engineers environmental analysis that the State has already determined to be consistent with the State's rules. The Council discussed this issue with Staff three years ago. We do not feel that it was successfully resolved. We believe that a satisfactory solution is possible with further discussion and we are assembling a small CRAC team to pursue that solution. The team will be working with DCM Staff and the Corps to explore the options and CRAC will continue this discussion in March and will have a recommendation for the Commission soon thereafter.

PRESENTATIONS

CRC Study of the Use of Terminal Groins (CRC 10-08)
Johnny Martin, and Paul Tschirky, Moffatt & Nichol

Jim Gregson stated we thought it would be prudent to give a brief history of how we got to where we are with the ban on hardened structures, what the existing rules say about erosion control structures, and talk about the existing law. Shortly after CAMA was passed, the CRC decided to limit the use of permanent erosion control structures with the exception of protecting structures that already existed. If you had a building that was there prior to June 1, 1979 it could be protected with a permanent erosion control structure such as a jetty or seawall). In 1984, the Outer Banks Task Force recommended prohibiting hardened structures unless strict criteria could be met. The criteria was lengthy and some of it is incorporated in the current rules for hardened

structures. A lot of what we have today is based on what the Outer Banks Task Force recommended. In 1985, the Commission banned hardened structures regardless of the construction date for the structure that was being protected. In 1989, the CRC amended the hardened structure ban to allow for the protection of Bonner Bridge. In 1992, there were additional amendments that gave exceptions for the protection of nationally significant and historic sites and commercial navigation channels. In 1995, the CRC granted a variance for a sand tube groin field located on Bald Head Island and that was later added to the exceptions list. In 2003, the law was amended to prohibit permanent erosion control structures with limited exceptions. The current rules say that permanent erosion control structures may cause significant adverse impact on the value and enjoyment of adjacent properties or public access to and use of the ocean beach and therefore are prohibited. Keep in mind that the list of structures in the rule includes groins and this would include terminal groins. There are some exceptions in the rules and they are not banned in all instances. The exception basically says that those structures that would otherwise be prohibited could be permitted if there are certain findings. 7H .0308(H) states that it can be permitted if the erosion control structure is necessary to protect a bridge which provides the only existing road access on a barrier island that is vital to public safety and is imminently threatened by erosion. If the structure is located within twenty feet of the erosion escarpment it is considered imminently threatened. The structure can be permitted if the structure is necessary to protect a state or federally registered historic site that is imminently threatened by shoreline erosion. The third exception is if the structure is necessary to maintain an existing commercial navigation channel of regional significance if the channel is maintained within the federally authorized limits. The fourth exception states that you may renew a permit for an erosion control structure that is issued pursuant to a variance granted by the Commission prior to July 1, 1995. The Commission may also authorize replacement of that permanent erosion control structure that was permitted pursuant to a variance granted prior to July 1, 1995. Your rules do not completely ban hardened structures. There are exceptions to that ban and that could be used today to permit structures in limited circumstances. The two structures in North Carolina that are part of the terminal groin study could be permitted today based on your rules. CAMA was amended in 2003 which codified what the CRC said in its rules. This amendment was the result of a Senate Bill that was put into place with the intent of strengthening the ban on seawalls. The law also defines what an erosion control structure is. The law says that no person shall construct a permanent erosion control structure along an ocean shoreline. It goes on to talk about what types of erosion control structures are allowed by law. Currently those types of structures are limited to temporary sandbags. The law also set up some exceptions that reference the exceptions set out in the CRC's rules. The two terminal groin structures in North Carolina are not currently banned by state law or the CRC's rules.

Paul Tschirky of Moffatt & Nichol stated this presentation will be a study overview and then discussion of the draft report. The first part of the draft report is the coastal engineering analysis and geological assessment. This is one area that the draft report will differ from the final report. Based on comments from the Science Panel and others we will restructure the report to integrate the coastal engineering and geologic analysis into one section called physical assessment of the terminal groin. The next section will be the environmental assessment portion of the report. The next part of the report is the economic assessment. The last section of the report combines the construction techniques, costs, and locations.

House Bill 709 was the driver of this report. This bill identified in its second section that the Coastal Resources Commission shall conduct a study of the feasibility and advisability of the use of a terminal groin as an erosion control device. Six specific things were identified in the legislation. The first was to gather scientific data regarding the effectiveness of the terminal groins. The second point is to look at the impact of terminal groins on the environment. The

third point was to address the engineering techniques used to construct terminal groins. The fourth point was to look at the economic impact of erosion caused by shifting inlets. The fifth point was to look at the cost of construction and maintenance. The sixth point specifically asks whether terminal groins should be limited to navigable, dredged inlet channels. Another part of the legislation was the need for public input. Three public hearings were required. We have already conducted three public hearings and two more are scheduled. All of the presentations, comments received and meeting minutes have been added to the Division of Coastal Management website www.nccoastalmanagement.net. Comments can be made to Jim Gregson in his role as Executive Secretary to the CRC. The legislation identifies that the final findings of the CRC should be reported to the Environmental Review Commission and the General Assembly by April 1, 2010. The project study team includes Moffatt & Nichol who looked at the coastal engineering and physical assessment. Dial Cordy and Associates looked at the environmental issues. Dr. Duncan FitzGerald from Boston University consulted with us on the coastal geologic aspects. Dr. Chris Dumas from UNCW led the economic portion of this study. The CRC and CRAC have been providing guidance to the study team and will ultimately develop policy recommendations to submit to the ERC and General Assembly. The Science Panel has been involved with project scoping, approval and discussion of the study methodologies, as well as in an advisory capacity on the draft report.

The first step of the study was to look at what sites would be studied. There were 23-25 sites identified originally, primarily along the southeast coast of the United States. At the September Science Panel meeting there was discussion on which sites were most appropriate to proceed forward with in the study and five were selected. Oregon Inlet and Fort Macon are in North Carolina. Amelia Island, Captiva Island, and John's Pass are all in Florida. Sections two and three of the draft report will be combined in the final report to address the coastal and geological in one physical assessment section. The first step in this section was to gather and compile the physical data. In order to assess the physical impacts of the terminal groin the first thing used in the methodology was to look at shoreline change. The objective was to gather shoreline information for periods prior to the construction of the terminal groin and after. Once the shoreline information was gathered for pre- and post- periods then the shoreline change was measured at fifty meter transects for three miles on each side of the inlet. From those measurements we calculated pre- and post-shoreline change rates along those three miles on each side of the inlet. We did that as a cumulative average as well as averages over intervals. In these shoreline changes there are also other activities that would be going on along the shoreline in addition to the terminal groin like beach nourishment and dredging. The shoreline change information was converted into a beach volume change. We wanted to get to a volume form so we could look at the potential impacts of nourishment and dredging on the shoreline behavior. Nourishment was important so we looked at all the information that was available. Volume changes were calculated pre- and post-structure netting out all nourishment. Dredging also has an impact on what sand arrives at the beach. We looked at the dredging volumes that were available and times they were dredged. In the report there are scenarios looking at the amount of dredge material. Integrated into this is the discussion of the geologic setting which included literature review for the five sites. The physical and geologic processes were discussed as they related to the terminal groin. The differences were measured between historic positions pre- and post-structure. Included in the change are sea level rise, storms, beach nourishment, dredging, structures, and long-term natural regional shoreline processes. As summary of the overall findings looking at the five sites, if you look at shoreline change you see that the shorelines on the structure side of the inlet were eroding prior to the groin construction. The shorelines on the opposite side of the inlet in the five cases we looked at don't display a clear trend. Some are eroding and some are accreting. However, due to the nourishment and dredging activities you cannot make an assessment on what the terminal groins are doing based on the shorelines alone.

The next part was the nourishment and nearshore disposal displacement volume. On the structure side of the inlet when we net out all the beach nourishment and all the nearshore disposal, the beach along the three miles on the structure side generally displays a reduction in eroded volume with the exception of Amelia Island. Part of that may be that Amelia had a very large renourishment project that went along with the construction of the structure and it is the newest structure so there is not a long time history post-construction. If you look at the report, we looked at two different time periods at Oregon Inlet. For one of the time periods Pea Island also shows some slight increase in erosion volume. Beach volume changes on the opposite side of the inlet don't show a clear trend. Dredging activity deprives the natural sand bypassing of the inlet. Sand that might have normally, naturally deposited on the beach isn't getting there anymore. We need to count that in order to have a full understanding of the relative impact of the terminal groin.

Dawn York of Dial Cordy and Associates stated Dial Cordy was charged with evaluating the environmental analysis. We collected and analyzed biological data that was readily available and scientific literature. We identified and interviewed state and federal agencies, non-profit organizations, as well as non-governmental organizations. We evaluated the available biological data using a spatial and temporal basis using pre- and post-construction. We also looked at similar sites adjacent to the study areas. We evaluated data on a graphical representation providing the information in the study report as observations per year. Based on comments and recommendations from the Science Panel we also integrated storm and renourishment data for each of the sites trying to define any trends in the data. We also described the data numerically in the report. Based on our study we realized that there were quite a few caveats. No new data was collected during the study. It was an evaluation of preexisting data. We looked at existing secondary sources and raw data collected by the other entities. We looked at available data but did realize that most of, if not all of, the information that was readily available was not directly related to the construction of a terminal groin. Beach nourishment and terminal groin effects could not be separated based on available natural resources data. The historical nature of some of the study sites, including John's Pass and Fort Macon, precluded the availability of pre-construction natural resource data that we could look at to evaluate before and after. Prior to construction and after construction data were only available for two sites, Oregon Inlet and Amelia Island, and it was only available for limited resources such as sea turtle and shorebird data. Some of the resources that were evaluated in addition to the biological resources we have listed were recreational, public access and aesthetics. Minimizing natural overwash at the end of a barrier island limits the natural processes which affect inlet habitats, thus affecting species use. We know that anchoring the end of an island may curtail an inlet's natural migration patterns thereby minimizing the formation of sand flats. The fillet material that is used at the end of an island should be compatible to minimize effects on benthic and infauna recovery and upper trophic levels. We did see through the data that was available to us in our evaluation that resources continue to use the study sites where terminal groins exist, however if habitat succession occurs species suitability may be affected. The available data and the limited time frame for the study did result in non-discernable site specific trends.

Johnny Martin of Moffatt & Nichol stated I will be talking about some of the economic work and some of the construction costs, techniques, and locations. Dr. Dumas could not be here today. There has been a lot of input from the Science Panel on this portion of the study. It was agreed that the method and approach for this portion of the study should be to identify properties and infrastructure at risk using proposed 30-year risk lines. The current property and infrastructure locations and value data were assembled. The economic value was added up and tabulated for each side of the inlet. The features from the legislation that were to be in the study included property loss, public infrastructure and tax-base losses and all of these were considered. We also

realized that there were other factors that should be included so diminished market value, impacts on second row, and environmental and recreational values were also included in the study. The summary results of the economic study show the economic impacts vary widely by inlet and side of inlet. The inlets with higher development may have significant infrastructure and property at risk over the next 30 years. All areas denoted by 30-year risk lines may not be protected by a terminal groin structure. Additional factors such as recreation, environmental economic impact, and property transfer value can be important. The literature review of techniques used to limit impacts on adjacent shorelines included limits on groin height and length, porosity of structures, materials, etc. We also did a parametric study with the available data on the five sites looking at how shoreline change rates were altered pre- and post-structure and tried to plot that against some of these different factors. Longer length has more effect. There is a threshold that you reach. Higher elevation also has more effect. The leaky groin at Amelia Island clearly allows more material to pass through it than the other structures. Groin structure shape has an influence. Some areas are using things like inclined and notched structures as well as different planform shapes to limit impact on adjacent shorelines. Material types have also been shown to affect sediment transport rates and shoreline behavior. Concrete, steel, timber sheeting and pilings allow for adjustments in the field as well as removal of the structures if shown to have an unacceptable adverse impact. You would be able to remove one hundred percent of the structure. You may only be able to remove eighty or ninety percent of a rock structure. Available cost data was reviewed for existing terminal groins including public and private costs. Ranges were developed of potential costs based on typical expected terminal groin dimensions and typical North Carolina offshore slopes. Rock would be used for some of the shorter structures and could run as low as $1200.00 per foot, but if you start getting out into deeper water on a steep beach then it could be as high as $6500.00 per foot. Oregon Inlet was a little bit higher than that. Steel and concrete structures did not have as much variability within them mainly because you can only go out to a certain depth before they become unfeasible. These would be suitable for shallower structures, but not in deep water. Timber and geotextile tubes are comparatively a good bit less expensive, but could not go into deep water. We found that the annual maintenance costs can vary widely as well. The ones here in North Carolina have not had a lot of maintenance done to them. Maintenance costs can be very minimal. John's Pass and Captiva Island have both required major rehabs over a twenty year time frame. We think it is mainly due to the fact that these were built with local dollars and they were not built to the 100-year design level. The annual maintenance costs would be between 5 – 10% of the initial cost of construction. As a result of sea level rise and storms over a long period of time it would increase the cost by another 5-10%. Initial beach nourishment costs should also be included. Permitting, design, monitoring and removal costs should also be included. Some of the shorter structures are estimated to be around 2.5 million dollars initially with annual maintenance costs around $500,000.00 per year due to the required monitoring and long-term maintenance. For larger structures (around 1,500 feet long) it would be around $10 million with about $1 million per year maintenance costs. Literature review was done of the existing locations of the inlets. We looked at issues with respect to use at navigable, dredged inlets versus non-dredged inlets. We also looked at inlet behavior and whether the inlet was stable or migrating. The goal was to assess and comment on the locations of terminal groins with respect to the inlet conditions as well as the geologic and hydrodynamic setting of each of the five study cases. Most of the existing sites include navigable, dredged inlets. We looked at all of these structures and tried to find one that was at the end of a littoral cell and we could not find one. Only five locations were considered for the study. The five sites have similar hydrodynamic conditions as North Carolina inlets. There was a significant range of inlet management covered with the five study sites. There are two take home messages from the study. The level of interventions and manmade impacts (nourishment and dredging) along with the terminal groin dimensions determine relative scale effect of the groin. In some of these areas like Oregon Inlet or Beaufort Inlet where you do

have some intense nourishment and dredging operations, those overwhelm any of the impacts of the terminal groin itself. However, when you look at some of the ones down in Florida that are not so heavily managed, then the terminal groin impacts are a lot more apparent or the potential effects are a lot more apparent. There is a relative scale effect with these structures. Nourishment and some level of inlet management normally accompany terminal groins. Usually these things are not done in a vacuum. In all cases that we have seen there has been some level of nourishment that has gone on as well as some level of inlet management to help fix the location of the channel so it will not undermine the groin.

Bob Emory stated this task was assigned to us by the Legislature. Our task was to study the advisability and feasibility of terminal groins in North Carolina. We do have a due date of April 1, 2010 to report our findings to the Legislature. The way the legislation was written we report to the Environmental Review Commission of the Legislature. That method of reporting has not been determined at this point. We are working off of the assumption that we need to be ready April 1. The Moffatt & Nichol report is almost final. You have heard during the presentation that they have consulted and received input from the Science Panel along the way. There was discussion among the Steering Committee members early on that the Science Panel would be in a peer review role. It became obvious as things went on that there was not time to do a true peer review of this study. The Science Panel wanted to make it very clear that this report will not be considered to be peer reviewed by the Science Panel. There has been a lot of interaction, advice and input but we are not going to call this a peer reviewed report. We have had three public hearings already, have one scheduled for today, and the last one is scheduled during our next CRC meeting. We have a Steering Committee made up of CRC and CRAC members. This group has met with the consultants twice and will meet one more time before the Commission has to come to some sort of final recommendation. We have just heard a summary of the draft report. I would say that the report is informative and it covers all of the topics that the legislation called for. It includes five study sites, but we need to remember that it did not attempt to analyze all North Carolina inlets for the advisability and feasibility of the use of groins. The report does a good job of highlighting conditions at specific inlets but the report did not do our work for us. It does not send an easy, clear message for us. We are going to have to digest this report and come up with a recommendation based on the report. Our recommendations to the Legislature should include our assessment of what we learned from the Moffatt & Nichol report. Our report to the Legislature should include recommendations for action, no action or what we think should happen with terminal groins. Today I hope we can provide Staff a sense of where we are on the report and maybe begin to develop a sense of where we are on terminal groins. Any final decision on terminal groins should be based on the final report. Let the Staff begin development of the CRC document that will accompany the report to the Legislature. The Science Panel and the Steering Committee will meet in March to review the final report. Some of the possible outcomes include (1) status quo with the existing exceptions; (2) keep the ban and get rid of the exceptions; (3) retain the ban with the existing exceptions and add some new ones that should be considered; (4) recommend that the Legislature restore the former authority the CRC had to handle groin requests through a variance procedure (either with the standard variance criteria or with specific criteria for groins); (5) retain the current ban but get the authority from the Legislature to develop development guidelines and permitting procedures for terminal groins; or (6) recommend doing more study.

Bob Emory stated that he would like to get Staff started on development of a document that would come from the Coastal Resources Commission to accompany this report to the Legislature. The next time the Steering Committee meets it will look at the document that Staff has put together on our behalf and refine it. We need to look into the Moffatt & Nichol report and see to what degree of certainty we can speak to several issues. We need to consider the effect on adjacent and nearby shorelines and wildlife habitat. Make sure if a community has the

ability to put in one of these structures that the money is there to maintain and nourish through time. There are concerns about the practicality of removing a groin if you ever have the need to remove one. We know quite a bit about the five inlets in the study and about what the impact is within three miles, but we are less certain about impacts beyond three miles. Every inlet is different and unique. It would be a challenge to develop a rule, a development standard, for groins with the great variability from inlet to inlet. Lift statements of uncertainty out of the report. Let the Legislature know there is too much uncertainty to determine the feasibility or advisability. There is a lack of empirical data. We should obtain some best practices from other states and include their success and failures in the Staff's report. We need to list the resources that we are worried about, but also talk about the people. The tax payers of North Carolina are a major resource. We also need to include what makes the North Carolina coast different from other coasts.

PUBLIC COMMENT

Marty Cooke stated I am a County Commissioner in Brunswick County. I have been to other Coastal Resources Commission meetings. I have to tell you that I have come to appreciate your job because I sit on a similar perspective. As Veronica stated we have to make decisions for not just one individual, but one size has to fit all. I have walked the beaches of Ocean Isle Beach and some of these other beaches and I equate it to being a patient who is now on life support, a patient who is dealing with a bleeding ulcer, or a patient who is suffering from a condition that may ultimately cause their demise. That being said, as a layman and not having a degree in meteorology or any aspect of climate change, sea level change or anything else, just as a layman as a citizen of the State. And as a citizen of Brunswick County and having seen firsthand some of the issues that we have I think the terminal groin does provide us with a perspective where we can bring stability. I think as Dr. Leutze stated there doesn't seem to be any indication that the terminal groins don't work. Categorically if they did not work we probably wouldn't be having this discussion. But there seems to be some basis whereby it does. That being said my real concern is that if we continually have exhaustive studies at some point we won't have anything to protect. It isn't just the property owner. It isn't just that one individual. It's the infrastructure. It's the tax base. It's the cities. It's the towns. It's the inlets. It's the waterways. It's everything that we have as one package. So it is not that affluent individual, that person who is given something by their parents or whatever, it is an overall collaborative, comprehensive aspect of how we must be able to provide stability for our beaches. I implore you; please do not exhaustively study this. We need to find a way to actually address this issue, even if we do have to have some degree of maintenance, we will be able to find a more sustainable stability for these beaches than what we have at this time. Thank you for your time.

Steve Foster stated I have lived on the coast for over 30 years now. Gratefully, I have enjoyed every minute of it and hope I live here for another 30 years. The coast is under assault. It is under a terrific amount of strain and stress. I have worked on beach renourishment projects. I am currently the Town Manager at North Topsail Beach and former Manager at Topsail Beach. There is no money available for non-federal projects. These small towns are for beach renourishment. These small towns are struggling. I mean literally struggling trying to scrape up every single penny that they can get together just to save their communities. This isn't an issue of maybe we can or should we or anything else. We have to. So if we can somehow use this tool, these terminal groins, as a potential to help these communities I think it is incumbent on the Legislature and everyone to try to expedite this as soon as they possibly can. Thank you.

PUBLIC HEARING
CRC Study of the Feasibility and Advisability of the Use of Terminal Groins

Paul Tschirky of Moffatt & Nichol stated this presentation would be similar to the others given at the three previous public hearings. House Bill 709 was the trigger for this process. It had two sections in the Bill and the second section of the Bill directed the Coastal Resources Commission to study the feasibility and advisability of the use of a terminal groin as an erosion control device. The legislation specifically had six points that should be considered. The study follows those six points. The first was to look at scientific data regarding the effectiveness of terminal groins. The second was to look at the terminal groin's impact on the environment. The third was to look at engineering techniques used to construct terminal groins and if anything could be done with the techniques to minimize any impacts that they may have. The fourth point was to look at the economic impact to North Carolina from shifting inlets. The fifth point was to look at the cost of construction and maintenance of terminal groin structures. The sixth point specifically addressed the question of location and whether terminal groins should be limited to navigable and dredged inlet channels. The other parts of the legislation addressed the need for public input. Three public hearings were required in the legislation. Today is the fourth public hearing that has been held on this study and a fifth is scheduled during the next Coastal Resources Commission meeting. The final report by the CRC to the ERC and General Assembly is due April 1, 2010. The study team that put together the draft report is Moffatt & Nichol which looked at the coastal engineering and physical aspects. Dial Cordy and Associates looked at the environmental aspects. Dr. Duncan Fitzgerald of Boston University provided advice with respect to the coastal geology. Dr. Chris Dumas from UNCW worked on the economic section. The overall work plan for the contractor portion of the study had seven main tasks. The first six tasks mirror that of the legislation. The seventh task is the public input. The eighth part is the reporting function. The CRC and CRAC have provided guidance to Moffatt & Nichol during the study and are ultimately responsible for developing policy recommendations. The Science Panel was involved in the project scoping, approval of the study methodologies, and in an advisory capacity providing comments to those methodologies and to the report. The five sites that were selected to look at in detail in the study were two in North Carolina, Oregon Inlet and Fort Macon, and three in Florida, Amelia Island, Captiva Island and John's Pass. All information on this study (reports, presentations, comments, and meeting schedules) can be found on the DCM website www.nccoastalmanagement.net under the "What's New" section. Comments can be made to Jim Gregson at Jim.Gregson@ncdenr.gov in his role as the Executive Secretary to the CRC. The working draft of the report came out on February 1, 2010 and it is available on the website. The final draft of the contractor portion of the study is due March 1, 2010.

John Fisher, Village of Bald Head Island, stated I would like to start by saying that the Village of Bald Head Island appreciates the hard work that the Coastal Resources Commission, Steering Committee, Science Panel, Advisory Council, Division of Coastal Management, Staff and their consultants have put into this terminal groin report as well as Moffatt & Nichol. It is a very inclusive product. Often we don't recognize those that do a lot of public service work. You are appreciated. We may not always agree with the results of some of these things, but the effort is there and it is appreciated. This is how we reach conclusions and move forward. The report is consistent with Bald Head Island's experience and belief that terminal groins can be helpful at inlets if properly designed and constructed as part of a comprehensive management plan which does include beach nourishment. That was alluded to by the Science Panel and not necessarily all added in this report but it is certainly a key component. The Bald Head Island sand tube groin field was alluded to earlier. I want to state for the record that it has been very helpful. It is not robust enough for the serious shipping channel induced erosion that we experience on Bald Head Island, however the sand tubes also do not meet the report preferred design criteria of structure

permeability, longevity, low-elevation, wave absorption characteristics and so forth. But do they do the job? Yes they do. The Bald Head Island cloth tubes fail approximately every four to five years and that is relative to major storms or not. This costs about 1.1 million to replace each time we go back into that. You have personally observed the Corps' dredging and erosion which results immediately thereafter at Bald Head Island. You have also observed the loss of public beaches, habitat and accesses. The Village had to fund a 17 million dollar beach nourishment project this past year. That was to protect the island's habitats, homes, and infrastructure as the existing sand management plan is inadequate and leaves a four year gap between the placement of sand from the Corps. A terminal groin should be studied for Bald Head Island and maybe helpful along with continued sand placement under the sand management plan as part of a comprehensive management plan at Bald Head Island's inlet and other NC inlets. All of the inlets are unique and different. It is very difficult. We have heard that today reiterated numerous times to have a scientific study that says each is the same. As legislation is necessary to build a terminal groin, the CRC should propose legislation to the General Assembly. The legislation should require proper oversight and compliance with good engineering practices. We do feel that today's engineering practices are much better than they have been in the past. Science is science and we are moving forward. Engineering is moving ahead. The legislation should allow terminal structure permit decisions to be made by the CRC or the DCM Staff rather than being made at the legislative level. Bald Head Island will again have a four year sand gap in 2016-2017. We do need some action and quickly because the process is timely overall. Bald Head Island's beaches, turtles and birds belong to the State and the people of North Carolina. They are worthy of protection. Terminal groins that are properly designed and constructed as part of a comprehensive management plan, including beach nourishment, can be helpful at Bald Head Island's inlets as well as other N.C. inlets. The alternative to no terminal groin may be no beaches at all. I didn't hear that talked about too much in the reports. I did hear about habitat, preservation for the critters as well as the people, and the birds, fish and wildlife. But the environmental impact of allowing unmitigated erosion doesn't seem to be present in the report. That needs to be thought about. What if we do nothing and the beach continues to fall away and is gone? The Village of Bald Head Island has delivered a letter in support of terminal groins to the Coastal Resources Commission as well as the N.C. Division of Coastal Management. We would like to see our suggestions, the study of this report considered and the legislation move forward as we have heard today.

Alderman Deborah Lanci stated she represents the Citizens of the Town of North Topsail Beach, the Board of Alderman and the Mayor. I have been authorized by the aforementioned leadership to make a statement at today's CRC public hearing with regard to hardened structures in the form of terminal groins. North Topsail Beach would like to go on the record as proponents of legalization of terminal groins solely for the purpose of inlet stabilization. With the textile and furniture industries having been relocated out of North Carolina and sent overseas, tourism now remains one of our main leading industries. Towns like North Topsail Beach that are located adjacent to turbulent, dynamic inlets face severe erosion challenges. Some might see inlet stabilization as a means of protecting private properties, however in order to continue to compel tourists to continue to visit our beaches we need to demonstrate our commitment to maintaining those beaches with erosion control. It is a well known fact that wide, white sandy beaches are the preference of tourists. No tourist wants to arrive at their vacation destination to find the home that they rented is next to a condemned structure falling into the ocean. Residents of our town and towns of similar geography find themselves having to foot the bill for very expensive beach renourishment events. Inlets tend to act as enormous black holes sucking in sand from neighboring beaches and requiring very expensive navigation channel maintenance dredging operations. The ability to stabilize the inlet by means of a terminal groin would lessen the need to perform such operations as frequently. When the maintenance is required, the sand could be

placed in a means sensitive to mitigating any downstream beach erosion. In conclusion, on behalf of North Topsail Beach, I implore the CRC to make the recommendation to legalize the use of terminal groins as a means of inlet stabilization on North Carolina's beautiful yet fragile coastline. Thank you for your time and anticipated support of our concerns.

Ray Webb, attorney with Bald Head Island Limited, stated I delivered a letter of comment from our CEO and President and ask that this be made a part of the record on this matter. I was searching for a way to segway into this and it struck me that I am 6'4" and well north of 200 pounds so I might have particular credibility in suggesting that one size does not fit all. I respectfully submit to you that for quite some time the one size fits all premise has been an underpinning of much of North Carolina's coastal policies. As a consequence we are grateful to the Legislature for giving us this opportunity to consider certain options. I would like to suggest that the justification for the prohibitive policy which has been a policy for years is largely the idea that littoral movement of sand will give us islands and coastal landforms that seek their own equilibrium. Certainly, to a large extent, in many circumstances this is true. I would like to submit that it is equally true that the justification for that policy drops out in the case of managed or dredged inlets where the natural process is no longer controlling. Bald Head Island is in certain respects, especially the sensitive West and South beach area, is a poster child for managed or dredged inlets. This inlet has been dredged, gouged, engineered, moved and monkeyed with for 150 years or more. As a consequence I don't know that anyone can absolutely say what it would or should look like as a consequence of the natural processes. I think we can say without fear of contradiction that as a consequence of man's most recent intervention, in the form of the aggressive channel maintenance dredging that took place this past summer, we have had an unprecedented loss approximately four times the customary or usual rate of loss of sand than would have otherwise occurred during the natural erosive process. I would like to suggest that if we as a society through our government are going to mandate a critical interest, open and navigable channels, it is only fair that we equally mandate that those areas in those communities that suffer the consequences of that policy should be entitled to mediate or mitigate in some fashion. The opportunity for careful studied use of the terminal groin may present that opportunity or that technology. I want to emphasize that we want to add our voices to the entirety of coastal communities in supporting the opportunity to study this type of intervention through the use of the terminal groin wherever it is justified on the basis of sound science and sound policy. It strikes me personally that we currently have a fundamental anomaly in that when wildfires or perhaps flood waters threaten homes and lives we not only tolerate, but we demand a response. I would like to suggest that it should be no different in the case of the negative effects of uncontrolled erosion. Certainly we can expect that the response be safe and that it pose no collateral damage to other properties, but I think we would be reasonable in demanding or at least expecting that that opportunity be made available. I believe that in some respects many coastal property owners are perhaps in the grips of an illness at a time when the economy, politics, and the pressures that are being brought to bear on them demand that they be especially fit and well and vital. I would like to suggest that the careful, intelligent use of a terminal groin might well provide for that cure. It would prove to be good medicine and an instrument to be added to the doctor's bag. Or as someone else has said very well previously, it would be another tool to place in the box.

John Kluttz stated I would like to thank the CRC for the service that this Commission is providing to the public and carrying out your responsibilities in the interest of North Carolina and its citizens. I am a small business owner and an avid water sportsman. I speak only as a concerned citizen. I have had some opportunities to work with the North Carolina Coastal Federation and understand some of the things that they are doing in view of this current project. I think it is significant to note that North Carolina is one of only two states that have regulations

on the books forbidding the construction of terminal groins. In our state we only have two of these structures. I am not sure what that means because I think what you have heard here today and what the Commission is going to be going through is very complex, emotionally driven conversation. I don't know if the fact that we are only one of two states that forbid these whether in time will prove to be a sign of great wisdom from our community leaders and law makers. I think when I looked at what was going on with this recently there has been a review of the Moffatt & Nichol proposal by some folks with the NCCF. Even as complete and complex as that document is there are already some areas that have been identified as not clearly being addressed. I am sure you will have an opportunity to do so as this process moves forward. There is scientific data and good science supporting these structures as well as good science and data supporting that they shouldn't be there. We have a lot to go through. I am not here supporting either way. I am asking this Commission to approach this process with a well thought out and prudent review process regarding this proposal to change the law. The CRC should also ensure that the due diligence process fairly and equitably represents all of the interested parties.

Dave Dawson of Buxton stated I have the Cape Hatteras Motel and Croatoan Inn. I have been fighting the Atlantic Ocean for 38 years at the Cape Hatteras Motel. Back in the late 1970's and early 1980's I used to be a thorn in the CRC's side because I came to all of these hearings and ran my mouth. We had a meeting one time at the Ramada Inn in Nags Head, which at that time was the tallest structure on Hatteras Island or Bodie Island. They were trying to justify the existence of the CRC at the time. They showed a slide show. The slide show was my motel and two next door to it. They went on to say that they were trying to protect the cottage court atmosphere that had long been a mainstay on Carolina beaches. I was quick to point out that we were standing in the very type of building that they wouldn't let us build anymore while the cottage courts that they alluded to were washing away and that was 35 years ago and nothing has changed. We are still washing away. I have heard a lot about stabilizing the inlet area with these groin fields. The groins work. All you have to do is go to Google Earth, type in Bald Head Island, and take a gander at beautiful beach. I don't begrudge anybody from protecting their beach, but don't leave the rest of the coast hanging out to dry. What is good for the goose is good for the gander. Thank you.

Robert McFeeters stated I am a citizen of New Hanover County and here to represent myself and my family. I am against any relaxation in the law not permitting terminal groins. I think at best the science is mixed. The animals, birds and critters that were aforementioned to don't need terminal groins to be protected. With the science mixed, that means that they may do just as much harm as they may do good. If somebody hands you a pistol and told you that they thought it wasn't loaded, I don't think you would put it to your head and pull the trigger. I think terminal groins are the same thing. Thank you.

Michael Rice stated I live in Southport. I am afraid that I cannot enlighten you any on the technical aspect of terminal groins. But I do know a little bit about reports. I do know a little bit about laws. I look at the law that you are facing and the report that you are facing and I don't see a match. You have been directed by the Legislature to conduct a study of the feasibility and advisability of the use of terminal groins. You have a report that doesn't tell you that. It doesn't even try. It says on page one that this report is a fact gathering effort. It does not advocate any policy. Where are you going to get it if not from this report and from these experts that you have paid? We look through the report and we hope there are some conclusions in there that you might find as guidance. At the end of the report in the conclusion section there is nothing. They are leaving that to you. When you go down each of the six points, each one of those has a place for conclusions. Sometimes there are conclusions, but they are very timid. We can either

conclude from that that your consultants are just shy people and unwilling to say what they think or there is not enough in the science that they have looked at to draw conclusions. They are leaving that to you and your staff in the next six weeks. That is a very difficult job. This is an important policy issue. What you are considering is changing a policy that has been long standing in this state. This is not something to be done lightly. There is one area here that did emerge in some of the conclusions. There is an agreement that beach erosion in the vicinity of navigation channels is due to the sediment traps caused by dredging. That clearly is the problem at Bald Head Island and several other places. This tells us that there is a larger issue here. By the way, item six in your list doesn't appear to have been addressed to any extent in the report. It is also larger in other ways. There is a Beach and Inlet Management Plan that has been held captive somewhere. That speaks to the very same issues. This report and that cannot be considered separately. Ladies and gentleman I believe what you have got here is a situation where in the next six weeks there is very little you can do to reach any kind of conclusion that would change the current legislative situation. I believe the Legislature deserves more of a study than this if they are going to be asked to change that policy. Thank you.

Todd Miller stated I would like to thank the Commission for the job that you are doing. It is not an easy task and you are dealing with a public policy issue that is of critical importance not only to the people sitting in this room but to many future generations. This Commission since the early 1980's has had as its basic policy when it comes to ocean beaches that it is the top priority to protect the beaches. In situations where you can protect private property and protect the beach, you have made allowances for that. But never have you sacrificed the beach to protect private property. I hope as you go forward in making these considerations over the next six weeks that you will not abandon this basic policy. There has been a lot of discussion about the input from the Science Panel in this process and I hope everybody will go to the website and read the draft report and the comments that have come in both from the public and from the science panel. I looked at the five sets of comments that did come in from the Science Panel. The comments came in from two engineers, two geologists, and one biologist. Quite frankly, I found it amazing the amount of agreement in the comments. I think the Science Panel has struggled with this over its last four meetings. They are trying to talk about this in a scientific and technical manner and not in a political manner. There has been a lot of discussion about the economics of this issue and I would just like to speak on behalf of someone who spends a lot of time playing and recreating in an inlet. If you go there any day in the summer there are thousands of people enjoying these inlets, these natural inlets. Those inlet shoals which are critical wildlife habitat and are a major economic engine for the State when you think about the boating activity, the fishing activity, and all the things that go on around these inlets. Anything that would interfere with that type of activity is going to have a negative economic impact on our state. So it is good to think about the positive economic impacts that come from shifting inlets as well as being concerned about the negative concerns with erosion. There has been some comments made about who will pay for these structures if they are allowed. I want to point out in the Bogue Inlet project that it was built originally as a local project. The costs escalated over the course of doing that project and the state of North Carolina was asked to step in and help fund that effort as well and became a major payer even though the original intent was that it would be locally funded. There have been recommendations that we think about going back to the variance process and I think there has been some discussion about why that process was taken away by the Legislature. Let's not kid ourselves; there was a lot of politics in that process. The decisions that came out of it were not strictly made based on the science in front of us. The question is who should be playing politics here, the Commission or the Legislature? If it is going to be a political decision then let's leave that in the Legislature's hands. This option as we have all learned today is not a simple solution to the problems. Beach renourishment will have to continue. The annual maintenance costs based on figures I have seen in the Beach and Inlet

Management Plan actually exceed what many communities are currently spending on beach renourishment. You are going to have those costs in addition to the cost of building these structures and the continued cost of nourishment. If anybody thinks this option is going to save money, I am afraid they have been sorely misled. At the beginning of this effort there was a notion that there were terminal groins everywhere and that they had a proven track record and we knew what they would do. Obviously through this study we have found that there aren't that many examples of these structures in existence that meet the criteria of what we are talking about in North Carolina and that the track record is very unproven. Even looking intensely at five case studies we have not found definitive answers in terms of what the impacts have been. In your permitting process if you face uncertainty in terms of what the actual impacts of a proposal are going to be, the way the Coastal Area Management Act is written, you are under the obligation to issue those permits. If you are uncertain that something is going to work or not work, the burden is on you to show that it will not work or you will issuing the permits. If you are comfortable being wrong ten percent or twenty percent or fifty percent of the time then take on that burden. I would ask that you think about the consequence for beaches and the rest of the citizens of North Carolina if you make wrong permit decisions. As we have seen with sandbags it is not easy to undo these actions once you set a policy and go forward with it. It would be nice to be naïve enough to think that we would pull out mistakes, but that is not the history anywhere. The history is that we keep adapting, expanding and multiplying when the first initial attempts do not work and the efforts just continue to escalate. Long-term people are going to need answers and alternatives. I am just sorry that this isn't an easy, simple solution to the problems that people are facing. We are in a period of rising sea level and storm activities. These issues are not going to go away and the problems in dealing with them are going to increase no matter what policy course you decide to take. Thank you.

Carolyn Pryor stated I am here representing Coastal Water Watch, an environmental group that is concerned with the water sheds of Brunswick County. We are very concerned about any change in the law that would affect our beaches and our wildlife here in North Carolina. My husband and I run a sailboat charter business and we sail in and out of the inlet over 100 times per year between Oak Island and Bald Head Island. We think that the tourism business that comes here doesn't come just to have a house on the beach. They come here to see the natural beautiful beaches that we do have and the wildlife that we have. We think that the laws here in North Carolina that have protected the beaches against hard structures have been very wise. We do not believe that there has been any new information to show that hard structures would be better than they were back when that decision was made in 1984. Our recommendation is that we try to consider the loss in tourism dollars if we effectively put in these groins that may save some inlets but it's also going to change the shifting dynamics that could cause new inlets to develop as more rapid inflow comes in to the dredged inlets. It could cause more damage to other property because of increased storm surge coming in these specified inlets. We hope that the laws will stay as they are. We think that the beach nourishment and the sandbags isn't a way to effectively deal with the problem. It could be just as cost effective as the other groins that allows flexibility if we do get sea level rise and other storms that could make the terminal groins in fact become obsolete or ineffective or possibly doing even more damage than we would like. Thank you for considering. I hope that we will leave the rules as is and add to the report the economic effects of a decrease in tourism that could come from putting in terminal groins. Thank you.

Frank Iler, District 17 Representative, stated this is the fourth time we have met like this. You all have met five times but I missed one of those. Next time the report will have been completed. I wanted to come today to wrap up a few things that I have mentioned before. Hopefully it will help in the process. I am here to help. I asked you last time to keep an open mind about this. It

is obvious that confusion still exists in the public about what a terminal groin is from the descriptions I have been hearing. Let's look at what we have got here. We have a bill in the Legislature which is in a House committee, the Environmental Committee. It passed the Senate 30-20. It crossed over so it is eligible to be taken up this year. It is in the Environmental Committee and based on the CRC's recommendations, Speaker Hackney and Chairman Allen will probably act on it favorably or unfavorably based on what you recommend. Again, as I have said before, this is another tool in the toolbox for coastal management. If we need an amendment to the bill to avoid you being forced to permit them that can happen. I am sure Chairman Allen would love to amend it to that affect in the Committee or on the House floor. We are asking for a chance to vote. The people's representatives in the Senate thought it was a good idea. The people's representatives in the House probably think it is a good idea, but we don't know that until we debate it and vote on the floor. Then the Governor has a chance to sign or not sign it. That is the basis of what we are talking about. Based on your recommendations something could happen this year. I want to thank everybody. I know from coming to your meetings how much effort you have put into it. I apologize for being late today. I came from the Department of Natural Resources in Raleigh from a meeting and we may have resolved something at Oak Island and the sewer system there today. Thanks for your efforts and I will repeat one thing that I said before, if not this then what? If not now, then when?

Tripp Murphy and Dave Pryor signed up to speak but did not make oral comments.

ACTION ITEMS

Rule Adoptions

15A NCAC 07H .2302 General Permit for the Replacement of Existing Bridges and Culverts – Approval Procedures

15A NCAC 07H .2303 General Permit for the Replacement of Existing Bridges and Culverts – Permit Fee

15A NCAC 07H .2304 General Permit for the Replacement of Existing Bridges and Culverts – General Conditions

15A NCAC 07H .2305 General Permit for the Replacement of Existing Bridges and Culverts – Specific Conditions

Lee Wynns made a motion to adopt 15A 07H .2300 General Permit for Replacement of Existing Bridges and Culverts. Veronica Carter seconded the motion. The motion passed unanimously (Elam, Wynns, Carter, Leutze, Mitchell, Webster) (Wilson, Weld, Bissette absent for vote) (Simmons abstained).

With no further business, the CRC adjourned.

Respectfully submitted,

James H. Gregson, Executive Secretary

Angela Willis, Recording Secretary

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

Beverly Eaves Perdue
Governor

James H. Gregson
Director

Dee Freeman
Secretary

MEMORANDUM **CRC-10-17**

To: The Coastal Resources Commission

From: John A. Thayer Jr. Manager, Local Planning Programs

Date: March 9, 2010

Subject: Certification of the Joint Tyrrell-Town of Columbia Land Use Plan (March 25, 2010 CRC Meeting)

Recommendation: Certification of the Joint Tyrrell County-Town of Columbia LUP based on the determination that the document has met the substantive requirements outlined within the 2002 7B Land Use Plan Guidelines and that there are no conflicts evident with either state or federal law or the State's Coastal Management Program. Included in this recommendation/determination is that *Policy 97* is not enforceable for state and federal consistency purposes.

A copy of the plan can be found on the Division of Coastal Management's website at the following link: *http://www.nccoastalmanagement.net/Planning/under_review.htm*

Overview

Tyrrell County is located in eastern North Carolina and is adjacent to Washington and Hyde counties and across the Alligator River from Dare County along the south side of the Albemarle Sound. The most notable state roadway that traverses the County is HWY 64, which has recently been expanded to four lanes, on its way to Manteo and the Outer Banks. This is a joint plan with the only municipality in the County, the historic Town of Columbia, near the mouth of the Scuppernong River.

The County has a permanent population of over 4,100 including Columbia's 819 residents. The County is considered a slow growth County not subject to the stringent 7B Guideline requirements associated with justification of the LUP policies holding capacity.

Land Use Plan Policies

There are no notable policy statements that exceed State and federal permitting rules. Included within the LUP are six (6) smart growth principles that are more specific than goal statements but just short of policies. They are aims for consideration during review of development projects.

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The LUP has a series of policies and implementation statements that recognize sea level rise; however they primarily defer to the state and federal governments to regulate. The exception is the two following implementation statements:

I.25 In order to monitor possible sea level rise, Tyrrell County will implement the following:
- *Support bulkheading to protect its shoreline areas from intruding water resulting from rising sea levels.* (page 105)

I.56 In response to possible sea level rise, Tyrrell County and the Town of Columbia will review all local building and land use related ordinances and consider establishing setback standards, density controls, bulkhead restrictions, buffer vegetation protection requirements, and building designs which will facilitate the movement of structures. (page 115)

The County does have a policy that is recognized as not enforceable for state and federal consistency purposes as follows:

P.97 Tyrrell County and the Town of Columbia oppose the establishment of military outlying landing fields (OLFs) within the coastal plain of eastern North Carolina. The county acknowledges that this policy is not enforceable; however, it is necessary to outline a position within the context of the land use plan. (page 122)

As staff has noted with several other LUP's, specific opposition statements that are intimate to specific state or federal facilities are acceptable in the local LUP, however for such statements to be an enforceable policy, similar treatment and other policies must not be specific to a project, but likewise to other similar public and private facilities. For example: airports, noise generating uses and activities, and development that impacts wildlife and agriculture activities.

DCM staff recommends that in the CRC's certification that the non-enforceability of Policy 97 be recognized.

Similar to many other LUP's, more particularly for rural jurisdictions, the LUP's policies are dominated by statements that either simply support or defer to other state and federal agencies rules. As a reminder, deferring statements are not considered policy for state and federal consistency purposes; this is likewise true where statements simply defer to local ordinances.

Both the County and Town conducted separate public hearings. The County Commissioners adopted the LUP by resolution, on December 15, 2009 and the Town of Columbia did the same on February 1, 2010.

The public has had an opportunity to provide written comments on the LUP up to fifteen (15) business days prior to the CRC meeting. No comments were received.

If there are any questions about the plan please feel free to contact me by phone at 252-808-2808 or email at john.thayer@ncdenr.gov.

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

Beverly Eaves Perdue
Governor

James H. Gregson
Director

Dee Freeman
Secretary

CRC 10-12

MEMORANDUM

To: Coastal Resources Commission
From: Maureen Meehan Will, DCM Morehead City District Planner
Date: March 8, 2010 (March 24-26, 2010 CRC Meeting)
Subject: Amendment of the Town of Atlantic Beach Core Land Use Plan

The Town of Atlantic Beach is requesting Coastal Resource Commission (CRC) certification of an amendment to their Future Land Use Map (FLUM), including non-policy related text and charts, to the current CRC Certified Land Use Plan (LUP) certified July 24, 2008.

DCM Staff Recommendation
DCM Staff has determined that the Town of Atlantic Beach has met the substantive requirements outlined within the 2002 Land Use Plan Guidelines and that there are no conflicts evident with either state or federal law or the State's Coastal Management Program.

DCM staff recommends that the CRC certify the Town of Atlantic Beach Core Land Use Plan Amendments.

Overview
In an effort to ensure the Future Land Use Map is compatible with the new zoning classifications for the jurisdiction, the town has adopted changes to the land use plan, specifically the FLUM. The Atlantic Beach Town Council held a duly advertised public hearing for the LUP amendments and voted unanimously, by resolution, to adopt the map amendments on December 21, 2009. The public had the opportunity to provide written comments on the LUP up to fifteen business days prior to the CRC meeting, which the amendments are being considered for certification (March 3, 2010). DCM did not receive any comments.

The adopted changes and proposed amendments to the LUP are outlined below: (see attached memo from the town and attachments for each map amendment)

1) FLUM Changes - Reclassification of land from Residential-Medium Density to Mixed-Use Residential. The parcels that were reclassified include multi-family resort style housing. Permitted uses in the Mixed-Use Residential areas include single and multi-family residences, low density commercial, hotels and motels, including accessory commercial uses to the facilities, and other accessory recreational uses. Industrial and high density commercial developments are not permitted.

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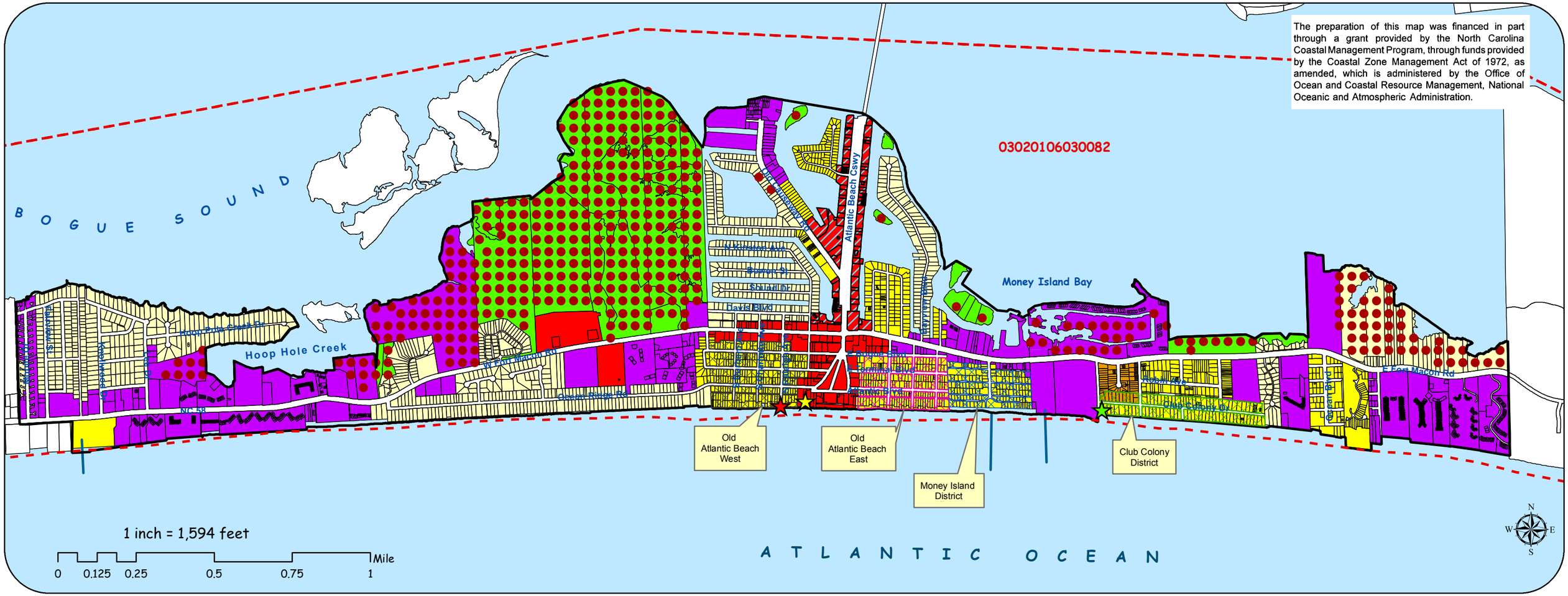
2) Text Changes – Updates to the narrative including: **Section 5.E.7, Zoning**. The new zoning districts are outlined and replace the 'old' districts that are currently described in the plan; **Section 6.M.2, Land Use Categories and Acreage**. This section has been updated to include new corresponding zoning districts and acreages for Table 40, as well the narrative that relates to the table and new zoning districts. The permitted and not permitted uses for each FLUM classification have not changed. Further, Table 41 has been updated to reflect the new zoning districts; **Section 6.M.3, Future Land Demand Forecast and Infrastructure Carrying Capacity.** Increased acreages at higher residential densities have been accounted for and changes to the demand for water and waste water have been updated to correspond with the increased need.

Attachments
Attachment 1 – Future Land Use Map
Attachment 2 – Section 5 Text Amendments
Attachment 3 – Section 6 Text Amendments
Attachment 4 – Land Demand Text Amendments

The preparation of this map was financed in part through a grant provided by the North Carolina Coastal Management Program, through funds provided by the Coastal Zone Management Act of 1972, as amended, which is administered by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration.



Legend

- 14 Digit Hydrologic Code
- 8A. Regional Shoreline Access Site
- 8B. Regional Shoreline Access Site
- 8C. Regional Shoreline Access Site
- Least Suitable Land Overlay
- Piers
- Corporate Limits

Cottage Overlay Districts

- Club Colony District
- Money Island District
- Old Atlantic Beach East
- Old Atlantic Beach West

Future Land Use

- Conservation / Open Space
- Mixed-Use Commercial
- Mixed-Use Residential
- Residential-Low Density
- Residential-Medium Density
- Residential-High Density
- Urban Water-Front Overlay Zone

MAP 20

Town of Atlantic Beach Land Use Plan

Future Land Use

Cottage Overlay Districts	Acres
Club Colony District	21.496
Money Island District	19.357
Old Atlantic Beach East	23.856
Old Atlantic Beach West	30.623
TOTAL	95.332

These are overlay districts, the acreages have already been calculated in the Future Land Use Categories Acreage

Section 5.E.7 (Page 138)

7. Zoning

The Atlantic Beach zoning ordinance is included in Chapter 18 of the Municipal Code. The purposes of the zoning ordinance, as stated in the Section 18-1 of the 2008 2009 revisions to the ordinance, are as follows:

> "(1) Promoting the public health, safety, morals, and general welfare; (2) Promoting the orderly growth and development of the Town of Atlantic Beach and the surrounding area; (3) Lessening congestion in the street and roads; (4) Providing adequate light and air; (5) Securing safety from fires, panic, and other dangers; (6) Preventing the overcrowding of land; (7) Avoiding undue congestion of population; (8) Facilitating the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements."

The zoning ordinance includes the following twelve ten land use districts. Each parcel of land in the Town is included in one of the following districts:

~~*RA-1 Residential District*. The RA-1 residential district is established as a district in which the only use of land is for single-family dwellings.~~

~~*RA-1.5 Residential District*. The RA-1.5 residential district is established as a district in which only single-family dwellings or duplex dwellings will be allowed.~~

~~*RA-1M Residential District*. The RA-1M residential district is established as a district in which the only use of land is for single-family dwellings which shall include conventional houses, modular homes and mobile homes.~~

~~*RA-2 Residential District*. The RA-2 residential district is established as a district in which the principal use of land is for single-family, duplex, triplex, and four-family dwellings.~~

~~*RA-3 Residential District*. The RA-3 residential district is established as a district in which the principal use of the land is for high density residential development in order to provide overnight accommodations.~~

~~*RA-3M Residential District*. The RA-3M residential district is established as a district in which the principal use of the land is for high density residential development in order to provide overnight accommodations.~~

~~*RA-3V Residential District*. The RA-3V residential district is established as a district in which the principal use of land is for high density residential development in order to provide overnight accommodations.~~

~~*RR Resort Residential District*. The RR resort residential district is established as a district to provide areas, which, due to their location, natural features and access, have an extremely high potential for both permanent and tourist types of residential development.~~

~~*RC Resort Commercial District*. Within a limited business district, it is intended that permitted uses shall be oriented to those businesses and services associated with those tourist related activities which reflect a family atmosphere.~~

~~*RS Recreational Sound District*. The RS district is established as a district in which the principal use of land and water is for recreational purposes only.~~

~~*CDD Circle Development District*. The CDD district allows a dense mix of commercial and residential uses in "The Circle" redevelopment district as designated by the Town. Development in this district is subject to the requirements of the Town's "Circle Development District" ordinance adopted in 2004.~~

~~*GB General Business Zone*. The purpose of this district shall be to create and maintain general businesses and professional offices which are necessary to the residents of Atlantic Beach and also to the tourists who visit Atlantic Beach.~~

~~*CZ Conservation Zone*. The purpose of this conservation zone is to provide environmental protection for surface waters and to protect the wildlife and natural features of the property. Any activity in this zone inconsistent with the purposes of this zone is prohibited. The property shall be maintained in its natural, scenic, wooded and open condition and restricted from any development or use that would impair or interfere with the conservation purpose of this conservation zone.~~

R-1(C) Residential District

(A) The R-1(C) residential district is established as a district in which the only use of land is for single-family dwellings based on the issuance of a conditional use permit.

(B) For a detailed table of specified permitted/conditional uses in the R-1(C) zoning district, see Section 5.5

R-1(5) Residential District

(A) The R-1(5) residential district is established as a district in which the only use of land is for single-family dwellings. The R-1(5) district has a required side yard setback of five feet.

(B) For a detailed table of specified permitted/conditional uses in the R-1(5) zoning district , see Section 5.5.

R-1(7) Residential District

(A) The R-1(7) residential district is established as a district in which the only use of land is for single-family dwellings. The R-1(7) district has a required side yard setback of seven feet.

(B) For a detailed table of specified permitted/conditional uses in the R-1(7) zoning district ,

see Section 5.5.

R-1M Residential District

(A) The R-1M residential district is established as a district in which the only use of land is for single-family dwellings and manufactured homes.

(B) For a detailed table of specified permitted/conditional uses in the R-1M zoning district , see Section 5.5.

R-2 Residential District

(A) The R-2 residential district is established as a district in which the principal use of land is for single-family and duplex dwellings.

(B) For a detailed table of specified permitted/conditional uses in the R-2 zoning district , see Section 5.5.

R-3 Residential District

(A) The R-3 residential district is established as a district in which the principal use of the land is for high density residential development including single-family, two-family (duplex), three-family (triplex), and four-family (quadraplex) dwelling units.

(B) For a detailed table of specified permitted/conditional uses in the R-3 zoning district , see Section 5.5.

RMU Resort Mixed Use

(A) The RMU resort mixed use district is established as a district to provide an area for varying residential building types to support both permanent and transient residences. Additionally, some non-residential uses are allowed either conditionally or by right in an effort to provide development options that will support the tourist industry.

(B) For a detailed table of specified permitted/conditional uses in the RMU zoning district, see Section 5.5.

RS Resort Service District

(A) The RS resort service district is established as a district to provide areas, which, due to their location, natural features and access, have an extremely high potential for both permanent and tourist types of residential development. Additionally, commercial uses are permitted and shall be oriented to businesses and services associated with those tourist related activities which reflect a family atmosphere.

(B) For a detailed table of specified permitted/conditional uses in the RS zoning district , see Section 5.5.

CDD Circle Development District

(A) For the purposes of this Ordinance, the Circle Development District Overlay is designed to re-establish and preserve the "Circle" area as the primary civic, retail, office, institutional, cultural and entertainment center for the community.

(B) For a detailed table of specified permitted/conditional uses in the CDD zoning district , see Section 5.5.

CB Community Business District

(A) The purpose of this district is to provide broad-based commercial services to both year-round residents and tourists.

(B) For a detailed table of specified permitted/conditional uses in the CB zoning district , see Section 5.5.

GB General Business District

(A) The purpose of this district shall be to create and maintain general businesses and professional offices which are necessary to the residents of Atlantic Beach and also to the tourist who visit Atlantic Beach.

~~In addition to the twelve aforementioned primary zoning districts, the Town created two "overlay" zones in 2001. These "overlay" zones can be found in any of the twelve primary zoning districts and they impose additional site and building design requirements to those found in the primary zoning categories. The first of these overlay zones is for areas identified as maritime forests. In these areas, significant maritime forests must be preserved. The second overlay zone applies to special flood hazard areas. In these areas, filling, grading and dredging, and the installation of flood barriers are restricted to ensure no negative impacts to nearby properties and foundation elevation requirements are imposed.~~

I n addition to the ten aforementioned standard zoning districts, the town has adopted one overlay district, the Causeway Overlay District (COD). The COD allows for the same permissible uses as the general business district, but provides some incentives for mixed use development. The purpose of the Causeway Overlay District (COD) is to:

(1) Accommodate vertical mixed-use buildings with retail, service, office, institutional, and other uses on the ground floor and residential units above the nonresidential space.

(2) Encourage development that exhibits the physical design characteristics of pedestrian-oriented, storefront-style shopping streets.

(3) Promote the health and well-being of residents by encouraging physical activity, interconnectivity through pedestrian facilities, and greater social interaction.

2. Land Use Categories and Acreage

The future land use categories and acreages are provided in Table 40. The future land use map depicts a desired pattern of land uses, which are generally consistent with the Land Suitability Analysis. The land use categories have been coordinated with Atlantic Beach's zoning districts. The zoning districts specify allowable uses for each land use category. Refer to the Town's zoning ordinance for specific uses allowed in each district. The land use categories are intrinsically tied to the policy section of this plan.

Table 40. Town of Atlantic Beach
Future Land Use Acreages

Future Land Use Categories	Residential Density	Corresponding Existing Zoning Districts	Acres
Conservation/Open Space	No units	CON	314.3
Mixed-Use Commercial	7-10 units per acre	CDD*, GB, CB	82.4
Mixed-Use Residential	Over 10 units per acre	RS, RMU	416.3
Residential - Low Density	1-6 units per acre	R-1(5), R-1(7), R-1M	319.9
Residential - Medium Density	7-10 units per acre	R-2	182.8
Residential - High Density	Over 10 units per acre	R-3	9.2
Right-of-way			178.32
Water			147.31
Total			1650.5

*The CDD zoning district is limited in area, but can allow up to 50 residential units per acre.
NOTE: Mixed-use commercial objective - 50% Commercial/50% Residential; Mixed-use residential objective - 25% non-residential/75% residential.
~~NOTE: The RA-2 and RA-3 zoning districts are very similar. The Town should consider merging these districts in an effort to simplify the Town's existing code.~~
Source: Holland Consulting Planners, Inc.

The descriptions of each zoning district specified for each land use category are provided on pages 139 and 140. The following summarizes land use categories by type and the corresponding zoning district(s). **NOTE: The existing zoning ordinance must be revised to support the densities which are depicted on the Future Land Use Map, Map 20.**

a. Conservation

The Conservation designation is located on the north side of the island in areas of environmental concern. The designation is intended to be used for the protection and preservation of these environmentally sensitive lands through minimizing development potential.

Corresponding zoning districts: CON - Conservation
RS-Recreational Sound District
CZ-Conservation Zone

Permitted uses: Piers, floating docks, boat lifts, marinas, public accesses, pier houses, open space, and maximum 2,500 SF educational facilities (single structure). Note: Not all uses listed above are permissible in both zoning districts.

Not permitted uses: All uses not listed above

Allowable density: N/A

Maximum height: RS - 20 feet, CZ - 15 feet CON - 15 feet

Minimum lot size: N/A

Maximum lot coverage: None

b. Mixed Use - Commercial

Commercial land uses in Atlantic Beach are primarily located along the Atlantic Beach Causeway and Fort Macon Drive. The majority of future commercial development will be part of a mixed use initiative and be located along Atlantic Beach Causeway and on West Fort Macon Road for approximately five blocks west of the Causeway and on East Fort Macon Road for approximately two blocks east of the Causeway.

Corresponding zoning districts:
CB - Community Business
RC - Resort Commercial District
CDD - Circle Development District
GB - General Business Zone

Permitted uses: Mixed commercial/residential developments, restaurants, retail establishments, office spaces, and service establishments. Residential uses are not permitted within the CB zoning district.

Not permitted uses: Industrial uses.

Allowable densities: RC and GB - Single family - 8.7 units/acre
Multi-family - 12.1 units/acre
CDD - 50 units/acre

Maximum height: RC CB and GB - 55 feet
CDD – 55-185 feet

Minimum lot size: RC CB and GB - Single family - 5,000 s.f.
Multi-family - 5,000 s.f.
CDD - None
CB - None

Maximum lot coverage: Residential - May not exceed 40%
Commercial - May not exceed 85%

c. Mixed Use - Residential

Mixed Use - Residential is located predominantly along the frontage of Fort Macon Road; one on West Fort Macon Road and one on East Fort Macon Road.

Corresponding zoning districts: RR - Resort Residential District
RMU - Resort Mixed Use
RS - Resort Service
CDD - Circle Development District

Permitted uses: Single- and multi-family residences; low impact commercial development such as hotels and motels with restaurants, lounges, gift shops, etc., located within the building; day cares; churches; and recreational uses such as tennis courts, swimming pools, and golf courses. Note: Not all uses listed above are permissible in both zoning districts.

Not permitted uses: Industrial uses and high impact commercial establishments such as strip retail development.

Allowable densities: RR RS and RMU - 6.2 units/acre
CDD - 50 units/acre

Maximum height: RR RS and RMU - 45 feet
Projects with more than 4 units in a single building - 55 ft.
CDD - 55-185 feet

Minimum lot size: RR RS and RMU - 5,000 s.f.
CDD - None

Maximum lot coverage: RR RS and RMU - May not exceed 40%
CDD - None

d. Residential

Residential land uses have been divided into three separate land use categories based on associated variable residential densities. These categories include high, medium, and low density residential. The location of residential land uses by density was based on existing residential development patterns and constraints to development (i.e., floodplains and wetlands).

i. High Density Residential

Corresponding zoning districts: R-3 - Residential District
RA-3 - Residential District
RA-3M - Residential District
RA-3V - Residential District

Permitted uses: Single- and multi-family residences, recreational vehicles, neighborhood commercial uses, hotels and motels, schools, greenhouses, and hospitals. Note: Not all uses listed above are permissible in all zoning districts.

Not permitted uses: Industrial uses

Allowable densities: Single-family - 8.7 units/acre
Multi-family - 12.1 units/acre

Maximum height: 45 feet

Minimum lot size: 5,000 s.f.

Maximum lot coverage: May not exceed 40%.

ii. Medium Density Residential

Corresponding zoning districts: R-2 - Residential
RA-2 - Residential District

Permitted uses: Single- and multi-family development

Not permitted uses: All non-residential development

Allowable densities: Single family - 8.7 units/acre
Multi-family - 12.1 units/acre

Maximum height: 45 feet

Minimum lot size: 5,000 s.f.

Maximum lot coverage: May not exceed 40%

iii. Low Density Residential

Corresponding zoning districts: R-1(5) - Residential
R-1(7) - Residential
R-1M - Residential
RA-1 - Residential District
RA-1.5 - Residential District
RA-1M - Residential District

Permitted uses: Single-family and duplex residences and manufactured homes. Note: Not all uses listed above are permissible in all zoning districts.

Not permitted uses: All non-residential uses

Allowable densities: Single-family - 7.3 units/acre
Multi-family - 12.1 units/acre

Maximum height: 45 feet

Minimum lot size: R-1(5) and R-1M - Residential - 5,000 square feet
R-1(7) - Residential - 6,000 square feet
6,000 s.f.

Maximum lot coverage: May not exceed 40%

Notes related to zoning district requirements listed above:

(1) Maximum lot coverage as noted above assumes that a given property owner will develop an on-site stormwater management system which will manage the first inch and a half of precipitation for a given rain event. Without the installation of a stormwater management system, maximum lot coverage will be 25% for residential properties and 30% for commercial structures.

(2) Developments that will incorporate greater than four units in a single structure and/or two or more buildings on a single lot will fall under the Town's group housing zoning requirements and must be approved by the Town's Planning Board.

(3) The minimum lot size requirements listed above are based on an Ordinance amended adopted February 2, 2006. These requirements became effective February 2, 2007.

(4) Maximum building height listed above is for usable heated square footage only. Proposed developments may incorporate an additional five feet to a respective structure's maximum building height for the addition of ornamental elements. This additional five feet may not be usable square footage.

e. Least Suitable Land Overlay

The Future Land Use Map (Map 20, page 197) includes a least suitable land overlay. These areas parallel the areas that are least suitable as identified during the land suitability analysis (Map 19, page 149). Development of any areas located within the overlay should be sensitive to protection of the environmentally sensitive areas. These areas may have additional regulations for development, if development is allowed.

f. Overlay Districts

Guidelines for development of Cottage Overlay Districts are as follows:

1. Promote renovation of existing structures.

2. Establish Zoning Ordinance language to grandfather existing building footprints or lot coverage if a property owner renovates/expands a structure. This policy will apply even if the cost of improvements exceeds 50% of the structures fair market value.

3. In the event a structure is removed from a lot, setback, lot coverage, and building height regulations of the underlying zoning district will apply.

The future land use map identifies the following Cottage Overlay district areas:

District	Acreage
Club Colony District	21.496
Money Island District	19.357
Old Atlantic Beach East	23.856
Old Atlantic Beach West	30.623
Total	95.332

The identified acreages are included in the land use acreages specified in Table 40. All of the Cottage Districts are located in residential land use categories. The Cottage Districts are not specified in the Town of Atlantic Beach zoning ordinance. These areas are not designated historic districts. However, the character, building scale, and architectural style reflect "old Atlantic Beach." It is the Town's intent to preserve the scale/appearance of these areas. To accomplish this, revisions to the Town's zoning and subdivision ordinances may be required. Potential revisions

will be considered during the Fiscal Year 2007-2008 update of the Town's zoning and subdivision ordinances.

The future land use map emphasizes mixed-use development. Such development is considered essential to the redevelopment which is expected to occur in Atlantic Beach. The desired mix of residential and non-residential use are specified for the mixed-use land use categories in Table 40. Approximately 141.25 acres, or 8.6%, of Atlantic Beach's total area is delineated for mixed-use development. **NOTE: the specified mix of uses is an objective. To accomplish the mixed-use objectives, revision to the Town's zoning and subdivision ordinances will be required in Fiscal Year 2007-2008.**

g. Urban Waterfront Overlay District

The Town of Atlantic Beach will seek urban waterfront designation under 15A NCAC 7H.0209, Urban Waterfronts, for the Atlantic Beach Causeway subsequent to certification of this plan by the Coastal Resources Commission (CRC).

h. Land Use Compatibility Matrix

Each of the land use categories is supported by zoning districts contained in the Town's existing Zoning Ordinance. Table 41 provides a comparison of the land use categories and the Town's existing zoning districts. The reader is cautioned that this is an "overview" and detailed analysis must be based on careful review of the Zoning Ordinance. The existing Zoning Ordinance must be revised to coincide with some of this information.

Table 41. Future Land Use Plan Compatibility Matrix
Consistency Review of Future Land Use Map Designations and Existing Zoning Districts

Zoning Districts	CON	CDD	CB	GB	RMU	R-3	R-2	R-1(5)	R-1(7)	R-1M
Min. Lot Size (SF)	N/A	None	None	5,000	5,000	5,000	5,000	5,000	6,000	5,000
Max. Bldg. Height (ft.)	15	185	55	55	Note 1	45	45	45	45	45
Lot Coverage (%)	None	5%	5%	Note 2	0%	0%	0%	0%	0%	0%
Designations/Average Density (du per acre)										
Mixed Use-Commercial/8.7-50	x	g	g	g	x	x	x	x	x	x
Mixed Use-Residential/8.7-50	x	c	x	g	g/c	x	x	x	x	x
High Density Residential/8.7-12.1	x	g	x	g	g	g	c	x	x	x
Med. Density Residential/8.7-12.1	x	c	x	g	x	c	g	x	x	x
Low Density Residential/7.3-12.1	x	x	x	g	x	x	x	g	g	g
Conservation/N/A	g	x	x	x	x	x	x	x	x	x

g = generally consistent; c = conditionally consistent; x = inconsistent

Note 1: 45 feet for projects with 4 or fewer units in a single building; 55 feet for projects with more than 4 units in a single building.
Note 2: Residential - may not exceed 40%; commercial - may not exceed 85%.

3. Land Demand Forecast and Infrastructure Carrying Capacity

The Town of Atlantic Beach faces many obstacles with respect to future growth and development throughout its jurisdiction. The town does not currently have much buildable vacant land remaining; however, large scale redevelopment projects are either in the planning stage, or being discussed. The most substantial redevelopment effort will take place within the "Circle District" (see Map 15), and has been established as a special district within the town's existing zoning ordinance. Redevelopment of this area is still in the planning stages, and it is still unclear as to how this area will be developed with respect to land use. On the Future Land Use Map, this area has been shown as Mixed Use Commercial. The "Circle" at Atlantic Beach has traditionally served as the civic and cultural center for the Town. For this purpose, the Circle Development District is designed to re-establish and preserve the area as the primary civic, retail, office, institutional, cultural and entertainment center for the community.

One of the primary concerns of Atlantic Beach citizens with respect to land use is to either maintain existing densities or reduce density where possible. Establishing a solution to this concern is difficult due to the fact that the town is nearly built out. Based on data established through the Existing Land Use Map (Map 14, page 96), there are currently 466 vacant acres of land within the town's corporate limits, comprising approximately 35% of its total jurisdiction. Based on the districts outlined on the Future Land Use Map (Map 20, page 197), approximately 314 (67.4%) of these acres are designated as Conservation/Open Space. This leaves only 56.6 acres of vacant buildable land within the town for future development.

The vacant land that does remain within Atlantic Beach falls entirely within two distinct future land use districts: Low Density Residential (1-6 units per acre) and Medium Density Residential (6-10 units per acre). The densities outlined for these districts are to be interpreted as minimum and maximum allowable densities. For the purposes of this plan, the town would like to maintain an average single-family residential density of approximately five units per acre. The town is fully aware of the problems that existing residential density have generated with respect to water quality. These concerns have been documented within the existing community facilities (sewer system) and water quality sections of the plan. Although it is nearly impossible to rectify densities with respect to existing properties, the town can aim to reduce density on the development of new properties, as well within substantial redevelopment projects.

At this time, the town is issuing an average of approximately 20 single-family residential building permits annually dating back to fiscal year 2000. At this rate, the town can expect to see an increase of 100 housing units every five years throughout the infrastructure planning period horizon of 2025. Through 2025 that would result in 400 additional housing units. In an effort to maintain a reasonable density, if you assume an average single-family housing density of five units per acre, as noted above, there is enough vacant land remaining within town to support the construction of approximately 758 additional single-family homes, in excess of the 400 estimated based on historical building permit activity.

Due to the high likelihood for redevelopment, the infrastructure carrying capacity discussion has been based on three primary factors: existing conditions (see Existing Land Use Map, Map 14); future development (single-family residential construction); and redevelopment ("Circle District" and redevelopment of existing mobile home and mobile home park properties). It is assumed based on current market demand that all mobile homes, whether stand alone or within a mobile home park, will be redeveloped during the planning period (2025). Based on the factors outlined above, Table 42 below has been included to establish an estimated number of residential and nonresidential units that can be expected upon build out of Atlantic Beach. It is difficult at this time to determine what and how portions of the town will be redeveloped, outside of the "Circle District" and mobile home park areas. The most significant factor currently acting as an impediment to development is the lack of a central sewer system. The town has struggled with this issue for years, and the current situation is discussed in both the existing community facilities and future demands section of the plan.

Table 42
Estimated Build Out Acreage*(Through 2025)

Land Use	Existing Units	Redevelopment Units	New Construction Units	Total Units**	Average Units Per acre
Mobile Homes	242	0	0	0	N/A
Residential	3,563	513***	400	4,359	5
Commercial/ Mixed Use	176	545****	0	721	50****
Office & Institutional	8	8	0	8	N/A
Total	3,989	4,805	400	5,088	N/A

*Only land use units (structures) that will have an impact on infrastructure carrying capacity have been included.
**Total Units does not include redeveloped mobile homes.
***This figure assumes total redevelopment of all mobile home properties to single-family homes or medium density multi-family units at an average density of five units per acre. This will result in an increase of 513 new residential units based on a total acreage of 151.1 currently occupied by either individual mobile homes or mobile home parks.
****This figure is based on the redevelopment of the town's established "Circle District". This district is 10.9 acres in size, and therefore, proposed units (545) have been based on the maximum allowable units for this future land use district as currently established in the Town's Circle Development District Ordinance. It is anticipated that development within this area will be utilized to the maximum density allowed, pending approval of an on-site wastewater treatment system that will support the development. The maximum allowable density within this district is 50 units/acre. The 545 units will be considered mixed use/commercial for the purposes of the infrastructure forecast listed above. This forecast is based on the maximum allowable density and it is not anticipated that maximum will be achieved. The number of units permitted within the CDD varies depending on a respective property's square footage and maximum building height. For a determination on density for a specific property, refer to the Town's Circle Development District Ordinance. At this time, it is difficult to determine how many units will be residential versus non-residential; therefore, the average daily water use/wastewater treatment capacity will be based on commercial development.
*****This acreage figure includes the Mixed Use Residential district as indicated on the Future Land Use Map.

a. Water System

As discussed earlier in the plan, Atlantic Beach's water system capacity is currently 2.5 million gallons per day. Utilization of this capacity fluctuates substantially due to seasonal population fluctuations. During the slow season (winter months), the average daily water usage is approximately 482,000 gallons per day (GPD), while during peak summer months water usage reaches as high as 1,645,000 GPD. During summer months the town's water system operates at approximately 65.8% of total capacity. In order to assess what impact new development and redevelopment will have on available system capacity, estimates of increased demand based on Table 42 above have been compiled. These estimates have been based on average daily usage estimate for various land uses as established by the American Water Works Association (AWWA). Estimated average daily usage rates are as follows:

Water System Average Daily Usage Rates(Gallons Per Day)	
Residential:	170
Non Residential:	100

Based on these estimates, the town can expect to see the following increases in water system capacity demand due to the land use forecast outlined in Table 42 above.

Type of Development	Increased Units	Increased Demand (GPD)
New Residential Units	913	155,210
New Nonresidential Units	545	54,500
Total		209,710

According to this table, assuming buildout based on the criteria outlined above, the town can expect to see an increase in water system demand of 209,710 GPD. This would result in a total of approximately 1,854,710 GPD demand during peak summer moths. Under this scenario, 74.2% of the town's water system will be utilized, leaving nearly 30% of overall plant capacity to account for additional redevelopment efforts.

North Carolina Department of Environment and Natural Resources
Division of Coastal Management
Beverly Eaves Perdue, Governor James H. Gregson, Director Dee Freeman, Secretary

March 9, 2010

MEMORANDUM **CRC 10-14**

TO: Coastal Resources Commission

FROM: Jeffrey Warren, PhD, CPG
Coastal Hazards Specialist

SUBJECT: Amendments to 15A NCAC 07H.0304 – Ocean Erodible and Unvegetated Beach Areas of Environmental Concern

Division of Coastal Management (DCM) staff have identified two separate sections within 15A NCAC 07H.0304 (AECs within Ocean Hazard Areas) for amendment consideration by the Coastal Resources Commission (CRC). The first proposed rule change in 07H.0304(1)(a) is a recommended increase in the formula used to calculate the width of the Ocean Erodible Area of Environmental Concern, commonly referred to as the OEA, to be consistent with the CRC's new setback policy. The second proposed rule change in 07H.0304(4) is related to the Unvegetated Beach (UB) Area of Environmental Concern (AEC) designation. DCM is recommending that the UB AEC only be applicable within the OEA (i.e., oceanfront shoreline) and that the current temporary UB designation for Hatteras Village adopted in 2004 be removed. Miscellaneous, minor edits are included in both rules for reasons of clarity and consistency. A discussion of changes to the relevant sections of 07H.0304 and the full rule language with amendments are provided below.

OCEAN ERODIBLE AREA
The OEA boundary is defined oceanward by mean low water (MLW) and landward by a distance measured from the first line of stable and natural vegetation (FLS&NV) equal to 60 times the long-term annual erosion rate (ER). For the developed coast, ERs range between two and 15 feet per year (minimum setback rules require that the minimum ER = two feet per year, which currently applies to 81% or 127.5 miles of the developed portion of the 326 miles of oceanfront shoreline). In addition, the OEA width adds the distance of shoreline recession that would be generated from a storm having a one percent change of being equaled or exceeded in any given year (i.e., the 100-yr storm recession rate or SRR). The SRR model estimated the distance of shoreline recession (erosion) expected during a 100-year storm (i.e., there is a one percent chance every year that the modeled storm will impact the coast). The minimum and maximum values of the 100-yr SRR model results in North Carolina are 25 and 330 feet, respectively.

Summarily, the current OEA width formula can be simplified as: OEA = [(60 x ER) + SRR]. When placed in the context of the CRC's new setback policies (effective August 11, 2009), the OEA width is inadequate to ensure that larger-scale oceanfront development (i.e., most

development greater than 10,000 square feet shall follow a larger setback factor graduated between 65 and 90 based on total floor area) remains within the OEA.

To illustrate this conflict, assume a scenario using large-scale development (100,000 square feet) with a setback equal to 90 x ER proposed for an oceanfront location with an ER of two feet per year and a SRR of 25 feet (25 is the minimum SRR value and is applied to 19% or 30 miles of the developed oceanfront shoreline). Based on these variables, an oceanfront setback of 180 feet (i.e., 90 x 2) landward of the FLS&NV is required where the OEA is only 145 feet wide, or [(60 x 2) + 25]. Therefore, instead of being set back a distance of 180 feet landward from the FLS&NV, the setback would actually end up being 145 feet (OEA width), a deficit of 35 feet, because development outside of the OEA is not required to follow the oceanfront setback rules. Table 1 below illustrates the deficits using this scenario.

LONG TERM ANNUAL EROSION RATE (feet per year)

100 YEAR STORM RECESSION RATE (feet)	2	2.5	3	3.5	4	4.5	5
25	-35	-50	-65	-80	-95	-110	-125
30	-30	-45	-60	-75	-90	-105	-120
35	-25	-40	-55	-70	-85	-100	-115
40	-20	-35	-50	-65	-80	-95	-110
45	-15	-30	-45	-60	-75	-90	-105
50	-10	-25	-40	-55	-70	-85	-100
55	-5	-20	-35	-50	-65	-80	-95
60	0	-15	-30	-45	-60	-75	-90
65	5	-10	-25	-40	-55	-70	-85
70	10	-5	-20	-35	-50	-65	-80
75	15	0	-15	-30	-45	-60	-75
80	20	5	-10	-25	-40	-55	-70
89	25	10	-5	-20	-35	-50	-65
90	30	15	0	-15	-30	-45	-60
95	35	20	5	-10	-25	-40	-55
100	40	25	10	-5	-20	-35	-50

Table 1. *Negative values (distance in feet) indicate where the new maximum oceanfront setback (90 x ER) is larger, and by how much, than the current OEA width [(60 x ER) + 100-yr SRR]. When the expected setback is greater than the width of the OEA itself, a deficit is created (negative numbers in yellow cells). Values greater than or equal to zero (white cells) indicate sufficient OEA width under the current rule formula to ensure that large-scale development falls within the OEA (i.e., no distance deficit). In this specific tabulated scenario, large-scale is considered as 100,000 square feet or greater to illustrate the deficit created using new maximum setback requirements and existing OEA widths, but the "distance deficit" concept can be applied to all graduated setback factors greater than 60.*

Further, development outside of the OEA may also be outside of the other relevant Ocean Hazard System AECs (Inlet Hazard Area and High Hazard Flood Area) and not subject to a Coastal Area Management Act (CAMA) permit. In that case, the applicant is not required to review and acknowledge by signature the AEC Hazard Notice (required for a CAMA permit), which identifies important coastal hazards information such as ER and SRR.

DCM RECOMMENDATION (1 of 3)

Based on the conflict presented between the new CRC setback policy and the current OEA boundaries, DCM staff recommends a simple formula change that is consistent with the maximum setback factor of 90. The current OEA formula of (60 x ER) + SRR should be increased to (90 x ER) + SRR. The result will be a 30% expansion of the current OEA boundaries along the developed portions of the barrier islands. Half of this proposed expansion would be into areas without other AECs. Furthermore, for 81% of the total developed shoreline (127.5 miles), where the minimum ER of two feet per year currently is in place, the proposed OEA expansion would only result in a landward boundary movement of the AEC by 60 feet (regardless of the SRR value). The majority of OEA growth, therefore, would be in areas with higher erosion rates, primarily those greater than ten feet per year, where it is most critical to ensure that potential large-scale development is able to meet the CRC oceanfront setbacks to their full extent and be required to: 1) acknowledge relevant hazards and removal requirements contained within the AEC Hazard Notice and 2) obtain a CAMA permit in accordance with the current CRC setback policy. Other minor changes are also noted in the rule language below for clarity and consistency with other CRC rules and policies. Each of these proposed changes will be discussed in front of the full CRC on March 26th.

UNVEGETATED BEACH AREA

The Unvegetated Beach (UB) AEC designation may be applied by the CRC on either a temporary or permanent basis to areas where no stable natural vegetation is present. This designation can either be temporary or permanent. Currently, the only oceanfront community with a UB designation is Hatteras Village, which was approved by the CRC in May 2004 as a temporary designation after the loss of vegetation from Hurricane Isabel (September 2003). Therefore, a measurement line is used in place of the actual FLS&NV.

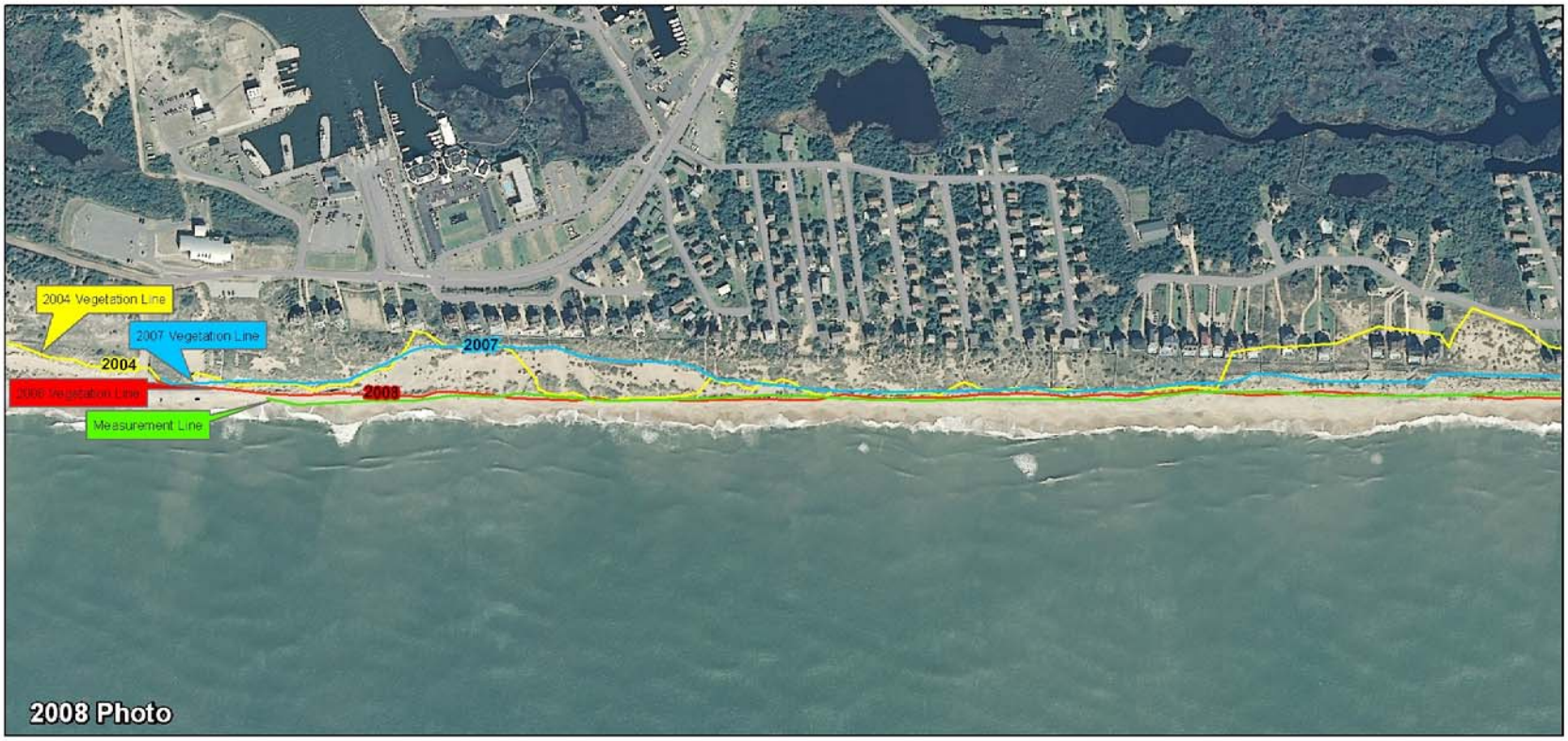
Current rule language allows the UB designation in all other AECs within the Ocean Hazard System (OEA, Inlet Hazard, High Hazard Flood). However, DCM staff feels that this policy is only appropriate for the oceanfront shoreline (OEA) and not the shoreline adjacent to inlets (Inlet Hazard Areas) where dynamic vegetation movement is a constant and natural response to inlet processes. The UB is also not applicable to the High Hazard Flood Area landward of the OEA.

DCM RECOMMENDATION 2 of 3

After on-the-ground observations at Hatteras Village in February 2010 and a review of the vegetation line recovery since 2004 (see maps 1 and 2 below; note the location of the red 2009 vegetation line and the green measurement line), DCM staff is recommending the removal of the temporary UB designation for Hatteras Village.

DCM RECOMMENDATION 3 of 3

Allow the UB designation only along the oceanfront shoreline (the OEA) and not the Inlet Hazard AEC. Minor changes are also noted in the language below for clarity and consistency with other CRC rules and policies. Each of these proposed changes will be discussed in front of the full CRC on March 26th.



Hatteras Village

Oceanfront Vegetation Line

Legend

- Measurement Line *(Un-Veg. Beach)*
- Vegetation Line - 2007
- Vegetation Line - 2008
- Vegetation Line - 2004

NOTE: Vegetation Line represents "stable-natural" as interpreted from photography

Datum: NAD 83
Projection: North Carolina State Plane
Units: Feet

0 600 1,200 2,400 Feet

0 0.125 0.25 0.5 Miles

2008 Photo Map 1 of 2

By: Ken Richardson

NC DENR - Division of Coastal Management - 2010

Hatteras Village

Oceanfront Vegetation Line

Legend

- Measurement Line *(Un-Veg. Beach)*
- Vegetation Line - 2007
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0 600 1,200 2,400 Feet

0 0.125 0.25 0.5 Miles

2008 Photo Map 2 of 2

By: Ken Richardson

NC DENR - Division of Coastal Management - 2010

15A NCAC 07H .0304 AECS WITHIN OCEAN HAZARD AREAS

The ocean hazard system of AECs contains all of the following areas:

(1) Ocean Erodible Area. This is the area in which there exists a substantial possibility of excessive erosion and significant shoreline fluctuation. The oceanward boundary of this area is the mean low water line. The landward extent of this area is determined as follows:

(a) a distance landward from the first line of stable and natural vegetation as defined in 15A NCAC 07H.0305(a)(5) to the recession line that would be established by multiplying the long-term annual erosion rate times 90. For the purposes of this Rule, the erosion rates shall be the long-term average based on available historical data. The current long-term average erosion rate data for each segment of the North Carolina coast is depicted on maps entitled "Long Term Annual Shoreline Change Rates updated through 1998 and approved by the Coastal Resources Commission on January 29th, 2004 (except as such rates may be varied in individual contested cases, declaratory or interpretive rulings). In all cases, the rate of shoreline change shall be no less than two feet of erosion per year. The maps are available without cost from any Local Permit Officer or the Division of Coastal Management; and

(b) a distance landward from the recession line established in Sub-Item (1)(a) of this Rule to the recession line that would be generated by a storm having a one percent chance of being equaled or exceeded in any given year.

(2) The High Hazard Flood Area. This is the area subject to high velocity waters (including hurricane wave wash) in a storm having a one percent chance of being equaled or exceeded in any given year, as identified as zone V1-30 on the flood insurance rate maps of the Federal Insurance Administration, U.S. Department of Housing and Urban Development.

(3) Inlet Hazard Area. The inlet hazard areas are natural-hazard areas that are especially vulnerable to erosion, flooding and other adverse effects of sand, wind, and water because of their proximity to dynamic ocean inlets. This area shall extend landward from the mean low water line a distance sufficient to encompass that area within which the inlet shall migrate, based on statistical analysis, and shall consider such factors as previous inlet territory, structurally weak areas near the inlet and external influences such as jetties and channelization. The areas identified as suggested Inlet Hazard Areas included in the report entitled INLET HAZARD AREAS, The Final Report and Recommendations to the Coastal Resources Commission, 1978, as amended in 1981, by Loie J. Priddy and Rick Carraway are incorporated by reference are hereby designated as Inlet Hazard Areas except that the Cape Fear Inlet Hazard Area as shown on said map shall not extend northeast of the Bald Head Island marina entrance channel. In all cases, this area shall be an extension of the adjacent ocean erodible area and in no case shall the width of the inlet hazard area be less than the width of the adjacent ocean erodible area. This report is available for inspection at the Department of Environment and Natural Resources, Division of Coastal Management, 400 Commerce Avenue, Morehead City, North Carolina. Small scaled photo copies are available at no charge.

(4) Unvegetated Beach Area. The Unvegetated Beach Area shall not apply to Inlet Hazard or High Hazard Flood Areas. Only beach areas within the Ocean Erodible Area where no stable natural vegetation is present may be designated as an Unvegetated Beach Area on either a permanent or temporary basis:

(a) An area appropriate for permanent designation as an Unvegetated Beach Area is a dynamic area that is subject to rapid unpredictable landform change from wind and wave action. The areas in this category shall be designated following detailed studies by the Division of Coastal Management. These areas shall be

designated on maps approved by the Coastal Resources Commission and available without cost from any Local Permit Officer or the Division of Coastal Management.

(b) An area that is suddenly unvegetated as a result of a hurricane or other major storm event may be designated as an Unvegetated Beach Area for a specific period of time. At the expiration of the time specified by the Coastal Resources Commission, the area shall return to its pre-storm designation. Areas appropriate for such designation are those in which vegetation has been lost over such a large land area that interpolation of the vegetation line under the procedure set out in Rule .0305(a)(5) of this Section is inappropriate.

History Note: *Authority G.S. 113A-107; 113A-113; 113A-124;*
Eff. September 9, 1977;
Amended Eff. December 1, 1993; November 1, 1988; September 1, 1986; December 1, 1985;
Temporary Amendment Eff. October 10, 1996;
Amended Eff. April 1, 1997;
Temporary Amendment Eff. October 10, 1996; Expired on July 29, 1997;
Temporary Amendment Eff. October 22, 1997;
Amended Eff. February 1, 2006; October 1, 2004; April 1, 2004; August 1, 1998.

North Carolina Department of Environment and Natural Resources
Division of Coastal Management
Beverly Eaves Perdue, Governor **James H. Gregson, Director** Dee Freeman, Secretary

March 11, 2010

MEMORANDUM

TO: Coastal Resources Commission
FROM: Tancred Miller
SUBJECT: Sea Level Rise Initiatives Update

Following on the heels of our successful science forum there has been a lot of momentum on climate change and sea level rise. Work continues at a very rapid pace at the Division, Department, regional, and national levels. Some of the more notable events include DENR's recent Climate Adaptation Workshop, the Department and Division's participation in the Governors' South Atlantic Alliance, and our ongoing development of a sea level rise education plan and draft policy.

Our involvement in regional collaborations has increased. DENR and DCM are working with sister agencies in Florida, Georgia and South Carolina, and with South Carolina Sea Grant to identify mutually beneficial priorities on the subjects of 1) working waterfronts, 2) disaster resilient communities, 3) clean coastal and ocean waters, and 4) healthy ecosystems. In addition, I have been assisting the state of South Carolina on a sea level rise adaptation planning project.

DENR was one of the primary co-sponsors of a climate adaption workshop in Raleigh at the beginning of March. The workshop drew between 350 and 400 participants to generate ideas on climate adaptation statewide, including sea level rise. Among the core findings of the workshop were the importance of fresh water, and the need for advance planning and public education. Staff has begun to develop a sea level rise education and outreach plan, and has met with the Museum of Natural Sciences to discuss potential educational displays.

There have been a number of other events and initiatives completed, underway, or planned. I look forward to bringing you all up to speed and hearing your thoughts going forward.

In a final piece of news, the Science Panel is meeting on March 12th to finalize the sea level rise report. I will have final copies for you all at the meeting.

North Carolina Department of Environment and Natural Resources
Division of Coastal Management
Beverly Eaves Perdue, Governor **James H. Gregson, Director** Dee Freeman, Secretary

March 11, 2010

MEMORANDUM

TO: CRC & Interested Parties
FROM: Tancred Miller
SUBJECT: Rulemaking Update

Along with this memo is a spreadsheet that contains all of the Commission's rules that are currently in the rulemaking process—from those being proposed for initial action to those reviewed by the N.C. Rules Review Commission (RRC) since the last CRC meeting. Listed below is a description and recent history of the CRC's action on each rule. Complete drafts of rules scheduled for public hearing at this meeting will be available on the DCM website.

RULE DESCRIPTIONS

1. 15A NCAC 7H.0104 Development Initiated Prior to Effective Date of Revisions
   Status: Public hearing at March meeting.
   The proposed amendments are to clarify how erosion rate setback factors for oceanfront development are to be applied. The amendments also establish limitations for new development that cannot meet the current setback, but could meet the setback based on the rate in effect when the lot was created.

2. 15A NCAC 7H.0106 General Definitions (Wind Energy)
   Status: Going to public hearing.
   The proposed amendment creates a definition for wind energy facilities. Public hearing anticipated in late spring or early summer 2010.

3. 15A NCAC 7H.0208 Estuarine System Use Standards (Docks & Piers provisions, wind energy)
   Status: Docks and piers changes at rules review; wind energy changes going to public hearing.
   This rule is being amended to make conforming changes to the CRC's shoreline stabilization and docks & piers rules. The public comment period closed on November 2nd, with no comments received. These changes were adopted at the January 2010 meeting, with an anticipated effective date of April 1st, 2010. Additional changes proposed at the January meeting for wind energy facilities were approved for public hearing, anticipated in summer 2010.

4. 15A NCAC 7H.0209 Estuarine Shorelines
   Status: Effective March 1st, 2010.
   This rule was sent to rules review to fix an incorrect internal citation. This was merely a technical change and did not require public notice or hearing.

5. 15A NCAC 7H.0309 Use Standards for Ocean Hazard Areas: Exceptions
   Status: At rules review.
   This rule underwent one round of public comment to make the development limitations conform with changes to 7H.0306, and changes to the pier house section that allow construction and expansion of pier houses oceanward of the setback. Another round of public comment was necessary to incorporate additional changes related to allowing electrical transmission lines oceanward of the development setback. The public comment period closed on November 2nd, with no comments received. Changes were adopted at the January 2010 meeting, with an anticipated effective date of April 1st, 2010.

6. 15A NCAC 7H.0310 Use Standards for Inlet Hazard Areas
   Status: Under Science Panel review.
   The CRC has seen the new inlet hazard area delineations prepared by its Science Panel on Coastal Hazards and had further discussion in July and November 2008. The CRC Science Panel and DCM staff continue to work on recommendations to bring to the CRC at a later meeting. Science panel work on this rule has been delayed by the Panel's focus on the terminal groin study and preparation of a sea level rise metrics report.

7. 15A NCAC 7H.1704-5 GP for Emergency Work Requiring a CAMA and/or Dredge & Fill Permit
   Status: At rules review.
   Changes are being made to this rule to conform with newly-effective changes to 7H.0308, Use Standards for Ocean Hazard Areas. The changes primarily address general and specific use standards related to temporary erosion control structures. The public comment period closed on November 2nd, with no comments received. Changes were adopted at the January 2010 meeting, with an anticipated effective date of April 1st, 2010.

8. 15A NCAC 7H.2300 GP for Replacement of Existing Bridges
   Status: Going to rules review.
   These amendments are intended to streamline the process under which the Department of Transportation (DOT) replaces two-lane bridges on secondary roads. The changes will expand the applicability of the GP and shorten the project delivery time for bridge replacements. Public hearing was held at the January 2010 meeting with no comments received. Changes were adopted at the February 2010 meeting, with an anticipated effective date of May 1st, 2010.

9. 15A NCAC 7M.0400
   Status: Going to public hearing.
   Amendments proposed in January to define policies for wind energy facilities were approved for public hearing, anticipated in late spring or early summer 2010.

COASTAL RESOURCES COMMISSION RULEMAKING STATUS - MARCH 2010					
Item #	**Rule Citation**	**Rule Title**	**March '10 Status**	**March Action Required?**	**Next Steps**
1	15A NCAC 7H.0104	Development Initated Prior to Effective Date of Revisions	Public hearing	**Yes**	Public hearing at March meeting.
2	15A NCAC7H.0106	General Definitions	Going to public hearing	No	Changes to insert a definition of "wind energy facilities" going to public hearing in late sp summer 2010.
3	15A NCAC 7H.0208	Estuarine System Use Standards	At Rules Review	No	Public hearing held in September. Adopted at January 2010 meeting. Additional chang January for wind energy facilities will go to public hearing in summer 2010.
4	15A NCAC 7H.0209	Estuarine Shorelines	Effective March 1st, 2010	No	Technical change being made to fix an incorrect internal reference.
5	15A NCAC 7H.0309	Use Standards for Ocean Hazard Areas: Exceptions	At Rules Review	No	Re-published for changes related to electrical transmission lines oceanward of the setba hearing held in September. Anticipated effective date is March 1st, 2010.
6	15A NCAC 7H.0310	Use Standards for Inlet Hazard Areas	Under Science Panel review	No	DCM and Science Panel continue to work on recommendations to CRC.
7	15A NCAC 7H.1704 & 1705	GP for Temporary Erosion Control Structures	At Rules Review	No	Public hearing held in September. Adopted at January 2010 meeting. Anticipated effec March 1st, 2010.
8	15A NCAC 7H.2300	GP for Replacement of Existing Bridges	Going to Rules Review	No	Public hearing held at the January 2010 meeting. No comments received.

North Carolina Department of Environment and Natural Resources
Division of Coastal Management
Beverly Eaves Perdue, Governor **James H. Gregson, Director** Dee Freeman, Secretary

March 11, 2010

MEMORANDUM

TO: Coastal Resources Advisory Council

FROM: Dara Royal

SUBJECT: March 2010 CRAC Meeting

Happy Spring! I hope everyone is looking forward to great meeting in Sunset Beach. We are fortunate to have a full 2½ day meeting this time, which will allow us to continue the good progress we've been able to make so far this year.

Following up from our October meeting, DENR has released a public comment draft of its Boards and Commissions report to the Legislature. It is extremely important that you read the attached memo from Frank Rush and I about what this report means to the future of the CRAC. We would be surprised if there was not legislative proposal soon to reduce the size of the CRAC. Frank and I have discussed this in some length with DCM staff and have included them in the attached memo. I urge you all to do your own thinking in advance of the meeting and if you can, ask for some input from your appointing bodies. FYI, the full DENR report is included in the meeting materials.

Phil Harris has arranged a presentation for us on NCDOT's agreement with the NC Wildlife Resources Commission for providing public water access at NCDOT bridge crossings. This agreement goes part of the way towards addressing our interest in expanding public water access throughout the coastal area.

The City of Wilmington's Phil Prete will be with us this time to share with us what they have been doing to prepare for climate change and sea level rise. This presentation was re-scheduled from February.

Also following up from our February meeting, Spencer Rogers, Harry Simmons, and Tracy Skrabal met with DCM and the Corps to talk about non-federal takeover of Army Corps nourishment projects. The meeting proved to be very productive and Doug Huggett will be here to tell us about it, as well as where the process is heading next.

For those of you who can make it, Hope Sutton is again offering a morning field trip to the Bird Island Coastal Reserve. Spring is a great time to visit, just keep your eye on the weather forecast and dress appropriately. If you would like to go please RSVP to Hope at 910-962-2998 or SuttonH@uncw.edu.

Thank you all for your continued dedication, see you on the 24th.

400 Commerce Avenue, Morehead City, North Carolina 28557
Phone: 252-808-2808 \ FAX: 252-247-3330 \ Internet: www.nccoastalmanagement.net

NC COASTAL RESOURCES ADVISORY COUNCIL
March 24-26, 2010
Sea Trail Golf Resort & Convention Center
Sunset Beach, NC

***Per CRAC bylaws, Article XIII, Section 5, Members are reminded to refrain from voting on rules and policies for which they have a significant and unique familial or financial interest.*

AGENDA

Wednesday, March 24th

9:30	**Field Trip to Bird Island Coastal Reserve** (Optional)	Hope Sutton
1:00	**Council Call to Order** (Jones/Byrd 1) ▪ Roll Call ▪ Approval of February 2010 Minutes ▪ Announcements and Updates	Dara Royal
1:15	**Public Access at NCDOT Bridge Crossings**	William Goodwin, NCDOT
1:30	**City of Wilmington Sea Level Rise Adaptation Planning**	Phil Prete, Senior Environmental Planner, City of Wilmington
2:00	**Transfer of USACE Nourishment Authority**	Doug Huggett
2:30	**CRAC Structure and Function**	Frank Rush
3:00	**Old/New Business** ▪ Future agenda items	Dara Royal
	Adjourn; Join CRC Meeting in Byrd 2&3	

Thursday 25th and Friday 26th

Meet in session with CRC.

NEXT MEETING: May 18-19, 2010
Division of Coastal Management Office
Morehead City, NC

NC Coastal Resources Advisory Council
New Hanover County Government Complex, Wilmington, NC
February 16, 2010
Meeting Summary

Attendance

SEAT	MEMBER NAME	16th	17th
CAMA Counties			
Beaufort	Paul Spruill		
Bertie	Traci White		
Brunswick	Bob Shupe	Y	Y
Camden	William Wescott	Y	
Carteret	Charles Jones	Y	
Chowan	W. Burch Perry		
Craven	Tim Tabak	Y	
Currituck	Gary McGee		
Dare	Ray Sturza		
Gates	*Vacant*		
Hertford	*Vacant*		
Hyde	Eugene Balance		
New Hanover	Dave Weaver		
Onslow	*Vacant*		
Pamlico	Christine Mele (Missy Baskervill)	Y	
Pasquotank	W. H. Weatherly		
Pender	Bill Morrison	Y	Y
Perquimans	Lester Simpson		
Tyrrell	Joe Beck	Y	
Washington	Wayne Howell	Y	
Coastal Cities			
Columbia	Rhett White	Y	
Edenton	William Gardner, Jr	Y	
Emerald Isle	Frank Rush **(Vice Chair)**	Y	
Hertford	Carlton Davenport		
Nags Head	Webb Fuller	Y	Y
Oak Island	Dara Royal **(Chair)**	Y	Y
Caswell Beach	Harry Simmons	Y	Y
Surf City	J. Michael Moore	Y	Y
Lead Regional Planning Orgs			
Albemarle Regional Commission	Bert Banks		
Cape Fear Council of Governments	Debbie Smith	Y	Y
Eastern Carolina Council	Judy Hills	Y	Y
Mid-East Commission	Eddy Davis (Tim Ware)	Y	
Science & Technology			
NC Coastal Federation	Tracy Skrabal	Y	Y
NC Sea Grant, Wilmington	Spencer Rogers	Y	
Quible & Associates, Kitty Hawk	Joe Lassiter		
State Agencies			
Department of Administration	Joy Wayman		
Department of Agriculture	Maximilian Merrill		
Department of Commerce	Lee Padrick	Y	
Department of Cultural Resources	Renee Gledhill-Earley		
DENR, Division of Marine Fisheries	Anne Deaton (Michelle Duval)	Y	Y
DENR, Division of Water Quality	Cyndi Karoly	Y	
NCDOT	Phil Harris	Y	Y
NCDOT	Travis Marshall		
State Health Director (Shellfish San.)	*Vacant*		
Local Health Director	Jerry Parks		

Tuesday 16th October

Call to Order

Dara Royal called the meeting to order at 2:00 pm and the Council approved the October 2009 minutes without amendment. Royal introduced Ocean Isle Beach Mayor Debbie Smith, the new representative for the Cape Fear Council of Governments. Smith replaces Penny Tysinger. Royal announced that the CRC would be discussing the terminal groin draft report on Wednesday, and urged members to participate in the discussion as called for in the legislation. Royal reminded members that the draft report and all public comments received to date can be found on DCM's website.

Royal said that the presentation from Philip Prete about the City of Wilmington's sea level rise planning has to be rescheduled, and can hopefully be done in March.

Harry Simmons announced that NCBIWA will be hosting its NC Coastal Local Governments Annual Meeting on March 29th and 30th at the NC Aquarium in Pine Knoll Shores, and invited members to register through the NCBIWA website.

CRAC Involvement in Land Use Planning Guidelines Update

Dara Royal referred members to the handout (attached) summarizing the CRAC subcommittee's discussion about updating the land use planning guidelines. Royal said that the subcommittee's initial discussion focused on process for going about the update rather than on the nature of specific amendments. Royal said that the subcommittee recommends a small team of 5-7 CRC and CRAC members should be assembled to run the process. Royal said that she, Frank Rush, Tim Tabak, Christine Mele, Lee Padrick all volunteered to serve, and invited feedback from the membership.

Eddy Davis made a motion to recommend that the CRC create a team with these plus three CRC members of the CRC. The motion was approved unanimously.

Royal said that the process of gathering information and preparing recommendations should take roughly one year. Once the CRC assembled the team, and after the CRC finishes its terminal groin report that is due by April 1st, DCM will begin to coordinate the team's work, including generating a list of stakeholders who should be invited to provide expert input.

Royal said that NOAA/OCRM will be invited to offer early input and provide ongoing consultation. Staff said that they will approach OCRM about sending a representative to a CRC meeting to talk about their oversight and partnership relationship with the state's program. OCRM will also be asked to explain, from their perspective, the processes and challenges associated with routine program changes, land use plan updates, and consistency determinations.

Royal said that CRAC members who are not appointed to the review team will have ample opportunities to have input on the process and development of recommendations. All meetings will be open, and direct input will be solicited at various points throughout the process.

Royal said that even though there is uncertainty about the CRC's meeting schedule for the rest of 2010, she expects that the team can continue to work via small meetings, conference calls, and email, and opportunistically with CRC meetings when they occur.

Royal said that there is recognition of the need for local government education about the LUP process. Opportunities could be offered through the Coastal Training Program, and by doing presentations at local government meetings. Local governments should also be asked about their perceptions of the value and effectiveness of the CAMA LUP program, and how it could be improved. A presentation about the program could be given at the NCBIWA Coastal Local Governments meeting in April. Bob Shupe and Harry Simmons volunteered to be part of a CRAC panel at the meeting to talk about and answer questions about the CRAC.

CRAC Issues for 2010

Royal reviewed the CRAC's list of 2007 priorities, and asked for input on where the Council should focus in 2010.

Phil Harris offered to arrange a presentation about the agreement between NCDOT and WRC to provide public access at NCDOT bridge crossings. Harris said that the plan takes into account right of way and safety issues.

Webb Fuller asked whether DENR had any new initiatives that the CRAC could become involved in. Tancred Miller replied that climate change is one of DENR's biggest new initiatives. DENR is initially focused on green infrastructure, renewable energy, and sea level rise. DENR is developing an action plan that should be drafted by this summer, and that will let the CRAC evaluate how to get involved.

Mike Lopazanski said that the BIMP is almost ready for public involvement. Steve Underwood said that the Department will be releasing the BIMP this year, but for now is getting into a lot more of the specifics of the report, e.g. on cost breakdowns and funding scenarios, trying to estimate how much the state could contribute financially, and incorporating sea level rise data. Underwood said that he would be meeting with Robin Smith on February 25th to discuss where things stand. Underwood said that there will ultimately be a new draft released, that will be offered for a 60-day comment period, but the exact release date was still unknown.

Joe Beck asked whether there is any money available for repairing CAMA access sites. John Thayer said that there generally is not, but FEMA provides money if a natural disaster is declared. Thayer said that the CAMA access program is down 50-60 percent below recent averages, and that DCM is still trying to find funds to honor the commitments that were announced last year. Steve Underwood said that DCM expects local governments to cover the costs of routine maintenance, but they could apply to CAMA for replacement funds after a reasonable period of time.

Harry Simmons said that the loss last August of the Department of Corrections' community work program has also hurt public access. Simmons said that DOC workers used to be a source of cheap labor for maintaining beach accesses, and wondered whether the CRAC could have any influence in getting the program re-started. Rhett White said that even though the program has been severely cut, it has not been totally eliminated. White said that town can still have access to use inmates, but now have to provide their own transportation. Frank Rush said that the Town of Emerald Isle picks up three inmates from the Newport prison every working day, and the Town provides the transportation.

Transfer of USACE Consistency Determination to Single-Use GP

Spencer Rogers reminded the Council that this issue had been raised with staff over two years ago, but never reached a conclusion that was satisfactory to the CRAC. Rogers said that occasions still arise where because of unexpectedly high bids or loss of federal funds, and the local governments, even though they may have the money to cover the difference, is prevented from doing so under federal law and state rules. Harry Simmons said that one of his affiliated organizations is working to seek Congressional action to allow the Corps to accept local funds for non-navigation projects. Rogers said it is especially troubling in cases in projects where the Corps already has all the required authorizations and consistency determinations. Rogers said that sometimes the Corps has to back out at the very last minute, leaving the project either dead, diminished, or seeking emergency appropriation, and at that juncture it is too late for the local government to seek their own permits. Rogers says the problem is the lack of a CAMA GP to allow the local government to quickly get a permit for these types of projects. Rogers mentioned Carolina Beach as one community that had a last-minute reduction in Corps funding and was preparing to reduce the size of its project when they were awarded an emergency appropriation to complete the project as designed.

Webb Fuller asked whether there is a class of CAM permit available now that is simply not convenient for the local governments. Rogers said that there is such a permit, but the lead time is too long when doing NEPA/SEPA assessments, and the cost of doing the environmental studies is too high.

Simmons wondered whether local governments could get parallel permits that would be kept as backup in case the Corps is unable to complete the project. Simmons said that the drawback is having to spend $1 million or so on preparing environmental documents.

Charles Jones reminded the Council that staff had offered accelerated review through the express permit program and suggested that one of the communities could go through that route as a guinea pig for the other communities. Simmons said that the Council could try that. Carolina Beach said that they might have considered an express permit application but did not know that it was an option. Jones then wondered how much environmental documentation, therefore cost, would be required for an express permit versus a CAMA major permit.

Tracy Skrabal asked whether the local governments, whether in the express or major permit process, could use the Corps' environmental documents instead of spending time and money to prepare their own. Rogers said that is one option that can be successful given the leadership to get it done.

A motion was made and seconded to ask the CRC to have staff prepare draft rule language to transfer Corps consistency determinations to non-federal entities. Tracy Skrabal asked for discussion of the motion since there seemed to be a lot of missing information and speculation surrounding the Council's discussion. Cyndi Karoly asked whether anyone had checked with the Attorney General's office about the legalities involved. No-one had done so.

Harry Simmons suggested having a meeting with a few CRAC members, DCM, and the Corps to discuss what can be done.

The motion was withdrawn and a committee was put together to meeting with DCM and the Corps. Doug Huggett was mentioned as an essential meeting participant. Harry Simmons, Tracy Skrabal and Spencer Rogers volunteered to be on the committee. The meeting was to be scheduled in early March.

New Business/Old Business
None.

Adjourn
With no further business the Council adjourned at 4 pm.

Wednesday 17th
Advisory Council met in session with CRC.

##

Land Use Planning Guidelines Update
CRAC Subcommittee Discussion about Advisory Council Involvement
February 11th, 2010

Subcommittee Members: Dara Royal, Frank Rush, Tim Tabak, Christine Mele, Lee Padrick
DCM Staff: Steve Underwood, John Thayer, Mike Lopazanski, Tancred Miller

The subcommittee agreed for this call to focus more on a discussion of the process for updating the LUP guidelines than on content or specific amendments to the 7B rules. As a starting point the subcommittee agreed that the guidelines in general only need routine updates, and that a major overhaul as was done at the last update is not necessary. Local governments should not anticipate having to adopt new plans immediately, although some minor tweaks and amendments might be required.

The subcommittee discussed the following questions:

1. **What's the appropriate composition for the CRC-appointed subcommittee that will review the guidelines? Should other stakeholders be appointed to the subcommittee or just invited to give their input at specific points along the way? Who from the CRAC?**
   The subcommittee should be kept small in order to be efficient, approximately 7-8 people. There should be representatives from the CRC and CRAC, along with DCM staff support. Roughly five members from the CRAC and three from the CRC. Dara Royal, Frank Rush, Tim Tabak, Christine Mele, Lee Padrick all indicated a desire to serve, which is a good cross-section of representation from county and municipal members, elected officials and staff, and state government. These volunteers can be considered as a starting point for CRAC discussion.

   Additional members could be appropriate, such as Eddy Davis or other members who express a strong desire. CRAC members who have experience writing or developing local land use plans should be considered for appointment.

   Following the February CRAC meeting Dara will make a recommendation to the CRC to convene the subcommittee, and recommend which CRAC members should be appointed.

2. **What is an estimated and reasonable timeline for this task taking into account other factors, e.g. the development of a CRC sea level rise policy and the Emergency Management SLR study?**
   The process of drafting recommended revisions should take roughly one year.

   There is a need to incorporate several external efforts into the update, such as sea level rise policy from the CRC and adaptation tools from the Division of Emergency Management Risk Management Study. These components will be incorporated as they become available, but the work on revising the existing guidelines should begin now.

3. **How to identify stakeholders and begin collecting their input?**
   Consultants who draft local land use plans were identified as a necessary stakeholder group for soliciting input. It was decided that a brainstorm of potential stakeholders was not appropriate for this call. After the CRC appoints a subcommittee DCM staff will begin a stakeholders list and distribute it by email for input from subcommittee members.

   At the March meeting the full CRAC will be asked to provide input on the stakeholder list and to offer ideas for how to engage the stakeholders.

4. **How do we involve NOAA/OCRM in the process?**
   It is important to bring OCRM into the process as early as possible and to keep them involved throughout, perhaps as an ex officio member of the revisions subcommittee. An OCRM representative should be invited to attend a CRC meeting and explain from their perspective how the

federal-state-local partnership works, and what they look for in state guidelines and local land use plans. They should also explain how the process of federal approval of local land use plans, and how the process can be improved. DCM will initiate a conversation with OCRM.

5. **How to tap the expertise of CRAC members who are not appointed to the subcommittee**
   CRAC members and external stakeholders should be invited in to share their expertise throughout the process. All subcommittee meetings will be open to the public, including interested CRAC members who may not be on the subcommittee.

6. **How to function despite the uncertainty of regular CRC/CRAC meetings for the rest of the year**
   There is considerable uncertainty about the CRC's meeting schedule for the next year. After the March 2010 meeting there are no further meetings scheduled at this time, but DCM expects that regular, one-day meetings will continue. The subcommittee may be able to work at these meetings, but is also free to meet on their own, either in person or by conference call.

7. **Thoughts about local government education**
   Elected officials need general education about CAMA land use planning, including the necessity, requirements, process, available assistance, and costs and benefits. It may be possible to offer some education through DCM's Coastal Training Program. The best way to reach them will be to attend their meetings and do brief, basic presentations. CRAC members can help if they're given a powerpoint or video presentation. The subcommittee should solicit feedback from the local governments about whether they think their local land use plans are useful and how they can be improved.

CAMA Land Use Planning Guidelines
http://www.nccoastalmanagement.net/Rules/Text/t15a_07b.pdf

Land Use Planning Technical Manual
http://www.nccoastalmanagement.net/Planning/techmanual.pdf

March 10, 2010

To: Coastal Resources Advisory Council (CRAC) Members
From: Dara Royal and Frank Rush
Re: Potential CRAC Re-Structuring

At our October 2009 meeting staff informed us that the current state budget bill contained a directive to DENR to prepare a report on its standing boards, commissions and councils. The directive required DENR to make recommendations for consolidating or eliminating the various boards, councils or commissions to reduce redundancy and cost. DENR has released a public comment draft of its report, and it recommends a reduction in the size of the CRAC, in both the local government and state agency slots. The report does not have a recommendation about how many seats to eliminate.

We have since had two lengthy discussions with DCM staff about a response from the CRAC. In the eventuality that the General Assembly accepts DENR's recommendation we feel it would be most appropriate that a proposal for how to restructure the Advisory Council come from us. We are now offering our combined thoughts to you for discussion.

Current Structure	Potential Re-Structure
20 county seats	16 local government seats
8 coastal city seats	2 coastal science & technology seats
4 planning district seats	6 state agency seats
3 coastal science & technology seats	
1 local health director seat	
9 state agency seats	
45 TOTAL	24 TOTAL

County and coastal city seats would be consolidated into general "local government" seats, and reduced from 28 to 16. Local Government seats would become regionally representative, similar to that of the current structure for coastal cities seats. The 20 counties would be divided into four regions to align with DCM's regional offices: Northern (Camden, Chowan, Currituck, Dare, Gates, Pasquotank, Perquimans); Inland (Beaufort, Bertie, Hertford, Hyde, Tyrrell, Washington); Central (Carteret, Craven, Onslow, Pamlico); and Southern (Brunswick, New Hanover, Pender). Each district would have four seats on the Council. County and local governments, and regional planning organizations would be asked to make nominations, and all members would be appointed by the CRC. The CRC would need to ensure a balance between mainland and island representatives, as well as county and town representatives.

Science and technology seats would be reduced from three to two, however, nothing would prevent an individual with this expertise from being nominated for a local government seat. Similarly, designated seats for the regional planning organizations would be eliminated, but individuals from those organizations could serve in a local government capacity.

State agency seats would be reduced from nine to six. Possible seats could include Division of Marine Fisheries, Division of Water Quality, Division of Water Resources, Wildlife Resources Commission, Department of Transportation, and one at-large seat reserved for nomination by the DENR secretary. The rationale for this change being that these agencies are the most involved on a daily basis with the Coastal Program. Other agencies could be called upon when specific issues or expertise requires their participation.

We also suggest, as DENR does, an amendment to have the CRAC advise the CRC, rather than the secretaries of DENR and DOA. The CRAC would continue in its roles as 1) a liaison between the governments and agencies they represent, and the CRC, and 2) a participant and advisor to the CRC on coastal policy and regulatory development.

We also think it advisable to formalize a CRAC executive committee within our Bylaws, which would consist of three to four of our members.

Staff has suggested that the CRAC chair and vice chair be assigned seats at the CRC's table during Commission meetings, as a way of facilitating more meaningful interaction between the CRC and CRAC.

We offer these thoughts as a starting point for discussion. As the Department has been directed by the General Assembly to study the issue, it is prudent to anticipate some organizational changes, and to take a proactive approach to guiding the future makeup of our group.

##

DENR Recommendation, excerpted from its <u>Legislative Report on Boards, Commissions and Councils</u> (Public Comment Draft, March 2010):

Reduce the number of members on the Coastal Resources Advisory Council:

The Coastal Resources Advisory Council (CRAC) was created in 1973 when the General Assembly enacted the Coastal Area Management Act (CAMA). The CRAC is a 45 member body which serves as an advisory body to the Coastal Resources Commission (CRC), a 15 member board charged with administering CAMA and developing rules.

The statute governing the CRAC, NCGS Sec. 113A-105(c) states that its duties are to assist the Secretary of the Department of Environment and Natural Resources and the Secretary of Administration. The actual work of the CRAC has been to advise the CRC. Consequently, the statute should be modified to reflect that the actual role of the CRAC is to advise the CRC.

One of the primary functions of the CRAC is to provide local government input to the CRC on coastal management policy. Of the 45 appointments to the CRAC, 32 are local government appointees, including one representative from each of the 20 CAMA counties. While local government representation is critical to the work of the CRAC, the number of local government appointees should be reduced from the current statutory mandate of 32 to a smaller number.

Along those lines, the CRAC could continue to serve its important function, but in a more streamlined and focused manner if some of the state government appointment requirements were eliminated from the statute. For example, appointments from state agencies, including representatives from Commerce, Agriculture, and Administration could be eliminated. There will continue to be occasions when matters related to those agencies are of relevance and significance to the CRC. However, in those situations it would be more efficient and economical to have a representative from those agencies attending and presenting to the CRC on a specific issue, rather than as a standing member of the CRAC.

*** Also noted in the report: the certified CRAC expenditure from state funds for FY 2008-09 was $32,444. The majority of the CRAC's financial support is provided through a federal CZMA grant.*

MEMORANDUM OF AGREEMENT

BETWEEN

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

AND

THE NORTH CAROLINA WILDLIFE RESOURCES COMMISSION

THIS AGREEMENT is made and entered into this the 30th day of October, 2009, between the NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, an agency of the State of North Carolina, herein referred to as NCDOT, and the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION of the North Carolina Department of Environment and Natural Resources, an agency of the State of North Carolina, herein referred to as WRC.

WITNESSETH:

WHEREAS, the NCDOT owns and maintains certain rights of way surrounding bridges in North Carolina (hereinafter, "the Property"), and,

WHEREAS, the WRC has been given the mission to fund, provide, and manage public recreational access; and,

WHEREAS, Session Law 2007-485 directs the WRC and NCDOT to work together to address public access to coastal waters along the roadways, bridges, and other transportation infrastructure owned or maintained by NCDOT, and,

WHEREAS, it is necessary for the NCDOT and the WRC to coordinate planning and development processes that coincide on the Property; and,

WHEREAS, the WRC and the NCDOT may enter into cooperative agreements with the approval of the North Carolina Department of Administration, pursuant to N.C.G.S. § 143B-24.

NOW, THEREFORE, the parties hereto, each in consideration of the promises and undertakings of the other as herein provided, do hereby covenant and agree, each with the other, to formalize a framework for cooperation between the NCDOT and the WRC for the planning and development of public recreational access on or adjacent to Right of Way owned by the NCDOT.

1. The parties agree to cooperate in accordance with Attachments A and B which are incorporated as part of this agreement and to participate in joint planning and/or development of transportation projects and recreational access facilities as appropriate.

2. If, pursuant to Attachments A and B, the parties agree to pursue a recreational access facility, a project specific agreement will be signed by both parties.

3. Both parties agree that the property for the development of public recreational access on or adjacent to the Right of Way owned by the NCDOT, considered in its entirety, is not significant for consideration under Section 4(f) of the US Department of Transportation Act of 1966 and its implementing regulations (23 CFR Part 774) and further agree that it is not the intent of this agreement to interfere with future transportation improvements that may be needed at or near a bridge or stream crossing. Both parties also agree to insert this acknowledgment into each project specific agreement. To that end, recreational access facilities will be considered interim uses of NCDOT Property, encroachments onto NCDOT property, or interim uses of property adjacent to the Right of Way owned by the NCDOT, as further described in Attachment A.

4. Amendments to this Agreement may be made by mutual agreement and must be in writing and signed by both parties.

IN WITNESS WHEREOF, this Agreement has been executed, in duplicate, the day and year heretofore set out, on the part of the NCDOT and the WRC by authority duly given.

NORTH CAROLINA WILDLIFE RESOURCES COMMISSION

By: _____ August 26, 2009
Gordon Myers, Executive Director — Date

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

By: _____ 9/3/09
Eugene A. Conti, Jr., Secretary — Date

By: _____ 9/6/09
J. Douglas Galyon, Chairman, NC Board of Transportation — Date

NORTH CAROLINA DEPARTMENT OF ADMINISTRATION

By: _____ 10.30.09
W. Britt Cobb, Jr, Secretary — Date

ATTACHMENT A

Attachment A serves as a framework for cooperation between the NCDOT and the WRC for planning and development of public recreational access on NCDOT's bridge replacement and new bridge construction projects.

Project Selection

The NCDOT and WRC will work cooperatively to identify feasible public recreational access on projects listed in the NCDOT's Transportation Improvement Program (TIP). Project selection will be determined by the following guidelines:

1. The NCDOT Project Development and Environmental Analysis Branch (PDEA) Bridge Unit agrees to furnish the NCDOT's TIP bridge project list in electronic format to the WRC Engineering Services, Design Services Section Chief. The NCDOT PDEA Bridge Unit will provide TIP updates following Board of Transportation approval of each new TIP.
2. The WRC, at no expense to NCDOT, shall perform site investigations, assess development feasibility, and prepare finding reports for each of the TIP projects. The WRC will provide the NCDOT a listing of projects recommended for development of public recreational access prior to NCDOT's project scoping meeting.
3. NCDOT's PDEA Bridge Unit will coordinate with the appropriate NCDOT Division Engineer for each recommended project to establish NCDOT's acceptance of each recommended project as appropriate for joint development.
4. The NCDOT PDEA Bridge Unit Project Planning Engineer shall contact the WRC Project Engineer upon planning and design commencement of the TIP project recommended for public recreational access to initiate the design

integration process, if the criteria contained in NCDOT's "Guidelines For Recreational Access At Creeks And Rivers," attached hereto as Attachment B, are met.

Planning and Design Integration

The NCDOT and the WRC will work cooperatively to accommodate the WRC's public recreational access needs within the NCDOT's TIP project planning and design process in accordance with the following guidelines:

1. The NCDOT PDEA Bridge Unit Project Planning Engineer will invite the WRC Project Engineer to the Field Scoping Meeting.
2. The NCDOT Roadway Design Project Engineer will provide the WRC Project Engineer with preliminary designs of alignment alternatives for the TIP bridge projects once designs are complete (approximately four (4) months after the Field Scoping Meeting).
3. The WRC will attend the Field Scoping Meeting and will provide the NCDOT with input regarding public recreational access development for the project site.
4. If feasible and practical, the NCDOT will accommodate the WRC's public recreational access needs within the TIP project design.
5. On TIP Projects with anticipated public recreational access accommodations, the WRC Project Engineer will be invited by the NCDOT Roadway Design Project Engineer to attend the Combined Field Inspection meeting.
6. For projects constructed entirely or in part by the NCDOT contractor, the NCDOT and WRC will coordinate payment and bid item details nine (9) months prior to TIP project letting. WRC will reimburse NCDOT for all expenses of project construction.

7. NCDOT must keep bridge replacement projects on schedule. If project issues or circumstances dictate, NCDOT reserves the right to proceed with the bridge replacement project and have WRC complete the access project at a later date.

Ancillary Property Acquisition

The integration of public recreational access with bridge replacement or construction of a new bridge may require the purchase of ancillary property in addition to the property required for the bridge project. Ancillary property required for the construction of public recreational access will be acquired according to the following guidelines:

1. The WRC will provide to the NCDOT ancillary property delineation to meet requirements of desired public recreational access.
2. NCDOT agrees to clearly identify and label on the TIP Project's Final Right of Way plans the ancillary property needed for the public recreational access. The property shall be labeled on the plans as "Public Recreational Property (By others)".
3. The NCDOT Right of Way Branch will perform appraisals for the ancillary property. The WRC will reimburse the NCDOT for the expense of the appraisal.
4. The NCDOT Right of Way Branch Agents will negotiate for the NCDOT project property required for the highway project. The Department of Administration, State Property Office, will negotiate for the WRC public recreational access property. The NCDOT Right of Way Agent and the State Property Office Agent will coordinate the initial negotiation meeting with the property owner.
5. Ownership transfer of the NCDOT right of way and the ancillary property will be completed separately through the acquisition processes established by each agency. At the completion of the acquisition process, NCDOT will own the right of way needed for the bridge project construction and the WRC will own the

additional property needed for the public recreational access. The WRC may also elect to donate the additional property needed for the public recreational access to the NCDOT. In this case, subject to the terms of a NCDOT encroachment agreement, the WRC will be allowed to encroach upon the additional property for the purposes of managing, maintaining, and operating the public recreational access. If there is a need for the NCDOT to demand abandonment of the encroachment, then NCDOT will provide written notification to WRC. In the case where NCDOT demands abandonment of the encroachment, NCDOT will perform the appraisal and will reimburse the WRC for the appraised value of the donated property.

NCDOT will certify that any property acquired by others and donated to NCDOT meets all applicable Federal and NCDOT acquisition requirements prior to being incorporated into any Federal-aid project.

6 Alternatively, the NCDOT Right of Way Branch may elect to perform appraisals and negotiate for both the NCDOT project property and the public recreational access property or a portion of the public access property. In this case, title to the public recreational access property will be held by the NCDOT and the property will be leased to the WRC on terms agreeable to both parties.

Environmental Documents and Permitting

Primary environmental regulatory agencies have provided the following guidance for permitting cooperative projects:

1 United States Army Corps of Engineers:

A. Public recreational access projects which will be constructed and completed by the WRC or its agents within one year of the completion of the NCDOT's bridge

project should be permitted as one project in combination with the NCDOT's project.

B. Public recreational access projects which will be constructed and completed by NCDOT or its agents within one year of the completion of the NCDOT's bridge project should be permitted as one project in combination with the NCDOT's project.

C. For public recreational access projects constructed and completed by the WRC or its agents one year or more after the completion of the NCDOT's bridge project, the regulatory agency requests notification of the pending project.

2. Division of Coastal Management

A. The Division of Coastal Management prefers application for regulatory approval of cooperative projects within the Division of Coastal Management's jurisdiction be submitted separately to maintain agency accountability.

B On a case by case basis, the Division of Coastal Management will consider permitting cooperative bridge replacement and public recreational access projects under a single application if it is deemed beneficial to the NCDOT and the WRC for an individual cooperative project.

General Permitting and Construction

1. The WRC, at no expense to the NCDOT, shall prepare, apply for and obtain the necessary environmental documents, mitigation and all permits needed to develop the public recreational access.

2 The WRC shall obtain an executed encroachment agreement from the NCDOT prior to the start of construction of the public recreational access.

3. The WRC shall be responsible for the development, design and construction of the public recreational access, including landscape plans, at no expense to the NCDOT.

4. The WRC, and/or its agent, shall construct, or cause to be constructed, at no cost to the NCDOT, the access roads, parking area, and any other structures for the public recreational access; any necessary site preparations or improvements including, but not limited to, landscaping, relocation of control access fencing, lighting, sidewalks, handicap accessibility structures; and any necessary roadway improvements including, but not limited to, turn lanes, signalization, pavement markings, or signs. All work shall be done in accordance with the approved project plans and in accordance with the NCDOT standards and specifications.
5. The WRC and/or its agent(s) agrees to comply with all federal, state and local laws and rules in the construction of the site and to prevent soil erosion; silting or pollution of rivers, streams, lakes, wetlands, reservoirs, other water impoundments, ground surfaces, or other property; or pollution of the air.
6. The WRC agrees to the following conditions during construction of the public recreational access:
    A. Letting of the contract for construction and purchase of materials, supplies, and equipment shall comply with North Carolina General Statute 143-129.
    B. The NCDOT reserves the right to inspect any portion of the work being performed by the WRC and/or its agent, to ensure compliance with the provisions of this Agreement.
    C. Any changes in the plans and site preparations shall be approved by the Division Engineer or his designated representative prior to the work being performed.
    D. All materials incorporated into the public recreational access and workmanship performed by the WRC and/or its agent, shall be in accordance with the standards and specifications used by the NCDOT.

E. The WRC, and/or its agent, shall be responsible for ensuring that the contractor complies with all of the terms of the approved plans and specifications.

F. During the construction of the public recreational access, the WRC, and/or its agent, shall provide and maintain adequate barricades, signs, and any other warning devices necessary for the protection and safety of its employees, agents and the traveling public in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways.

G. The WRC, at no expense or liability to the NCDOT, shall adjust and/or relocate all utilities in conflict with the public recreational access.

Maintenance and Operations

1. The NCDOT reserves the right to inspect the public recreational access to ensure that the public recreational access is being maintained in a manner that is in conformity with its intended use.
2. The WRC, at no expense to the NCDOT, shall assume all management, security and liability responsibilities for the public recreational access in accordance with all applicable laws and regulations. The WRC shall perform routine safety and condition inspections of the public recreational access and maintain written documentation for said inspections
3. The WRC shall not install any underground tanks or associated underground piping for the storage of any product on the recreational access without the express written consent of the NCDOT.
4. The WRC shall not dispose of wastes of any kind, whether hazardous or not, on the public recreational access and shall not conduct any activity which may or does require a hazardous waste treatment, storage or disposal facility permit from

either the federal or state agencies. Septic systems installed to provide public restrooms are exempted from this condition provided express written consent is obtained from the Division Engineer or his designated representative.

5. The WRC agrees to exercise every reasonable precaution to maintain the public recreational access in a manner that prevents soil erosion; silting or pollution of rivers, streams, lakes, wetlands, reservoirs, other water impoundments, ground surfaces, or other property, or pollution of the air.

6. If hazardous or any other unauthorized material is discovered to have been illegally discarded since the acquisition of the property, the WRC shall be solely responsible and hold the NCDOT harmless for all costs associated with the removal of the material and any damages caused by the existence of said material.

7. If, in the future and upon completion of the public recreational access, the WRC desires to structurally alter the public recreational access or a portion thereof, notification must be submitted to the Division Engineer prior to any work being performed. If said alterations exceed the original boundaries of the public recreational access, or change the access for vehicles utilizing the public recreational access or have an adverse safety impact on highway traffic, the plan for the alterations shall be submitted to the Division Engineer for final approval and shall be approved by the Division Engineer or his designated representative prior to the start of any work.

8. Upon completion of the public recreational access by the WRC, the WRC shall have total jurisdiction and responsibility for the maintenance of the public recreational access including, but not limited to litter and garbage removal, parking and site maintenance, resurfacing, mowing, structural maintenance, painting, etc. Maintenance of the lighting shall include but not be limited to the

repair and replacement of foundations, poles and fixtures. The WRC shall also be responsible for providing electrical service and for all bills for the public recreational access, at no expense to the NCDOT. The WRC shall assume all liability and maintenance responsibility for these improvements.

General Conditions

1. WRC shall indemnify and hold harmless the NCDOT and its officers, agents, and employees from all suits, actions, or claims of any character brought for any injury or damages received or sustained by any person, persons, or property by reason of any act of the WRC, its contractors, agents or employees, in the design, construction, operation, or maintenance of the public recreational access The WRC shall be responsible for acquiring necessary insurance for the public recreational access in the event of vandalism and/or acts of nature that damage the public recreational access, at no expense to the NCDOT.
2. If it is necessary for the WRC to enter into agreements with third parties for the construction or maintenance of the public recreational access, the WRC shall enter into such agreements at its sole cost and expense. Such agreements shall not affect the terms or obligations of the parties to this Agreement.
3. The NCDOT and WRC reserve the right to terminate this Agreement at any time and for any reason. Each party shall give the other party thirty (30) days notice of termination.
4. At the NCDOT's discretion, the NCDOT may immediately control, limit or close said public recreational access from any public use in the event of an emergency, if the NCDOT deems the Property is otherwise unsafe or the Property presents a safety hazard to highway traffic.

5. Upon completion of the public recreational access, the WRC shall add the public recreational access to their inventory. Furthermore, the WRC shall be responsible for addressing all concerns and/or complaints from adjoining property owners that might arise due to the public recreational access. If said concerns are not addressed satisfactorily the NCDOT reserves the right to limit and/or close the public recreational access from all public use.

6. The NCDOT shall retain all rights of ownership of said Property for the purpose of bridge or highway maintenance, bridge replacement, and/or bridge expansion and/or roadway expansion. Both parties agree that the property for the development of public recreational access on or adjacent to the Right of Way owned by the NCDOT, considered in its entirety, is not significant for consideration under Section 4(f) of the US Department of Transportation Act of 1966 and its implementing regulations (23 CFR Part 774) and further agree that it is not the intent of this agreement to interfere with future transportation improvements that may be needed at or near a bridge or stream crossing. To that end, recreational access facilities will be considered interim uses of NCDOT property, encroachments onto NCDOT property, or interim uses of property adjacent to the Right of Way owned by the NCDOT The NCDOT may take any action it deems necessary, at any time, in order to maintain, repair, or improve its bridges or roadways regardless of the effect such action may have on the public recreational access. The NCDOT may require the public recreational access to alter its operations or to temporarily or permanently close to facilitate such maintenance, repair or improvement In the event of a permanent closure of a particular public recreation access site, the WRC shall, at its own expense and within 6 months, remove any improvements affixed to the Property which in the

opinion of the NCDOT can be removed without material injury to the Property, and restore the Property to the maximum extent practicable to a condition existing prior to the to the construction of the public recreational access. If WRC relocates or replaces the public recreational access, or if the NCDOT, for any reason, is required to relocate or replace the public recreational access, WRC will be solely responsible for finding a new site for the public recreational access and for all costs associated with said relocation or replacement.

7. To the extent allowed by Law, each party shall be responsible for its respective actions under the terms of this agreement and for any claims arising as a result of such actions under the terms of this Agreement.

ATTACHMENT B

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GUIDELINES FOR RECREATIONAL ACCESS AT CREEKS AND RIVERS

Public interest in recreational access along various creeks and rivers in North Carolina has been increasing in recent years. The North Carolina Department of Transportation (NCDOT) fully acknowledges the value of recreational access but has not been given the mission to fund, provide, or manage such facilities. The Department will lend support (as legal, design, and funding constraints allow) by coordinating with other agencies that have been charged with such a mission.

In order to delineate more clearly how NCDOT will participate in providing recreational access, NCDOT has developed the guidelines to direct the decision making process. These guidelines should be used during the planning process The decision regarding whether an access will be provided should be made before the final planning document is completed so the access can be addressed within the document

If there is an existing publicly owned formal facility managed for recreational access (fishing, canoeing, or otherwise), the Department will replace the facility as part of the project construction. This is in accordance with the Federal Highway Administration's (FHWA) Section 4(f) procedures

If there is an existing privately owned formal facility managed for recreational access (fishing, canoeing, or otherwise) NCDOT will address any project impacts to the facility through the right of way acquisition process. NCDOT will not, however, replace impacted parts of the facility as part of the project construction

If formal access is desired where there is an informal recreational access (no formal facilities but site is used to access fishing, canoeing, and otherwise) or no existing access at all, NCDOT will include new access as part of the project construction under either of the following two conditions:

1) If, in the judgement of NCDOT, there is a strong transportation safety related need to include an access then NCDOT will improve the location as appropriate to resolve the safety concern. NCDOT will coordinate with local agencies on the long term management of the site. A separate government agency must agree to provide the long term maintenance and management of the site.

2) If all of the following five criteria is met, then NCDOT will as part of planning, design and construction, include a recreational access facility:

- If there is a separate funding source outside of the North Carolina Department of Transportation
- If there is a partnering government agency willing to maintain, fund, and manage the site
- If there is a willing seller or provider of land needed for the facility
- If there are not unacceptable impacts associated with developing the new recreational access facility (wetland impacts for example)
- If the adjacent property owners and the majority of the public comments favor the addition of the recreational access facility

Any project constructed by NCDOT will be consistent with the Americans with Disabilities Act (ADA). Any exceptions to the guidelines will require the approval of the NCDOT State Highway Administrator and the FHWA Division Administrator