

OCEAN ISLE BEACH SHORELINE PROTECTION PROJECT
NORTH CAROLINA DIVISION OF COASTAL MANAGEMENT
MAJOR PERMIT APPLICATION

Prepared for:

The Town of Ocean Isle Beach

Prepared by:

COASTAL PLANNING & ENGINEERING OF NORTH CAROLINA, INC.
4038 Masonboro Loop Road
Wilmington, North Carolina 28409

Submitted to:

North Carolina Department of Environment and Natural Resources
Division of Coastal Management
Wilmington Regional Office

October 2015

**Ocean Isle Beach Shoreline Protection Project
NCDCM Major Permit Application**

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1 FORMS

1.1 DCM MP-1



APPLICATION for Major Development Permit

(last revised 12/27/06)

North Carolina DIVISION OF COASTAL MANAGEMENT

1. Primary Applicant/ Landowner Information			
Business Name Town Of Ocean Isle Beach		Project Name (if applicable) Ocean Isle Beach Shoreline Management Project	
Applicant 1: First Name Debbie	MI S	Last Name Smith	
Applicant 2: First Name	MI	Last Name	
<i>If additional applicants, please attach an additional page(s) with names listed.</i>			
Mailing Address 3 West Third Street		PO Box	City Ocean Isle Beach State NC
ZIP 28469	Country USA	Phone No. 910 - 579 - 2166 ext.	FAX No. 910 - 579 - 8804
Street Address (if different from above)		City	State ZIP -
Email mayor@oibgov.com			

2. Agent/Contractor Information			
Business Name Coastal Planning & Engineering of North Carolina, Inc.			
Agent/ Contractor 1: First Name Brad	MI	Last Name Rosov	
Agent/ Contractor 2: First Name Greg	MI	Last Name Finch	
Mailing Address 4038 Masonboro Loop Road		PO Box	City Wilmington State NC
ZIP 28409		Phone No. 1 910 - 791 - 9494 ext.	Phone No. 2 - - ext.
FAX No. 910 791 4129	Contractor # Federal ID # 020623951		
Street Address (if different from above)		City	State ZIP -
Email brad.rosov@cbi.com; greg.finch@cbi.com			

3. Project Location			
County (can be multiple) Brunswick	Street Address Eastern End of Ocean Isle Beach and Shallotte Inlet and near 469 East 3rd St.	State Rd. # N/A	
Subdivision Name N/A	City N/A	State NC	Zip N/A -
Phone No. N/A - - ext.	Lot No.(s) (if many, attach additional page with list) N/A, , ,		
a. In which NC river basin is the project located? Lumber	b. Name of body of water nearest to proposed project Shallotte Inlet and the Atlantic Ocean		
c. Is the water body identified in (b) above, natural or manmade? <input checked="" type="checkbox"/> Natural <input type="checkbox"/> Manmade <input type="checkbox"/> Unknown	d. Name the closest major water body to the proposed project site. Atlantic Ocean		
e. Is proposed work within city limits or planning jurisdiction? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	f. If applicable, list the planning jurisdiction or city limit the proposed work falls within. Town of Ocean Isle Beach		

4. Site Description	
a. Total length of shoreline on the tract (ft.) 3214 ft. (Accretion Fillet)	b. Size of entire tract (sq.ft.) ~535,748 s.f. (Accretion Fillet); ~3,619,854 (Borrow Area)
c. Size of individual lot(s) N/A, (If many lot sizes, please attach additional page with a list)	d. Approximate elevation of tract above NHW (normal high water) or NWL (normal water level) ~0 to 15' MSL <input type="checkbox"/> NHW or <input type="checkbox"/> NWL
e. Vegetation on tract Typical beach and dune vegetation.	
f. Man-made features and uses now on tract Single family residential structures, sandbags, man-made dunes and beach fill. Recreational beach usage and public access.	
g. Identify and describe the existing land uses <u>adjacent</u> to the proposed project site. Single family residences, recreational beach uses.	
h. How does local government zone the tract? Residential (R-1)	i. Is the proposed project consistent with the applicable zoning? (Attach zoning compliance certificate, if applicable) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
j. Is the proposed activity part of an urban waterfront redevelopment proposal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
k. Has a professional archaeological assessment been done for the tract? If yes, attach a copy. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA If yes, by whom?	
l. Is the proposed project located in a National Registered Historic District or does it involve a National Register listed or eligible property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	

m. (i) Are there wetlands on the site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(ii) Are there coastal wetlands on the site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(iii) If yes to either (i) or (ii) above, has a delineation been conducted? (Attach documentation, if available) There are coastal wetlands near the offloading area. All wetlands will be avoided and delineated as necessary prior to construction.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
n. Describe existing wastewater treatment facilities. Municipal	
o. Describe existing drinking water supply source. Municipal	
p. Describe existing storm water management or treatment systems. N/A	

5. Activities and Impacts	
a. Will the project be for commercial, public, or private use?	<input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Public/Government <input type="checkbox"/> Private/Community
b. Give a brief description of purpose, use, and daily operations of the project when complete. The project purpose is to mitigate erosion on the eastern portion on the Town's oceanfront shoreline so as to preserve the integrity of its infrastructure, provide protection to existing development and ensure the continued use of the oceanfront beach.	
c. Describe the proposed construction methodology, types of construction equipment to be used during construction, the number of each type of equipment and where it is to be stored. A hydraulic pipeline dredge and pipeline, bulldozers, front-end loaders and other earth moving machines will be used during construction. Storage of the equipment will not typically be a concern as the work will likely occur 24 hours a day. A 20' wide temporary trestle will be installed parallel to the alignment of the terminal groin. The trestle would be removed upon completion of the rubblemound portion of the terminal groin. Trestle length will be approximately 950', dependent on existing grade and beach conditions at the time of construction. A crane will be placed upon the structure thereby allowing it to move stones into position in the water. Temporary sand placement for construction pads will not be necessary.	
d. List all development activities you propose. The proposed activity includes the construction of a terminal groin along with beach nourishment and any required mitigation measures.	
e. Are the proposed activities maintenance of an existing project, new work, or both?	New
f. What is the approximate total disturbed land area resulting from the proposed project?	Approx. 100 <input type="checkbox"/> Sq.Ft or <input checked="" type="checkbox"/> Acres
g. Will the proposed project encroach on any public easement, public access way or other area that the public has established use of?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
h. Describe location and type of existing and proposed discharges to waters of the state. The placement location is the oceanfront beach adjacent to the eastern end of Ocean Isle Beach.	
i. Will wastewater or stormwater be discharged into a wetland? If yes, will this discharged water be of the same salinity as the receiving water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
j. Is there any mitigation proposed? If yes, attach a mitigation proposal. Only in the event of negative impacts. See inlet management plan in Appendix C.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA

6. Additional Information

In addition to this completed application form, (MP-1) the following items below, if applicable, must be submitted in order for the application package to be complete. Items (a) – (f) are always applicable to any major development application. Please consult the application instruction booklet on how to properly prepare the required items below.

- a. A project narrative.
- b. An accurate, dated work plat (including plan view and cross-sectional drawings) drawn to scale. Please give the present status of the proposed project. Is any portion already complete? If previously authorized work, clearly indicate on maps, plats, drawings to distinguish between work completed and proposed.
- c. A site or location map that is sufficiently detailed to guide agency personnel unfamiliar with the area to the site.
- d. A copy of the deed (with state application only) or other instrument under which the applicant claims title to the affected properties.
- e. The appropriate application fee. Check or money order made payable to DENR.

f. A list of the names and complete addresses of the adjacent waterfront (riparian) landowners and signed return receipts as proof that such owners have received a copy of the application and plats by certified mail. Such landowners must be advised that they have 30 days in which to submit comments on the proposed project to the Division of Coastal Management.

Name See Appendix A	Phone No.
Address	
<hr/>	
Name	Phone No.
Address	
<hr/>	
Name	Phone No.
Address	
<hr/>	

g. A list of previous state or federal permits issued for work on the project tract. Include permit numbers, permittee and issuing dates.

N/A

- h. Signed consultant or agent authorization form, if applicable.
- i. Wetland delineation, if necessary.
- j. A signed AEC hazard notice for projects in oceanfront and inlet areas. (Must be signed by property owner)
- k. A statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A 1-10), if necessary. If the project involves expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

7. Certification and Permission to Enter on Land

I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to the conditions and restrictions contained in the permit.

I certify that I am authorized to grant, and do in fact grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project. I further certify that the information provided in this application is truthful to the best of my knowledge.

Date: 10/14/15 Print Name: Greg Kirsch, Agent, Coastal Planning & Engineering of North Carolina, Inc.

Signature [Handwritten Signature], Agent, CP&E-NC

- Please indicate application attachments pertaining to your proposed project.
- DCM MP-2 Excavation and Fill Information
 - DCM MP-3 Upland Development
 - DCM MP-4 Structures Information
 - DCM MP-5 Bridges and Culverts

1.2 DCM MP-2

EXCAVATION and FILL

(Except for bridges and culverts)

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

Describe below the purpose of proposed excavation and/or fill activities. **All values should be given in feet.**

	Access Channel (NLW or NWL)	Canal	Boat Basin	Boat Ramp	Rock Groin	Rock Breakwater	Other (excluding shoreline stabilization)
Length	Avg. 3800'				750'		250
Width	Avg. 950'				15' at top; 75' at bottom		75
Avg. Existing Depth	-6' MLW				NA	NA	-2.5 NAVD88
Final Project Depth	-15' MLW				NA	NA	-6.6 NAVD88

1. EXCAVATION

applicable

This section not applicable

- a. Amount of material to be excavated from below NHW or NWL in cubic yards.
~264,000 cy within Shallotte Inlet Borrow Area; 2,000 to 3,000 cy for landward 250' of rubblemound portion of terminal groin.
- b. Type of material to be excavated.
Beach quality sand
- c. (i) Does the area to be excavated include coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
 CW _____ SAV _____ SB _____
 WL _____ None
- (ii) Describe the purpose of the excavation in these areas:
N/A
- d. High-ground excavation in cubic yards.
None

2. DISPOSAL OF EXCAVATED MATERIAL

applicable

This section not applicable

- a. Location of disposal area.
Oceanfront shoreline along the eastern end of Ocean Isle Beach between Charlotte St. and the end of E 3rd St.
- b. Dimensions of disposal area.
Irregular, 3214 length, 535,749 s.f.
- c. (i) Do you claim title to disposal area?
 Yes No NA
- (ii) If no, attach a letter granting permission from the owner.
Easements
- d. (i) Will a disposal area be available for future maintenance?
 Yes No NA
- (ii) If yes, where?
Same location
- e. (i) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
 CW _____ SAV _____ SB _____
- f. (i) Does the disposal include any area in the water?
 Yes No NA
- (ii) If yes, how much water area is affected?
~516,000 s.f.

WL _____ None

(ii) Describe the purpose of disposal in these areas:

3. SHORELINE STABILIZATION

This section not

applicable

(If development is a wood groin, use MP-4 – Structures)

a. Type of shoreline stabilization:

Bulkhead Riprap Breakwater/Sill Other: Terminal Groin

c. Average distance waterward of NHW or NWL: 423' from 2013 shoreline (most recent survey data).

e. Type of stabilization material:

Sheet pile, bedding and armor stone

g. Number of square feet of fill to be placed below water level.

Bulkhead backfill _____ Riprap _____

Breakwater/Sill _____ Other Bedding and Armor Stone- 69,670 s.f.; Accretion Fillet- 493,967 s.f. Based on 2013 survey.

i. Source of fill material.

Offsite to be determined for terminal groin materials, Shallotte Inlet borrow area for accretion fillet.

b. Length: 1050

Width: 65'

d. Maximum distance waterward of NHW or NWL: 846.5' based on 2013 shoreline (most current survey data).

f. (i) Has there been shoreline erosion during preceding 12 months?

Yes No NA

(ii) If yes, state amount of erosion and source of erosion amount information.

8'/yr. based on DCM maps.

h. Type of fill material.

Bedding and armor stone; sand

4. OTHER FILL ACTIVITIES

This section not applicable

(Excluding Shoreline Stabilization)

a. (i) Will fill material be brought to the site? Yes No NA

If yes,

(ii) Amount of material to be placed in the water _____

(iii) Dimensions of fill area _____

(iv) Purpose of fill

b. (i) Will fill material be placed in coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

CW _____ SAV _____ SB _____

WL _____ None

(ii) Describe the purpose of the fill in these areas:

5. GENERAL

a. How will excavated or fill material be kept on site and erosion controlled?
A temporary dike will be constructed seaward of the placement area allowing sandy material to settle out before the water reenters the ocean. Ultimately, the terminal groin will control the placed sediment.

b. What type of construction equipment will be used (e.g., dragline, backhoe, or hydraulic dredge)?
Cutterhead hydraulic dredge and pipeline, bulldozers, front-end loaders and other earth moving machines. Barges and cranes associated with the construction of the terminal groin and temporary tressle.

c. (i) Will navigational aids be required as a result of the project?
 Yes No NA
(ii) If yes, explain what type and how they will be implemented.

d. (i) Will wetlands be crossed in transporting equipment to project site? Yes No NA
(ii) If yes, explain steps that will be taken to avoid or minimize environmental impacts.

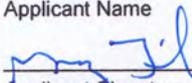
10/26/15
Date

Ocean Isle Beach Shoreline Protection Project

Project Name

Ocean Isle Beach, c/o Debbie S. Smith

Applicant Name

 , Agent, Coastal Planning & Engineering of North Carolina, Inc.
Applicant Signature

1.3 DCM MP-3

UPLAND DEVELOPMENT

(Construction and/or land disturbing activities)

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

GENERAL UPLAND DEVELOPMENT

- a. Type and number of buildings, facilities, units or structures proposed.
None

- b. Number of lots or parcels.
NA

- c. Density (give the number of residential units and the units per acre).
NA

- d. Size of area to be graded, filled, or disturbed including roads, ditches, etc.
Temporary staging areas and construction corridor: 37,132 s.f. (0.85 ac.).

- e. If the proposed project will disturb more than one acre of land, the Division of Land Resources must receive an erosion and sedimentation control plan at least 30 days before land-disturbing activity begins.
(i) If applicable, has a sedimentation and erosion control plan been submitted to the Division of Land Resources?
 Yes No NA
(ii) If yes, list the date submitted:

- f. List the materials (such as marl, paver stone, asphalt, or concrete) to be used for impervious surfaces.
NA

- g. Give the percentage of the tract within the coastal shoreline AEC to be covered by impervious and/or built-upon surfaces, such as pavement, building, rooftops, or to be used for vehicular driveways or parking.
NA. Temporary staging areas and construction corridor only.

- h. Projects that require a CAMA Major Development Permit may also require a Stormwater Certification.
(i) Has a site development plan been submitted to the Division of Water Quality for review?
 Yes No NA
(ii) If yes, list the date submitted: _____
- i. Give the percentage of the entire tract to be covered by impervious and/or built-upon surfaces, such as pavement, building, rooftops, or to be used for vehicular driveways or parking.
NA. Temporary staging areas and construction corridor only.

- j. Describe proposed method of sewage disposal.
NA

- k. Have the facilities described in Item (i) received state or local approval?
 Yes No NA
If yes, attach appropriate documentation.
- l. Describe location and type of proposed discharges to waters of the state (e.g., surface runoff, sanitary wastewater, industrial/commercial effluent, "wash down" and residential discharges).
NA

- m. Does the proposed project include an innovative stormwater design?
 Yes No NA
If yes, attach appropriate documentation.

m. Describe proposed drinking water supply source (e.g., well, community, public system, etc.)

NA

n. (i) Will water be impounded? Yes No NA

(ii) If yes, how many acres? _____

o. When was the lot(s) platted and recorded?

NA

p. If proposed development is a subdivision, will additional utilities be installed for this upland development?

Yes No NA

10/16/15

Date

Ocean Isle Beach Shoreline Protection Project

Project Name

The Town of Ocean Isle Beach

Applicant Name

Agent, Coastal Planning and Engineering of North Carolina, Inc.

Applicant Signature

1.4 DCM MP-4

STRUCTURES

(Construction within Public Trust Areas)

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

1. DOCKING FACILITY/MARINA CHARACTERISTICS

This section not applicable

- a. (i) Is the docking facility/marina:
 Commercial Public/Government Private/Community
- b. (i) Will the facility be open to the general public?
 Yes No
- c. (i) Dock(s) and/or pier(s)
(ii) Number _____
(iii) Length _____
(iv) Width _____
(v) Floating Yes No
- d. (i) Are Finger Piers included? Yes No
If yes:
(ii) Number _____
(iii) Length _____
(iv) Width _____
(v) Floating Yes No
- e. (i) Are Platforms included? Yes No
If yes:
(ii) Number _____
(iii) Length _____
(iv) Width _____
(v) Floating Yes No
Note: Roofed areas are calculated from dripline dimensions.
- f. (i) Are Boatlifts included? Yes No
If yes:
(ii) Number _____
(iii) Length _____
(iv) Width _____
- g. (i) Number of slips proposed

(ii) Number of slips existing

- h. Check all the types of services to be provided.
 Full service, including travel lift and/or rail, repair or maintenance service
 Dockage, fuel, and marine supplies
 Dockage ("wet slips") only, number of slips: _____
 Dry storage; number of boats: _____
 Boat ramp(s); number of boat ramps: _____
 Other, please describe:

- i. Check the proposed type of siting:
 Land cut and access channel
 Open water; dredging for basin and/or channel
 Open water; no dredging required
 Other; please describe:

- j. Describe the typical boats to be served (e.g., open runabout, charter boats, sail boats, mixed types).

- k. Typical boat length: _____
- l. (i) Will the facility be open to the general public?
 Yes No
- m. (i) Will the facility have tie pilings?
 Yes No
(ii) If yes number of tie pilings?

2. DOCKING FACILITY/MARINA OPERATIONS

This section not applicable

a. Check each of the following sanitary facilities that will be included in the proposed project.

Office Toilets

Toilets for patrons; Number: _____; Location: _____

Showers

Boatholding tank pumpout; Give type and location: _____

b. Describe treatment type and disposal location for all sanitary wastewater.

c. Describe the disposal of solid waste, fish offal and trash.

d. How will overboard discharge of sewage from boats be controlled?

e. (i) Give the location and number of "No Sewage Discharge" signs proposed.

(ii) Give the location and number of "Pumpout Available" signs proposed.

f. Describe the special design, if applicable, for containing industrial type pollutants, such as paint, sandblasting waste and petroleum products.

g. Where will residue from vessel maintenance be disposed of?

h. Give the number of channel markers and "No Wake" signs proposed. _____

i. Give the location of fuel-handling facilities, and describe the safety measures planned to protect area water quality.

j. What will be the marina policy on overnight and live-aboard dockage?

k. Describe design measures that promote boat basin flushing?

l. If this project is an expansion of an existing marina, what types of services are currently provided?

- m. Is the marina/docking facility proposed within a primary or secondary nursery area?
 Yes No
- n. Is the marina/docking facility proposed within or adjacent to any shellfish harvesting area?
 Yes No
-
- o. Is the marina/docking facility proposed within or adjacent to coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
 CW _____ SAV _____ SB _____
 WL _____ None
- p. Is the proposed marina/docking facility located within or within close proximity to any shellfish leases? Yes No
 If yes, give the name and address of the leaseholder(s), and give the proximity to the lease.

3. BOATHOUSE (including covered lifts) This section not applicable

- a. (i) Is the boathouse structure(s):
 Commercial Public/Government Private/Community
- (ii) Number _____
- (iii) Length _____
- (iv) Width _____
- Note: Roofed areas are calculated from dripline dimensions.*

4. GROIN (e.g., wood, sheetpile, etc. If a rock groin, use MP-2, Excavation and Fill.) This section not applicable

- a. (i) Number _____
- (ii) Length _____
- (iii) Width _____

5. BREAKWATER (e.g., wood, sheetpile, etc.) This section not applicable

- a. Length _____
- b. Average distance from NHW, NWL, or wetlands _____
- c. Maximum distance beyond NHW, NWL or wetlands _____

6. MOORING PILINGS and BUOYS This section not applicable

- a. Is the structure(s):
 Commercial Public/Government Private/Community
- b. Number _____
- c. Distance to be placed beyond shoreline _____
Note: This should be measured from marsh edge, if present.
- d. Description of buoy (color, inscription, size, anchor, etc.)

- e. Arc of the swing _____

7. GENERAL

a. Proximity of structure(s) to adjacent riparian property lines
NA

b. Proximity of structure(s) to adjacent docking facilities.
NA

Note: For buoy or mooring piling, use arc of swing including length of vessel.

c. Width of water body
NA

d. Water depth at waterward end of structure at NLW or NWL
~ -8 to -10 MSL

e. (i) Will navigational aids be required as a result of the project?
 Yes No NA
(ii) If yes, explain what type and how they will be implemented.
As defined by the US Coast Guard

8. OTHER

This section not applicable

a. Give complete description:

A 20' wide temporary trestle will be installed parallel to the alignment of the terminal groin. The trestle would be removed upon completion of the rubblemound portion of the terminal groin. Trestle length will be approximately 950', dependent on existing grade and beach conditions at the time of construction.

10/16/15

Date

Ocean Isle Beach Shoreline Protection Project

Project Name

The Town of Ocean Isle Beach

Applicant Name

Applicant Signature

, Agent, Coastal Planning and Engineering of North Carolina, Inc.

2 ATTACHMENTS

2.1 DCM MP-1. ADDITIONAL INFORMATION

2.1.1 6a. Project Narrative.

2.1.1.1 *Project Purpose and Description*

The Town of Ocean Isle Beach is seeking federal and state permits to allow development of a shoreline protection project. The proposed project is designed to mitigate chronic erosion on the eastern portion on the Town's oceanfront shoreline. The project would serve to preserve the integrity of the Town's infrastructure, provide protection to existing development and ensure the continued use of the oceanfront beach along this area.

The main concern of residents and property owners at Ocean Isle Beach are economic losses resulting from damages to structures and their contents due to hurricane and storm activity and the loss of beachfront land due to the ongoing shoreline erosion along the east end of the island in proximity to Shallotte Inlet. A review of historical data suggests that current shoreline management strategies have not been successful in providing the proper shoreline protection sought by the Town. With a tax value of property within the limits of Ocean Isle Beach equaling approximately \$1,816,012,300 (based on the 2012 reappraisal), the Town realizes the need to protect homes and infrastructure along the east end of the island. This valuation includes 3,247 commercial and residential structures and property and 1,456 vacant lots (Ivey, pers. comm.).

The proposed project includes the construction of a terminal groin located 148 feet east of baseline station 0+00. Components of the structure will include a 300-foot shore anchorage section (to protect against possible flanking of the landward end of the structure) and a 750-foot rubble mound section extending 600 feet seaward of the baseline (Figure 1, Appendix A). The 300-foot shore anchorage section would be constructed with either steel or concrete sheet pile. The sheet piles would have a top elevation of +4.9 feet NAVD for a distance of approximately 130 feet between the landward end of the rubblemound section and the existing dune. The top elevation of the shore anchorage section would be reduced to +4.5 feet NAVD for the remaining 170 feet (Sheet 7 of 12, Appendix A). The top of the landward most portion of the shore anchorage section would be below the existing ground level. The 750-foot rubblemound portion of the terminal groin would be constructed with loosely placed armor stone on top of a foundation mat or mattress and would have a crest elevation of +4.9 feet NAVD (Sheet 7 of 12, Appendix A). The rubblemound portion of the groin will not include a "core" and will be arranged such that it will remain "leaky" and will facilitate the movement of littoral material through the structure. In addition, the relative low crest elevation of +4.9 feet NAVD would allow some sediment to pass over the structure during periods of high tide.

In addition to the construction of the terminal groin, a pre-filled accretion fillet would be constructed along a 3,214-foot section of oceanfront shoreline adjacent to the structure. The fillet would be formed with approximately 264,000 cubic yards of material excavated from the borrow area utilized by the USACE within Shallotte Inlet. Dredging will be performed by a hydraulic

cutter-suction pipeline dredge (pipeline dredge) during the environmental dredge window of November 15 through April 30.

Thirty-five (35) easements will be obtained to allow for the constriction of this project. This includes twenty-seven (27) easements along the oceanfront shoreline, seven (7) within the shore anchorage section and associated construction corridor, and one (1) within the footprint of the proposed offloading area in proximity to the AIWW. At this time, all easements have been obtained with the exception of one (1) along the oceanfront shoreline due to the inability to locate the current owners. In addition, one (1) parcel located within the shore anchorage section of the groin has not executed its easement due to the pending sale of this property. The prospective buyer, however, has verbally confirmed to the Town that they will sign the easement once the sale is finalized.

2.1.1.2 Construction Methodology

The initial construction of the terminal groin and the placement of associated beach fill are not intended to be coordinated with the construction of the federal Coastal Storm Damage Reduction Project (CSDRP) that overlaps a portion of fill area. Rather, the initial construction should be considered to be an independently contracted project by the Town of Ocean Isle Beach. Maintenance events, however, would be coordinated to coincide with the maintenance of the CSDRP. The eastern terminus of the federal project is located at station 10+00 (Shallotte Boulevard). The fill for the terminal groin fillet would extend to station 30+00; therefore, the fillet will overlap 2,000 feet of the CSDRP between station 10+00 and 30+00. Generally, the USACE's navigation disposal activities on the east end of Ocean Isle Beach occur from approximately station 0+00 (1,000 feet east of Shallotte Boulevard) and extend to around station 20+00 (1,000 feet west of Shallotte Boulevard). The exact area covered by the USACE disposal operations, however, depends on the volume of material to be removed from the AIWW/Shallotte Inlet crossing.

Preliminary methodology to transport the stone required to construct the terminal groin to Ocean Isle Beach would be via the AIWW with barges loaded from a rail terminal similar to one located in Wilmington, NC. The stone would be off-loaded on to trucks at the north end of Shallotte Boulevard (Figure 4, Appendix A). The stone would be transported by trucks from the offloading facility down Shallotte Boulevard and E. 4th Street to a temporary stone storage area located on the beach at the end of E. 4th Street. The rubblemound portion of the terminal groin would be constructed from a temporary trestle installed parallel to the alignment of the terminal groin. The trestle would be removed upon completion of the rubblemound portion of the terminal groin. Actual logistics and construction details are to be determined and are subject to change.

A minimal amount of excavation or leveling would be required for the landward 150 to 250 feet of the rubblemound portion of the structure in order to place the foundation stone or mattress at an elevation of -6.6 feet NAVD (Sheet 7 of 12, Appendix A). From that point seaward, the foundation stone/mattress would be placed on grade.

The sheet pile for the landward portion of the terminal groin would be transported directly to the site by truck from where it would be offloaded and driven into place with typical pile driving equipment. A 50-foot wide construction corridor would be established on either side of the shore

anchorage section. The construction corridor would be restored to pre-construction conditions as much as possible by grading any disturbed land and replanting with native vegetation.

2.1.1.3 Shoreline and Inlet Management Plan Summary

See Appendix C for the complete plan. In summary, the shoreline and inlet management plan for the Ocean Isle Beach project would include the following components:

1. Beach profile surveys every 6 months covering 27,000 feet of shoreline on Ocean Isle Beach and 10,000 feet of shoreline east of Shallotte Inlet on Holden Beach.
2. The beach profiles will be spaced at 500-foot intervals along both Ocean Isle Beach and Holden Beach.
3. Annual hydrographic surveys of Shallotte Inlet extending from the confluence of the inlet with the AIWW seaward to the -30-foot NAVD depth contour in the ocean. The hydrographic surveys will cover the area from approximately station 400+00 on Holden Beach to station 0+00 on Ocean Isle Beach.
4. The 9 radial profiles on the east end of Ocean Isle Beach and the 8 radial profiles on the west end of Holden Beach will be surveyed each spring and graphs prepared to show changes over time.
5. The sand spit shoreline east of the terminal groin will be mapped from the aerial photos taken each spring and plots of the changes in the spit shoreline shown graphically.
6. Similar shoreline mapping will also be performed on the Holden Beach side of Shallotte Inlet.
7. An annual report will be prepared summarizing changes observed during the year and identifying any profile stations where the shoreline change thresholds are exceeded.
8. The report will include a summary of significant meteorological events (tropical and extratropical), manmade activities (beach nourishment), and any other factors that had occurred that could have an impact of past as well as future shoreline changes.
9. The report will discuss if measures are needed to correct any observed negative shoreline impacts and if so provide recommendations on how to address the impacts.

If mitigation beach fill is needed on either the west end of Holden Beach or along portions of Ocean Isle Beach west of station 30+00, the mitigation beach fill would be accomplished during regularly scheduled periodic nourishment of the Ocean Isle Beach project. The location of possible future mitigation beach fill will not be known until after the beach monitoring surveys are completed and analyzed. Should the need to provide beach fill to mitigate for project related shoreline impacts be determined, the Town of Ocean Isle Beach would apply for appropriate state and federal permits. All environmental documentation and required information will be included with these permit applications. Since the location for the mitigation beach fill cannot be determined in advance, the permit process could not begin until the monitoring program identifies where the impacts have occurred. As a result, the time lapse between the identification of a shoreline erosion problem and the initiation of construction to provide the beach fill could be as long as three (3) years. This includes one year to identify the problem and two years to verify if the problem still exists. During the first year of verification, work will begin to obtain the necessary permits. Any mitigation measure would be limited to the November 16 to March 31 environmental dredging window.

No agreement between the USACE, Holden Beach and Ocean Isle Beach has been executed nor is one expected to be in the future. The statement indicating that one may be obtained has been removed from the Inlet Management Plan. Refer to the Inlet Management Plan (Appendix C).

The erratic behavior of the shoreline along the east shoulder of Shallotte Inlet on the Holden Beach side, particularly in the area between the two islands, and the apparent tendency of the extreme western tip of Holden Beach opposite the inlet gorge to erode under existing conditions makes it virtually impossible to establish a shoreline position along the west end of Holden Beach that could serve as a shoreline a threshold similar to what is proposed for the Ocean Isle Beach side. This notwithstanding, the shoreline condition on the west end of Holden Beach adjacent to Shallotte Inlet will be monitored using aerial photographs at the Town's expense. Should changes in the inlet shoreline pose a threat to existing development on the west end of Holden Beach, methods to mitigate the threat would be evaluated. Consideration of mitigation measures around the inlet shoreline on the Holden Beach side would be coordinated with the USACE, NCDCM and the Town of Holden Beach.

The proposed SDI-5 project, proposed 30-Year Island-Wide Shoreline Protection Plan, federal CSDRP, and any potential mitigation on Holden Beach, if required as a result of the proposed terminal groin project, all use the same borrow area within Shallotte Inlet. Although each these projects have been designed to excavate a pre-determined volume from the borrow area, the amount removed from Shallotte Inlet as a result of these projects would not be cumulative. Engineering analysis has determined the required beach fill density along the Town's oceanfront shoreline. It is not anticipated that any project would be implemented to place fill above the stated density requirement. The applicant acknowledges that the borrow source may be used for these projects and proposes no action that would jeopardize the availability of material for any existing or proposed projects.

2.1.1.4 Monitoring

All monitoring activities as stated within the forthcoming permit conditions issued by both CAMA and the Department of Army along with the terms and conditions set forth within the USFWS' Biological Opinion will be abided by the Town of Ocean Isle Beach. Should some of these monitoring requirements be performed by another entity (i.e. USACE, NCWRC, etc.), the Town will ensure that all requirements are fully met. Ultimately, the Town is fully responsible for each monitoring requirement as outlined in the permit conditions, the Biological Opinion, and the Inlet Management Plan. A brief description of potential monitoring requirements is as follows.

Construction Observations (material color, escarpments, water quality)

Several initiatives will be undertaken by the Town of Ocean Isle Beach, the Engineer or his duly authorized representative to monitor construction practices. Construction observation and contract administration will be periodically performed during periods of active construction. Most observations will be during daylight hours; however, random nighttime observations may be conducted. The Town of Ocean Isle Beach, the Engineer, or his duly authorized representative will provide onsite observation by an individual with training or experience in beach

nourishment and construction observation and testing, and that is knowledgeable of the project design and permit conditions.

Biological Monitoring

Bird Monitoring

The North Carolina Wildlife Resource Commission and partners have performed breeding surveys for colonial nesting waterbirds within proximity to the Permit Area since 1977. Specifically, surveys have been conducted along the eastern and western portion of the island in proximity to Tubbs Inlet and Shallotte Inlet. Surveys for breeding piping plovers have been conducted since 1989 at the same locations. Surveys for non-breeding piping plovers have been conducted in more recent years. These surveys include data from breeding and non-breeding seasons for several listed bird species as well as other shorebirds and waterbirds. This monitoring is expected to continue for the foreseeable future. Through a formal consultation process with the US Fish and Wildlife Service, it is expected that a robust bird monitoring program may be required on an annual basis for up to three years post-construction. The applicant will coordinate with NCWRC to determine if the State's effort may satisfy this requirement. If it does not, the Town will assume the responsibility and perform bird monitoring as required by the USFWS Biological Opinion.

Seabeach Amaranth

Ocean Isle Beach has been surveyed by the USACE for seabeach amaranth since 1992 (Piatkowski, pers. comm.). This monitoring is anticipated to continue for the foreseeable future. Through a formal consultation process with the US Fish and Wildlife Service, it is expected that a seabeach amaranth monitoring program may be required on an annual basis for up to three years post-construction. The applicant will coordinate with USACE to determine if their proposed effort may satisfy this requirement. If it does not, the Town will assume the responsibility and perform seabeach amaranth monitoring as required by the USFWS Biological Opinion.

Sea Turtles

The Ocean Isle Beach Sea Turtle Patrol has been actively monitoring sea turtle nests on their beach since 1984. Currently, the Ocean Isle Beach Sea Turtle Protection Organization provides monitoring along the island. This monitoring is anticipated to continue for the foreseeable future. Through a formal consultation process with the US Fish and Wildlife Service, it is expected that a sea turtle monitoring program may be required on an annual basis for up to three years post-construction. The applicant will coordinate with the Ocean Isle Beach Sea Turtle Protection Organization to determine if their proposed effort may satisfy this requirement. If it does not, the Town will assume the responsibility and perform sea turtle monitoring as required by the USFWS Biological Opinion.

Habitat Mapping

The implementation of the proposed project has the potential to impact certain biological resources and habitats found within the proposed project area, particularly within the Shallotte Inlet complex. These include resources such as shellfish habitat, salt marsh, and intertidal communities found within the area to be investigated. Determining the baseline conditions of these resources prior to construction is a fundamental step in quantifying changes in response to

the implementation of the proposed project. The Town has developed a baseline habitat map. After initial construction, updates to the habitat map will occur on an annual basis for three years to assess the extent of habitat change within the designated boundary. See Appendix G for a brief description of the habitat mapping plan and the geographic extent of this effort.

Physical Monitoring

The USACE established a comprehensive inlet and shoreline management plan in December 2002 for the Federal storm damage reduction project (USACE, 2002). The various aspects of that plan, which are described in full within Appendix C of this permit application package and summarized above in Section 2.1.1.3, are adopted for the Ocean Isle Beach preferred shoreline management project involving a terminal groin and beach fill along the eastern end of the island.

2.1.2 6b and c. Work Plats and Location Maps.

See Appendix A.

2.1.3 6d. A copy of the deed (with state application only) or other instrument under which the applicant claims title to the affected properties.

The town is currently in the process of securing easements that will allow for the proposed construction and maintenance of the project. See Appendix E.

2.1.4 6h. Signed Agent Authorization Form.

See Appendix B.

2.1.5 6j. Signed AEC Hazard Notice.

See Appendix B.

3 APPENDICES

Appendix A: Work Plats and Location Maps

OCEAN ISLE BEACH SHORELINE PROTECTION PROJECT BRUNSWICK COUNTY, NORTH CAROLINA

SHEET INDEX

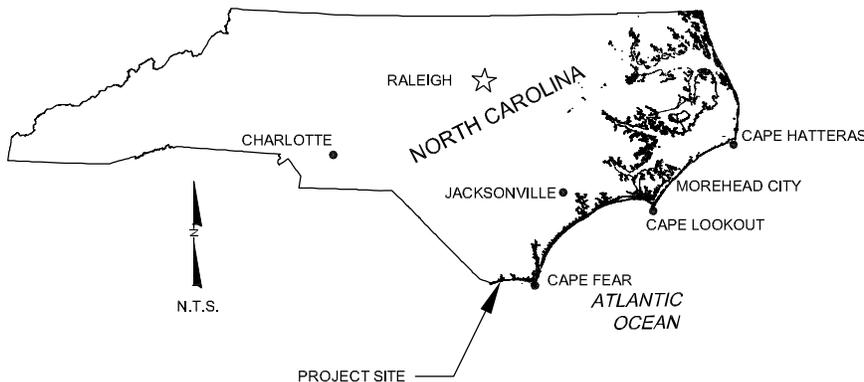
NO.	TITLE
1	COVER SHEET
2	OVERALL PLAN VIEW
3	ADJACENT RIPARIAN OWNERS
4	TERMINAL GROIN PLAN VIEW
5	ACCRETION FILLET PROFILES
6	TYPICAL GROIN PROFILES A-A' AND B-B'
7	TYPICAL GROIN PROFILE C-C'
8	BORROW AREA PLAN VIEW
9	BORROW AREA PROFILES D-D',
10	BORROW AREA PROFILES E-E' AND F-F'
11	TEMPORARY CONSTRUCTION TRESTLE PLAN VIEW
12	TEMPORARY CONSTRUCTION TRESTLE CROSS SECTION



**OCEAN ISLE BEACH
SHORELINE PROTECTION PROJECT
COVER SHEET**

**COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.**
4039 WASHINGTON COOP RD.
WILMINGTON, NC 28409
PH: (910) 791-5494
FAX: (910) 791-4129

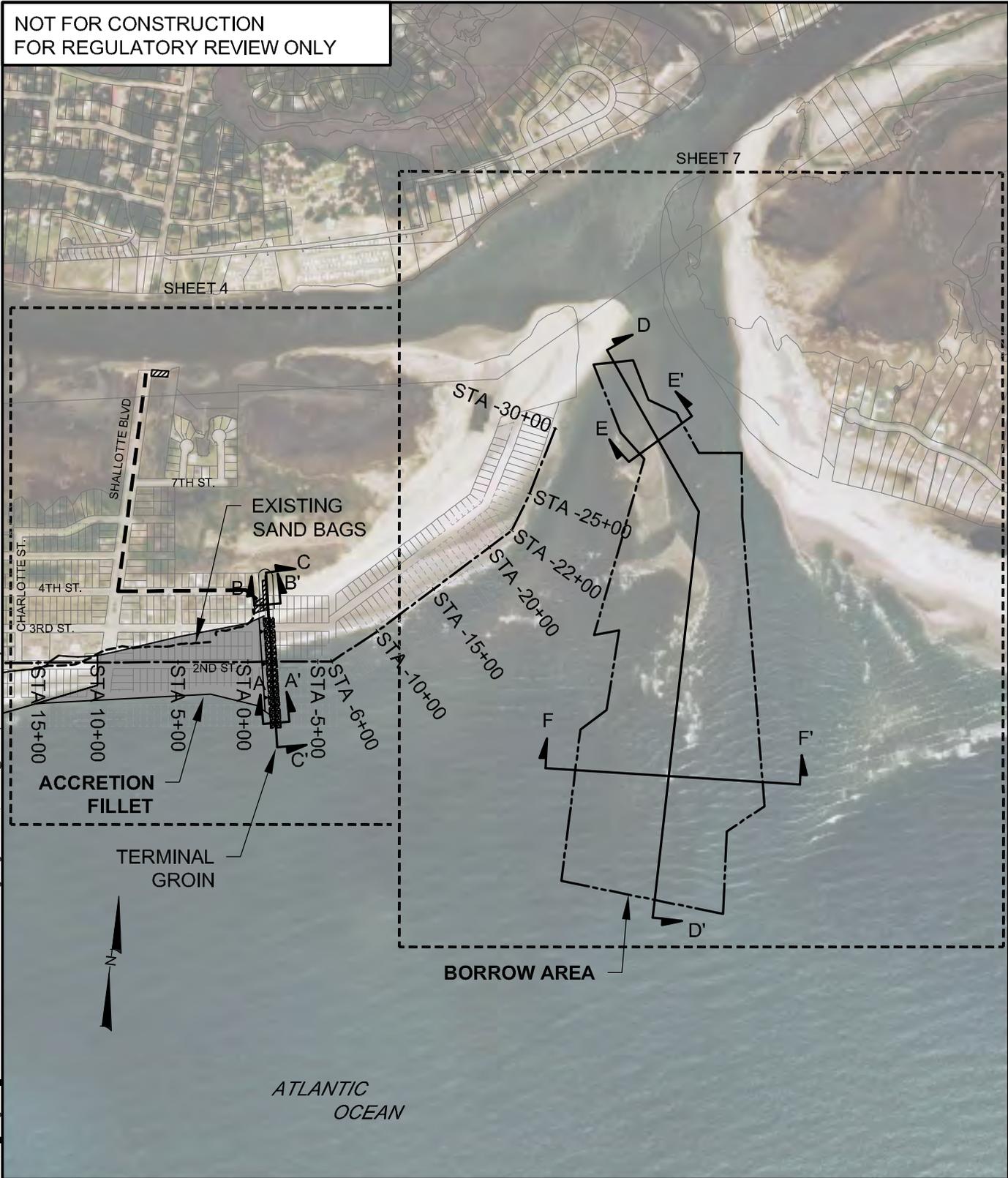
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 BY: HN
 COMM NO.: 147426
 SHEET: 1 OF 12



REVISIONS		
DATE	BY	DESCRIPTION

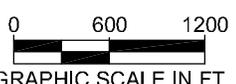
**NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY**

NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY



OCEAN ISLE BEACH
SHORELINE PROTECTION PROJECT
OVERALL PLAN VIEW

COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.
4039 WASHINGTON RD.
WILMINGTON, NC 28409
PH: (910) 791-5494
FAX: (910) 791-4128



LEGEND:

- PROPOSED TRUCK HAUL ROUTE
- BEACH FILL (ACCRETION FILLET)
- BORROW AREA
- PROPOSED STONE STAGING AREA

NOTES:

1. COORDINATES ARE IN FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD83).
2. DATE OF AERIAL IMAGERY: MAY-JUNE 2012.
3. STAGING AREAS AND TRUCK HAUL ROUTE SUBJECT TO CHANGE.

DATE:	5/13/15
BY:	HN
COMM NO.:	147426
SHEET:	2 OF 12

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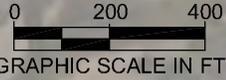
NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

LEGEND:

- BASELINE
- . - . - . MEAN HIGH WATER AUGUST 2013
(MHW EL. +1.79' NAVD88)
- - - - MEAN LOW WATER AUGUST 2013
(MLW EL. -2.94' NAVD88)
(BY OTHERS)
- TRUCK HAUL ROUTE
- ~ 2 ~ EXISTING CONTOURS
- [Hatched Box] ACCRETION FILLET
- [Hatched Box] PROPOSED STONE STAGING
AREAS = 16,417 S.F.

NOTES:

1. COORDINATES ARE IN FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD83).
2. DATE OF AERIAL IMAGERY: MAY-JUNE 2012.
3. BATHYMETRIC CONTOURS DERIVED FROM McKIM & CREED, JUNE 2013 SURVEY DATA.
4. STAGING AREAS AND TRUCK HAUL ROUTE SUBJECT TO CHANGE.
5. DISTURBED AREA: (STAGING AREA + CONSTRUCTION CORRIDOR) = 37,132 S.F.



N

ATLANTIC INTRACOASTAL
WATERWAY

PROPOSED
STAGING
AREA

SHALLOTTE BLVD.

E. 7TH ST.

BAYWATCH DR.

OCEAN
ISLE
BEACH

CONSTRUCTION CORRIDOR

PROPOSED
STAGING
AREA

SHEET PILE
SECTION

E. 5TH ST.

E. 4TH ST.

E. 3RD ST.

CHARLOTTE ST.

EXISTING
SAND BAGS

MHW AUGUST 2013

E. 2ND ST.

STA -10+00
STA -9+00
STA -8+00
STA -7+00
STA -6+00
STA -5+00
STA -4+00
STA -3+00
STA -2+00
STA -1+00
STA 0+00
STA 1+00
STA 2+00
STA 3+00
STA 4+00
STA 5+00
STA 6+00
STA 7+00
STA 8+00
STA 9+00
STA 10+00

ACCRETION
FILLET LIMITS
(TOP OF BERM
+6.0' NAVD88)

ATLANTIC

OCEAN

TERMINAL GROIN
FOOTPRINT

RUBBLE MOUND SECTION

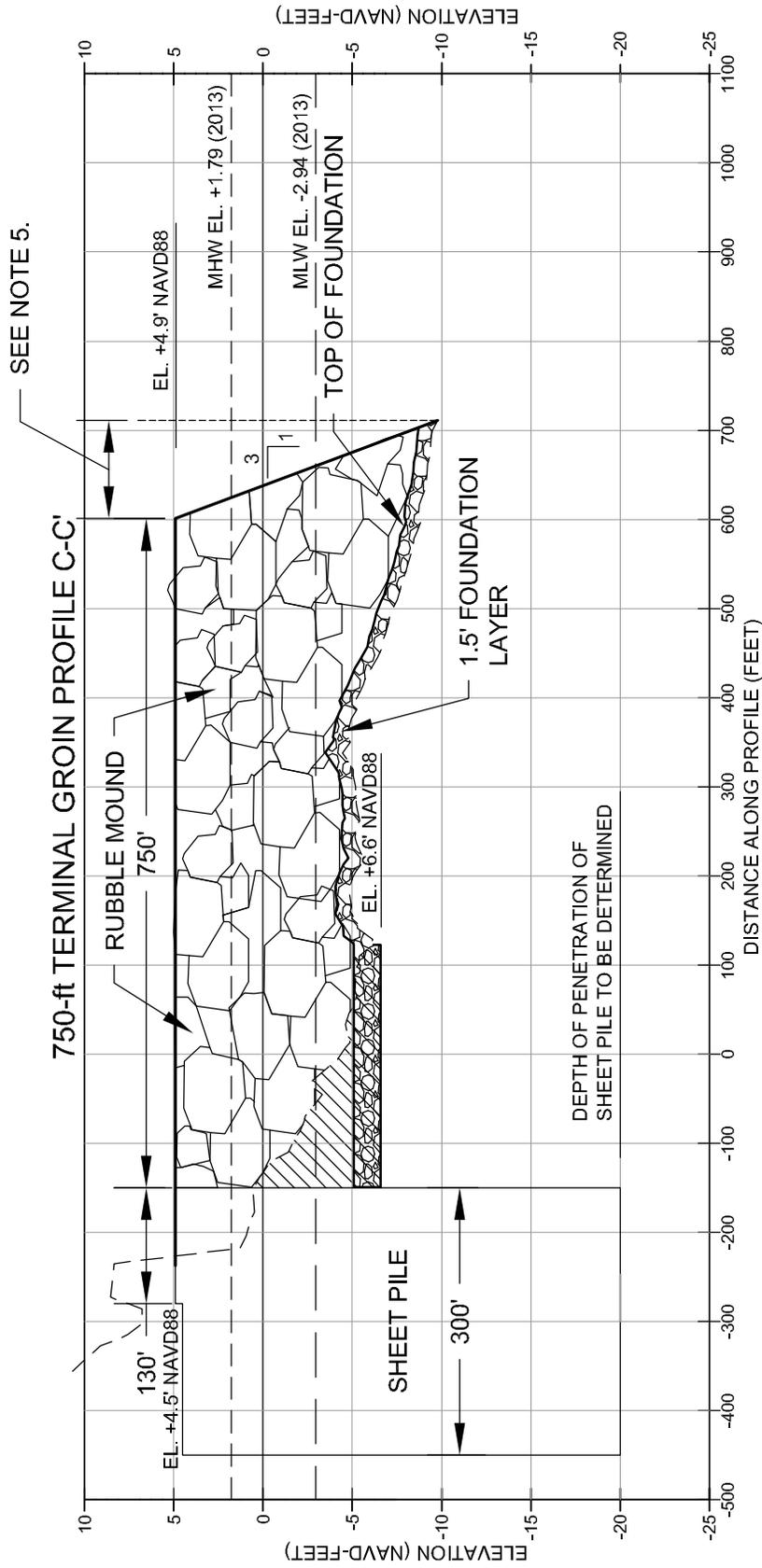
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OCEAN ISLE BEACH
SHORELINE PROTECTION PROJECT
TERMINAL GROIN PLAN VIEW

COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.
4039 WILSONBORO LOOP RD.
WILMINGTON, NC 28409
PH: (910) 791-5494
FAX: (910) 791-4123

DATE:	5/13/15
BY:	HN
COMM NO.:	147426
SHEET:	4 OF 12

**NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY**



NOTES:

1. ELEVATIONS SHOWN ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. BATHYMETRIC SURVEY PERFORMED JUNE 2013, BY MCKIM & CREED.
3. TYPICAL PROFILE. ACTUAL TERMINAL GROIN CONSTRUCTION DETAILS PER ENGINEER.
4. BEDDING LAYER FINAL DESIGN SHOULD INCLUDE A ROCK-FILLED MAT.
5. DISTANCE DEPENDS ON BOTTOM DEPTH AT TIME OF CONSTRUCTION.

LEGEND:

- EXISTING GRADE JUNE, 2013
- 750-FT TERMINAL GROIN
- ▨ TOP OF FOUNDATION
- ▨ EXCAVATION VOLUME = 2363 CU.YDS.



VERTICAL GRAPHIC SCALE



HORIZONTAL GRAPHIC SCALE

**COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.**

4038 MASONBRO LOOP RD.
WILMINGTON, NC 28409
PH: (910) 791-6484
FAX: (910) 791-4129

DATE:	5/13/15
BY:	HN
COMM NO.:	147426
SHEET:	7 OF 12

**OCEAN ISLE BEACH
SHORELINE PROTECTION PROJECT
TERMINAL GROIN PROFILE C-C'**

NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

BEACH

CONSTRUCTION CORRIDOR

PROPOSED
STAGING
AREA

EXISTING
SAND BAGS

E. 2ND ST.

STA 0+00

STA -5+00

STA -6+00

TRESTLE STARTING
POINT TO BE
DETERMINED
BY BEACH
CONDITIONS AT TIME
OF CONSTRUCTION

TERMINAL GROIN
FOOTPRINT

20' WIDE TEMPORARY
CONSTRUCTION TRESTLE

LEGEND:

- BASELINE
- MEAN HIGH WATER AUGUST 2013
(MHW EL. +1.79' NAVD88)
- - - - - MEAN LOW WATER AUGUST 2013
(MLW EL. -2.94' NAVD88)
(BY OTHERS)
- TRUCK HAUL ROUTE
- ~ 2 ~ EXISTING CONTOURS
- [Hatched Box] ACCRETION FILLET
- [Diagonal Hatched Box] PROPOSED STONE STAGING
AREAS = 16,417 S.F.
- [Cross-hatched Box] TEMPORARY CONSTRUCTION
TRESTLE

NOTES:

1. COORDINATES ARE IN FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD83).
2. DATED AERIAL IMAGERY: MAY-JUNE 2012.
3. BATHYMETRIC CONTOURS DERIVED FROM MCKIM & CREED, JUNE 2013 SURVEY DATA.
4. STAGING AREAS AND TRUCK HAUL ROUTE SUBJECT TO CHANGE.
5. TRESTLE SHALL BE CONSTRUCTED ON EITHER SIDE ALONGSIDE ROCK GROIN.
6. DISTURBED AREA: (STAGING AREA CONSTRUCTION CORRIDOR) = 37,132 S.F.

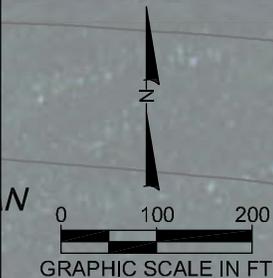
**OCEAN ISLE BEACH
SHORELINE PROTECTION PROJECT
TEMPORARY CONSTRUCTION TRESTLE PLAN VIEW**

**COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.**

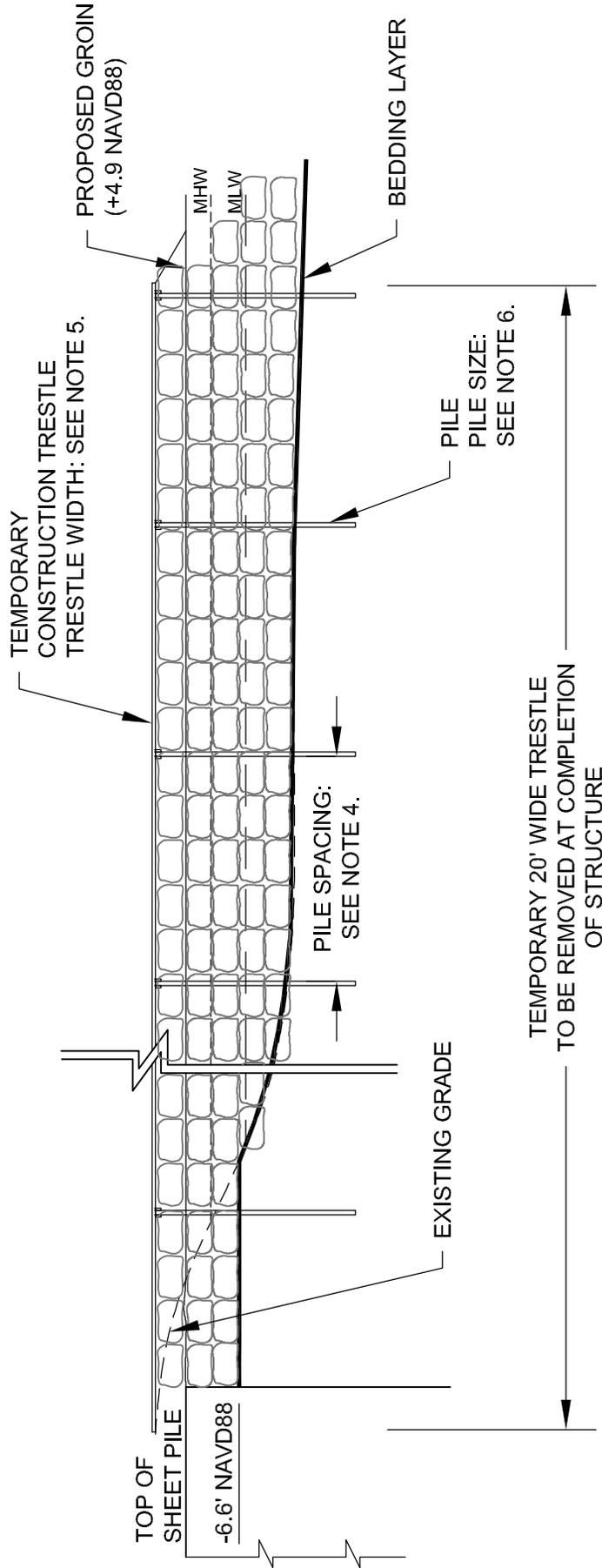
4039 WILSONBORO LOOP RD.
WILMINGTON, NC 28409
PH: (910) 791-5494
FAX: (910) 791-4128

DATE: 5/13/15
BY: HN
COMM NO.: 147426
SHEET: 11 OF 12

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SEAWARD



TEMPORARY CONSTRUCTION TRESTLE

N.T.S.

NOTES:

1. TRESTLE SHALL BE CONSTRUCTED ON EITHER SIDE ALONGSIDE ROCK GROIN.
2. TRESTLE LENGTH TO BE DETERMINED BY BEACH CONDITIONS AT TIME OF CONSTRUCTION.
3. ALL TRESTLE MATERIAL TO BE REMOVED FROM SITE.
4. PILE SPACING TO BE DETERMINED BY THE CONTRACTOR. POSSIBLE SPACING 6 FEET TO 12 FEET.
5. WIDTH OF THE TEMPORARY CONSTRUCTION TRESTLE TO BE DETERMINED BY CONTRACTOR. COULD RANGE FROM 20 FEET TO 2.5 FEET.
6. PILE SIZE TO BE DETERMINED BY CONTRACTOR. COULD RANGE FROM 12 INCHES TO 24 INCHES.

DATE:	5/13/15
BY:	GK
COMM NO.:	147426
SHEET:	12 OF 12

**COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.**
 4038 MALSONBORO LOOP RD.
 WILMINGTON, NC 28409
 PH: (910) 791-6494
 FAX: (910) 791-4129

TITLE:
**OCEAN ISLE BEACH
 SHORELINE PROTECTION PROJECT
 TEMPORARY CONSTRUCTION TRESTLE CROSS SECTION**

Appendix B: Signed Agent Authorization Form and AEC Notice

N.C. DIVISION OF COASTAL MANAGEMENT AGENT AUTHORIZATION FORM

Date 5-13-2015

Name of Property Owner Applying for Permit:

Town of Ocean Isle Beach

Mailing Address:

3 West Third Street

Ocean Isle Beach, NC 28469

I certify that I have authorized (agent) Coastal Planning and Engineering of NC, Inc to act on my behalf, for the purpose of applying for and obtaining all CAMA Permits necessary to install or construct (activity) Ocean Isle Beach Shoreline Protection Project, at (my property located at) Eastern end of Ocean Isle Beach oceanfront shoreline.

This certification is valid thru (date) 6/30/2016.


Property Owner Signature
Mayor

5-13-2015
Date

OCEAN HAZARD AEC NOTICE

Project is in an: X Ocean Erodible Area X High Hazard Flood Area X Inlet Hazard Area

Property Owner: Town of Ocean Isle Beach

Property Address: Ocean Isle Beach Ocean Front

Date Lot Was Platted: Easements Pending

This notice is intended to make you, the applicant, aware of the special risks and conditions associated with development in this area, which is subject to natural hazards such as storms, erosion and currents. The rules of the Coastal Resources Commission require that you receive an AEC Hazard Notice and acknowledge that notice in writing before a permit for development can be issued.

The Commission's rules on building standards, oceanfront setbacks and dune alterations are designed to minimize, but not eliminate, property loss from hazards. By granting permits, the Coastal Resources Commission does not guarantee the safety of the development and assumes no liability for future damage to the development. Permits issued in the Ocean Hazard Area of Environmental Concern include the condition that structures be relocated or dismantled if they become imminently threatened by changes in shoreline configuration. The structure(s) must be relocated or dismantled within two (2) years of becoming imminently threatened, and in any case upon its collapse or subsidence.

The best available information, as accepted by the Coastal Resources Commission, indicates that the annual long-term average ocean erosion rate for the area where your property is located is up to 8 feet per year.

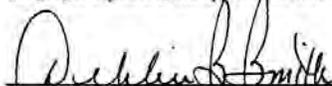
The rate was established by careful analysis of aerial photographs of the coastline taken over the past 50 years.

Studies also indicate that the shoreline could move as much as 300 feet landward in a major storm.

The flood waters in a major storm are predicted to be about 16 feet deep in this area.

Preferred oceanfront protection measures are beach nourishment and relocation of threatened structures. Hard erosion control structures such as bulkheads, seawalls, revetments, groins, jetties and breakwaters are prohibited. Temporary sand bags may be authorized under certain conditions.

The applicant must acknowledge this information and requirements by signing this notice in the space below. Without the proper signature, the application will not be complete.


Property Owner Signature

3-23-15
Date

SPECIAL NOTE: This hazard notice is required for development in areas subject to sudden and massive storms and erosion. Permits issued for development in this area expire on December 31 of the third year following the year in which the permit was issued. Shortly before work begins on the project site, the Local Permit Officer must be contacted to determine the vegetation line and setback distance at your site. If the property has seen little change since the time of permit issuance, and the proposed development can still meet the setback requirement, the LPO will inform you that you may begin work. Substantial progress on the project must be made within 60 days of this setback determination, or the setback must be re-measured. Also, the occurrence of a major shoreline change as the result of a storm within the 60-day period will necessitate re-measurement of the setback. It is important that you check with the LPO before the permit expires for official approval to continue the work after the permit has expired. Generally, if foundation pilings have been placed and substantial progress is continuing, permit renewal can be authorized. It is unlawful to continue work after permit expiration.

For more information, contact:

Holley Snider

Local Permit Officer

127 Cardinal Drive Extension

Address

Wilmington, NC 28403

Locality

910-796-7215

Phone Number

Revised May 2010

Appendix C: Inlet Management Plan

Ocean Isle Beach Shoreline and Inlet Management Plan

Introduction

The legislation passed by the NC General Assembly in June 2011 authorizing the permitting of terminal groins at four (4) inlets in North Carolina carried with it the requirement to provide a plan for managing inlet and the estuarine and ocean shorelines likely to be under the influence of the inlet. During the 2013 legislative session, the General Assembly adopted Session Law 2013-384 (Senate Bill 151) that modified some of the requirements that have to be met in order to permit a terminal groin. Most notably, the 2013 legislation no longer requires the applicant to demonstrate structures and infrastructure are “imminently threatened only that they are “threatened” by erosion. The 2013 legislation still requires the applicant to implement an inlet management plan that includes the following:

- (1) A monitoring plan.
- (2) A baseline for assessing adverse impacts and thresholds for when adverse impact must be mitigated.
- (3) A description of mitigation measures to address adverse impacts.
- (4) A plan to modify or remove the terminal groin if adverse impacts cannot be mitigated.

As stated in the legislation:

“The inlet management plan monitoring and mitigation requirements must be reasonable and not impose requirements whose costs outweigh the benefits. The inlet management plan is not required to address sea level rise.”

The USACE established a comprehensive inlet and shoreline management plan in December 2002 for the Federal storm damage reduction project (USACE, 2002). The various aspects of that plan, which are described below, are adopted for the Ocean Isle Beach preferred shoreline management project involving a terminal groin and beach fill along the eastern end of the island (Alternative 5). Some aspects of the USACE monitoring program have been modified to address specific issues associated with the implementation of a terminal groin project adjacent to the west side of Shallotte Inlet that are needed to comply with State Legislation.

In addition to the USACE monitoring program and modification described below, which would serve to satisfy items (1) and (2) of the mandated management plan listed above, measures to mitigate project related adverse impacts as well as plans to modify or remove the terminal groin if adverse impacts cannot be mitigate are discussed in the following sections.

(1) Monitoring Plan. The expressed purpose of the USACE monitoring program is to:

- 1) Monitor the Ocean Isle Beach and Holden Beach shorelines adjacent to Shallotte Inlet to verify the anticipated response of the inlet shoulders and ebb-tide shoal to dredging of the inlet as a borrow area.

- 2) Provide data to track the performance of the beach fill placement in order to plan and schedule the periodic renourishment of the Federal project.
- 3) Monitor the performance of Shallotte Inlet as a borrow area and sediment trap in order to plan dredging for the periodic renourishment.

The scope of the USACE monitoring program, detailed below, would be generally sufficient to track impacts of the terminal groin on the shoreline of Ocean Isle Beach east and west of the terminal groin, evaluate structure induced changes in the behavior of the inlet shoulders, and determine if the structure is negatively impacting shoreline behavior on the west end of Holden Beach. However, measures to track changes on the extreme west end of Holden Beach and the east end of Ocean Isle Beach have been added to supplement the USACE monitoring program.

With the federal storm damage reduction project having been completed in 2001 followed by subsequent periodic nourishment events in 2006-07, 2010, and 2014, all of which used the borrow area in Shallotte Inlet, the impacts of the federal project following the implementation of the terminal groin project would continue. Therefore, in order to assess incremental impacts of the terminal groin on the adjacent shorelines as well as the environs around Shallotte Inlet, post-terminal groin changes in these areas would need to be compared with changes that were occurring during the time in which only the federal project was active.

The evaluation of habitat changes in the vicinity of Shallotte Inlet will be accomplished through analysis of aerial photographs that are included as part of the routine monitoring program. These same aerial photographs will be used to monitoring shoreline changes along the AIWW east and west of Shallotte Inlet. The shoreline change analysis will include the AIWW shoreline west to Shallotte Boulevard on the Ocean Isle side and east to the mouth of the Shallotte River including Monks Island situated immediately behind the west end of Holden Beach.

Monitoring Program. The USACE monitoring program includes beach profile surveys covering 27,000 feet of shoreline on Ocean Isle Beach and 10,000 feet of shoreline on the west end of Holden Beach (Figure 6.2), radial profiles around the east and west shoulders of Shallotte Inlet, hydrographic survey of the inlet, and aerial photos. The beach profiles, which are spaced at 500-foot intervals, are surveyed every six months (fall and spring) while the inlet radial profiles are to be taken each spring. The aerial photos are also taken in the spring. To date, the USACE has published two monitoring reports, the first in December 2002 (USACE, 2002) and the second in June 2005 (USACE, 2005). While subsequent monitoring reports have not been published, the USACE has continued to collect monitoring data along the east end of the federal project and the west end of Holden Beach and has used the data to design the 2010 and 2014 periodic nourishment operations. Some of the same monitoring data was used in the evaluation of the various shoreline and inlet management alternatives included in this document.

However, beginning in 2010, budget shortfalls resulted in the USACE modifying the survey coverage with most surveys limited to the area on Ocean Isle Beach that fall within the limits of the federal project. In order to continue survey coverage for the entire town, the Town of Ocean Isle Beach initiated a beach profile monitoring program that includes areas on the east and west ends of the island that have not been surveyed by the USACE since about 2010. The east end surveys include the radial profiles around the east shoulder of Shallotte Inlet starting at station -

30+00 and extending west along the beach to baseline station 20+00 (Figure 6.2). The west end coverage starts at baseline station 170+00 and extends west to baseline station 275+00.

The numerical modeling of the terminal groin alternative indicated there would not be any shoreline impact, either positive or negative, west of station 30+00 on Ocean Isle Beach or on the west end of Holden Beach. With model indicated impacts ending at station 30+00 on Ocean Isle Beach, there would not be any terminal groin related impacts on Tubbs Inlet, located about 5.3 miles west of the proposed location of the terminal groin, nor would there be any terminal groin related impacts on Sunset Beach. Therefore, the USACE monitoring program is more than sufficient to satisfy the legislative requirements.

(2) Shoreline Change Thresholds. As part of the monitoring plan, the USACE developed shoreline change thresholds for Ocean Isle Beach and Holden Beach using shoreline change data developed by the NC Division of Coastal Management (NCDCM) for the time period 1938 to 1992 supplemented by a March 2001 pre-construction shoreline interpreted from aerial photographs (USACE, 2002). The USACE used least square analysis to establish shoreline trends at each 50-meter transect included in the NCDCM data set and to establish 95% confidence limits around the computed shoreline change trends. Next, the USACE matched the NCDCM transects to the beach profile monitoring profiles shown in Figure 6.1 and computed average shoreline change rates and average 95% confidence intervals for each profile. With the monitoring profiles spaced every 500 feet and the NCDCM transects every 50 meters, the averages were based on NCDCM transects on each side of the profile station. In general, the average shoreline change rates and confidence intervals applicable to each 500-foot profile station represent the average of 7 NCDCM transects.

In establishing the shoreline change thresholds, the USACE excluded areas on the west end of Holden Beach and the east end of Ocean Isle Beach that are included in the area presently designated as an Inlet Hazard Area. The USACE found shoreline changes within the Inlet Hazard Area to be too erratic to establish long-term trends. The excluded areas are shown in Figure 6.4.

The shoreline change rates, 95% confidence intervals, and the shoreline change threshold adopted by the USACE for each profile station on Ocean Isle Beach and Holden Beach are provided in Table 6.1. The shoreline change rate threshold adopted by the USACE was computed by subtracting one-half of the 95% confidence interval from the average shoreline change rate at each profile. For the area on the west end of Holden Beach between profile stations 375 and 400, the overall change in the shoreline was accretion, however; the USACE could not establish definitive shoreline change trends due to the unpredictable influence of the Shallotte Inlet bar channel on the shoreline. For this area the USACE adopted a threshold rate of 0 feet/year applicable to profiles 375 to 400.

While the past behavior of the west end of Holden Beach has been somewhat erratic, particularly since completion of initial construction of the federal storm damage reduction project on Ocean Isle Beach, the shoreline change thresholds for the west end of Holden Beach used by the USACE were modified for the terminal groin project by applying the same protocol between stations 375 and 400 as used to establish thresholds for the other transects. Adopting this protocol results in positive, i.e., accretionary, shoreline change thresholds between stations 375 and 400 rather than 0

feet/year adopted by the USACE. These revised shoreline change threshold values for the extreme west end of Holden Beach are provided in Table 6.1.

The use of 95% confidence intervals in establishing shoreline change rate thresholds provides a degree of certainty that observed shoreline change rates that exceed the threshold values are indicative of changes that would not have been expected to occur under pre-project conditions.

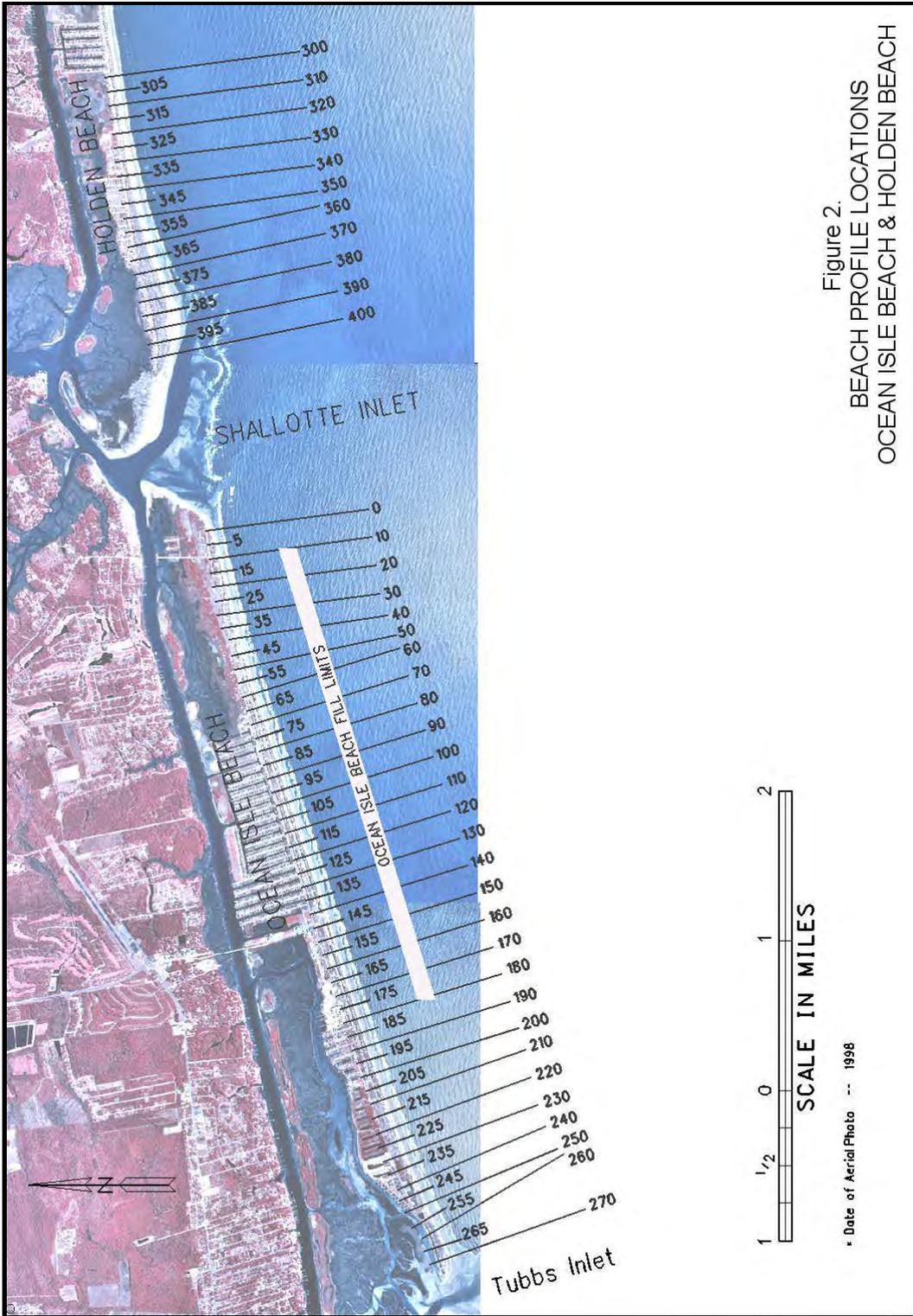


Figure 2.
 BEACH PROFILE LOCATIONS
 OCEAN ISLE BEACH & HOLDEN BEACH

Figure 6.1. Beach profiles included in the USACE Ocean Isle Beach monitoring program (Figure copied from USACE, 2002).

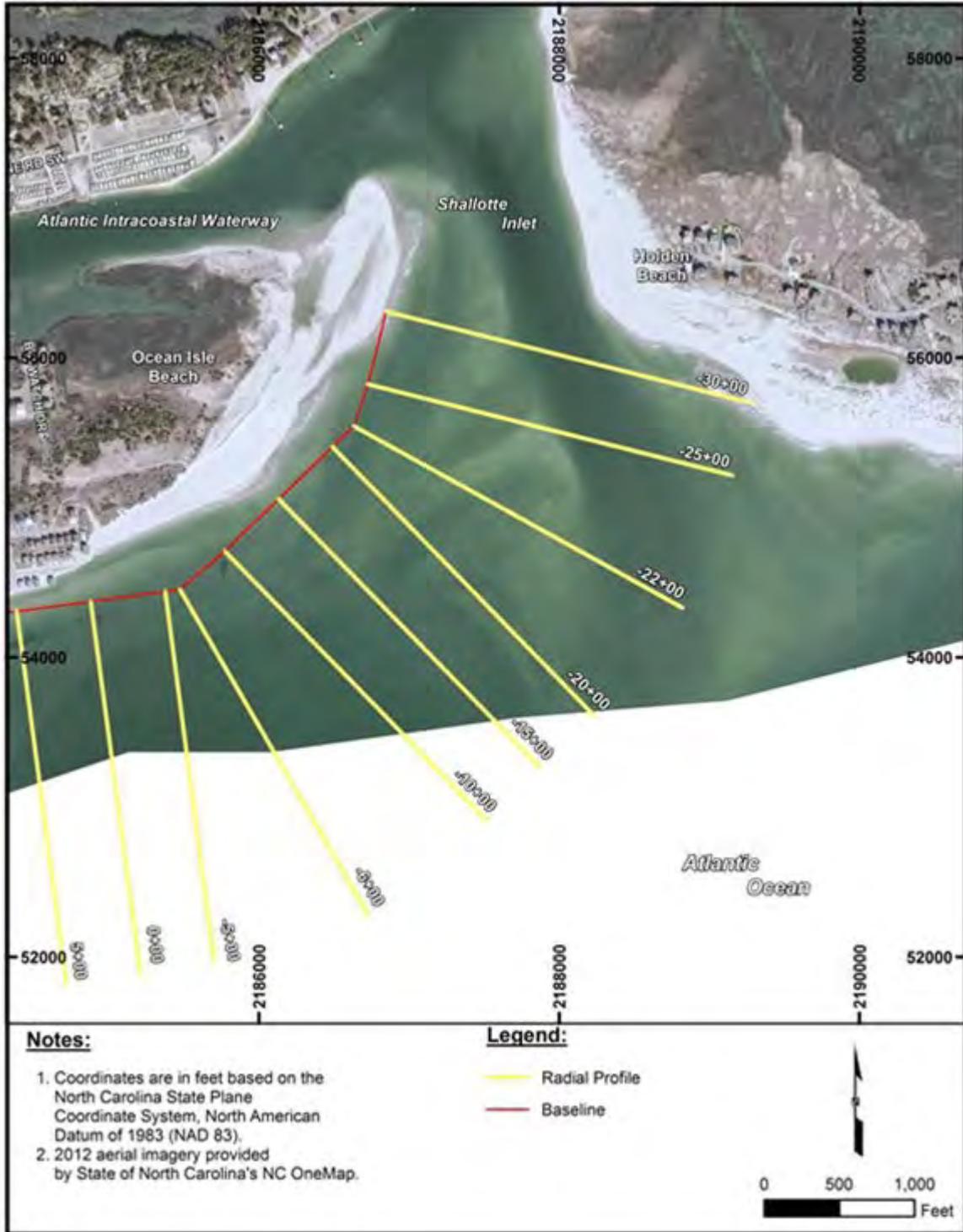


Figure 6.2. Inlet radial profiles included in the USACE Ocean Isle Beach monitoring program (Figure copied from USACE, 2002).

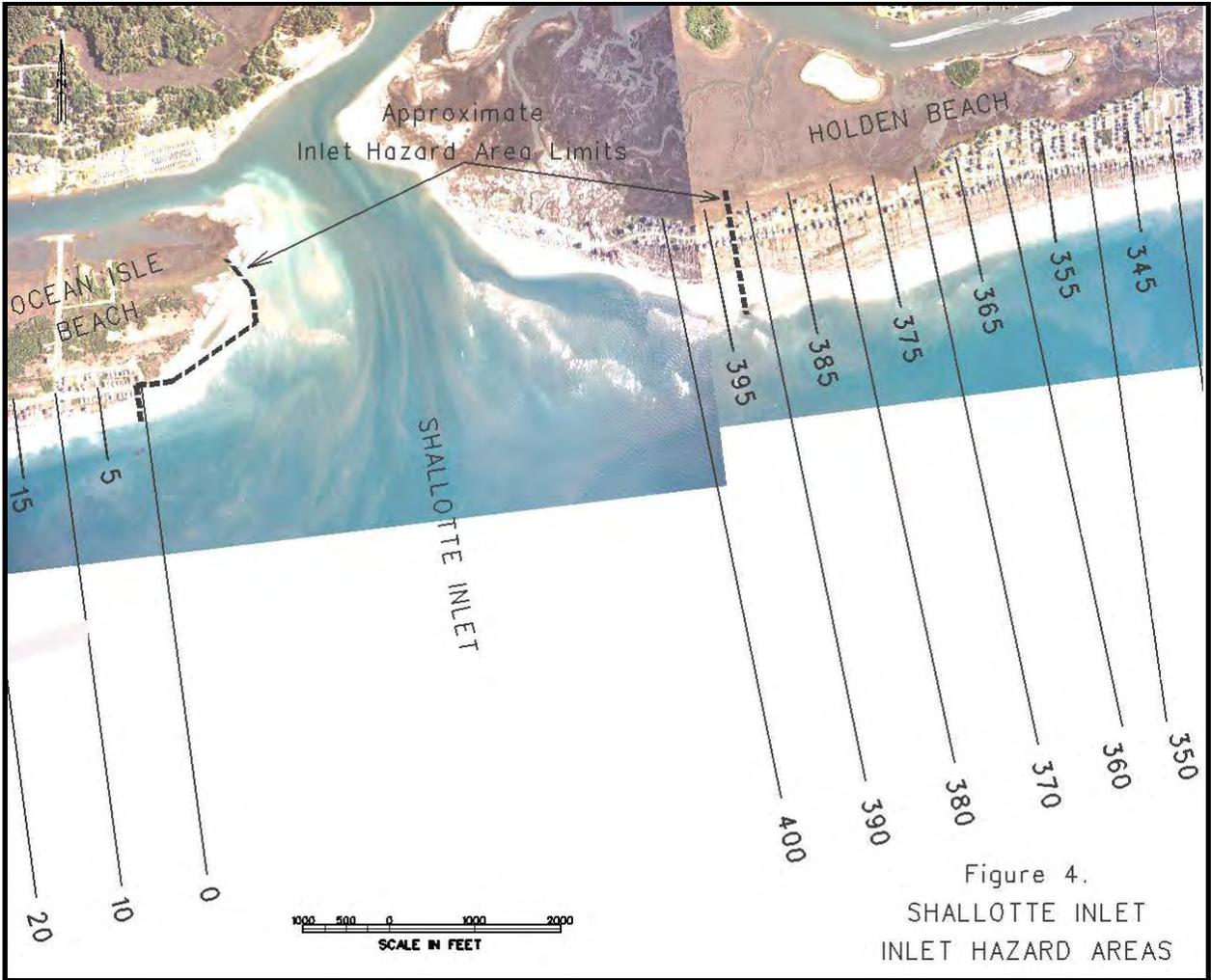


Figure 6.3. Existing Inlet Hazard Area for Shallotte Inlet (Figure copied from USACE, 2002).

Table 6.1. USACE shoreline change thresholds for Ocean Isle Beach and the west end of Holden Beach.

Ocean Isle Beach Shoreline Change Thresholds				
Beach Profile No.	Average Rate of Shoreline Change (ft/yr)	Average 95% Confidence Interval (ft/yr)	Shoreline Change Rate (ft/yr) ⁽¹⁾	Shoreline Change Threshold
5	-2.8	4.0	-4.9	
10	-4.3	2.1	-5.3	
15	-4.7	1.7	-5.6	
20	-3.6	1.7	-4.4	
25	-1.0	1.9	-1.9	
30	1.0	2.1	0.0	
35	1.7	1.9	0.8	

40	1.7	1.7	0.8
45	1.3	1.5	0.6
50	1.0	1.5	0.3
55	0.7	1.5	-0.1
60	0.3	1.7	-0.6
65	0.0	2.2	-1.1
70	0.1	2.9	-1.4
75	0.2	3.1	-1.3
80	0.1	3.2	-1.5
85	0.0	3.5	-1.7
90	-0.2	3.4	-1.9
95	-0.4	3.3	-2.0
100	-0.4	3.2	-2.0
105	-0.4	3.1	-1.9
110	-0.3	3.1	-1.8
115	-0.3	3.0	-1.7
120	-0.1	2.8	-1.5
125	0.1	2.5	-1.2
130	0.2	2.4	-1.0
135	0.4	2.3	-0.7
140	1.0	2.1	0.0
145	1.4	1.8	0.5
150	1.4	1.5	0.6
155	1.1	1.6	0.3
160	0.9	1.7	0.1
165	0.9	1.8	0.0
170	1.0	2.2	-0.1
175	1.1	2.5	-0.2
180	1.1	2.5	-0.1
185	1.1	2.6	-0.2
190	1.0	2.6	-0.3
200	1.1	2.6	-0.2
205	1.0	2.8	-0.4
210	1.0	2.8	-0.4
215	1.0	2.6	-0.3
220	1.1	2.5	-0.2
225	1.1	2.6	-0.2
230	1.1	2.7	-0.2
235	1.2	3.1	-0.4
240	1.3	3.4	-0.4
245	1.3	3.7	-0.5

250	1.4	4.2	-0.7
255	1.4	4.8	-1.1
260	1.6	5.6	-1.2
265	1.8	6.2	-1.3
270	1.8	6.2	-1.3

Holden Beach Shoreline Change Thresholds			
Beach Profile No. ⁽²⁾	Average Rate Shoreline Change (ft/yr)	Average 95% Confidence Interval (ft/yr)	Shoreline Change Rate Threshold (ft/yr) ⁽¹⁾
400	2.1		1.9
395	5.5	7.3	3.3
390	7.0	7.5	3.1
385	7.1	8.0	2.0
380	6.3	8.7	0.7
375	5.3	9.3	1.9
370	4.2	9.1	-0.4
365	3.0	8.3	-1.1
360	2.1	7.4	-1.7
355	1.4	6.7	-1.9
350	1.0	5.9	-2.0
345	0.5	4.9	-1.9
340	0.3	4.4	-1.9
335	-0.2	3.7	-2.1
330	-0.6	3.2	-2.2
325	-0.8	2.5	-2.0
320	-0.9	2.0	-1.9
315	-1.2	1.7	-2.1
310	-1.7	1.5	-2.5
305	-1.7	1.3	-2.4
300	-1.7	1.2	-2.3

⁽¹⁾Shoreline change rate threshold equal to average rate – (½ x 95% confidence interval).

⁽²⁾Threshold rate of 0 ft/yr adopted for profiles 375 to 400 due to influence of Shallotte Inlet bar channel.

To account for possible short-term shoreline changes that could be caused by storm events or other factors, the USACE adopted a 2-year confirmation period, i.e., should observed shoreline change rate exceed the threshold rate at any profile station; an additional 2-year period would follow to confirm the trend. Should the shoreline change rate exceed the threshold over the entire 2-year confirmation period, an assessment of the proper responsive measures would be made. If the shoreline change rate decreases below the threshold rate during the confirmation period, the 2-year confirmation period would be reset.

In the event the area is impacted by a catastrophic storm such as a hurricane or severe nor'easter that causes major changes in the shoreline, subsequent shoreline change rates would likely exceed the threshold rates for some time. If after the two year post-storm confirmation period shoreline change rates are still being impacted by the storm induced changes and some of the measured shoreline change rates still exceed the threshold rates, an assessment will be made to determine if a new reference shoreline condition is needed in order to adequately evaluate potential project induced shoreline impacts that occur post storm.

Comparable shoreline change rate thresholds were not established by the USACE for the radial profile lines around the inlet's east and west shoulders (Figure 6.2) due to the variable nature of the shoreline changes and the lack of definitive shoreline trends. However, the radial transects would be monitored during the life of the project and the behavior of the inlet shorelines as depicted by the radial profiles used to determine if modifications in the Shallotte Inlet borrow area are needed.

As mentioned above, the shoreline and inlet monitoring program and shoreline change rate thresholds established by the USACE for the Ocean Isle Beach storm damage reduction project are adopted for the Ocean Isle Beach Shoreline Management Project with the exception of profiles 375 to 400 on the west end of Holden Beach, which were revised based on the same protocol used to establish the thresholds at all the other transects. In this regard, should Federal funding for the monitoring program fall short in any given year, the Town of Ocean Isle Beach would provide the necessary funding to assure the program is accomplished as planned.

The Town of Ocean Isle Beach presently pays \$17,000 to survey 34 profiles on the east and west end of the island, or \$500 per profile. If the Town had to assume the cost of surveying the federal project between station 0+00 and 180+00, the cost to survey these 37 profiles would be an additional \$18,500. The USACE monitoring program also includes 21 profiles on the west end of Holden Beach. Again, if the USACE were unable to survey the west end of Holden Beach due to a lack of federal funds, the Town of Ocean Isle Beach would assume that responsibility. The cost to survey the 21 profiles on the west end of Holden Beach would be \$10,500. Thus, the total cost of the beach profile surveys that would become the responsibility of the Town of Ocean Isle Beach in the absence of federal funding for this activity would be \$29,000 per year.

Ocean Isle Beach Sand Spit. The area on Ocean Isle Beach located east of profile station 5+00 was not included in the USACE shoreline change threshold evaluation since this area falls within the existing Inlet Hazard Area established by the NC Coastal Resources Commission. Also, the sand spit, in its present form, did not exist prior to the construction of the Federal project.



Figure 6.4. Sand spit shorelines on east end Ocean Isle Beach – March 1999 to January 2013.

Shoreline changes along the sand spit have been highly variable as shown by the shoreline positions of the sand spit traced from Google Earth aerial photos taken between March 1999 (pre-construction) and January 2013 shown on Figure 6.4. The shorelines on Figure 6.4 do not represent a particular elevation such as mean high water or mean low water; rather the shorelines simply represent the approximate interface of the water with the dry sand beach as shown by the wet/dry line on the photos.

Based on this set of aerial photos, the eastward projection of the sand spit reached a maximum in October 2007 (yellow line in Figure 6.4). Between October 2007 and October 2010 (dark blue line), the sand spit rotated counter clockwise resulting in a landward recession of the shoreline of between 400 feet and 600 feet on the extreme eastern end of the sand spit. The re-curved nature of the sand spit normally results in the formation of a shallow pond between the old spit shoreline and the backside of the new spit. Between October 2010 and January 2013 (red line), the

shoreline along the eastern end of the sand spit moved seaward 250 feet to 350 feet in response to a new slug of sand moving to the east. Eastward movement of the slug of sand stopped when it reached the main inlet channel and the sand spit again rotated counter clockwise and eventually merged with the previous sand spit. This cyclic nature of sand spit behavior should continue following the implementation of Alternative 5.

The approximate 1,000 feet of shoreline measured from the last house on the east end of Ocean Isle Beach represents the trailing end of the sand spit. Shoreline behavior in this area is also highly variable but not to the same degree as the eastern tip of the sand spit. This shoreline position variability is due in part to the movement of beach nourishment material being transported to the east off the east end of the federal storm damage reduction project. In this regard, the October 2009 shoreline (green line in Figure 6.4), which was taken about 6 months prior to the April-May 2010 nourishment operation, had the landward most position of all of the shorelines in the photo dataset.

Even though the establishment of shoreline change thresholds at each radial transect is not practical for the spit area, the March 1999 configuration of the sand spit, as shown in Figure 6.4, is adopted as a threshold for the sand spit area on the east end of Ocean Isle Beach. Post-terminal groin construction changes in the sand spit will be monitored using aerial photographs. Should the sand spit diminish in size to that comparable to the March 1999 threshold, consideration will be given to modifying the structure to allow more sediment to move from west to east past the structure. Beach nourishment in this area would also be considered as a mitigation option.

Holden Beach - Shallotte Inlet Shoreline. A comparison of shoreline changes on the extreme west end of Holden Beach adjacent to Shallotte Inlet is provided in Figure 6.5. The dates of the shorelines shown in Figure 6.5 are the same as the dates shown for the Ocean Isle Beach sand spit in Figure 6.4 and were obtained from Google Earth photos. The March 1999 shoreline, shown in black in Figure 6.5, represents the position of the shoreline prior to the initial construction of the Ocean Isle Beach federal storm damage reduction project. Between March 1999 and October 2005 (blue line in Figure 6.5), the western tip of Holden Beach on the ocean side experienced considerable amount of accretion as the result of the onshore migration of a portion of the ebb tide delta located off the west end of Holden Beach. This onshore migration was attributed to the initial excavation of the Shallotte Inlet borrow area in 2001. At the narrowest point between Holden Beach and Ocean Isle Beach inside the inlet, commonly referred to as the inlet gorge, the shoreline moved east (i.e., eroded) approximately 600 feet between March 1999 and January 2013 as shown by comparing the black and red lines in Figure 6.5.

The erratic behavior of the shoreline along the east shoulder of Shallotte Inlet on the Holden Beach side, particularly in the area between the two islands, and the apparent tendency of the extreme western tip of Holden Beach opposite the inlet gorge to erode under exiting conditions makes it virtually impossible to establish a shoreline position along the west end of Holden Beach which could serve as a shoreline threshold similar to what is proposed for the Ocean Isle Beach side. This notwithstanding, the shoreline condition on the west end of Holden Beach adjacent to Shallotte inlet will be monitored using aerial photographs. Should changes in the inlet shoreline pose a threat to existing development on the west end of Holden Beach, methods to mitigate the threat would be evaluated. Consideration of mitigation measures around the inlet shoreline on the

Holden Beach side would be coordinated with the USACE, NCDCM and the Town of Holden Beach.

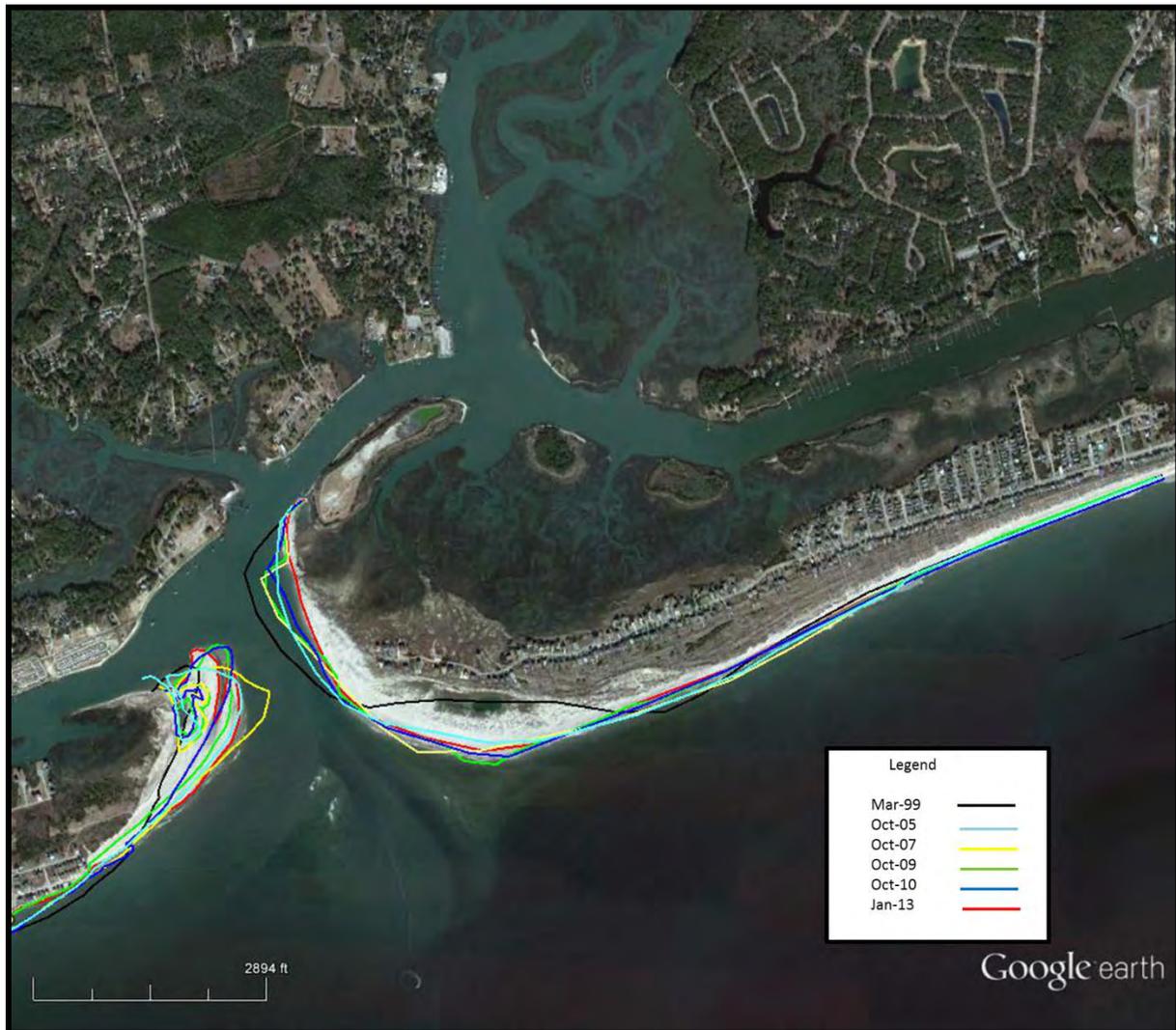


Figure 6.5. Shoreline changes on the extreme west end of Holden Beach next to Shallotte Inlet – March 1999 to January 2013.

(3) Mitigation Measures. Should shoreline responses along Ocean Isle Beach or Holden Beach exceed the shoreline change thresholds presented above and continue to exceed the thresholds throughout the 2-year verification period, the terminal groin would be evaluated to determine if modifications to the structure could be made that would mitigate the negative shoreline impacts. If modification of the terminal groin would not address the problem, beach nourishment would be provided in the affected areas to compensate for the structure related impacts.

Once the need to provide beach fill to mitigate for project related shoreline impacts is determined, the Town of Ocean Isle Beach would apply for appropriate State and Federal permits. Since the location for the mitigation beach fill cannot be determined in advance, the permit process could not begin until the monitoring program identifies where the impacts have occurred. As a result,

the time lapse between the identification of a shoreline erosion problem and the initiation of construction to provide the beach fill could be as long as three (3) years. This includes one year to identify the problem and two years to verify if the problem still exists. During the first year of verification, work will begin to obtain the necessary permits. Any mitigation measure would be limited to the November 16 to March 31 environmental dredging window.

Material for the mitigation beach fill would be obtained from the Shallotte Inlet borrow area. Depending on the timing of when the need for mitigation beach fill is determined, the mitigation beach fill could possibly be provided during the normal periodic nourishment operation. If the timing does not coincide with the normal periodic cycle, the mitigation fill would be provided during a separate nourishment operation.

Under the existing Federal storm damage reduction project, mitigation of adverse impacts of the Shallotte Inlet borrow area on Holden Beach would be the responsibility of the Town of Ocean Isle Beach. Separating terminal groin and borrow area impacts on the west end of Holden Beach would be difficult if not impossible. However, with the Town of Ocean Isle Beach being responsible for mitigation in both instances, identifying the culpable feature (borrow area or terminal groin) would not be required.

In the event the negative impacts of the terminal groin cannot be mitigated with beach nourishment or possible modifications to the design of the terminal groin, the terminal groin would be removed. Removal would entail the extraction of the sheet pile from the shore anchorage section and the complete removal of all stone, including bedding and armor stone. The terminal groin construction materials would be transported off the island and placed in an appropriate storage site. The terminal groin material, particularly the sheet pile and stone, would have some salvage value; however, the opinion on the cost for removal of the terminal groin, excluding any salvage value, is \$2.0 million.

(4) Project Modifications. The terminal groin proposed for the east end of Ocean Isle Beach in the applicant's preferred alternative (Alternative 5) is designed to allow littoral sediment to move over, through, and/or around the structure. The so-called "leaky" nature of the design, a nomenclature suggested by Olsen & Associates for the terminal groin on Amelia Island, Florida, should allow sufficient volumes of sand to move past the structure and continue east along the sand spit to maintain the integrity of the spit. As indicated above, the March 1999 configuration of the sand spit on the Ocean Isle Beach side of Shallotte Inlet will be used as a "threshold" in determining if modifications to the structure are needed to allow more sediment to move past the structure. No such threshold is possible for the inlet shoreline on the Holden Beach side due to the document erratic behavior of the shoreline prior to and following the initial construction of the Ocean Isle Beach federal storm damage reduction project. In this regard, mitigation on the Holden Beach side would be dictated by shoreline changes that exceed the thresholds established for the federal project.

Consideration would also be given to possibly nourishing the area east of the terminal groin on the Ocean Isle Beach side as a means of restoring the character of the sand spit. The post-construction configuration of the sand spit will be evaluated through interpretation of the aerial photographs. As stated above, should the sand spit diminish in size comparable to the March 1999

condition, consideration will be given to modifying the structure to allow more sediment to move from west to east past the structure of possibly providing beach fill to the area east of the terminal groin during regularly scheduled periodic nourishment operations. Modification to the structure could include removal of stones to increase permeability, shortening the structure, or lowering the crest elevation. The appropriate measures, i.e., structure modifications or beach fill, would be determined following an assessment of the degree of impact the structure is having on the area.

Reporting. Annual reports, comparable to the two monitoring reports previously published by the USACE, would be prepared and submitted to the USACE Wilmington District Regulatory Office and the NC Division of Coastal Management. The reports will summarize shoreline changes observed during the previous year and will compare updated shoreline changes to shoreline change thresholds. The results will be provided in both tabular and graphical form.

Should the monitoring surveys detect shoreline change rates exceeding the threshold rates, the profile where the thresholds are exceeded will be “red flagged.” Subsequent monitoring reports over the following two years will closely follow changes at these profiles to determine if corrective actions are needed.

Summary of Shoreline and Inlet Management Plan. The shoreline and inlet management plan for the Ocean Isle Beach project would include the following:

- (1) Beach profile surveys every 6 months covering 27,000 feet of shoreline on Ocean Isle Beach and 10,000 feet of shoreline east of Shallotte Inlet on Holden Beach.
- (2) The beach profiles will be spaced at 500-foot intervals along both Ocean Isle Beach and Holden Beach.
- (3) Annual hydrographic surveys of Shallotte Inlet extending from the confluence of the inlet with the AIWW seaward to the -30-foot NAVD depth contour in the ocean. The hydrographic surveys will cover the area from approximately station 400+00 on Holden Beach to station 0+00 on Ocean Isle Beach.
- (4) The 9 radial profiles on the east end of Ocean Isle Beach and the 8 radial profiles on the west end of Holden Beach, as shown in Figure 6.2, will be surveyed each spring and graphs prepared to show changes over time.
- (5) The sand spit shoreline east of the terminal groin will be mapped from the aerial photos taken each spring and plots of the changes in the spit shoreline shown graphically.
- (6) Similar shoreline mapping will also be performed on the Holden Beach side of Shallotte Inlet.
- (7) An annual report will be prepared summarizing changes observed during the year and identifying any profile stations where the shoreline change thresholds are exceeded.
- (8) The report will include a summary of significant meteorological events (tropical and extratropical), man-made activities (beach nourishment), and any other factors that had occurred that could have an impact of past as well as future shoreline changes.
- (9) The report will discuss if measures are needed to correct any observed negative shoreline impacts and if so provide recommendations on how to address the impacts.

Appendix D: Financial Assurance

North Carolina Department of Environmental Quality

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

September 29, 2015

Ms. Daisy Ivey
Town Administrator/Finance Officer
3 W. Third Street
Ocean Isle Beach, North Carolina 28469

Re: Terminal Groin Project
Town of Ocean Isle Beach, North Carolina
Proof of Financial Assurance

Dear Ms. Ivey,

Pursuant to N.C. Gen. Stat. §113A-115.1(e)(6), the Secretary must verify that the proof of financial assurance submitted on behalf of the Town of Ocean Isle Beach is adequate to cover the cost of implementing the following components of the inlet management plan:

- a. Long-term maintenance and monitoring of the terminal groin.
- b. Implementation of mitigation measures.
- c. Modification or removal of the terminal groin.

The N.C. Department of Environment and Natural Resources, with assistance from the N.C. Department of State Treasurer's State and Local Government Finance Division, has reviewed the additional materials that you sent July 16, 2015, relating to the proof of financial assurance for the Town of Ocean Isle Beach's proposed terminal groin project. The information that you provided indicates that the Town of Ocean Isle Beach has the financial ability to support the estimated costs of the terminal groin project, assuming that the projected costs are reasonable estimates and that the accommodation tax continues to generate funds at current levels. Based on our review, the Town of Ocean Isle Beach has satisfied the proof of financial assurance requirements of N.C. Gen. Stat. §113A-115.1(e)(6).

Sincerely,



Tom Reeder
Assistant Secretary for the Environment

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-707-8600 \ Internet: www.ncdenr.gov

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Appendix E: Pending Easements



**OCEAN ISLE BEACH
SHORELINE PROTECTION PROJECT
EASEMENT PARCELS**

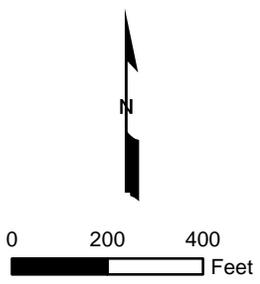
G:\Enterprise\Brunswick\147426_Ocean Isle Beach EI\Simxd\Easement_Parcel.mxd

LEGEND:

- EASEMENT PARCELS
- PARCELS
- 50FT. CONSTRUCTION BUFFER
- SHEET PILE
- ACCRETION FILLET
- TERMINAL GROIN

NOTES:

1. COORDINATES ARE IN FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD 83).
2. 2012 BACKGROUND IMAGERY IS FROM THE NC ONEMAP IMAGERY SERVICE.



**COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.**

PH. (910) 791 - 9494
FAX (910) 791 - 4129

4038 MASONBORO LOOP RD.
WILMINGTON, NC 28409

DATE:	05/13/15
BY:	HMV
COMM NO.:	147426
SHEET:	1

ID	PIN	Owner	Address	City	State	ZipCode
1	108514347276	MARITIME PLACE PROPERTY OWNERS ASSN. INC	PO BOX 8126	OCEAN ISLE BEACH	NC	28469
3	108514447648					
4	108514446697					
8	108514444427	476 OCEAN ISLE LLC	2450 SHADYWOOD CI	CROFTON	MD	21114
9	108514442475	KERNODLE DENNIS	4880 SARTIN ROAD	BURLINGTON	NC	27217
10	108514442424	SOUTHER DAN L ET FRIEDA	4219 FARLIN AVE	GREENSBORO	NC	27407
14	108514349399	MILLIKEN JEFFREY A ETALS	PO BOX 6609	SHALLOTTE	NC	28470
15	108514442335	MUELLER ROBERT E ETUX POLLY	PO BOX 3755	MEDINA	OH	44256
16	108514349394	MILHEN LLC	419 LIGHTWOOD LANE	SHALLOTTE	NC	28459
19	108514349299	JENNINGS ROGER A III ETUX MARLEEN O	9053 DEER HILL ROAD	BELEWS CREEK	NC	27009
84	108514449821	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
85	108514449871	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
86	108515540822	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
87	108514449741	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
90	108514445429	MCMURTRIE BARRY & TONI TITONE	5887 LYCIA LN	OCEAN ISLE BEACH	NC	28469
91	108514444478	BLEVINS THOMAS S ETUX	478 EAST THIRD STREET	OCEAN ISLE BEACH	NC	28469
92	108514443426	ROBERTS ROBERT JAMES JR ETALS	474 E THIRD STREET	OCEAN ISLE BEACH	NC	28469
93	108514441474	JURANICH PETER F ETUX DENISE A	25 OLD FORT DR	HILTON HEAD	SC	29926
94	108514441423	ZORZI KERRY & HEATHER	9204 CONCORD HILL CT	RALEIGH	NC	27613
96	108514440472					
104	108514442386	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
105	108514441385	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
106	108514445479	MCMURTRIE BARRIE ETUX TONI TITONE	5887 LYCIA LANE	OCEAN ISLE BEACH	NC	28469
107	108514446520	VENABLE ONETA MICHELLE	PO BOX 1685	ANDERSON	SC	29622
111	108514445696					
112	108514446647					
113	108514441334	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
114	108514440383	DYE JOHN R ET JACQUELINE H	4915 LAKESHORE DR	KILLEEN	TX	76543
117	108514448649					
118	108514447699					
119	108514449791	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
121	108514346342	HENLEY DONNA D	1514 LANGDON VILLAGE DR	CLEMMONS	NC	27012
123	108515540742	LW LEGACY ASSETS LLC & DW LEGACY ASSETS LLC	11 CAUSEWAY DRIVE	OCEAN ISLE BEACH	NC	28469
124	108511555784					
125	108510450937					

**OCEAN ISLE BEACH
SHORELINE PROTECTION PROJECT
EASEMENT PARCELS**

**COASTAL PLANNING & ENGINEERING
OF NORTH CAROLINA, INC.**

PH. (910) 791 - 9494
FAX (910) 791 - 4129

4038 MASONBORO LOOP RD.
WILMINGTON, NC 28409

DATE:
05/13/15

BY:
HMV

COMM NO.:
147426

SHEET:
2

EASEMENT

STATE OF NORTH CAROLINA

COUNTY OF BRUNSWICK

THIS EASEMENT, made this ____ day of May, 2015, by and between _____ and _____, hereinafter, whether one or more, referred to as "GRANTOR," and **Town of Ocean Isle Beach**, a North Carolina municipal corporation, Three West Third Street, Ocean Isle Beach, NC 28469, hereinafter, whether one or more, referred to as "GRANTEE":

WITNESSETH:

THAT WHEREAS, Grantee is undertaking a Terminal Groin Project within the Town to help control erosion and protect waterfront lots; and

WHEREAS, in order to properly construct and complete the project, it is necessary for Grantee to acquire certain easements for said project from affected property owners; and

WHEREAS, Grantor is the owner of that certain tract of land located in Ocean Isle Beach, Brunswick County, North Carolina, more particularly described as _____, which property is affected by said project; and

WHEREAS, Grantor acknowledges that they will also benefit from said project; and

WHEREAS, Grantee has requested and Grantor has agreed to convey the necessary easement to Grantee to enable it to undertake said project;

NOW, THEREFORE, the Grantor, for a valuable consideration, including the benefits Grantor may derive from said project, the receipt of which is hereby acknowledged, has and by these presents does give, grant, bargain, dedicate and convey unto the Grantee and its successors and assigns a perpetual, irrevocable and assignable easement and right-of-way in, on, over, through and across the land hereinafter described for the use by the Grantee and its'

representatives, agents, employees, officials, engineers, consultants, surveyors, contractors, subcontractors, and assigns. The easement area shall be all of the above-described property.

Grantor also conveys and grants to Grantee a non-exclusive access easement across any portion of the above-described property for the purpose of permitting Grantee's inspection and, if necessary, observation, maintenance and repair of the Grantee's work and activities within the easement area (the "Access Easement")..

This easement is granted for the purpose of allowing Grantee to use the Easement Area for the placement of beach compatible material, utilization of heavy machinery to place said material, construction of the terminal groin and anchor section, and the staging and transportation of construction materials together with the right of ingress and egress for such work. Grantee may use the Easement Area to evaluate, survey, inspect, construct, preserve, patrol, protect, operate, maintain, repair, rehabilitate, and replace a public beach, a dune system, and other erosion control and storm damage reduction measures including the construction of a terminal groin and its associated shore anchorage system together with appurtenances thereto, including the right to (a) deposit sand; (b) accomplish any alterations of contours on said land; construct berms and dunes; (c) nourish and re-nourish periodically; (d) move, store and remove equipment and supplies; (e) perform any other work necessary and incident to the construction, periodic re-nourishment and maintenance of the Project; (f) plant vegetation on said dunes and berms; (g) erect, maintain and remove silt screens and sand fences; (h) facilitate preservation of dunes and vegetation through the limitation of access to dune areas; (i) trim, cut, fell, and remove from said land all trees, underbrush, debris, obstructions, and any other vegetation, structures and obstacles within the boundaries of the Easement Area that would hinder the above described activities, and (j) removal of the terminal groin in its entirety if directed by order of the U S Army Corps of Engineers.

. There is reserved, however, to the Grantor, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired.

TO HAVE AND TO HOLD the aforesaid easement (including access easement) and all privileges and appurtenances thereunto belonging to the Grantee and its successors and assigns forever. Grantee shall have the right to temporarily or permanently assign this easement to the federal, state or county governments, or any agency or department thereof or any other governmental authority formed to implement beach re-nourishment or stabilization of the beach within the Town.

AND the Grantor covenants with the Grantee that Grantor is seized of the premises in fee simple, has the right to convey this easement, that the property is free from encumbrances and that it will warrant and defend the said title to the same against the claims of all persons whomsoever.

IN WITNESS WHEREOF, the Grantor has hereunto executed this easement the day and year first above written.

(NAME) (SEAL)

(NAME) (SEAL)

STATE OF NORTH CAROLINA

COUNTY OF _____

I, _____, a Notary Public in and for the State and County aforesaid, do hereby certify that _____ and _____ personally appeared before me this day and acknowledged the due and voluntary execution of the foregoing instrument for the purposes set forth therein.

Witness my hand and notarial seal, this the _____ day of _____, 2015.

My commission expires:

_____, NOTARY PUBLIC

EASEMENT

STATE OF NORTH CAROLINA

COUNTY OF BRUNSWICK

THIS EASEMENT, made this ____ day of May, 2015, by and between _____ and _____, hereinafter, whether one or more, referred to as "GRANTOR," and **Town of Ocean Isle Beach**, a North Carolina municipal corporation, Three West Third Street, Ocean Isle Beach, NC 28469, hereinafter, whether one or more, referred to as "GRANTEE":

WITNESSETH:

THAT WHEREAS, Grantee is undertaking a Terminal Groin Project within the Town to help control erosion and protect waterfront lots; and

WHEREAS, in order to properly construct and complete the project, it is necessary for Grantee to acquire certain easements for said project from affected property owners; and

WHEREAS, Grantor is the owner of that certain tract of land located in Ocean Isle Beach, Brunswick County, North Carolina, more particularly described as PIN no. 108510450937 which property is affected by said project; and

WHEREAS, Grantor acknowledges that they will also benefit from said project; and

WHEREAS, Grantee has requested and Grantor has agreed to convey the necessary easement to Grantee to enable it to undertake said project;

NOW, THEREFORE, the Grantor, for a valuable consideration, including the benefits Grantor may derive from said project, the receipt of which is hereby acknowledged, has and by these presents does give, grant, bargain, dedicate and convey unto the Grantee and its successors and assigns a perpetual, irrevocable and assignable easement and right-of-way in, on, over, through and across the land hereinafter described for the use by the Grantee and its' representatives, agents, employees, officials, engineers, consultants, surveyors, contractors, subcontractors, and assigns. The easement area shall include all of that portion of the above-described property. located 100 feet south (landward) of the Mean High Water shoreline along the Atlantic Intracoastal Waterway.

Grantor also conveys and grants to Grantee a non-exclusive access easement across any portion of the above-described property for the purpose of permitting Grantee's inspection and, if necessary, observation, maintenance and repair of the Grantee's work and activities within the easement area (the "Access Easement")..

This easement is granted for the purpose of allowing Grantee to use the Easement Area for the construction of temporary offloading facilities, stockpiling of materials, utilization of heavy machinery to place and remove said material, and the staging and transportation of construction materials together with the right of ingress and egress for such work. Grantee may use the Easement Area to evaluate, survey, inspect, construct, preserve, patrol, protect, operate, maintain, repair, rehabilitate, and replace a public beach, a dune system, and other erosion control and storm damage reduction measures including the construction of a terminal groin and its associated shore anchorage system together with appurtenances thereto, including the right to (a) deposit sand; (b) accomplish any alterations of contours on said land; (c) move, store and remove equipment and supplies; (d) perform any other work necessary and incident to the construction, periodic re-nourishment and maintenance of the Project; (e) plant vegetation ; (f) erect, maintain and remove silt screens and sand fences; (g) trim, cut, fell, and remove from said land all trees, underbrush, debris, obstructions, and any other vegetation, structures and obstacles within the boundaries of the Easement Area that would hinder the above described activities, and (h) removal of the terminal groin in its entirety if directed by order of the U S Army Corps of Engineers.

. There is reserved, however, to the Grantor, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired.

TO HAVE AND TO HOLD the aforesaid easement (including access easement) and all privileges and appurtenances thereunto belonging to the Grantee and its successors and assigns forever. Grantee shall have the right to temporarily or permanently assign this easement to the federal, state or county governments, or any agency or department thereof or any other governmental authority formed to implement beach re-nourishment or stabilization of the beach within the Town.

AND the Grantor covenants with the Grantee that Grantor is seized of the premises in fee simple, has the right to convey this easement, that the property is free from encumbrances and that it will warrant and defend the said title to the same against the claims of all persons whomsoever.

IN WITNESS WHEREOF, the Grantor has hereunto executed this easement the day and year first above written.

(NAME) (SEAL)

(NAME) (SEAL)

STATE OF NORTH CAROLINA

COUNTY OF _____

I, _____, a Notary Public in and for the State and County aforesaid, do hereby certify that _____ and _____ personally appeared before me this day and acknowledged the due and voluntary execution of the foregoing instrument for the purposes set forth therein.

Witness my hand and notarial seal, this the _____ day of _____, 2015.

My commission expires:

_____, NOTARY PUBLIC

EASEMENT

STATE OF NORTH CAROLINA

COUNTY OF BRUNSWICK

THIS EASEMENT, made this ____ day of May, 2015, by and between _____ and, _____, hereinafter, whether one or more, referred to as "GRANTOR," and **Town of Ocean Isle Beach**, a North Carolina municipal corporation, Three West Third Street, Ocean Isle Beach, NC 28469, hereinafter, whether one or more, referred to as "GRANTEE":

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THAT WHEREAS, Grantee is undertaking a Terminal Groin Project within the Town to help control erosion and protect waterfront lots; and

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WHEREAS, Grantor is the owner of that certain tract of land located in Ocean Isle Beach, Brunswick County, North Carolina, more particularly described as _____, which property is affected by said project; and

WHEREAS, Grantor acknowledges that they will also benefit from said project; and

WHEREAS, Grantee has requested and Grantor has agreed to convey the necessary easement to Grantee to enable it to undertake said project;

NOW, THEREFORE, the Grantor, for a valuable consideration, including the benefits Grantor may derive from said project, the receipt of which is hereby acknowledged, has and by these presents does give, grant, bargain, dedicate and convey unto the Grantee and its successors and assigns a perpetual, irrevocable and assignable easement and right-of-way in, on, over, through and across the land hereinafter described for the use by the Grantee and its'

representatives, agents, employees, officials, engineers, consultants, surveyors, contractors, subcontractors, and assigns. The easement area shall be that portion of the above-described property located between (1) the mean high water mark of the Atlantic Ocean, and (2) the landward toe of a sandbag revetment (if present). In the absence of a sandbag revetment, the easement area shall be that portion of the Property located between (3) the mean high water mark of the Atlantic Ocean, and (4) a point 15 feet seaward of the seaward most edge of any Permanent Structure located on the Property as of the date of this Easement. In the absence of a sandbag revetment or a Permanent Structure, the easement area shall be that portion of the Property located between (5) the mean high water mark of the Atlantic Ocean, and (6) an eastern and/or western extension of the easement area for the property or properties adjoining the Property whose comparable easement areas have been established using either the sandbag revetment or a Permanent Structure located on such adjoining property (the "Easement Area").

Grantor also conveys and grants to Grantee a non-exclusive access easement across any portion of the above-described property for the purpose of permitting Grantee's inspection and, if necessary, observation, maintenance and repair of the Grantee's work and activities within the easement area (the "Access Easement")..

This easement is granted for the purpose of allowing Grantee to use the Easement Area for the placement of beach compatible material, utilization of heavy machinery to place said material, construction of the terminal groin and anchor section, and the staging and transportation of construction materials together with the right of ingress and egress for such work. Grantee may use the Easement Area to evaluate, survey, inspect, construct, preserve, patrol, protect, operate, maintain, repair, rehabilitate, and replace a public beach, a dune system, and other erosion control and storm damage reduction measures including the construction of a terminal groin and its associated shore anchorage system together with appurtenances thereto, including the right to (a) deposit sand; (b) accomplish any alterations of contours on said land; construct berms and dunes; (c) nourish and re-nourish periodically; (d) move, store and remove equipment and supplies; (e) perform any other work necessary and incident to the construction, periodic re-nourishment and maintenance of the Project; (f) plant vegetation on said dunes and berms; (g) erect, maintain and remove silt screens and sand fences; (h) facilitate preservation of dunes and vegetation through the limitation of access to dune areas; (i) trim, cut, fell, and remove from said land all trees, underbrush, debris, obstructions, and any other vegetation, structures and obstacles within the boundaries of the Easement Area that would hinder the above described activities, and (j) removal of the terminal groin in its entirety if directed by order of the U S Army Corps of Engineers.

. There is reserved, however, to the Grantor, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired.

For purposes of this easement, the following definitions shall apply:

Permanent Structure: A building, including a principal building and any accessory building(s), covered decks, swimming pool, and improvements associated with a swimming pool, but not including any uncovered decks or any improved dune walkover access or any associated gazebos or other improved portions of an improved dune walkover access.

Sandbag Revetment: A stack of sandbags installed along the ocean side of the property to provide temporary erosion protection.

TO HAVE AND TO HOLD the aforesaid easement (including access easement) and all privileges and appurtenances thereunto belonging to the Grantee and its successors and assigns forever. Grantee shall have the right to temporarily or permanently assign this easement to the federal, state or county governments, or any agency or department thereof or any other governmental authority formed to implement beach re-nourishment or stabilization of the beach within the Town.

AND the Grantor covenants with the Grantee that Grantor is seized of the premises in fee simple, has the right to convey this easement, that the property is free from encumbrances and that it will warrant and defend the said title to the same against the claims of all persons whomsoever.

IN WITNESS WHEREOF, the Grantor has hereunto executed this easement the day and year first above written.

(NAME) (SEAL)

(NAME) (SEAL)

STATE OF NORTH CAROLINA
COUNTY OF _____

I, _____, a Notary Public in and for the State and County aforesaid, do hereby certify that _____ and _____ personally appeared before me this day and acknowledged the due and voluntary execution of the foregoing instrument for the purposes set forth therein.

Witness my hand and notarial seal, this the _____ day of _____, 2015.

My commission expires:

_____, NOTARY PUBLIC

Appendix F: Adjacent Riparian Landowner Notifications and Session Law Notification

COASTAL PLANNING & ENGINEERING OF NORTH CAROLINA, INC.

4038 MASONBORO LOOP ROAD, WILMINGTON, NC 28409

910-791-9494 PHONE 910-791-4129 FAX

May 14, 2015

Re: Town of Ocean Isle Beach Shoreline Protection Project

Adjacent Riparian Landowner Notification

Dear Sir or Madam:

On behalf of the Town of Ocean Isle Beach (Town), Coastal Planning & Engineering of North Carolina (CPE-NC), Inc. is submitting a Coastal Area Management Act (CAMA) Major Permit application to the North Carolina Division of Coastal Management (NC DCM) for work occurring within an Area of Environmental Concern.

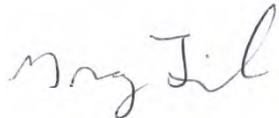
As more completely described in the attached application, the Town intends to submit a CAMA Major Permit application to allow for the construction of a terminal groin and associated sand placement on the eastern end of the Town's oceanfront shoreline.

Attached to this notice, please find a copy of the application as submitted to the NC DCM office. Within 30 days from receipt of this notice, you may submit comments regarding the referenced project to the following address:

Attn: Holley Snider
Division of Coastal Management
North Carolina Department of Environment and Natural Resources
127 Cardinal Drive Extension
Wilmington, North Carolina 28405

Sincerely,

COASTAL PLANNING & ENGINEERING OF NORTH CAROLINA, INC.



Greg Finch, Agent, CPE-NC

Enclosures: Application for Major Development Permit

Pursuant to the requirement of Session Law 2013-384 Senate Bill 151 Part II (e) (3), the Town of Ocean Isle Beach is notifying all property owners and local governments that may be affected by the construction of the proposed terminal groin and accompanying beach nourishment project.

Information on the proposed Ocean Isle Beach Shoreline Protection Project, which includes the construction of a terminal groin and associated beach nourishment, can be found on the Town's website at <http://www.oibgov.com/shoreline-protection.cfm>

Comments regarding the referenced project may be submitted to the following address:

Attn: Holley Snider
Division of Coastal Management
North Carolina Department of Environment and Natural Resources
127 Cardinal Drive Extension
Wilmington, North Carolina 28405

Appendix G: Habitat Mapping

Purpose and Goals

It is anticipated that the implementation of the proposed project has the potential to impact certain biological resources and habitats found within the proposed Permit Area, particularly within the complex of Shallotte Inlet. These include resources such as shellfish habitat, salt marsh, and intertidal communities found within the area to be investigated. Determining the baseline conditions of these resources prior to construction is a fundamental step in quantifying changes in response to the implementation of Alternative 5. Existing data were utilized to delineate and characterize habitats and select species within the proposed Permit Area. Data gathered from these activities provided the baseline conditions of a number of biological resources as reported in Chapter 4 of this document. The purpose of the baseline habitat mapping effort was to identify the current extent of the biological resources within the area prior to the construction of the terminal groin and subsequent beach fill and will serve as the baseline assessment of the subject resources within the identified Shallotte Inlet Habitat Mapping Area, as designated in Figure 1. Subsequent habitat mapping efforts will be utilized to assess the extent of change to these habitats within the designated boundary following construction activities.

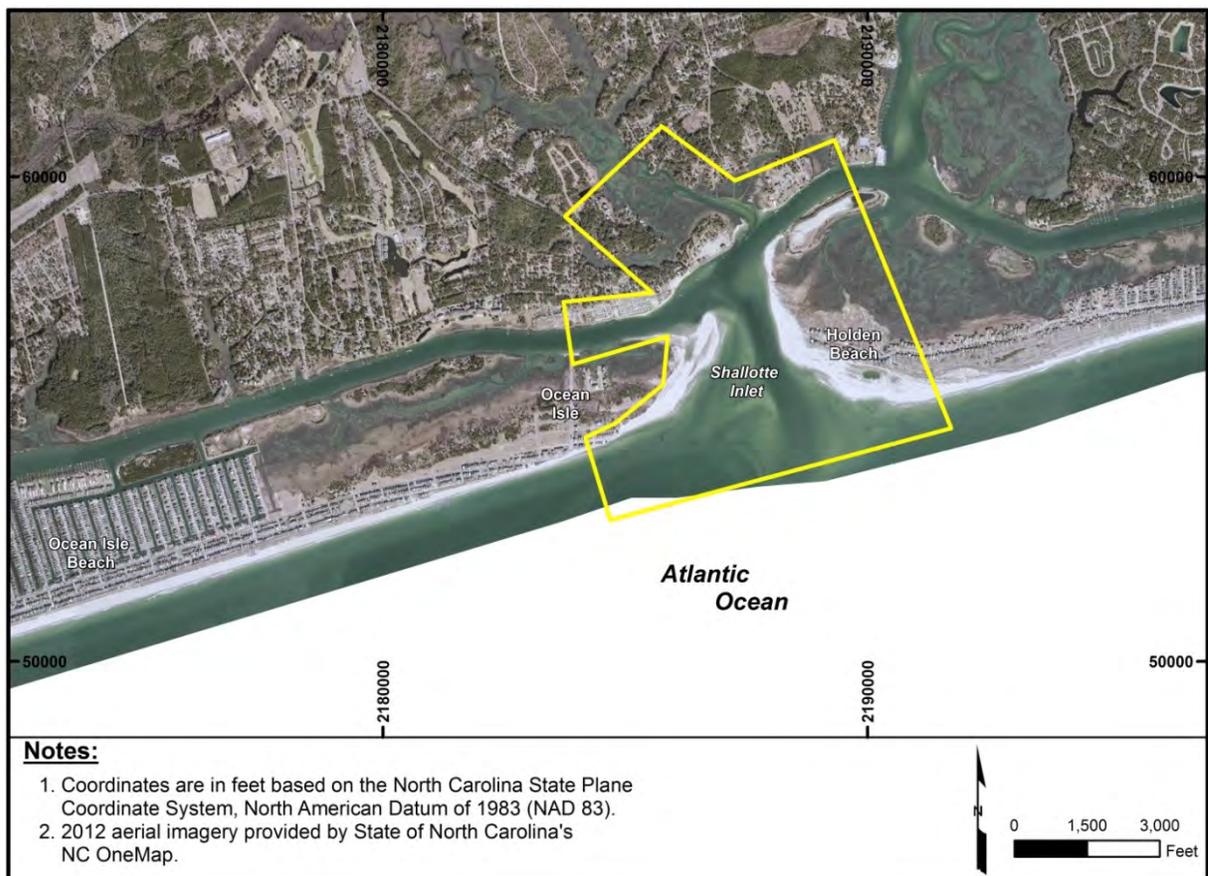


Figure 1- Shallotte Inlet Habitat Mapping Area

Monitoring Schedule

Pre-construction photographic interpretation of biotic communities and groundtruthing investigations within the proposed habitat mapping area were completed in March 2014 utilizing high-resolution aerial photography acquired in 2012.

The acquisition of high-resolution aerial photographs, ground-truth investigations and identification of biotic communities will be conducted within the Shallotte Inlet Habitat Mapping Area between 1 September and 30 November in the three (3) years following construction of the proposed project. All surveys will be compared to the pre-construction conditions observed from the 2012 aerial photography.

Monitoring Parameters

Aerial Photography:

Cartographic aerial photography will include the acquisition of ortho-rectified color digital imagery of the 928-acre Shallotte Inlet Habitat Mapping Area. Resolution of the acquired imagery will be sufficient to accurately delineate and map habitats and features of environmental significance within the survey area. The aerial platform from which the imagery is acquired will have an onboard GPS that will provide an accurate basis for product correction. NMFS will be consulted regarding the performance specifications on the imagery prior to finalizing the plan by the Town of Ocean Isle Beach and authorizing a contract.

In compliance with State and Federal agency requests, digital image acquisition will be scheduled, to the greatest extent possible, to coincide with good weather conditions and an ebb tide that may provide for increased accuracy of habitat interpretation. Considering the weather-dependent nature of this activity, every effort will be made to accomplish this task under optimum conditions.

Aerial imagery will be collected in accordance with NOAA's Coastal Services Center 2001 *Guidance for Benthic Habitat Mapping – An Aerial Photographic Approach* (Finkbeiner et al., 2001). Aerial photographs include the acquisition of ortho-rectified color digital imagery of the Shallotte Inlet Habitat Mapping area. Resolution of the acquired imagery will be sufficient (<0.6 m [2 ft]) to accurately delineate and map habitats and features of environmental significance within the survey area. An emphasis will be placed on those marine and estuarine habitats located immediately within and adjacent to the Shallotte Inlet Habitat Mapping area. The aerial platform from which the imagery is acquired will include an onboard Global Positioning System (GPS) that will provide an accurate basis for product correction.

Salt Marsh, Intertidal Shoals, Supratidal Shoals and Subtidal Communities:

Visual interpretations of biotic community types were digitally mapped using ArcView 9.3 software over high-resolution georeferenced digital multispectral aerial photographs as part of the initial pre-construction assessment of biotic communities. The methods employed for interpretation of aerial photography included visual analysis of color variations in the photographs to delineate habitats (dark areas = submerged land; white areas = sediment exposed above high tide line). Resolution of this imagery (< 2 feet) allowed for adequate delineation of the habitats and features within the Permit Area. Following the development of the preliminary biotic community mapping within the Permit Area via visual interpretation, field investigations were

conducted to groundtruth the initial delineations. Sites selected for groundtruthing were determined by identifying areas that were difficult to classify from the aerial photography. These locations were visited via boat and the biotic community type (as identified through aerial photographic interpretation) was then verified. Based on the results of the field investigations, the preliminary habitat map was revised as necessary and acreages were determined.

Reporting

The final product from each post-construction assessment will include a report describing the biotic community map derived from the methods explained above. This report will summarize the acreage of each habitat identified and will compare the acreages to previous investigations (pre-construction and any post-construction efforts that may have occurred). Results of these mapping efforts will be incorporated into the Global Information System (GIS) database developed for this project. Acreages of each habitat type present within the permit area will be provided in a report to the USACE – Wilmington District, NMFS, USFWS, NCWRC and NCDCM by January 1st of each year.