Public Hearing: Figure “8” Island Shoreline Management Project

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Tools Used to Evaluate Alternatives

• Geomorphic analysis of Rich Inlet and adjacent shorelines (by Dr. William Cleary – Sub Appendix A in SEIS)

• Numerical Models:
  ❖ Primary – Delft3D
  ❖ Secondary - GENESIS
Figure 9. Aerial photograph mosaic (2006) depicting position of the ebb channel between 1938 and 2007. During the mid 1990s the ebb channel shifted to the NE ~1,184 ft and has remained in same general location. Note the changing alignment of outer portion of the ebb channel.
Shoreline Transects
(Dr. William Cleary Report – Sub Appendix A in SEIS)

Figure 2. Aerial mosaic (2006) depicting the ebb channel baseline position and the estuarine and oceanfront shoreline transect locations.
Figure Eight Island 1938-2007 Shorelines
(Dr. William Cleary Report – Sub Appendix A in SEIS)
Figure 13. Aerial photograph (2007) depicting selected (8) shoreline positions along HI since 1938 and transect locations (T21-41). The entirety of Hutaff Island is included within an IHA. For purposes of comparison and discussion this study has designated the Rich Inlet zone of influence to include the shoreline reach between Transect 21 and 30. Note that the relative positions of the 1938 and 1945 shorelines along the barrier. Also note the continuous retreat of the shoreline since 1938 north of T26.
Channel Orientation versus Shoreline Change
Northern 4,000 feet Figure Eight Island

- Channel Aligned Toward Figure 8
- Channel Aligned Toward Hutauff
- Shore Normal = 141 deg.

- Shore normal
- Channel Orientation
- Cumulative Shoreline Change 60+00 to 100+00
Maximum Recession at North End

Summer/Fall 1984
Erosion Zone

Flood Channel
Rich Inlet September 2007
Rich Inlet October 2014
Terminal Groin Alternatives Evaluated

NOTES:
1. COORDINATES ARE IN FEET BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM (NAD 83).
2. RICH INLET AERIAL PHOTOGRAPHY PROVIDED BY GAHAGAN AND BRYANT, DATE FLOWN JUNE 2012.
3. COASTAL WETLAND VERIFIED BY DCM STAFF ON APRIL 16, 2013.

LEGEND:
- CREEK LIMIT
- COASTAL WETLAND LINE
- TERMINAL GROIN DESIGN
  - TERMINAL GROIN - ELEVATION 0.5'
  - TERMINAL GROIN - ELEVATION 3.5'
  - TERMINAL GROIN - ELEVATION 6'
- BURIED SHEET PILE
Alternative 2 – No New Action

Delft3D Model - Initial Condition

Bathymetry (feet NAVD), Year 0, Alt. 2 - Abandon/Retreat
Alternative 2 – No New Action
Delft3D Model - After 5-year Simulation
Alternative 5D
Delft3D Model - Immediately after Construction (Year 0)
Typical Cross-Section Rubblemound Portion of Terminal Groin

Armor Stone 7.5 to 12.5 Tons

1

2

15 ft.

Maximum Crest Elev. +6.0 ft NAVD88

1

2

15 ft.

75 feet (+/-)

Excavation Line

Foundation Layer 1.5 ft Thick
Construction Methodology
Bald Head Island Example
Construction Methodology

Bald Head Island Example

Foundation Mat

Temp Offloading Pier

Approximately 60 – 70 feet
Figure Eight Island Terminal Groin Construction Corridor
COMMENTS