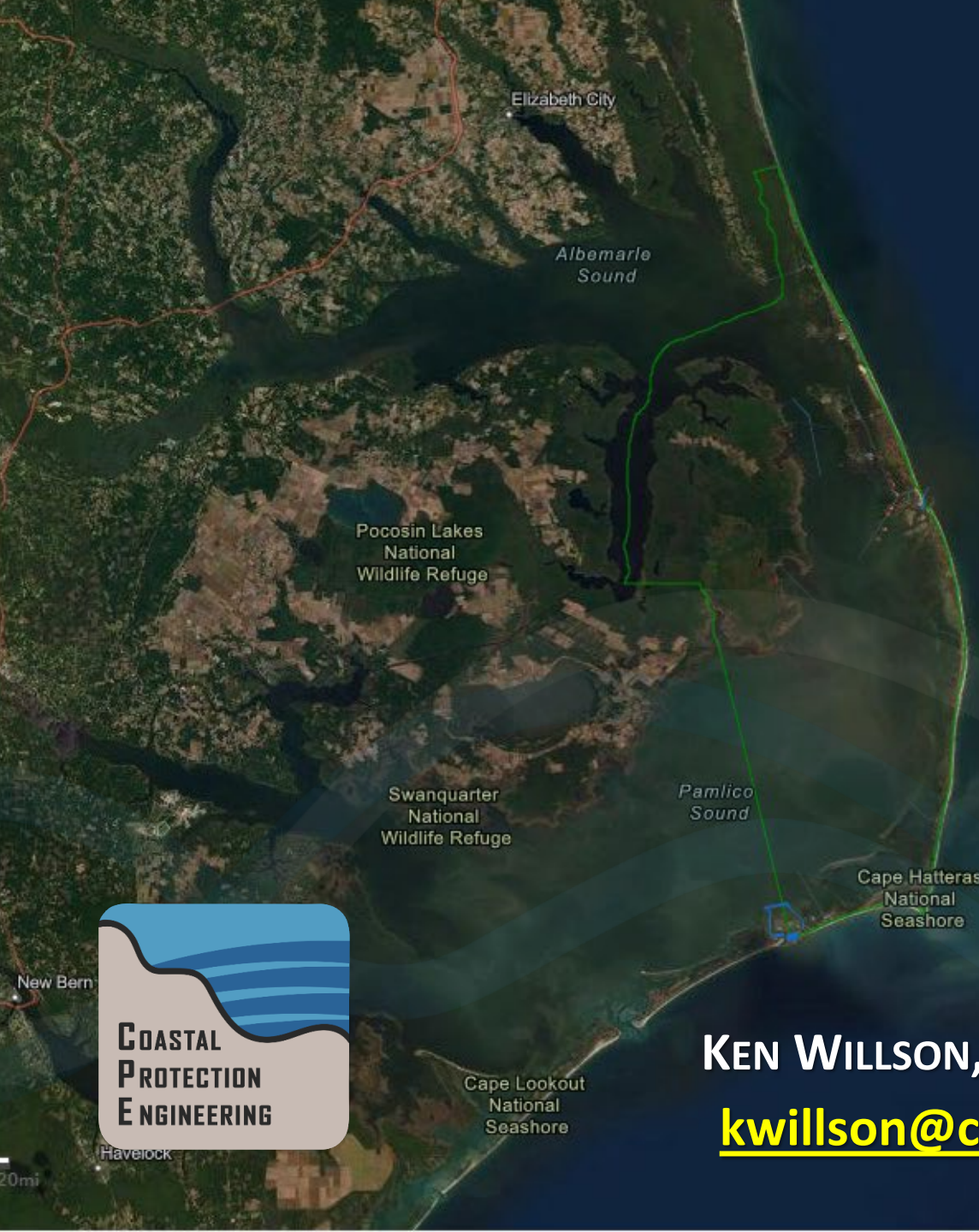


NCBIWA Local Governments Conference

April 27, 2021

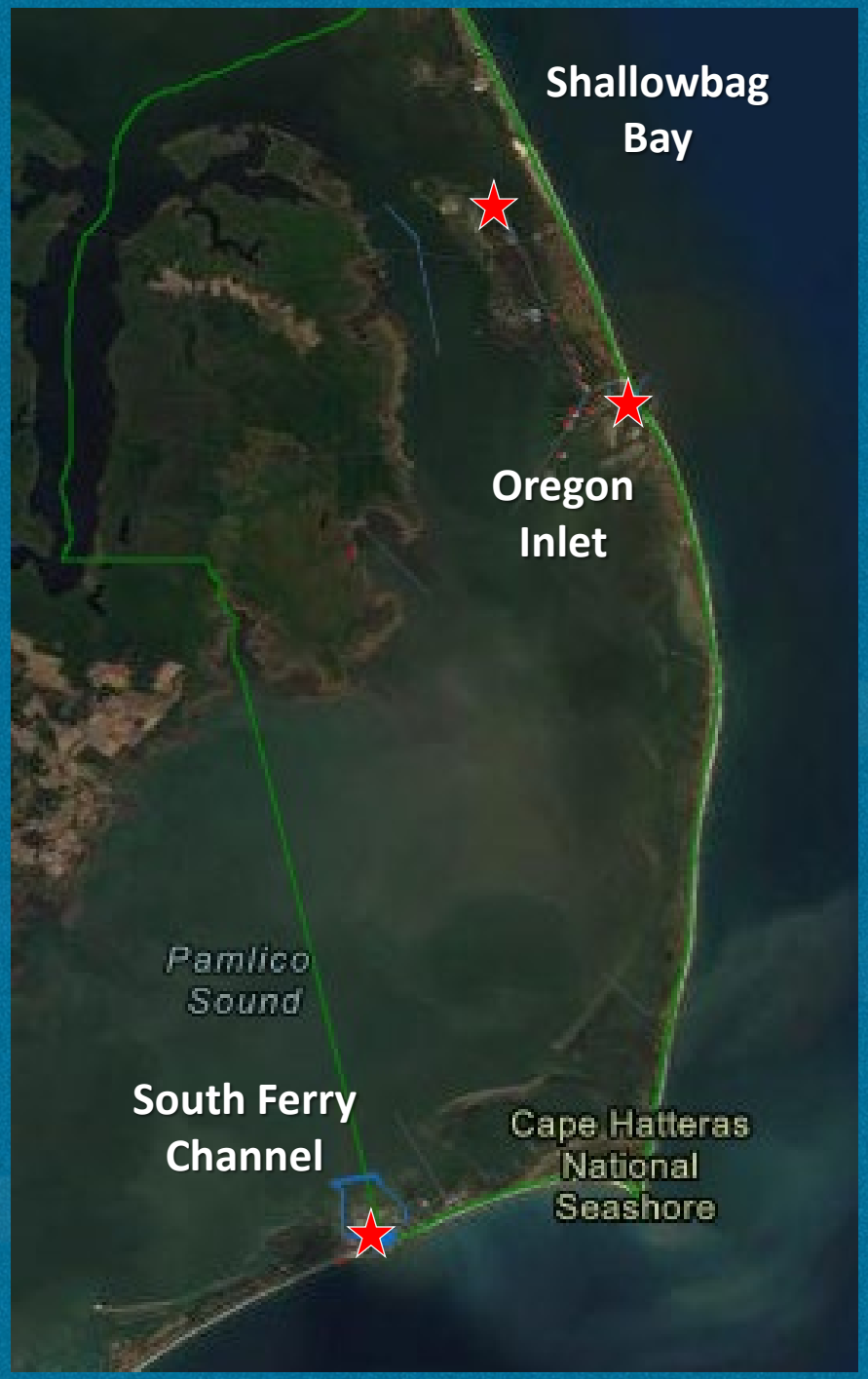
Dare County Dredge Material Management

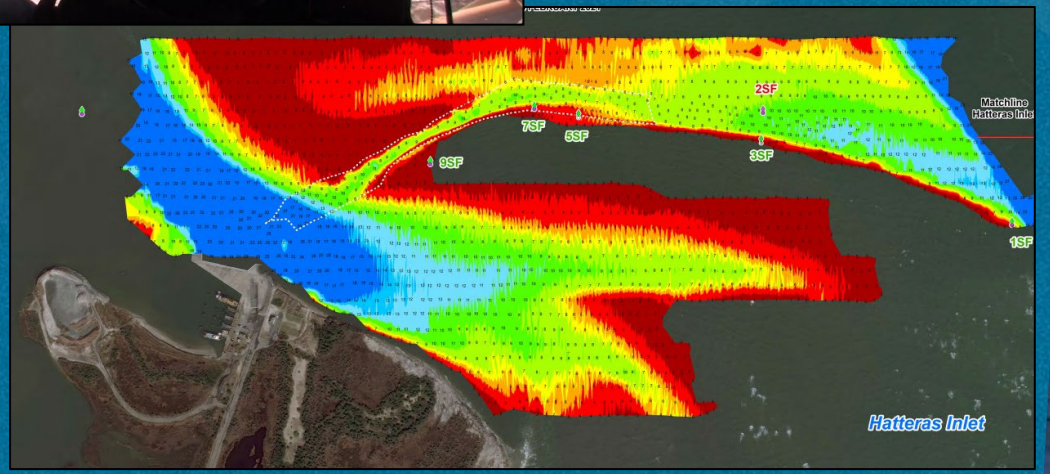
Ken Willson, Senior Program Manager

kwillson@coastalprotectioneng.com

Coastal Protection Engineering

Coastal Protection Engineering





Coastal Protection Engineering

Goals of the Project:

- Provide additional dredge material capacity
- Identify disposal alternatives that enhance Coastal Resilience

Phases of the Project:

1. Needs Assessment
2. Develop Concepts to Evaluate
3. Evaluation Criteria
4. Provide County Recommendations (Short-Term & Long-Term):
5. Obtain permits for short-term alternatives

Coastal Protection Engineering

Project Area:

Manteo-Shallowbag Bay to Wanchese portion of the Project

Notes:

1) Coordinates are in feet based on the North Carolina State Plane Coordinate System, FIPS 3200, North American Datum of 1983 (NAD 83).

2) Aerial photography collected in August 2019 by ESRI Basemap Services.

Legend:

Channels

Disposal Areas

N

0 4,000 8,000 Feet

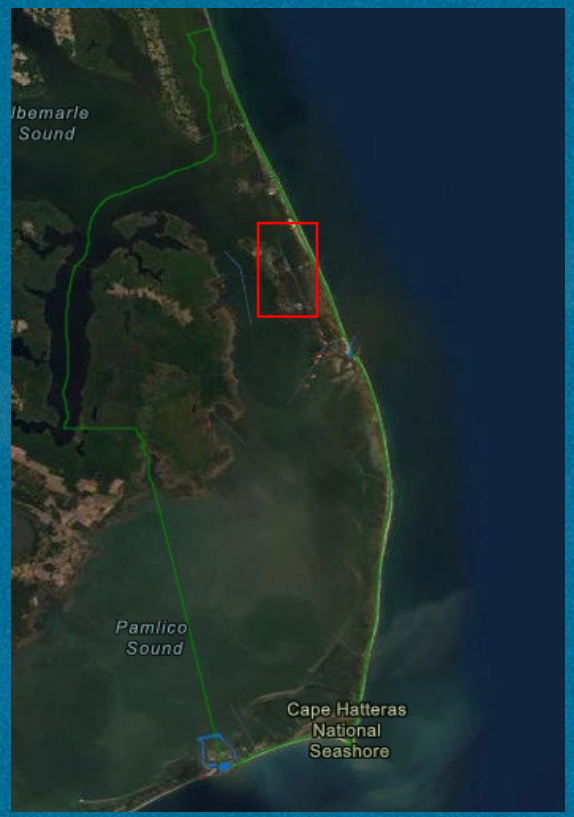
Title:

MANTEO-SHALLOWBAG BAY TO WANCHESE

DARE COUNTY, NC

COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC.

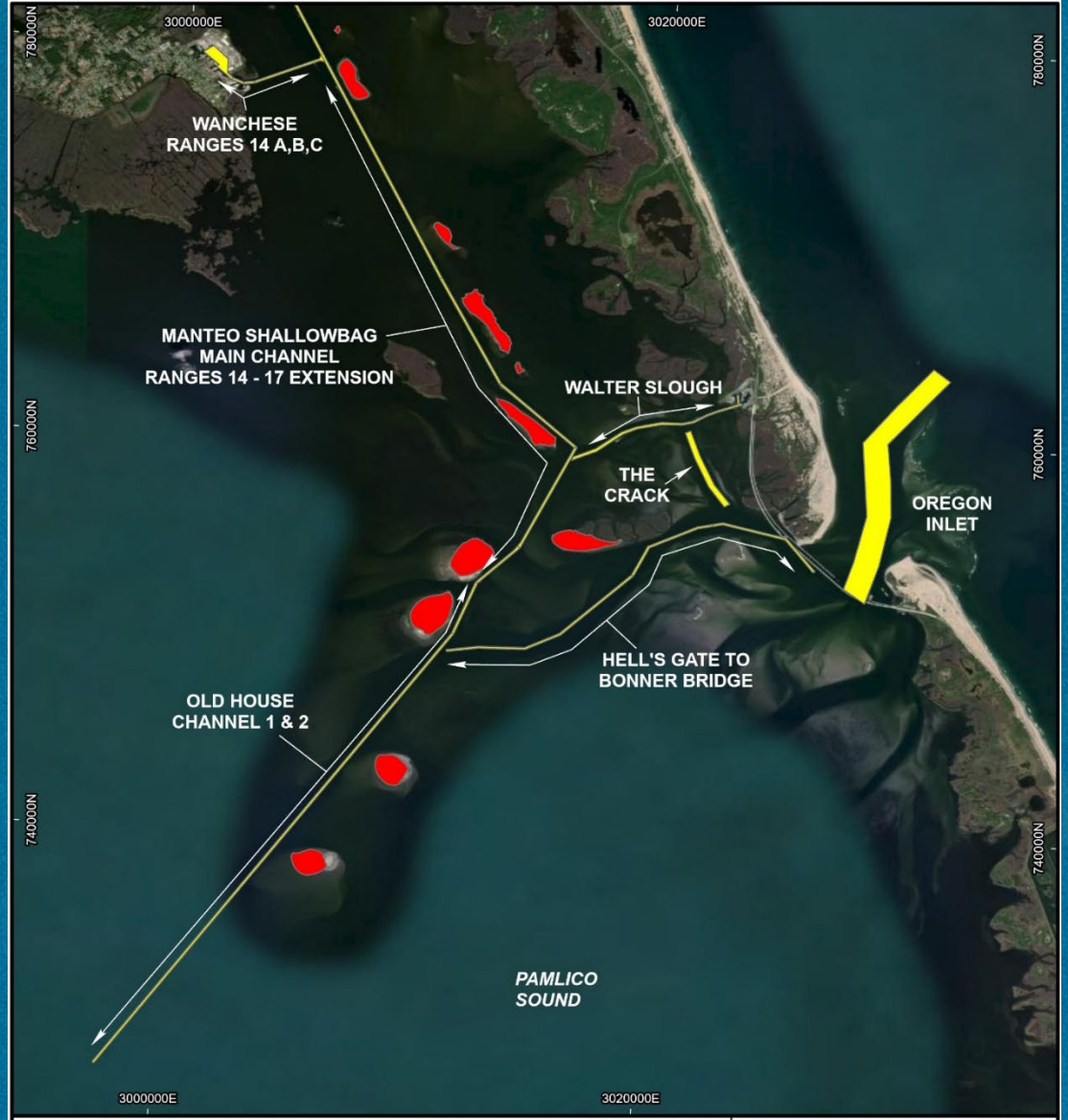
4038 MASONBORO LOOP ROAD
WILMINGTON, NC 28409
PH. (910) 399-1905



Coastal Protection Engineering

Project Area:

Old House Channel to Oregon Inlet and Wanchese to Oregon Inlet portions of the Project



Notes:

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2) Aerial photography collected in August 2019 by ESRI Basemap Services.

Legend:

Channels

Disposal Areas

N

0 5,000 10,000 Feet

Title:

OLD HOUSE CHANNEL TO OREGON INLET

DARE COUNTY, NC

COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC.

4038 MASONBORO LOOP ROAD
WILMINGTON, NC 28409
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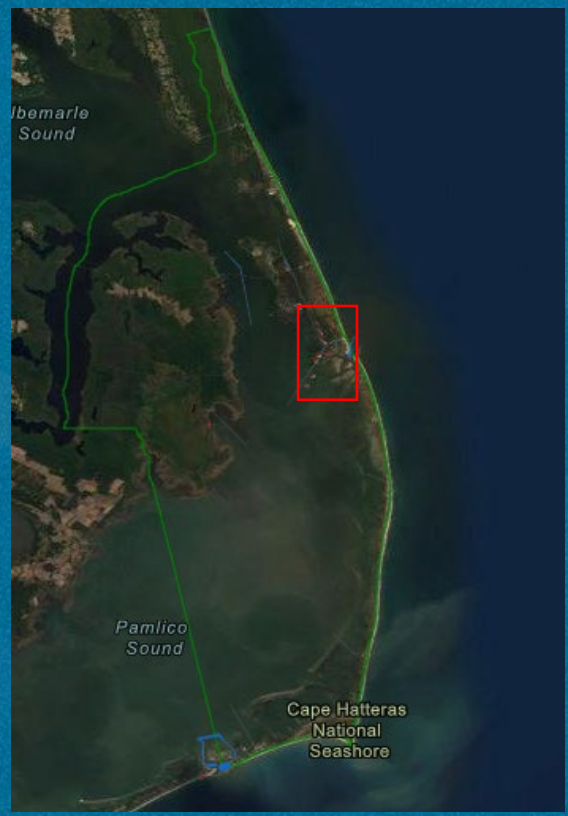


Coastal Protection Engineering

Project Area:

Stumpy Point Channel portion of the Project

Notes:

1) Coordinates are in feet based on the North Carolina State Plane Coordinate System, FIPS 3200, North American Datum of 1983 (NAD 83).

2) Aerial photography collected in August 2019 by ESRI Basemap Services.

Legend:

Channels

Disposal Areas

N

0 2,500 5,000 Feet

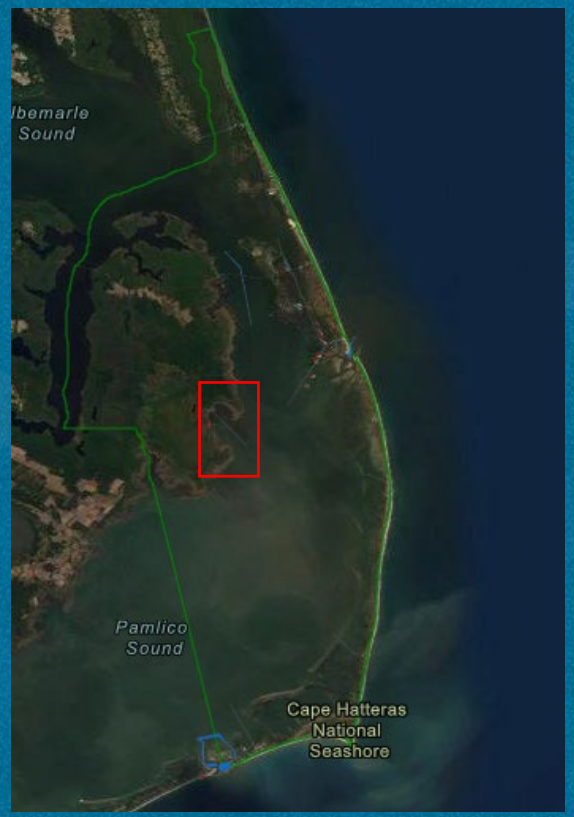
Title:

STUMPY POINT

DARE COUNTY, NC

COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC.

4038 MASONBORO LOOP ROAD
WILMINGTON, NC 28409
PH. (910) 399-1905



Coastal Protection Engineering

Project Area:

Rodanthe Channel portion of the Project

Notes:

1) Coordinates are in feet based on the North Carolina State Plane Coordinate System, FIPS 3200, North American Datum of 1983 (NAD 83).

2) Aerial photography collected in August 2019 by ESRI Basemap Services.

Legend:

Channels

Disposal Areas

N

0 1,250 2,500 Feet

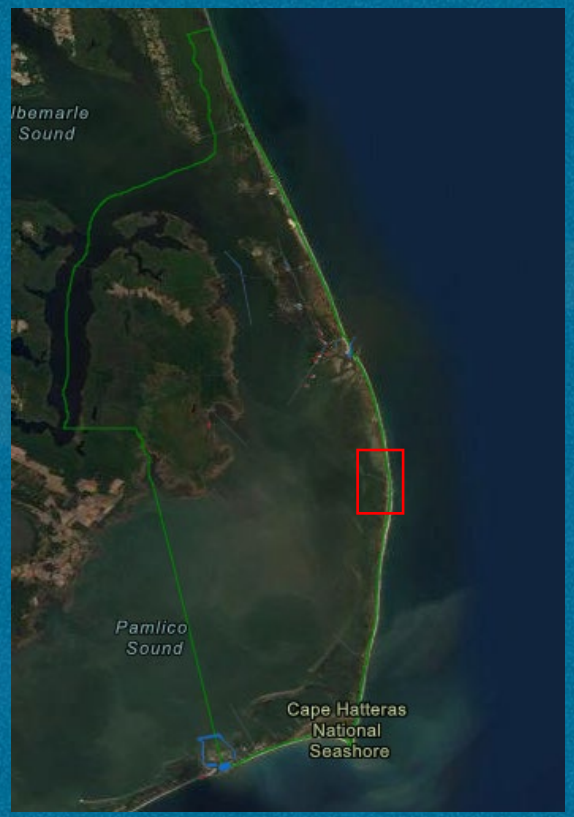
Title:

RODANTHE

DARE COUNTY, NC

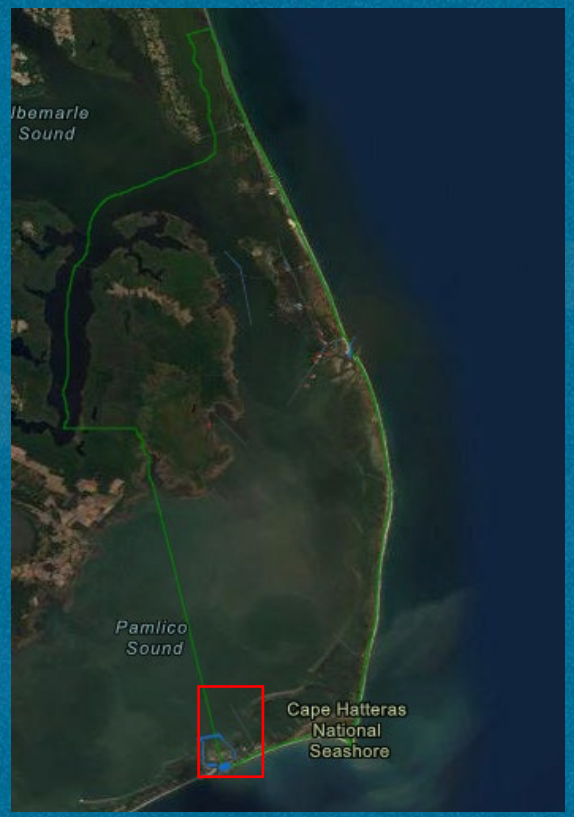
COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC.

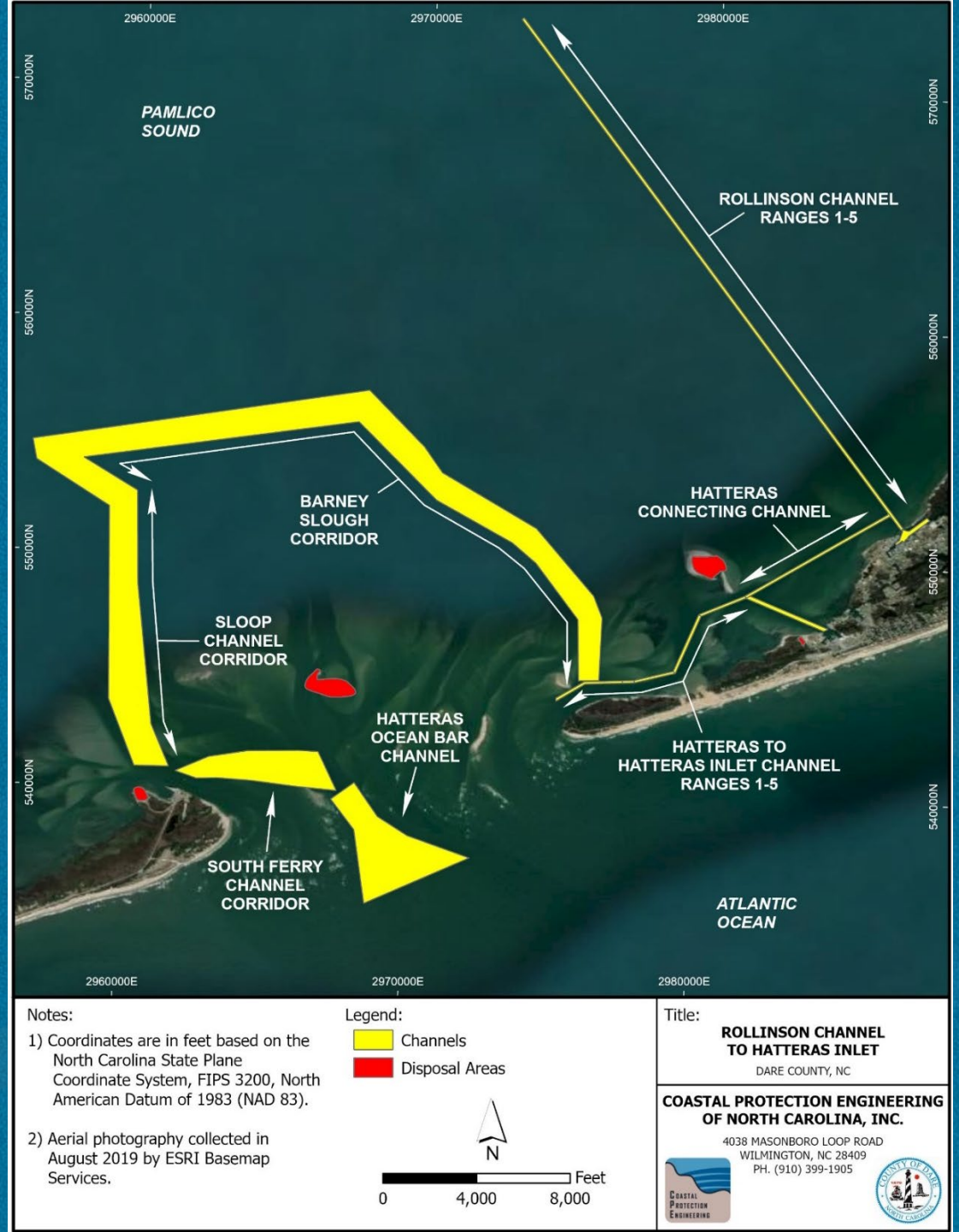
4038 MASONBORO LOOP ROAD
WILMINGTON, NC 28409
PH. (910) 399-1905



Project Area:

Rollinson Channel to Hatteras Inlet portion of the Project





Coastal Protection Engineering

Needs Assessment:

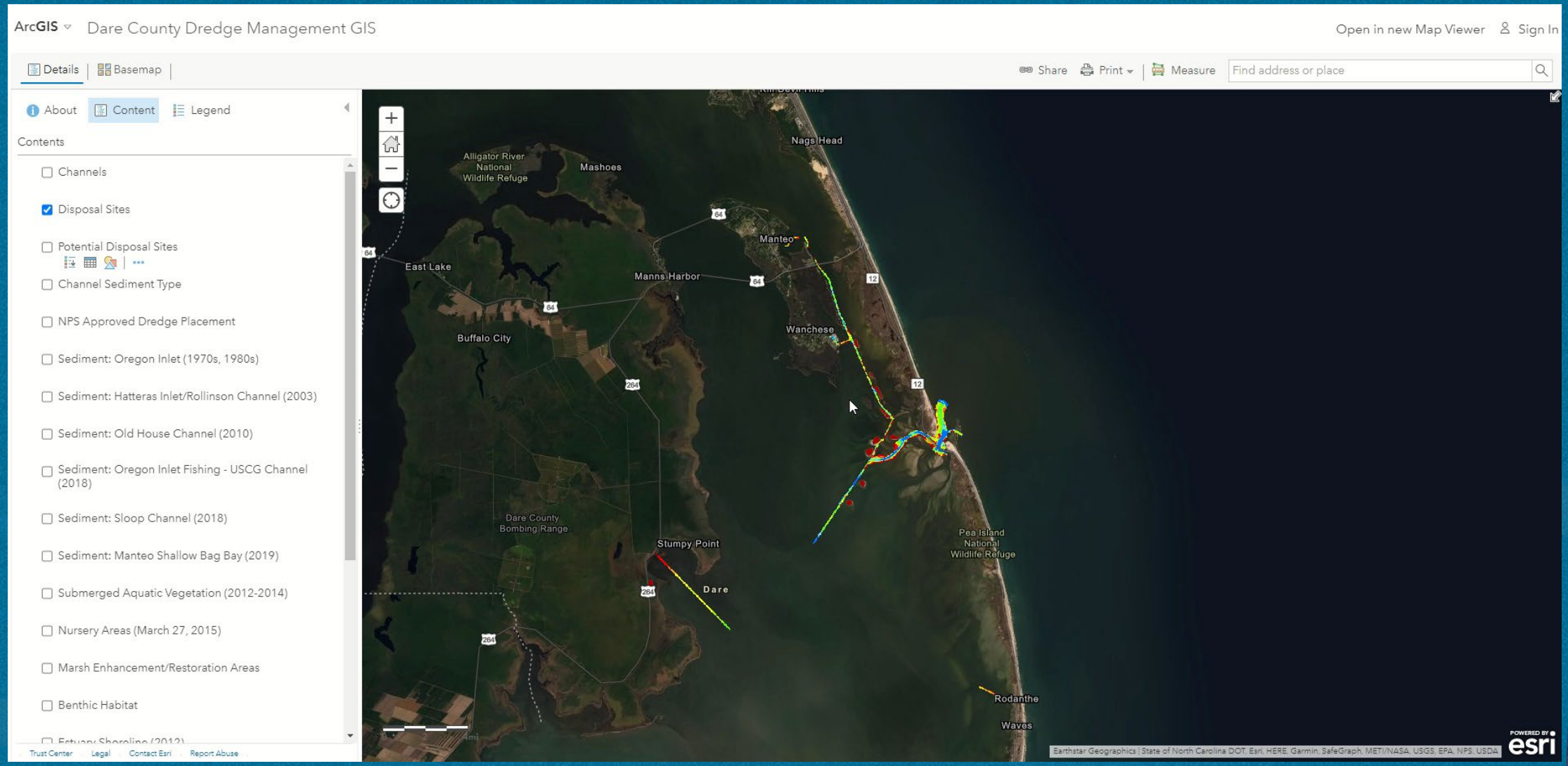
- Maintenance Statistics: (# of Events, Volume per event, Frequency, etc.)
- Type of Material Dredged (% Silt, % Sand, % Gravel, USCS)

Stakeholder Engagement:

- U.S. Army Corps of Engineers
- NC Department of Transportation
- National Parks Service
- The Nature Conservancy
- The North Carolina Coastal Federation
- North Carolina Wildlife Resource Commission

Coastal Protection Engineering

Needs Assessment:



Coastal Protection Engineering

Concept Alternatives:

- Placement of material along the shoreline to provide erosion mitigation and shoreline protection;
- Creation and restoration of bird islands that provide increased habitat;
- Thin layer placement of sediment in marshes to help these types of habitat keep up with seal level rise;
- Development of new confined disposal facilities (CDF) that can be mined for public or private benefit;
- The modification of CDFs to increase capacity;
- Marsh restoration projects like the Wanchese Section 204 Project; and
- Various concepts to facilitate routine maintenance conducted with the PPP dredge

Coastal Protection Engineering

Alternatives Screening:

- Relative Cost;
- Long-Term Capacity Provided
- Relative Difficulty to Permit
- Necessity to Obtain Easements and/or the Need to Acquire Property
- Potential for Cost Sharing with Partners
- Amount of Beneficial Uses

Coastal Protection Engineering

Recommendations:

1. Specific recommended concepts to pursue in the short-term to increase dredge material capacity;
2. Numerical modeling to evaluate alternatives in Northern Roanoke Sound

Coastal Protection Engineering

Notes:

1) Coordinates are in feet based on the North Carolina State Plane Coordinate System, FIPS 3200, North American Datum of 1983 (NAD 83).

2) Aerial photography collected in August 2019 by ESRI Basemap Services.

Legend:

- Channels
- Disposal Areas
- Potential Disposal Areas

N

0 5,000 10,000 Feet

Title:

ALTERNATIVE DISPOSAL OPTIONS
MANTEO-SHALLOWBAG NORTH
DARE COUNTY, NC

COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC.
4038 MASONBORO LOOP ROAD
WILMINGTON, NC 28409
PH. (910) 399-1905

Coastal Protection Engineering

Recommendations:

1. Specific recommended concepts to pursue in the short-term to increase dredge material capacity;
2. Numerical modeling to evaluate alternatives in Northern Roanoke Sound
3. Establish a Web-based GIS For Dredge Material Management
4. Data Collection for CDFs
5. CAP Program

Coastal Protection Engineering

Coastal Protection Engineering

Recommendations:

1. Specific recommended concepts to pursue in the short-term to increase dredge material capacity;
2. Numerical modeling to evaluate alternatives in Northern Roanoke Sound
3. Establish a Web-based GIS For Dredge Material Management
4. Data Collection for CDFs
5. CAP Program
6. Beneficial Use of Dredge Material Pilot Projects

Coastal Protection Engineering

The USACE 2020 Regional Sediment Management Optimization Update

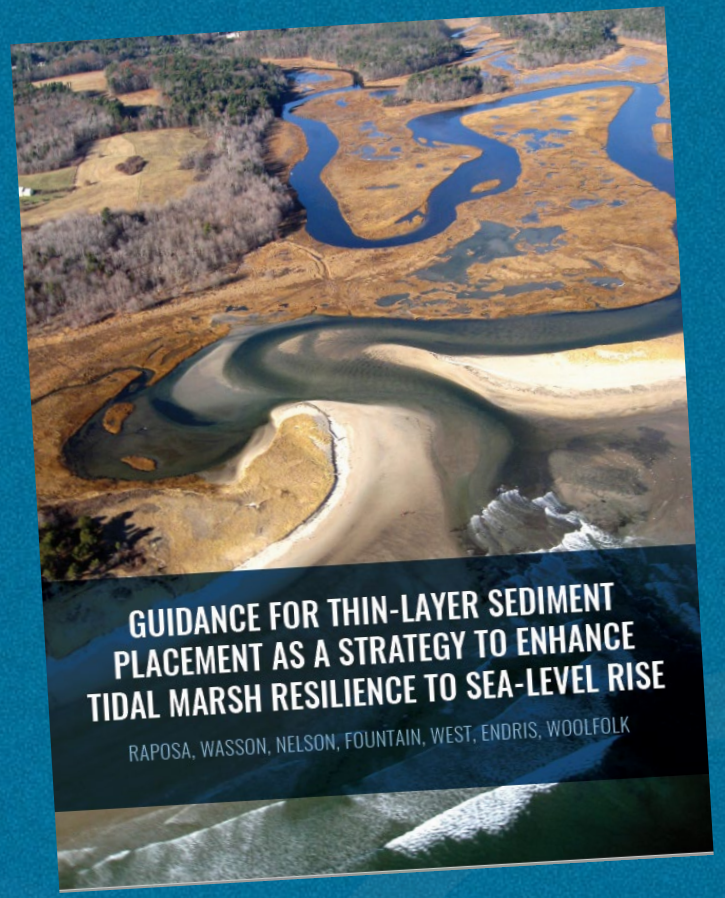
The majority of dredged material in the Wilmington District consists of sand, silt, mud, and clay that is not suitable for beach placement. The State of North Carolina does not have nearshore placement provisions that allow for or provide criteria for placement of material with higher fine material content than beach quality material. An opportunity for a research proposal could include an analysis of non-beach-quality material in key project areas to determine the volume and value of sediment that could be placed beneficially if the state's percent-fines regulations were modified or exempted.

Coastal Protection Engineering

The USACE 2020 Regional Sediment Management Optimization Update

Open water and TLP are two strategies that keep sediment in the active system; save available capacity in upland and offshore placement areas; and are typically the least-cost placement options. Wetland creation projects can support healthy ecosystems and provide significant placement capacity. These strategies, as well as other potential opportunities such as filling of relict dredge holes and coastal and wetland habitat restoration projects, could be explored by the Wilmington District.

Coastal Protection Engineering



Sponsored By: National Estuarine Research Reserve
Funded By: NOAA

- *Modern tidal marsh ecosystems evolved over thousands of years to withstand the storm-driven deposition of large volumes of sediment on the marsh plain.*
- *flood management infrastructure… have in many locations altered the natural movement of water and sediment from watersheds to tidal wetlands, and from high-energy shorelines to low-energy backbarrier embayments.*
- *TLP has the potential to functionally re-create these natural episodic processes, thereby improving and maintaining topographic, substrate, and ecological diversity in tidal wetlands.*
- *The U.S. Environmental Protection Agency encourages the use of dredged sediment and provides a general approach and steps for considering dredging and beneficial use.*
- *Since the TLP approach is one of the few viable alternatives to protect marshes in their current locations, and since past projects and experimental plots have shown promise, we recommend that funders and permitters facilitate the implementation of project-scale (beyond plot-scale), carefully selected, well-designed and monitored restoration projects using TLP.*

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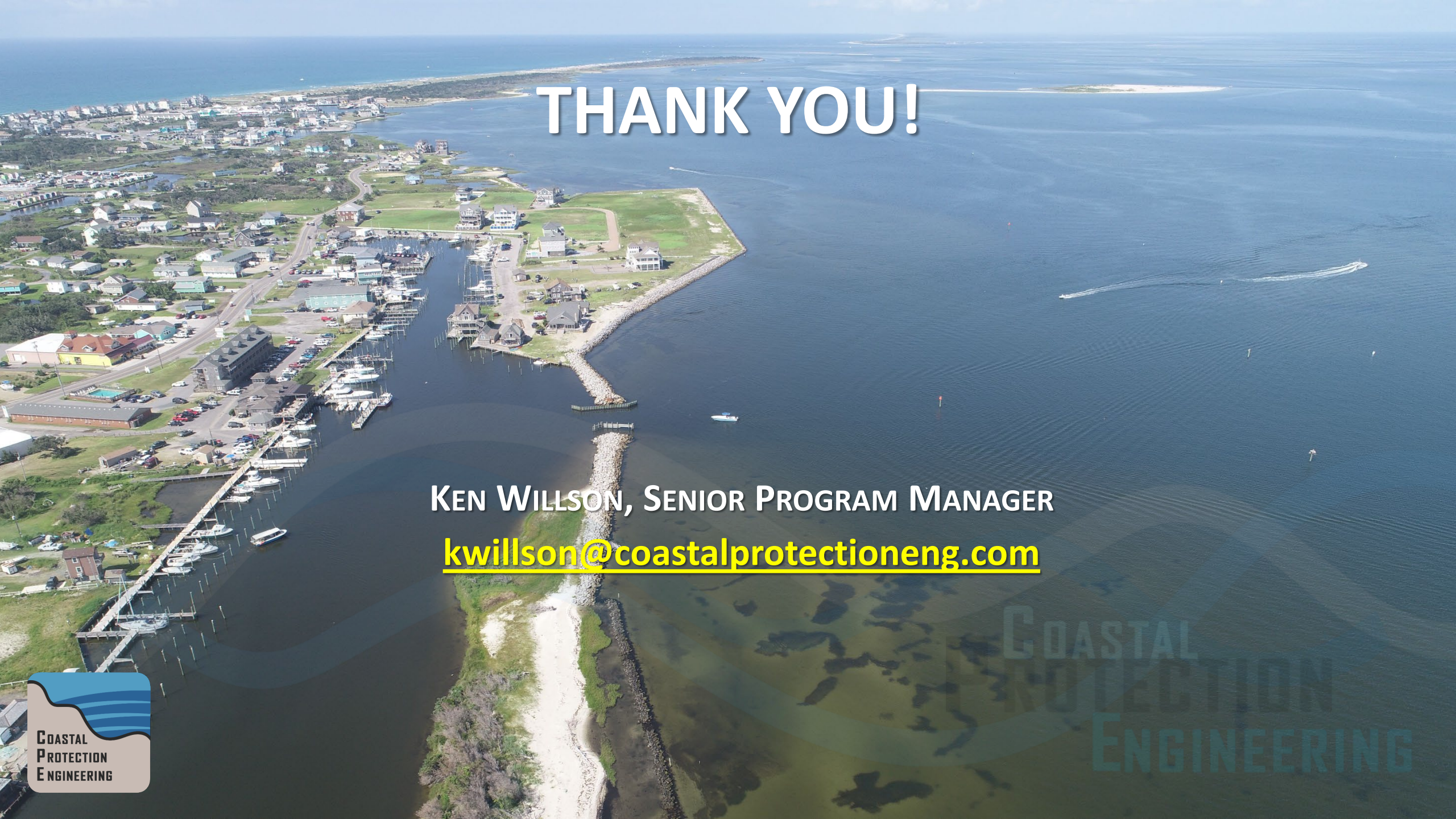

THANK YOU!

KEN WILLSON, SENIOR PROGRAM MANAGER

kwillson@coastalprotectioneng.com

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