THE TOWN OF OAK ISLAND, NORTH CAROLINA

Town of Oak Island
CSRM Meeting, Beach & Inlet Management Plan and 2024-25 Beach Renourishment Project Update

January 17, 2024

moffatt & nichol

Outline

- Beach and Inlet Management Planning Efforts
- 2024-2025 Project
- CSRM Meeting Debrief
- Q&A

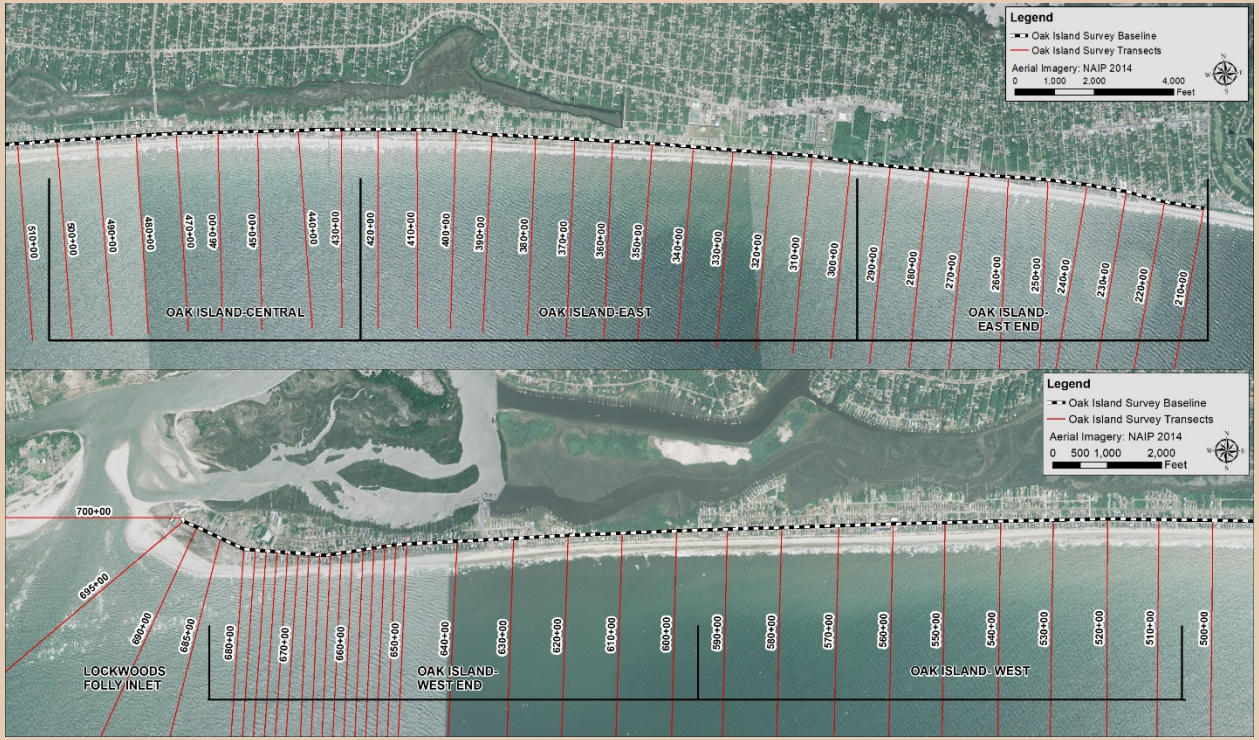
Purpose of the Beach & Inlet Management Plan

- Town of Oak Island desired to develop a comprehensive long-term beach maintenance program that will set the Town up for success
  - Town has engaged and funded M&N for the last 3 years to develop a beach nourishment "50-Year Master Plan" the OIBIMP
- Provide increased protection for Life, Safety & Infrastructure during storm events
- Increase overall Town resilience against background erosion and storm events which allows for quicker recovery for the Town by minimizing damage
  - Healthy(wide) Beach + Vegetation = Resilience
- Increase the overall health of the beach to attract tourism to the community
- 30-Year Beach Management Plan approved by Coastal Resources Commission on June 15, 2023 (up for renewal in 2028) to restore some of the protections the Development Line provided oceanfront property owners prior to August 1, 2022

Annual Monitoring

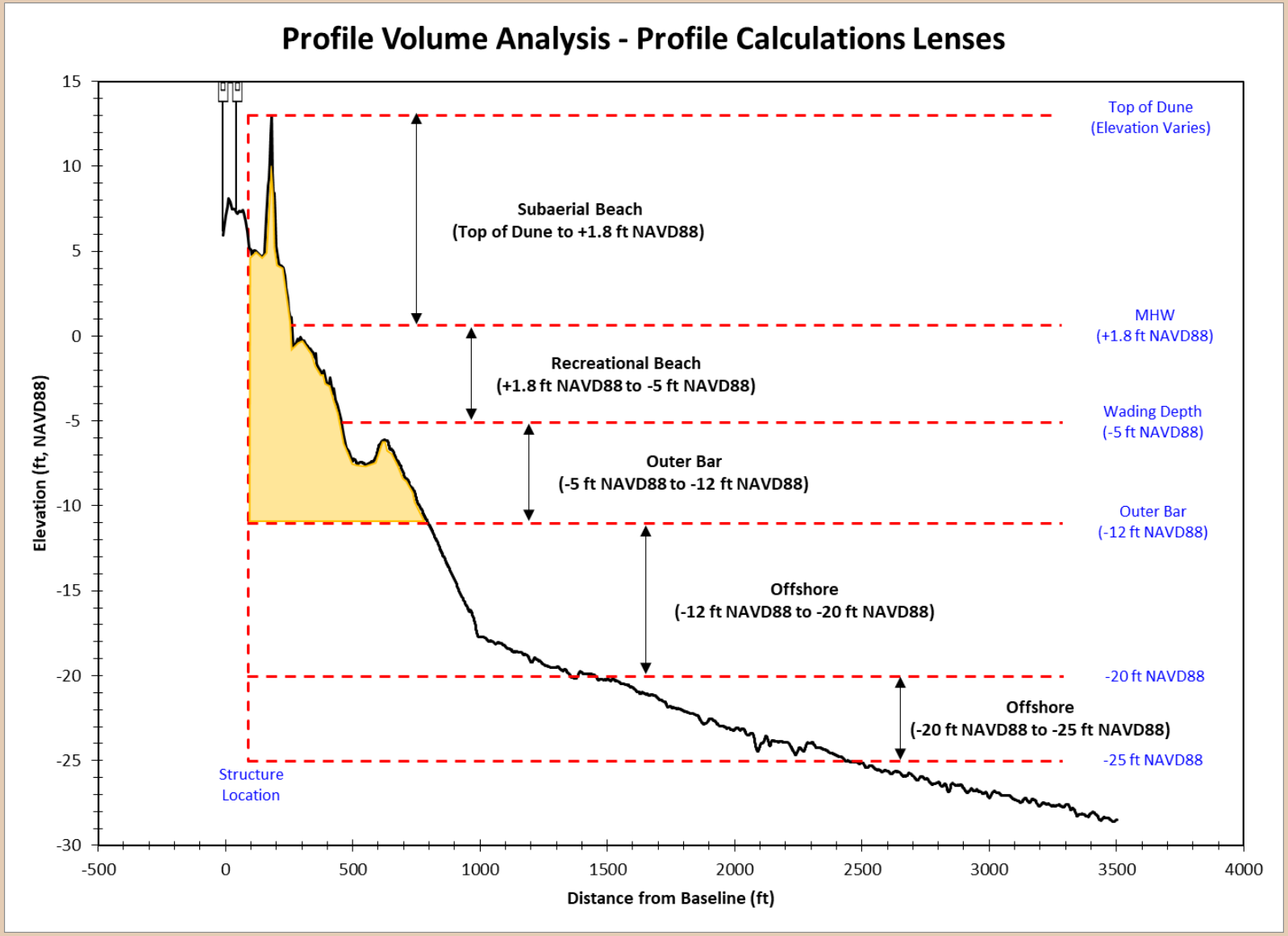
- Oak Island Shoreline Mapping Program (OISMP) initiated 2016, based on USACE transect locations, with some additions (1000 ft spacing plus additional in hotspot areas)
  - Tracks shoreline and volume changes

Date	Survey Type
7/18/2014	Annual
10/16/2015	Annual
7/25/2016	Annual
10/20/2016	Post-Storm (Hurricane Matthew)
8/17/2017	Annual
9/6/2018	Annual
10/17/2018	Post-Storm (Hurricane Florence)
6/18/2019	Annual
9/11/2019	Post-Storm (Hurricane Dorian)
6/26/2020	Annual
8/12/2020	Post-Storm (Hurricane Isaias)
3/24/2021	Annual
10/8/2021	Post-Storm (Hurricane Ian)
5/26/2022	Annual
5/22/2023	Annual

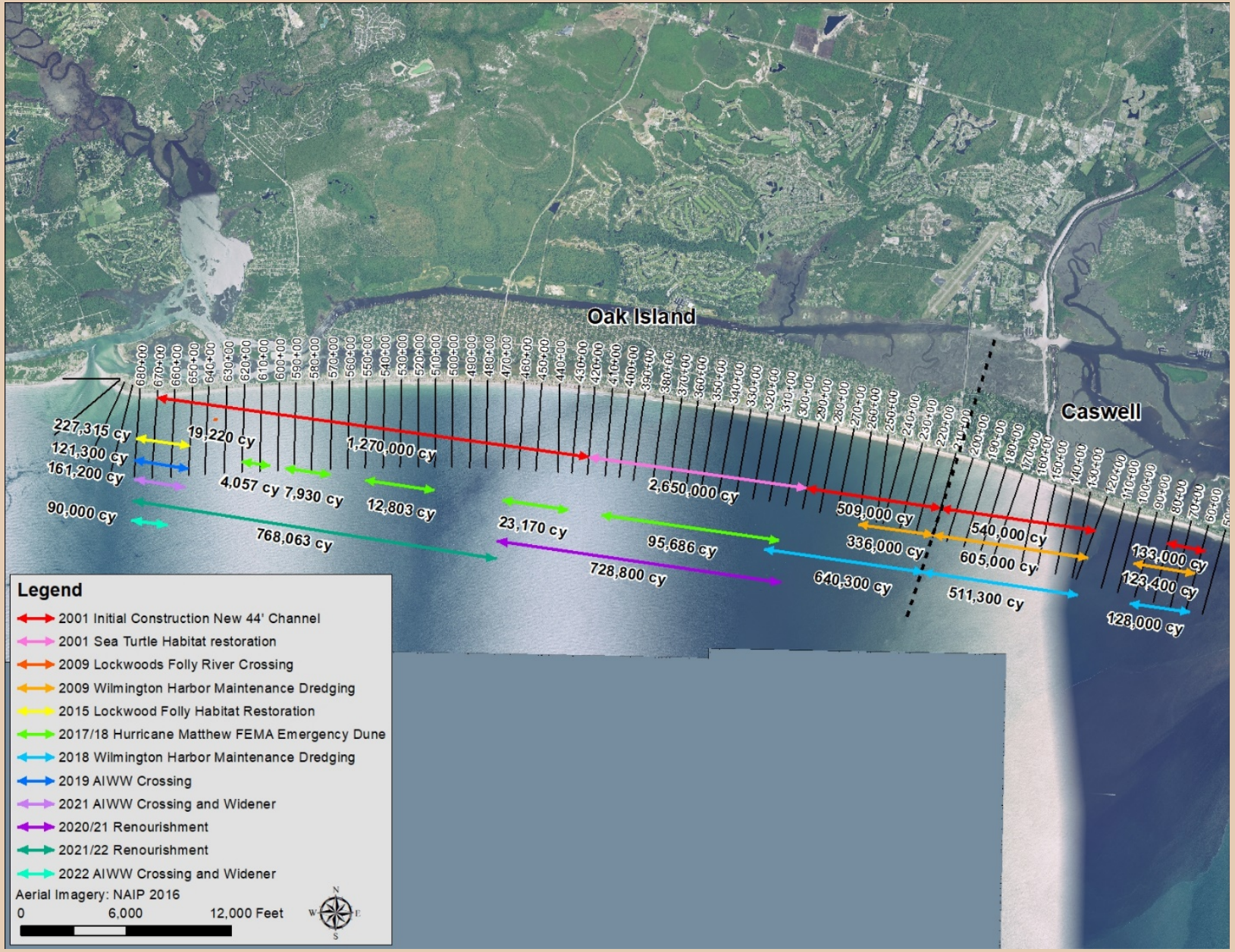


- Hydrographic surveys of Lockwoods Folly Inlet and Eastern Channel annually

Profile Volume Lenses



Previous Projects

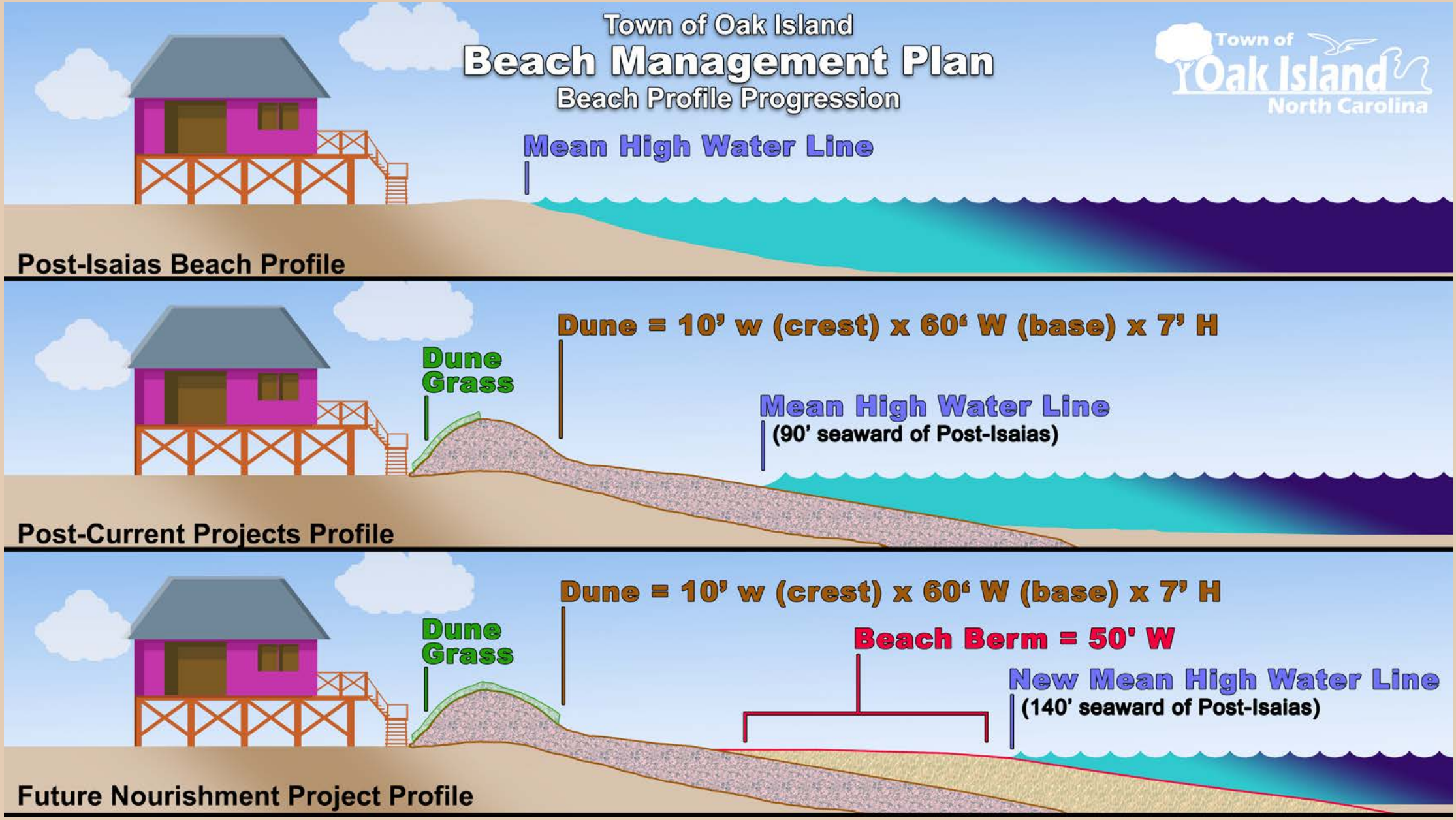


Renourishment Needs & Cycle Design

- Volumetric Triggers – Determined by Material Above Outer Bar from Annual Monitoring Surveys

Reach	10-year Level of Protection Trigger Volume (cy/ft)	25-year Level of Protection Trigger Volume (cy/ft)
Oak Island-East End 210+00 - 290+00 (Eastern Town Limits – SE 63rd St)	307	315
Oak Island-East 300+00 - 420+00 (SE 63rd St – 16th Pl East)	257	283
Oak Island-Central 430+00 - 500+00 (16th Pl East – 10th Pl West)	235	244
Oak Island-West 510+00 - 590+00 (10th Pl West – 42nd Pl West)	231	242
Oak Island-West End 600+00 - 680+00 (42nd Pl West – West End Parking Lot)	238	249

Renourishment Needs & Cycle Design



Post 2022 Project

Renourishment Needs & Cycle Design

- Planned for 6-year cycle based on:
  - Calculation of annual needs/losses + SLR
  - Designing a cost-efficient beach renourishment project (minimum fill density)
  - The size of the ‘24-’25 project
  - Maintaining the LOP

Basis of Annual Material Need for Maintenance Events	Background Erosion Annual Need (cy)	Annual Sea Level Rise (cy)	Total Annual Volume Needed (cy)	6-Year Project Requirement (cy)
2014 - 2020 Measured Data	213,247	13,333	226,580	1,359,000

Town Financial Plan

- Funding has been secured for 2024/2025 Project.

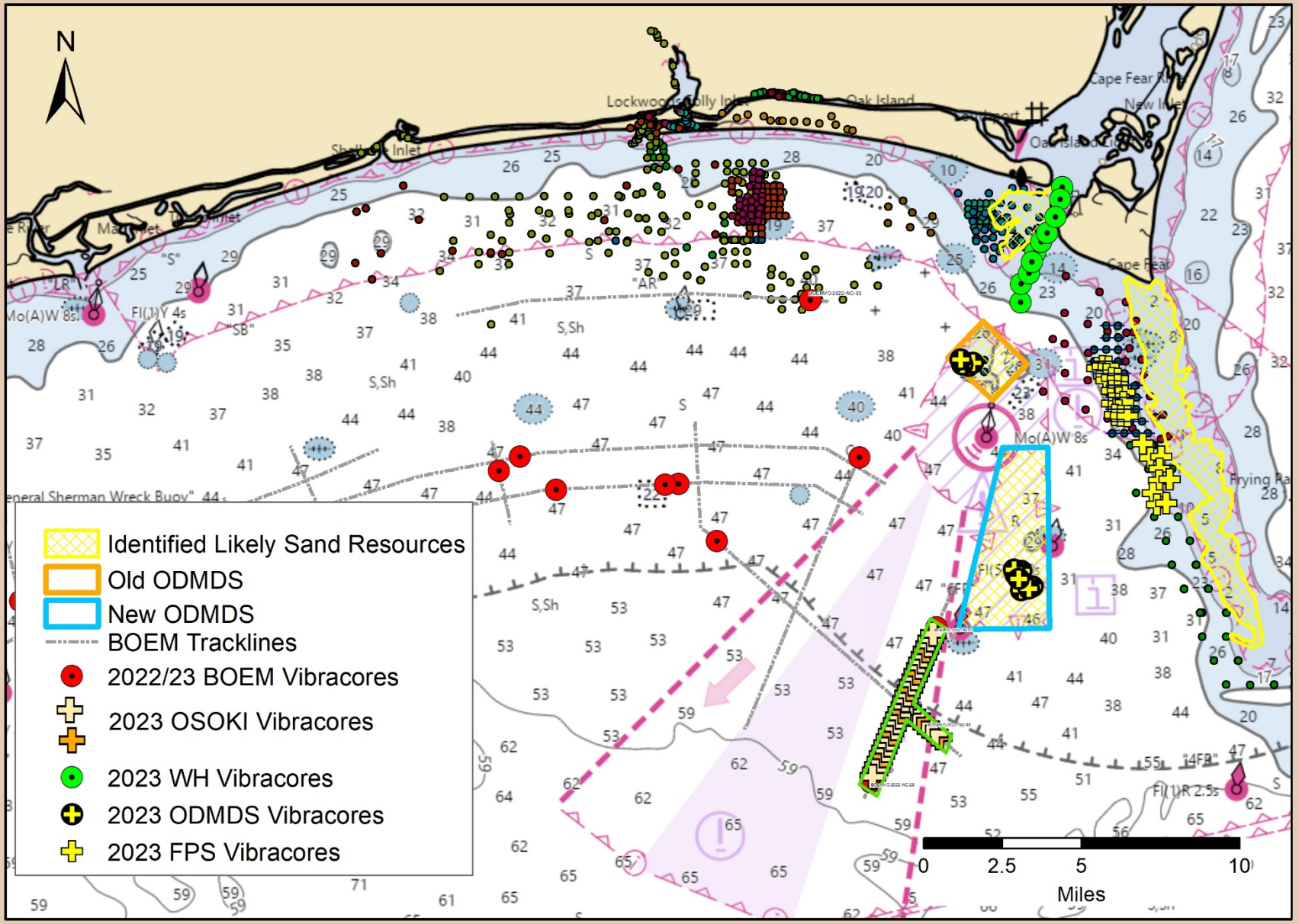
- Planning needs to account for $5.5M annually for a 6-year cycle cost of $33.0M project.

Project Construction	Engineering Cost	Mob/Demob	Volume (cy)	Unit Rate ($/cy)	Total Cost
2024/2025 Oak Island Renourishment Project	$2,500,000	$6,500,000	1,650,000	$18.75	$39,937,500

Maintenance Events (6-year interval)	Engineering Cost	Mob/Demob	Volume (cy)	Unit Rate ($/cy)	Total Cost	Annual Fund Requirement
Measured Data (Accounting for SLR)	$1,000,000	$6,500,000	1,359,000	$18.75	$32,981,250	$5,496,875

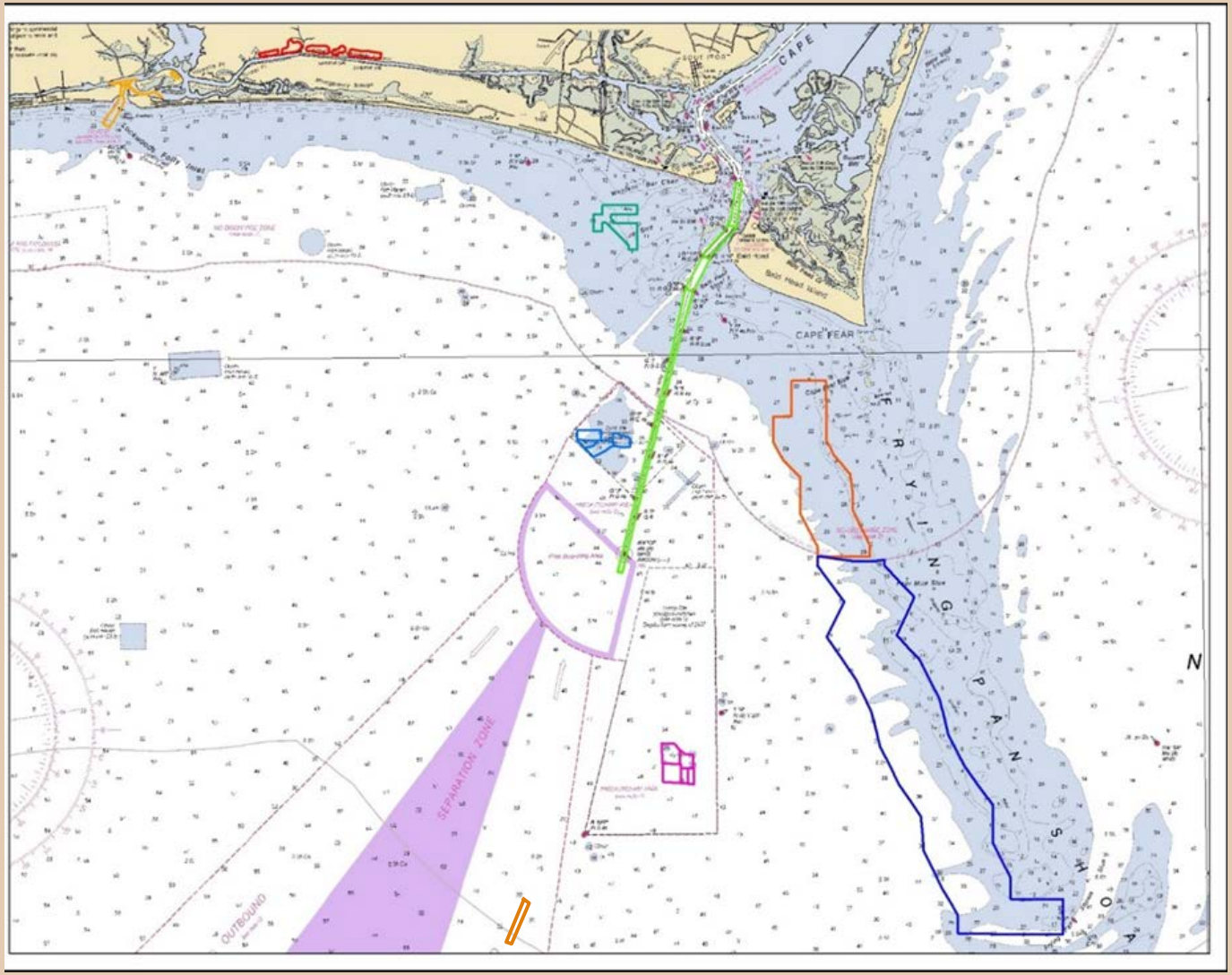
Potential Borrow Area Sources

- Town has spent approximately $2.0M on investigations over the past 5 years
- The town is committed to continue to research compatible, permittable, and economical borrow sources for the management of the OKI Beaches



Identified Potential Borrow Area Sources

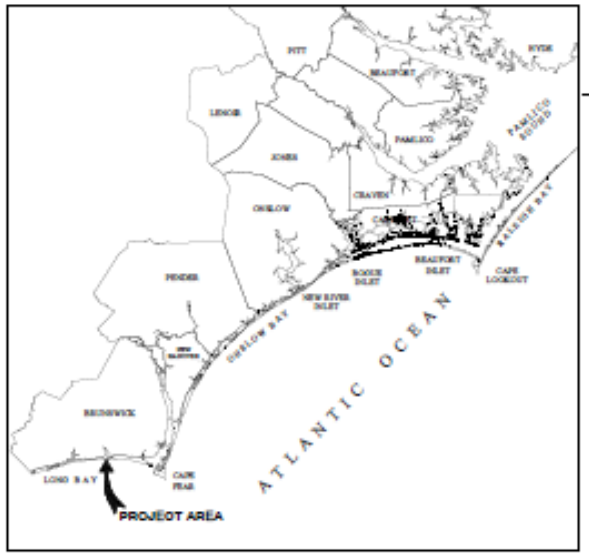
Area	Total Preliminary Volume (cy)
Old ODMDS	1,000,000
New ODMDS	700,000
Wilmington Harbor Channel	1,600,000
Lockwoods Folly Inlet Complex LFI Bend Widener, Eastern Channel, Sheep Island	4,052,000
Yellow Banks	4,200,000
Frying Pan Shoals - Federal	58,000,000
Frying Pan Shoals - State	29,000,000
Jay Bird Shoals	N/A (short term)
Offshore Oak Island	5,000,000



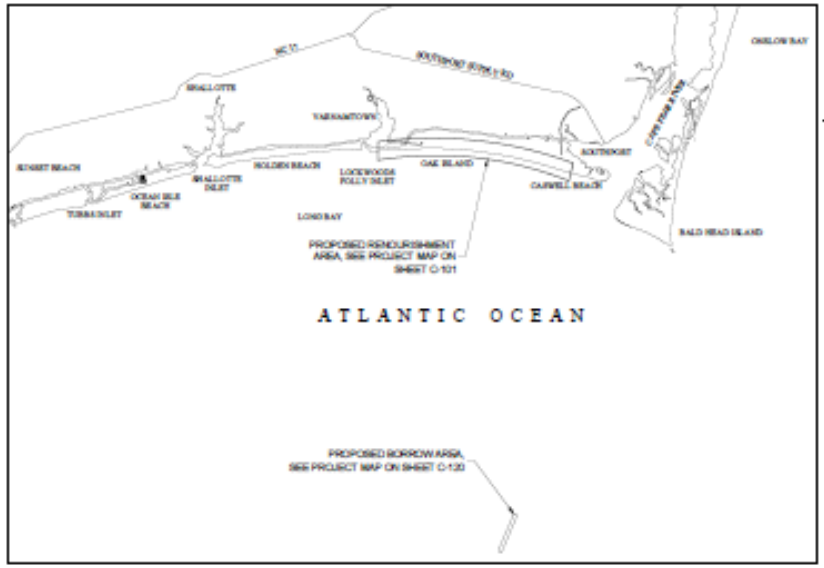
2024-25 Renourishment Project

BRUNSWICK COUNTY
OAK ISLAND RENOURISHMENT PROJECT 2024
OAK ISLAND, NORTH CAROLINA

TOWN OF OAK ISLAND
4601 E. OAK ISLAND DRIVE
OAK ISLAND, NC 28465



VICINITY MAP
NTS



LOCATION MAP
NTS

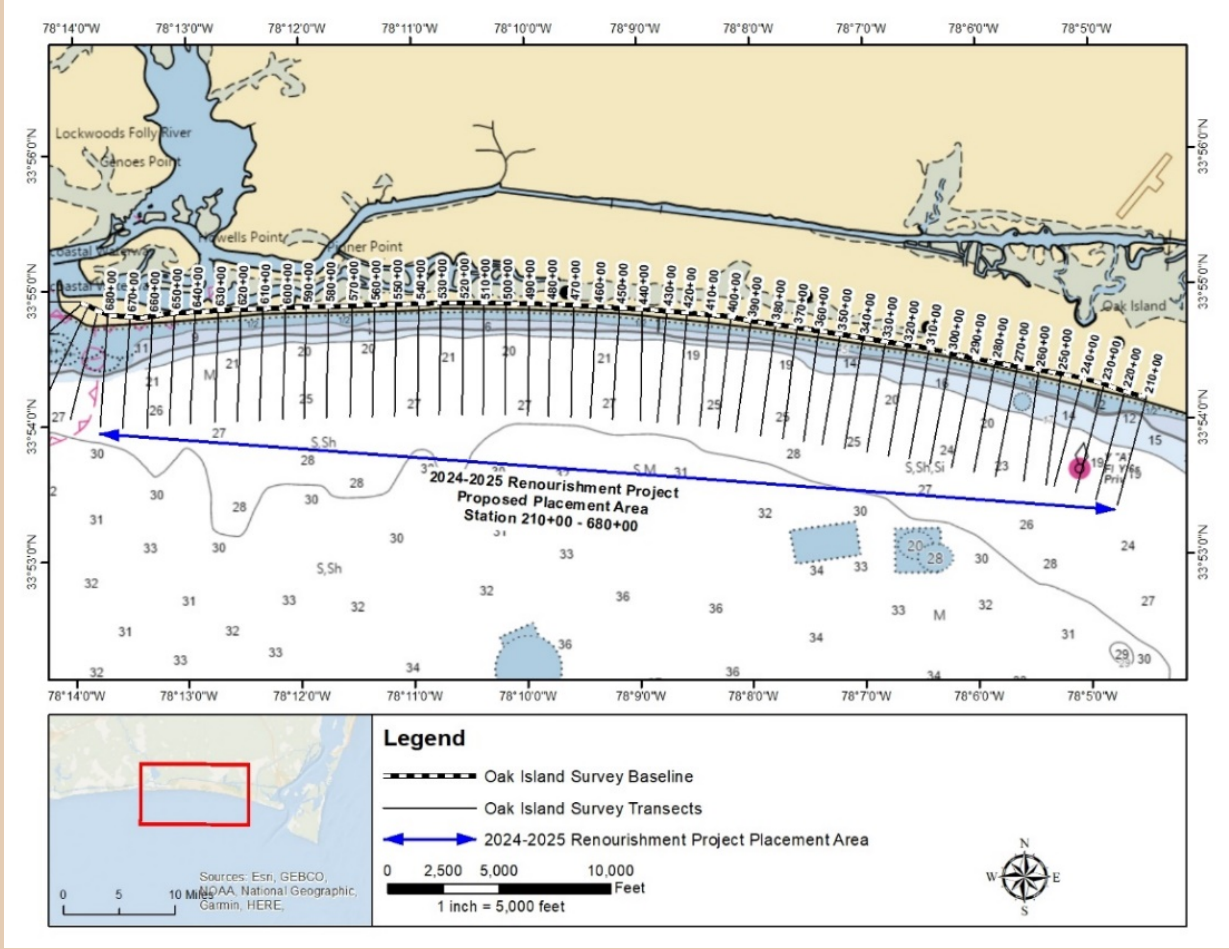
ISSUED FOR PERMIT
ISSUED: 2024-01-00
NOT TO BE USED FOR CONSTRUCTION

COVER SHEET

G-001

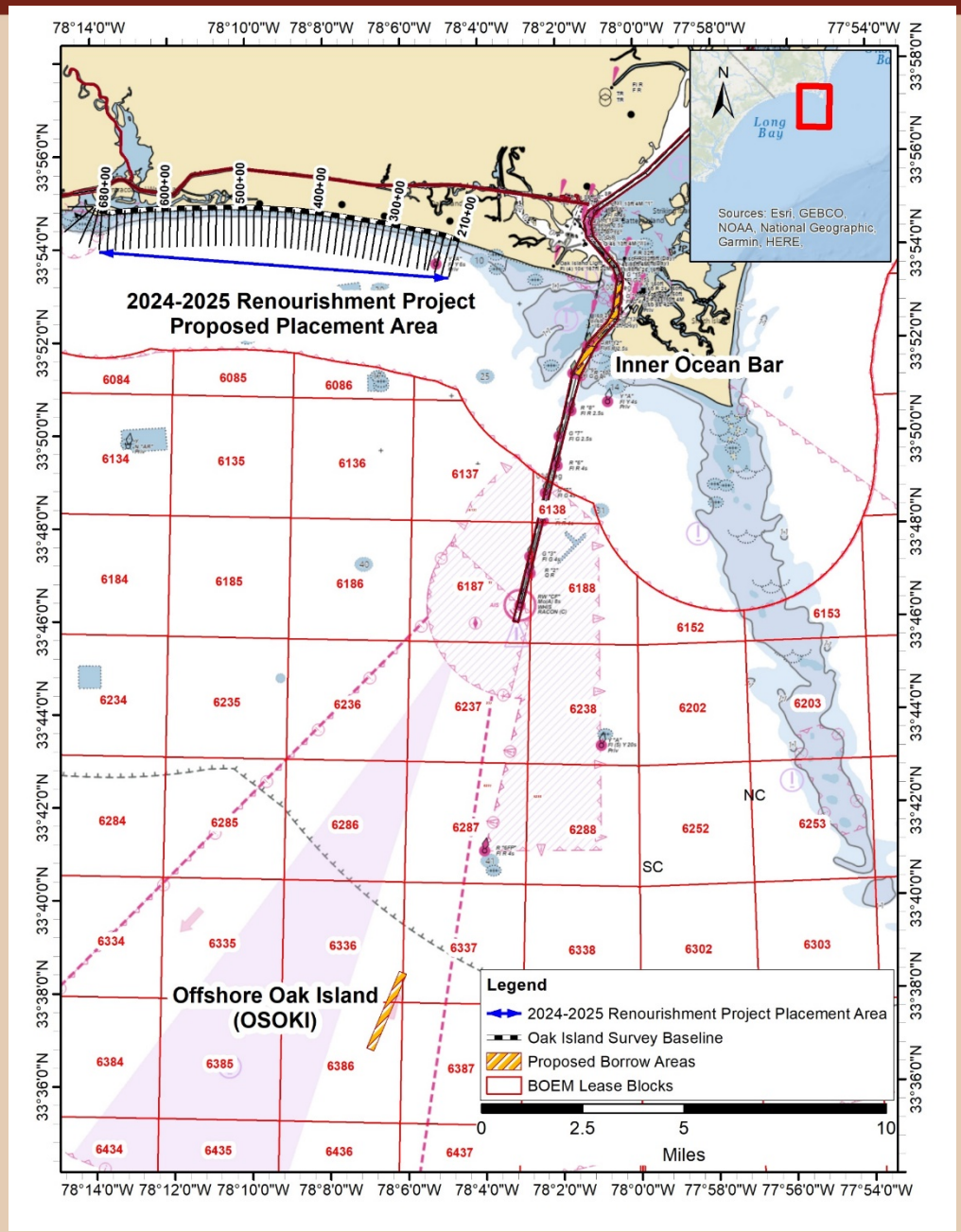
2024-25 Project Proposed Placement

- Beach Placement of up to 3Mcy
- Station 210+00 to 680+00
- Primarily Protective Berm/Advance Fill
- Varying Berm Width 40 ft to 200 ft
- Berm Elevation +7 ft NAVD88
- Dune Repair as Needed to 2021 & 2022 Projects Template
- Potential Additional Dune Repair between Stations 235+00 to 275+00 (not previously permitted)



2024-25 Project Proposed Borrow Sources

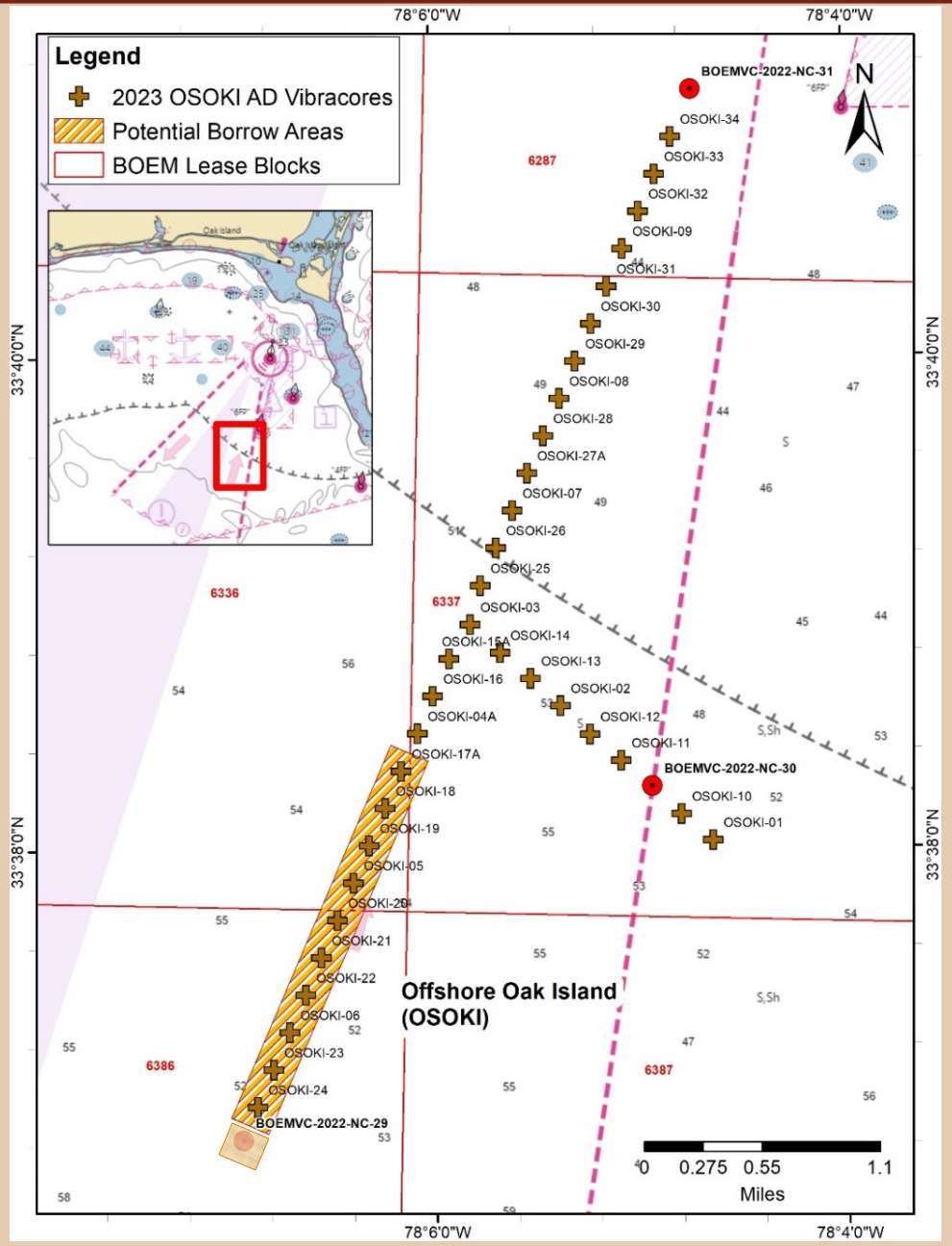
- Proposed Borrow Sources
  - Wilmington Harbor Channel Inner Ocean Bar
  - Offshore Oak Island (OSOKI)



Geophysical and Geological Available Data

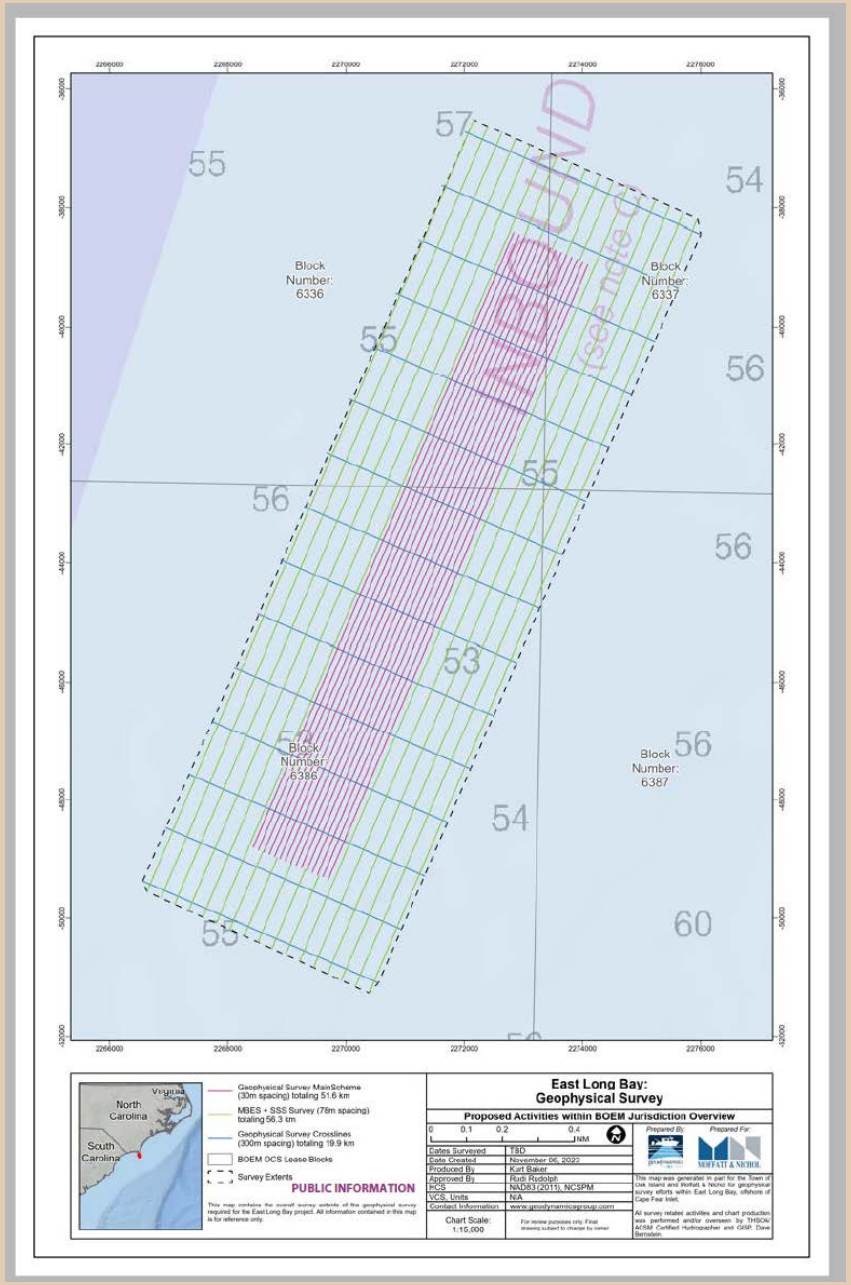
Offshore Oak Island (OSOKI)

- **2022** – Geophysical data & vibracores collected by BOEM
- **Summer 2023** – 34 vibracores, 1000 ft spacing (area defined in figure is subset of 10 vibracores)
- **Winter 2023/24** – Additional geophysical data collection concluded January 15, 2024, Final Report expected February 16. Data needed for CAMA permit and Environmental Assessment



Winter 2023/24 Geophysical Data Collection

- **Multibeam Echosounder (MBES)** – 110% min coverage: 30m line spacing, 300m QA tie lines
- **Sidescan sonar** – 200% min coverage
- **Sub-bottom profiler** – 30m line spacing, 300m QA tie lines
- **Gradiometer** – Twin magnetometer in TVG frame, 30m line spacing, 300m QA tie lines
- Additional surveys outside of the primary borrow area – 500m Buffer for cultural and hardbottom clearance (MBES & SSS only), 78m spacing, 300m QA tie lines



Vibracore Data Summary

- Compatibility Calculations with 10 cores from OSOKI & BOEM NC-29

Sediment Compatibility	2019 Native Global	OSOKI Composite	NCAC Maximum
Gravel	0.45%	0.67%	6%
Granular	0.71%	1.37%	11%
Sand	96.96%	93.99%	-
Fines	1.88%	3.97%	7%
Carbonate	9.72%	5.97%	25%
Mean (mm)	0.27	0.36	-

Vibracore Data Available Volume

- Available Volumes to Compatible Depth and with 2 ft Buffer

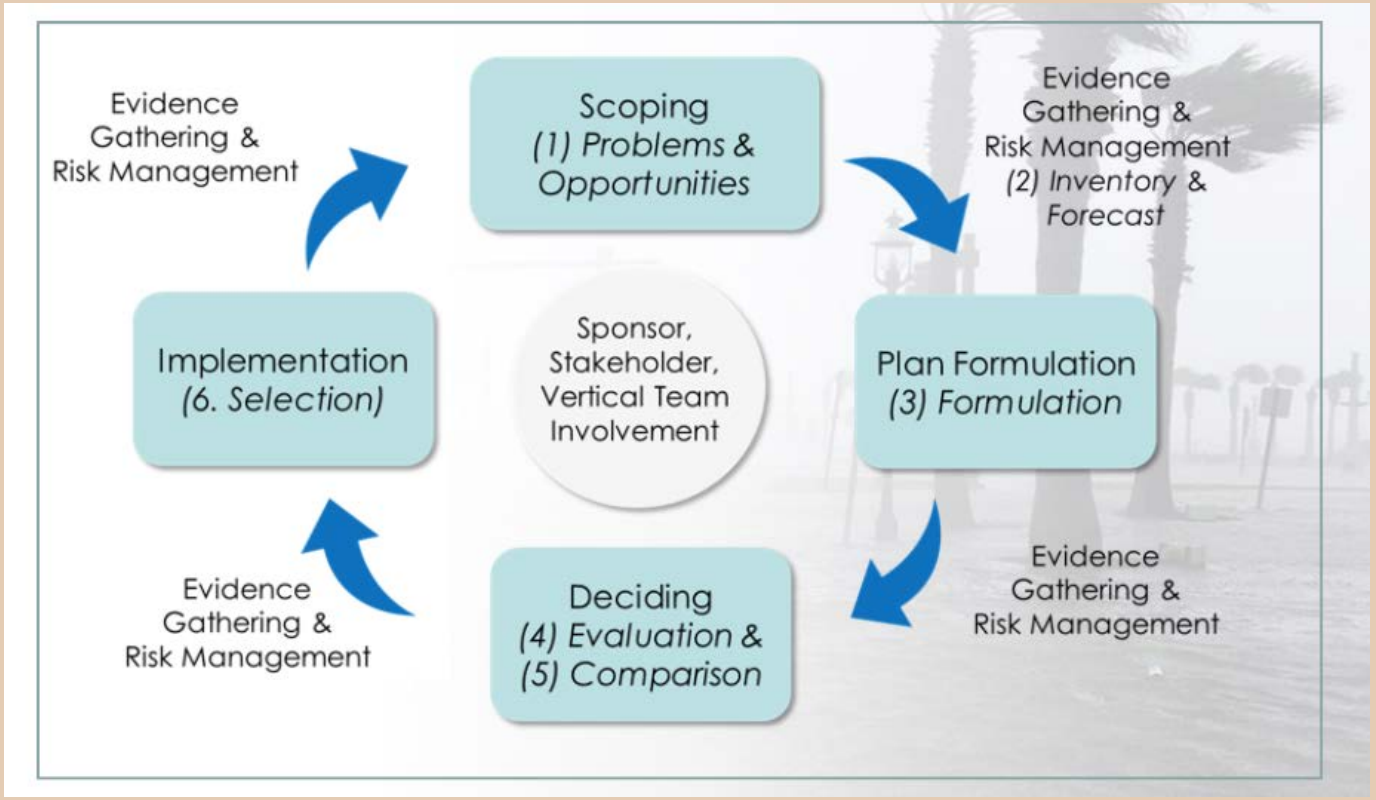
Vibracore	Permitted Dredge Elevation (ft, NAVD88)	Design Depth Cut (ft)	Overdredge Depth Cut (ft)	Design Depth Volume (CY)	Overdredge Volume (CY)
2023-OSOKI-17A	-70.3	6.30	8.30	232,748	306,637
2023-OSOKI-18	-71.6	8.00	10.00	296,074	370,093
2023-OSOKI-19	-71.3	8.60	10.60	318,507	392,579
2023-OSOKI-05	-72.5	10.40	12.40	384,515	458,460
2023-OSOKI-20	-72.7	11.20	13.20	414,707	488,762
2023-OSOKI-21	-69.1	8.00	10.00	296,223	370,279
2023-OSOKI-22	-74.3	13.00	15.00	482,088	556,256
2023-OSOKI-06	-70.0	8.40	10.40	311,952	386,226
2023-OSOKI-23	-76.7	14.60	16.60	541,600	615,791
2023-OSOKI-24	-76.6	15.40	17.40	540,800	611,033
BOEMVC-2022-NC-29	-72.7	11.40	13.40	400,297	470,524
TOTAL				**4,219,510**	**5,026,639**

2024-25 Project Milestones

- Agency Scoping – November 2023
- Joint Federal Agreement – January 2024
- USACE Permit Application Submittal – January 2024
- CAMA Permit Application Submittal – January 2024
- FONSI – June 2024
- BOEM Lease Agreement Executed/Permits Issued – August 2024
- Bid Advertisement – August 2024
- Project Award – October 2024
- Project Construction – December 2024 – April 2025

CSRM Meeting January 10, 2024

- FSCA Executed October 19, 2023
- Initiated Scoping Phase
- Data Request
  - Hydro and Beach Surveys
  - Geotechnical Data
  - Property Tax Information
  - Cultural Resources Surveys
  - Natural Resource Data
  - Shoreline Data
  - NEPA Information
  - 2024/25 Project Data



CSRM Meeting January 10, 2024

- Discussion Items
  - Data Sharing
    - MN Prepared to Assist with Data Sharing
    - Public Availability of Data
    - Holden Beach Study Data
  - Recommend Town Request Regular Coordination and Involvement with Team
  - M&N Role

Discussion

Thank You!