

July 19, 2024

Indian River Flood Shoal Sampling and Analysis Plan

Anchor QEA, Inc. (Anchor QEA) has prepared this sampling and analysis plan to support the Delaware Department of Natural Resources and Environmental Control (DNREC) with sediment sampling and reporting services associated with the Indian River Inlet Flood Shoal dredging and beneficial use project. Anchor QEA understand that DNREC and the U.S. Army Corps of Engineers (USACE) desires to obtain a better understanding of the nature and type of sediments present at this location to evaluate a suite of beneficial use applications in the vicinity of the project area. The proposed sampling area is shown on Figure 1.

Scope of Services – Sediment Sampling and Data Analysis – Indian River Inlet Flood Shoal

Anchor QEA will collect sediment cores and grab samples to support DNREC's efforts to permit sediment dredging in the Indian River Inlet Flood Shoal and beneficial reuse of the dredged material as fill at the beach at Northside Indian River Inlet. Sediment core and grab sample locations from USACE's 2013 dredging project in the Indian River Inlet following Hurricane Sandy will be replicated. The scope of the sediment sampling and data analysis activities is outlined below:

- Three (3) sediment cores (3-inch diameter) will be collected to the proposed dredge depth of - 24 North American Vertical Datum 1988 (NAVD88). The bottom 2 inches from each sediment core will be composited into one sample. The remaining upper sediment interval from each sediment core will be composited into one sample.
- Five (5) grab samples will be collected from the sediment surface using a Ponar grab sampler (or similar equipment). One composite sample will be collected from the five grab samples.
- Proposed sediment core and grab locations are summarized in Table 1 and are shown on Figures 2 and 3. Existing bathymetry and core sample cross-sections are shown on Figures 2 and 3.
- Each sample (three [3] total) will be analyzed for the following items:
 - Grain size via ASTM International (ASTM) D422 Standard Test Method for Particle-Size Analysis
 - Polyaromatic hydrocarbons (PAHs) and alkylated PAH homologs via United States Environmental Protection Agency (USEPA) Method 8270E SIM
 - Target Compound List (TCL) organochloride (OC) pesticides via USEPA Method 8081A
 - Polychlorinated biphenyls (PCBs_ via USEPA Method 680
 - Target Analyte List (TAL) metals via USEPA Method 6020B
 - Mercury via USEPA Method 7471B
 - Total Kjeldahl Nitrogen (TKN) Method 351.2
 - Ammonia nitrogen via Method 4500 NHS C-2011
 - Nitrate and nitrite via Method EPA 300.0 R2.1

- Total nitrogen
- Total phosphorus via Method 365.1
- Dioxins/furans via USEPA Method 1613B
- Total organic carbon (TOC) via the Llyod Kahn Method
- Total solids
- Percent moisture
- Each sample collected for grain size analysis will be analyzed on a 15-day turnaround time (TAT).
- Each sample collected for chemical analysis will be analyzed on a 10-day TAT.
- Quality assurance/quality control (QA/QC) samples (i.e., field duplicates, blind duplicates, matrix spike [MS], matrix spike duplicate [MSD] matrix, etc.) will not be collected or analyzed.
- Due to deeper water depths and targeted sediment core depths, Anchor QEA will use subcontractor labor, vessels, and equipment to complete sediment core and grab samples. Anchor QEA staff will process all samples collected.

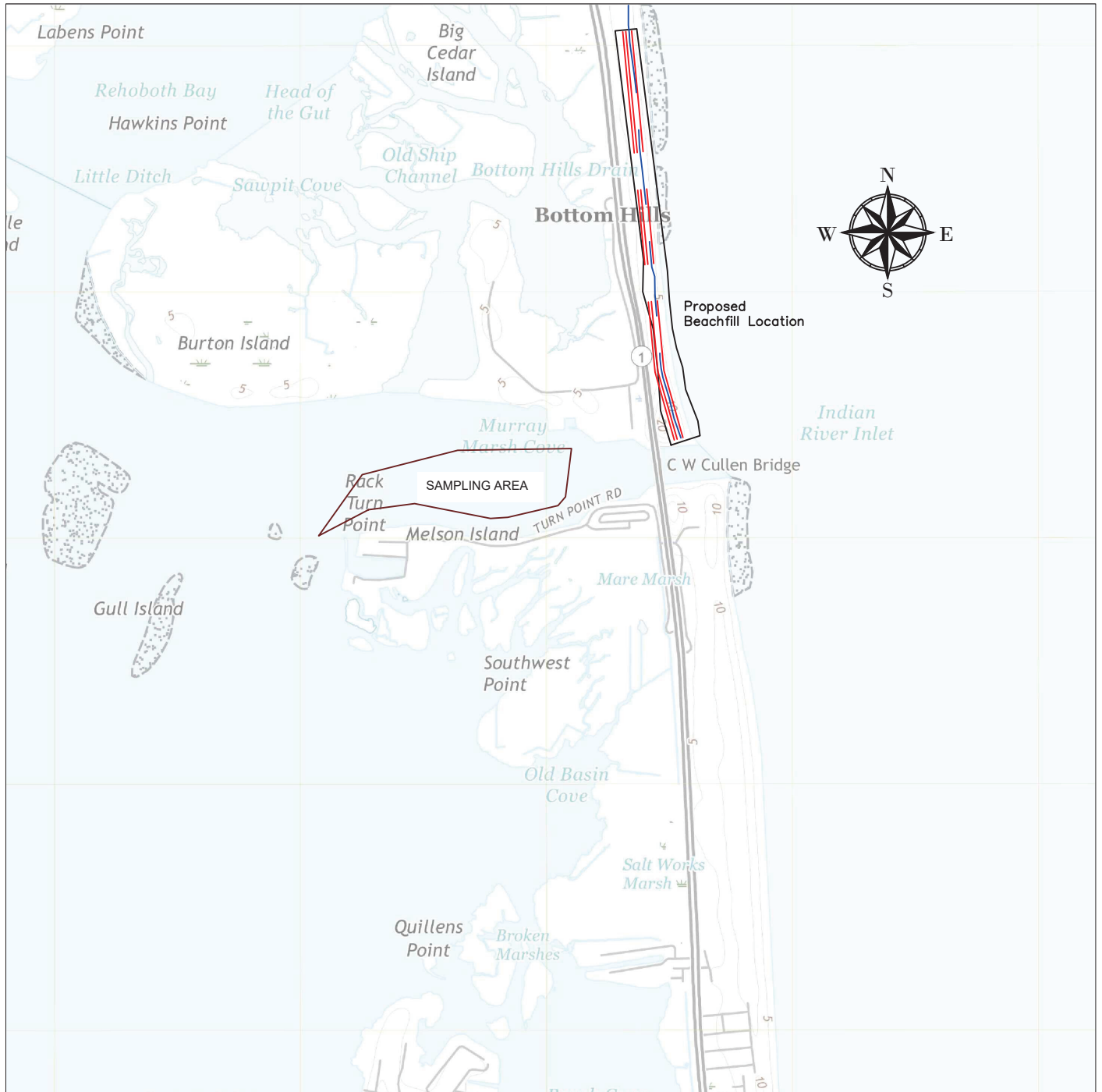
Table 1 – Sediment Core and Grab Sample Locations

Core/Grab Sample ID	Northing DE State Plane NAD83 (US feet)	Easting DE State Plane NAD83 (US feet)
Core_1	221309.00	753626.00
Core_2	221396.00	754203.00
Core_3	221481.00	754802.00
Grab_1	221270.95	754804.84
Grab_2	221256.66	753824.39
Grab_3	221277.54	755555.90
Grab_4	221527.54	754825.19
Grab_5	220969.21	754795.83

Driving Directions

Indian River Inlet – From Dover, Delaware, take DE-1 South approximately 50 miles to the Indian River Inlet. Sampling area located within inlet proximate to southern shoreline.

Indian River Flood Shoal SEDIMENT SAMPLING PLANS



Scale: 1" = 2000'	Date: 12/12/2023
Designed by:	J. Faries, P.E.
Drawn by:	J. Faries, P.E.
Checked by:	J. French, P.E.
Sheet No.	FIGURE 1

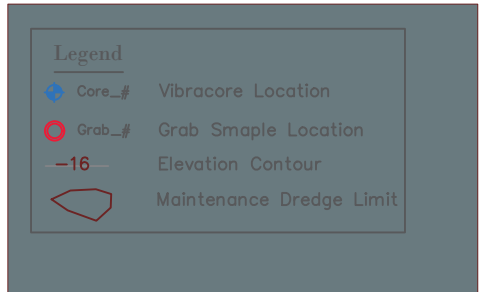
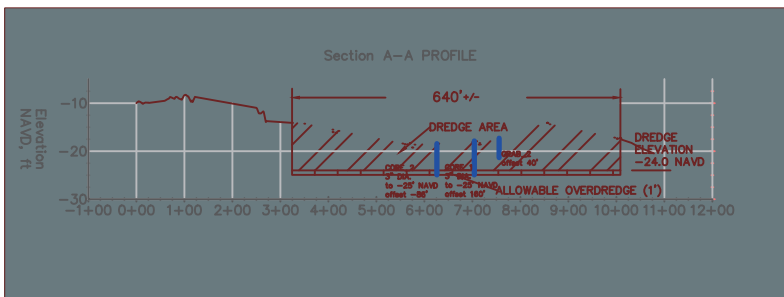
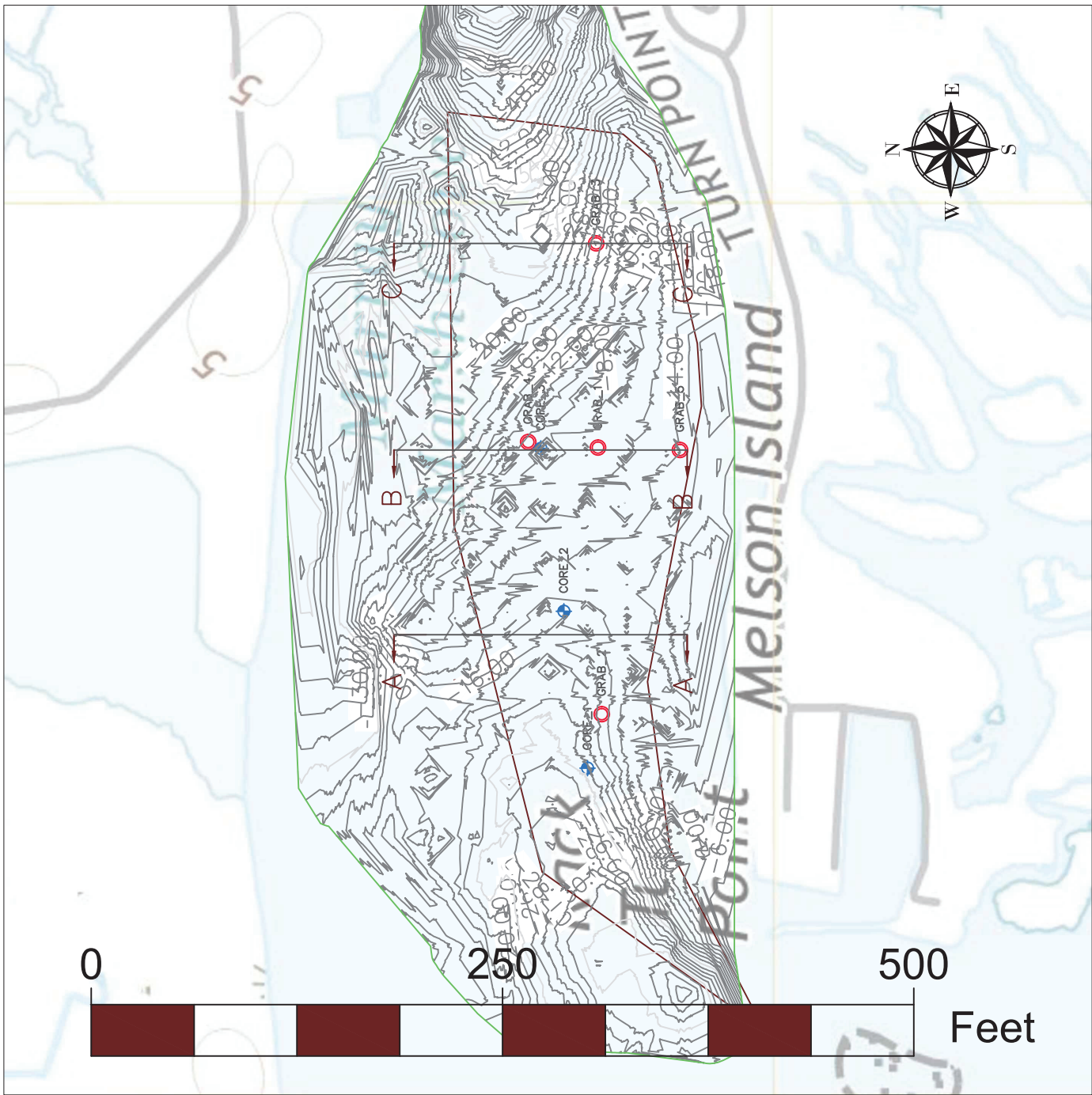
Indian River Flood Shoal
SEDIMENT SAMPLING PLANS
 COASTAL
 SUSSEX COUNTY, DELAWARE



Division of Watershed Stewardship
 Shoreline and Waterway Section

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Sheet No. FIGURE 2

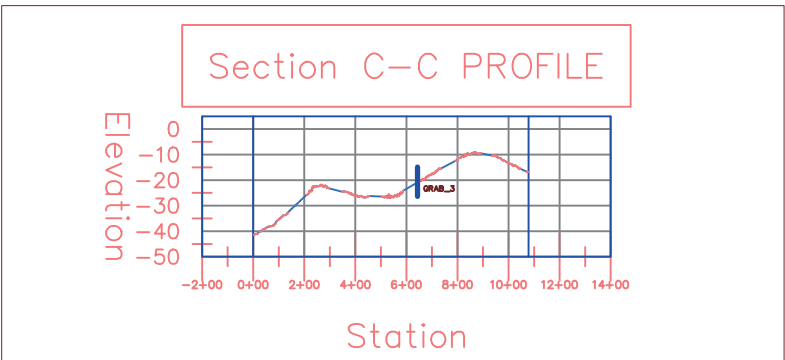
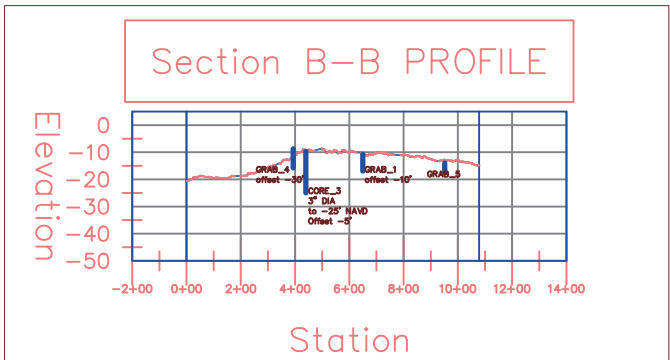
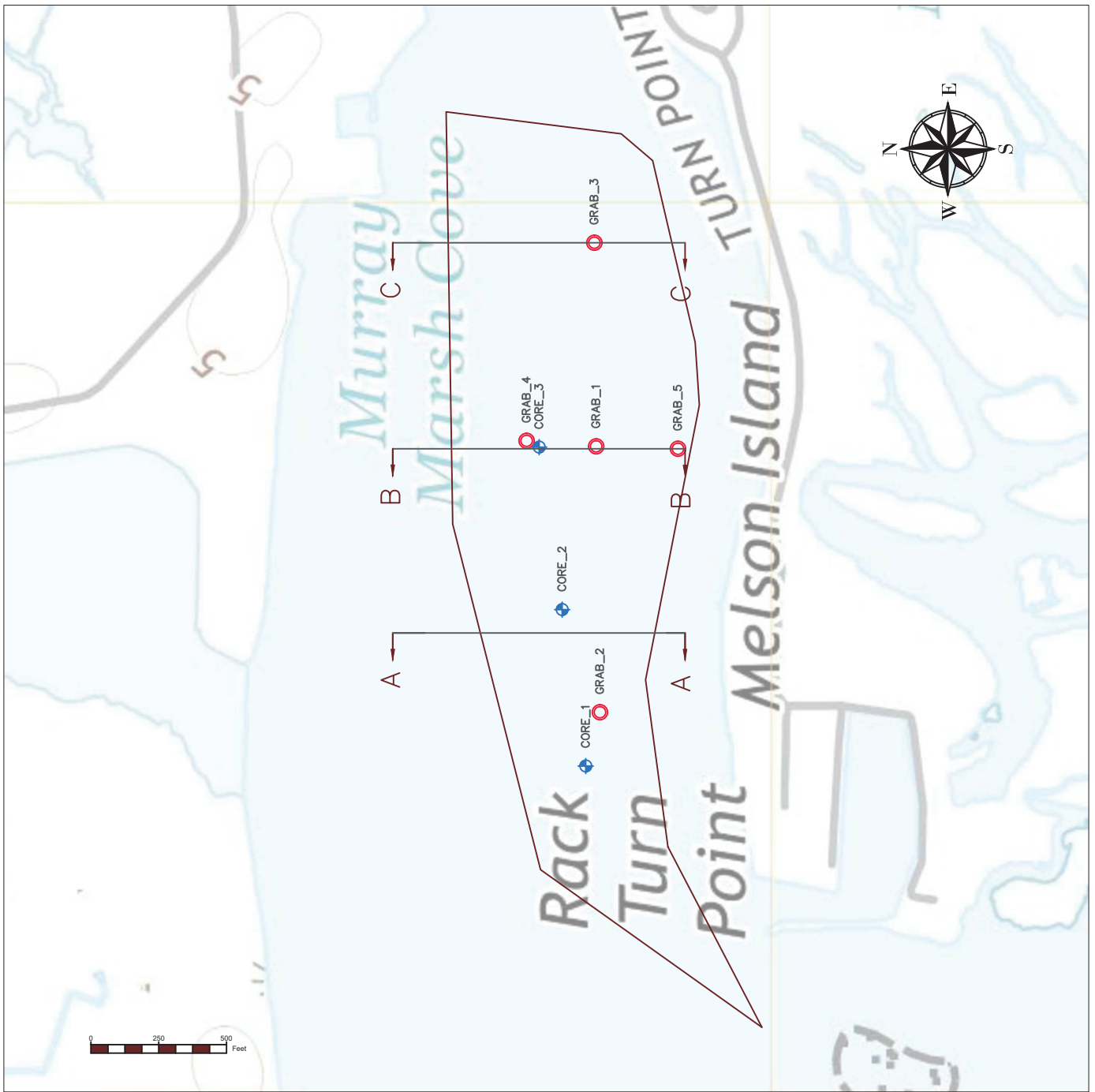
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Indian River Flood Shoal
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DELAWARE DEPARTMENT OF
**NATURAL RESOURCES AND
 ENVIRONMENTAL CONTROL**

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