

FOR AGENCY USE ONLY	ABBREVIATED JOINT FEDERAL / STATE APPLICATION FOR THE ALTERATION OF ANY TIDAL WETLAND AND/OR TIDAL WATERS IN MARYLAND										MDE Permit #:	21-WL-0640					
											Tracking #:	202160895					
MDSPGP Category:	<input type="checkbox"/>	Major	<input type="checkbox"/>	Minor	<input type="checkbox"/>	240-day	<input type="checkbox"/>	90-Day	<input type="checkbox"/>	MHT	<input type="checkbox"/>	WHD	<input type="checkbox"/>	PN	MDE AI #:	163561	
This abbreviated application should only be used for projects that are eligible for federal authorization under the Maryland State Programmatic General Permit (MDSPGP).											MDE Reviewer:	MPD	County:	DO			

Pre-Application Meeting Held?  with MDE  with USACE AI# (if given): \_\_\_\_\_

Reviewer's Name(s): Mary Phipps-Dickerson \*MAILING INSTRUCTIONS LOCATED ON 2<sup>ND</sup> PAGE OF THIS APPLICATION\*

Applying for:  Authorization  Modification

**MDE APPLICATION REVIEW FEE REQUIRED: PLEASE REFER TO THE MDE WEBSITE:**  
<http://mde.maryland.gov/programs/Water/WetlandsandWaterways/Documents/FeeSchedule.pdf>

**(Applicant will be copied on all correspondence, unless they opt out, BY INITIAL AND SIGNATURE, in Section 12)**

**1. APPLICANT INFORMATION:** (Please note that the applicant is not the contractor/agent applying on behalf of a property owner)

Name: Amanda Peñafiel Home Telephone: (410)385-4470

Address: 401 East Pratt Street, Suite 1900 Email Address: apenafiel@marylandports.com

City: Baltimore State: Maryland Zip: 21202

**2. PROPERTY OWNER INFORMATION:** (If different from the Applicant)

Name: State of Maryland Home Telephone: \_\_\_\_\_

Address: \_\_\_\_\_ Email Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

**3. AUTHORIZED AGENT / PRINCIPAL CONTACT INFORMATION:**

Name: Maura Morris Telephone: (410)729-8369

Address: 259 Najoles Road Email Address: mmorris@menv.com

City: Millersville State: Maryland Zip: 21108

**4. CONTRACTOR INFORMATION** (If currently unknown, required to be provided to MDE's Tidal Wetland Division prior to construction of project)

Company Name: TBD

Principal Contact: \_\_\_\_\_ Email Address: \_\_\_\_\_

Maryland Marine Contractor License #: \_\_\_\_\_ Telephone: \_\_\_\_\_

**5. PROJECT DESCRIPTION:** (Attach additional pages if necessary)

See Attachment 1

**6. PROJECT PURPOSE:** (Check all that apply)

Improve Navigable Access  Shore Erosion Control  Fill

Beach Nourishment  Create/Improve Habitat  Erosion/Sediment Control  Marina

Create/Improve Infrastructure  Utility Installation  Residential/Commercial Development

Other: (describe) See Attachment 1

**7. PROJECT LOCATION:** (If project site has no address, please include the lot # and/or nearest address with a clear description of the site)

County: Dorchester Name of Waterway: Chesapeake Bay/Tar Bay Area

Site Address or Location: Barren Island is located adjacent to Upper Hoopers Island (see Att. 2 and 3).

Latitude: 38.333648 Longitude: -76.257662

Directions from nearest intersection of two state roads: NA

**8. FEDERALLY AUTHORIZED CIVIL WORKS PROJECTS:** Is the project located in, on, or adjacent to a U.S. Army Corps of Engineers' federally authorized civil works project, structure, property, or easement (e.g., federal navigation channel, flood control levees, dams and reservoirs, lake property, etc.)?  Yes  No

If yes, has a review pursuant to 33 U.S.C. 408 (Section 408) been initiated?  Yes  No

**9. BEST MANAGEMENT PRACTICES VERIFICATION:** I verify that my project will meet all Endangered Species Act Best Management Practices applicable to work in tidal waters and wetlands as required by the MDSPGP (see Section VII.B.4.c.i-iii).

Yes  No  Unknown

Refer to the application instructions and the MDSPGP for additional information regarding these Best Management Practices.

**10. TYPE OF PROJECT** (check all that apply and provide all applicable information):

**This abbreviated application should only be used for projects that are eligible for federal authorization under the Maryland State Programmatic General Permit (MDSPGP). Please refer to the MDSPGP for eligible activities.**

Work Proposed	Overall Length (Ft.)	Average Width (Ft.)	Volume of Fill Material (cu. yards.)	Total Area Impacted (Sq. Ft.)		Maximum Distance Channelward from Mean High Water Line (Ft.)	New Work	Maintenance /Repair	Work Started/ Completed
				Permanent	Temporary				
<input type="checkbox"/> Bulkhead	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Revetment	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input checked="" type="checkbox"/> Breakwater	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input checked="" type="checkbox"/> Groins, Jetties, or Low Profile Sill	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Living Shoreline (vegetated area)	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Pier	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Finger Pier	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Platform	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Pile(s) (#: )   <input type="checkbox"/> Osprey Pole	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Boat Lift (including support piles)	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Boat Ramp	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Utility Line	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Construction Access/Mats	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input checked="" type="checkbox"/> Dredging (Maintenance or New Minor)	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input type="checkbox"/> Hydraulic / <input type="checkbox"/> Mechanical	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *
<input checked="" type="checkbox"/> Other: See Attachment #	_____	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *

\*For any work started or completed, please clearly and accurately depict those portions of the project on the plans

**11. DESCRIPTION OF AVOIDANCE, MINIMIZATION, AND COMPENSATION:** Please be advised that unavoidable losses of tidal wetlands and/or aquatic resources may require compensatory mitigation. Please provide a separate sheet(s) that addresses the proposed project's avoidance, minimization, and compensation (if required) which includes any clearing, grading, or excavation required before, during, and after the proposed project.

**12. STATE CERTIFICATION AND FEDERAL PRIVACY ACT STATEMENT:**

Application is hereby made for a permit or permits to authorize the work described in this application. I hereby designate and authorize the agent named above to act on my behalf in the processing of this application and to furnish any information that is requested. I certify that the information on this form and on the attached plans and specifications is true and accurate to the best of my knowledge and belief. I understand that any of the agencies involved in authorizing the proposed works may request information in addition to that set forth herein as may be deemed appropriate in considering this proposal. I grant permission to the agencies responsible for authorization of this work, or their duly authorized representative, to enter the project site for inspection purposes during working hours. I will abide by the conditions of all permit(s) or license(s) if issued and will not begin work without the appropriate authorization. I also certify that the proposed works are consistent with Maryland's Coastal Zone Management Plan.

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers, 33 CFR 320-332. Principal Purpose: Information provided on this JPA will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice. Submission of requested information is voluntary, however, if information is not provided, the permit application cannot be evaluated nor can a permit be issued.

All information, including permit applications and related materials, submitted to MDE may be subject to public disclosure consistent with the Maryland Public Information Act, §4-101 et seq., General Provisions Article of the Maryland Code.

I am the property owner/applicant and do not want to be contacted by MDE. All correspondence should occur with my authorized agent /principal contact designated in Section 3, located on the 1<sup>st</sup> page of this application. (By initializing the box, you are acknowledging that you will not receive any correspondence directly from MDE). I understand a copy of MDE's final decision regarding this application will be sent to me. This opt-out option does not apply to the U.S. Army Corps' correspondence, which will continue to be with the applicant/permittee.

**PROPERTY OWNER MUST SIGN:** *Amanda Penafiel* **Date:** 5/3/2021

**IMPORTANT:**

**PLEASE MAIL SEVEN (7) COPIES OF THE APPLICATION, SITE PLAN, AND VICINITY MAP (WITH PROJECT LOCATION PINPOINTED) TO:**

MDE/WATER AND SCIENCE ADMINISTRATION  
REGULATORY SERVICES SECTION  
MONTGOMERY PARK BUSINESS CENTER – STE 430  
1800 WASHINGTON BOULEVARD  
BALTIMORE, MD 21230-1708  
(410) 537-3762

**SEND THE APPLICABLE APPLICATION FEE AND A COPY OF THE FIRST PAGE OF THE APPLICATION TO:**

MDE  
P.O. BOX 2057  
BALTIMORE, MD 21203-2057  
PCA: 13910 OBJ: 4142  
FOR FURTHER INSTRUCTIONS, PLEASE REFER TO OUR WEBSITE  
<http://mde.maryland.gov/programs/Water/WetlandsandWaterways>

**Attachment 1 – Barren Island Supplemental Information (4 Pages)**

## **5. Project Description**

The Barren Island restoration project is in Dorchester County and will be the smaller portion of the Mid-Chesapeake Bay Island Ecosystem Restoration Project (Mid-Bay Project) (see Attachment 2 – Pages 1, 2, and 3). Currently, Barren Island is 138 acres, and is protected by 4,850 linear feet of stone sill (see Attachment 2 – Pages 2 and 5).

The restoration project will include the construction of approximately 13,023 linear feet of new and modified stone sills and 4,620 linear feet of segmented breakwater to immediately provide increased protection to the eroding Barren Island and to the extensive submerged aquatic vegetation (SAV) beds to the east of the Barren Island, and installation of 2 bird islands (approximately 8.5 acres total) and approximately 83 acres of wetlands (see Attachment 2 – Page 2). The stone sills and breakwater will be constructed on top of geotextile fabric and composed of a small stone base topped with larger armor stone ranging from 2,100 to 4,100 pounds. The stone sills will be constructed to an elevation of +3.52 feet NAVD88 and the breakwater to an elevation of +5.52 feet NAVD88 (see Attachment 2 – Page 7).

Once the confining sills are constructed, and dredged material is available, the project's habitat components will be constructed. Approximately 429,000 cubic yards of authorized maintenance material dredged from small local federal navigation channels will be placed behind the confining stone sills up to the Mean High Water elevation. Since several dredging cycles would be required to meet the material capacity of the proposed restored wetland acreage, this is considered a long-term restoration project. Placed dredged material will be used for the restoration of approximately 83 acres of wetlands/mudflats (see Attachment 2 – Pages 2 and 9). Wetlands will include low and high marsh plantings as well as some intertidal mudflats. During final wetland development planning, current conditions will be evaluated with respect to sea level rise projections and determinations of sustainable marsh elevations to identify high to low marsh ratios. Acreages of high marsh and low marsh depicted in the impacts table (see Attachment 2 – Page 11) represent wetland ratio ranges of 80/20 to 50/50 low marsh to high marsh. It is anticipated that a higher proportion of high marsh would be designed to enable migration of low marsh with sea level rise versus conversion to open shallow water. Tidal exchange will be established through use of open tidal guts or outfall structures after the material is stabilized (see Attachment 2 – Page 2). The design will aim to take advantage of any freshwater flow from the island to augment tidal gut flow. To the extent practicable, wetlands will be designed to allow for estuarine connectivity via gaps and tidal creeks to maximize value to fisheries resources.

At the southern end of the restoration project, two small bird islands will be integrated into the breakwater. The bird islands will range from 3.5 – 5 acres for a total of approximately 8.5 acres (see Attachment 2 – Page 2). The bird islands are designed using tiered elevation control structures and stone sills to confine approximately 154,000 cubic yards of suitable/approved sandy fill material (see Attachment 2 – Page 8). The bird island designs incorporated natural resource agencies' input to allow for greater distance from the main Barren Island and between the two islands to avoid predation, while maintaining benefits to SAV bed habitat with the use of a segmented breakwater design. The stone confining units to the west are designed to withstand erosional forces based on Hydraulic & Hydrologic (H&H) modeling, while the east side is designed to allow chicks to enter the tidal waters. Occasional wash over will assist with vegetation control.

Approximately 52,500 cubic yards of unsuitable foundation material will be dredged from the depicted northeast Barren Island stone sill location to an approximate depth of 7 feet (see Attachment 2 – Pages 2 and 7). The dredged material will be placed hydraulically or mechanically

within the confined area found behind the constructed sills at Barren Island as depicted in the Dredged Material Management Plan. Suitable/approved sandy fill material will be placed in the void created by removal of the unsuitable material to create a solid structurally sound base for the northeast sill.

This project was designed by a multi-disciplinary team through the processes documented in the Mid-Chesapeake Bay Island Ecosystem Restoration Integrated Feasibility Report and Environmental Impact Statement (2008). Monitoring and management of the project will be performed through use of an annual monitoring framework, habitat development framework, and adaptive management plan, similar to the Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island.

## **6. Project Purpose:**

The purpose of the Mid-Bay Project is to: restore and protect wetland, aquatic, and terrestrial island habitat for fish, reptiles, amphibians, birds, and mammals; protect existing island ecosystems to prevent further loss of island and aquatic habitat; provide dredged material placement capacity for Federal navigation channels; increase wetlands acreage in the Chesapeake Bay watershed; decrease local erosion and turbidity; promote conditions to establish and enhance submerged aquatic vegetation; and promote conditions that support oyster recolonization.

## **Section 11. Description of Avoidance, Minimization, and Compensation**

This project is an ecosystem restoration project that will provide a myriad of environmental benefits including but not limited to: shoreline protection for remote island habitat as well as the neighboring mainland, protection of over 1,000 acres of potential SAV beds, improvement of water quality, and wetland/habitat creation (approximately 83 acres of wetland and 8.5 acres of bird island habitat). Through the Environmental Impact Statement (EIS) process as well as the Pre-Construction Engineering Design Phase, every effort has been made to maximize environmental and ecosystem benefits where practical. Extensive natural resource agency coordination occurred and continues to occur through this adaptive management process. See Attachment 2 – Page 11 for impacts.

## **Environmental Impact Statement Alternatives Analysis Summary**

The EIS plan formulation was conducted to determine a recommended plan that would provide ecosystem benefits within site-specific constraints and meet the long-term dredged material placement needs. The plan formulation process had two primary phases, both of which included various ranking, scoring, and screening processes. First, potential locations suitable for a large island restoration project and meeting the project objectives of habitat restoration and dredged material capacity were identified. Feasible alternative alignments were then developed to meet the engineering and environmental design constraints for the potential site (or sites).

The process to select a site for large island restoration had two components: 1) identify all potential locations for a large island restoration project within the study area (105 total existing or former island sites), and 2) rank these sites using engineering criteria, environmental criteria, and public input to eliminate sites that were not feasible. Eight feasible island sites were carried forward for additional consideration using the environmental criteria ranking process developed by the Bay Enhancement Working Group (BEWG) as part of the State of Maryland's Dredged Material Management Program process. The environmental ranking process evaluated sites

based on 52 parameters to determine each site's environmental suitability as a dredged material placement site. Based on the results of the island site selection process, James and Barren Islands were selected for detailed alternatives development.

Four Barren Island alignments, five James Island alignments, and 20 additional alignments that were combinations at both James Island and Barren Island were used to develop an array of 145 feasible alignment alternatives for evaluation. The screening of the alternatives involved multiple analysis tools, including: 1) geographic information system (GIS) analysis, 2) engineering and design suitability screening, 3) ecosystem benefits determination [using Island Community Units (ICU) analysis], 4) cost effectiveness/incremental cost analysis, and 5) input from resource agencies. Once feasible alignment alternatives were identified, these alignments were optimized to maximize ecosystem benefits and placement efficiency by evaluating multiple wetland/upland proportions in conjunction with variable upland dike heights, minimization of the project footprint, and resource agency input.

### **Barren Island - Pre-Construction Engineering and Design Phase Alternatives Analysis Summary**

Six alignments of the breakwater were formulated and underwent H&H modeling. The H&H modeling estimated water surface elevations, surge heights, and various velocity metrics with and without project during a series of 25 storms. Velocity was selected as a metric to evaluate effects to submerged aquatic vegetation (SAV) habitats.

Initially, the first 5 alternatives were evaluated. These included no breakwater, the full breakwater depicted in the feasibility report, a short breakwater, a short breakwater with 2 bird islands, and a short breakwater with a segmented portion. The sixth alternative was formulated using the results of the initial modeling and geotechnical information. It was identified that the foundation below the bend in the long breakwater was poor for breakwater construction and would require foundation replacement. The modeling results suggested that the protection to SAV habitat could be achieved with a shorter breakwater, and that the breakwater did not need to be continuous. The sixth configuration was devised to account for separations suggested by resource agencies to minimize risks of predation to nesting birds, and to avoid the poor foundation.

The seventh and recommended configuration includes additional input from the resource agencies to provide further distance between Barren Island and the bird islands while maintaining SAV habitat protection. Based on modeling results, it is estimated that the proposed configuration would reduce or maintain existing maximum water velocities experienced during the modeled storms. Additionally, the proposed configuration will minimize the impacts and costs associated with the longer breakwater and associated unsuitable foundation replacement.

### **Additional Information**

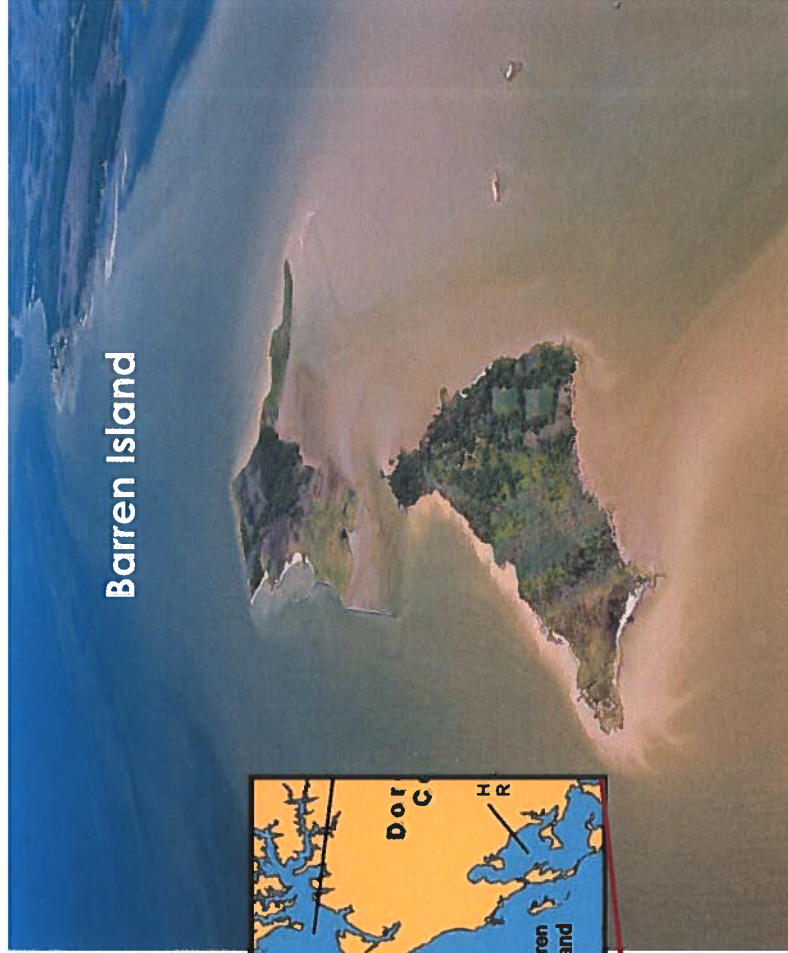
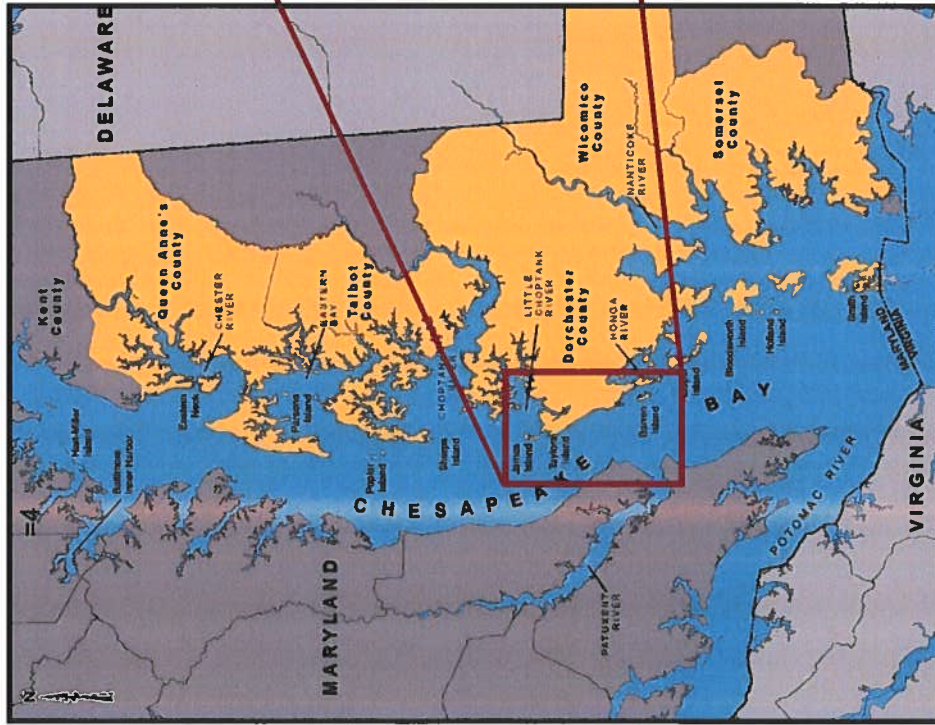
Please find additional information about the extensive planning process for this project in the Mid-Chesapeake Bay Island Ecosystem Restoration Integrated Feasibility Report and environmental Impact statement (EIS) in the following location:

<https://www.nab.usace.army.mil/Mid-Bay/>

Wetland Delineation: The 2020 wetland delineation report and LiDAR data were utilized to create the existing resources map and calculate wetland impacts over the site. The 2020 report is included for review.

**Attachment 2 – Project Impacts, Plans, and Figures (11 Pages)**

# Barren Island Vicinity Map



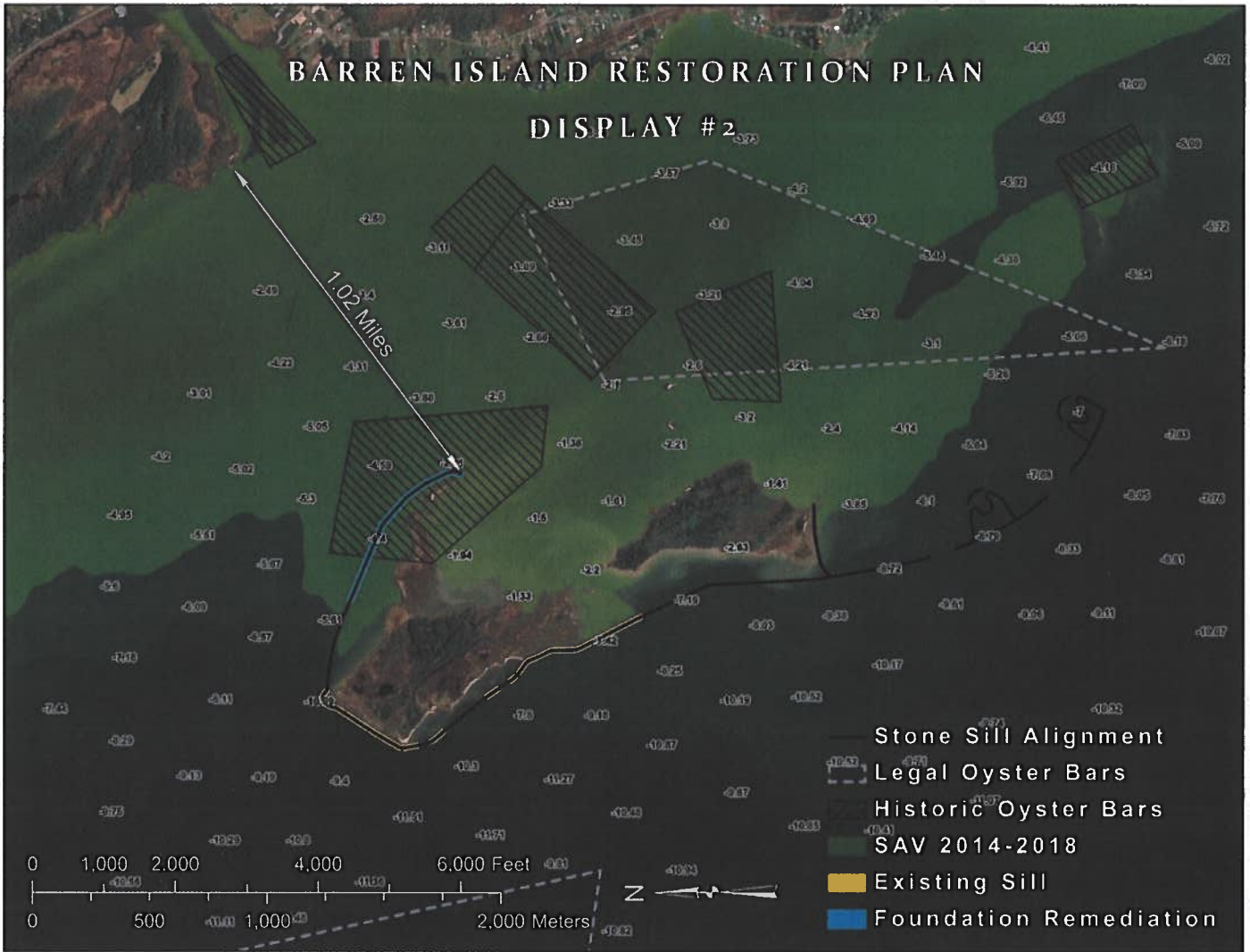
Barren Island is located directly to the west of Upper Hoopers Island in Dorchester County, Maryland





**Barren Island Restoration Plan**

The restoration effort at Barren will be comprised of the following components: modification or installation of 13,023 ft of protective stone sill, installation of 4,620 ft of southern breakwater, installation of 2 bird islands (8.5 acres total), and installation of ~83 acres of wetlands. Final design of the wetlands will depend on current conditions at construction. Currently, six outfall locations are planned to allow for tidal exchange.



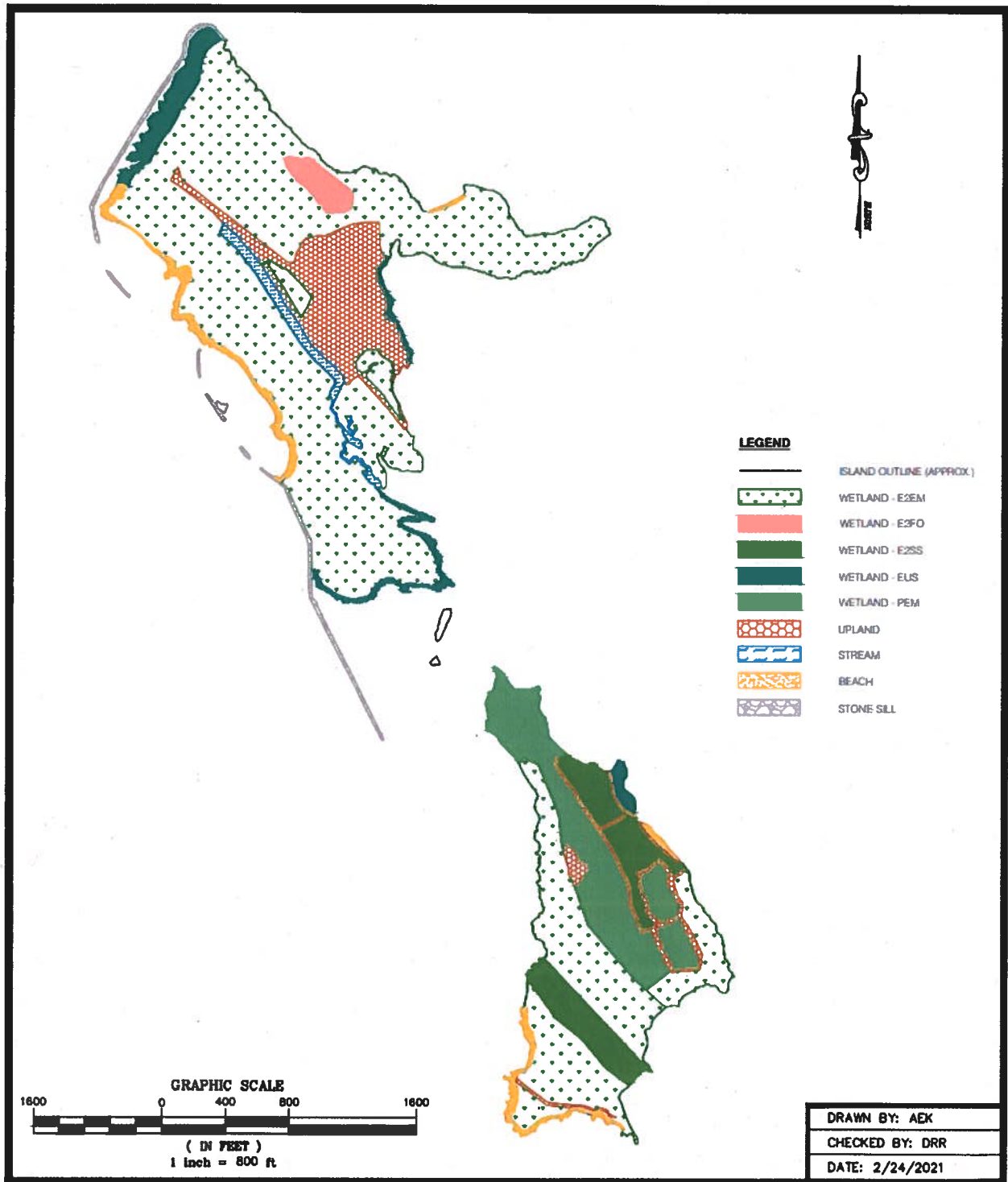
**Barren Island Natural Resource Map**

Barren Island is located approximately 1 mile west of Upper Hoopers Island. Once constructed, the protective stone sills and southern breakwater will provide not only shoreline protection for Barren Island and Upper Hoopers Island, but protection of the extensive submerged aquatic vegetation (SAV) bed (over 1,000 acres) to the east of Barren Island.



**Barren Island and Historic and Navigation Channel Location**

Barren Island is located approximately a quarter mile south of the Honga River channel, which is the only channel in the immediate vicinity.



### Page 5 – Barren Island Existing Resources

Of the 138 acres remaining of Barren Island, over 80 acres of wetland habitat is present. Once the restoration project is complete, approximately 83 acres of wetland will be added. The above resource map was created using 2020 LiDAR data and the 2020 wetland delineation study.

0.33'	_____	MEAN HIGHER HIGH WATER (MHHW)
0.16'	_____	MEAN HIGH WATER (MHW)
0.00'	_____	NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
-0.45'	_____	MEAN TIDE LEVEL (MTL)
-1.06'	_____	MEAN LOW WATER (MLW)
-1.22'	_____	MEAN LOWER LOW WATER (MLLW)

TIDAL DATUMS AT BARREN ISLAND, MD FOR THE  
1983-2001 TIDAL EPOCH\*

NOT TO SCALE

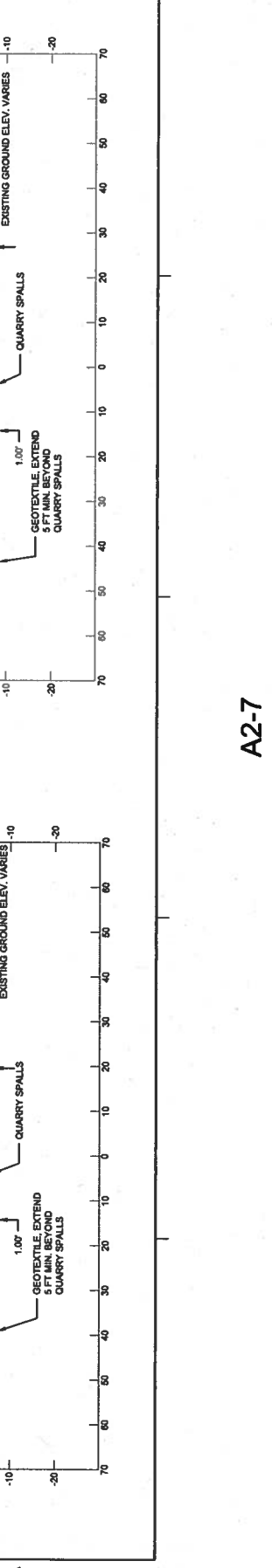
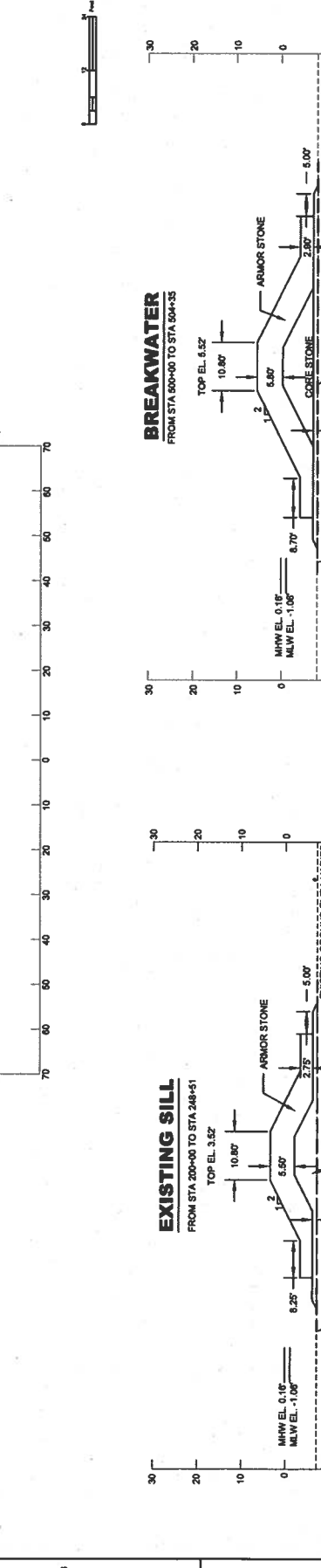
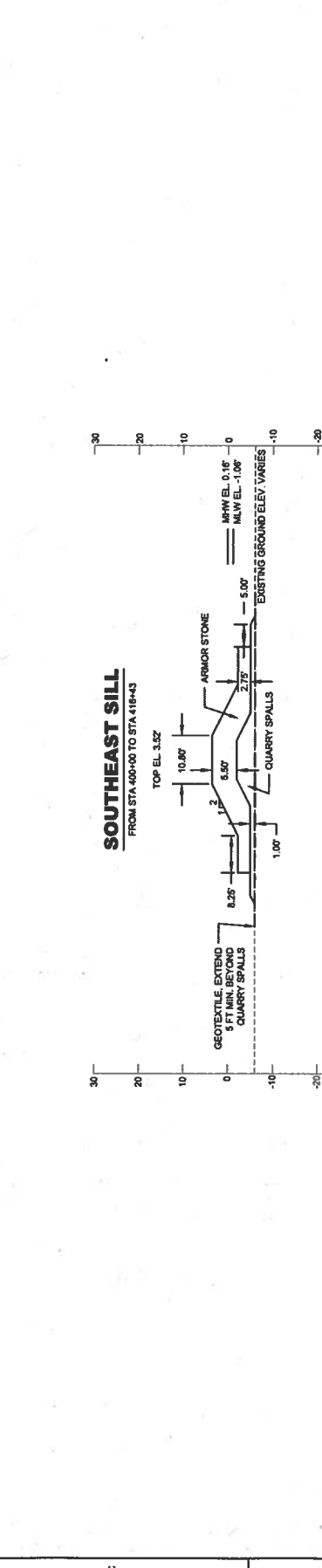
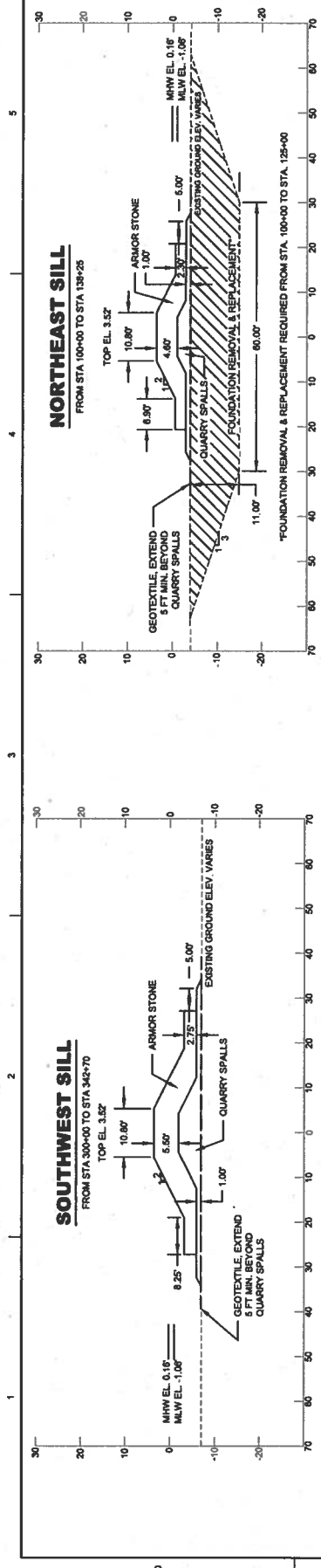


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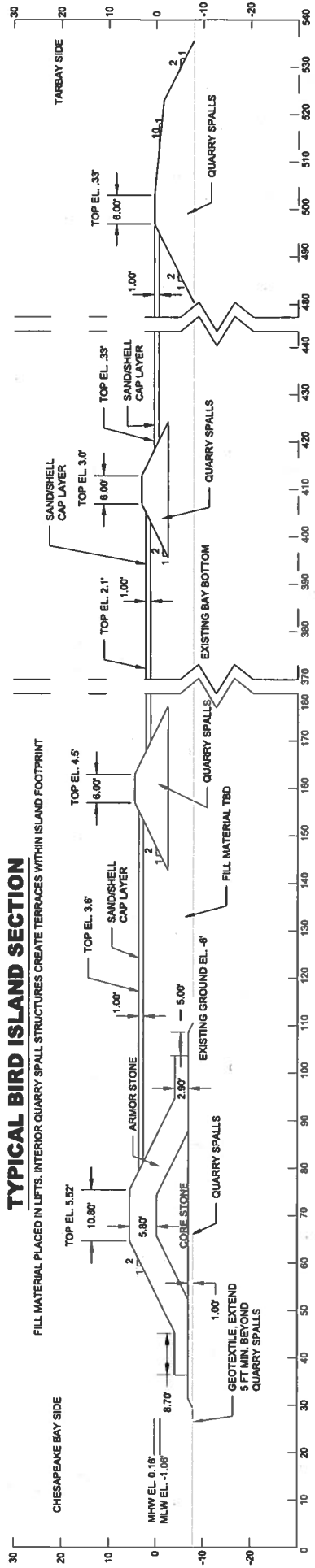
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CONTRACT NO.	
PLAT NUMBER	
PROJECT DATE	
SCALE	
ENGINEERING DIVISION	

MD-CORPARE BAY ISLAND  
 ECOPROTECT RESTORATION PROJECT  
 PHASE I - BAYVIEW ISLAND  
 STONE RESTORATION STRUCTURES  
 CROSS SECTIONS

SHEET IDENTIFICATION  
**C-301**

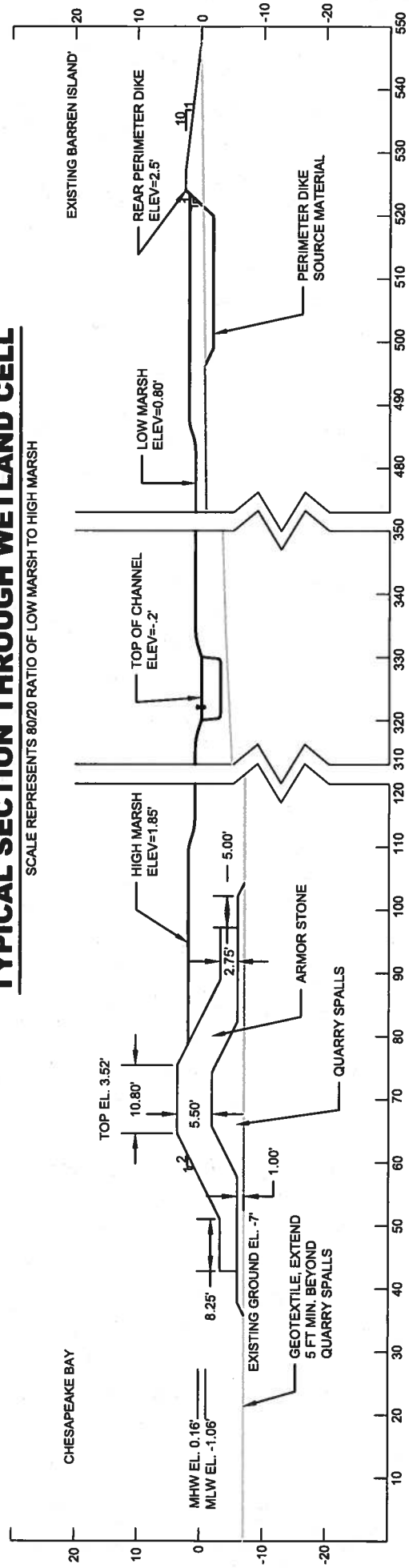


### TYPICAL BIRD ISLAND SECTION



# TYPICAL SECTION THROUGH WETLAND CELL

SCALE REPRESENTS 80/20 RATIO OF LOW MARSH TO HIGH MARSH





1 2 3 4 5



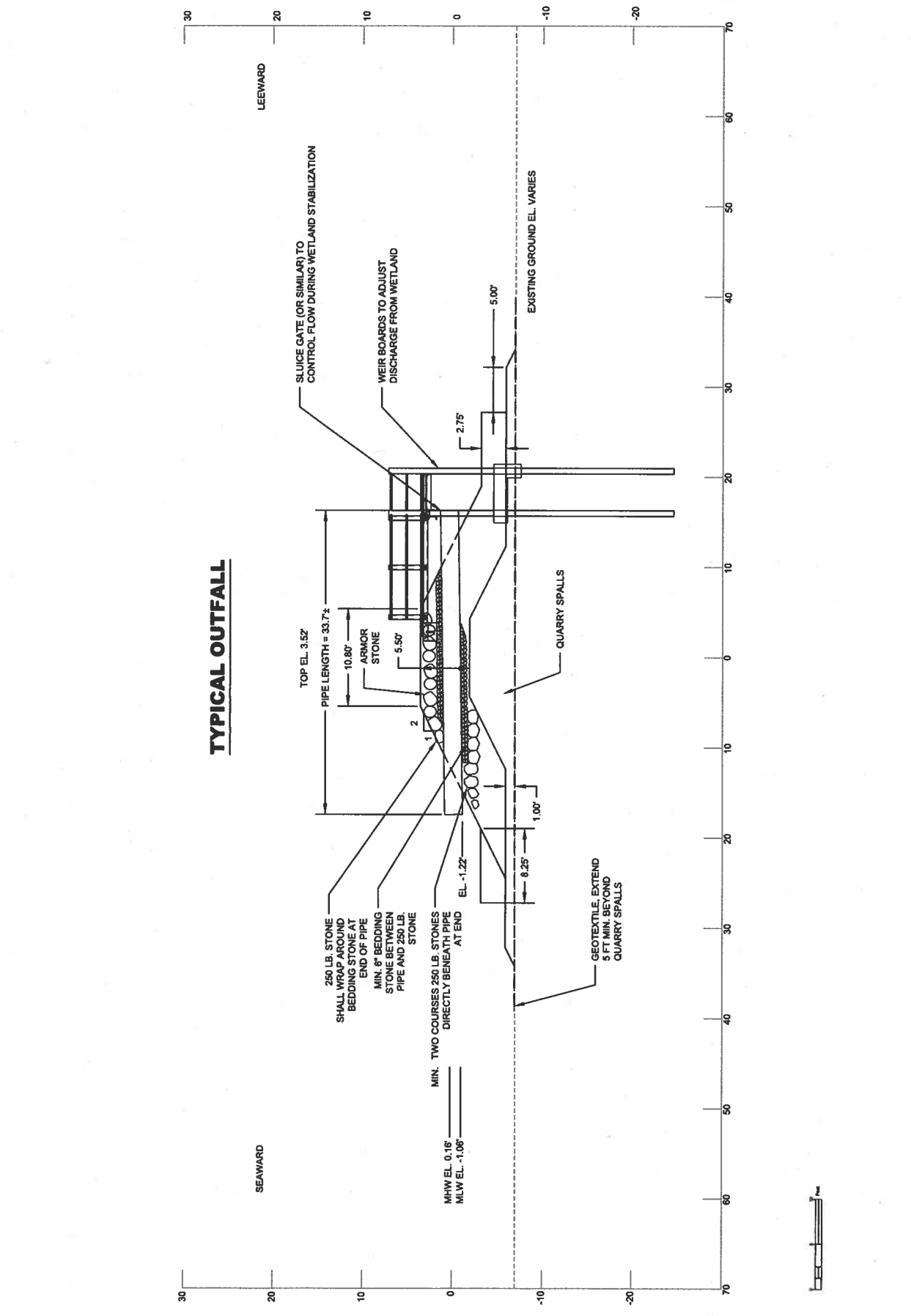
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NO. OF SHEETS			
TOTAL SHEETS			
DATE			

U.S. ARMY CORPS OF ENGINEERS  
BALTIMORE DISTRICT  
BALTIMORE, MARYLAND  
ENGINEERING DIVISION

MD-CHESAPEAKE BAY ISLAND  
ECOSYSTEM RESTORATION PROJECT  
PHASE I - BARREN ISLAND  
STONE RESTORATION STRUCTURES  
CROSS SECTIONS

SHEET IDENTIFICATION  
**C-302**



**TYPICAL OUTFALL**

A2-10

### Barren Island Impacts Table

Work Proposed	Overall Length Ft.	Average Width Ft.	Average Depth Ft.	Vol. of Dredged or Fill Material CY	Total Area Impacted Sq. Ft.	Max Channelward Distance Ft.	Habitat Creation <sup>1</sup> Acres
<b>All new work</b>							
<b>Breakwater and Sill Features</b>							
Sills (NE, NW, and SW)	~13,023	70	-	-	~911,610	-	-
Southern Breakwater (including stone structures for the bird islands)	~4,620	90	-	-	~415,800	1,525	-
<b>Dredging Activities (Foundation Work)</b>							
Removal of unsuitable foundation material identified under the NE sill	~2,500	60	7	~52,500	~150,000	-	-
<b>Fill Activities (Foundation Work, Bird Islands, and Wetlands)</b>							
<b>Foundation Work</b>							
Replacement of unsuitable foundation material identified under the NE sill with sand from an allowable sand source	~2,500	60	7	~52,500	~150,000	-	-
<b>Bird Island Impacts</b>							
Lot Fill (2 bird island)	-	-	-	~154,000	~370,260	-	Remote Bird Islands 8.5
<b>Wetland Impacts (current wetland impacts calculated from the overlap of the proposed wetlands and current wetlands identified in the wetland delineation report and LIDAR data)</b>							
Lot Fill (3 wetlands)	-	-	-	~429,000	~3,606,768	-	Wetlands 82.8
	-	-	-	-	-	-	High Marsh 15.56 - 38.9
	-	-	-	-	-	-	Low Marsh 62.24 - 38.9
	-	-	-	-	-	-	Mud Flats ~5
<b>Total wetland impacts from lot fill (~1.41 acres)</b>							
~27.9-Acre NE Wetland (.17-acre impact)	-	-	-	-	~61,420	-	-
~12.4-Acre NW Wetland (.79-acre impact)	-	-	-	-	7,405	-	-
~42.5-Acre SW Wetland (.45-acre impact)	-	-	-	-	34,412	-	-
<b>Total open water impacts from lot fill (~81.39 acres)</b>	-	-	-	-	19,602	-	-
	-	-	-	-	~3,545,348	-	-

1 - Totals wetland types represent wetland ratios of 80/20 to 50/50 low marsh to high marsh

**Attachment 3 – Barren Island Adjacent Property Owners (9 Pages)**

*Removed*

**Attachment 4 – Barren Island Dredge Material Management Plan (1 Page)**

## **Barren Island Dredged Material Management Plan for Unsuitable Foundation Material Dredging**

To effectively construct the Barren Island restoration, substantial sand material is necessary to construct stable dike structures to reduce wave energy and contain future dredged material, which will allow construction of wetlands, construct the two bird islands, and to replace foundation materials that are not structurally suitable for marine construction.

Unsuitable foundation material (see Attachment 2 – Pages 2 and 7) will be dredged using hydraulic or mechanical (clamshell bucket) dredging methods. Should hydraulic methods be implemented, the dredge vessel will use a cutter head dredge to vacuum the material and transport it to Barren Island using a pipe from the dredge to the placement location. Should mechanical methods be implemented, a barge with a large clamshell excavator will dredge the material and place it on an adjacent barge which will then be mobilized to Barren Island and unloaded using mechanical methods to the placement location. The unsuitable foundation material will be used to restore wetland habitat behind the confining sills.

Suitable sand material used for fill/foundation material will be placed directly in the excavation discussed above. Any sand material used for dike construction will be stockpiled behind the stone structure and will be mechanically placed. The sand material used to construct the bird islands will be placed at the bird island location after the breakwater structures have been constructed.