



Maryland

Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

August 02, 2024

Maryland Coastal Bays Program
c/o Albert McCullough
Sustainable Science LLC
410 S Second St
Denton, MD 21629

Via email: albert@sustainablesience.com

Re: Agency Interest Number: 175164
Tracking Number: 202260834
Tidal Authorization Number: 23-WQC-0035

Dear Maryland Coastal Bays Program:

Your project did not qualify for approval under the Maryland State Programmatic General Permit (MDSPGP); therefore a separate review and issuance of the federal permit will be required by the U.S. Army Corps of Engineers. The federal permit is not attached.

Additionally, your project required a Wetlands License to be approved and issued by the Maryland Board of Public Works (BPW). The Wetlands License will be sent to you by BPW's Wetlands Administrator.

A project that does not qualify for approval under the MDSPGP requires an individual Water Quality Certification (WQC) to be issued by the Maryland Department of the Environment, which is attached. Please take a moment to read and review your WQC to ensure that you understand the limits of the authorized work and all of the general and special conditions.

You should not begin any work until you have obtained all necessary State, local, and federal authorizations. Please contact Robert M Simmons at robertm.simmons@maryland.gov or 410-901-4044 with any questions.

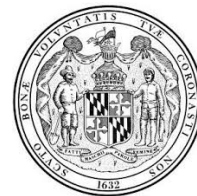
Sincerely,

Tammy Roberson

Tammy Roberson,
Deputy Program Manager
Wetland and Waterways Protection Program



STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION
WATER QUALITY CERTIFICATION



23-WQC-0035

EFFECTIVE DATE: **August 01, 2024**
CERTIFICATION HOLDER: **Maryland Coastal Bays Program**
ADDRESS: **8219 Stephen Decatur Hwy**
Berlin, MD 21811

PROJECT LOCATION: **outside of Girdletree, MD**
38.077222 N, -75.334167 W
Girdletree, MD 21829

UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND ITS AMENDMENTS AND IN ACCORDANCE WITH § 9-313 THROUGH § 9-323, INCLUSIVE, OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND, THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER AND SCIENCE ADMINISTRATION HAS DETERMINED THAT THE REGULATED ACTIVITIES DESCRIBED IN THE REQUEST FOR CERTIFICATION FOR THE PROPOSED TIZZARD ISLAND LIVIGN SHORELINE AND AS DESCRIBED IN THE ATTACHED PLAN SHEETS DATED JULY 31, 2024 AND ANY SUBSEQUENT MODIFICATIONS APPROVED BY THE DEPARTMENT WILL NOT VIOLATE MARYLAND'S WATER QUALITY STANDARDS, IF CONDUCTED IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION.

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVALS, LICENSES, OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE CORPS OF ENGINEERS. THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW.

PROJECT DESCRIPTION

1. Construct 6 segmented headland breakwaters with cobble toes measuring between 163 and 465 long and between 32 and 39 feet wide, all associated with a tombolo style living shoreline with the segmented headland breakwaters extending 122 to 422 feet channelward of the mean high water line; fill and grade with approximately 8,433 cubic yards of a sand/woodchip mix and a sand/cobble mix for tombolo/habitat construction and plant with 29,032 square feet of low marsh vegetation and 33,053 of high marsh vegetation;
2. Construct three channel blocks with inlet elevation set at mean lower low water as follows: Channel Block 1 measures 95 feet long by 10 feet wide; Channel Block 2 measures 63 feet long by 10 feet wide; and Channel Block 3 measures 22 feet long by 10 feet wide.

The Administration satisfied statutory and regulatory public notice requirements by placing the WQC on Public Notice from August 15, 2023 to September 15, 2023 on the Maryland Department of the Environment's Public Notice webpage and in the Worcester County Times on August 24, 2023.

GENERAL CONDITIONS

1. All water quality-related performance standards and conditions required by the Department in any state issued authorization for activities in tidal wetlands, nontidal wetlands, their 100-year floodplains, nontidal wetlands buffers, or nontidal wetland expanded buffers to ensure that any discharges will not result in a failure to comply with water quality standards in COMAR 26.08.02 or any other water quality requirements of state law or regulation shall be met.
2. This Certification does not obviate the need to obtain required authorizations or approvals from other State, federal or local agencies as required by law.
3. All additional authorizations or approvals, including self-certifying General Permits issued by the Department, shall be obtained and all conditions shall be completed in compliance with such authorizations.
4. The proposed project shall be constructed in accordance with the approved final plan by the Department, or, if Department approval is not required, the plan approved by the U.S. Army Corps of Engineers, and its approved revisions.
5. All fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into waters of this State.
6. This Certification does not authorize any injury to private property, any invasion of rights, or any infringement of federal, state, or local laws or regulations.
7. Authorized representatives of the Department shall be provided access to the site of authorized activities during normal business hours to conduct inspections and evaluations of the operations and records necessary to assure compliance with this Certification.
8. No stockpiles of any material shall be placed in Waters of the U.S. or state or private tidal wetlands.
9. Temporary construction trailers or structures, staging areas and stockpiles shall not be located within tidal wetlands, nontidal wetlands, nontidal wetlands buffers, or the 100-year floodplain unless specifically included on the Approved Plan.
10. This Certification is valid for the project identified herein and the associated U.S. Army Corps of Engineers authorization NAB-2022-60834 (MD Coastal Bays Program - Tizzard Island Resiliency) until such time that it expires or is not administratively extended.

SPECIAL CONDITIONS

1. All Critical Area requirements shall be followed and all necessary authorizations from the Critical Area Commission ("Commission") shall be obtained. This Certificate does not constitute authorization for disturbance in the 100-foot Critical Area Buffer. "Disturbance" in the Buffer means clearing, grading, construction activities, or removal of any size of tree or vegetation. Any

anticipated Buffer disturbance requires prior written approval, before commencement of land disturbing activity, from local jurisdiction in the form of a Buffer Management Plan.

2. All work performed under this Water Quality Certificate shall be conducted by a marine contractor licensed by the Marine Contractors Licensing Board (MCLB) in accordance with Title 17 of the Environment Article of Annotated Code of Maryland. Licensing by MCLB shall occur prior to the beginning of construction activities. A list of licensed marine contractors may be obtained by contacting the MCLB at 410-537- 3249, by e-mail at MDE.MCLB@maryland.gov or by accessing the Maryland Department of the Environment, Environmental Boards webpage.
3. The issuance of this Certificate is not a validation or authorization by the Department for any of the existing structures depicted on the plan sheets on the subject property that is not part of the authorized work description, nor does it relieve the Certificate Holder of the obligation to resolve any existing noncompliant structures and activities within tidal wetlands.
4. The Certificate Holder shall construct the marsh establishment area in accordance with the following conditions:
 - a. The Certificate Holder shall use clean substrate fill material, no more than 10% of which shall pass through a standard number 100 sieve.
 - b. The marsh establishment area shall be planted within one year following completion of the filling operation.
 - c. The marsh establishment project shall be maintained as a wetland, with non-nuisance species' aerial coverage of at least 85% for three consecutive years. If 85% coverage is not attained, the reasons for failure shall be determined, corrective measures shall be taken, and the area shall be replanted.
 - d. If the fill is graded hydraulically, the licensee shall use a turbidity curtain around the perimeter of the instream work.
 - e. If the existing bank is to be cleared or graded:
 - i. The Certificate Holder shall perform all work under and in accordance with an approved Soil Erosion and Sediment Control Plan from the applicable sediment and erosion control agency; and
 - ii. The Certificate Holder shall perform all work under and in accordance with the Critical Area requirements of the local jurisdiction in the form of an approved Buffer Management Plan.
5. The Certificate Holder shall accept the terms of the attached marsh maintenance plan by signing and returning the standard plan to the Water and Science Administration, Tidal Wetlands Division prior to commencement of any work authorized under this Certificate. If the Certificate Holder wishes to propose an alternative marsh maintenance plan, the alternative plan must be submitted to and approved by the Tidal Wetlands Division, Water and Science Administration, prior to commencement of any work authorized under this Certificate. Any alternative plan must provide assurances of success that are at least equivalent to those of the standard plan, in terms of the extent of native marsh plant coverage, elimination of invasive species and timeframe for plant establishment.
6. The Certificate Holder shall submit photographs on an annual basis for the first five growing seasons to the Tidal Wetlands Division, Water and Science Administration in order to document the success of the project in terms of the extent of native marsh plant coverage. Photographs shall be taken from at least two directions, as necessary to fully depict the living shoreline.
7. Due to Submerged Aquatic Vegetation, the Certificate Holder shall perform no in-water work between April 15 and October 15 of any year.

STATEMENTS OF NECESSITY & CITATIONS

1. Statement of Necessity for General Conditions 1, 2, 3, 4, and Special Conditions 1, 3: These conditions are necessary to ensure that water quality standards are met, and designated uses are maintained.

Citations: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10G(3); COMAR 26.23.02.06; COMAR 26.17.01; COMAR 26.23; COMAR 26.24

2. Statement of Necessity for General Conditions 5, 8, 9, and Special Conditions 4, 5, 6: Fill or construction material within or adjacent to regulated resources may cause discharges resulting in turbidity in excess of water quality standards and interfere with designated uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance.

Citation: 26.08.02.03B(1)-B(2); COMAR 26.23; COMAR 26.24; COMAR 26.17.04

3. Statement of Necessity for General Condition 6: This condition is necessary to clarify the scope of this certification to ensure compliance with water quality regulations, without limiting restrictions through other requirements.

Citation: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08, COMAR 26.08.02.10E; COMAR 26.23.02.06; COMAR 26.17.04; COMAR 26.23; COMAR 26.24

4. Statement of Necessity for General Condition 7: Conditions of certification involve precise actions to comply with water quality standards. Site inspection may be necessary to ensure that limits, methods, and other requirements are met to ensure that water quality standards are met and designated uses are maintained. These conditions are necessary to ensure that the activity was conducted, and project completed according to terms of the authorization/certification, while allowing for review of in-field modifications which may have resulted in discharges to ensure that water quality standards were met. Designated uses include support of estuarine and marine aquatic life and shellfish harvesting and for growth and propagation of fish, other aquatic life, and wildlife

Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.03B(1)(b); COMAR 26.08.02.03B(2); COMAR 26.23.02.06; COMAR 26.23; COMAR 26.24; COMAR 26.17.04

5. Statement of Necessity for General Condition 10: This condition is necessary to qualify the period of applicability of the terms and conditions of this Certification to be protective of Maryland water quality standards.

Citations: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; 40 C.F.R. 121, 15 C.F.R. 930, Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.17.04; COMAR 26.23; COMAR 26.24

6. Statement of Necessity for Special Condition 2: Expertise for conducting certain activities is required to ensure that there is no violation of water quality standards nor interference with designated uses. This condition is necessary to ensure that discharges will be conducted in a manner which does not violate water quality criteria nor interfere with designated uses.

Citation: COMAR 26.08.02.02B(2)- B(4); COMAR 26.08 02.03B(2)(d) – (e); COMAR 26.08.02.03B(1)(b); 26.08.02.03B(2); COMAR 23.02.04.04

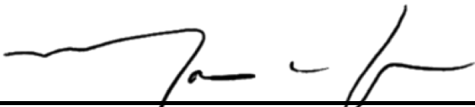
7. Statement of Necessity for Special Conditions 4, 5, 6: Tidal wetlands provide essential habitat, water quality, food, and movement corridors for wildlife, and support of estuarine and marine aquatic life and shellfish harvesting. Successful establishment is necessary to prevent discharges which interfere with designated uses, including growth and propagation of fish, other aquatic life, and wildlife through loss of stream channel habitat and wetlands. Required establishment, re-establishment, or enhancement and loss limits will maintain the designated use.

Citations: COMAR 26.08.02.02B(3); COMAR 26.08.02.03B(3) and B(4); COMAR 26.24.

8. Statement of Necessity for Special Condition 7: A time of year restriction is necessary to maintain the designated use for support of estuarine and marine aquatic life and shellfish harvesting.

Citation: Federal and state laws which authorize this condition include but are not limited to: COMAR: 26.08.02.02B(1)(d); 26.08.02.02B(3); COMAR 26.08.02.02-16.

CERTIFICATION APPROVED



D. Lee Currey, Director
Water and Science Administration

8/7/2024

Date

Tracking Number: 202260834
Agency Interest Number: 175164

Effective Date: **August 01, 2024**

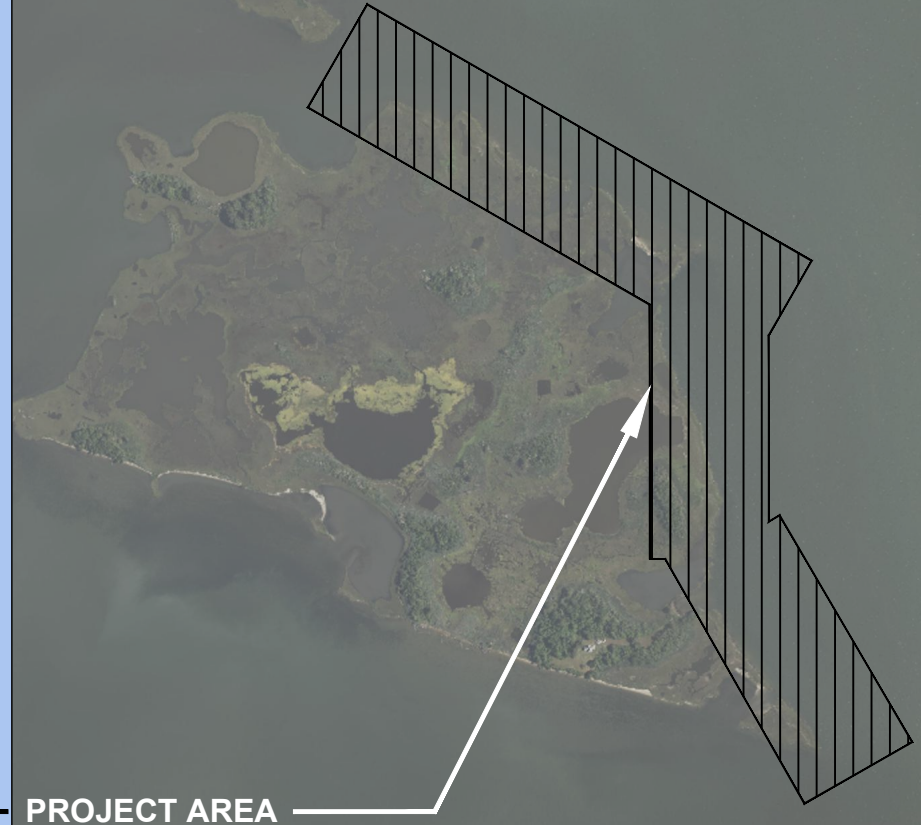
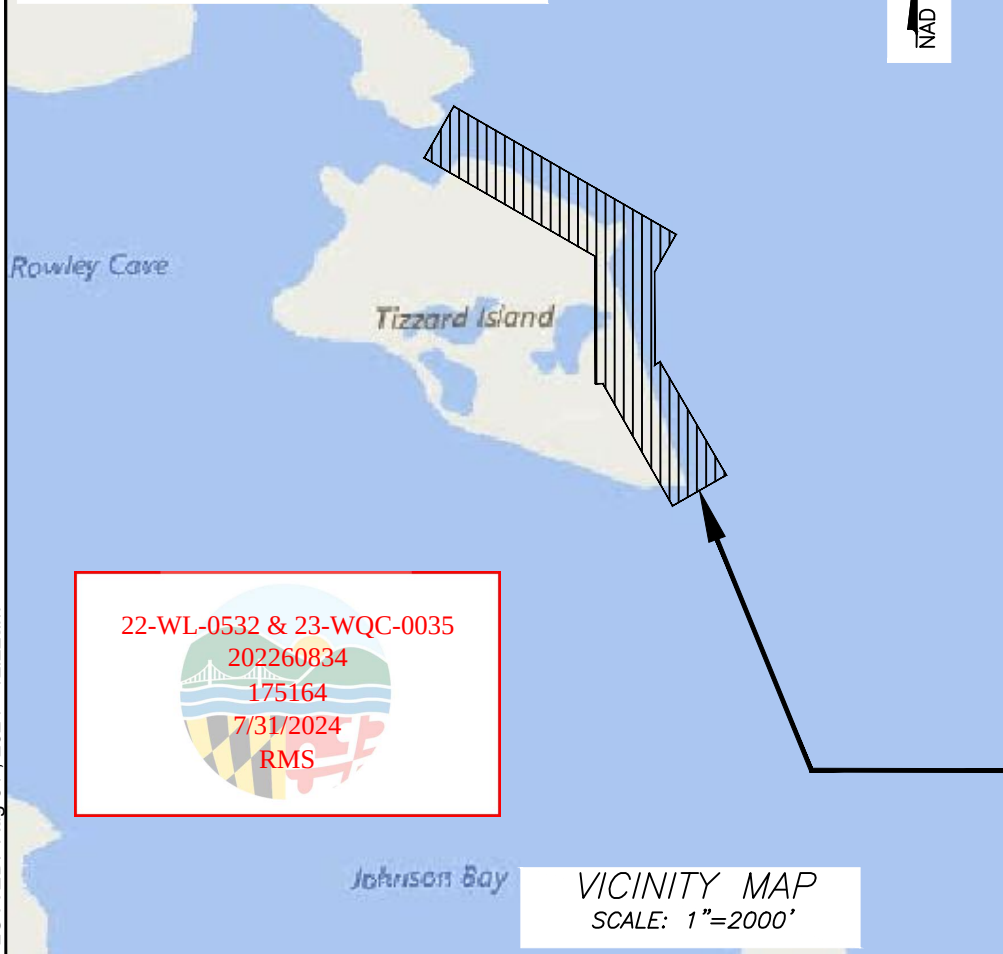
Enclosure: Plan Sheets dated **July 31, 2024**

cc: WSA Inspection & Compliance Program
Army Corps of Engineers

SHEET INDEX

DESCRIPTION	SHEET
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VICINITY MAP AND AERIAL PHOTO	1
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PLAN
SCALE: 1"=1000'

JULY 31, 2024

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tel. 410-849-3211 fax. 410-849-2136

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



Scale	AS SHOWN	VICINITY MAP AND AERIAL PHOTO TIZZARD ISLAND COASTAL RESILIENCY MAP 0087 , GRID 0000 , PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY
Drawn By	K.B./J.H./J.K.	
Approved By	K.B.	
Sheet No.	1 Of 30	
Project No.	18-025	

Code File: S:\006-Projects\Tizzard Island Coastal Resiliency Planning & Design\04-CAD\Drawings\TIDAL\TIDAL_01_VICINITY MAP & AERIAL.dwg

BROCKATONORTON BAY

EXISTING CONDITIONS SHEET 3

EXISTING CONDITIONS SHEET 4

EXISTING CONDITIONS SHEET 5

EXISTING CONDITIONS SHEET 6

EXISTING CONDITIONS SHEET 7

JOHNSON BAY

JOHNSON BAY

BROCKATONORTON BAY

PLAN

SCALE: 1"=1000'

22-WL-0532 & 23-WQC-0035

202260834

175164

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Project No.	18-025

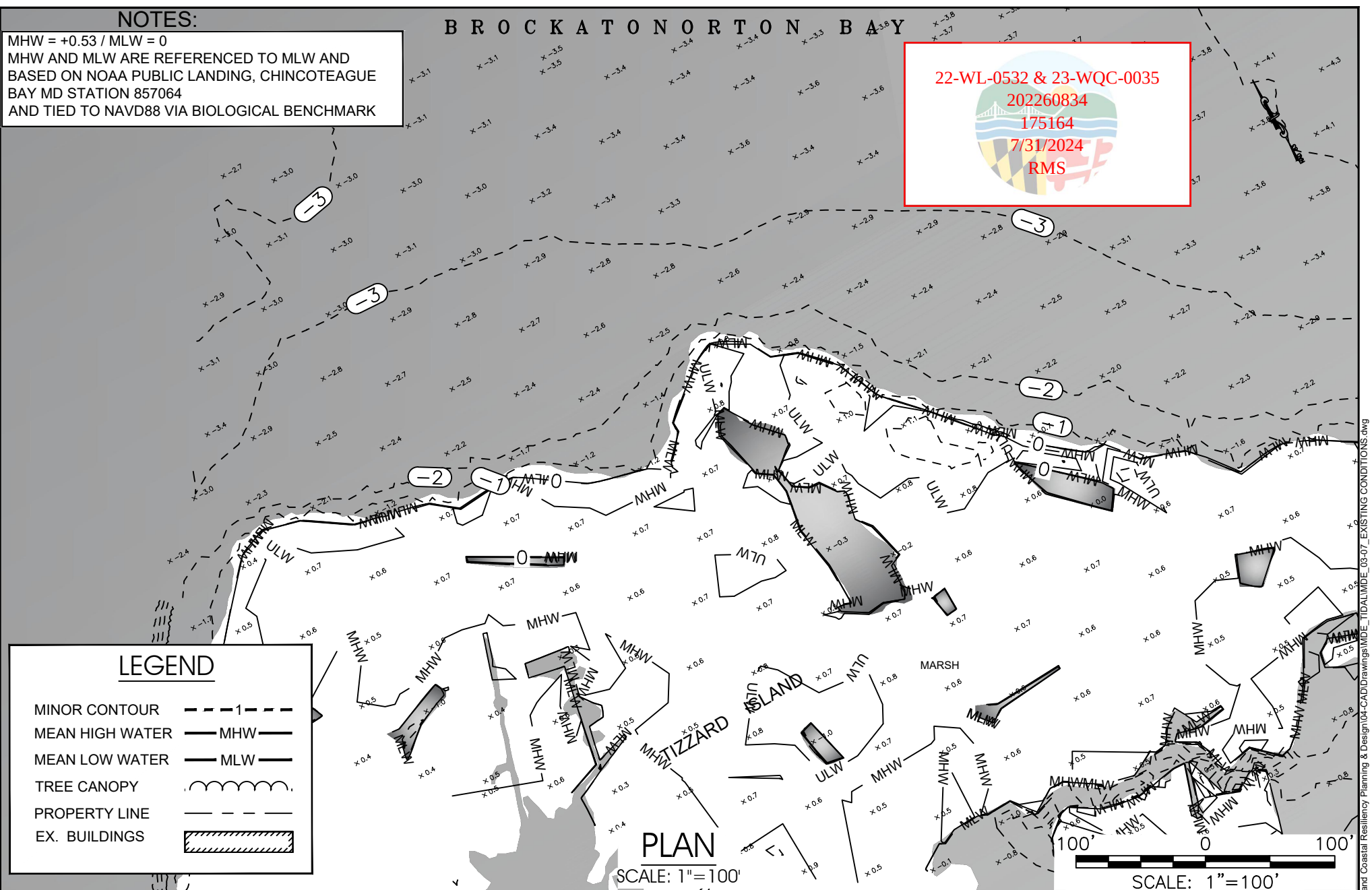
PROJECT VICINITY CONDITIONS

TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

MHW = +0.53 / MLW = 0
MHW AND MLW ARE REFERENCED TO MLW AND
BASED ON NOAA PUBLIC LANDING, CHINCOTEAGUE
BAY MD STATION 857064
AND TIED TO NAVD88 VIA BIOLOGICAL BENCHMARK

22-WL-0532 & 23-WQC-0035
202260834
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22-WL-0532 & 23-WQC-0035

202260834

175164

7/31/2024

RMS

LEGEND

MINOR CONTOUR	---
MEAN HIGH WATER	— MHW —
MEAN LOW WATER	— MLW —
TREE CANOPY	~~~~~
PROPERTY LINE	- - - - -
EX. BUILDINGS	▨▨▨▨▨

PLAN
SCALE: 1"=100'

100' 0 100'
SCALE: 1"=100'

MAPPED
SUBMERGED
AQUATIC
VEGETATION PER
VIRGINIA
INSTITUTE OF
MARINE SCIENCE
2016-2020

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Sheet No.	4 Of 30
Project No.	18-025

EXISTING CONDITIONS
TIZZARD ISLAND
COASTAL RESILIENCY

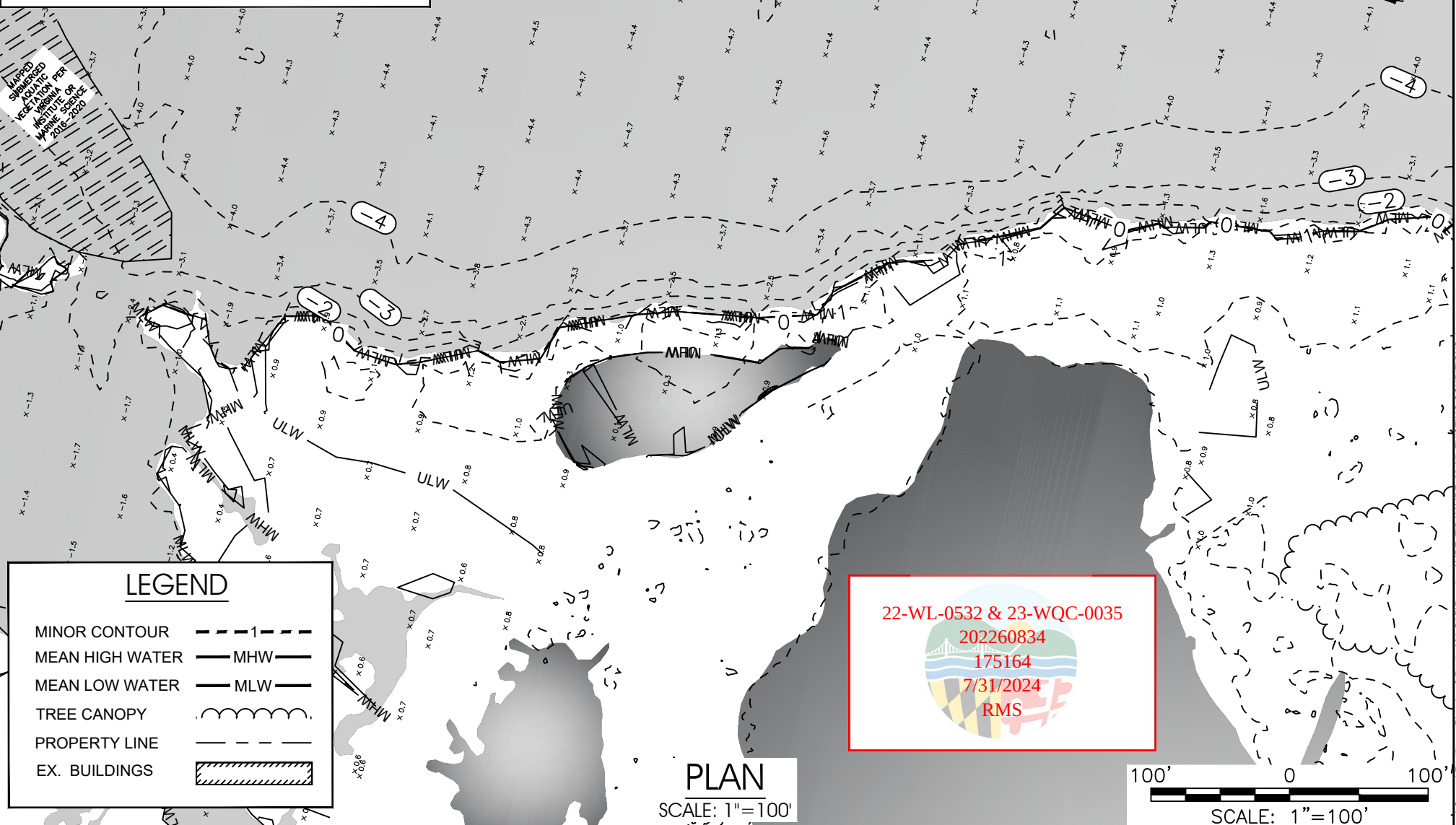
MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

JULY 31, 2024

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BAY MD STATION 857064
AND TIED TO NAVD88 VIA BIOLOGICAL BENCHMARK

BROCKATON NORTON BAY



LEGEND

- MINOR CONTOUR ---1---
- MEAN HIGH WATER —MHW—
- MEAN LOW WATER —MLW—
- TREE CANOPY (wavy line symbol)
- PROPERTY LINE (dashed line symbol)
- EX. BUILDINGS (hatched area symbol)

PLAN
SCALE: 1"=100'

100' 0 100'
SCALE: 1"=100'

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Approved By	K.B.
Sheet No.	5 Of 30
Project No.	18-025

EXISTING CONDITIONS
TIZZARD ISLAND
COASTAL RESILIENCY

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10TH ELECTION DISTRICT, WORCESTER COUNTY

JULY 31, 2024

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BAY MD STATION 857064
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MOORING PILE

EX. STRUCTURE

DUCK BLIND

TIDAL M

LEGEND

- MINOR CONTOUR ---1---
- MEAN HIGH WATER —MHW—
- MEAN LOW WATER —MLW—
- TREE CANOPY (wavy line symbol)
- PROPERTY LINE (dashed line symbol)
- EX. BUILDINGS (hatched box symbol)

22-WL-0532 & 23-WQC-0035
202260834
175164
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PLAN

SCALE: 1"=100'

SCALE: 1"=100'

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Approved By	K.B.
Sheet No.	6 Of 30
Project No.	18-025

EXISTING CONDITIONS
TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087, GRID 0000, PARCEL 0021
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BROCKATON NORTON BAY

LEGEND

MINOR CONTOUR ---1---
MEAN HIGH WATER —MHW—
MEAN LOW WATER —MLW—
TREE CANOPY ~~~~~
PROPERTY LINE - - - - -
EX. BUILDINGS [Hatched Box]

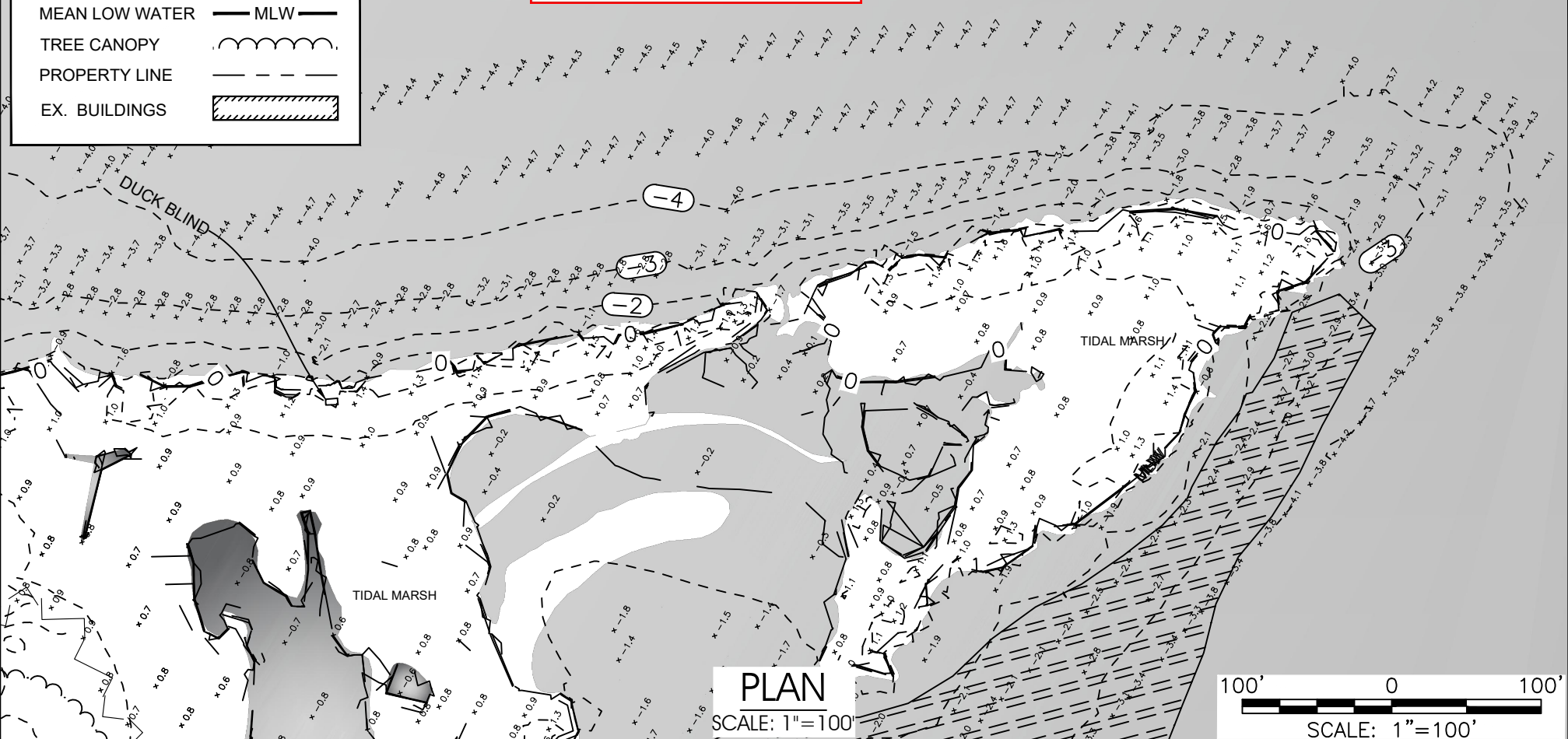
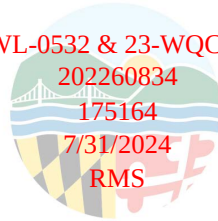
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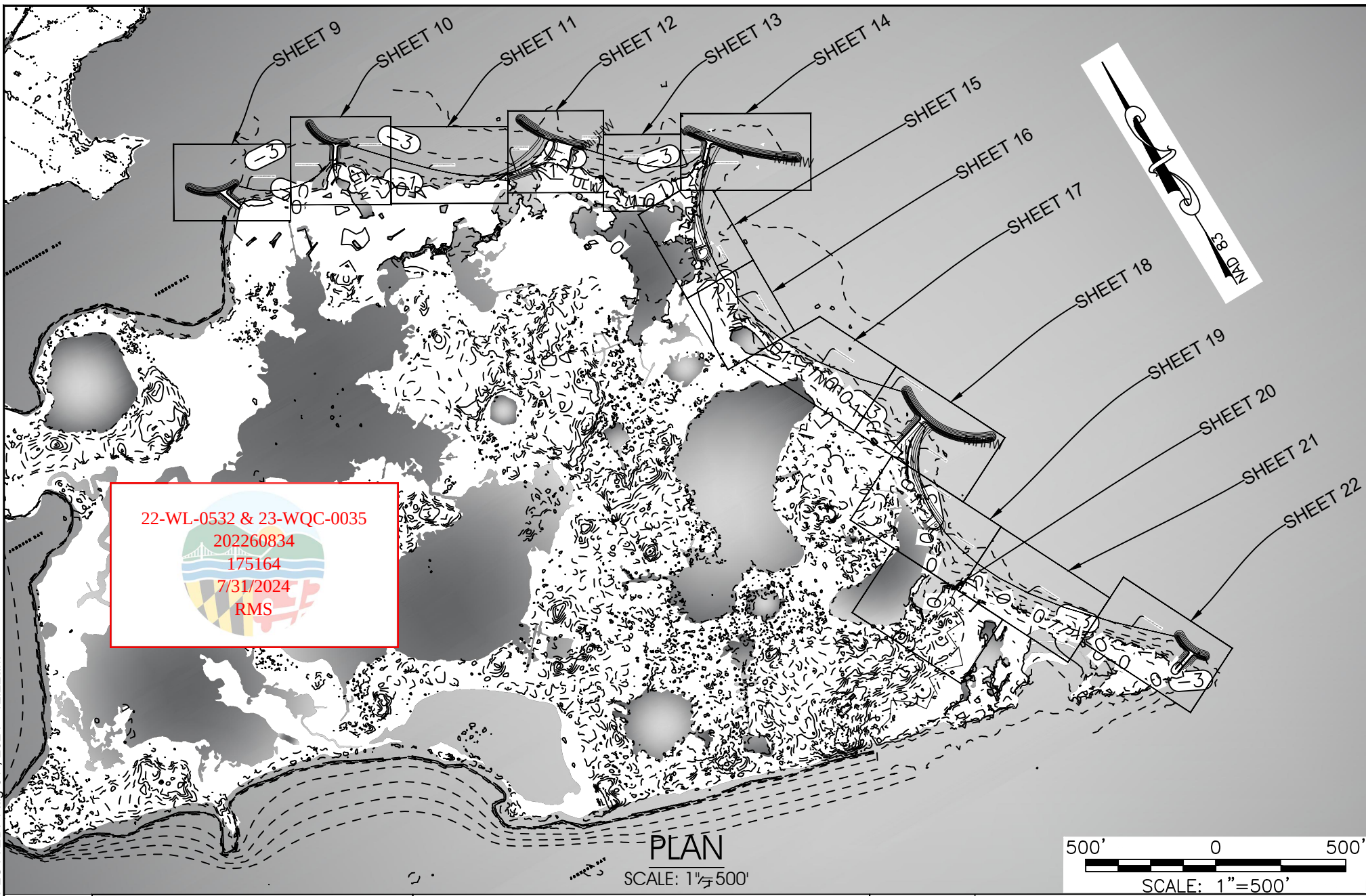
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Sheet No. 7 Of 30
Project No. 18-025

EXISTING CONDITIONS
TIZZARD ISLAND
COASTAL RESILIENCY

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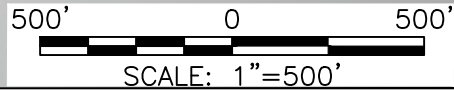
JULY 31, 2024

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PLAN

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JULY 31, 2024

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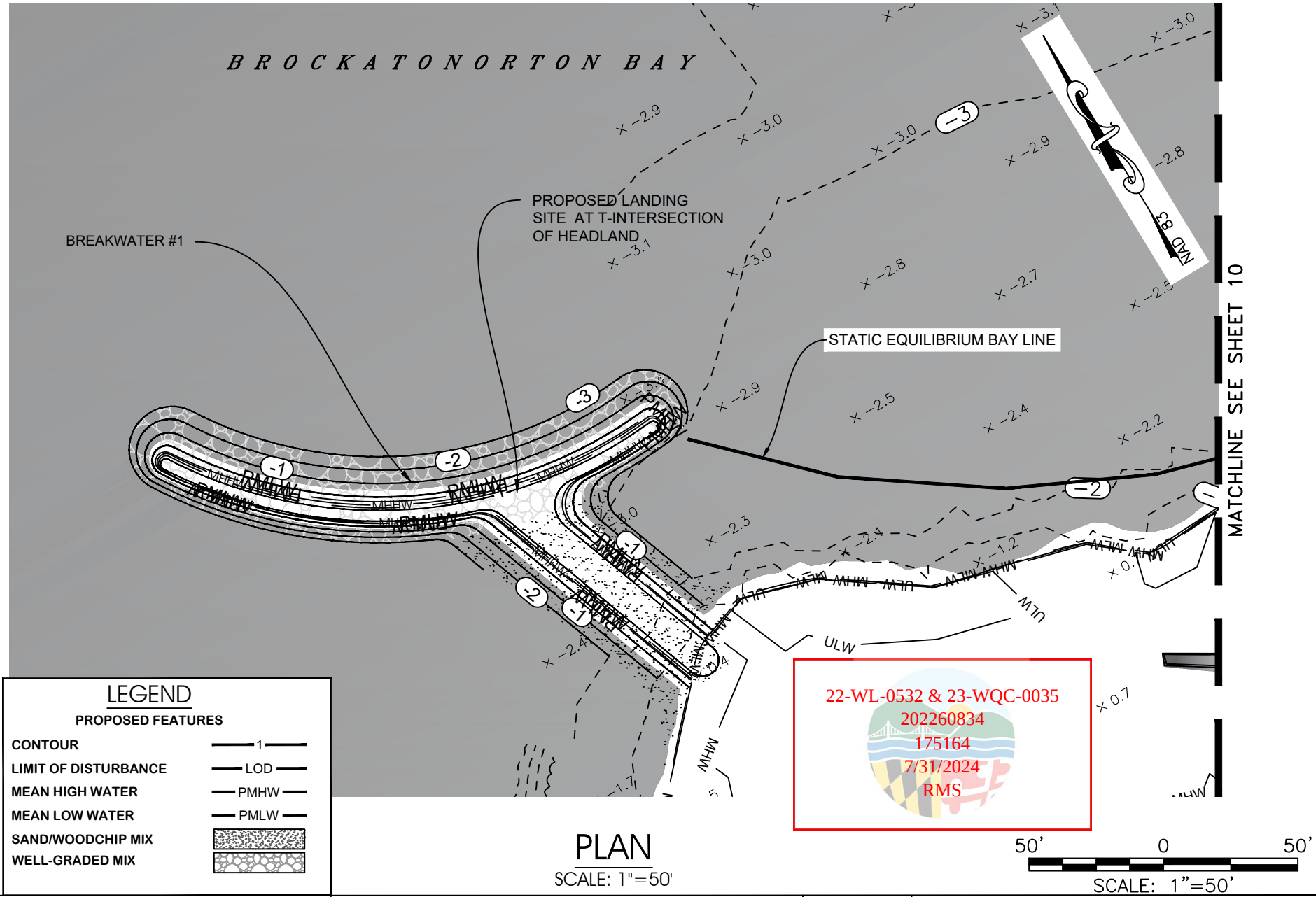
MARYLAND
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NATURAL RESOURCES



Scale		AS SHOWN	PROPOSED INDEX TIZZARD ISLAND COASTAL RESILIENCY MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY
Drawn By		K.B./J.H./J.K.	
Approved By		K.B.	
Sheet No.		8 Of 30	
Project No.		18-025	

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LEGEND
PROPOSED FEATURES

CONTOUR	— 1 —
LIMIT OF DISTURBANCE	— LOD —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

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MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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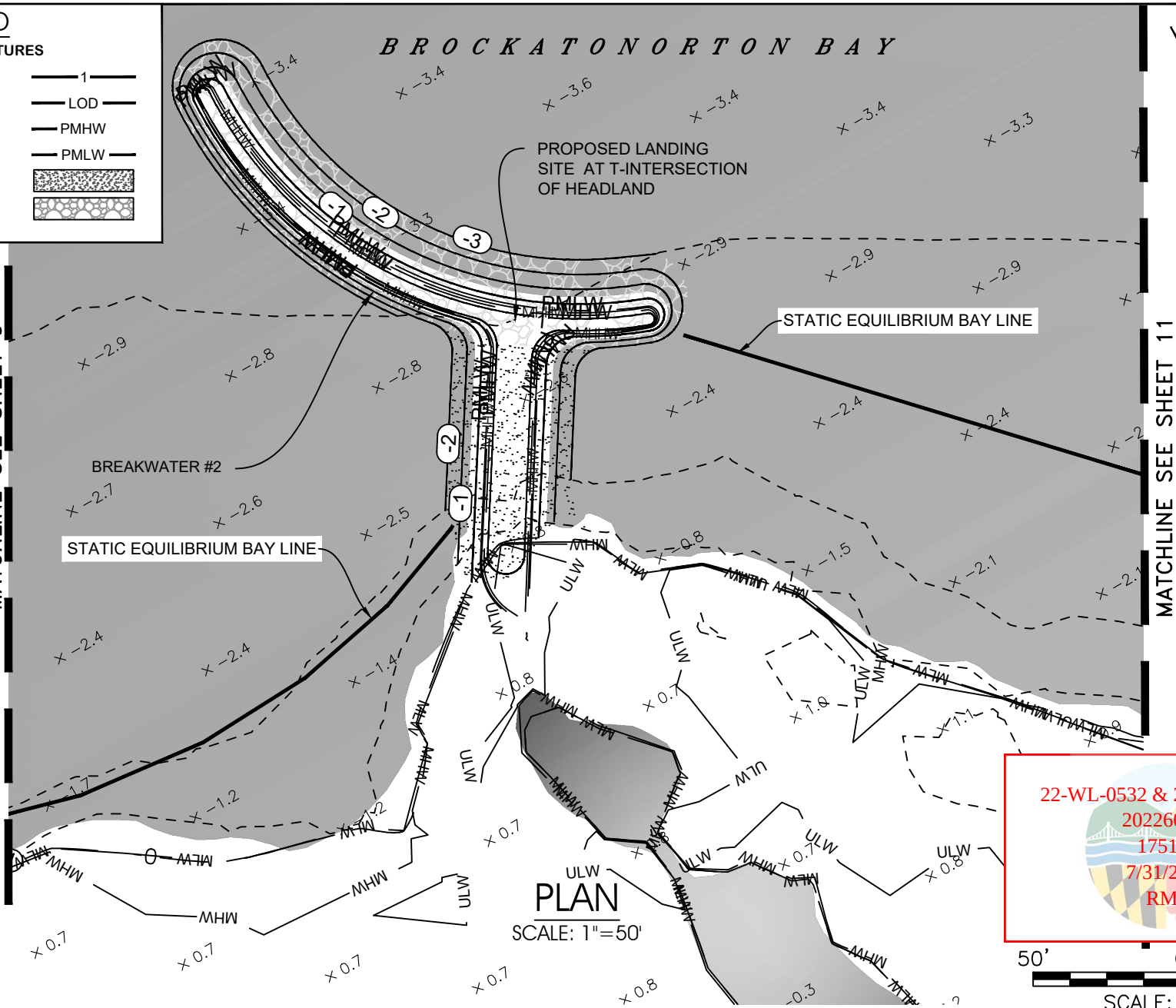
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LEGEND

PROPOSED FEATURES

CONTOUR	— 1 —
LIMIT OF DISTURBANCE	— LOD —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

MATCHLINE SEE SHEET 9



MATCHLINE SEE SHEET 11

PLAN
SCALE: 1"=50'

22-WL-0532 & 23-WQC-0035
202260834
175164
7/31/2024
RMS

50' 0 50'
SCALE: 1"=50'

JULY 31, 2024

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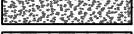
Scale	AS SHOWN
Drawn By	K.B./J.H./J.K.
Approved By	K.B.
Sheet No.	10 Of 30
Project No.	18-025

PROPOSED CONDITIONS
**TIZZARD ISLAND
COASTAL RESILIENCY**

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

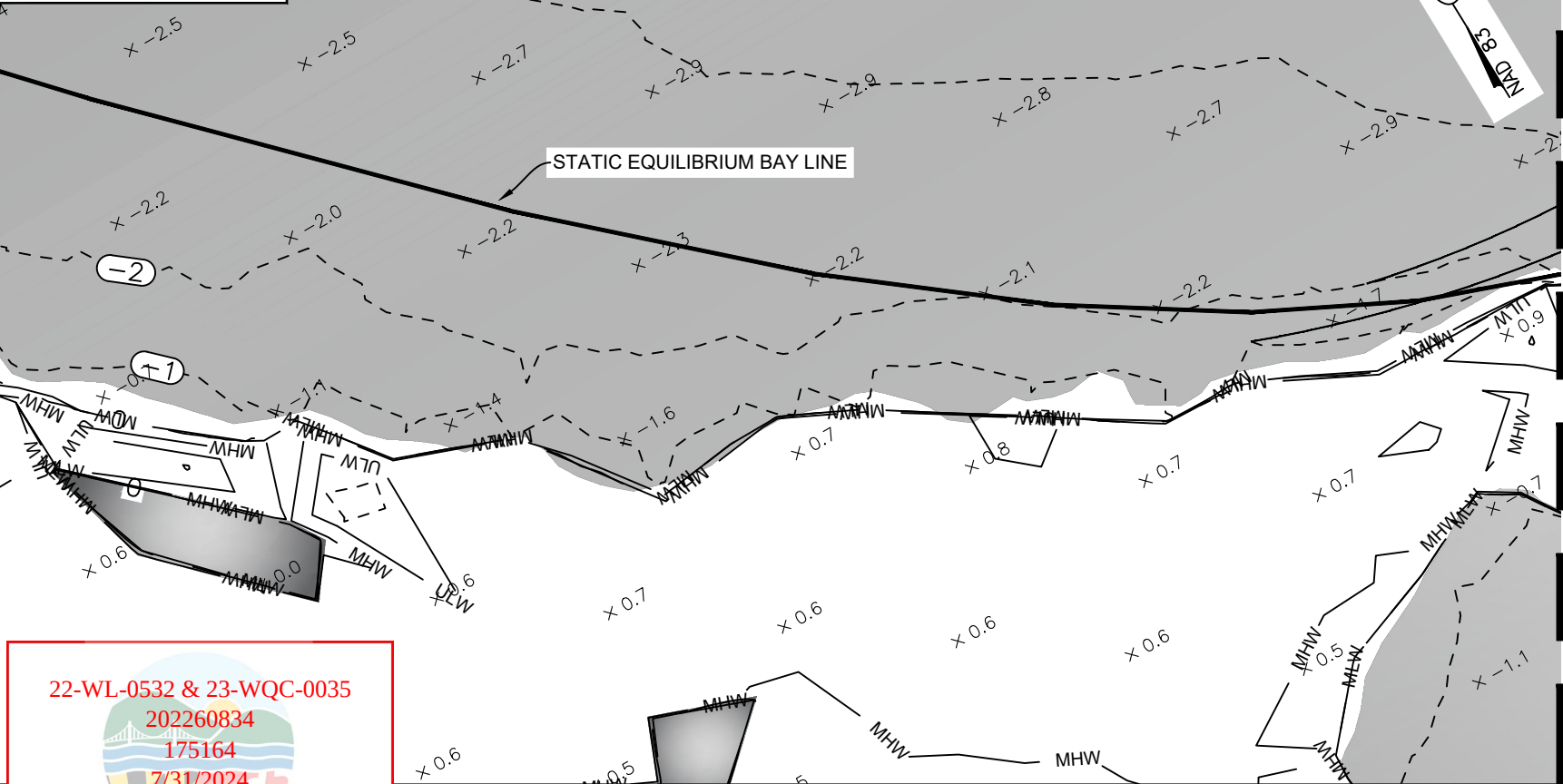
LEGEND

PROPOSED FEATURES

CONTOUR	—1—
LIMIT OF DISTURBANCE	—LOD—
MEAN HIGH WATER	—PMHW—
MEAN LOW WATER	—PMLW—
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

MATCHLINE SEE SHEET 10

MATCHLINE SEE SHEET 12



22-WL-0532 & 23-WQC-0035
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175164
7/31/2024
RMS

PLAN
SCALE: 1"=50'

50' 0 50'
SCALE: 1"=50'

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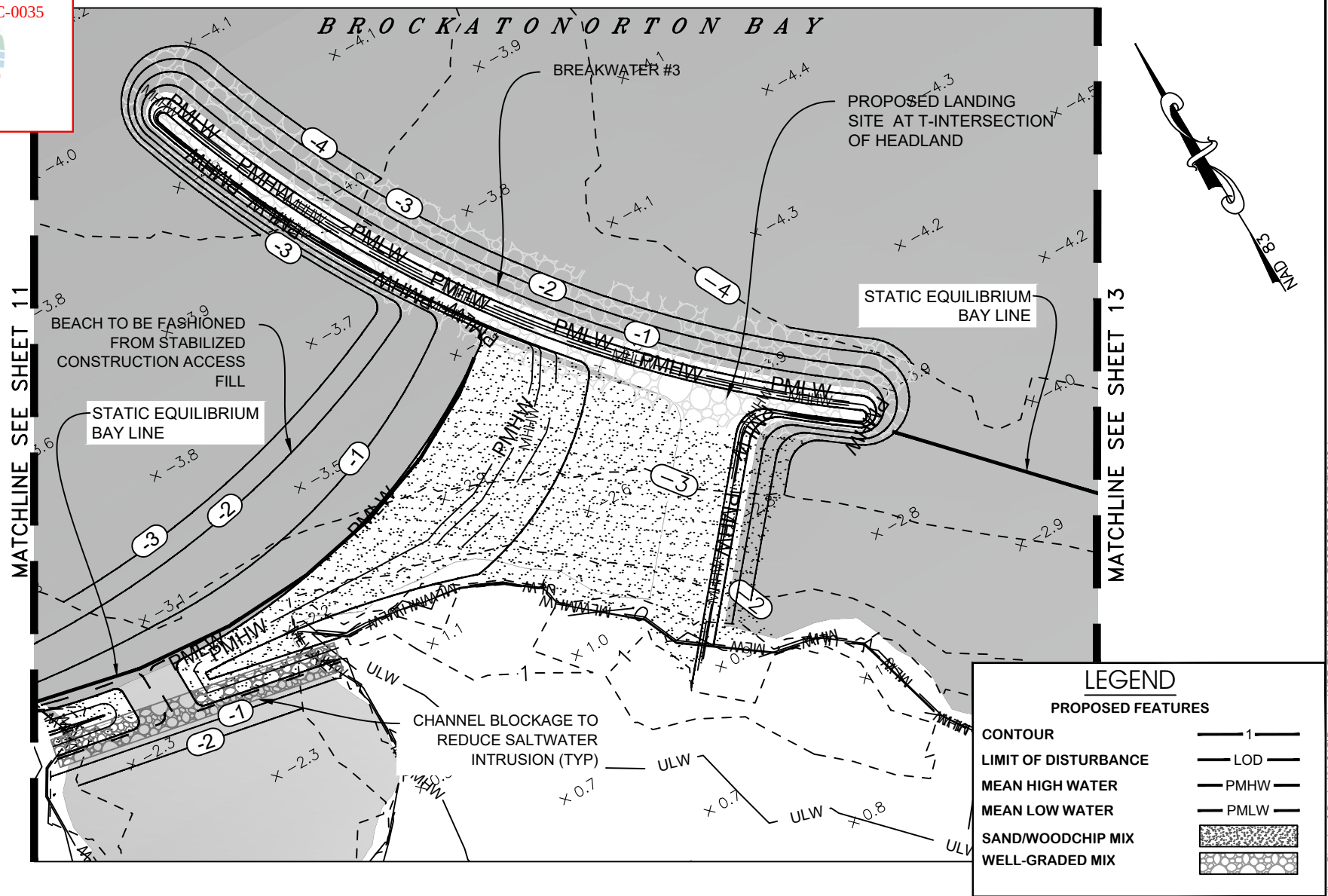
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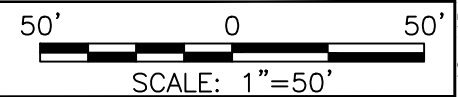


JULY 31, 2024	
Scale	AS SHOWN
Drawn By	K.B./J.H./J.K.
Approved By	K.B.
Sheet No.	11 Of 30
Project No.	18-025
PROPOSED CONDITIONS TIZZARD ISLAND COASTAL RESILIENCY MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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PLAN
SCALE: 1"=50'



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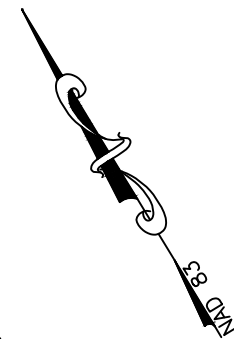
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Drawn By	K.B./J.H./J.K.	PROPOSED CONDITIONS TIZZARD ISLAND COASTAL RESILIENCY	
Approved By	K.B.		
Sheet No.	12 Of 30		
Project No.	18-025		
		MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

LEGEND

PROPOSED FEATURES

CONTOUR	————— 1 —————
LIMIT OF DISTURBANCE	————— LOD —————
MEAN HIGH WATER	————— PMHW —————
MEAN LOW WATER	————— PMLW —————
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

CONTOUR	 1
LIMIT OF DISTURBANCE	 LOD
MEAN HIGH WATER	 PMHW
MEAN LOW WATER	 PMLW
SAND/WOODCHIP MIX	
WELL-GRADED MIX	



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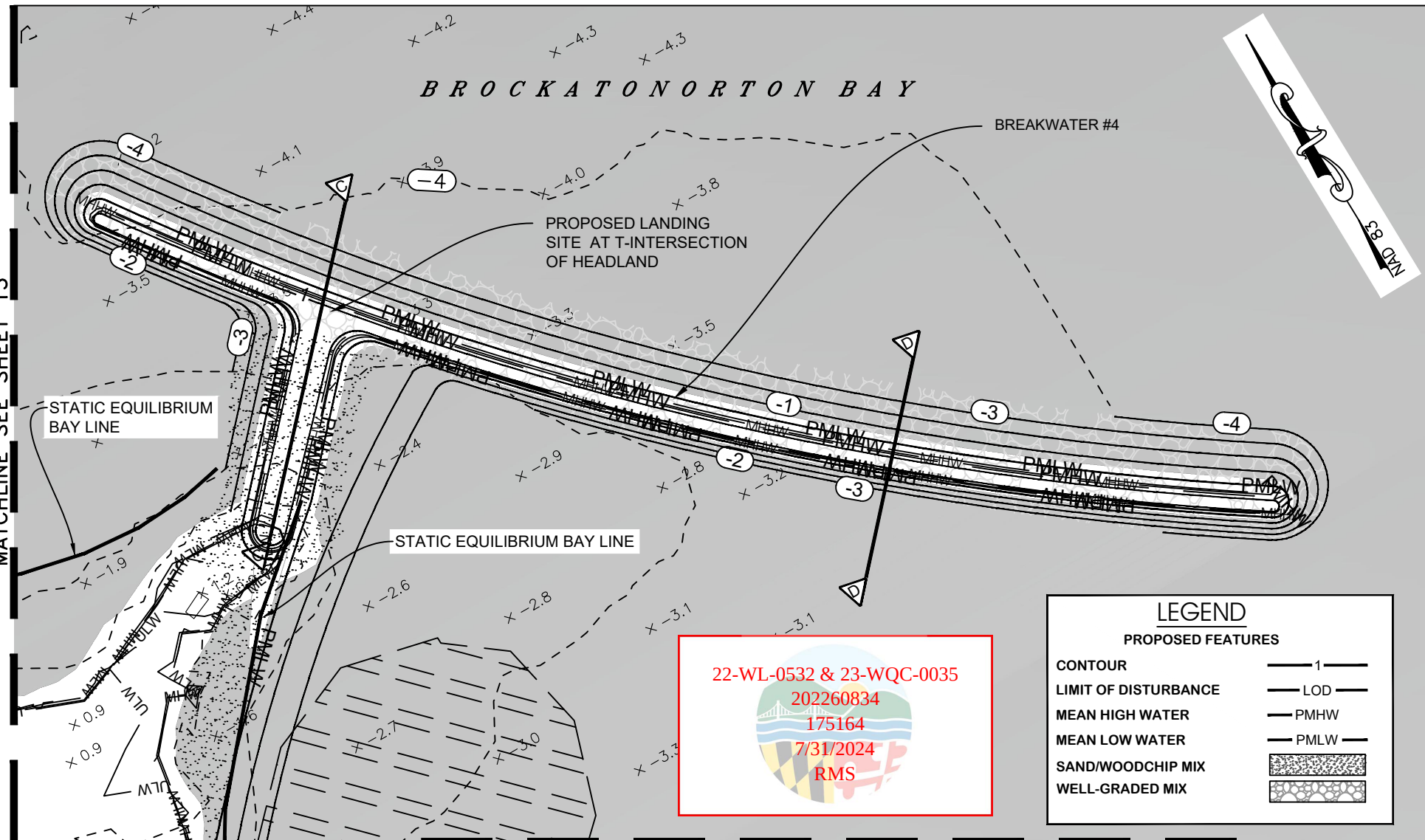
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Scale	AS SHOWN	PROPOSED CONDITIONS TIZZARD ISLAND COASTAL RESILIENCY MAP 0087 , GRID 0000 , PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	
Drawn By	K.B./J.H./J.K.		
Approved By	K.B.		
Sheet No.	13 Of 30		
Project No.	18-025		

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MATCHLINE SEE SHEET 13



MATCHLINE SEE SHEET 15

PLAN
SCALE: 1"=50'

50' 0 50'
SCALE: 1"=50'

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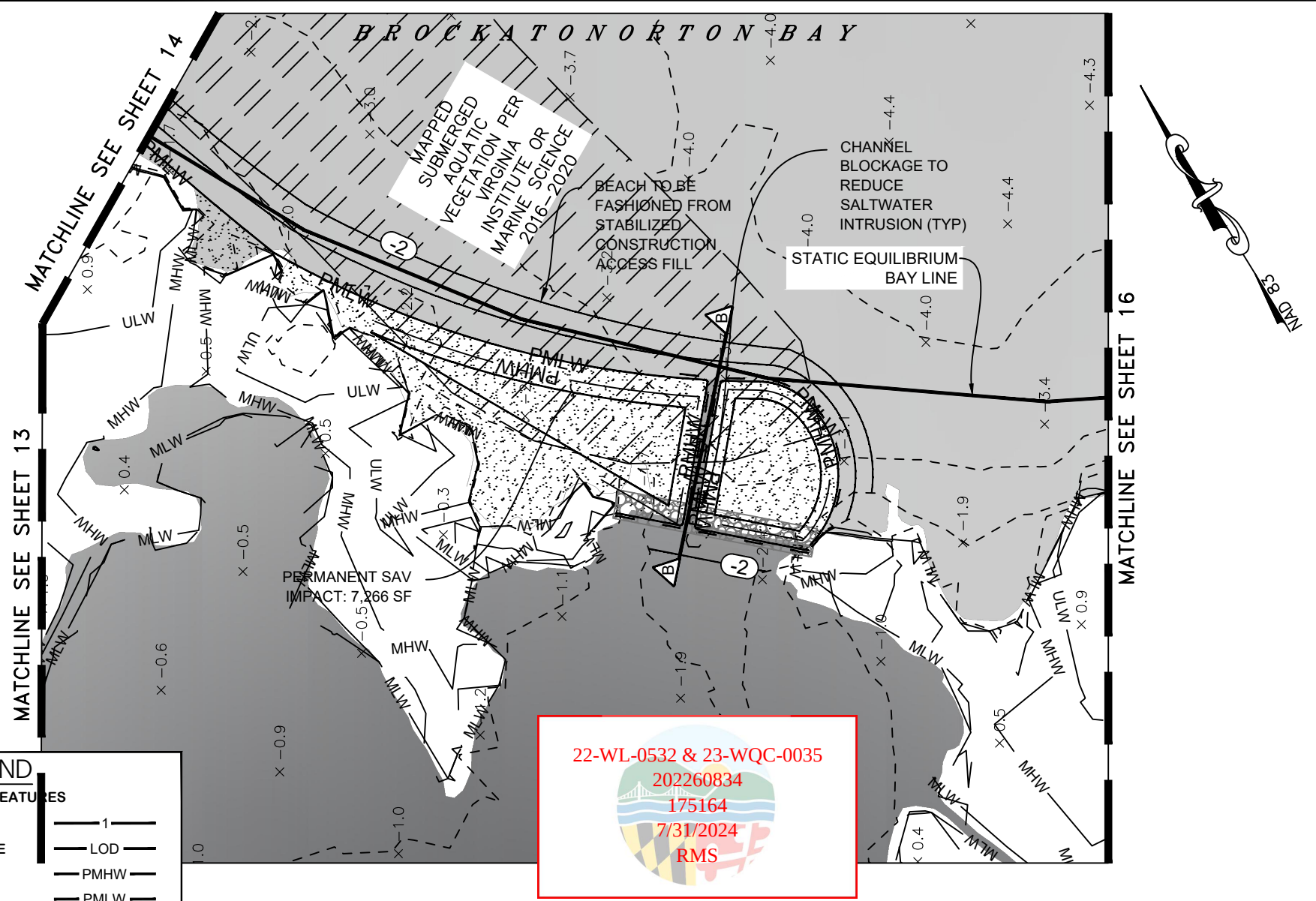
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**COASTAL BAYS
PROGRAM**

JULY 31, 2024	
Scale	AS SHOWN
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Approved By	K.B.
Sheet No.	14 Of 30
Project No.	18-025
PROPOSED CONDITIONS TIZZARD ISLAND COASTAL RESILIENCY MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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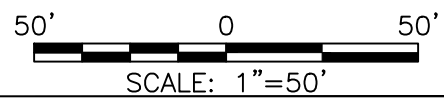
LEGEND

PROPOSED FEATURES

- CONTOUR
- LIMIT OF DISTURBANCE
- MEAN HIGH WATER
- MEAN LOW WATER
- SAND/WOODCHIP MIX
- WELL-GRADED MIX

1
LOD
PMHW
PMLW

PLAN
SCALE: 1"=50'



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Approved By	K.B.
Sheet No.	15 Of 30
Project No.	18-025
PROPOSED CONDITIONS	
TIZZARD ISLAND COASTAL RESILIENCY	
MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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LEGEND

PROPOSED FEATURES

CONTOUR	1
LIMIT OF DISTURBANCE	LOD
MEAN HIGH WATER	PMHW
MEAN LOW WATER	PMLW
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

MATCHLINE SEE SHEET 15

MATCHLINE SEE SHEET 17

BROCKATON NORTON BAY

STATIC EQUILIBRIUM BAY LINE

PLAN

SCALE: 1"=50'

50' 0 50'
SCALE: 1"=50'

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Approved By	K.B.
Sheet No.	16 Of 30
Project No.	18-025

PROPOSED CONDITIONS
TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

JULY 31, 2024

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LEGEND

PROPOSED FEATURES

CONTOUR	— 1 —
LIMIT OF DISTURBANCE	— LOD —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

BROCKATONORTON BAY

STATIC EQUILIBRIUM BAY LINE

MATCHLINE SEE SHEET 16

MATCHLINE SEE SHEET 18

22-WL-0532 & 23-WQC-0035

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PLAN

SCALE: 1"=50'

50' 0 50'
SCALE: 1"=50'

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Scale	AS SHOWN
Drawn By	K.B./J.H./J.K.
Approved By	K.B.
Sheet No.	17 Of 30
Project No.	18-025

PROPOSED CONDITIONS

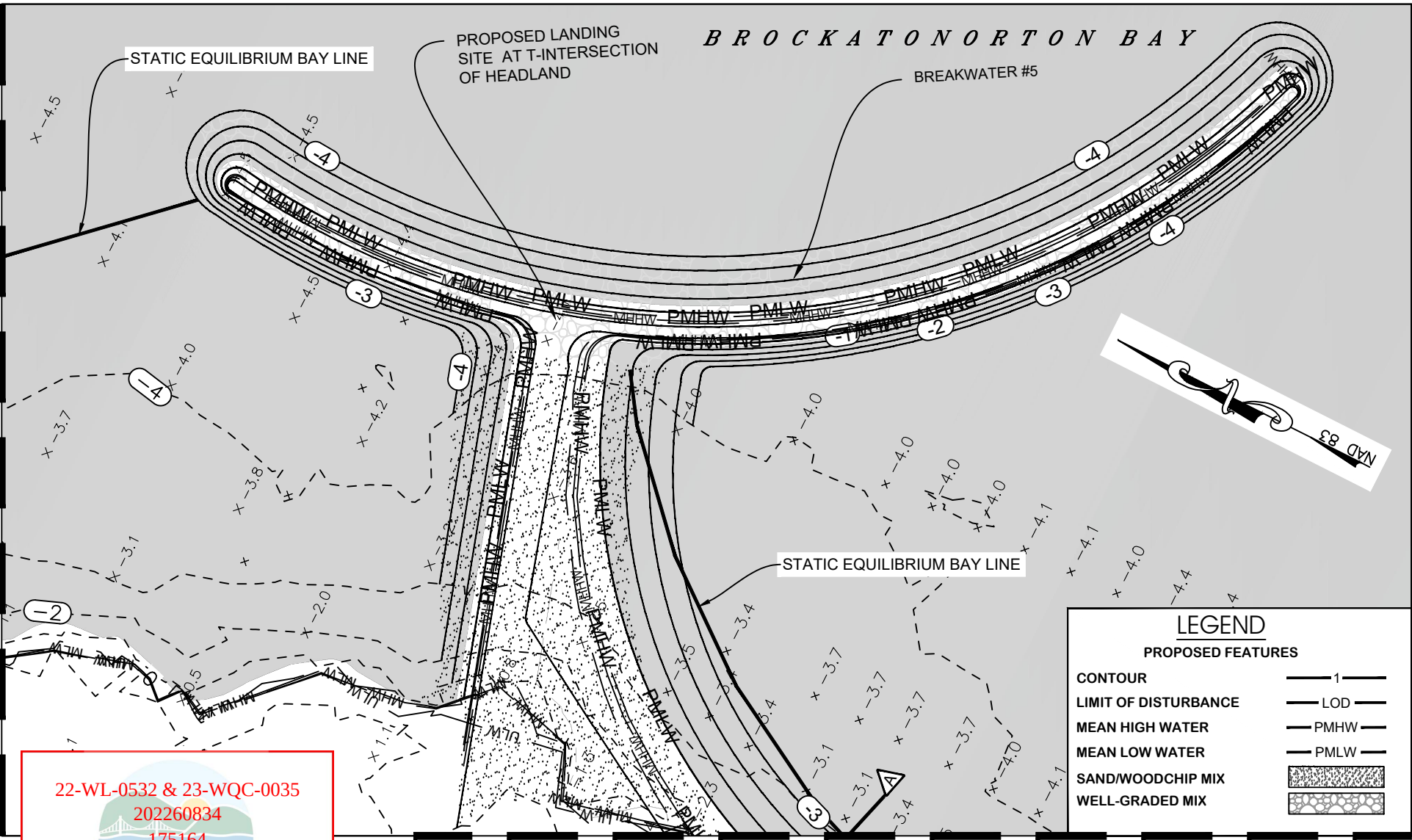
**TIZZARD ISLAND
COASTAL RESILIENCY**

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

JULY 31, 2024

PLOTTED: Aug 01, 2024 - 12:23am

MATCHLINE SEE SHEET 17



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MATCHLINE SEE SHEET 19

PLAN
SCALE: 1"=50'

LEGEND
PROPOSED FEATURES

CONTOUR	1
LIMIT OF DISTURBANCE	LOD
MEAN HIGH WATER	PMHW
MEAN LOW WATER	PMLW
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

50' 0 50'
SCALE: 1"=50'

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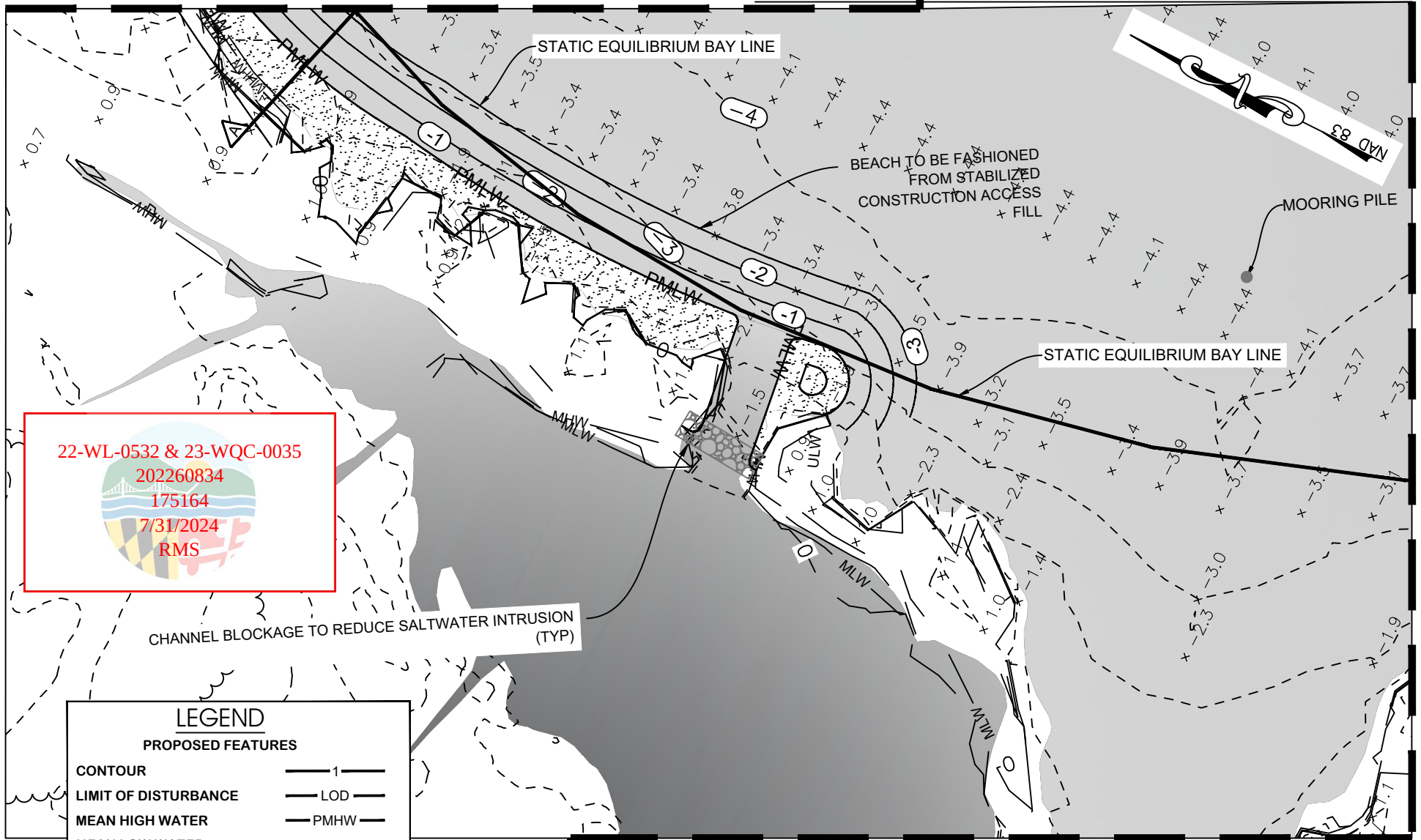
JULY 31, 2024	
Scale	AS SHOWN
Drawn By	K.B./J.H./J.K.
Approved By	K.B.
Sheet No.	18 Of 30
Project No.	18-025
PROPOSED CONDITIONS	
TIZZARD ISLAND COASTAL RESILIENCY	
MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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MATCHLINE SEE SHEET 18

MATCHLINE SEE SHEET 21

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7/31/2024
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LEGEND

PROPOSED FEATURES

CONTOUR ——— 1 ———

LIMIT OF DISTURBANCE ——— LOD ———

MEAN HIGH WATER ——— PMHW ———

MEAN LOW WATER ——— PMLW ———

SAND/WOODCHIP MIX [Pattern]

WELL-GRADED MIX [Pattern]

MATCHLINE SEE SHEET 20

PLAN

SCALE: 1"=50'

50' 0 50'

SCALE: 1"=50'

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Scale	AS SHOWN
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Approved By	K.B.
Sheet No.	19 Of 30
Project No.	18-025
PROPOSED CONDITIONS TIZZARD ISLAND COASTAL RESILIENCY MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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MATCHLINE SEE SHEET 19

MATCHLINE SEE SHEET 21

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EX. STRUCTURE

EX. PIER

EDGE OF
PHRAGMITES

LEGEND

PROPOSED FEATURES

CONTOUR	— 1 —
LIMIT OF DISTURBANCE	— LOD —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SAND/WOODCHIP MIX	
WELL-GRADED MIX	

PLAN

SCALE: 1"=50'

50' 0 50'

SCALE: 1"=50'

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Sheet No.	20 Of 30
Project No.	18-025

PROPOSED CONDITIONS

TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

JULY 31, 2024

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MATCHLINE SEE SHEET 19

MATCHLINE SEE SHEET 22

LEGEND

PROPOSED FEATURES

- CONTOUR ——— 1 ———
- LIMIT OF DISTURBANCE ——— LOD ———
- MEAN HIGH WATER ——— PMHW ———
- MEAN LOW WATER ——— PMLW ———
- SAND/WOODCHIP MIX 
- WELL-GRADED MIX 

CKATONORTON BAY

22-WL-0532 & 23-WQC-0035

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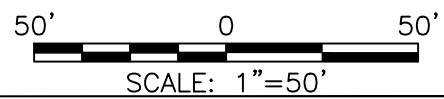
DUCK BLIND

STATIC EQUILIBRIUM BAY LINE

MATCHLINE SEE SHEET 20

PLAN

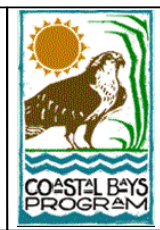
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JULY 31, 2024	
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Approved By	K.B.
Sheet No.	21 Of 30
Project No.	18-025
PROPOSED CONDITIONS	
TIZZARD ISLAND COASTAL RESILIENCY	
MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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BROCKATONORTAN BAY

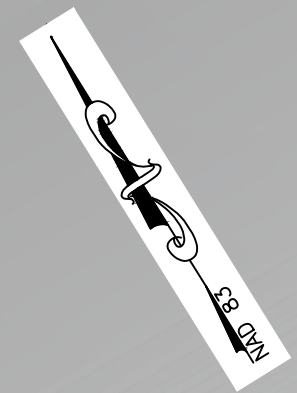
22-WL-0532 & 23-WQC-0035

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LEGEND

LOW MARSH PLANTINGS



HIGH MARSH PLANTINGS



PLAN

SCALE: 1"=150'



SCALE: 1"=150'

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Approved By	K.B.
Sheet No.	23 Of 30
Project No.	18-025

PLANTING PLAN
TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

JULY 31, 2024

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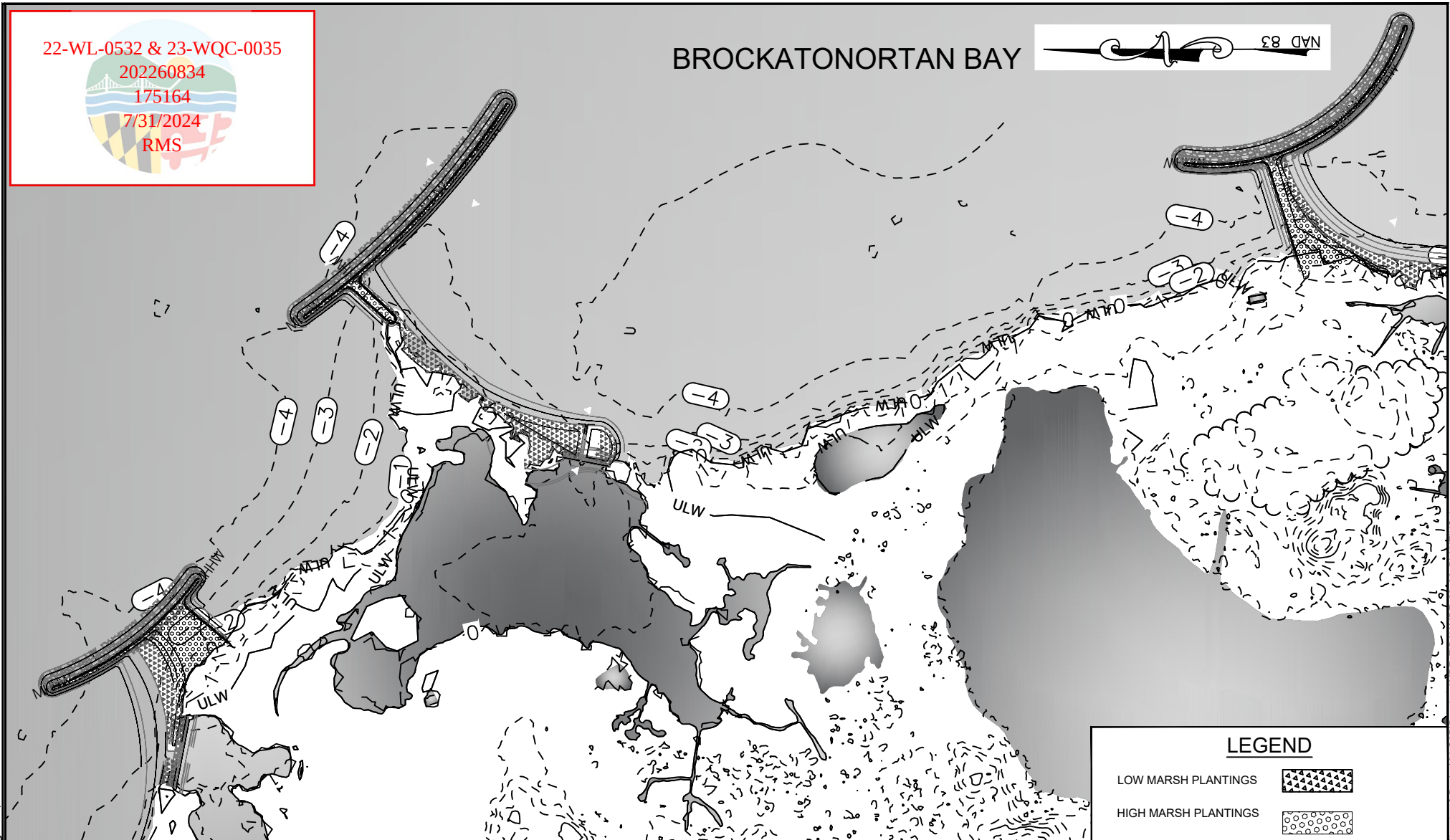
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NAD 83



SCALE: 1"=200'

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Scale	AS SHOWN
Drawn By	K.B./J.H./J.K.
Approved By	K.B.
Sheet No.	24 Of 30
Project No.	18-025

PLANTING PLAN

TIZZARD ISLAND COASTAL RESILIENCY

MAP 0087 , GRID 0000 , PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

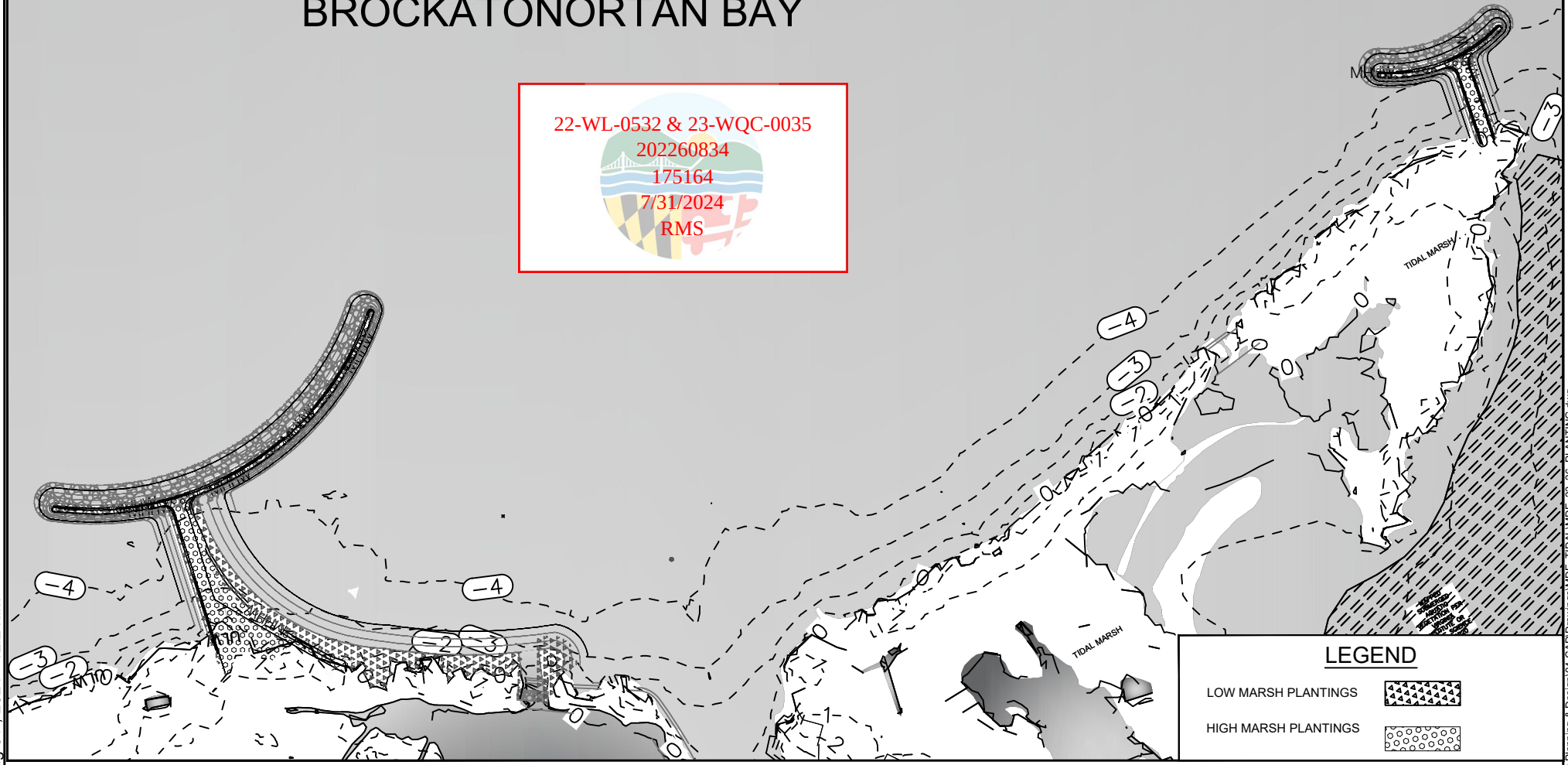
JULY 31, 2024

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BROCKATONORTAN BAY

22-WL-0532 & 23-WQC-0035

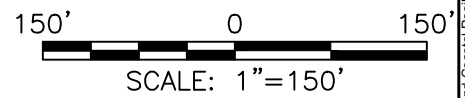


LEGEND

- LOW MARSH PLANTINGS
- HIGH MARSH PLANTINGS

PLAN

SCALE: 1"=150'



JULY 31, 2024

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Scale	AS SHOWN	PLANTING PLAN TIZZARD ISLAND COASTAL RESILIENCY MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	
Drawn By	K.B./J.H./J.K.		
Approved By	K.B.		
Sheet No.	25 Of 30		
Project No.	18-025		

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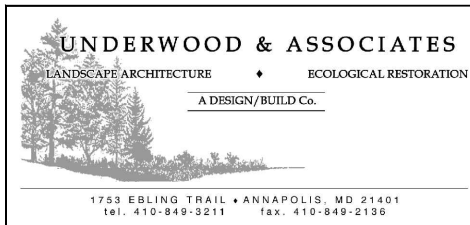
Planting Schedule and Mitigation Calculations

Planting Zone	Symbol	Total Area (SF)	Common Name	Scientific Name	Type	Size	Distribution	Avg Spacing (ft)	Quantity	Credit Area (SF per plant)	Total Credit Area (SF)	Description
Lowmarsh Cordgrass		29,032	Lowmarsh Cordgrass	<i>Spartina Alterniflora</i>	Herbaceous	Gal	Random	1.5	12,903	2	25,806	Between MLW and MHW.
Highmarsh Cordgrass		33,053	Highmarsh Cordgrass	<i>Spartina Patens</i>	Herbaceous	Gal	Random	1.5	14,690	2	29,380	Generally above MHW to elevation 2 ft.
Critical Area Mitigation Calculations			Total Area of Disturbed Canopy (SF)		Mitigation Ratio		Total Mitigation Credit Required (SF)			Total Credit Area (SF)		Percent Mitigation (%)
			0		2:1		0			55,187		N/A

NOTES:

THE STABILIZED CONSTRUCTION ACCESS (SCA) WILL BE CONSTRUCTED SEAWARD OF ELEVATION 0 FT OR MLW TO MINIMIZE IMPACT TO EXISTING MARSH. THE SCA WILL BE BUILT TO ELEVATION +1 FT ABOVE MHW TO PROVIDE WORKING ACCESS TO COMPLETE CHANNEL BLOCK CONSTRUCTION. THE SIDE SLOPES WILL BE 3H:1V INCLINATION. AFTER CONSTRUCTION IS COMPLETED, THE SCA FILL MATERIAL WILL BE FASHIONED INTO GENTLE SLOPING BEACHES WITH PARTS ABOVE WATER TO BE LIMITED TO LEEWARD OF THE LINE OF ENCROACHMENT. THE NEW BEACH AREAS WILL BE PLANTED WITH LOW AND HIGH MARSH GRASSES.

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JULY 31, 2024	
Scale	AS SHOWN
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Approved By	K.B.
Sheet No.	26 Of 30
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PLANTING NOTES	
TIZZARD ISLAND COASTAL RESILIENCY	
MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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Project Data

Feature	Proposed
New Low Marsh Created (SF)	29,032
New High Marsh Created (SF)	33,053
Channelward Area Fill (CY)	8,433
New Shoreline at MHW (LF)	4,713

NOTES:

- CHANNELWARD AREAS ARE CONSIDERED AS AREAS CHANNELWARD FROM MHW
- BREAKWATER #4 WILL IMPACT 7,266 SF OF SAV MAPPED BY THE VIRGINIA INSTITUTE OF MARINE SCIENCE IN THE YEARS 2016-2020. THE IMPACTED SAV BED WAS ONLY PRESENT IN THE 2020 STUDY.

Project Dimensions

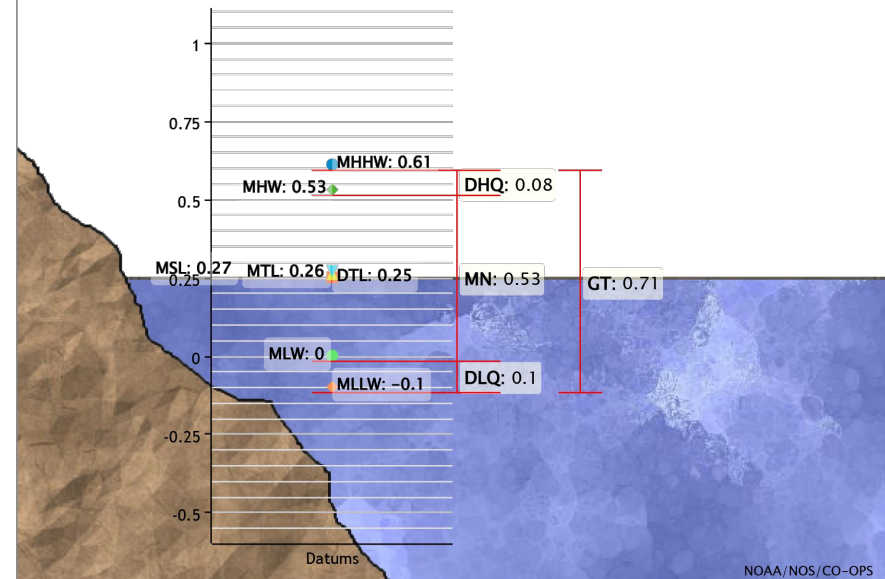
	Max Distance from MHW FT	Max Length FT	Max Width FT	Total Channelward Area SF	Headland Breakwater Area SF	Sand Fill Area SF
Breakwater #1	240	208	32	10,508	6,606	3,902
Breakwater #2	214	190	33	9269	6,128	3,141
Breakwater #3	210	293	39	32,842	10,142	22,700
Breakwater #4	422	465	39	41,591	16,665	24,926
Breakwater #5	364	408	39	44,985	16,788	28,197
Breakwater #6	122	163	39	9,499	6,029	3,470
Channel Block #1	-	95	10	950		
Channel Block #2	-	63	10	630		
Channel Block #3	-	22	10	220		

NOTES:

- CHANNEL BLOCK #1 PLACEMENT IS WITHIN THE SAND PLACEMENT AREA OF BREAKWATER #3.
- CHANNEL BLOCK #2 PLACEMENT IS WITHIN THE SAND PLACEMENT AREA OF BREAKWATER #4.
- CHANNEL BLOCK #3 PLACEMENT IS WITHIN THE SAND PLACEMENT AREA OF BREAKWATER #5.

Datums for 8570649, PUBLIC LANDING, CHINCOTEAGUE BAY, MD

All figures in feet relative to MLW



22-WL-0532 & 23-WQC-0035

202260834

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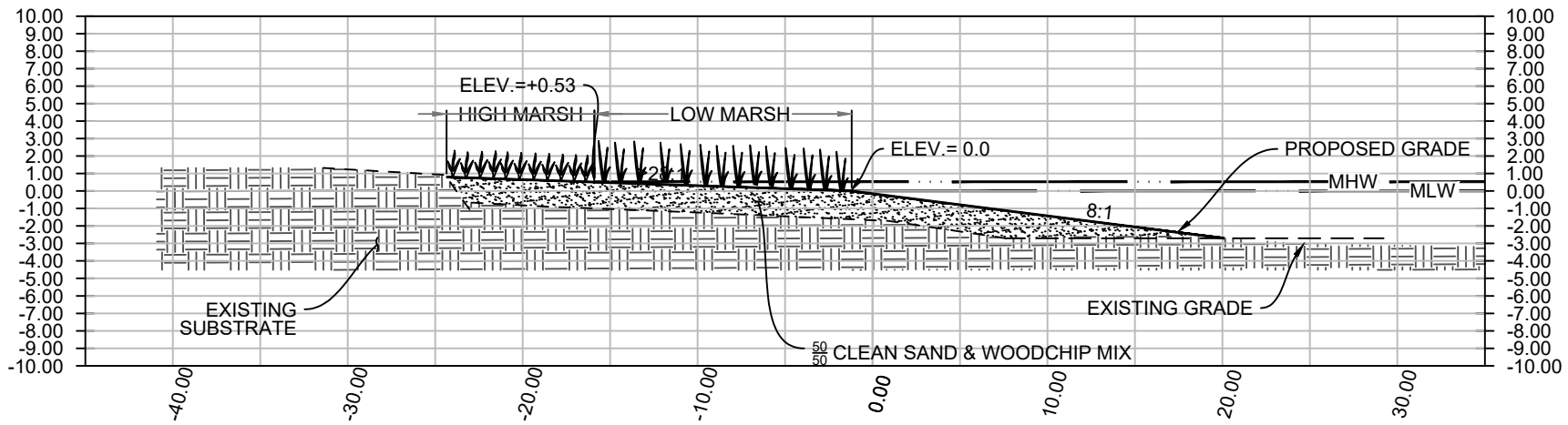
JULY 31, 2024

Scale	AS SHOWN
Drawn By	K.B./J.H./J.K.
Approved By	K.B.
Sheet No.	27 Of 30
Project No.	18-025

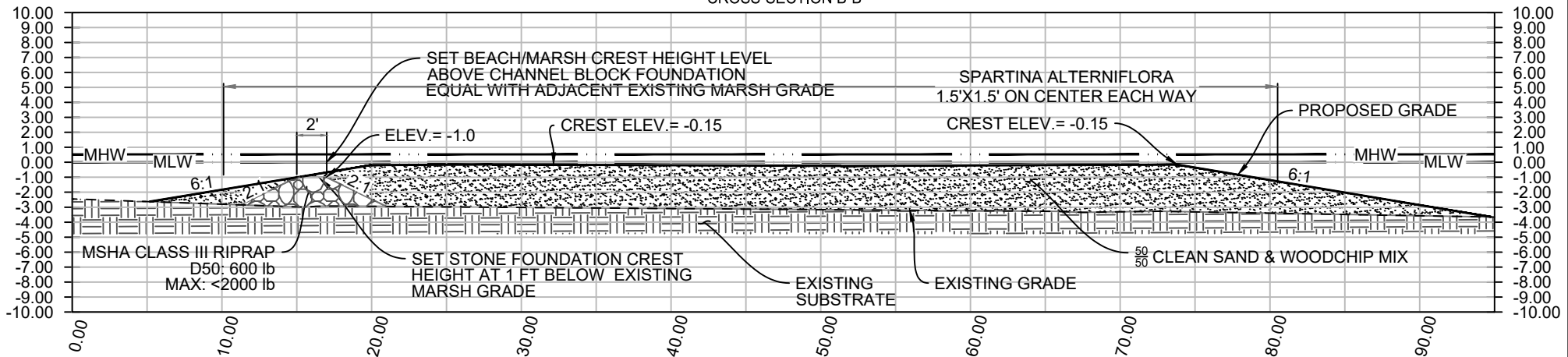
PROJECT NOTES
TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

BEACH / MARSH
CROSS-SECTION A-A'



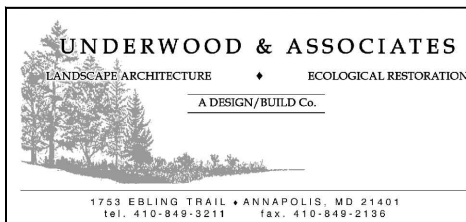
CHANNEL BLOCK TIDAL EXCHANGE INLET
CROSS-SECTION B-B'



CROSS SECTIONS
SCALE: HORI. 1"=10', VERT. 1"=10'

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Sheet No.	28 Of 30
Project No.	18-025

CROSS-SECTIONS

TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087 , GRID 0000 , PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

Cadd File : S:\006-Projects\Tizzard Island Coastal Resiliency Planning & Design\04-CAD\Drawings\MDE_TIDAL\MDE_28_30_XSECTION & PROFILE.dwg

PLOTTED: Aug 01, 2024 - 12:24am

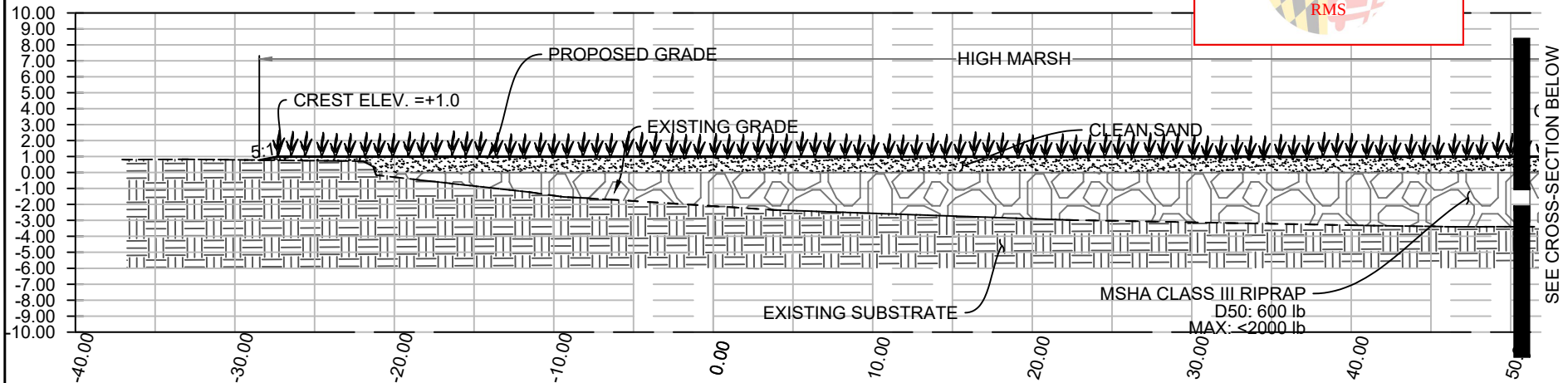
22-WL-0532 & 23-WQC-0035

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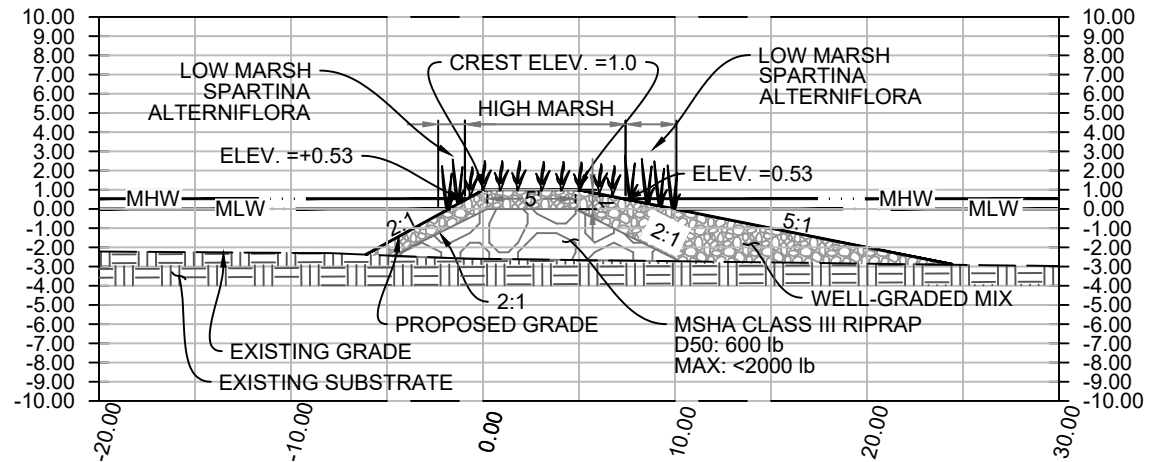
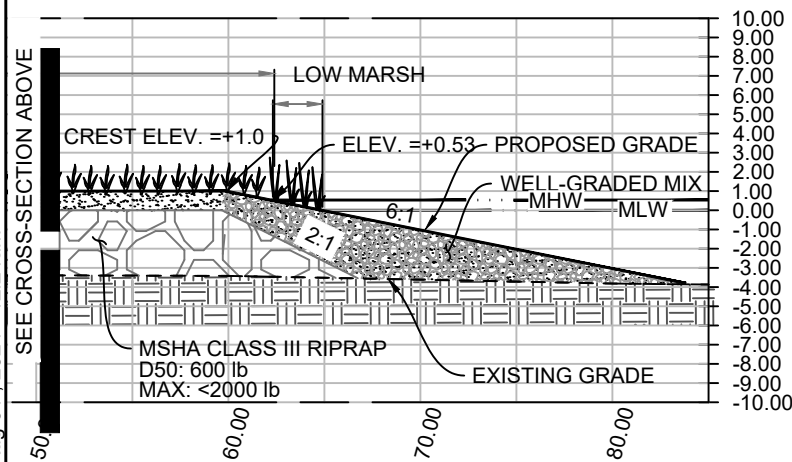
7/31/2024

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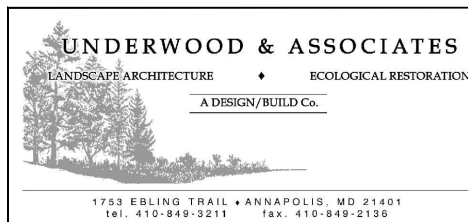
BREAKWATER AND TOMBOLO
CROSS-SECTION C-C'

BREAKWATER
CROSS-SECTION D-D'



CROSS SECTIONS

SCALE: HORI. 1"=10', VERT. 1"=10'

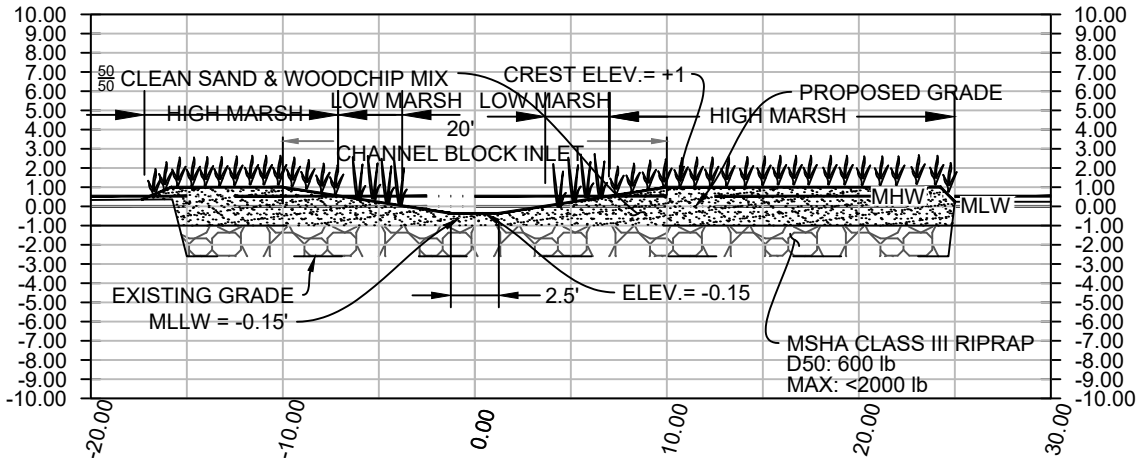


JULY 31, 2024	
Scale	AS SHOWN
Drawn By	K.B./J.H./J.K.
Approved By	K.B.
Sheet No.	29 Of 30
Project No.	18-025
CROSS-SECTIONS	
TIZZARD ISLAND COASTAL RESILIENCY	
MAP 0087, GRID 0000, PARCEL 0021 10TH ELECTION DISTRICT, WORCESTER COUNTY	

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SEE CROSS-SECTION ABOVE

CHANNEL BLOCK LONGITUDINAL
STANDARD DETAIL CROSS-SECTION



CROSS SECTIONS

SCALE: HORI. 1"=10', VERT. 1"=10'

22-WL-0532 & 23-WQC-0035

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MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



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Sheet No.	30 Of 30
Project No.	18-025

CROSS-SECTIONS
TIZZARD ISLAND
COASTAL RESILIENCY

MAP 0087, GRID 0000, PARCEL 0021
10TH ELECTION DISTRICT, WORCESTER COUNTY

JULY 31, 2024

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