

Critical Area Commission

STAFF REPORT

June 4th, 2025

APPLICANT:	Maryland Port Administration
PROPOSAL:	Cox Creek STAR Facility Remediation & Development Middle Settling Basin Stockpile
JURISDICTION:	Baltimore County; Anne Arundel County
COMMISSION ACTION:	Vote
STAFF RECOMMENDATION:	Approval with Conditions
STAFF:	Jamileh Soueidan
APPLICABLE LAW/ REGULATIONS:	COMAR 27.02.05 State Agency Actions Resulting in Development on State-Owned Lands

DISCUSSION:

The Maryland Port Administration (MPA) is proposing site improvements including environmental remediation efforts at the Cox Creek STAR Facility, located at 3901 Fort Armistead Road in Baltimore City and in Anne Arundel County. The proposal includes the removal of existing vegetation around the Middle Settling Basin and using the site as a temporary stockpile area, which serves as an intermediate remediation step for soil consolidation. The stockpile will be comprised of borrow material from the neighboring Cox Creek Dredge Material Containment Facility (DMCF) for additional capacity benefits. Given that a portion of this project is located within the Critical Area requires 2.49 acres of clearing, this project exceeds the parameters of Category II review under Exhibit A4 of the MDOT/CAC MOU. Therefore, review and approval by the Critical Area Commission is required.

This project was presented to the Project Committee for information only on September 4, 2024. A copy of the proposed site location and plan are attached.

Background and Existing Conditions

In December 2022, MPA purchased the Cox Creek STAR Facility site (formerly named Hawkins Point Plant). The property is adjacent to and directly north of MPA's Cox Creek Dredged Material Containment Facility (DMCF) and is surrounded by other industrial use sites, including Hawkins Landfill and Kemira Water Solutions. Of the 123 acres of uplands, 62.27 acres are within the Critical Area, including 55.33 acres classified as Intensely Developed Area (IDA) and 6.94 acres classified as Resource Conservation Area (RCA), and is classified as a Waterfront Industrial Area (WIA) per the Maryland Department of Transportation (MDOT) / Critical Area

Commission (CAC) Memorandum of Understanding (MOU), Exhibit A4: Maryland Port Administration.

The site is subject to a Maryland Department of the Environment (MDE) Administrative Consent Order for environmental remediation. As presented to the Project Committee in September 2024, MPA's goal is to remediate the site in phases and to ultimately use it as the primary location for implementing Innovative Reuse and Beneficial Use program for dredged material. The program allows MPA to reclaim and maintain capacity in the adjacent Cox Creek DMCF, extending its operational life and providing a long-term solution to managing dredged material from maintenance of the Baltimore Harbor navigation channels.

The existing site is disturbed, developed, and industrial in nature. Similar to the adjacent Cox Creek upland area, there are abandoned industrial buildings/structures, foundations, tanks, rail lines, utilities, and roads, some of which are in disrepair, as well as open areas. The site also contains four surface impoundments (three settling basins and the "Batch Attack Lagoon"), a Groundwater Containment System and associated treatment system (for pH neutralization) within the Waste Acid Neutralization Area, as well as electrical and water supply and distribution systems.

Proposed Project

The proposed project will be located at the Middle Settling Basin, which is currently at an elevation at or below +28 feet mean lower low water (MLLW). Prior to purchase, the site was an active titanium dioxide manufacturing facility. The Middle Settling Basin was used to receive and dewater dredged solids from the manufacturing facility's wastewater for removal and disposal offsite. Soil borings show the subsurface material at the Middle Settling Basin consist primarily of very soft and wet silt and clay material.

The proposed Middle Settling Basin Stockpile will raise the elevation an additional 25 feet to +53 feet MLLW. Approximately 252,000 cubic yards of borrow material from construction of the adjacent Cox Creek DMCF expansion will be used to construct the stockpile. In accordance with the administrative consent order (ACO) for environmental remediation, this stockpile will be an interim remediation step to help consolidate the underlying subsoils to minimize future infiltration into impacted soil and reduce groundwater contamination and provide a material source for future use for site remediation and construction projects. In the long term, the Middle Settling Basin will be fully remediated, and the impoundment will be permanently closed, per the MDE-approved Settling Basins Operable Unit Remedial Action Plan. The Middle Settling Basin Stockpile project will be a temporary condition for remediation (2-5 years), pending future site remediation and development activities.

Project Impacts and Mitigation

The Middle Settling Basin Stockpile project is partially located within the Critical Area and straddles the jurisdictional line between Baltimore City and Anne Arundel County. The total

limit of disturbance (LOD) for the project is 9.6 acres, of which 3.5 acres is within the Critical Area's IDA. The entire project area is outside of the Critical Area 100-Foot Buffer and there are no proposed impacts to tidal and nontidal wetlands or to any Habitat Protection Areas. There is no existing impervious surface within the project LOD and no new impervious surface is proposed.

Woodland and Tree Clearing

During pre-application coordination, existing vegetated areas throughout the Cox Creek STAR Facility site were delineated and quantified in coordination with Critical Area Commission staff to determine future project impacts. Many areas of the site were not maintained by the previous landowners and volunteer vegetation has become established since closure of the titanium dioxide production in areas including utility right-of-way, fence lines, stormwater drainage swales, along edges of developed infrastructure, as well as within the settling basin impoundment areas.

The Maryland Environmental Service completed a field assessment and Forest Stand Delineation to characterize and quantify the existing vegetation both outside and within the Critical Area. The existing conditions within the Middle Settling Basin consist primarily of brush and patches of more mature woody vegetation and trees. The brush areas are dominated by groundsel trees and woody vines, and the forested areas are in early successional stages. Remediation activities, as prescribed by MDE's Consent Order, will require the clearing of this vegetation. The total proposed clearing of both tree and brush is 108,621 square feet (2.49 acres). The mitigation rate for clearing in the Critical Area is 1:1 based on the square footage of forest and developed woodland canopy clearing.

Due to the nature of the site, which includes future remediation and site development, MPA intends to use the 2021 MOU between the Critical Area Commission, MPA, and Chesapeake Bay Trust (CBT) to pay a fee-in-lieu (FIL) at a rate of \$1.50 per square foot for mitigation. This FIL funds existing Chesapeake Bay Trust (CBT) grant programs that implement environmental restoration projects to improve water quality and aquatic and land habitats of the Chesapeake Bay, specifically in and around Baltimore County and Anne Arundel County. Total clearing impacts and FIL mitigation calculations are provided in Table 1 below:

Table 1. Total Clearing and Mitigation Impacts

Vegetation Type	Proposed Clearing Area (SF)	Mitigation Rate	Required Mitigation (SF)	Habitat and Water Quality Mitigation Fee-in-Lieu Required (\$1.50/SF)
Tree	45,796	1:1	45,796	\$ 162,931.50
Brush	62,825	1:1	62,825	
Total			108,621	

Climate Resiliency

Per COMAR 27.02.05.03, State agencies who are proposing development activities on State-owned lands shall demonstrate that the agency has considered the likelihood of inundation by sea level rise over the course of the design life of the project, and to demonstrate that the development identifies and incorporates climate resilient practices in order to avoid or minimize environmental or structural damage associated with a coastal hazard, an extreme weather event, sea level rise, and other coastal impacts. MPA has provided the following information to demonstrate that they have reviewed these coastal resilient factors:

The Middle Settling Basin Stockpile project will be a temporary condition, pending future site remediation and development activities. Site remediation is scheduled to occur through 2031. The design life of the stockpile area is anticipated to be less than 10 years (likely 2 to 5 years pending site remediation and development progress and material needs). No major or critical infrastructure is proposed as part of the project. The existing elevation at the project site is approximately +25 to +30 feet MLLW.

The project site is not within the FEMA floodplain nor the Maryland Storm Surge limits and is not within the Maryland Sea Level Rise Vulnerability range through 10 Foot Inundation (Attachment 3). The project site does not fall within the Coast Smart Climate Ready Action Boundary (CS-CRAB), and Coast Smart Program review is not required for this project because it does not involve construction of a structure or highway facility. Furthermore, no wetland adaptation areas, as defined by the Sea-Level Affecting Marsh Migration (SLAMM) model, were identified within the project's LOD both in the near-term and end of century (Attachment 1). Standard erosion and sediment control design measures and inspection and maintenance procedures will protect the stockpile from damage from weather events.

Agency Reviews and Permits

Maryland Department of the Environment (MDE)

Stormwater Management (SWM) & Erosion & Sediment Control (ESC)

MDE is currently reviewing the SWM/ESC plan review (MDE No. 25-SF-0092). The Stormwater Management Concept Approval letter was issued on March 25, 2025. There is no new impervious area proposed, and no stormwater management is required for the project. ESC plans include the installation of a Super Silt Fence and seeding the stockpile once construction is complete, along with regular monitoring and maintenance as needed. Final ESC approval is expected prior to the June 4, 2025 Critical Area Commission meeting.

Wetlands Review

There are no impacts to tidal or nontidal wetlands proposed for the Middle Settling Basin Stockpile project.

Maryland Department of Natural Resources Wildlife & Heritage Service (WHS)

Review of the entire Cox Creek STAR Facility site by WHS occurred on January 31, 2024, and determined that there are no State or Federal records for rare, threatened, or endangered species within the boundaries of the site. In an updated review, dated April 28th, 2025, WHS reconfirmed that there are no State or Federal records for rare, threatened, or endangered species within the boundaries of the site.

Maryland Historical Trust (MHT)

Per comments dated March 28, 2025, MHT determined this project will have no adverse effects on historic properties.

Public Notice

In accordance with the provisions of COMAR 27.03.01.03, signage was posted at the project site and notice of the project was posted in The Baltimore Sun on Tuesday, April 15th, 2025. As of the date of the writing of this staff report, no comments have been submitted to MPA.

STAFF RECOMMENDATION

Commission staff recommends approval of the Middle Settling Basin located at the Cox Creek STAR Facility with the following conditions:

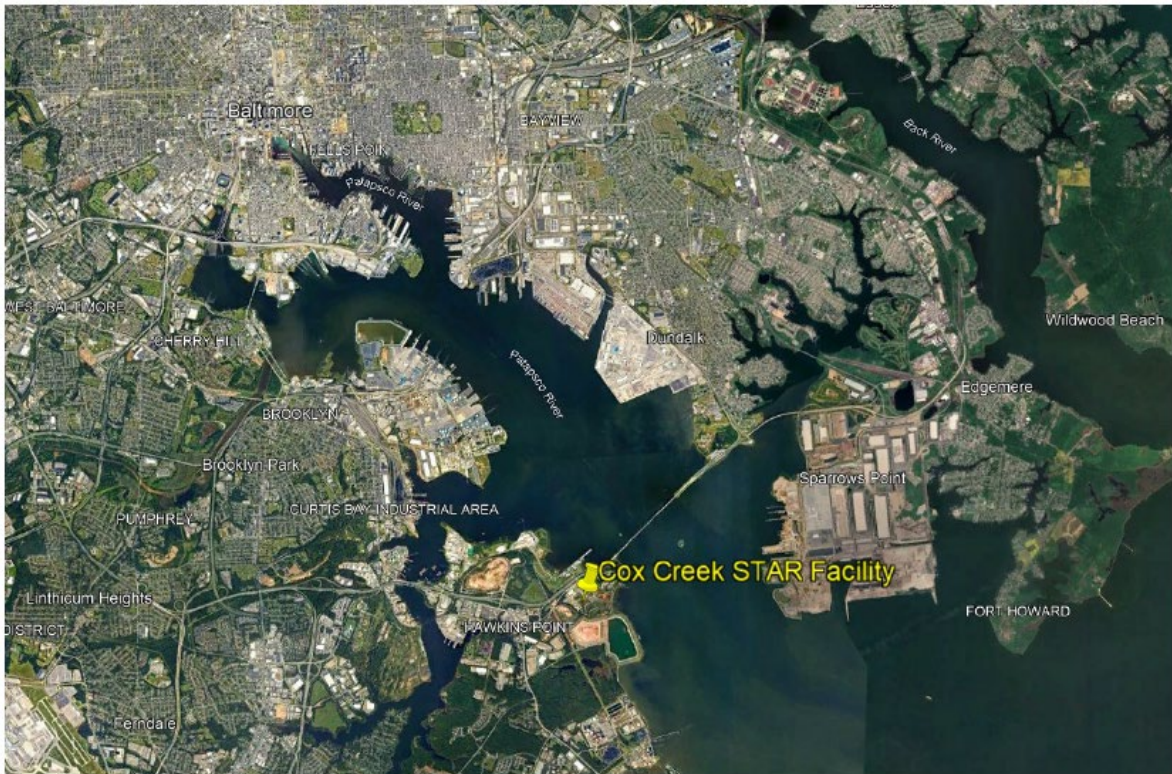
Prior to the start of construction, the Maryland Port Administration shall submit to Commission staff:

1. Copies of authorizations issued by the Maryland Department of the Environment for erosion and sediment control and stormwater management; and
2. Verification of the Critical Area habitat and water quality fee-in-lieu payment to the Chesapeake Bay Trust to satisfy the mitigation requirements.

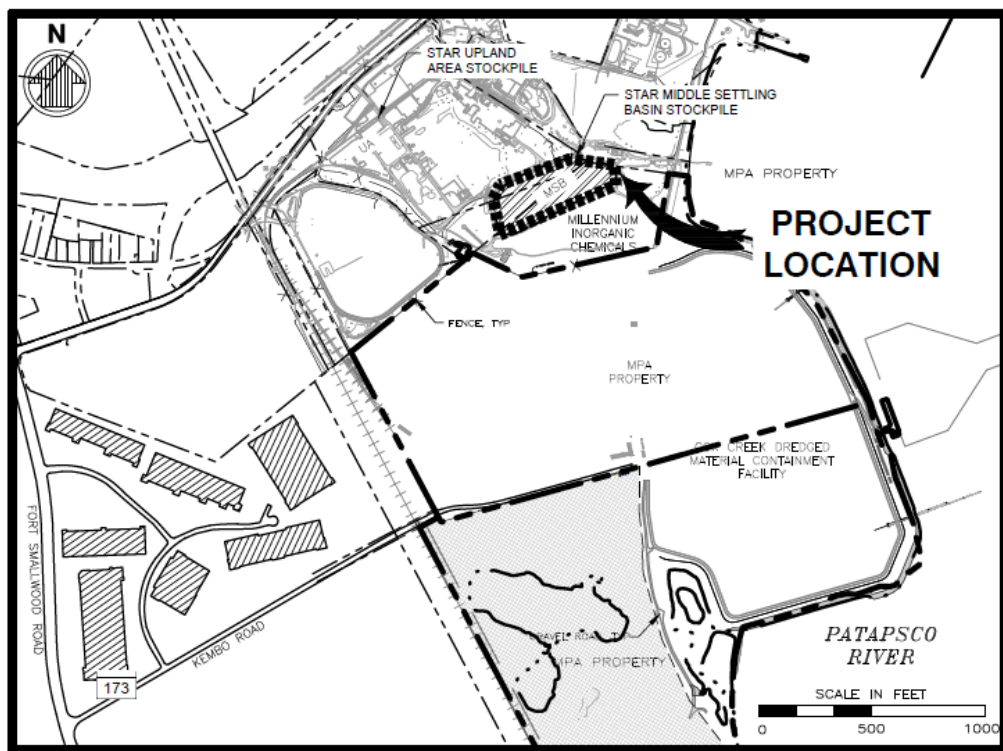
Attachments:

1. Location, site plans, and existing vegetation
2. Coastal Resilience Assessment - Supporting Figures

Maryland Port Administration
Cox Creek STAR Facility Remediation & Development
Middle Settling Basin Stockpile



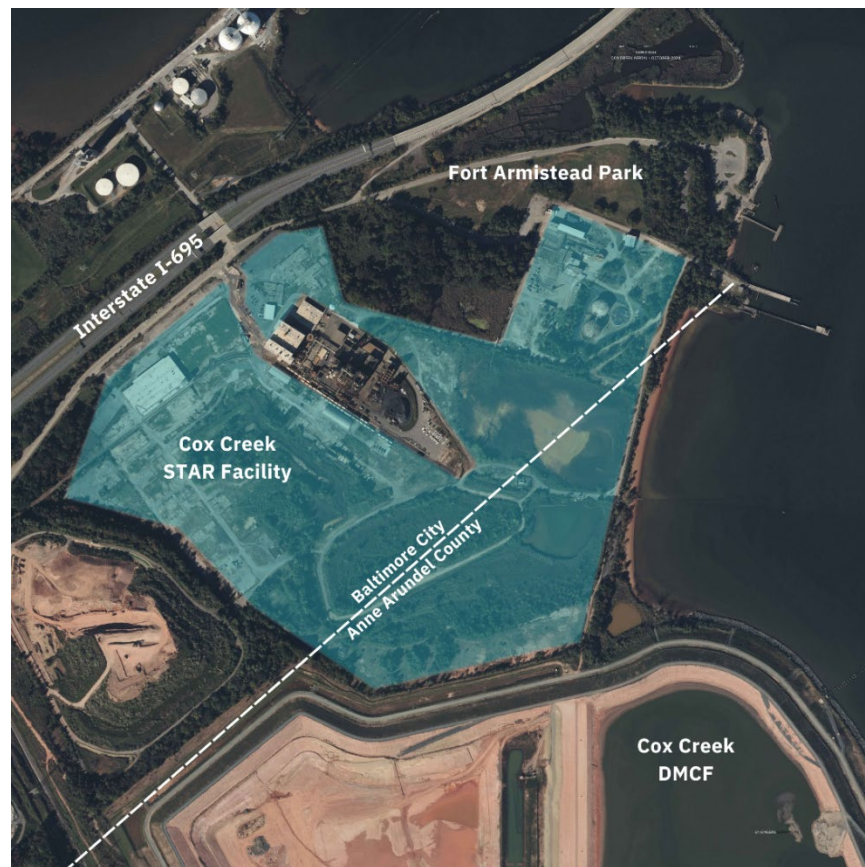
Site Location Map



Project Location Map



Cox Creek STAR Facility Site Location in Relation to Cox Creek DMCF



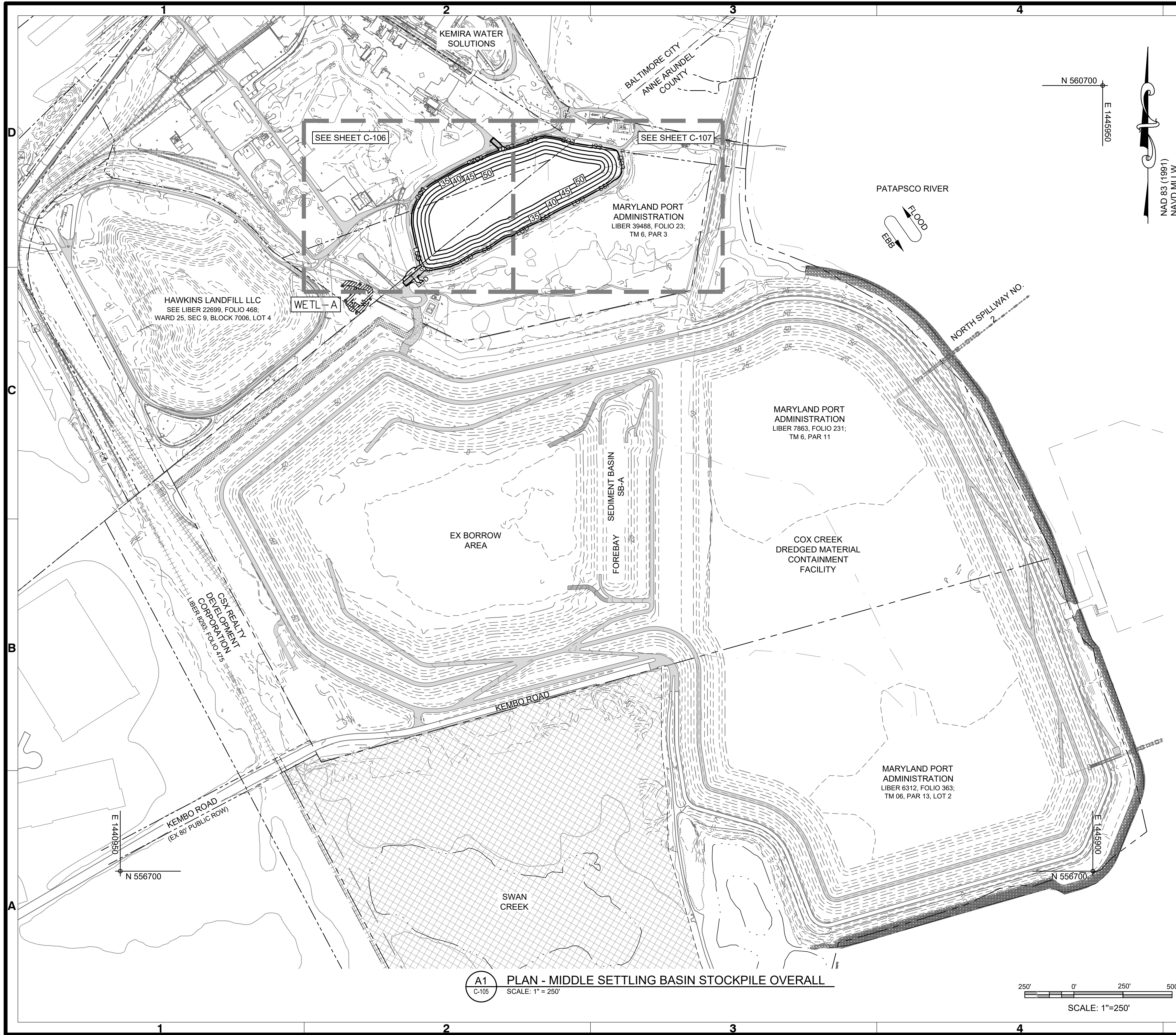
Cox Creek STAR Facility Site Boundary



Middle Settling Basin Stockpile Project Area with Critical Area Boundary



Aerial Photo of Middle Settling Basin Area



SHEET NOTES

1. FOR LEGEND, GENERAL NOTES AND ABBREVIATIONS SEE SHEETS G-002 THRU G-004 .
2. FOR SEQUENCE OF CONSTRUCTION SEE SHEET G-005
3. FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS SEE SHEETS C-503 THRU C-506.

LEGEND


- LOD — LIMIT OF DISTURBANCE
 — SSF — SUPER SILT FENCE
 SCE STABILIZED CONSTRUCTION ENTRANCE
 — WL — WETLAND

MDE NO: 25-SF-0092

NOTE TO CONTRACTOR:
"EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED"

COX CREEK DREDGED MATERIAL
CONTAINMENT FACILITY
STAR FACILITY MIDDLE SETTLING BASIN
STOCKPILE

PLAN - MIDDLE SETTLING BASIN

 moffatt & nichol 2780 LIGHTHOUSE POINT EAST, SUITE D BALTIMORE, MARYLAND 21224 410-583-7300		Date: 03/07/2025	Rev. No: 0
Designed by: C. HUNTLEY		MSN Project No: 10848-03	
Drawn by: HH	Checked by: DMC	Client Project No: 	
Reviewed by: W.T. PHILLIPS		Drawing Scale: AS SHOWN	
Submitted by: C. HUNTLEY		Plot Scale: 1" = 1' (ANSI D)	
Approved by: W. T. PHILLIPS		Moffatt & Nichol MOFFATT & NICHOL	



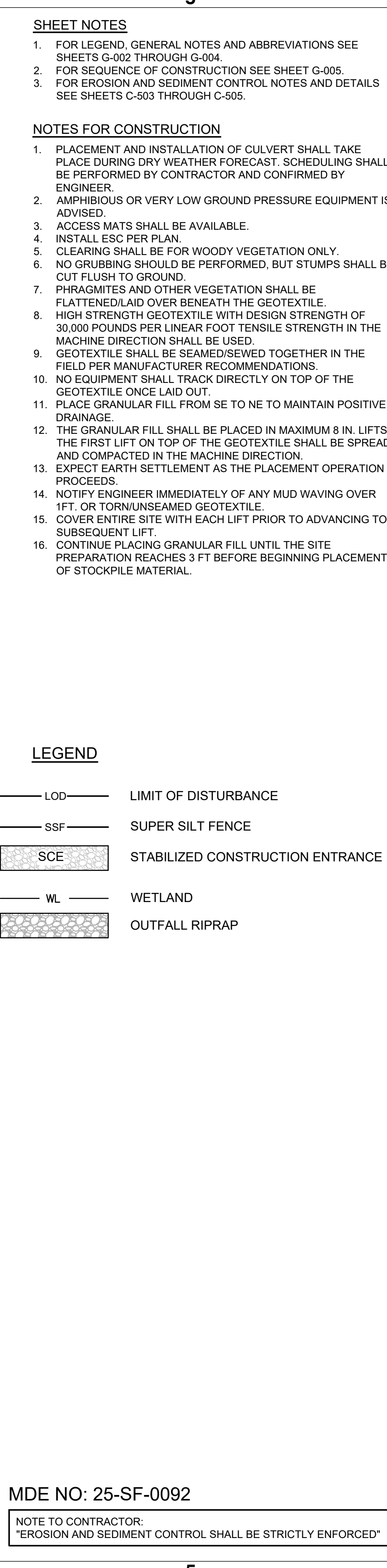
I, CRAIG HANSSEN HUNTLEY,
HEREBY CERTIFY THAT THESE
DOCUMENTS WERE PREPARED OR
APPROVED BY ME, AND THAT I
AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER
THE LAWS OF THE STATE OF
MARYLAND.


LICENSE NO.: 18717

EXPIRATION DATE: 06/02/26

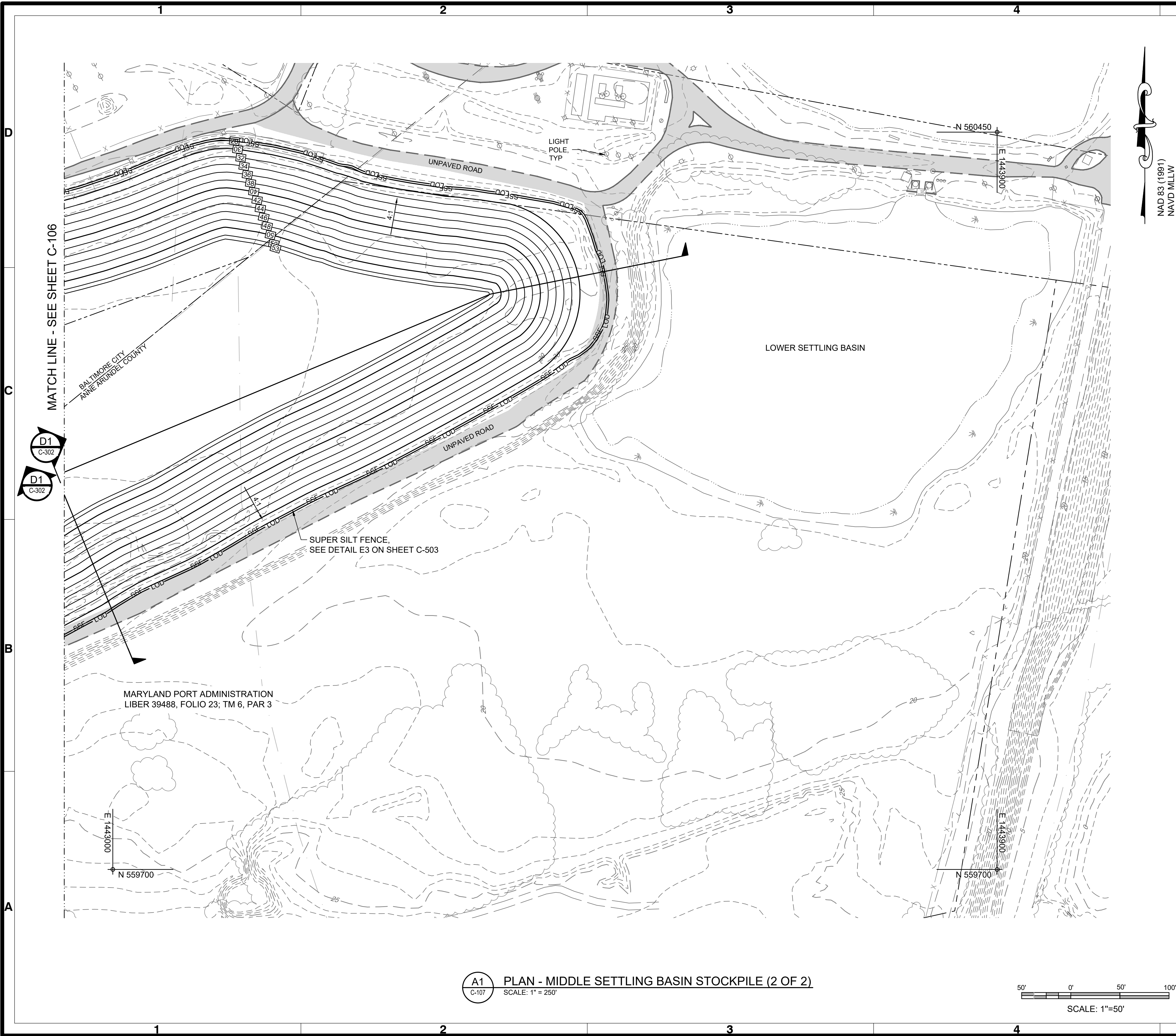
SHEET
REFERENCE NO.
C-105

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C	<p>COX CREEK DREDGED MATERIAL CONTAINMENT FACILITY STAR FACILITY MIDDLE SETTLING BASIN STOCKPILE</p>	<p>PLAN - MIDDLE SETTLING BASIN STOCKPILE (1 OF 2)</p>	<p>Date: 03/07/2025 Rev. No: 0</p> <p>M&N Project No: 10848-03</p> <p>Client Project No:</p>
B	<p>moffatt & nichol</p> <p>2780 LIGHTHOUSE POINT EAST, SUITE D BALTIMORE, MARYLAND 21224 410-563-7300</p> <hr/> <p>MDOT THE WORLD TRADE CENTER THREE 401 EAST PRATT STREET, SUITE 1900 BALTIMORE, MARYLAND 21202</p> <p><small>MARYLAND PORT ADMINISTRATION</small></p>		
A	 <p>SEAL</p> <p>I, CRAIG HANSSEN HUNTLEY, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.</p> <p>LICENSE NO.: 18717</p> <p>EXPIRATION DATE: 06/02/26</p>		
<p>SHEET REFERENCE NO. C-106</p> <p>INDEX: 13 OF 26</p>			

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- SHEET NOTES**
- FOR LEGEND, GENERAL NOTES AND ABBREVIATIONS SEE SHEETS G-002 THROUGH G-004.
 - FOR SEQUENCE OF CONSTRUCTION SEE SHEET G-005.
 - FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS SEE SHEETS C-503 THROUGH C-505.
- NOTES FOR CONSTRUCTION**
- AMPHIBIOUS OR VERY LOW GROUND PRESSURE EQUIPMENT IS ADVISED.
 - ACCESS MATS SHALL BE AVAILABLE.
 - INSTALL ESC PER PLAN.
 - CLEARING SHALL BE FOR WOODY VEGETATION ONLY.
 - NO GRUBBING SHOULD BE PERFORMED, BUT STUMPS SHALL BE CUT FLUSH TO GROUND.
 - PHRAGMITES AND OTHER VEGETATION SHALL BE FLATTENED/LAID OVER BENEATH THE GEOTEXTILE.
 - HIGH STRENGTH GEOTEXTILE WITH DESIGN STRENGTH OF 30,000 POUNDS PER LINEAR FOOT TENSILE STRENGTH IN THE MACHINE DIRECTION SHALL BE USED.
 - GEOTEXTILE SHALL BE SEAMED/SEWED TOGETHER IN THE FIELD PER MANUFACTURER RECOMMENDATIONS.
 - NO EQUIPMENT SHALL TRACK DIRECTLY ON TOP OF THE GEOTEXTILE ONCE LAID OUT.
 - PLACE GRANULAR FILL FROM SE TO NE TO MAINTAIN POSITIVE DRAINAGE.
 - THE GRANULAR FILL SHALL BE PLACED IN MAXIMUM 8 IN. LIFTS. THE FIRST LIFT ON TOP OF THE GEOTEXTILE SHALL BE SPREAD AND COMPACTED IN THE MACHINE DIRECTION.
 - EXPECT EARTH SETTLEMENT AS THE PLACEMENT OPERATION PROCEEDS.
 - NOTIFY ENGINEER IMMEDIATELY OF ANY MUD WAVING OVER 1 FT. OR TORN/UNSEAMED GEOTEXTILE.
 - COVER ENTIRE SITE WITH EACH LIFT PRIOR TO ADVANCING TO SUBSEQUENT LIFT.
 - CONTINUE PLACING GRANULAR FILL UNTIL THE SITE PREPARATION REACHES 3 FT BEFORE BEGINNING PLACEMENT OF STOCKPILE MATERIAL.

- LEGEND**
- LOD — LIMIT OF DISTURBANCE
- SSF — SUPER SILT FENCE
- SCE STABILIZED CONSTRUCTION ENTRANCE

COX CREEK DREDGED MATERIAL CONTAINMENT FACILITY STAR FACILITY MIDDLE SETTLING BASIN STOCKPILE

PLAN - MIDDLE SETTLING BASIN STOCKPILE (2 OF 2)

DATE: 03/07/2025
REV. NO.: 0

DESIGNED BY: C. HUNTLEY
CHECKED BY: DMC
DRAWN BY: HH

CLIENT PROJECT NO.: 10848-03

REVIEWED BY: W.T. PHILLIPS
SUBMITTED BY: C. HUNTLEY
MOFFATT & NICHOL

AS SHOWN PER SCALE: 1" = 100' (ANSI D)

MOFFATT & NICHOL
2780 LIGHTHOUSE POINT EAST, SUITE D
BALTIMORE, MARYLAND 21224
410-563-7300

THE WORLD TRADE CENTER
401 EAST BRATT STREET, SUITE 1900
BALTIMORE, MARYLAND 21202

MARYLAND PORT ADMINISTRATION

STATE OF MARYLAND
PROFESSIONAL ENGINEER
SEAL

I, CRAIG HANSEN HUNTLEY, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO.: 18717
EXPIRATION DATE: 06/02/26

SHEET REFERENCE NO. C-107

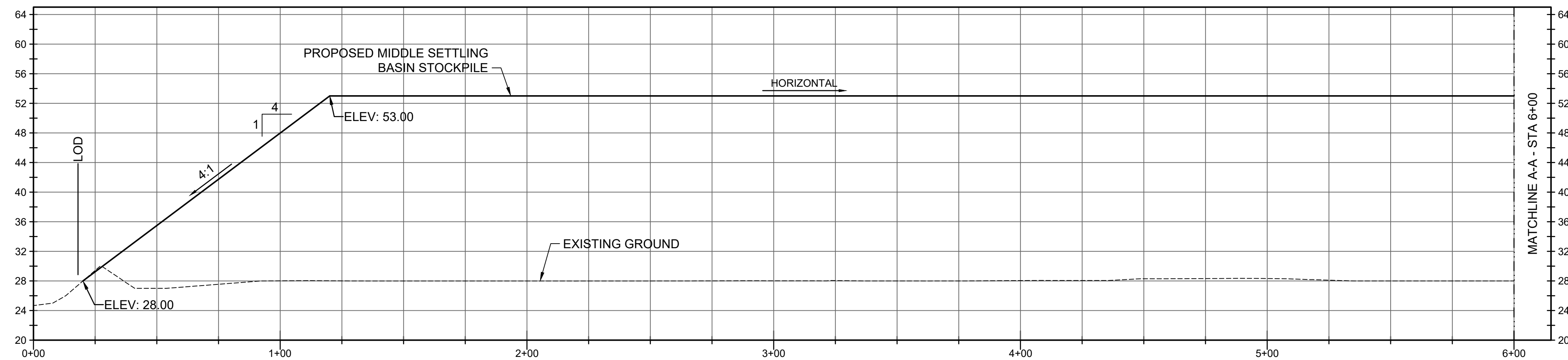
INDEX: 14 OF 26

NOTE TO CONTRACTOR:
"EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED"

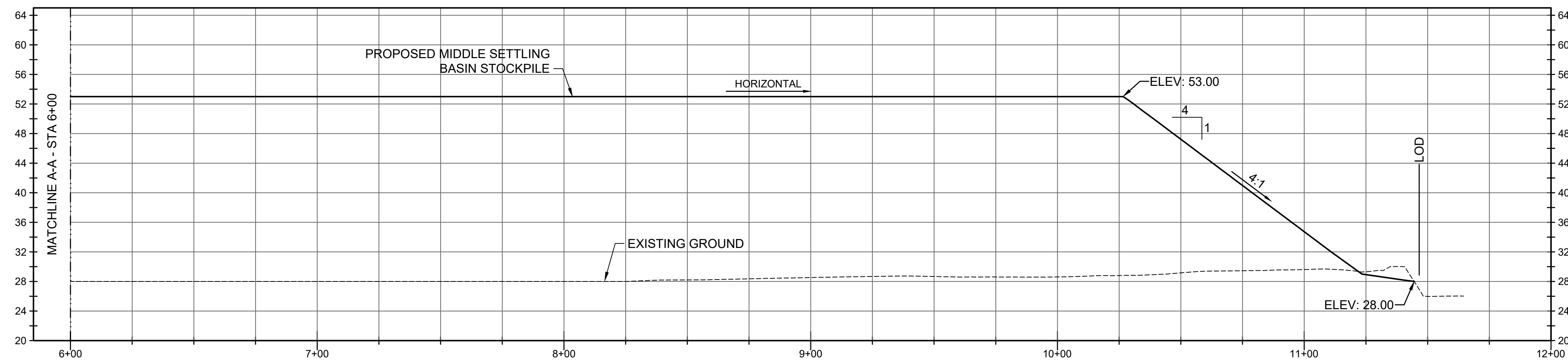
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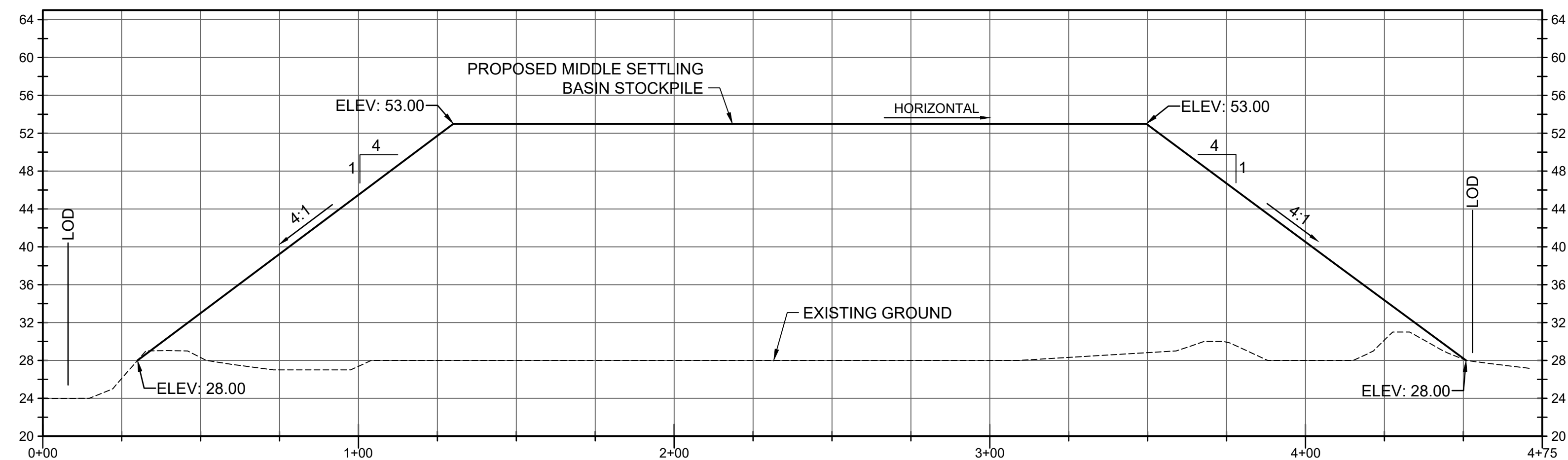
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D1 **MIDDLE SETTLING BASIN - TYPICAL SECTION A-A**
C-302 SCALES: HORIZONTAL: 1" = 30' VERTICAL: 1" = 10'



C1 MIDDLE SETTLING BASIN - TYPICAL SECTION A-A
C-302 SCALES: HORIZONTAL: 1" = 30' VERTICAL: 1" = 10'



A1 **MIDDLE SETTLING BASIN - TYPICAL SECTION B-B**
C-302 SCALES: HORIZONTAL: 1" = 30' VERTICAL: 1" = 10'

SHEET NOTES

1. FOR LEGEND, GENERAL NOTES AND ABBREVIATIONS SEE SHEETS G-002 THROUGH G-004 .
2. FOR SEQUENCE OF CONSTRUCTION SEE SHEET G-005.
3. FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS SEE SHEETS C-503 THROUGH C-505.

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C	COX CREEK DREDGED MATERIAL CONTAINMENT FACILITY STAR FACILITY MIDDLE SETTLING BASIN STOCKPILE
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**SECTION - MIDDLE SETTLING
BASIN STOCKPILE AREA**

Designed by:	C. HUNTLEY	Date:	03/07/2025	Rev. No:	0
Checked by:	DMC	IM&N Project No:	10848-03		
Drawn by:	HH	Client Project No:			
Reviewed by:	W.T. PHILLIPS				
Submitted by:	C. HUNTLEY MOFFATT & NICHOL	Drawing Scale:	AS SHOWN		
			Plot Scale:	1" = (ANSI/D)	

B

moftatt & nichol

2780 LIGHTHOUSE POINT EAST, SUITE D
BALTIMORE, MARYLAND 21224
410-583-7300

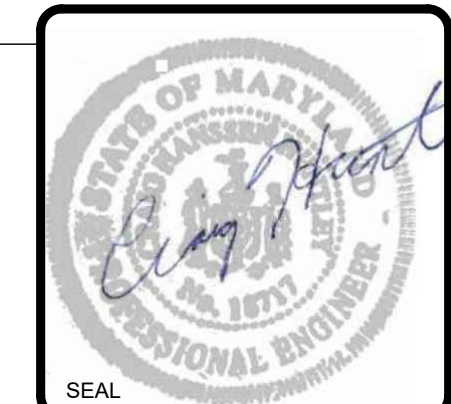
MDT

THE WORLD TRADE
CENTRE
401 EAST PRATT STREET,
SUITE 1900
BALTIMORE, MARYLAND 21202

MDT

MARYLAND DEPARTMENT
OF TRANSPORTATION

**MARYLAND PORT
ADMINISTRATION**

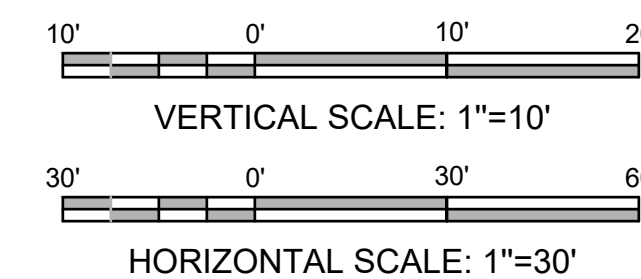


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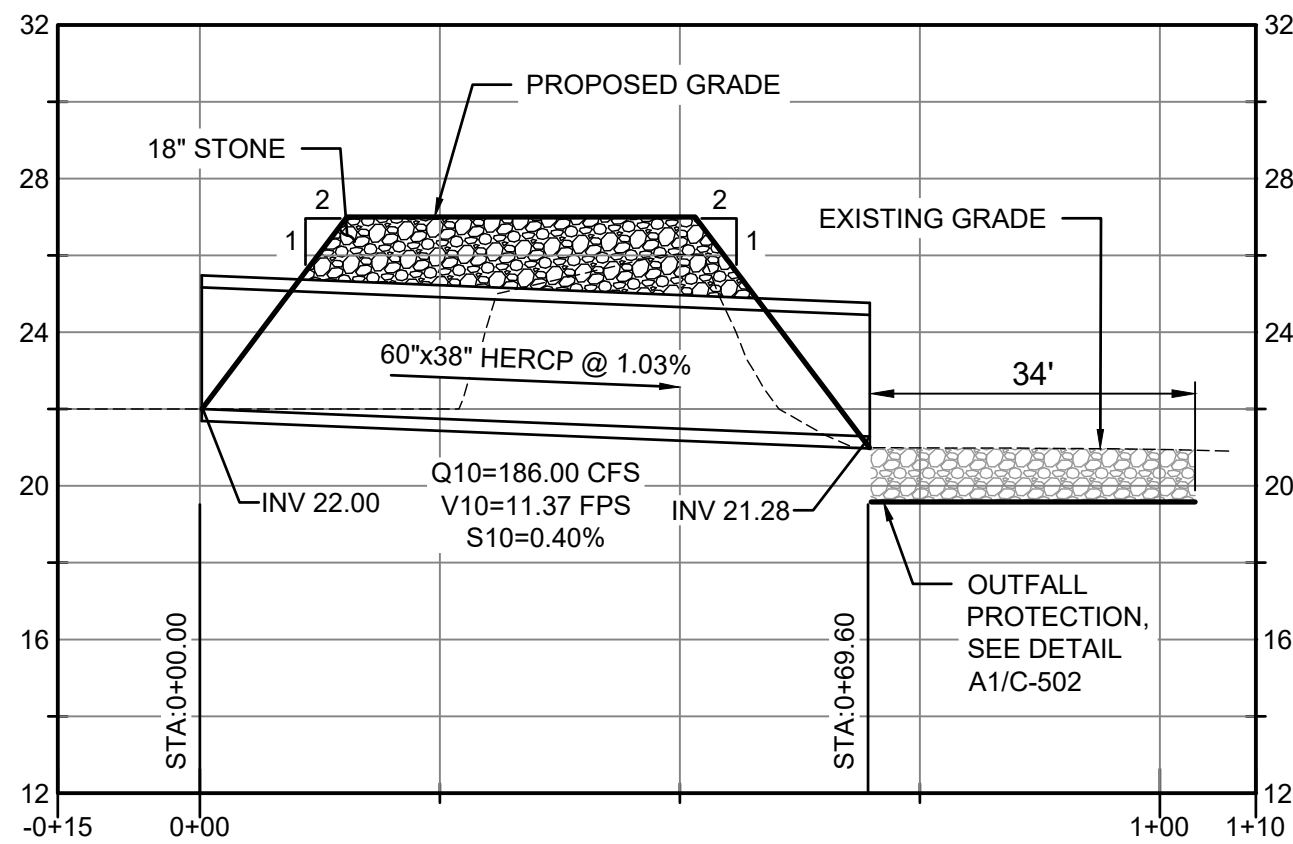
EXPIRATION DATE: 06/02/26

SHEET
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C-302
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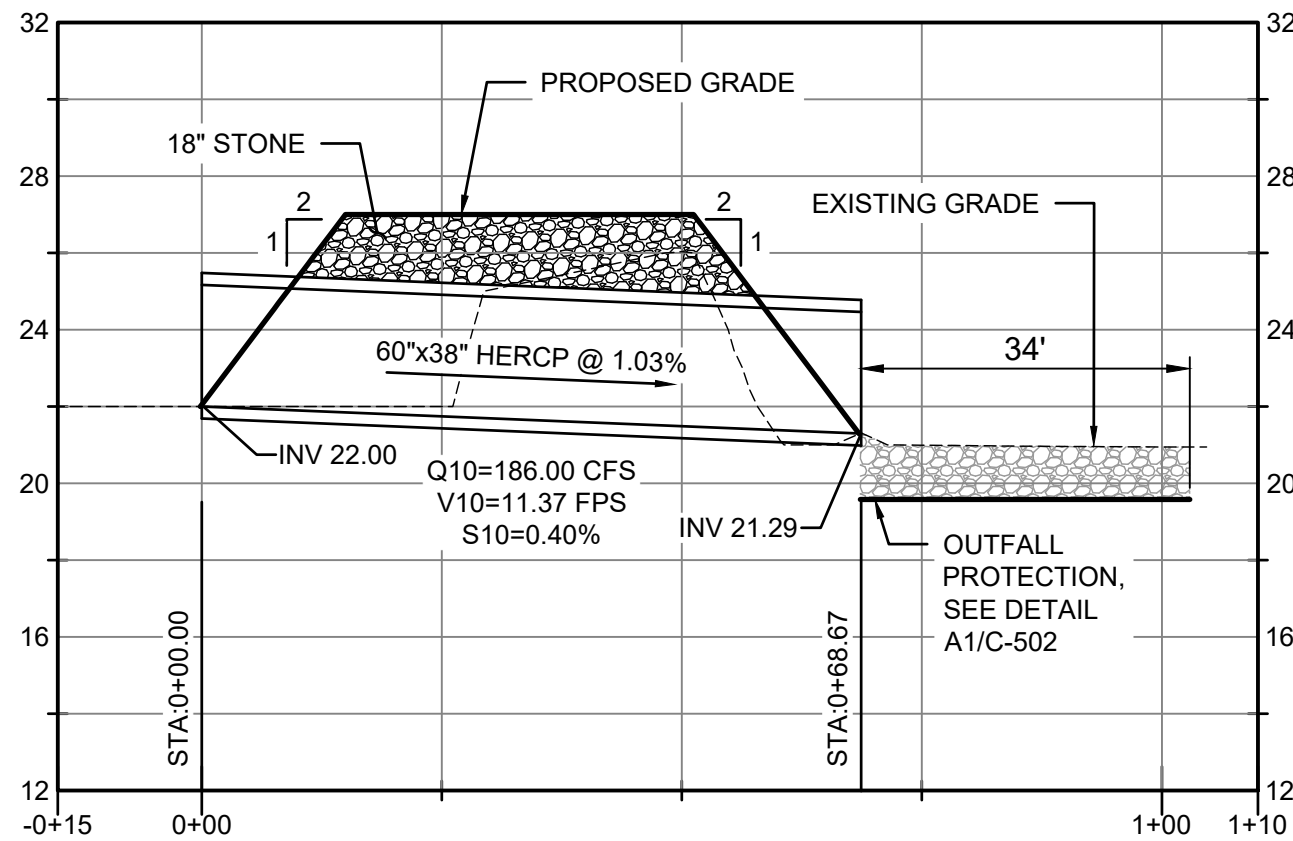


MDE NO: 25-SF-0092

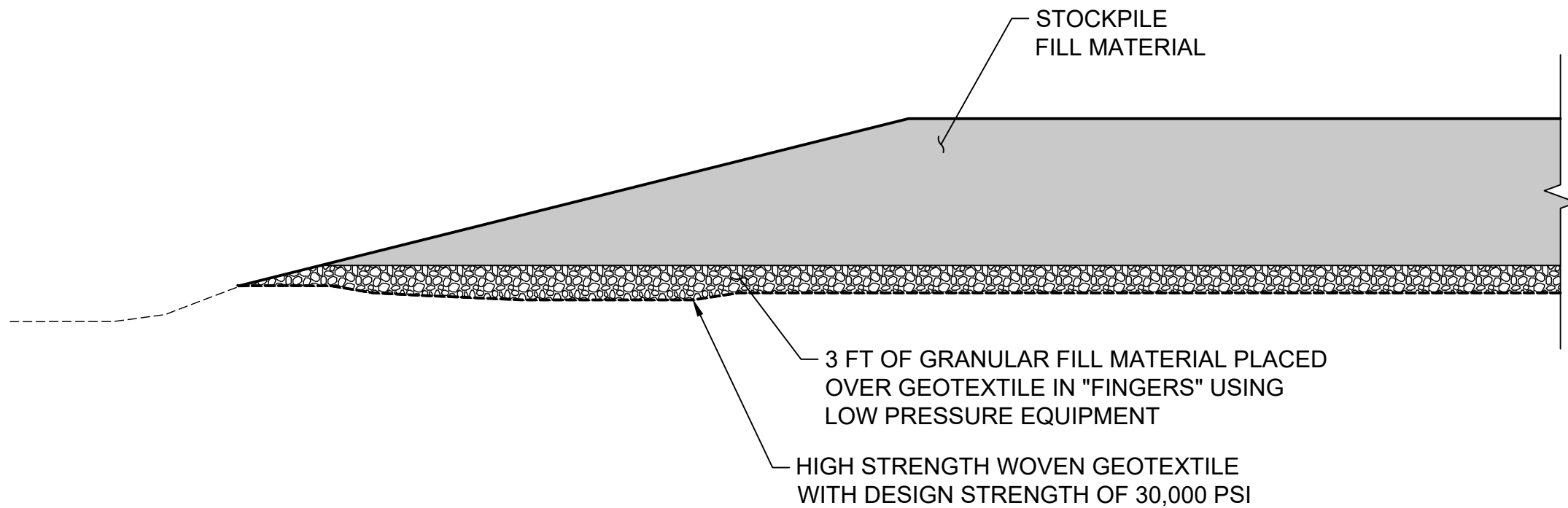
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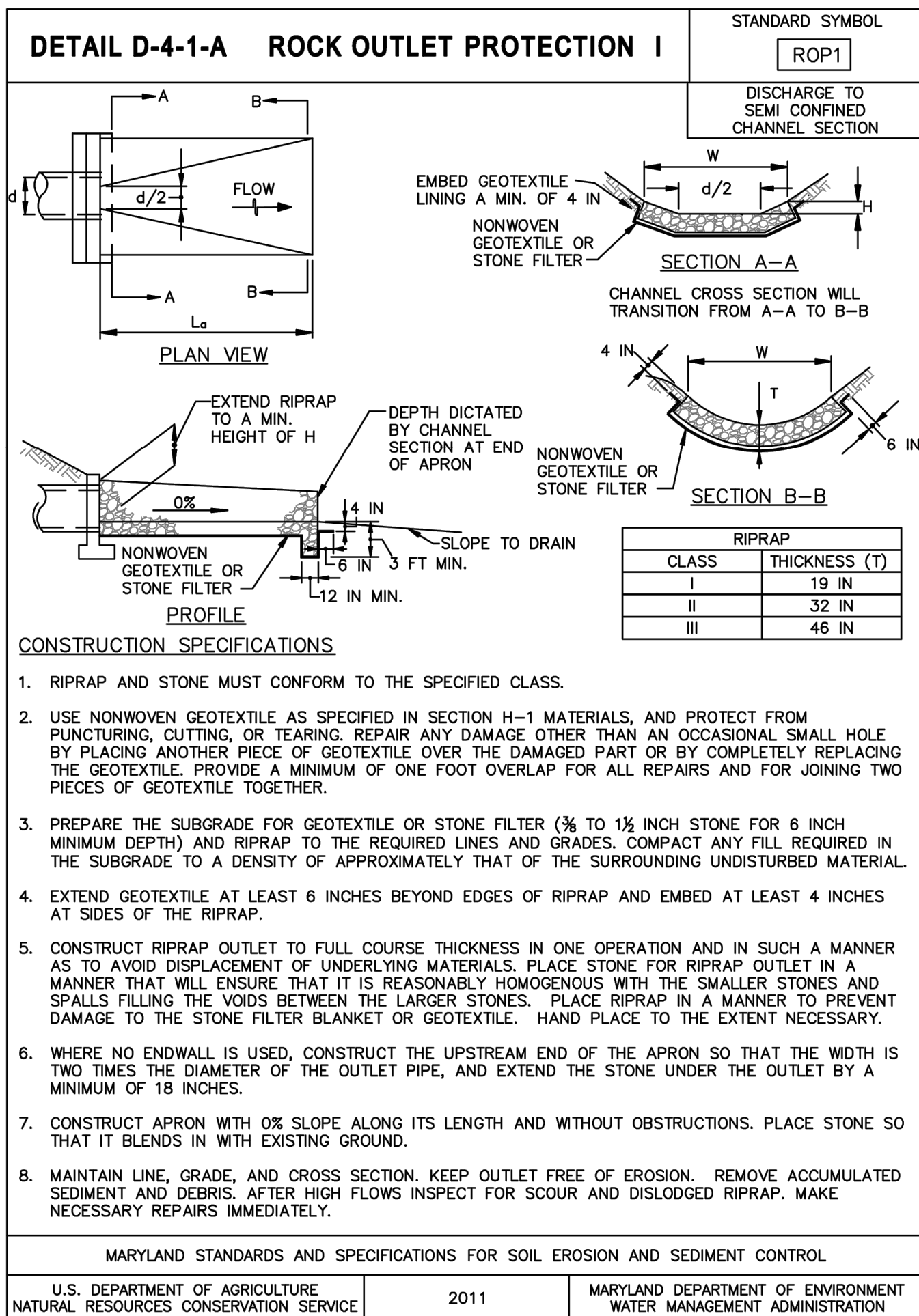
C1 PROFILE - CULVERT CROSSING TO MIDDLE SETTLING BASIN (1 OF 2)
C-106 SCALE: HORIZONTAL: 1"=20', VERTICAL: 1"=5'



B1 PROFILE - CULVERT CROSSING TO MIDDLE SETTLING BASIN (2 OF 2)
C-106 SCALE: HORIZONTAL: 1"=20', VERTICAL: 1"=5'



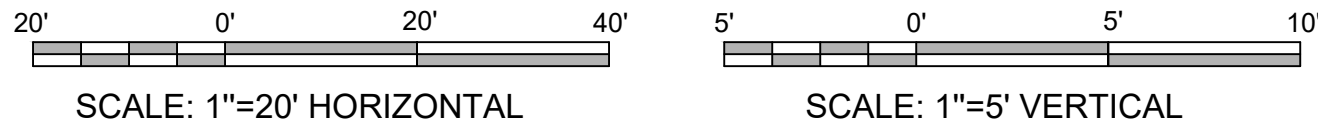
C2 DETAIL - MSB STOCKPILE SITE PREPARATION
C-106 SCALE: 1"=20'



A3 DETAIL - OUTFALL PROTECTION
C-106 SCALE: NTS

NOTES

- THE DIMENSIONS FOR THE CLASS I RIPRAP OUTFALL PROTECTION ARE AS FOLLOWS:
LA = 34 FT
W = 25 FT
T = 19 IN
H = 38 IN



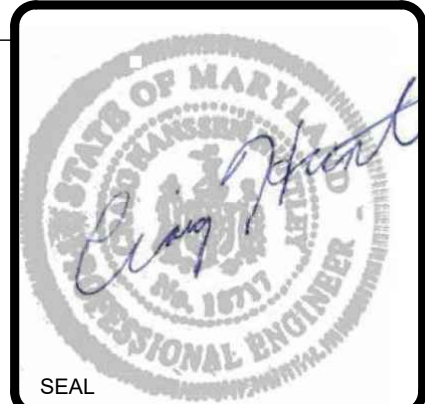
SHEET NOTES

- FOR LEGEND, GENERAL NOTES AND ABBREVIATIONS, SEE SHEETS G-002 THROUGH G-004.
- Q10, V10, AND S10 SHOWN IN PROFILES ARE BASED ON DESIGN FLOWS CALCULATED FOR A DOUBLE BARREL HERCP CULVERT.

COY CREEK DREDGED MATERIAL
CONTAINMENT FACILITY
STAR FACILITY MIDDLE SETTLING BASIN
STOCKPILE

DETAILS - SITE PREPARATION AT
MIDDLE SETTLING BASIN

Designed by: C. HUNTLEY	Checked by: DMC	Reviewed by: W.T. PHILLIPS	Submitted by: C. HUNTLEY	AS SHOWN Per Scale: 1:1 (ANSI D)
Drawn by: HH	Client Project No: 10848-03	Drawing Scale: 1:1 (ANSI D)		
Date: 03/07/2025	M&N Project No: 10848-03			
Rev. No: 0				

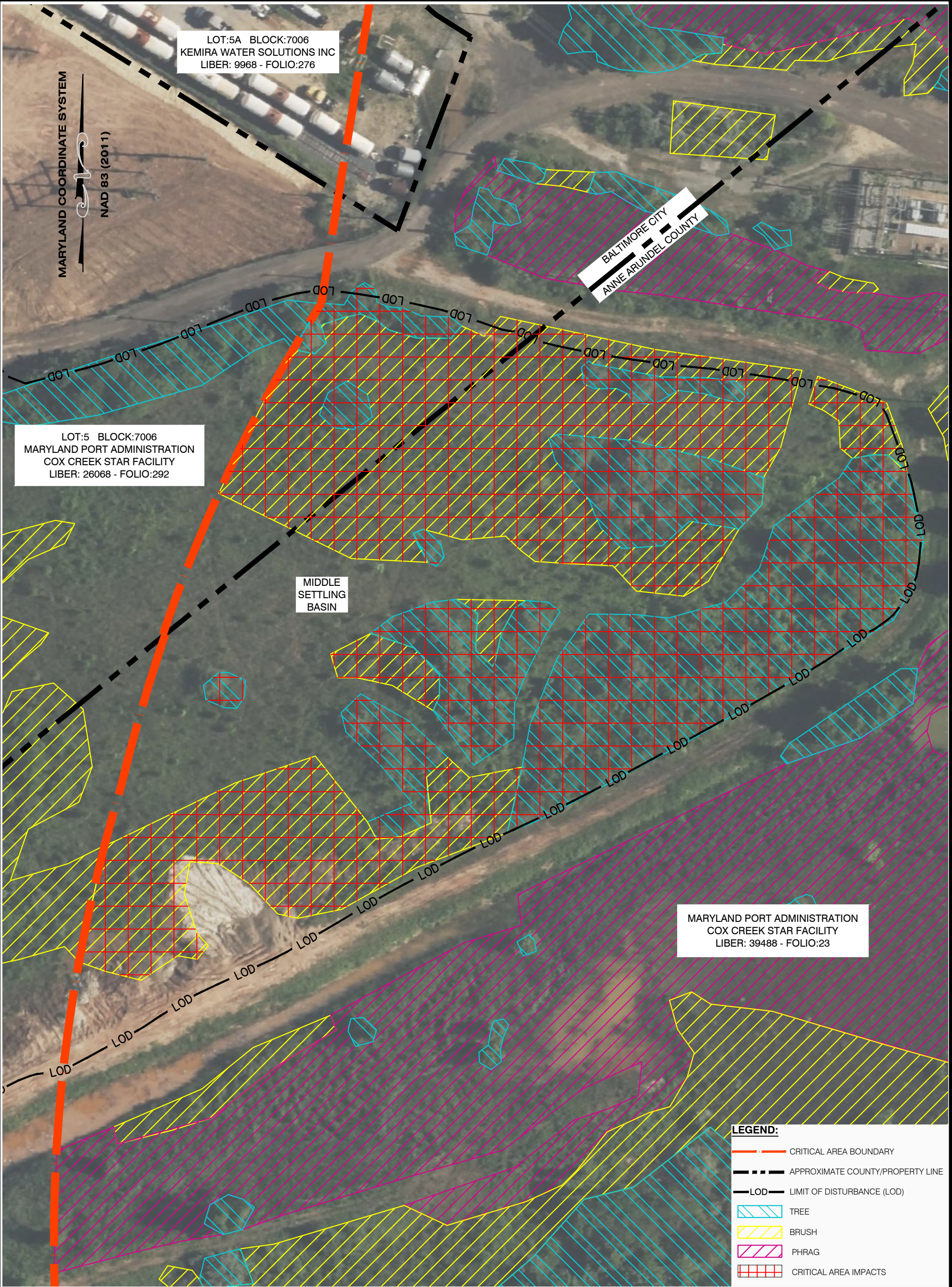


I, CRAIG HANSEN HUNTLEY,
HEREBY CERTIFY THAT THESE
DOCUMENTS WERE PREPARED OR
APPROVED BY ME, AND THAT I
AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER
THE LAWS OF THE STATE OF
MARYLAND.
LICENSE NO.: 18717
EXPIRATION DATE: 06/02/26

SHEET
REFERENCE NO.
C-502
20 OF 26

MDE NO: 25-SF-0092

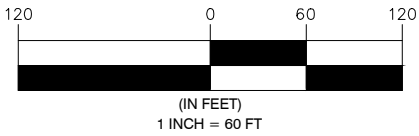
NOTE TO CONTRACTOR:
"EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED"



NOTES

- 1) THE VEGETATION CLASSIFICATION SHOWN HEREON IS BASED ON AERIAL IMAGERY COLLECTED BY MES ON NOVEMBER 30, 2023.
- 2) CRITICAL AREA EXTENTS WERE DOWNLOADED FROM MDIMAP AND WERE LAST UPDATED MARCH 30, 2022.
- 3) THE SITE IS IN AN EARLY FOREST STAGE, WITH A MIXTURE OF VEGETATIVE CLASSES IN SOME AREAS.
- 4) HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983(2011) (NAD 83/11)

GRAPHIC SCALE



STAR FACILITY - TREE AND BRUSH VEGETATION

CRITICAL AREA VEGETATION WITHIN MSB LOD		
	SqFt	Acres
TREE	45,796.06	1.05
BRUSH	62,825.23	1.44

DRAWN BY JBB
CLASSIFIED BY JBB, LC
CHECKED BY MO
DATE MARCH 21, 2025



Maryland
ENVIRONMENTAL
SERVICE

COX CREEK STAR FACILITY - CRITICAL AREA

TREE & BRUSH WITHIN MSB LOD

BALTIMORE, MARYLAND

SCALE: 1" = 60'

SHEET 1 OF 1

Sea Level Rise Vulnerability, FEMA Floodplain, and Wetland Migration Areas



Floodplain

Preliminary FEMA Floodplain

- 100 Year Floodplain (1% Chance)
- 500 Year Floodplain (0.2% Chance)
- Floodway (1% Chance)
- Upland (Zone X)

Effective FEMA Floodplain

- 100 Year Floodplain (1% Chance)
- 500 Year Floodplain (0.2% Chance)
- Floodway (1% Chance)
- Upland (Zone X)

Sea Level Rise Vulnerability

5 to 10 Foot Inundation

- 5 to 10 Foot Inundation

Wetland Adaptation to Sea Level Rise

Wetland Adaptation Areas 2100

- 2100

Projected Storm Surge



Storm Surge

Hurricane Storm Surge

-  Category 1
-  Category 2
-  Category 3
-  Category 4