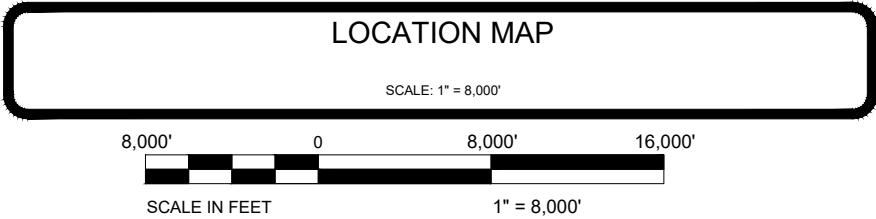
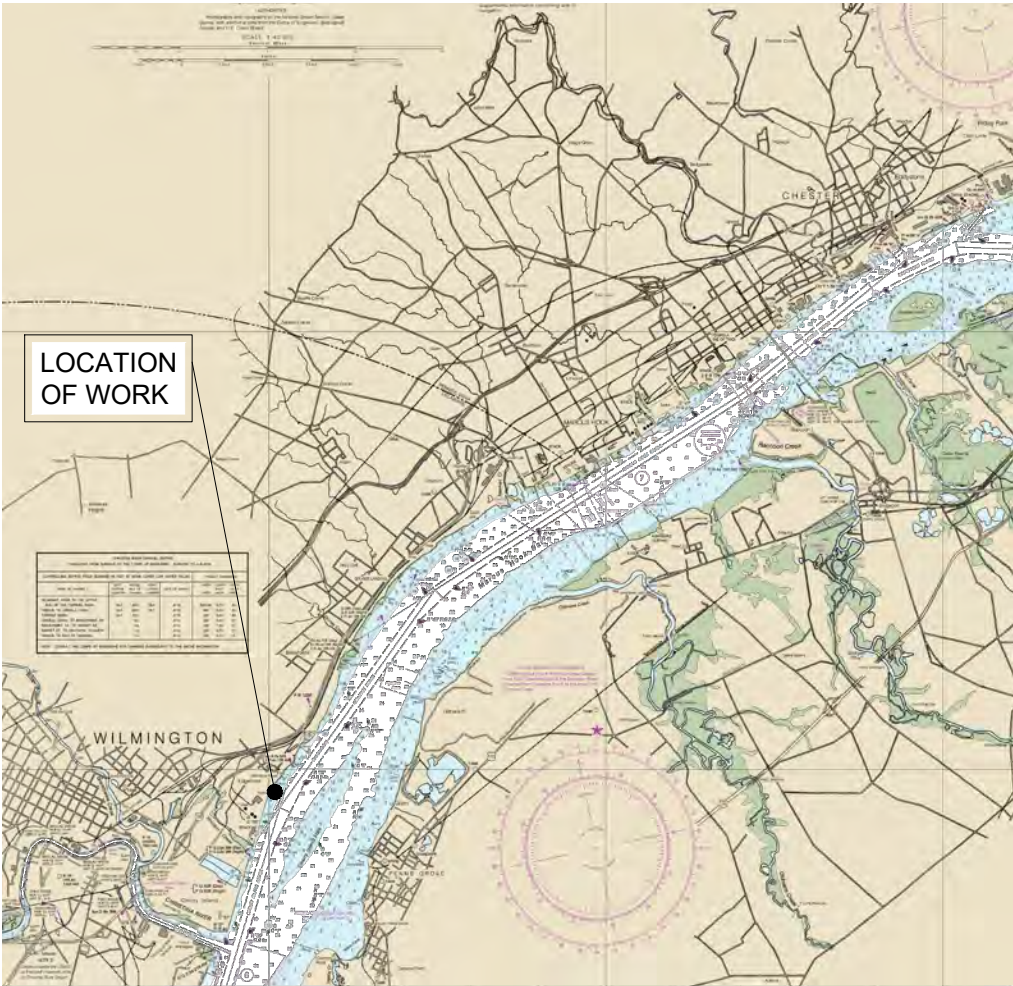


PORT OF WILMINGTON EDGEMOOR EXPANSION
PERMIT PLANS



BRANDYWINE HUNDRED, NEW CASTLE COUNTY, DELAWARE



PURPOSE:

THE PURPOSE OF THESE PLANS IS TO PROVIDE PLANS AND DETAILS FOR THE PERMITTING OF A NEW HARBOR AND DOCK STRUCTURE AT THE PORT OF WILMINGTON EDGEMOOR FACILITY IN NEW CASTLE COUNTY, DELAWARE. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY ARE NOT FOR BIDDING.

JUNE 2021 REVISION - THE PURPOSE OF THIS REVISION IS TO REMOVE THE SEDIMENT FANS AND ADD A PLAN INDICATING THE ONSITE BENEFICIAL REUSE AREA TO THE PERMIT DRAWINGS

SITE DATA:

1.	TAX PARCEL NO.:	06-153.00-006
2.	SITE ADDRESS:	4600 HAY ROAD WILMINGTON, DE 19809
3.	OWNER:	DIAMOND STATE PORT CORPORATION 1 HAUSEL ROAD WILMINGTON, DE 19801
4.	SOURCE OF TITLE:	IN20170227-0010347
5.	ZONING:	HI - HEAVY INDUSTRIAL
6.	PARCEL SITE ACREAGE:	113.29 ± AC
7.	DATUM:	HORIZONTAL: NAD 83 DE STATE PLANE GRID VERTICAL: NAVD 1988
8.	SURVEY:	THE TOPOGRAPHIC SURVEY DEPICTED ON THIS PLAN WAS TAKEN FROM AN AERIAL SURVEY PREPARED BY COOPER AERIAL SURVEYS CO. DATED DECEMBER 23, 2018. BATHYMETRIC SOUNDING PERFORMED BY GAHAGAN & BRYANT ASSOCIATES IN JULY, 2018 WITH SINGLE BEAM AND MULTIBEAM SURVEY IN GENERAL ACCORDANCE WITH EM 1110-Z-1003. THE GROUND CONTROL POINTS UTILIZED BY COOPER AERIAL SURVEYS CO. FOR THE AERIAL SURVEY WERE SET IN THE FIELD BY VANDEMARK & LYNCH, INC. DATED DECEMBER 12-14, 2018.

INDEX OF SHEETS:

SHEET 1	COVER SHEET
SHEET 2	JURISDICTIONAL BOUNDARY PLAN
SHEET 3	EXISTING CONDITIONS PLAN
SHEET 4	EXISTING TOPOGRAPHY
SHEET 5	CONCEPTUAL SITE PLAN
SHEET 6	BERTH GRADING PLAN
SHEET 7	SECTIONS
SHEET 8	SECTIONS
SHEET 9	WHARF STRUCTURAL DETAILS
SHEET 10	WHARF STRUCTURAL DETAILS
SHEET 11	ANALYTICAL SAMPLE LOCATION SKETCH
SHEET 12	GEOTECHNICAL BORINGS LOCATION SKETCH
SHEET 13	ESSENTIAL FISH HABITAT
SHEET 14	BATHYMETRIC SURVEY
SHEET 15	MAGNETOMETER CONTOUR MAPPING
SHEET 16	SITE SCAN SONAR
SHEET 17	ONSITE CDF PLAN

QUANTITY NOTES:

1.	AREA OF DREDGE:	86.9 ACRES
2.	AREA OF DREDGE TO 48':	64.5 ACRES
3.	AREA OF SUBAQUEOUS FILL (INTERTIDAL, GROSS):	5.14 ACRES
4.	AREA OF SUBAQUEOUS FILL (SUBTIDAL, GROSS):	0.36 ACRES
5.	VOLUME OF DREDGE:	3,325,000 CUBIC YARDS
6.	VOLUME OF SUBAQUEOUS FILL:	20,107 CUBIC YARDS
7.	VOLUME OF FLOODPLAIN FILL:	145,893 CUBIC YARDS
8.	AREA OF WETLAND IMPACT:	0.0 ACRES
9.	AREA OF SHALLOW WATER IMPACT:	35.3 ACRES
10.	APPROXIMATE NUMBER OF PILES:	4,500 (PLUMB AND BATTER)
11.	VOLUME OF PILE FILL:	2,160 CUBIC YARDS
12.	"SHADED" FOOTPRINT AREA COVERED BY WHARF / FENDERS (AS CONSTRUCTED):	32,900 SQUARE FEET



DUFFIELD ASSOCIATES

Soil, Water & the Environment

5400 LIMESTONE ROAD
WILMINGTON, DE 19808-1232
TEL: 302.239.6634
FAX: 302.239.8465

OFFICES IN DELAWARE, MARYLAND
PENNSYLVANIA AND NEW JERSEY

E-MAIL: DUFFIELD@DUFFNET.COM

DESIGNED BY:	MRB
DRAWN BY:	AR
CHECKED BY:	BJD
FILE:	PRMT-Index-11139LH.dwg

PERMIT PLAN
COVER SHEET

PORT OF WILMINGTON EDGEMOOR EXPANSION

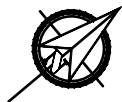
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 8,000'

PROJECT NO.
11139.LH

SHEET:
1 OF 17



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
PORT VENTURES, LLC
TP# 06-156.00-003
ZONED - HI (HEAVY INDUSTRIAL) (UDC)

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-001

ZONE AE (EL. 9)
PROPOSED LIMITS
OF DREDGING

PROPOSED LIMITS
OF DREDGING

DELAWARE
RIVER
MAIN
CHANNEL



LEGEND	
	PROPERTY LINE
	ADJOINER LINE
	100 YEAR FLOODPLAIN
	100 YEAR FLOODPLAIN
	100 YEAR FLOODPLAIN
	FLOODPLAIN DIVIDE
	FLOODPLAIN DIVIDE
	HIGH TIDE LINE
	MEAN HIGH WATER LINE
	MEAN LOW WATER LINE
	DEEP WATER LINE
	CHANNEL LIMITS

(BASE FLOOD ELEVATIONS,
BFE DETERMINED)
(COASTAL FLOOD ZONE
WITH VELOCITY HAZARD,
BFE DETERMINED)

EL. = 4.56' (N.A.V.D. 88)
EL. = 2.51' (N.A.V.D. 88)
EL. = -2.79' (N.A.V.D. 88)
EL. = -9.35' (N.A.V.D. 88)

**DUFFIELD
ASSOCIATES**
Soil, Water & the Environment

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FILE: PRMT-Juris-11139LH.dwg

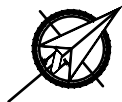
PERMIT PLAN
JURISDICTIONAL BOUNDARY PLAN
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
2 OF 17



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-001

N/F
PORT VENTURES, LLC
TP# 06-156.00-003
ZONED - HI (HEAVY INDUSTRIAL) (UDC)

N/F
STATE OF DELAWARE
TP# 06-147.00-017

SUBMERGED OUTFALL
(TO REMAIN)

SUBMERGED PILE STRUCTURE
(TO REMAIN)

EXISTING SEAWALL
(TO BE REMOVED)

ABANDONED EXISTING PIERS AND WATER
INTAKE STRUCTURE (TO BE REMOVED)

DELAWARE
RIVER
MAIN
CHANNEL

RANGE LIGHT
(TO BE RELOCATED)

SUBMERGED PILES (TO BE REMOVED)

EXISTING WOOD AND
CONCRETE PIER
(TO BE REMOVED)

LEGEND

— — — — — PROPERTY LINE
- - - - - ADJOINER LINE
= = = = = EXISTING RAILROAD
- - - - - EXISTING CONTOUR



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CHECKED BY: BJD

FILE: PRMT-Exist-11139LH.dwg

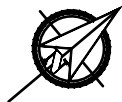
PERMIT PLAN
EXISTING CONDITIONS PLAN
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
3 OF 17



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
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PORT VENTURES, LLC
TP# 06-156.00-003
ZONED - HI (HEAVY INDUSTRIAL) (UDC)

N/F
STATE OF DELAWARE
TP# 06-147.00-017

DELAWARE
RIVER
MAIN
CHANNEL



LEGEND	
	PROPERTY LINE
	ADJOINER LINE
	EXISTING RAILROAD
	EXISTING CONTOUR



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CHECKED BY:	BJD
FILE:	PRMT-Exist-11139LH.dwg

PERMIT PLAN
EXISTING TOPOGRAPHY

PORT OF WILMINGTON EDGE MOOR EXPANSION

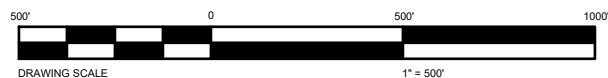
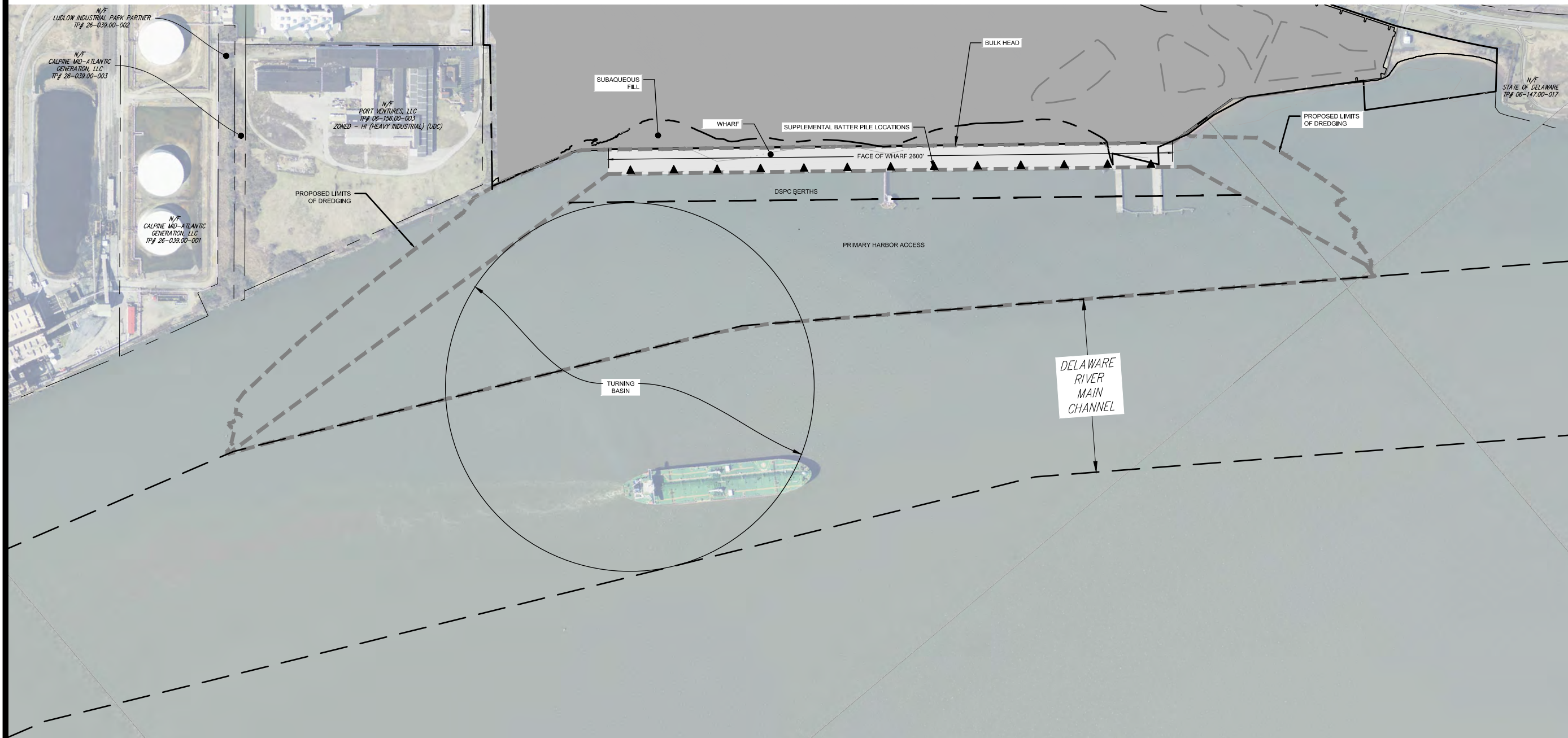
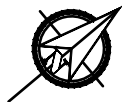
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
4 OF 17



DRAWING SCALE

1" = 500'

LEGEND

	PROPERTY LINE
	ADJOINER LINE
	CHANNEL LIMITS
	LIMITS OF DREDGING
	PROPOSED ASPHALT
	PROPOSED WHARF



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DESIGNED BY:	MRB
DRAWN BY:	MH
CHECKED BY:	BJD
FILE:	PRMT-Site-11139LH.dwg

PERMIT PLAN
CONCEPTUAL SITE PLAN

PORT OF WILMINGTON EDGEMOOR EXPANSION

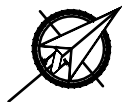
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
5 OF 17



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
CALPINE MID-ATLANTIC GENERATION, LLC
TP# 06-156.00-004

N/F
AHMED E. AMER, LLC
TP# 06-156.00-003

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-001

PROPOSED LIMITS
OF DREDGING

6:1 SLOPE

3:1 SLOPE

BULK HEAD

FILLED SUBAQUEOUS LAND

N/F
STATE OF DELAWARE
TP# 06-147.00-017

PROPOSED LIMITS
OF DREDGING

6:1 SLOPE

SEA WALL

DELAWARE RIVER
MAIN CHANNEL



LEGEND	
	PROPERTY LINE
	ADJOINER LINE
	CHANNEL LIMITS
	EXISTING CONTOUR
	LIMITS OF DREDGING
	PROPOSED ASPHALT
	PROPOSED CONTOUR

DUFFIELD ASSOCIATES
Soil, Water & the Environment

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PENNSYLVANIA AND NEW JERSEY

E-MAIL: DUFFIELD@DUFFNET.COM

DESIGNED BY:	MRB
DRAWN BY:	MH
CHECKED BY:	BJD
FILE:	PRMT-Grading-11139LH

PERMIT PLAN
BERTH GRADING PLAN

PORT OF WILMINGTON EDGE MOOR EXPANSION

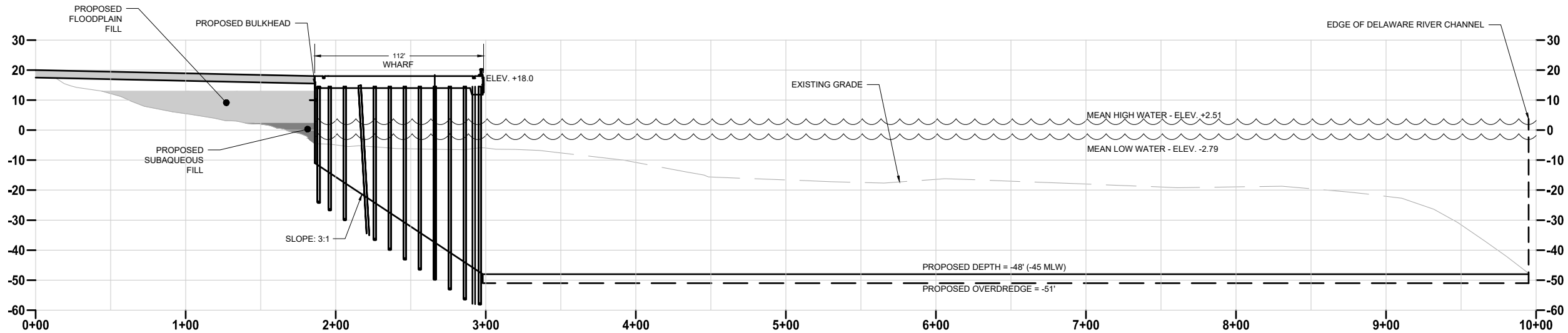
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

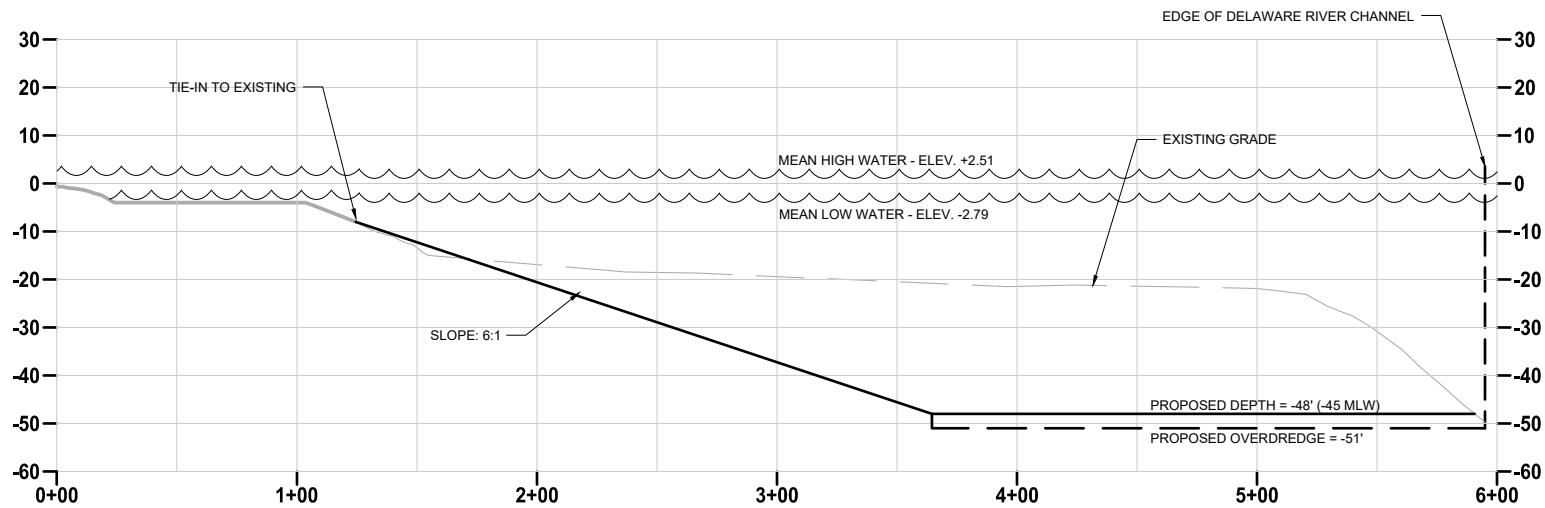
PROJECT NO.
11139.LH

SHEET:
6 OF 17



SECTION WHARF

SCALE: HORIZONTAL: 1" = 80'
VERTICAL: 1" = 40'



SECTION AT TIE-IN TO EXISTING SUBAQUEOUS SLOPE

SCALE: HORIZONTAL: 1" = 80'
VERTICAL: 1" = 40'



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E-MAIL: DUFFIELD@DUFFNET.COM

DESIGNED BY: MRB

DRAWN BY: AR

CHECKED BY: BJD

FILE: PRMT-Sections-11139LH

**PERMIT PLAN
SECTIONS**

PORT OF WILMINGTON EDGE MOOR EXPANSION

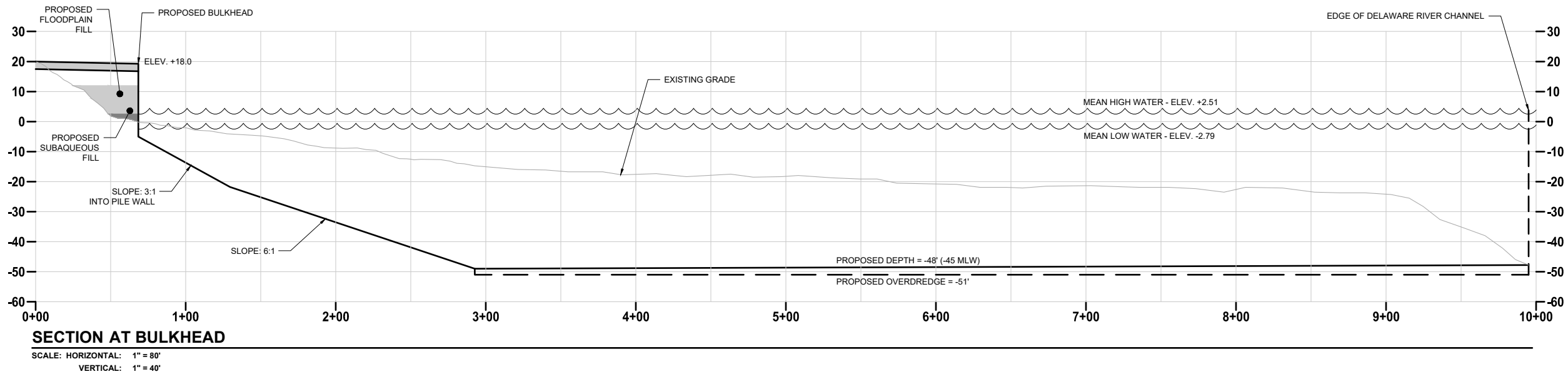
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
AS SHOWN

PROJECT NO.
11139.LH

SHEET:
7 OF 17



DESIGNED BY:	MRB
DRAWN BY:	AR
CHECKED BY:	BJD
FILE:	PRMT-Sections-11139LH

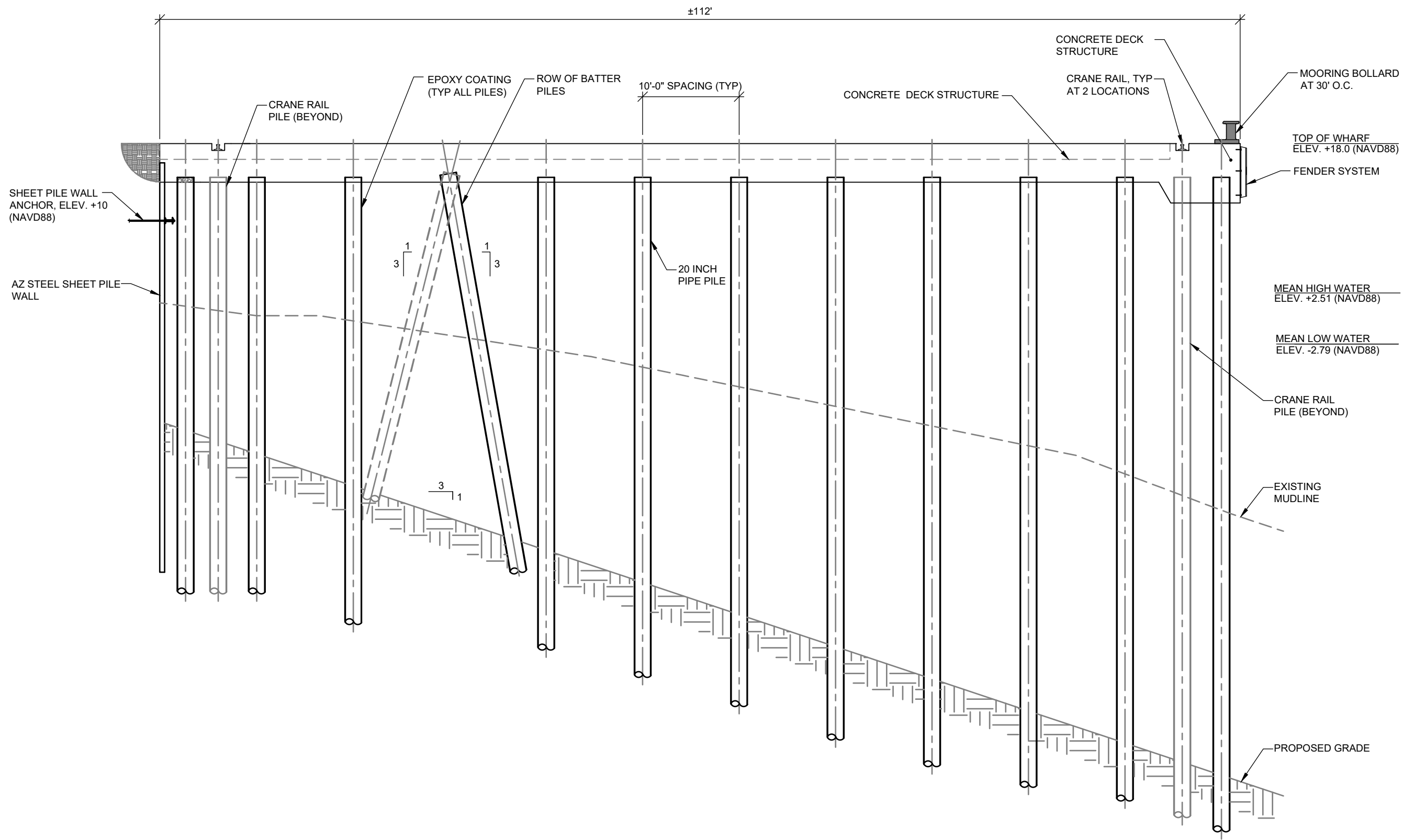
PERMIT PLAN
SECTIONS
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
AS SHOWN

PROJECT NO.
11139.LH

SHEET:
8 OF 17



WHARF CONSTRUCTION SECTION - SECTION VIEW
SCALE: NOT TO SCALE

DESIGNED BY:	MRB
DRAWN BY:	SFH
CHECKED BY:	BJD
FILE:	PRMT-Struct-11139.LH.dwg

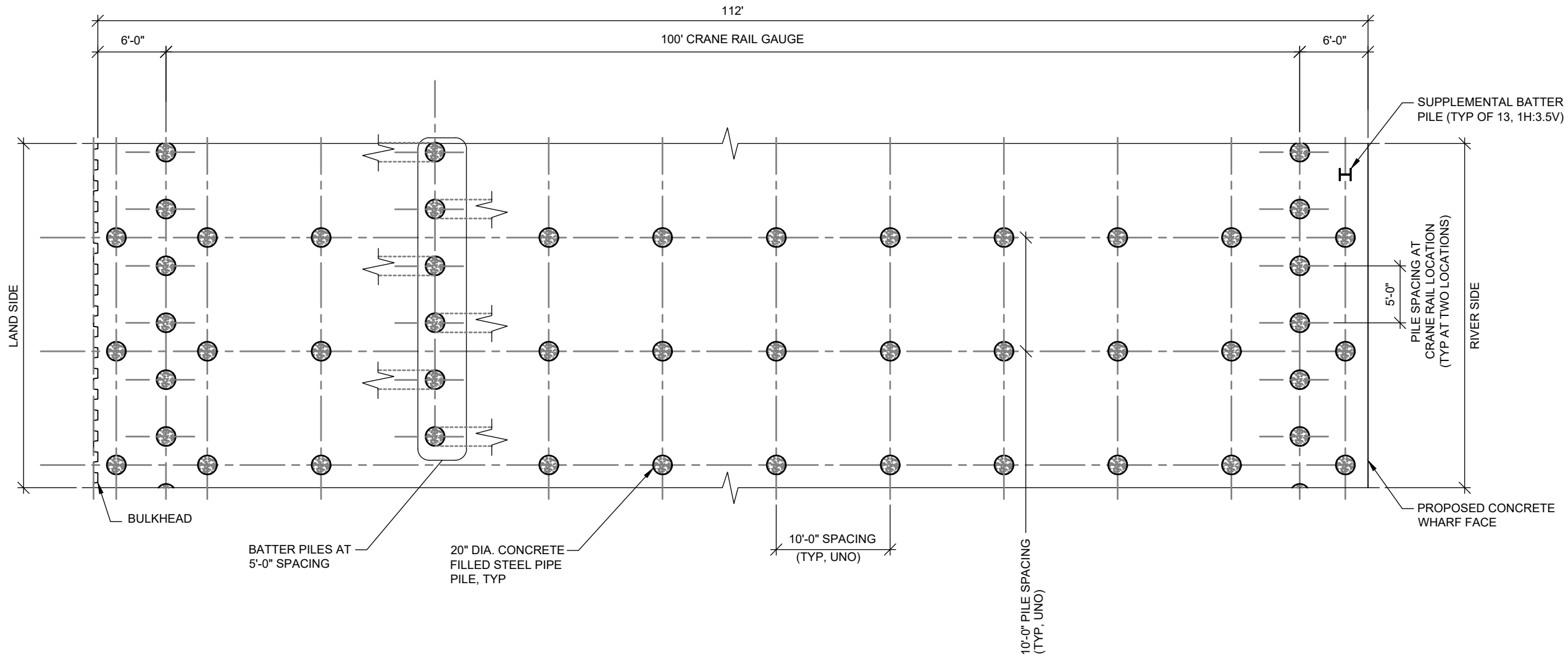
PERMIT PLAN
WHARF STRUCTURAL DETAILS
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
NTS

PROJECT NO.
11139.LH

SHEET:
9 OF 17



WHARF CONSTRUCTION SECTION - PLAN VIEW
SCALE: NOT TO SCALE



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
CALPINE MID-ATLANTIC GENERATION, LLC
TP# 06-156.00-004

N/F
AHMED E. AMER, LLC
TP# 06-156.00-003

N/F
STATE OF DELAWARE
TP# 06-147.00-017

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-001

PROPOSED LIMITS
OF DREDGING

PROPOSED LIMITS
OF DREDGING

DELAWARE RIVER
MAIN CHANNEL

LEGEND



2016 BORING PROGRAM



2019 VIBRACORE PROGRAM



5400 LIMESTONE ROAD
WILMINGTON, DE 19808-1232
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FAX 302.239.8465
OFFICES IN DELAWARE, MARYLAND
PENNSYLVANIA AND NEW JERSEY
E-MAIL: DUFFIELD@DUFFNET.COM

DESIGNED BY: MRB

DRAWN BY: KJT

CHECKED BY: BJD

FILE: PRMT-VIBRA-11139.LH.dwg

PERMIT PLAN
ANALYTICAL SAMPLE LOCATION SKETCH
PORT OF WILMINGTON EDGE MOOR EXPANSION

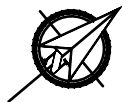
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
11 OF 17



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
CALPINE MID-ATLANTIC GENERATION, LLC
TP# 06-156.00-004

N/F
AHMED E. AMER, LLC
TP# 06-156.00-003

N/F
STATE OF DELAWARE
TP# 06-147.00-017

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-001

PROPOSED LIMITS
OF DREDGING

TB-6

TB-7
TB-7A

TB-1

TB-2

TB-3

TB-4

TB-8

TB-5

TB-9

TB-10

PROPOSED LIMITS
OF DREDGING

DELAWARE RIVER
MAIN CHANNEL

LEGEND

2016 TEST BORING PROGRAM

2018 TEST BORING PROGRAM



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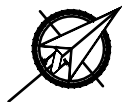
PERMIT PLAN
GEOTECHNICAL BORING LOCATION SKETCH
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
12 OF 17



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
CALPINE MID-ATLANTIC GENERATION, LLC
TP# 06-156.00-004

N/F
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TP# 06-156.00-003

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-001

N/F
STATE OF DELAWARE
TP# 06-147.00-017

PROPOSED LIMITS
OF DREDGING

PROPOSED LIMITS
OF DREDGING

DELAWARE RIVER
MAIN CHANNEL



LEGEND



PROPOSED BENTHIC SAMPLE LOCATIONS

PROPOSED BEACH SEINE LOCATIONS

PROPOSED TRAWL HAUL LOCATIONS



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E-MAIL: DUFFIELD@DUFFNET.COM

DESIGNED BY: MRB

DRAWN BY: AR/MH

CHECKED BY: BJD

FILE: PRMT-FISH-11139LH.dwg

PERMIT PLAN
ESSENTIAL FISH HABITAT SURVEY
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
13 OF 17



N/F
LUDLOW INDUSTRIAL PARK PARTNER
TP# 26-039.00-002

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-003

N/F
CALPINE MID-ATLANTIC GENERATION, LLC
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N/F
AHMED E. AMER, LLC
TP# 06-156.00-003

N/F
CALPINE MID-ATLANTIC
GENERATION, LLC
TP# 26-039.00-001

N/F
STATE OF DELAWARE
TP# 06-147.00-017

MULTI BEAM
BATHYMETRIC
SURVEY AREA

SINGLE BEAM
BATHYMETRIC
SURVEY AREA

DELAWARE RIVER
MAIN CHANNEL



NOTE
BATHYMETRIC SOUNDING PERFORMED BY GAHAGAN & BRYANT ASSOCIATES IN JULY, 2018 WITH
SINGLE BEAM AND MULTIBEAM SURVEY IN GENERAL ACCORDANCE WITH EM 1110-Z-1003.



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FILE: PRMT-Bath-11139LH.dwg

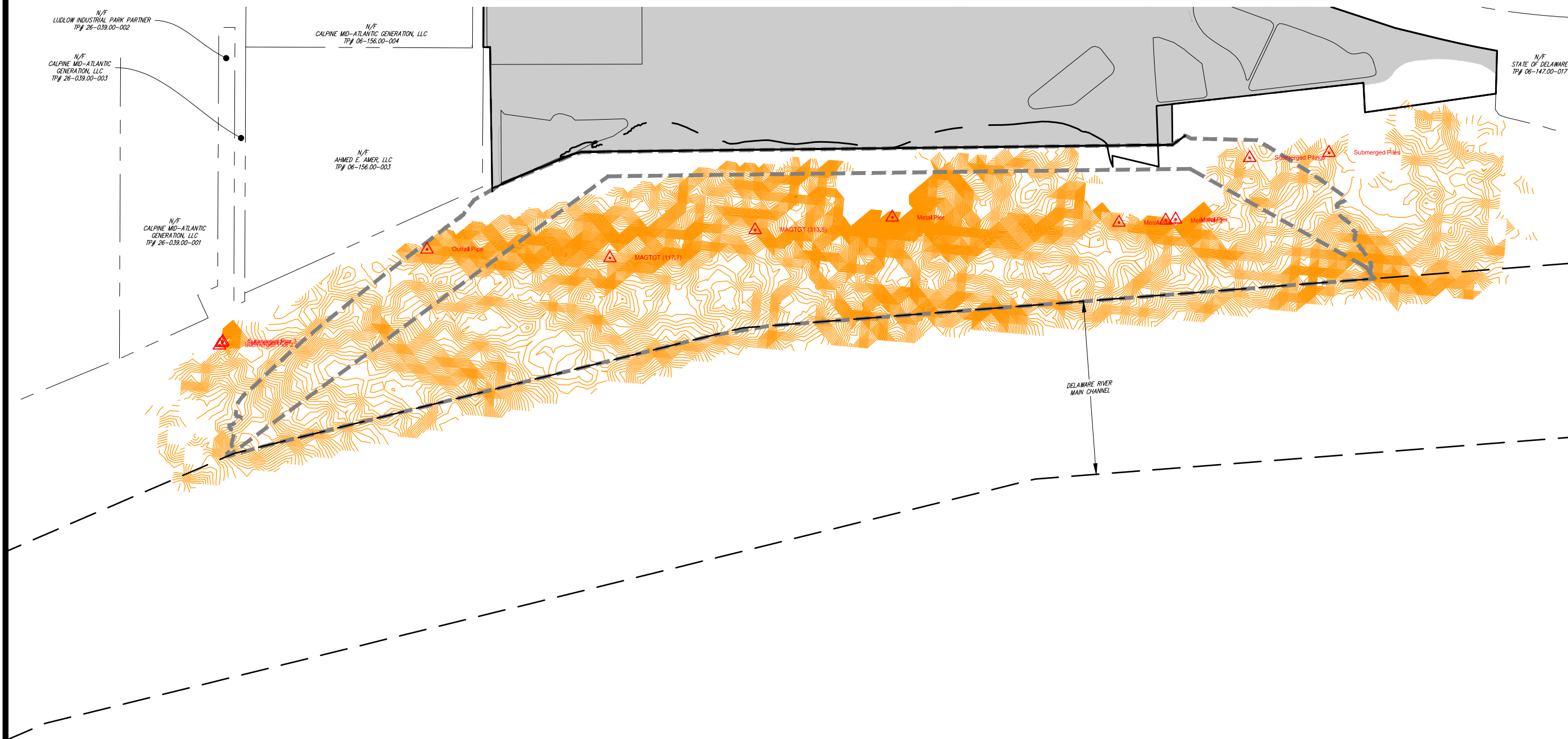
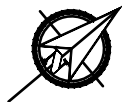
PERMIT PLAN
BATHYMETRIC SURVEY
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
14 OF 17



NOTE
MAGNETOMETER READINGS OF THE PROJECT SETUP PERFORMED BY
GAHAGAN & BRYANT ASSOCIATES IN JULY 2018. INTERPRETATION OF
DATA PROVIDED IN R.C. GOODWIN CULTURAL RESOURCES REPORT.



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E-MAIL: DUFFIELD@DUFFNET.COM

DESIGNED BY:	MRB
DRAWN BY:	MH
CHECKED BY:	BJD
FILE:	PRMT-MAG-11139LH.dwg

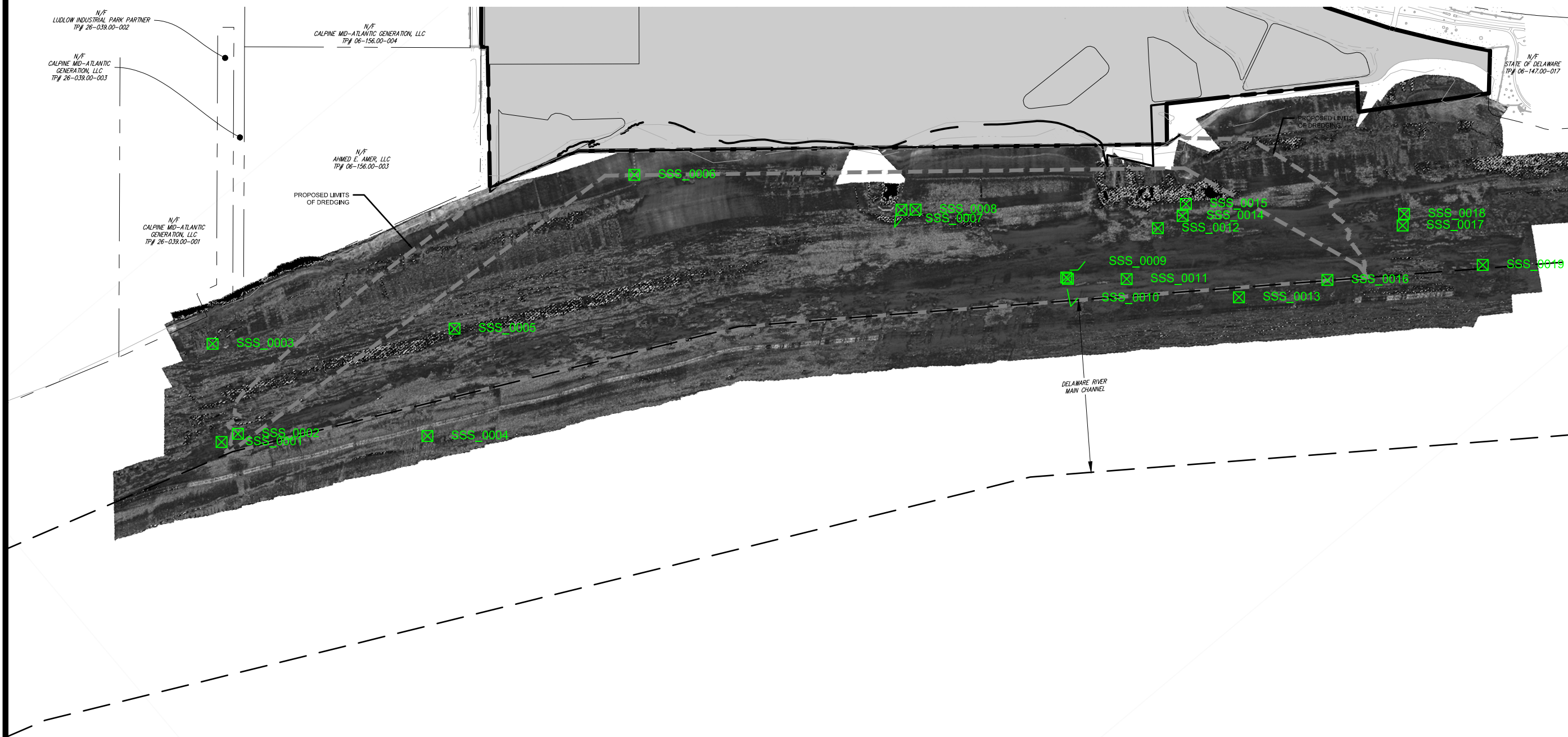
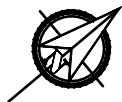
PERMIT PLAN
MAGNETOMETER CONTOUR MAPPING
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
15 OF 17



NOTE
SIDE SCAN SONAR SOUNDING PERFORMED BY GAHAGAN & BRYANT
ASSOCIATES IN JULY, 2018. INTERPRETATION OF DATA PROVIDED IN
R.C. GOODWIN CULTURAL AND NATURAL RESOURCES REPORT.



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FILE:	PRMT-SSS-11139.LH.dwg

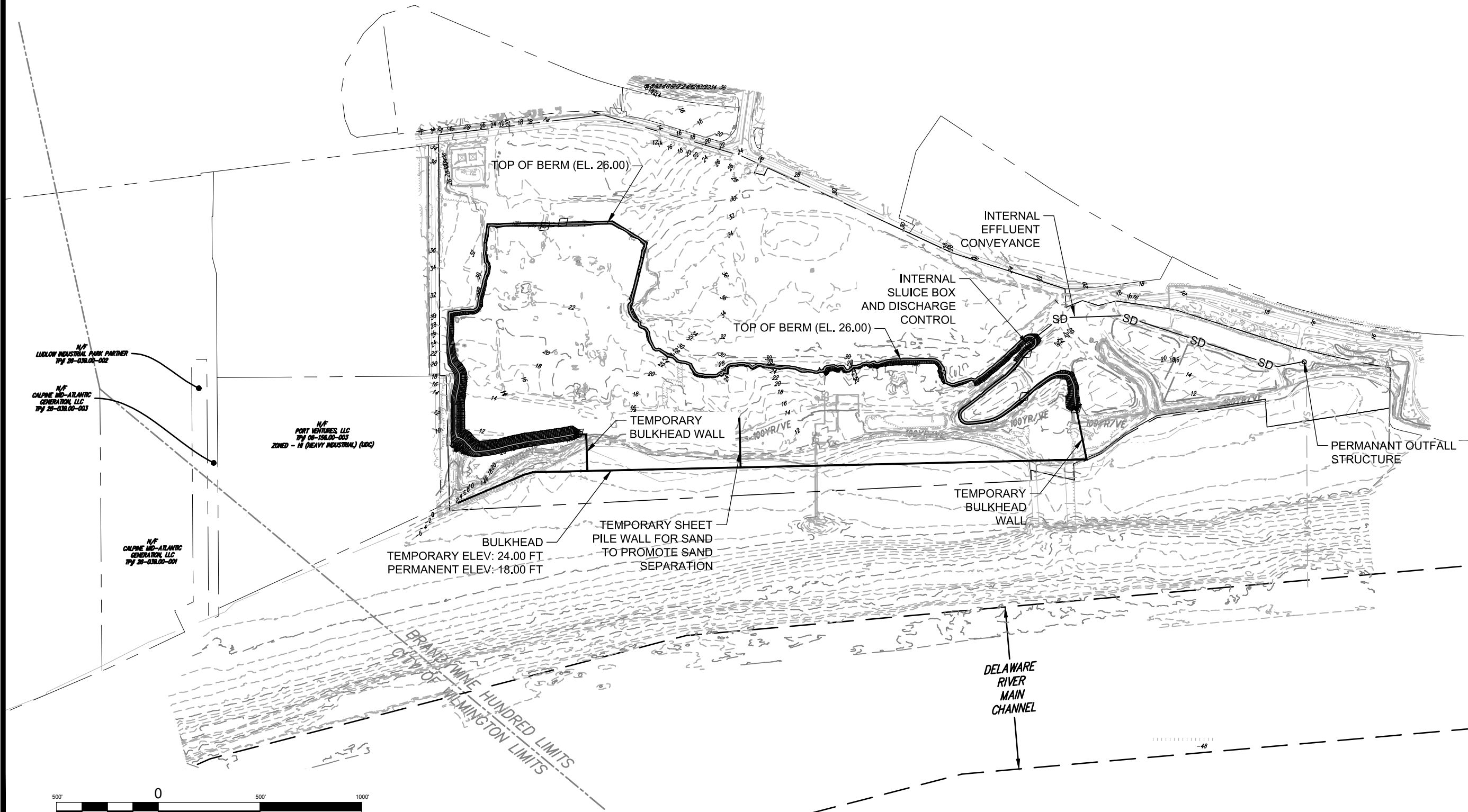
PERMIT PLAN
SIDE SCAN SONAR
PORT OF WILMINGTON EDGE MOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1" = 500'

PROJECT NO.
11139.LH

SHEET:
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DRAWN BY:	AR
CHECKED BY:	BJD
FILE PRMT-CDF-11139CJ	

PERMIT PLAN
ON-SITE CONFINED DISPOSAL FACILITY
PORT OF WILMINGTON EDGEMOOR EXPANSION
BRANDYWINE HUNDRED ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: October 2019
Rev 1. June 2021

SCALE:
1"=500'

PROJECT NO.
11139.LH

SHEET:
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