US Army Corps of Engineers®

PUBLIC NOTICE

Applicant:
NJDEP Fish & Wildlife

Published: July 9, 2025
Expires: August 8, 2025

Philadelphia District
Permit Application No. NAP-2020-00032-95

TO WHOM IT MAY CONCERN: The Philadelphia District of the U.S. Army Corps of Engineers (Corps) has received an application for a Department of the Army permit pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403). The purpose of this public notice is to solicit comments from the public regarding the work described below:

APPLICANT: NJDEP Fish & Wildlife
Attn: Tyler Kinney
8747 Road
Millville, New Jersey 08202

AGENT: WSP, USA
Attn: Katie Axt
One Penn Plaza
New York, New York 10119

WATERWAY AND LOCATION:

The project would affect waters of the United States and navigable waters of the United States sited within the western portion of Barnegat Bay at 140 Camp Lighthouse Road in Waretown, Ocean Township, Ocean County, New Jersey. Approximate Center Coordinates: 39.769928, -74.191038.

EXISTING CONDITIONS:

NJDEP Fish & Wildlife, in partnership with The Nature Conservancy, the New Jersey Department of Transportation's Office of Maritime Resources, and the U.S. Fish and Wildlife Services' Coastal Program, proposes undertake the Lighthouse Center Salt Marsh Restoration Project. The project site at the Lighthouse Center is owned by NJDEP Fish & Wildlife and is operated by the Natural Resource Education Foundation of New Jersey. The property encompasses 194-acres of diverse coastal habitat including salt marsh, maritime forest, brackish impoundments, and lagoons in a highly developed coastal back bay area.

Historical man-made alterations, legacy land use, erosion, and storm events have resulted in the loss and degradation of tidal marsh. Approximately 9.19 acres of former marsh in the northern part of the property has degraded to unvegetated mudflat. An

estimated 34.14-acre plot of tidal marsh at the southern portion of the property is experiencing reduced vegetative cover, interior drowning, sediment deficits, and elevation loss due to historical mosquito ditching and salt hay farming. The loss of protective oyster reefs in Barnegat Bay has exacerbated shoreline erosion Bay-wide, which has compounded the erosional loss of the wave-attenuating beach that once fronted the eastern portion of subject property, leaving exposed scarped peat and allowing increased flooding of the marsh. The southern portion of the property has experienced an erosion rate of 5-10 feet per year since 1995, resulting in the degradation of approximately 34.14-acres of tidal marsh. The northern area of the property has experienced loss/degradation of approximately 10.0-acres of tidal marsh.

PROJECT PURPOSE:

The stated purpose of the project is to restore and enhance coastal back bay salt marsh habitat and improve public access for non-motorized vessels at the Lighthouse Center.

PROPOSED WORK:

The project proposes to restore and enhance 53.35-acres of wetland habitat to provide a diverse mix of habitat types. The proposed restoration design, through beneficial use of dredged material, will elevate existing areas of open water, convert former grid ditches, mudflats, and sparsely vegetated low marsh to elevations suitable for sustaining tidal salt marsh habitats dominated by native plant species.

The project comprises the following restoration project areas:

<u>Project Area A - Salt Marsh Habitat Restoration</u>

Restore 35.14-acres of tidal salt marsh habitat using a combination of low-tech/low-cost restoration techniques to improve hydrology, encourage sediment accretion, and revegetate native species. Proposed restoration techniques include remediating historic grid ditching using bundled native vegetation to accrete sediment and restoring hydrologic connections via ditch clearing and creation of new runnels.

<u>Project Area B – Beneficial Use of Dredged Material and Reconnecting Public Access</u>

Restore elevations within 9.19-acres of tidal salt marsh habitat by direct hydraulic and mechanical placement of 5,940.0-cubic yards of dredged material onto the marsh. Dredged material will be sourced from Department of the Army-authorized maintenance dredging projects.

Reestablish public access for non-motorized vessels (i.e. kayaks, canoes, etc.) by reconnecting an existing 1,450-linear foot canal to Barnegat Bay by mechanically dredging approximately 9,950-cubic yards of shoaled bottom sediments from a 1.85-acre area to a depth of -4.0-feet Mean Low Water, plus 1.0-foot of allowable

overdredge. All resultant dredged material would be placed onto the marsh for habitat restoration within Project Area B.

Project Area C - Shoreline Restoration

Restore 3.0-acres of eroded shoreline by direct hydraulic and mechanical placement of approximately 13,200.0-cubic yards of dredged material sourced from Department of the Army-authorized maintenance dredging projects; and establish a sediment nourishment feeder bar to passively supply sand to the restored project site.

Proposed Project Impact Summary

A project total of 53.35 acres will be restored using approximately 19,250-cubic yards of dredged material sourced from both onsite and offsite sources to facilitate tidal salt marsh restoration activities in Project Areas B and C. Dredged material will be used to convert open water and mudflats to vegetated marsh habitat in Project Area B, and to restore the shoreline and create a passive sediment feeder bar in Project Area C. No fill is proposed in Project Area A. A project total fill acreage of 7.365-acres of intertidal zone and 0.257-acres of tidal wetlands are proposed to restore and elevate areas of the marsh.

Source sediments proposed to be used for the restoration project are comprised of a mixture of sand, silt, and clay, with an overall composition of greater than 70% sand.

Proposed Work Schedule

The proposed project is anticipated to commence in October 2025, after seasonal restrictions for birds and bats, and is anticipated to be completed by December 2025, prior to the Winter Flounder (*Pseudopleuronectes americanus*) seasonal restriction begins on January 01, 2026. Project Area A is expected to be completed within 1-2 weeks, subject to volunteer field crew schedules and weather conditions. Project Area B and Project Area C are expected to take three months, from October 01 to December 31.

AVOIDANCE AND MINIMIZATION: The applicant has provided the following information in support of efforts to avoid and/or minimize impacts to the aquatic environment:

Project activities would be undertaken in accordance with the enclosed Lighthouse Center Adaptive Management and Monitoring Plan.

COMPENSATORY MITIGATION: The applicant has provided the following explanation why compensatory mitigation should not be required:

Information provided in the application has indicated that compensatory mitigation is not required because the subject restoration project would result in a net increase in aquatic resource functions and services.

CULTURAL RESOURCES: The Corps is evaluating the undertaking for effects to historic properties as required under Section 106 of the National Historic Preservation Act. This public notice serves to inform the public of the proposed undertaking and invites comments including those from local, State, and Federal government Agencies with respect to historic resources. Our final determination relative to historic resource impacts may be subject to additional coordination with the State Historic Preservation Officer, federally recognized tribes and other interested parties.

ENDANGERED SPECIES: The Corps has performed an initial review of the application, the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), National Marine Fisheries Service (NMFS) Section 7 Mapper, and the NMFS Critical Habitat Mapper to determine if any threatened, endangered, proposed, or candidate species, as well as the proposed and final designated critical habitat may occur in the vicinity of the proposed project. Based on this initial review, the Corps' determination is that the proposed project may affect species and critical habitat listed below. No other ESA-listed species or critical habitat will be affected by the proposed action.

Land-Based Species

Species Common Name and/or Critical Habitat Name	**Scientific Name**	**Federal Status**
Northern Long-Eared Bat	*Myotis septentrionalis*	Endangered
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered
Eastern Black Rail	*Laterallus jamaicensis ssp. jamaicensis*	Threatened
Rufa Red Knot	*Calidris canutus rufa*	Threatened
Monarch Butterfly	*Danaus plexippus*	Proposed Threatened
American Chaffseed	*Schwalbea americana*	Endangered
Swamp Pink	*Helonias bullata*	Threatened

Aquatic-Based Species

Species Common Name and/or Critical Habitat Name	Scientific Name	Federal Status
Atlantic Sturgeon	*Acipenser oxyrinchus oxyrinchus*	Endangered
Green Sea Turtle	*Chelonia mydas*	Threatened
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	Endangered
Loggerhead Sea Turtle	*Caretta caretta*	Threatened
Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered

Pursuant to Section 7 ESA, any required consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service and will be conducted in accordance with 50 CFR part 402.

This notice serves as request to the U.S. Fish and Wildlife Service and National Marine Fisheries Service for any additional information on whether any listed or proposed to be listed endangered or threatened species or critical habitat may be present in the area which would be affected by the proposed activity.

ESSENTIAL FISH HABITAT: Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act 1996, the Corps reviewed the project area, examined information provided by the applicant, and consulted available species information.

The Corps intends to initiate Essential Fish Habitat (EFH) consultation separately from this public notice. A separate EFH consultation package will be sent to the National Marine Fisheries Service (NMFS). The Corps will not make a permit decision until the consultation process is complete.

NAVIGATION: The proposed activity is not located in the vicinity of a Federal Navigation Channel.

SECTION 408: The applicant will not require permission under Section 14 of the Rivers and Harbors Act of 1899 (33 USC 408) because the activity, in whole or in part, would not alter, occupy, or use a Corps Civil Works project.

WATER QUALITY CERTIFICATION: In accordance with Section 401 of the Clean Water Act, a Water Quality Certificate (WQC) is required from the State government in which the subject work is located.

NOTE: This public notice is being issued based on information furnished by the applicant. This information has not been verified or evaluated to ensure compliance with laws and regulation governing the regulatory program. The geographic extent of aquatic resources within the proposed project area that either are, or are presumed to be, within the Corps jurisdiction has not been verified by Corps personnel.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including cumulative impacts thereof; among these are conservation, economics, esthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food, and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people. Evaluation of the impact of the activity on the public interest will also include application of the guidelines promulgated by the Administrator, EPA, under authority of Section 404(b) of the Clean Water Act or the criteria established under authority of Section 102(a) of the Marine Protection Research and Sanctuaries Act of 1972. A permit will be granted unless its issuance is found to be contrary to the public interest.

COMMENTS: The Corps is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other Interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this determination, comments are used to assess impacts to endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act (NEPA). Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

The Philadelphia District will receive written comments on the proposed work, as outlined above, until August 8, 2025. Comments should be submitted electronically to Robert Youhas at robert.youhas@usace.army.mil. Alternatively, you may submit comments in writing to the Commander, U.S. Army Corps of Engineers, Philadelphia District, Attention: Robert Youhas, 1650 Arch Street, Philadelphia, PA 19103-2004. Please refer to NAP-2020-00032-95 in your comments.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Requests for a public hearing will be granted, unless the District Engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing.

Digitally signed by
Glenn R. Weitknecht
Date: 2025.07.01
15:04:45 -04'00'

FOR: Todd A. Schaible
Chief, Regulatory Branch

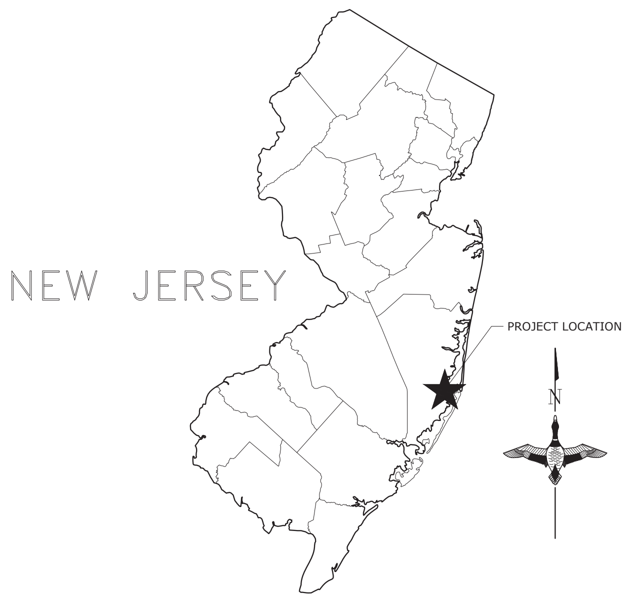
Project Area A Permit Plans

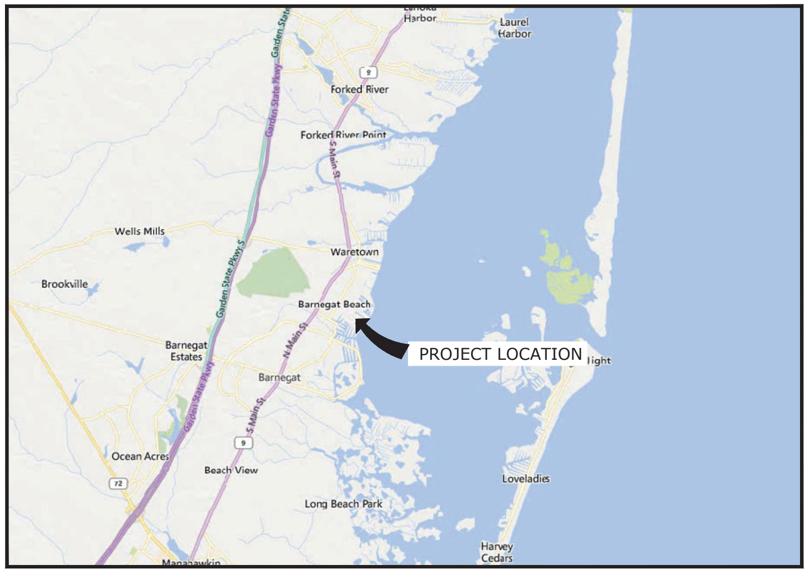
LIGHTHOUSE CENTER SALT MARSH HABITAT RESTORATION

OCEAN TOWNSHIP
WARETOWN, OCEAN COUNTY, NEW JERSEY

IN COOPERATION WITH

THE NATURE CONSERVANCY





PROJECT LOCATION MAP

NOT TO SCALE

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
C001	COVER SHEET
C101	SITE PLAN
C102	TOPOGRAPHIC SURVEY
C301	DETAILS

811 Know what's below. Call before you dig.

FOR PERMIT

GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 2, STE. 200
DEXTER, MICHIGAN 48130
(734) 623-2000
www.ducks.org

AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

COVER SHEET
LIGHTHOUSE CENTER
WARETOWN
OCEAN TOWNSHIP, NJ

Revision	Sheet	Revisions	Date	By

CAD FILE: NJ-100-4 LHC SITE PLAN
DESIGNED BY: LL
DRAWN BY: LL
SURVEYED BY: JP, GB
BIOLOGIST: JF
DATE: 4/4/25
PROJECT NUMBER: NJ-100-4

C001

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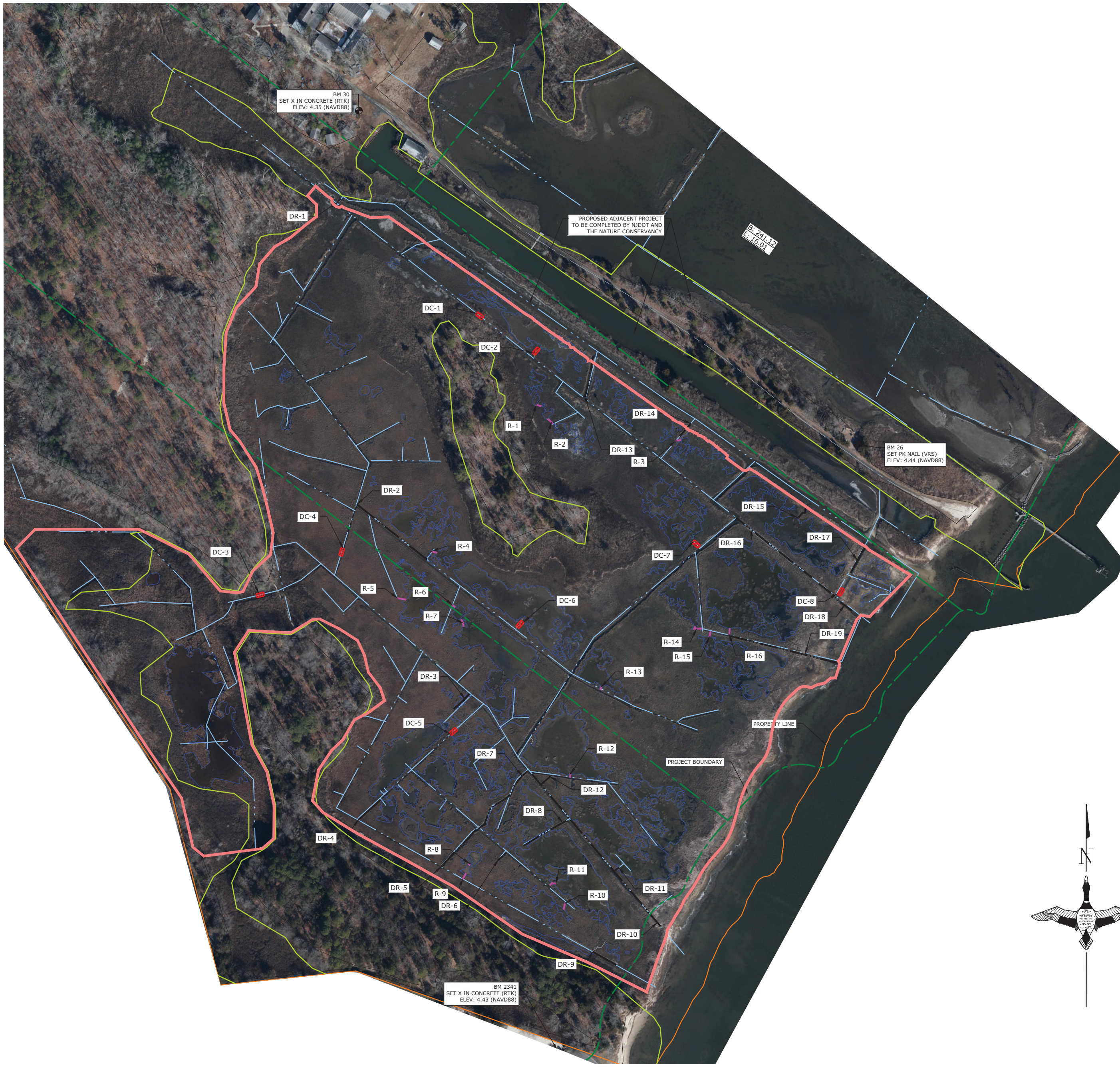

N

LEGEND

- APPROXIMATE PROPERTY LINE
- PROPOSED DITCH CLEARING
- PROPOSED RUNNEL
- PROPOSED DITCH REMEDIATION
- PROJECT BOUNDARY
- EXISTING OPEN WATER
- EXISTING DITCHES
- EXISTING TIDAL CHANNELS
- EXISTING NATURAL RUNNELS
- WETLAND DELINEATION
- COASTAL WETLAND BOUNDARY (1970)
- PARCEL BOUNDARY

DRAWING NOTES:

1. AERIAL IMAGE SHOWN IS FROM ORTHOIMAGERY COLLECTED VIA DRONE, FLOWN BY GBA IN FEBRUARY 2024.
2. EXISTING FEATURES, OPEN WATER, DITCHES, TIDAL CHANNELS, AND PROPERTY LINES SHOWN WERE PROVIDED BY THE FISH AND WILDLIFE SERVICE.
3. FIELD OBSERVATIONS AND SITE RECONNAISSANCE WAS CONDUCTED BY DUCKS UNLIMITED FIELD STAFF AND FISH AND WILDLIFE SERVICE STAFF.

TIDAL PARAMETERS		
	NOAA - VDATUM[1]	WSP MODEL[2]
MHHW	0.47'	0.66'
MHW	0.33'	0.37'
MSL	-0.04'	-
MTL	-0.37'	-
MLW	-0.49'	-0.05'
MLLW	-0.54'	-0.14'

[1]ALL VALUES SHOWN ARE IN NAVD88.
[2]ESTIMATES OF TIDAL DATUMS PROVIDED BY WSP. ALL VALUES SHOWN ARE IN NAVD88.

GEODETIC DATUMS

HORIZONTAL
Project coordinates established in the field are NAD 83 (CORS 2011), New Jersey State Plane, North Zone 2900, grid coordinates, grid north, and the units of measurement are U.S. Survey Feet. Coordinates were established from KEYNET VRS SERVICE, solution for the occupied control point 25.

VERTICAL
Elevations have been established from KEYNET VRS solution for the occupied control point number 25. Vertical Datum is NAVD88 (North American Vertical Datum of 1988) computed using Geoid Model, Geoid18.conus.

IMPACTS	TOTAL SQUARE FEET	TOTAL ACRES
PERMANENT COASTAL WETLANDS IMPACTS	11,190	0.257
TEMPORARY COASTAL WETLANDS IMPACTS	-	-

NOTES:

1. IMPACTS SHOWN INCLUDE MATERIAL DISTURBED AND HABITAT CONVERTED BY RUNNELING, DITCH REMEDIATION AND DITCH CLEARING.

GRAPHIC SCALE
100 0 50 100 200 400
1 inch = 100 feet

811 Know what's **below.** **Call** before you dig.

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DEXTER, MICHIGAN 48130
(734) 623-2000
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AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

SITE PLAN
LIGHTHOUSE CENTER WARETOWN OCEAN TOWNSHIP, NJ

Revision	Sheet	Revisions	Date	By

CAD FILE: NJ-100-4 LHC SITE PLAN
DESIGNED BY: LL
DRAWN BY: LL
SURVEYED BY: JP, GB
BIOLOGIST: JF
DATE: 4/9/25
PROJECT NUMBER: NJ-100-4
C101

NOT FOR CONSTRUCTION

C:\Users\llenderman\OneDrive - Ducks Unlimited Incorporated\Documents\C3D Projects\NJ-100-4 Lighthouse Center\C3D_DRAWING\NJ-100-4 LHC SITE PLAN.dwg, 4/9/2025 3:21 PM, Lauren Lenderman, Site Plan, None

C:\Users\zbaroudi\OneDrive - Ducks Unlimited Incorporated\Documents - CTC ENG\C3D Projects\NJ-100-4 Lighthouse Center\C3D_DRAWING\NJ-100-4 TOPOGRAPHIC SURVEY.dwg, 4/3/2025 2:37 PM, Zaryn Baroudi, Topo, None


BM 30
SET X IN CONCRETE (RTK)
ELEV: 4.35 (NAVD88)
LOW TIDE ELEVATION
ELEV.: 0.58
3/14/2024
8:43:53
WATER SURFACE
ELEV.: 0.28
3/13/2024
9:36:39
LOW TIDE ELEVATION
ELEV.: 0.71
3/14/2024
8:54:42
HIGH TIDE ELEVATION
ELEV.: 0.81
3/13/2024
12:25:00
WATER SURFACE
ELEV.: 0.92
3/13/2024
12:26:54
WATER SURFACE
ELEV.: 0.46
3/13/2024
9:41:55
24" HALF ROUND
INV.: -1.51
HALF ROUND ALUM
TOP OF RISER
3.98
15" ALUM
INV.: -1.68
WATER SURFACE
ELEV.: 0.44
3/13/2024
10:00:21
WATER SURFACE
ELEV.: 0.59
3/13/2024
10:01:30
WATER SURFACE
ELEV.: 0.59
3/13/2024
10:22:10
BM 26
SET PK NAIL (VRS)
ELEV.: 4.44 (NAVD88)
CP 25
NGS MONUMENT (VRS)
N: 341579.19
E: 579330.40
ELEV: 3.39 (NAVD88)
WATER SURFACE
ELEV.: -0.02
3/12/2024
9:09:23
WATER SURFACE
ELEV.: 0.89
3/12/2024
9:43:16
WATER SURFACE
ELEV.: -0.09
3/12/2024
9:12:24
WATER SURFACE
ELEV.: 0.14
3/12/2024
10:21:44
WATER SURFACE
ELEV.: 0.77
3/13/2024
11:45:51
WATER SURFACE
ELEV.: 0.56
3/12/2024
11:21:48
WATER SURFACE
ELEV.: 0.45
3/12/2024
10:30:31
WATER SURFACE
ELEV.: 0.33
3/12/2024
12:15:37
WATER SURFACE
ELEV.: 0.63
3/12/2024
12:05:52
BM 2341
SET X IN CONCRETE (RTK)
ELEV: 4.43 (NAVD88)

LEGEND

- EXISTING ROAD ℄
- EXISTING DITCH ℄
- EXISTING SPOT ELEVATION
- HORIZONTAL & VERTICAL CONTROL
- BENCHMARK
- EXISTING WATER CONTROL STRUCTURE
- S.E.T. ZONE

GEODETIC DATUMS

HORIZONTAL
Project coordinates established in the field are NAD 83 (CORS 2011), New Jersey State Plane, North Zone 2900, grid coordinates, grid north, and the units of measurement are U.S. Survey Feet. Coordinates were established from KEYNET VRS SERVICE, solution for the occupied control point 25.

VERTICAL
Elevations have been established from KEYNET VRS solution for the occupied control point number 25. Vertical Datum is NAVD88 (North American Vertical Datum of 1988) computed using Geoid Model, Geoid18.conus.

CONTROL POINT DATA

POINT #	NORTHING	EASTING	ELEVATION	TYPE	NOTES
25	341,579.1940	579,330.3970	3.39	NGS MONUMENT	FOUND
26	341,594.6900	579,334.0820	4.44	PK NAIL	SET
30	342,307.0180	578,270.5090	4.35	X IN CONCRETE	SET
2341	340,295.1930	578,698.1890	4.43	X IN CONCRETE	SET

N

GRAPHIC SCALE
100 0 50 100 200 400
1 inch = 100 feet

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DEXTER, MICHIGAN 48130
(734) 623-2000
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AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

TOPOGRAPHIC SURVEY
LIGHTHOUSE CENTER
WARETOWN
OCEAN COUNTY, NEW JERSEY

Revision	Sheet	Revisions	Date	By

CAD FILE:
NJ-100-4 TOPOGRAPHIC SURVEY
DESIGNED BY:
DRAWN BY: GB
SURVEYED BY: JP/GB
BIOLOGIST: JF
DATE:
4/4/25
PROJECT NUMBER:
NJ-100-4
C102

NOT FOR CONSTRUCTION

RUNNEL ID	UPSTREAM ELEVATION	DOWNSTREAM ELEVATION	SLOPE (%)	APPROX. LENGTH (FT)	UPSTREAM NORTHING	UPSTREAM EASTING	DOWNSTREAM NORTHING	DOWNSTREAM EASTING	QTY OF MATERIAL (CY)
R-1	0.7	0.6	0.5	10	341679.54	578649.37	341676.56	578659.30	0.4
R-2	0.5	0.0	3.3	15	341649.55	578673.27	341638.62	578683.35	0.9
R-3	0.8	0.6	1.9	10	341604.14	578957.64	341602.96	578947.36	0.3
R-4	0.8	0.0	6.8	12	341363.48	578437.10	341366.75	578423.83	1.1
R-5	0.7	0.1	3.2	19	341263.49	578371.44	341267.12	578352.87	2.3
R-6	0.7	0.0	9.0	8	341247.40	578476.06	341252.18	578470.22	0.6
R-7	0.8	0.6	1.3	16	341206.48	578494.02	341221.15	578489.14	0.5
R-8	0.5	0.4	2.7	4	340700.43	578507.00	340697.30	578505.04	0.3
R-9	0.8	0.2	4.1	13	340679.48	578499.08	340668.06	578492.29	1.2
R-10	0.5	0.0	3.7	13	340602.65	578707.40	340615.78	578710.49	1.0
R-11	0.5	-0.1	3.9	16	340657.95	578691.39	340654.11	578677.57	1.1
R-12	0.7	0.2	6.3	7	340891.61	578721.78	340884.47	578721.22	0.3
R-13	0.6	0.0	8.7	7	341077.39	578787.75	341070.72	578785.99	0.5
R-14	0.6	0.3	1.4	21	341206.07	578988.40	341201.84	579002.66	2.0
R-15	1.0	0.3	6.1	12	341184.49	579018.47	341195.66	579021.11	0.4
R-16	0.9	0.4	3.5	13	341201.99	579061.98	341189.59	579060.68	0.4

RUNNEL LAYOUT TABLE

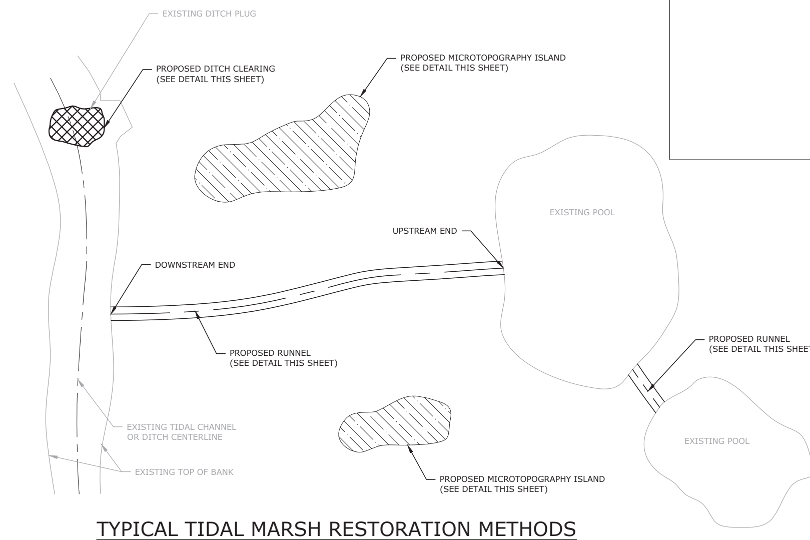
NOTE: ALL ELEVATIONS SHOWN ARE IN NAV88

DITCH REMEDIATION ID	APPROX. LENGTH (FT)	QTY OF MATERIAL (CY)	UPSTREAM NORTHING	UPSTREAM EASTING	DOWNSTREAM NORTHING	DOWNSTREAM EASTING
DR-1	9	0.9	342111.16	578225.13	342118.26	578230.78
DR-2	190	31.4	341349.38	578415.63	341466.83	578266.63
DR-3	28	6.3	341030.83	578473.30	341062.26	578505.71
DR-4	63	27.7	340836.35	578316.33	340793.94	578269.61
DR-5	107	32.7	340771.99	578520.56	340694.32	578446.78
DR-6	22	2.3	340708.19	578567.56	340723.19	578583.94
DR-7	163	24.6	340775.83	578527.11	340896.65	578628.66
DR-8	105	10.9	340738.60	578622.21	340791.81	578712.90
DR-9	57	4.9	340512.34	578769.7	340484.42	578819.39
DR-10	425	88.0	340891.11	578640.37	340566.66	578914.20
DR-11	14	0.2	340692.21	578825.50	340683.91	578814.06
DR-12	24	0.5	340886.31	578678.61	340870.51	578660.80
DR-13	88	27.3	341696.52	578753.23	341782.13	578769.99
DR-14	36	1.5	341612.54	578955.61	341639.38	578978.88
DR-15	37	10.0	341438.19	579205.75	341463.78	579225.38
DR-16	206	26.5	341438.39	579075.76	341310.73	579237.28
DR-17	61	19.3	341321.05	579319.85	341374.16	579348.86
DR-18	91	13.6	341297.33	579252.84	341239.73	579322.46
DR-19	232	139.4	341185.70	579064.45	341129.31	579289.43

DITCH REMEDIATION LAYOUT TABLE

DITCH CLEARING ID	NORTHING	EASTING	QTY OF MATERIAL (CY)
DC-1	341869.74	578520.74	0.1
DC-2	341794.69	578649.37	0.1
DC-3	341273.61	578060.05	0.1
DC-4	341365.04	578233.98	0.6
DC-5	340981.72	578472.31	0.0
DC-6	341210.12	578613.68	0.2
DC-7	341381.44	578990.93	0.0
DC-8	341280.60	579298.72	0.1

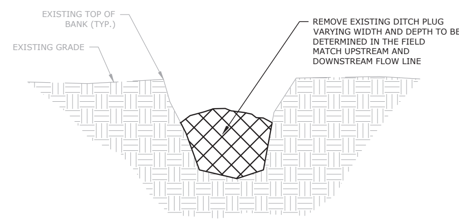
DITCH CLEARING LAYOUT TABLE



EXISTING DITCH PLUG
PROPOSED DITCH CLEARING
(SEE DETAIL THIS SHEET)
PROPOSED MICROTOPOGRAPHY ISLAND
(SEE DETAIL THIS SHEET)
EXISTING POOL
UPSTREAM END
DOWNSTREAM END
PROPOSED RUNNEL
(SEE DETAIL THIS SHEET)
PROPOSED RUNNEL
(SEE DETAIL THIS SHEET)
EXISTING TIDAL CHANNEL
OR DITCH CENTERLINE
EXISTING TOP OF BANK
PROPOSED MICROTOPOGRAPHY ISLAND
(SEE DETAIL THIS SHEET)
EXISTING POOL

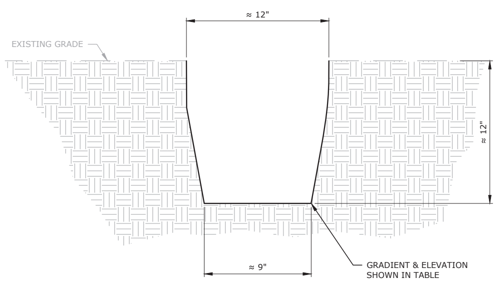
TYPICAL TIDAL MARSH RESTORATION METHODS

NOT TO SCALE



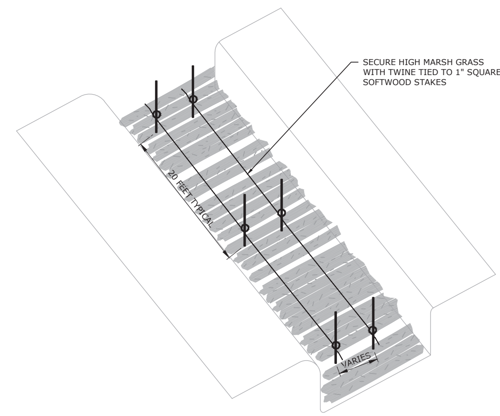
TYPICAL DITCH CLEARING CROSS SECTION

NOT TO SCALE



TYPICAL RUNNEL EXCAVATION CROSS SECTION

NOT TO SCALE

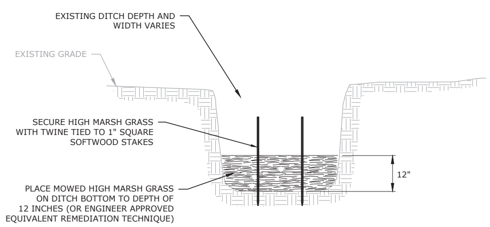


TYPICAL DITCH REMEDIATION PLAN VIEW

NOT TO SCALE

RUNNEL, DITCH CLEARING AND MICROTOPOGRAPHY ISLAND NOTES:

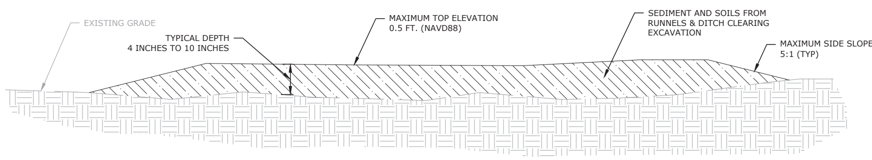
1. MATERIAL EXCAVATED FROM THE DITCH CLEARING AND RUNNELS SHALL BE USED FOR THE MICROTOPOGRAPHY ISLANDS. THE LOCATION FOR THE MICROTOPOGRAPHY ISLANDS WILL BE UP TO THE DISCRETION OF THE THE NATURE CONSERVANCY AND FISH AND WILDLIFE FIELD STAFF.
2. MICROTOPOGRAPHY ISLANDS SHALL BE PLACED IN SUCH A MANNER THAT WILL NOT PREVENT THE DRAINAGE OF WATER FROM THE MARSH SURFACE TO THE PROPOSED RUNNELS.
3. ALL MATERIAL EXCAVATED WILL REMAIN ONSITE AND NO MATERIAL SHALL BE PLACED ABOVE ELEVATION 0.5 FEET (NAVD88).
4. DOWNSTREAM END OF RUNNEL SHALL DAYLIGHT INTO EXISTING TIDAL CHANNEL OR DITCH AND UPSTREAM END OF RUNNEL SHALL BE CUT INTO EDGE OF EXISTING POOL (SEE TYPICAL RUNNEL CROSS SECTION).



EXISTING DITCH DEPTH AND
WIDTH VARIES
EXISTING GRADE
SECURE HIGH MARSH GRASS
WITH TWINE TIED TO 1" SQUARE
SOFTWOOD STAKES
12"
PLACE MOWED HIGH MARSH GRASS
ON DITCH BOTTOM TO DEPTH OF
12 INCHES (OR ENGINEER APPROVED
EQUIVALENT REMEDIATION TECHNIQUE)

TYPICAL DITCH REMEDIATION SECTION

NOT TO SCALE



TYPICAL MICROTOPOGRAPHY CROSS SECTION

NOT TO SCALE

811 Know what's below. Call before you dig.

FOR PERMIT

NOT FOR CONSTRUCTION

DUCKS UNLIMITED
GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 2, STE. 200
DEXTER, MICHIGAN 48130
(734) 623-2000
www.ducks.org

AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

DETAILS
LIGHTHOUSE CENTER
WARETOWN
OCEAN TOWNSHIP, NJ

Revision	Sheet	Revisions	Date	By

CAD FILE: NJ-100-4 LHC SITE PLAN
DESIGNED BY: LL
DRAWN BY: LL
SURVEYED BY: JP, GB
BIOLOGIST: JF
DATE: 4/4/25
PROJECT NUMBER: NJ-100-4

C301

C:\Users\zbaroudi\OneDrive - Ducks Unlimited Incorporated\Documents - CTC ENG\C3D Projects\NJ-100-4 Lighthouse Center\C3D_DRAWING\NJ-100-4 LHC SITE PLAN.dwg, 4/3/2025 2:37 PM, Zaryn Baroudi, DETAILS, None

Project Area B and Project Area C Permit Plans

State of New Jersey
Department of Transportation

PLANS OF

MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER

TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

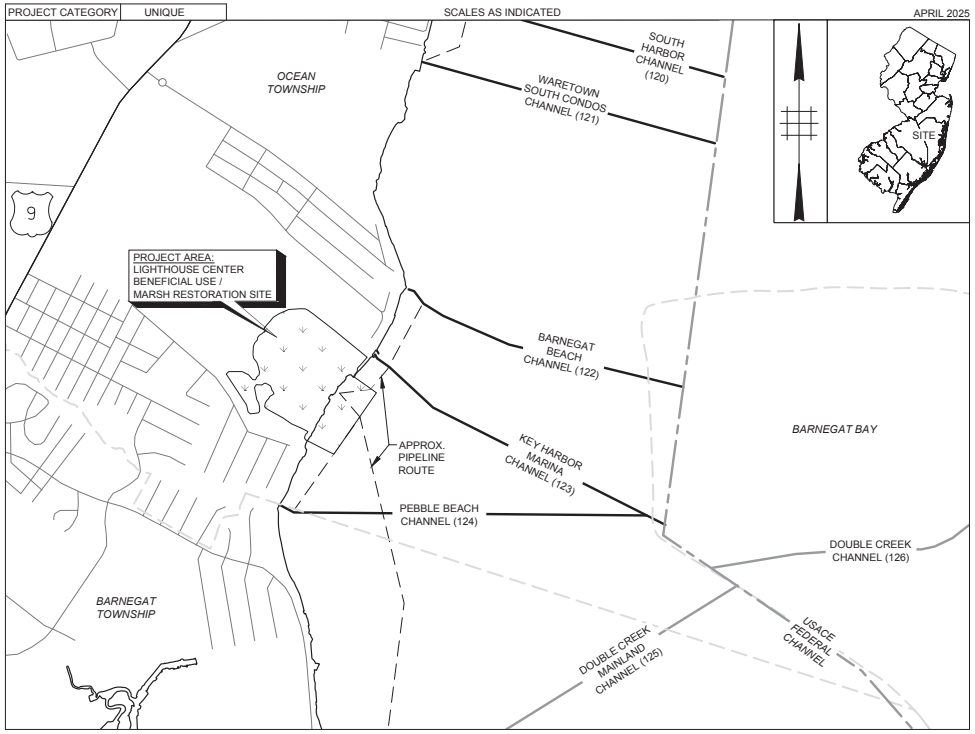
INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	KEY SHEET
2	PROJECT OVERVIEW
3 - 4	AREA - B MARSH AND BOAT CHANNEL RESTORATION PLANS
5	AREA - C SHORELINE RESTORATION PLAN
6	AREA - B MARSH AND BOAT CHANNEL PROFILES
7	AREA - C SHORELINE RESTORATION PROFILES
8	NJDEP PERMIT PLANS SHEET INDEX & EXISTING CONDITIONS
9 - 14	NJDEP PERMIT PLANS
15	SOIL EROSION AND SEDIMENT CONTROL PLAN
16	SOIL EROSION AND SEDIMENT CONTROL NOTES & DETAILS

RESOURCE	TOTAL IMPACTS THIS SHEET			
	PERMANENT HABITAT CONVERSION IMPACTS		TEMPORARY	
	SQUARE FEET	ACRES	SQUARE FEET	ACRES
FRESHWATER WETLANDS	0	0.000	13,130	0.301
COASTAL WETLANDS	16,386	0.376	47,361	1.087
INTERTIDAL / SUBTIDAL SHALLOWS	320,807	7.365	132,481	3.041
TIDAL WATERS	58,554	1.344	119,298	2.738
STATE OPEN WATERS	10,384	0.238	29,065	0.667
SAV	130,744	3.001	9,043	0.208
RIPARIAN	0	0.000	13,130	0.301

PROJECT CATEGORY | UNIQUE

SCALES AS INDICATED

APRIL 2025



SCALE IN FEET

1,000' 0 1,000' 2,000'

KEY MAP

STANDARD ROADWAY CONSTRUCTION/TRAFFIC CONTROL/BRIDGE CONSTRUCTION DETAILS BOOKLET, 2016 AND STANDARD ELECTRICAL DETAILS BOOKLET, 2016 ARE APPLICABLE TO THIS PROJECT EXCEPT FOR THOSE DETAILS CONTAINED HEREIN.

MID-POINT OF PROJECT
NORTHING: 341,496
EASTING: 578,903

PERMITS PLANS NOT FOR CONSTRUCTION

"CHANGES MADE TO THESE PLANS SINCE SIGNATURE BY THE CONSULTANT MAY BE DETERMINED BY COMPARISON OF THE PLANS FILED AT THE DEPARTMENT WITH THOSE FILED AT THE OFFICE OF THE CONSULTANT."

WSP USA INC.

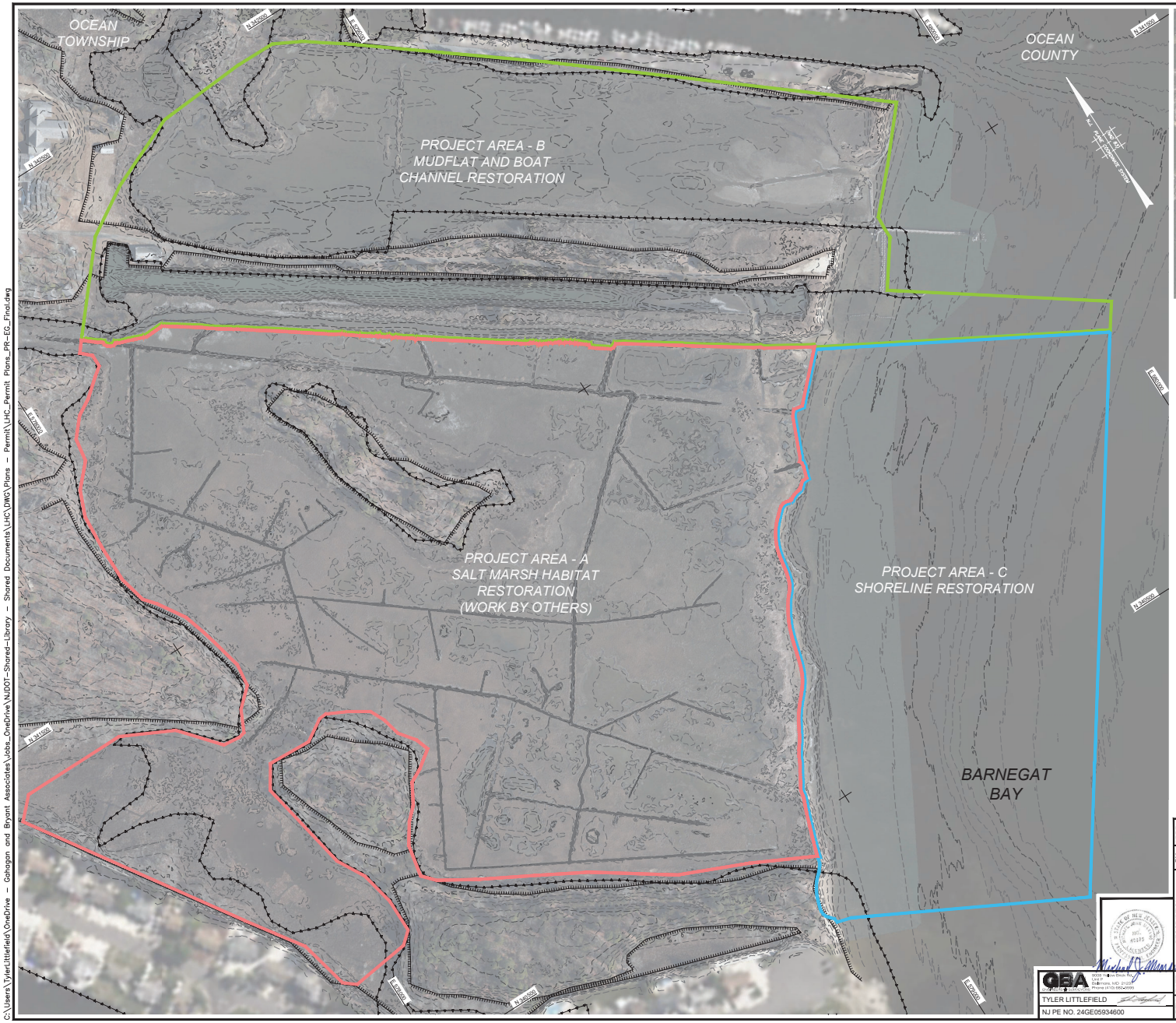
CERTIFICATE OF AUTHORIZATION NO. 24GA28029800

MICHAEL J. MARANO

NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500

2019 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION TO GOVERN

T:\39002741.6313 - Lighthouse Camp Restoration\env_permits\39002741.6313 - Lighthouse Camp_SHT01_KEY.dwg



PROJECT LOCATION MAP
SCALE: 1" = 2000'

NOTES:

1. VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). TIDAL INFORMATION OBTAINED FROM NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) VDATUM DATUM TRANSFORMATION PROGRAM, VERSION 4.6.1.
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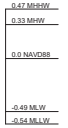
5. AERIAL IMAGERY DATED FEBRUARY 15, 2024 AND PROVIDED BY RAS. BACKGROUND IMAGERY SUPPLEMENTED WITH BING AERIAL.

LEGEND

- EXISTING GRADE MAJOR CONTOUR
- EXISTING GRADE MINOR CONTOUR
- PROJECT AREA – A (WORK BY OTHERS)
- PROJECT AREA – B
- PROJECT AREA – C
- 1970 COASTAL WETLAND LINE
- DELINEATED WETLAND LINE



RANGE OF TIDE (FT)
NOT TO SCALE

GRAPHIC SCALE (FT)

REV	DATE	DESCRIPTION	BY	APPR.

GBA
TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE: LIGHTHOUSE CAMP CENTER RESTORATION BENEFICIAL USE
PROJECT OVERVIEW - EXISTING CONDITIONS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER

TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: TRL	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: SEF		SHEET 2 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. PERMIT - 01
DATE: APR 2025		

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PROJECT LOCATION MAP

SCALE: 1" = 1000'

	PROJECT AREA - B MARSH RESTORATION BOAT CHANNEL CUT VOLUME
TEMPLATE (-4 NAVD88)	6,310
OVERDEPTH (-5 NAVD88)	3,640
TOTAL (CY)	9,950

	PROJECT AREA - B MARSH RESTORATION FILL VOLUME
BORROW DITCH FILL AREA	1,030
BERM FILL AREA	210
MUDFLAT FILL AREA NO. 1	530
MUDFLAT FILL AREA NO. 2	2,390
MUDFLAT FILL AREA NO. 3	330
MUDFLAT FILL AREA NO. 4	450
CRESCENT FILL AREA	1,000
TOTAL (CY)	5,940

NOTES:

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0.47 MHHW
0.33 MHW
0.0 NAVD88
-0.49 MLW
-0.54 MLLW

RANGE OF TIDE (FT)

NOT TO SCALE

LEGEND

- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- FILL/EXCAVATION BOUNDARY
- PROPOSED POST INFLOW CHANNELS
- DELINEATED WETLAND LINE
- SAV BOUNDARY

0' 50' 100' 200'

GRAPHIC SCALE (FT)

REV.	DATE:	DESCRIPTION	BY	APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE: LIGHTHOUSE CAMP CENTER RESTORATION BENEFICIAL USE AREA - B MARSH AND BOAT CHANNEL RESTORATION PLAN

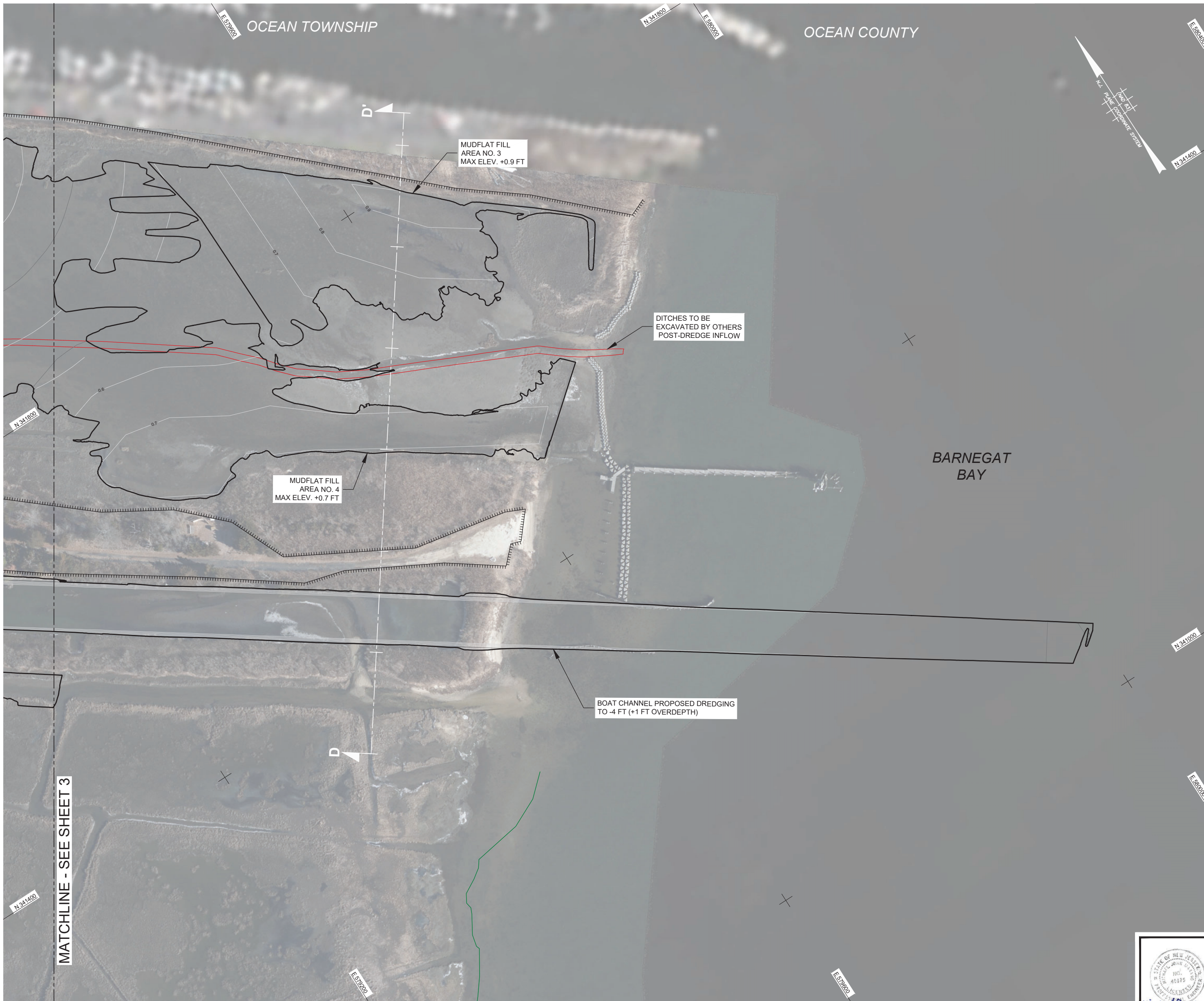
PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER

TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: TRL	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: SEF		SHEET 3 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	
DATE: APR 2025		DWG. NO. PERMIT - 02

GBA ENGINEERS SURVEYORS
9008 Yellow Brick Rd. Unit F Baltimore, MD 21237 Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600



PROJECT LOCATION MAP

SCALE: 1" = 1000'

	PROJECT AREA - B MARSH RESTORATION BOAT CHANNEL CUT VOLUME
TEMPLATE (-4 NAVD88)	6,310
OVERDEPTH (-5 NAVD88)	3,640
TOTAL (CY)	9,950

	PROJECT AREA - B MARSH RESTORATION FILL VOLUME
BORROW DITCH FILL AREA	1,030
BERM FILL AREA	210
MUDFLAT FILL AREA NO. 1	530
MUDFLAT FILL AREA NO. 2	2,390
MUDFLAT FILL AREA NO. 3	330
MUDFLAT FILL AREA NO. 4	450
CRESCENT FILL AREA	1,000
TOTAL (CY)	5,940

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0.47 MHHW
0.33 MHW
0.0 NAVD88
-0.49 MLW
-0.54 MLLW

RANGE OF TIDE (FT)
NOT TO SCALE

LEGEND

- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- FILL/EXCAVATION BOUNDARY
- PROPOSED POST INFLOW CHANNELS
- DELINEATED WETLAND LINE
- SAV BOUNDARY

0' 50' 100' 200'
GRAPHIC SCALE (FT)

REV. | DATE: | DESCRIPTION | BY | APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE: LIGHTHOUSE CAMP CENTER RESTORATION BENEFICIAL USE AREA - B MARSH AND BOAT CHANNEL RESTORATION PLAN

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER

TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd.
Unit P
Baltimore, MD 21237
Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

DRAWN BY: TRL
CHECKED BY: SEF
SCALE: AS SHOWN
DATE: APR 2025

WSP USA Inc.
CERTIFICATION OF AUTHORIZATION
NO. 24GA28029800

MICHAEL J. MARANO
NEW JERSEY PROFESSIONAL ENGINEER
NO. 24GE04087500

PROJECT NO.
SHEET 4 OF 16
DWG. NO. PERMIT - 03

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PROJECT LOCATION MAP

SCALE: 1" = 1000'

	AREA - C SHORELINE RESTORATION FILL VOLUME
BEACH FILL	11,370
FEEDER BEACH	1,940
TOTAL (CY)	13,310

NOTES:

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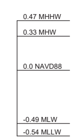

RANGE OF TIDE (FT)

NOT TO SCALE

LEGEND

- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- FILL/EXCAVATION BOUNDARY
- DELINEATED WETLAND LINE
- SAV BOUNDARY

0' 50' 100' 200'

GRAPHIC SCALE (FT)

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE: LIGHTHOUSE CAMP CENTER RESTORATION BENEFICIAL USE AREA - C SHORELINE RESTORATION PLAN

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER

TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

REV.	DATE:	DESCRIPTION	BY	APPR.

GBA ENGINEERS ★ SURVEYORS 9008 Yellow Brick Rd. Unit P Baltimore, MD 21237 Phone (410) 682-5595

TYLER LITTLEFIELD

NJ PE NO. 24GE05934600

DRAWN BY: TRL	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: SEF		SHEET 5 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. PERMIT - 04
DATE: APR 2025		

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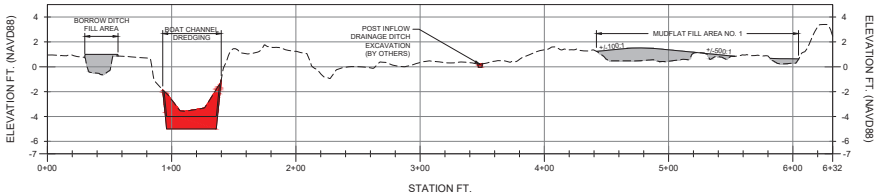
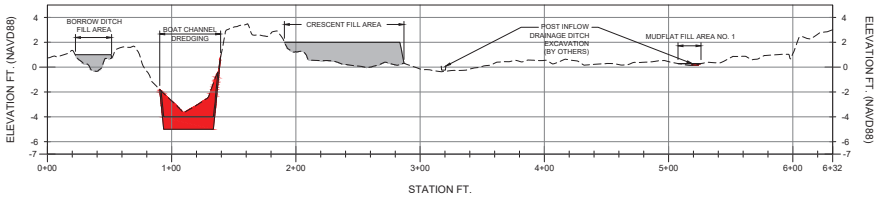
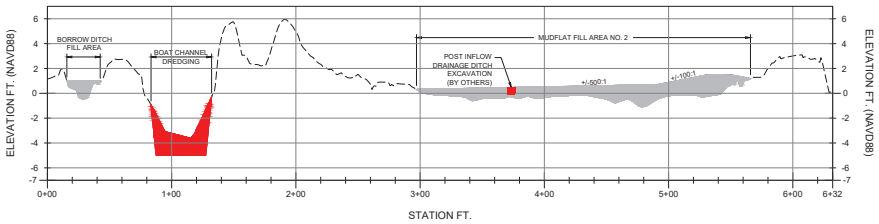
SECTION A-A'



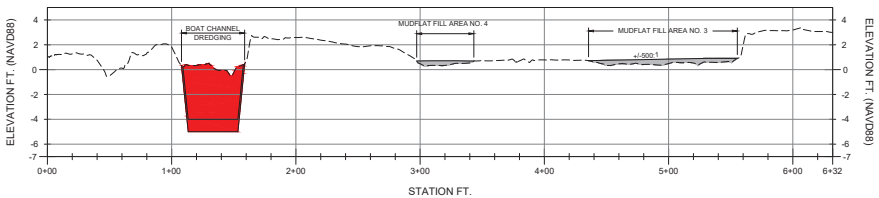
SECTION B-B'



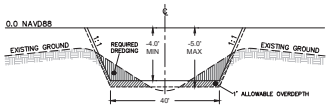
SECTION C-C'



SECTION D-D'



PROJECT LOCATION MAP
SCALE: 1" = 300'



TYPICAL SECTION: BOAT CHANNEL
NOT TO SCALE

NOTES:

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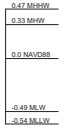
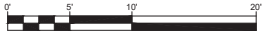
LEGEND

- EXISTING GROUND
- PROPOSED DESIGN
- PROPOSED EXCAVATION
- PROPOSED FILL/RESTORATION



RANGE OF TIDE (FT)
NOT TO SCALE



VERTICAL GRAPHIC SCALE (FT)

HORIZONTAL GRAPHIC SCALE (FT)

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE: LIGHTHOUSE CAMP CENTER RESTORATION BENEFICIAL USE AREA - B MARSH AND BOAT CHANNEL PROFILES

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER

TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

REV.	DATE	DESCRIPTION	BY	APPR.

GBA
GAHAGAN & BRYANT ASSOCIATES
TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

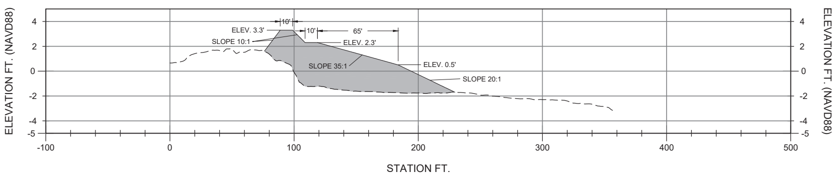
DRAWN BY: TRL
CHECKED BY: SEF
SCALE: AS SHOWN
DATE: APR 2025

WSP USA Inc.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
MICHAEL J. MARANO
NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500

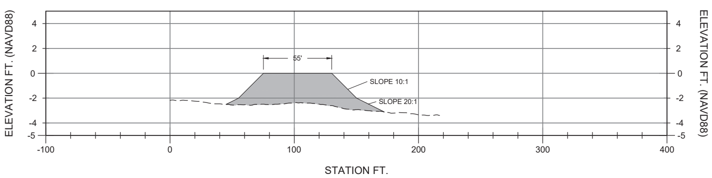
PROJECT NO.
SHEET 6 OF 16
DWG. NO. PERMIT - 01

C:\Users\Tyler.Littlefield\OneDrive - Gahagan and Bryant Associates\Jobs_OneDrive\NJDOT-Shared-Library - Shared Documents\LHC\DWG\Plans - Permit\LHC_Permit Plans_PR-EG_Final.dwg

SECTION E-E'



SECTION F-F'



PROJECT LOCATION MAP
SCALE: 1" = 300'

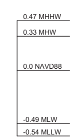
	AREA - C SHORELINE RESTORATION FILL VOLUME
BEACH FILL	11,370
FEEDER BEACH	1,940
TOTAL (CY)	13,310

NOTES:

1. VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). TIDAL INFORMATION OBTAINED FROM NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) VDATUM DATUM TRANSFORMATION PROGRAM, VERSION 4.6.1.
2. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
3. EXISTING CONDITION DATA SHOWN IS A COMPILATION OF TOPO DATA COLLECTED ON APRIL 08–09, 2024 AND BATHYMETRIC DATA COLLECTED ON FEBRUARY 15, 2024 BY GAHAGAN & BRYANT ASSOCIATES (GBA), LIDAR DATA COLLECTED ON FEBRUARY 16, 2024 BY ROBINSON AERIAL SURVEY (RAS), AND TOPO DATA COLLECTED ON MARCH 12, 2024 BY DUCKS UNLIMITED (DU),
4. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

LEGEND

EXISTING GROUND
PROPOSED DESIGN
PROPOSED FILL/RESTORATION



RANGE OF TIDE (FT)
NOT TO SCALE

0' 5' 10' 20'
VERTICAL GRAPHIC SCALE (FT)

0' 50' 100' 200'
HORIZONTAL GRAPHIC SCALE (FT)

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE: LIGHTHOUSE CAMP CENTER RESTORATION BENEFICIAL USE AREA - C SHORELINE PROFILES

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER

TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

REV.	DATE:	DESCRIPTION	BY	APPR.

STATE OF NEW JERSEY MICHAEL JOHN MARANO NO. 40875 LICENSED PROFESSIONAL ENGINEER

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd.
Unit P
Baltimore, MD 21237
Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

DRAWN BY: TRL	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: SEF		SHEET 7 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. PERMIT - 06
DATE: APR 2025		

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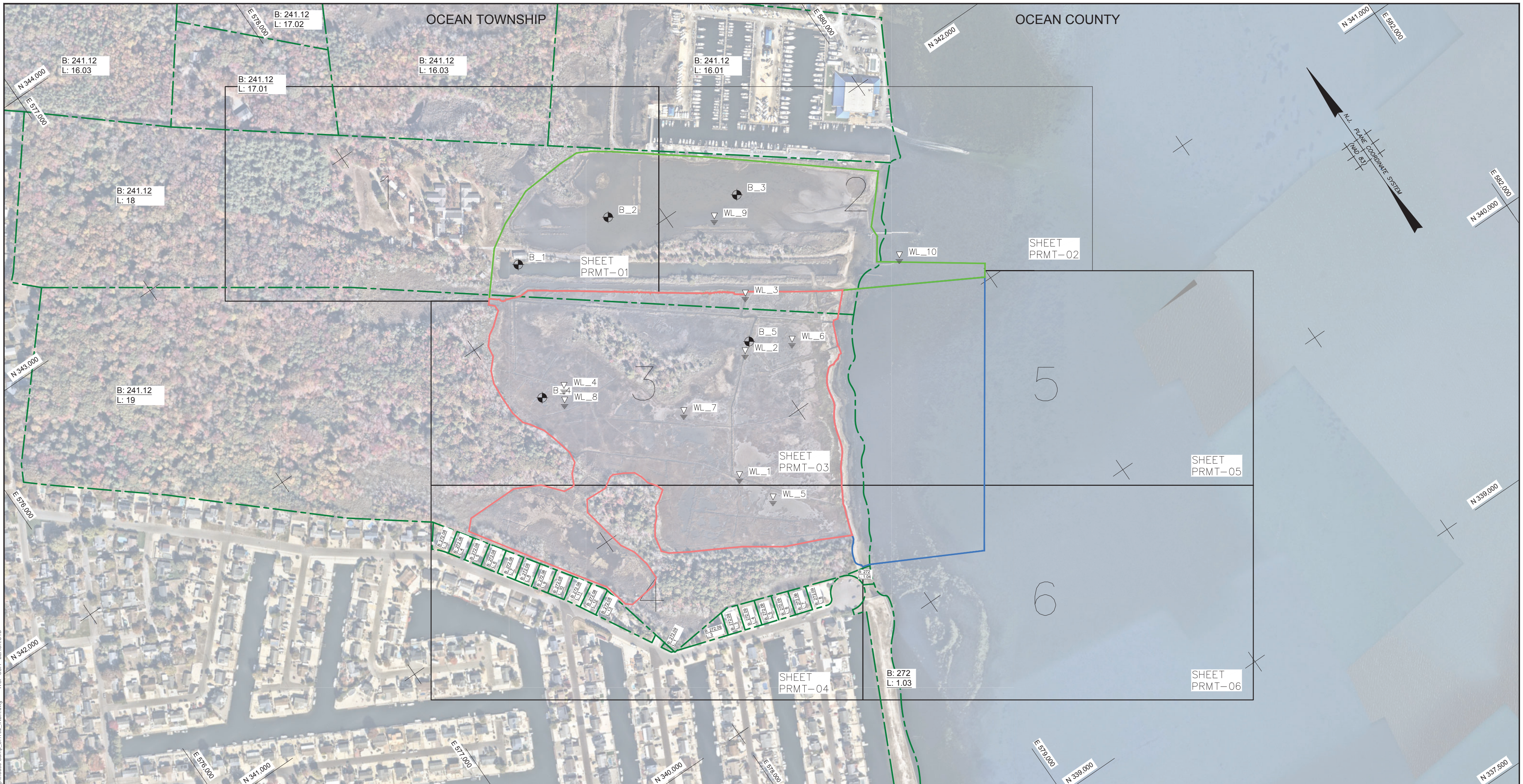


LEGEND

- APPROXIMATE PROPERTY/ROW LINES
- B: # BLOCK NUMBER
- L: # PARCEL LOT NUMBER
- B_# SOIL BORING LOCATION
- WL_# WATER LOGGER LOCATION

ID	NORTHING	EASTING
B_1	342195.71	578363.63
B_2	342144.59	578796.33
B_3	341910.60	579305.41
B_4	341666.75	578124.19
B_5	341362.14	578991.88

ID	NORTHING	EASTING
WL_1	340904.18	578626.33
WL_2	341328.26	578947.89
WL_3	341531.61	579088.92
WL_4	341646.54	578223.41
WL_5	340743.51	578690.36
WL_6	341254.95	579141.77
WL_7	341265.78	578585.38
WL_8	341593.31	578190.29
WL_9	341879.43	579166.71
WL_10	341291.84	579726.05

NOTES

1. THE VERTICAL DATUM SHOWN ON THIS PLAN SET IS IN REFERENCE TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). NAVD88 IS 0.49 FEET ABOVE MEAN LOW WATER. INFORMATION OBTAINED FROM NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) VDATUM TRANSFORMATION PROGRAM, VERSION 4.6.1.
2. THE VERTICAL DATUM FOR THIS PROJECT IS THE NORTH AMERICAN VERTICAL DATUM OF 1988; TO CONVERT THE ELEVATIONS LISTED ON THIS PLAN SET TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 ADD 1.26' TO THE PUBLISHED ELEVATIONS.
3. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
4. TIDAL DATA WAS COLLECTED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ON BEHALF OF THE THE NATURE CONSERVANCY (TNC) AND THE NATURAL RESOURCE EDUCATION FOUNDATION (NREF). NINE TIDAL GAUGES WERE DEPLOYED, COLLECTED DATA FROM JULY 26, 2022 TO NOVEMBER 29, 2022, AND SUPPLEMENTED WITH PUBLICALLY AVAILABLE DATA FROM THE USGS TIDAL GAUGE "BARNEGAT BAY NEAR WARETOWN" (STATION ID 01409124).
5. EXISTING CONDITION DATA SHOWN IS A COMPILATION OF TOPO DATA COLLECTED ON APRIL 08–09, 2024 AND BATHYMETRIC DATA COLLECTED ON FEBRUARY 15, 2024 BY GAHAGAN & BRYANT ASSOCIATES (GBA), LIDAR DATA COLLECTED ON FEBRUARY 16, 2024 BY ROBINSON AERIAL SURVEY (RAS), AND TOPO DATA COLLECTED ON MARCH 12, 2024 BY DUCKS UNLIMITED (DU).
6. AERIAL IMAGERY SHOWN FROM NEARMAP FLIGHT PHOTOGRAPHY DATED OCTOBER 22, 2024.
7. WETLANDS DELINEATED BY WSP USA, INC. ON APRIL 24, 2024 AND MAY 13, 2024.
8. COASTAL WETLANDS LINEWORK DERIVED FROM NJDEP 1970 TIDAL WETLANDS MAP NUMBER 336–2130.
9. GEOTECHNICAL BORING DATA COLLECTED AND INSPECTED BY NORTHLAND AIRBOATS AND WSP USA, INC. RESPECTIVELY BETWEEN JUNE 3–7, 2024. THIS DATA WAS PROCESSED BY COLLIERS ENGINEERING & DESIGN AND WSP USA, INC.
10. THE EXISTING PROPERTY BOUNDARIES WERE DERIVED FROM THE NEW JERSEY GEOGRAPHIC INFORMATION NETWORKS PUBLICLY AVAILABLE "PARCELS AND MOD–IV OF OCEAN COUNTY, NJ" DATED JANUARY 10, 2023 AND ARE TO BE CONSIDERED AS APPROXIMATE.
11. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

0' 200' 400'
SCALE: 1'=200'

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

SEAL:

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd.
Unit O
Baltimore, MD 21237
Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

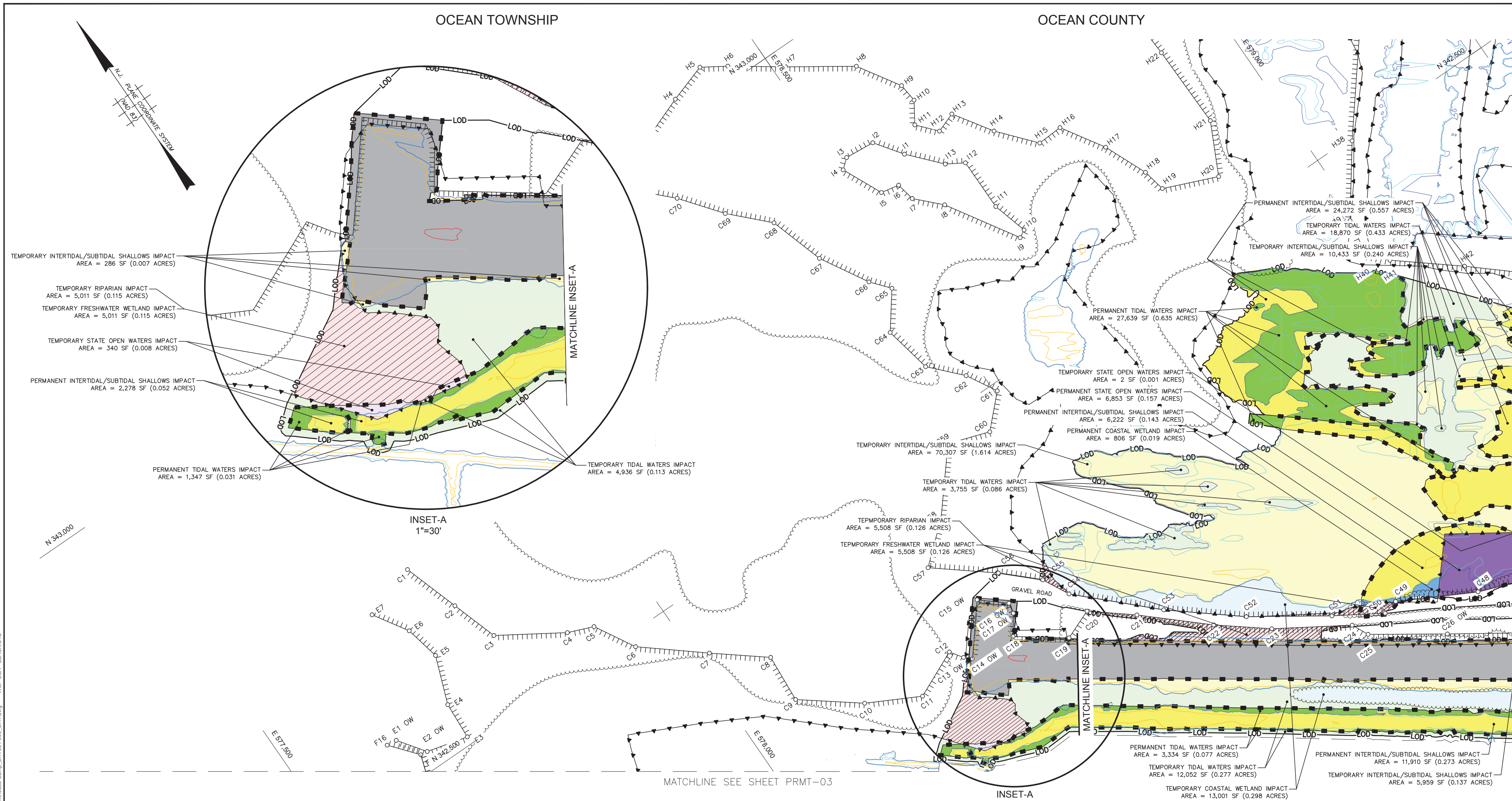
REV.	DATE:	DESCRIPTION	BY	APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE:
NJDEP PERMIT PLANS
SHEET INDEX & EXISTING CONDITIONS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: MJM		SHEET 8 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	
DATE: APRIL 2025		DWG. NO. INDX-01



OCEAN TOWNSHIP
OCEAN COUNTY
N.J. PLANE COORDINATE SYSTEM (NAD 83)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 286 SF (0.007 ACRES)
TEMPORARY RIPARIAN IMPACT AREA = 5,011 SF (0.115 ACRES)
TEMPORARY FRESHWATER WETLAND IMPACT AREA = 5,011 SF (0.115 ACRES)
TEMPORARY STATE OPEN WATERS IMPACT AREA = 340 SF (0.008 ACRES)
PERMANENT INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 2,278 SF (0.052 ACRES)
PERMANENT TIDAL WATERS IMPACT AREA = 1,347 SF (0.031 ACRES)
TEMPORARY TIDAL WATERS IMPACT AREA = 4,936 SF (0.113 ACRES)
MATCHLINE INSET-A
INSET-A
1"=30'
PERMANENT INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 24,272 SF (0.557 ACRES)
TEMPORARY TIDAL WATERS IMPACT AREA = 18,870 SF (0.433 ACRES)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 10,433 SF (0.240 ACRES)
PERMANENT TIDAL WATERS IMPACT AREA = 27,639 SF (0.635 ACRES)
TEMPORARY STATE OPEN WATERS IMPACT AREA = 2 SF (0.001 ACRES)
PERMANENT STATE OPEN WATERS IMPACT AREA = 6,853 SF (0.157 ACRES)
PERMANENT INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 6,222 SF (0.143 ACRES)
PERMANENT COASTAL WETLAND IMPACT AREA = 806 SF (0.019 ACRES)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 70,307 SF (1.614 ACRES)
TEMPORARY TIDAL WATERS IMPACT AREA = 3,755 SF (0.086 ACRES)
TEPMPORARY RIPARIAN IMPACT AREA = 5,508 SF (0.126 ACRES)
TEPMPORARY FRESHWATER WETLAND IMPACT AREA = 5,508 SF (0.126 ACRES)
GRAVEL ROAD
MATCHLINE SEE SHEET PRMT-02
MATCHLINE SEE SHEET PRMT-03
PERMANENT TIDAL WATERS IMPACT AREA = 3,334 SF (0.077 ACRES)
TEMPORARY TIDAL WATERS IMPACT AREA = 12,052 SF (0.277 ACRES)
TEMPORARY COASTAL WETLAND IMPACT AREA = 13,001 SF (0.298 ACRES)
PERMANENT INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 11,910 SF (0.273 ACRES)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 5,959 SF (0.137 ACRES)
INSET-A

LEGEND

- EDGE OF VEGETATION
- DELINEATED WETLANDS LINE
- 1970 COASTAL WETLAND LINE
- APPROXIMATE PROPERTY/ROW LINES
- LIMIT OF GRADING
- LOD — LIMIT OF DISTURBANCE
- = MAINTENANCE DREDGING OF BOAT CHANNEL
- SAV = SUBMERGED AQUATIC VEGETATION
- MHHW = MEAN HIGH HIGH WATER
- MHW = MEAN HIGH WATER
- NAVD'88 = NORTH AMERICAN VERTICAL DATUM 1988
- MLW = MEAN LOW WATER
- MLW −4 = ISS BOUNDARY

PERMANENT HABITAT CONVERSION IMPACTS / TEMPORARY IMPACTS

- = FRESHWATER WETLANDS
- = COASTAL WETLANDS
- = INTERTIDAL / SUBTIDAL SHALLOWS
- = TIDAL WATERS
- = STATE OPEN WATERS
- = SAV (SUBMERGED AQUATIC VEGETATION)
- = RIPARIAN ZONE

RESOURCE	TOTAL IMPACTS THIS SHEET			
	PERMANENT HABITAT CONVERSION IMPACTS		TEMPORARY	
	SQUARE FEET	ACRES	SQUARE FEET	ACRES
FRESHWATER WETLANDS	0	0.000	10,519	0.241
COASTAL WETLANDS	806	0.019	13,001	0.298
INTERTIDAL / SUBTIDAL SHALLOWS	44,682	1.025	86,985	1.997
TIDAL WATERS	32,320	0.742	39,613	0.909
STATE OPEN WATERS	6,853	0.157	342	0.008
SAV	0	0.000	0	0.000
RIPARIAN	0	0.000	15,410	0.354

NOTES

1. THE VERTICAL DATUM SHOWN ON THIS PLAN SET IS IN REFERENCE TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). NAVD88 IS 0.49 FEET ABOVE MEAN LOW WATER. INFORMATION OBTAINED FROM NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) VDATUM TRANSFORMATION PROGRAM, VERSION 4.6.1.
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3. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
4. TIDAL DATA WAS COLLECTED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ON BEHALF OF THE THE NATURE CONSERVANCY (TNC) AND THE NATURAL RESOURCE EDUCATION FOUNDATION (NREF). NINE TIDAL GAUGES WERE DEPLOYED, COLLECTED DATA FROM JULY 26, 2022 TO NOVEMBER 29, 2022, AND SUPPLEMENTED WITH PUBLICALLY AVAILABLE DATA FROMN THE USGS TIDAL GAUGE "BARNEGAT BAY NEAR WARETOWN" (STATION ID 01409124).
5. EXISTING CONDITION DATA SHOWN IS A COMPILATION OF TOPO DATA COLLECTED ON APRIL 08–09, 2024 AND BATHYMETRIC DATA COLLECTED ON FEBRUARY 15, 2024 BY GAHAGAN & BRYANT ASSOCIATES (GBA), LIDAR DATA COLLECTED ON FEBRUARY 16, 2024 BY ROBINSON AERIAL SURVEY (RAS), AND TOPO DATA COLLECTED ON MARCH 12, 2024 BY DUCKS UNLIMITED (DU).
6. WETLANDS DELINEATED BY WSP USA, INC. ON APRIL 24, 2024 AND MAY 13, 2024.
7. COASTAL WETLANDS LINEWORK DERIVED FROM NJDEP 1970 TIDAL WETLANDS MAP NUMBER 336-2130.
8. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

0' 60' 120'
SCALE: 1"=60'

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

SEAL:

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd. Unit O Baltimore, MD 21237 Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

REV. | DATE: | DESCRIPTION | BY | APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE:

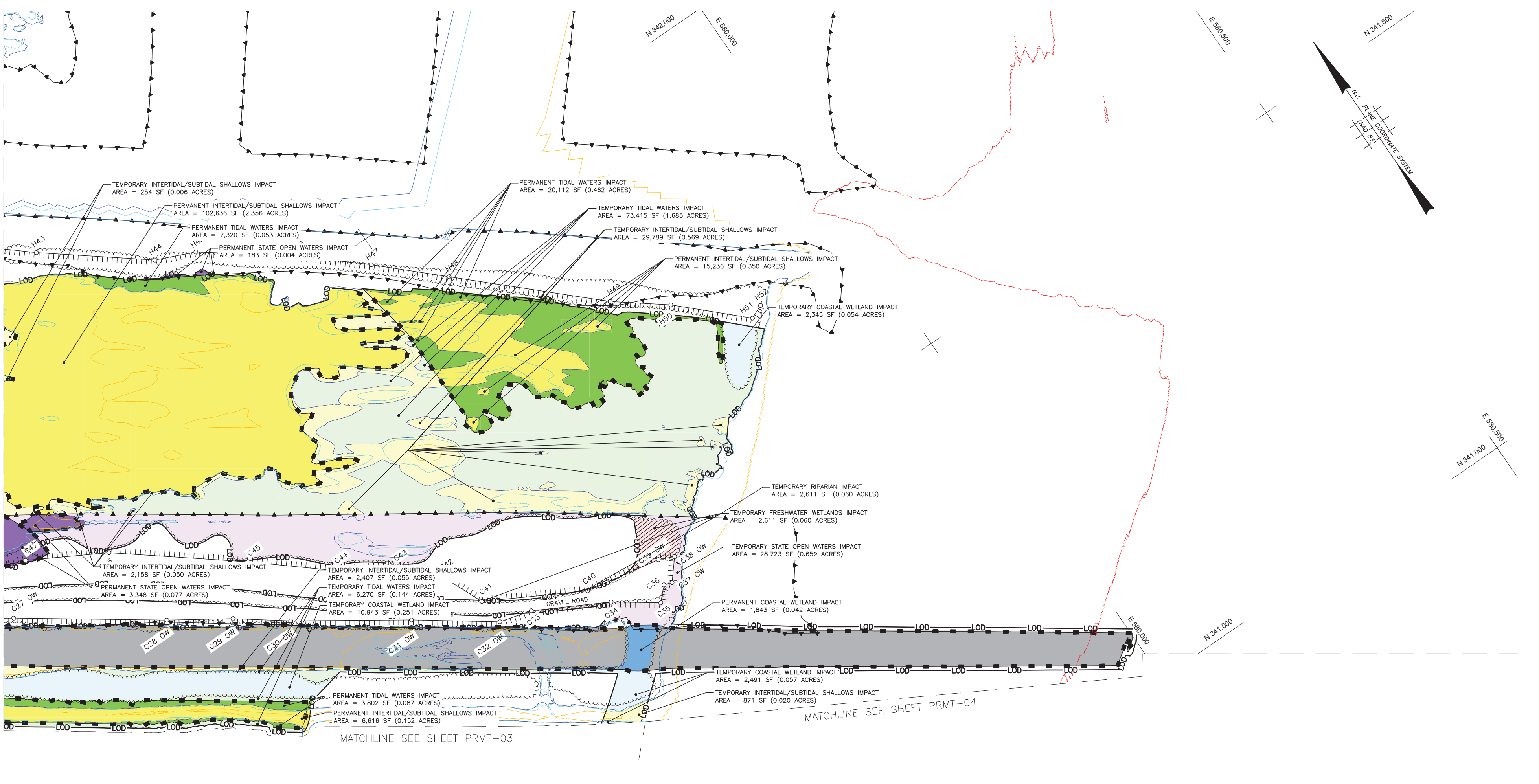
NJDEP PERMIT PLANS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: MJM		SHEET 9 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	
DATE: APRIL 2025		DWG. NO. PRMT-01

OCEAN TOWNSHIP

OCEAN COUNTY


N 342,000
E 580,000
E 580,500
N 341,500
N.J. PLANE COORDINATE SYSTEM (NAD 83)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 254 SF (0.006 ACRES)
PERMANENT INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 102,636 SF (2.356 ACRES)
PERMANENT TIDAL WATERS IMPACT AREA = 2,320 SF (0.053 ACRES)
PERMANENT STATE OPEN WATERS IMPACT AREA = 183 SF (0.004 ACRES)
PERMANENT TIDAL WATERS IMPACT AREA = 20,112 SF (0.462 ACRES)
TEMPORARY TIDAL WATERS IMPACT AREA = 73,415 SF (1.685 ACRES)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 29,789 SF (0.569 ACRES)
PERMANENT INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 15,236 SF (0.350 ACRES)
TEMPORARY COASTAL WETLAND IMPACT AREA = 2,345 SF (0.054 ACRES)
MATCHLINE SEE SHEET PRMT-01
TEMPORARY RIPARIAN IMPACT AREA = 2,611 SF (0.060 ACRES)
TEMPORARY FRESHWATER WETLANDS IMPACT AREA = 2,611 SF (0.060 ACRES)
TEMPORARY STATE OPEN WATERS IMPACT AREA = 28,723 SF (0.659 ACRES)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 2,158 SF (0.050 ACRES)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 2,407 SF (0.055 ACRES)
PERMANENT STATE OPEN WATERS IMPACT AREA = 3,348 SF (0.077 ACRES)
TEMPORARY TIDAL WATERS IMPACT AREA = 6,270 SF (0.144 ACRES)
TEMPORARY COASTAL WETLAND IMPACT AREA = 10,943 SF (0.251 ACRES)
GRAVEL ROAD
PERMANENT COASTAL WETLAND IMPACT AREA = 1,843 SF (0.042 ACRES)
E 580,500
N 341,000
E 580,000
N 341,000
TEMPORARY COASTAL WETLAND IMPACT AREA = 2,491 SF (0.057 ACRES)
TEMPORARY INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 871 SF (0.020 ACRES)
PERMANENT TIDAL WATERS IMPACT AREA = 3,802 SF (0.087 ACRES)
PERMANENT INTERTIDAL/SUBTIDAL SHALLOWS IMPACT AREA = 6,616 SF (0.152 ACRES)
MATCHLINE SEE SHEET PRMT-04
MATCHLINE SEE SHEET PRMT-03

LEGEND

- EDGE OF VEGETATION
- DELINEATED WETLANDS LINE
- 1970 COASTAL WETLAND LINE
- APPROXIMATE PROPERTY/ROW LINES
- LIMIT OF GRADING
- LOD — LIMIT OF DISTURBANCE
- = MAINTENANCE DREDGING OF BOAT CHANNEL
- SAV = SUBMERGED AQUATIC VEGETATION
- MHHW = MEAN HIGH HIGH WATER
- MHW = MEAN HIGH WATER
- 0 — NAVD'88 = NORTH AMERICAN VERTICAL DATUM 1988
- MLW = MEAN LOW WATER
- MLW −4 = ISS BOUNDARY

PERMANENT HABITAT CONVERSION IMPACTS / TEMPORARY IMPACTS

- = FRESHWATER WETLANDS
- = COASTAL WETLANDS
- = INTERTIDAL / SUBTIDAL SHALLOWS
- = TIDAL WATERS
- = STATE OPEN WATERS
- = SAV (SUBMERGED AQUATIC VEGETATION)
- = RIPARIAN ZONE

RESOURCE	TOTAL IMPACTS THIS SHEET			
	PERMANENT HABITAT CONVERSION IMPACTS		TEMPORARY	
	SQUARE FEET	ACRES	SQUARE FEET	ACRES
FRESHWATER WETLANDS	0	0.000	2,611	0.060
COASTAL WETLANDS	1,843	0.042	15,779	0.362
INTERTIDAL / SUBTIDAL SHALLOWS	124,488	2.858	35,479	0.814)
TIDAL WATERS	26,234	0.602)	79,685	1.829
STATE OPEN WATERS	3,531	0.081	28,723	0.659
SAV	0	0.000	0	0.000
RIPARIAN	0	0.000	2,611	0.060

NOTES

1. THE VERTICAL DATUM SHOWN ON THIS PLAN SET IS IN REFERENCE TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). NAVD88 IS 0.49 FEET ABOVE MEAN LOW WATER. INFORMATION OBTAINED FROM NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) VDATUM TRANSFORMATION PROGRAM, VERSION 4.6.1.
2. THE VERTICAL DATUM FOR THIS PROJECT IS THE NORTH AMERICAN VERTICAL DATUM OF 1988; TO CONVERT THE ELEVATIONS LISTED ON THIS PLAN SET TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 ADD 1.26' TO THE PUBLISHED ELEVATIONS.
3. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
4. TIDAL DATA WAS COLLECTED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ON BEHALF OF THE THE NATURE CONSERVANCY (TNC) AND THE NATURAL RESOURCE EDUCATION FOUNDATION (NREF). NINE TIDAL GAUGES WERE DEPLOYED, COLLECTED DATA FROM JULY 26, 2022 TO NOVEMBER 29, 2022, AND SUPPLEMENTED WITH PUBLICALLY AVAILABLE DATA FROMN THE USGS TIDAL GAUGE "BARNEGAT BAY NEAR WARETOWN" (STATION ID 01409124).
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6. WETLANDS DELINEATED BY WSP USA, INC. ON APRIL 24, 2024 AND MAY 13, 2024.
7. COASTAL WETLANDS LINEWORK DERIVED FROM NJDEP 1970 TIDAL WETLANDS MAP NUMBER 336–2130.
8. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

0' 60' 120'
SCALE: 1"=60'

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

SEAL:

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd. Unit O Baltimore, MD 21237 Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

REV. | DATE: | DESCRIPTION | BY | APPR.

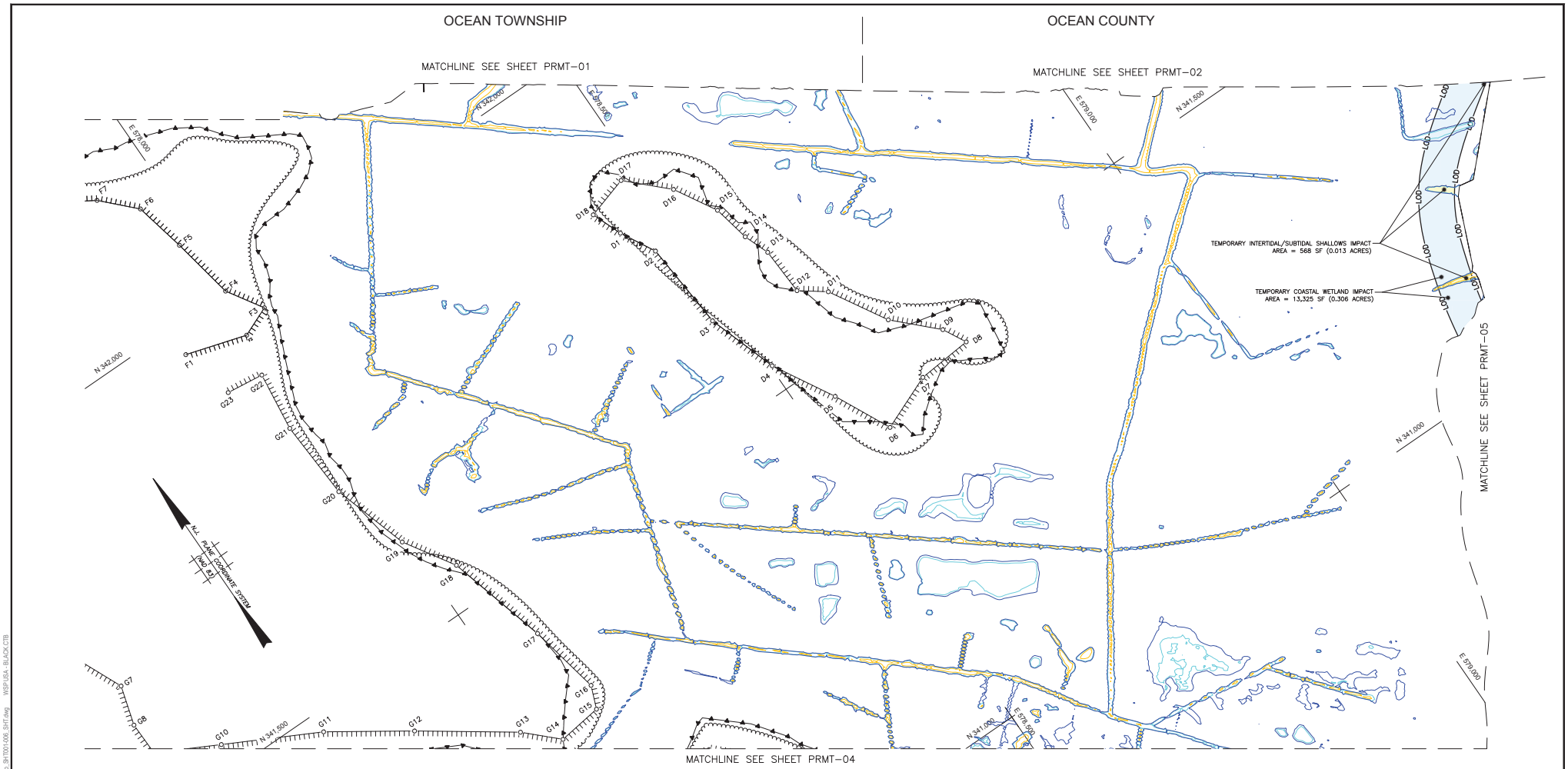
STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE:

NJDEP PERMIT PLANS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: MJM		SHEET 10 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. PRMT-02
DATE: APRIL 2025		



LEGEND

- EDGE OF VEGETATION
- DELINEATED WETLANDS LINE
- 1970 COASTAL WETLAND LINE
- APPROXIMATE PROPERTY/ROW LINES
- LIMIT OF GRADING
- LOD — LIMIT OF DISTURBANCE
- = MAINTENANCE DREDGING OF BOAT CHANNEL
- SAV = SUBMERGED AQUATIC VEGETATION
- MHHW = MEAN HIGH HIGH WATER
- MHW = MEAN HIGH WATER
- 0 — NAVD'88 = NORTH AMERICAN VERTICAL DATUM 1988
- MLW = MEAN LOW WATER
- MLW -4 = ISS BOUNDARY

PERMANENT HABITAT CONVERSION IMPACTS	TEMPORARY IMPACTS	
		= FRESHWATER WETLANDS
		= COASTAL WETLANDS
		= INTERTIDAL / SUBTIDAL SHALLOWS
		= TIDAL WATERS
		= STATE OPEN WATERS
		= SAV (SUBMERGED AQUATIC VEGETATION)
		= RIPARIAN ZONE

RESOURCE	TOTAL IMPACTS THIS SHEET			
	PERMANENT HABITAT CONVERSION IMPACTS		TEMPORARY	
	SQUARE FEET	ACRES	SQUARE FEET	ACRES
FRESHWATER WETLANDS	0	0.000	0	0.000
COASTAL WETLANDS	0	0.000	13,325	0.306
INTERTIDAL / SUBTIDAL SHALLOWS	0	0.000	568	0.013
TIDAL WATERS	0	0.000	0	0.000
STATE OPEN WATERS	0	0.000	0	0.000
SAV	0	0.000	0	0.000
RIPARIAN	0	0.000	0	0.000

NOTES

1. THE VERTICAL DATUM SHOWN ON THIS PLAN SET IS IN REFERENCE TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). NAVD88 IS 0.49 FEET ABOVE MEAN LOW WATER. INFORMATION OBTAINED FROM NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) VDATUM TRANSFORMATION PROGRAM, VERSION 4.6.1.
2. THE VERTICAL DATUM FOR THIS PROJECT IS THE NORTH AMERICAN VERTICAL DATUM OF 1988; TO CONVERT THE ELEVATIONS LISTED ON THIS PLAN SET TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 ADD 1.26' TO THE PUBLISHED ELEVATIONS.
3. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
4. TIDAL DATA WAS COLLECTED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ON BEHALF OF THE THE NATURE CONSERVANCY (TNC) AND THE NATURAL RESOURCE EDUCATION FOUNDATION (NREF). NINE TIDAL GAUGES WERE DEPLOYED, COLLECTED DATA FROM JULY 26, 2022 TO NOVEMBER 29, 2022, AND SUPPLEMENTED WITH PUBLICALLY AVAILABLE DATA FROMN THE USGS TIDAL GAUGE "BARNEGAT BAY NEAR WARETOWN" (STATION ID 01409124).
5. EXISTING CONDITION DATA SHOWN IS A COMPILATION OF TOPO DATA COLLECTED ON APRIL 08-09, 2024 AND BATHYMETRIC DATA COLLECTED ON FEBRUARY 15, 2024 BY GAHAGAN & BRYANT ASSOCIATES (GBA), LIDAR DATA COLLECTED ON FEBRUARY 15, 2024 BY ROBINSON AERIAL SURVEY (RAS), AND TOPO DATA COLLECTED ON MARCH 12, 2024 BY DUCKS UNLIMITED (DU).
6. WETLANDS DELINEATED BY WSP USA, INC. ON APRIL 24, 2024 AND MAY 13, 2024.
7. COASTAL WETLANDS LINEWORK DERIVED FROM NJDEP 1970 TIDAL WETLANDS MAP NUMBER 336-2130.
8. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

0' 60' 120'
SCALE: 1"=60'

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

SEAL:

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

REV	DATE	DESCRIPTION	BY	APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE:
NJDEP PERMIT PLANS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: MJM		SHEET 11 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. PRMT-03
DATE: APRIL 2025		

T:\30002741.6313 - Lighthouse Camp Restoration\env_permit\430002741.6313 - Lighthouse Camp_SHT001-006_SHT.dwg WSP USA - BLACK.CTB

NO IMPACT THIS SHEET

LEGEND

- EDGE OF VEGETATION
- DELINEATED WETLANDS LINE
- 1970 COASTAL WETLAND LINE
- APPROXIMATE PROPERTY/ROW LINES
- LIMIT OF GRADING
- LOD — LIMIT OF DISTURBANCE
- = MAINTENANCE DREDGING OF BOAT CHANNEL
- SAV = SUBMERGED AQUATIC VEGETATION
- MHHW = MEAN HIGH HIGH WATER
- MHW = MEAN HIGH WATER
- 0 — NAVD'88 = NORTH AMERICAN VERTICAL DATUM 1988
- MLW = MEAN LOW WATER
- MLW −4 = ISS BOUNDARY

PERMANENT HABITAT CONVERSION IMPACTS / TEMPORARY IMPACTS

- = FRESHWATER WETLANDS
- = COASTAL WETLANDS
- = INTERTIDAL / SUBTIDAL SHALLOWS
- = TIDAL WATERS
- = STATE OPEN WATERS
- = SAV (SUBMERGED AQUATIC VEGETATION)
- = RIPARIAN ZONE

RESOURCE	TOTAL IMPACTS THIS SHEET			
	PERMANENT HABITAT CONVERSION IMPACTS		TEMPORARY	
	SQUARE FEET	ACRES	SQUARE FEET	ACRES
FRESHWATER WETLANDS	0	0.000	0	0.000
COASTAL WETLANDS	0	0.000	0	0.000
INTERTIDAL / SUBTIDAL SHALLOWS	0	0.000	0	0.000
TIDAL WATERS	0	0.000	0	0.000
STATE OPEN WATERS	0	0.000	0	0.000
SAV	0	0.000	0	0.000
RIPARIAN	0	0.000	0	0.000

NOTES

1. THE VERTICAL DATUM SHOWN ON THIS PLAN SET IS IN REFERENCE TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). NAVD88 IS 0.49 FEET ABOVE MEAN LOW WATER. INFORMATION OBTAINED FROM NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) VDATUM TRANSFORMATION PROGRAM, VERSION 4.6.1.
2. THE VERTICAL DATUM FOR THIS PROJECT IS THE NORTH AMERICAN VERTICAL DATUM OF 1988; TO CONVERT THE ELEVATIONS LISTED ON THIS PLAN SET TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 ADD 1.26' TO THE PUBLISHED ELEVATIONS.
3. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
4. TIDAL DATA WAS COLLECTED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ON BEHALF OF THE THE NATURE CONSERVANCY (TNC) AND THE NATURAL RESOURCE EDUCATION FOUNDATION (NREF). NINE TIDAL GAUGES WERE DEPLOYED, COLLECTED DATA FROM JULY 26, 2022 TO NOVEMBER 29, 2022, AND SUPPLEMENTED WITH PUBLICALLY AVAILABLE DATA FROMN THE USGS TIDAL GAUGE "BARNEGAT BAY NEAR WARETOWN" (STATION ID 01409124).
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7. COASTAL WETLANDS LINEWORK DERIVED FROM NJDEP 1970 TIDAL WETLANDS MAP NUMBER 336–2130.
8. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

0' 60' 120'
SCALE: 1"=60'

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

SEAL:

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd.
Unit O
Baltimore, MD 21237
Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

REV.	DATE:	DESCRIPTION	BY	APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

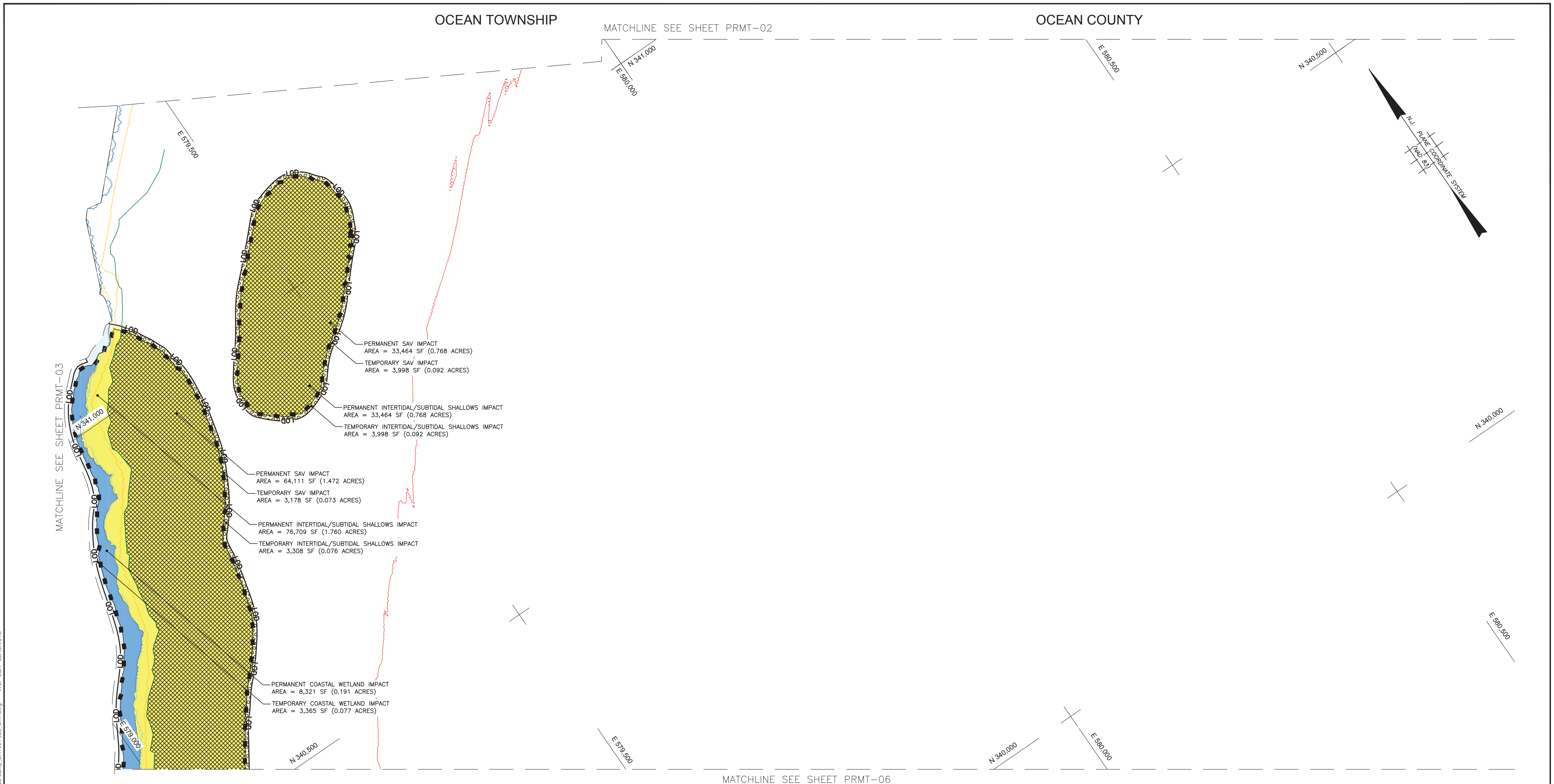
TITLE:

NJDEP PERMIT PLANS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.	
CHECKED BY: MJM		SHEET 12 OF 16	
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. PRMT-04	
DATE: APRIL 2025			

T:\30902741.6313 - Lighthouse Camp Restoration\env_permits\30902741.6313 - Lighthouse Camp_SHT001-006_SHT.dwg WSP USA - BLACK.CTB



LEGEND

- EDGE OF VEGETATION
- DELINEATED WETLANDS LINE
- 1970 COASTAL WETLAND LINE
- APPROXIMATE PROPERTY/ROW LINES
- LIMIT OF GRADING
- LOD — LIMIT OF DISTURBANCE
- = MAINTENANCE DREDGING OF BOAT CHANNEL
- SAV = SUBMERGED AQUATIC VEGETATION
- MHHW = MEAN HIGH HIGH WATER
- MHW = MEAN HIGH WATER
- NAVD'88 = NORTH AMERICAN VERTICAL DATUM 1988
- MLW = MEAN LOW WATER
- MLW −4 = ISS BOUNDARY

PERMANENT HABITAT CONVERSION IMPACTS / TEMPORARY IMPACTS

- = FRESHWATER WETLANDS
- = COASTAL WETLANDS
- = INTERTIDAL / SUBTIDAL SHALLOWS
- = TIDAL WATERS
- = STATE OPEN WATERS
- = SAV (SUBMERGED AQUATIC VEGETATION)
- = RIPARIAN ZONE

RESOURCE	TOTAL IMPACTS THIS SHEET			
	PERMANENT HABITAT CONVERSION IMPACTS		TEMPORARY	
	SQUARE FEET	ACRES	SQUARE FEET	ACRES
FRESHWATER WETLANDS	0	0.000	0	0.000
COASTAL WETLANDS	8,321	0.191	3,365	0.077
INTERTIDAL / SUBTIDAL SHALLOWS	110,173	2.529	7,306	0.168
TIDAL WATERS	0	0.000	0	0.000
STATE OPEN WATERS	0	0.000	0	0.000
SAV	97,575	2.240	7,176	0.165
RIPARIAN	0	0.000	0	0.000

NOTES

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2. THE VERTICAL DATUM FOR THIS PROJECT IS THE NORTH AMERICAN VERTICAL DATUM OF 1988; TO CONVERT THE ELEVATIONS LISTED ON THIS PLAN SET TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 ADD 1.26' TO THE PUBLISHED ELEVATIONS.
3. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
4. TIDAL DATA WAS COLLECTED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ON BEHALF OF THE THE NATURE CONSERVANCY (TNC) AND THE NATURAL RESOURCE EDUCATION FOUNDATION (NREF). NINE TIDAL GAUGES WERE DEPLOYED, COLLECTED DATA FROM JULY 26, 2022 TO NOVEMBER 29, 2022, AND SUPPLEMENTED WITH PUBLICALLY AVAILABLE DATA FROMN THE USGS TIDAL GAUGE "BARNEGAT BAY NEAR WARETOWN" (STATION ID 01409124).
5. EXISTING CONDITION DATA SHOWN IS A COMPILATION OF TOPO DATA COLLECTED ON APRIL 08–09, 2024 AND BATHYMETRIC DATA COLLECTED ON FEBRUARY 15, 2024 BY GAHAGAN & BRYANT ASSOCIATES (GBA), LIDAR DATA COLLECTED ON FEBRUARY 16, 2024 BY ROBINSON AERIAL SURVEY (RAS), AND TOPO DATA COLLECTED ON MARCH 12, 2024 BY DUCKS UNLIMITED (DU).
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8. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

0' 60' 120'
SCALE: 1"=60'

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

SEAL:

REV.	DATE:	DESCRIPTION	BY	APPR.	

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd.
Unit O
Baltimore, MD 21237
Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE:
NJDEP PERMIT PLANS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: MJM		SHEET 13 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. PRMT-05
DATE: APRIL 2025		

LEGEND

- EDGE OF VEGETATION
- DELINEATED WETLANDS LINE
- 1970 COASTAL WETLAND LINE
- APPROXIMATE PROPERTY/ROW LINES
- LIMIT OF GRADING
- LOD — LIMIT OF DISTURBANCE
- = MAINTENANCE DREDGING OF BOAT CHANNEL
- SAV = SUBMERGED AQUATIC VEGETATION
- MHHW = MEAN HIGH HIGH WATER
- MHW = MEAN HIGH WATER
- 0 — NAVD'88 = NORTH AMERICAN VERTICAL DATUM 1988
- MLW = MEAN LOW WATER
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PERMANENT HABITAT CONVERSION IMPACTS / TEMPORARY IMPACTS

- = FRESHWATER WETLANDS
- = COASTAL WETLANDS
- = INTERTIDAL / SUBTIDAL SHALLOWS
- = TIDAL WATERS
- = STATE OPEN WATERS
- = SAV (SUBMERGED AQUATIC VEGETATION)
- = RIPARIAN ZONE

RESOURCE	TOTAL IMPACTS THIS SHEET			
	PERMANENT HABITAT CONVERSION IMPACTS		TEMPORARY	
	SQUARE FEET	ACRES	SQUARE FEET	ACRES
FRESHWATER WETLANDS	0	0.000	0	0.000
COASTAL WETLANDS	5,416	0.124	1,891	0.043
INTERTIDAL / SUBTIDAL SHALLOWS	41,464	0.952	2,143	0.049
TIDAL WATERS	0	0.000	0	0.000
STATE OPEN WATERS	0	0.000	0	0.000
SAV	33,169	0.761	1,867	0.043
RIPARIAN	0	0.000	0	0.000

NOTES

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2. THE VERTICAL DATUM FOR THIS PROJECT IS THE NORTH AMERICAN VERTICAL DATUM OF 1988; TO CONVERT THE ELEVATIONS LISTED ON THIS PLAN SET TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 ADD 1.26' TO THE PUBLISHED ELEVATIONS.
3. COORDINATES ARE EXPRESSED IN FEET AND REFER TO THE NEW JERSEY STATE PLANE GRID COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
4. TIDAL DATA WAS COLLECTED BY THE U.S. FISH AND WILDLIFE SERVICE (USFWS) ON BEHALF OF THE THE NATURE CONSERVANCY (TNC) AND THE NATURAL RESOURCE EDUCATION FOUNDATION (NREF). NINE TIDAL GAUGES WERE DEPLOYED, COLLECTED DATA FROM JULY 26, 2022 TO NOVEMBER 29, 2022, AND SUPPLEMENTED WITH PUBLICALLY AVAILABLE DATA FROMN THE USGS TIDAL GAUGE "BARNEGAT BAY NEAR WARETOWN" (STATION ID 01409124).
5. EXISTING CONDITION DATA SHOWN IS A COMPILATION OF TOPO DATA COLLECTED ON APRIL 08–09, 2024 AND BATHYMETRIC DATA COLLECTED ON FEBRUARY 15, 2024 BY GAHAGAN & BRYANT ASSOCIATES (GBA), LIDAR DATA COLLECTED ON FEBRUARY 16, 2024 BY ROBINSON AERIAL SURVEY (RAS), AND TOPO DATA COLLECTED ON MARCH 12, 2024 BY DUCKS UNLIMITED (DU).
6. WETLANDS DELINEATED BY WSP USA, INC. ON APRIL 24, 2024 AND MAY 13, 2024.
7. COASTAL WETLANDS LINEWORK DERIVED FROM NJDEP 1970 TIDAL WETLANDS MAP NUMBER 336–2130.
8. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

0' 60' 120'
SCALE: 1'=60'

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

SEAL:

GBA ENGINEERS ★ SURVEYORS
9008 Yellow Brick Rd.
Unit O
Baltimore, MD 21237
Phone (410) 682-5595

TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

REV. | DATE: | DESCRIPTION | BY | APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

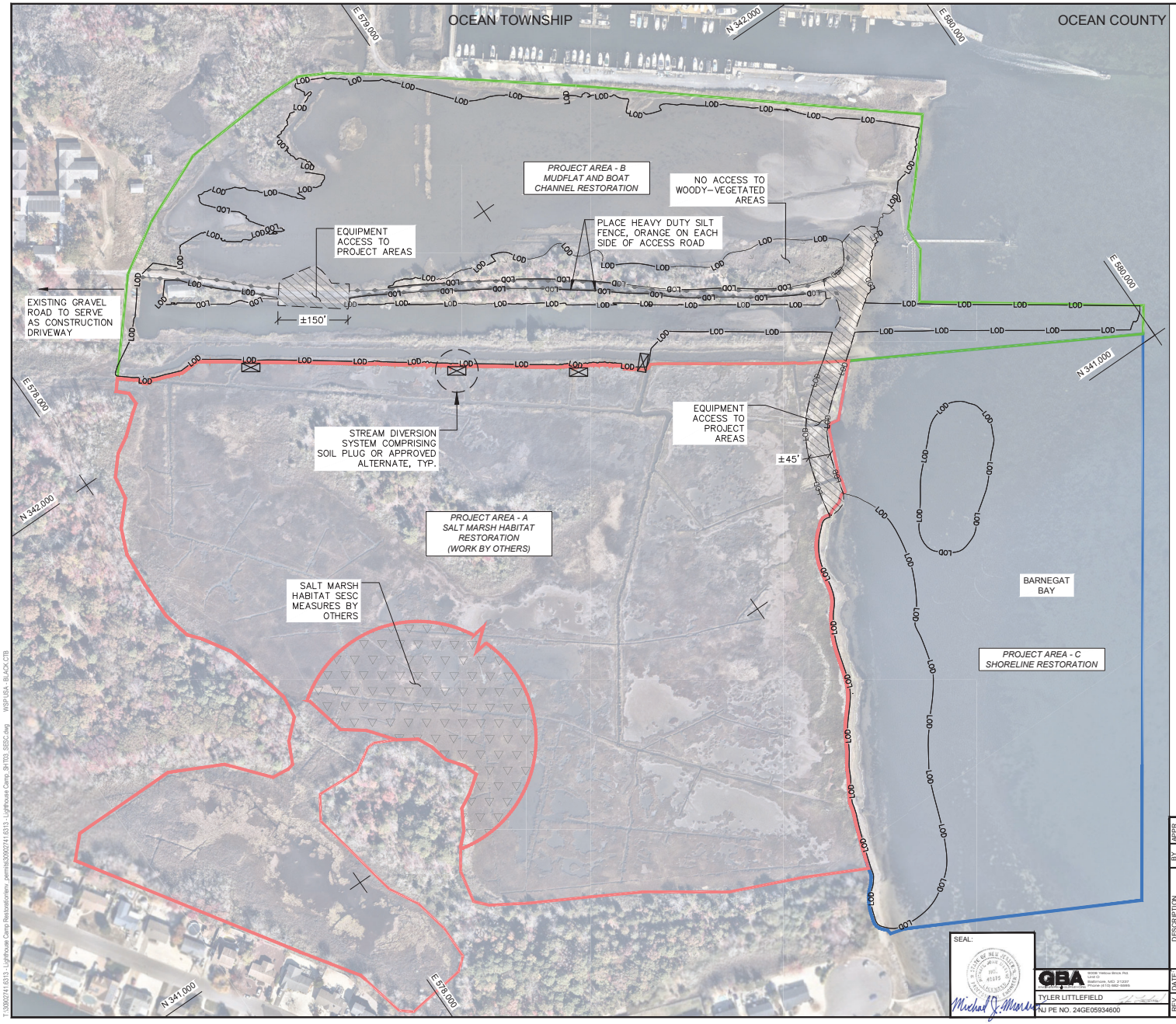
TITLE:
NJDEP PERMIT PLANS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV
CHECKED BY: MJM
SCALE: AS SHOWN
DATE: APRIL 2025

WSP USA Inc.
CERTIFICATION OF AUTHORIZATION NO. 24GA28029800
MICHAEL J. MARANO
NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500

PROJECT NO.
SHEET 14 OF 16
DWG. NO. PRMT-06



N.J. PLANE COORDINATE SYSTEM (NAD 83)

0.47 MHHW
0.33 MHW
0.00 NAVD88
-0.49 MLW
-0.54 MLLW
-4.49 ISS BOUNDARY

RANGE OF TIDE (FT)
NOT TO SCALE

NOTES

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6. AERIAL IMAGERY SHOWN FROM NEARMAP FLIGHT PHOTOGRAPHY DATED OCTOBER 22, 2024.
7. WETLANDS DELINEATED BY WSP USA, INC. ON APRIL 24, 2024 AND MAY 13, 2024.
8. COASTAL WETLANDS LINEWORK DERIVED FROM NJDEP 1970 TIDAL WETLANDS MAP NUMBER 336-2130.
9. GEOTECHNICAL BORING DATA COLLECTED AND INSPECTED BY NORTHLAND AIRBOATS AND WSP USA, INC. RESPECTIVELY BETWEEN JUNE 3-7, 2024. THIS DATA WAS PROCESSED BY COLLIERS ENGINEERING & DESIGN AND WSP USA, INC.
10. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS CONDUCTED ON THE ABOVE DATES AND SHOULD BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

LEGEND

- LOD — LIMIT OF DISTURBANCE
- HEAVY DUTY SILT FENCE, ORANGE
- SALT MARSH HABITAT RESTORATION
- MUDFLAT AND BOAT CHANNEL RESTORATION
- SHORELINE RESTORATION
- PROJECT AREA EQUIPMENT ACCESS
- WOODY VEGETATION
- SALT MARSH HABITAT SESC MEASURES
- STREAM DIVERSION SYSTEM. SEE SEDT-01.

0' 100' 200'
SCALE: 1"=100'

SEAL:

GBA
TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

REV.	DATE	DESCRIPTION	BY	APPR.

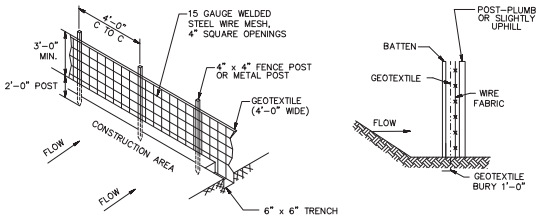
STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE:
SOIL EROSION AND SEDIMENT CONTROL

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.	
CHECKED BY: MJM		SHEET	15 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO.	SESC-01
DATE: APRIL 2025			

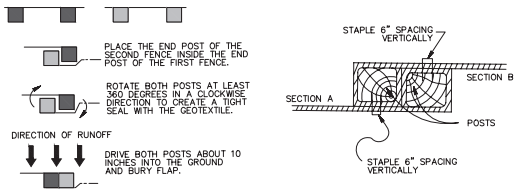
T:\30002741\6313 - Lighthouse Camp Restoration\env_permit\30002741.6313 - Lighthouse Camp_SHT03_SESC.dwg WSP USA - BLACK CTB



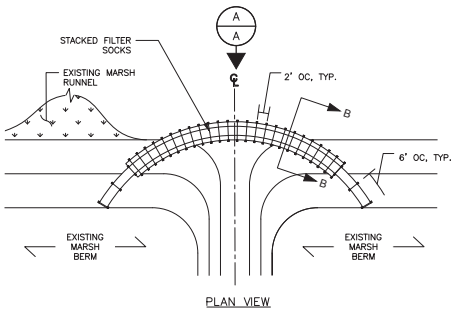
NOTES:

1. SECURELY FASTEN GEOTEXTILE TO WIRE FABRIC BY USE OF WIRE TIES OR HOG RINGS, THEN SANDWICH BETWEEN A 1" x 3" x 3' BATTEN AND THE POSTS PLACING SCREWS AT 6 INCH INTERVALS STARTING 3 INCHES FROM TOP.
2. BURY 4" X 4" FENCE POST 2'-0" BELOW GROUND.
3. BURY BOTTOM 1 FOOT OF GEOTEXTILE AS PER SILT FENCE AND TAMP IN PLACE.
4. SECURELY FASTEN ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE TO A COMMON POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND A BATTEN TWICE AND ATTACHING THE BATTEN TO POST WITH SCREWS AT 6 INCH INTERVALS STARTING 3 INCHES FROM THE TOP. SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINTS.
5. BURY 6" OF WIRE FABRIC IN TIDAL AREAS.

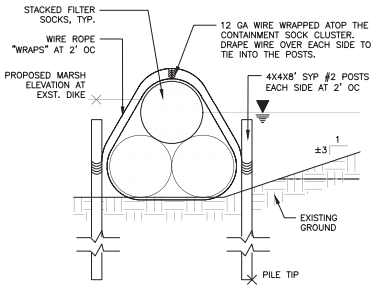
HEAVY DUTY SILT FENCE
NOT TO SCALE



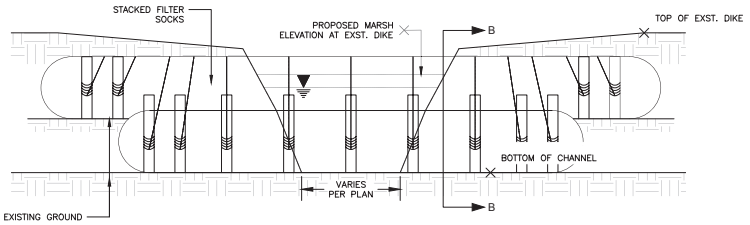
ATTACHING TWO SILT FENCES
NOT TO SCALE



PLAN VIEW

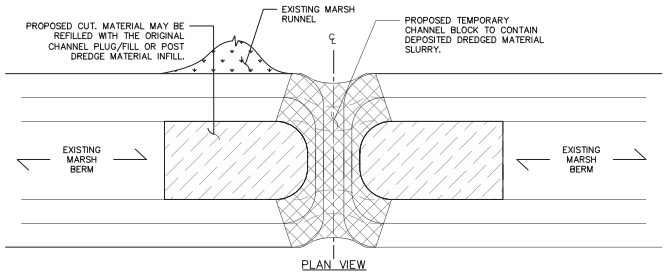


SECTION VIEW B-B

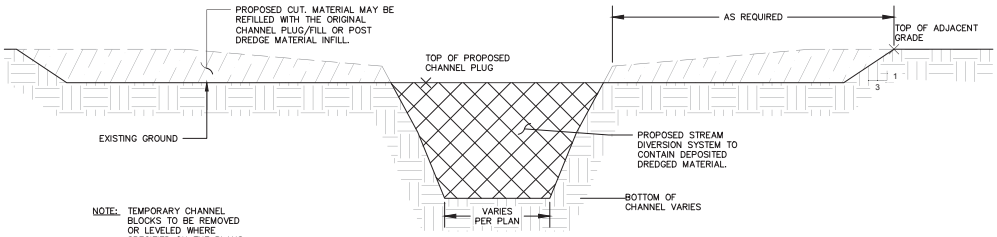


ELEVATION VIEW A-A

STREAM DIVERSION SYSTEM (ALTERNATE)
NOT TO SCALE



PLAN VIEW



NOTE: TEMPORARY CHANNEL BLOCKS TO BE REMOVED OR LEVELED WHERE SPECIFIED ON THE PLANS.

SECTION VIEW

STREAM DIVERSION SYSTEM
NOT TO SCALE

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE OCEAN COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY LAND DISTURBANCE.
2. ENSURE SOIL EROSION AND SEDIMENT CONTROL MEASURES ARE IN ACCORDANCE WITH THE NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL AND SECTION 158 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2019.
3. INSTALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO MAJOR SOIL DISTURBANCES OR CONSTRUCTION OPERATION IN THEIR PROPER SEQUENCE.
4. CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLANS REQUIRE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO NJDOT. THE REVISED PLANS MUST MEET CURRENT NJDOT SOIL EROSION AND SEDIMENT CONTROL STANDARDS. REMEDIATE EROSION OR SEDIMENT PROBLEMS THAT ARISE AS A RESULT OF THE ONGOING CONSTRUCTION.
5. PROVIDE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT FOR DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC.
6. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, PROVIDE TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF 1 ½ TO 2 TONS PER ACRE, ACCORDING TO STATE STANDARDS, FOR ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND ROADWAY EMBANKMENTS).
7. STABILIZE AND BACKFILL STEEP SLOPES (3:1 OR GREATER) DAILY AS THE INSTALLATION CONTINUES.
8. SEED OR SOD PERMANENT VEGETATION ON EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. USE MULCH FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
9. AT THE TIME WHEN PREPARING THE SITE FOR PERMANENT VEGETATIVE STABILIZATION INCLUDE PERMANENT GRASS SEEDING AND PROVISION FOR TEMPORARY SEEDING AS NECESSARY. IF THE REMOVAL OR TREATMENT OF THE SOIL DOES NOT PROVIDE SUITABLE CONDITIONS, EMPLOY NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION.
10. PLACE STOCKPILE AND STAGING LOCATIONS WITHIN THE LIMIT OF DISTURBANCE ACCORDING TO THE CERTIFIED PLAN. STAGING AND STOCKPILES NOT LOCATED WITHIN THE LIMIT OF DISTURBANCE WILL REQUIRE CERTIFICATION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN. THE DISTRICT RESERVES THE RIGHT TO DETERMINE WHEN CERTIFICATION OF A NEW AND SEPARATE SOIL EROSION AND SEDIMENT CONTROL PLAN WILL BE REQUIRED FOR THESE ACTIVITIES.
11. DURING CONSTRUCTION, INSTALL ADDITIONAL CONTROL MEASURES AS DEEMED NECESSARY BY THE RE TO PREVENT EROSION OR CONTROL.

OCEAN COUNTY SOIL CONSERVATION DISTRICT
714 LACEY ROAD, FORKED RIVER, NJ 08731
(609) 971-7002, FAX: (609) 971-3391, EMAIL: INFO@SOILDISTRICT.ORG.

SEAL:

CBA
TYLER LITTLEFIELD
NJ PE NO. 24GE05934600

REV.	DATE	DESCRIPTION	BY	APPR.

STATE OF NEW JERSEY
NJDOT OFFICE OF MARITIME RESOURCES

TITLE:
SOIL EROSION AND SEDIMENT CONTROL NOTES & DETAILS

PROJECT: MAINTENANCE DREDGING AND CHANNEL IMPROVEMENTS FOR THE WARETOWN CHANNEL COMPLEX WITH BENEFICIAL USE AT THE LIGHTHOUSE CAMP CENTER
TOWNSHIPS OF OCEAN & BARNEGAT, COUNTY OF OCEAN, NEW JERSEY

DRAWN BY: EV	WSP USA Inc. CERTIFICATION OF AUTHORIZATION NO. 24GA28029800	PROJECT NO.
CHECKED BY: MJM		SHEET 16 OF 16
SCALE: AS SHOWN	MICHAEL J. MARANO NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE04087500	DWG. NO. SESC-02
DATE: APRIL 2025		

T:\30902741\6313 - Lighthouse Camp Restoration\env_permits\30902741 6313 - Lighthouse Camp_SHT04_SESD1.dwg WSP USA - BLACK.CTB

Lighthouse Center Adaptive Management and Monitoring Plan

NJDEP FW is seeking to enhance coastal resilience, improve hydrology, elevate areas that can support a healthy marsh ecosystem and increase carbon storage and sequestration. The 194-acre property is located in a highly developed coastal area and encompasses diverse habitats including salt marsh, maritime forest, a brackish impoundment, and non-bathing beach shoreline.

The marsh has suffered significant loss and degradation due to man-made alterations and legacy land use practices. Historical grid ditching and agricultural activities disrupted natural water flow, creating dense channel networks and stagnant pools that have led to marsh platform degradation, vegetation loss, and unnatural mudflat expansion. The site's shoreline and vegetative marsh is currently eroding and remains highly vulnerable to rising sea levels and increased storm activity.

This section describes an adaptive management and monitoring strategy focusing on three project areas:

- Project Area A: Salt Marsh Habitat Restoration
    - Project Area A is located in the southern portion of the project site. Project Area A includes a total of 35 acres and includes a mix of degraded vegetated marsh and open water channel areas. 35 acres will be restored using a combination of low-tech/low-cost marsh restoration techniques to improve hydrology, encourage sediment accretion, and revegetation of native species. Work includes a combination of remediating historic grid ditching using bundled vegetation to accrete sediment and restoring hydrologic connections through creating new runnels and ditch clearing.

- Project Area B: Beneficial Use for Restoration and Public Access

Project Area B is located in the northern portion of the project site. Project Area B includes two distinct subareas: a large mudflat with open water, and an impounded boat channel area. The engineer of record for Project Area B is WSP USA. The proposed project approach for Project Area B includes:

    - Mudflat Restoration: Project Area B is a total of approximately 15.75 acres and is dominated primarily by mudflats and open water (9.19 acres). Sediment will be used to rebuild marsh elevations and restore native marsh vegetation. Current elevations range between 0.21-0.64 feet NAVD88. The proposed project will raise the marsh platform to design elevations between 0.70-2.00 feet NAVD88 to create a mix of low marsh and high marsh, retaining a small tidal mudflat to provide foraging habitat for wading birds.

- Boat Channel: Project Area B includes a 1,450 linear foot former boat channel. Between 1995 and 2002, sand migrated southward. The mouth of the canal shoaled in, effectively blocking the channel opening and creating an approximately 1.85-acre open water impoundment area. The proposed project will re-open the connection between the canal and Barnegat Bay to reestablish tidal exchange and facilitate re-activation of the site for human-powered boating activity. Existing water depths within the impoundment are between 0 and -5 feet at mean low water (MLW). The proposed project will perform maintenance dredging to -4 feet plus 1 foot of allowable overdredge to reopen the channel for kayaks, canoes, and small, nonmotorized boats. Sediment generated from maintenance dredging activities will be beneficially used on site to support raising marsh elevations in Project Area B.

- Project Area C: Shoreline Restoration
  - The southern shoreline is approximately 1,300 linear feet along Barnegat Bay. The objective of the shoreline restoration work is to repair elevation deficits from erosion to the marsh through passive nourishment and overwash, while reestablishing a wave-attenuating natural beach that was lost due to ditching (prevented natural overwash). The proposed project will address historic shoreline loss and rapid erosion by placing 70+% sandy dredged material along the existing shoreline for the purposes of renourishment and to reestablish an approximately 3-acre pocket beach. The proposed shoreline will be constructed below the spring high tide line to a proposed elevation of 3.3 feet NAVD88.

  - In addition to the nearshore sand placement along the shoreline, Project Area C will be passively nourished by strategic placement of an approximately 0.77-acre sand nourishment bar (feeder bar) to the northeast of the shoreline. These features may be stabilized, if needed, using natural materials, like biodegradable shell bags, native plants, and vegetative material. The shoreline treatment will reestablish natural and lost beach habitat, protect and stabilize exposed peat and promote revegetation to retain carbon-rich soil and increase the project site's carbon storage rates. Sandy material will be sourced from nearby State navigation channels.

This Plan provides a variety of options for the project team to use to achieve restoration goals when construction techniques, material characteristics, weather conditions, or equipment present challenges to achieving project goals or that may result in undesirable impacts. The information and methods will be used to communicate clear expectations between the project team members and bidding contractors on what might be asked of them during construction when certain field conditions are observed. Monitoring and management activities associated with subsequent project phases and features are also addressed in this plan as part of the wholistic restoration approach to the site.

The project team is composed of:

- Landowner: NJ Department of Environmental Protection Fish and Wildlife (NJDEP FW)
- Land and Facilities Manager: The Natural Resource and Education Foundation of NJ (NREF)
- Habitat Lead: The Nature Conservancy
- Project Area A Construction Team
    - Construction Project Manager: Ducks Unlimited LLC
    - Engineer of Record: Ducks Unlimited LLC
    - Contractor: N/A – volunteer crew
- Project Area B and C Construction Team
    - Construction Project Manager: NJ Department of Transportation Office of Maritime Resources (NJDOT OMR)
    - Resident Engineer (RE): NJDOT OMR
    - Engineer of Record: WSP USA, Inc.
    - Construction Management Services: WSP USA, Inc.
    - Design Team: WSP USA, Inc. and Gahagan and Bryant Associates (GBA)
    - Contractor: (TBD)

I. Project Area A Construction

For Project Area A, access to the site will be on foot or airboat. Field crews will approach the site from the National Resource Education Foundation's facilities and site access road. Volunteer field crews will start downstream and work upstream, prioritizing first work areas that are difficult to access. The crews will focus first on cutting runnels and clearing ditches, then move on to ditch remediation by filling in proposed areas in small lifts to match surrounding tidal marsh elevations. A field inspector will be on site to direct field crews on cutting and filling activities, using survey tools and flags to confirm design elevations are met.

II. Project Areas B and C Construction

For Project Areas B and C, access to the site will be primarily by water via the dredge barge and pipeline. A small, 150-foot-wide temporary construction access area will be established near the head of the boat channel to provide marsh equipment and pipeline access to Project Area B's mudflat area. The pipeline will be directed to six fill areas to build up the marsh platform in the interior mudflat and open water/tidal water areas, as depicted on the permit plans. The pipeline will also be used to pump sandy material to perform the shoreline restoration work within the permitted template and to create the sand nourishment feeder bar. A resident engineer and field inspector will be on-site to survey and monitor placement activities.

Observation and management of the contractor is a critical component of the construction phase of every restoration project that beneficially uses dredged material. This project will include the same level of oversight as is typical of every other NJDOT project with an inspection team trained in beneficial use projects and managed by a trained Resident Engineer (RE). During construction,

the contractor's progress at both the dredging and placement sites will be observed continuously by NJDOT. NJDOT's RE will coordinate with The Nature Conservancy, NJDEP FW, and NREF staff.

The progress of the project will be reported daily and summarized weekly in a standard NJDOT construction reporting format. These reports will contain detailed photos and technical narratives that describe site conditions, equipment, personnel, and dredging/placement activities. A final project summary report will be generated at the project completion. These reports will be available to the project team as soon as they are vetted through the NJDOT review process.

Daily meetings will be held with the contractor and project team members to ensure compliance with project plans, specifications, and permits, and to ensure the safety of field personnel and visitors. Accommodation will be made for TNC, NJDEP FW, NREF, and regulatory staff to observe field meetings, dredging, and placement activities. Site visits must be arranged in advance through the RE to ensure the safety of all and to select appropriate locations from which to observe regulated activities.

2.1 Dredging and Dredged Material Placement

Sediment from the channels may be dredged with a hydraulic cutterhead dredge and pumped via pipeline into the restoration site. Alternatively, but similarly, material may be dredged mechanically and barged to the placement site where it is unloaded and turned into a slurry for hydraulic placement. During the initial dredging and placement of material, the contractor will be expected to meet the design criteria as defined in the bid documents and must comply with the approved permits. The dredging contractor is not responsible for achieving project goals beyond those defined in the bid documents and approved permits. The project team's role is to determine if restoration goals have been met and to implement appropriate adjustments as necessary to reach those goals.

The placement of dredged material within the site will follow best management practices as described below:

- Review and discuss contractor work plan submittal prior to mobilization and start of dredging operations to ensure the proposed means and methods are sufficient to achieve the required fill placement, management, and overall dredging production schedule.
- Review contractor daily reports containing progress surveys, estimated quantity dredged, estimated material types dredged, effective time dredging, rate of dredging, and other detailed data on operations at the dredging and placement areas.
- RE and construction inspection staff will be on site daily during placement to monitor and report on contractor operations.

- NJDOT inspectors and consultants will be on site daily during placement to visually observe the placement flow rate, slurry levels, sediment elevations, and retention of sediment.
- The pipeline will be inspected daily for leaks and repaired promptly when and if needed. Lost sediment may be retrieved as necessary and brought to the project site.
- Daily meetings will be held between the project team and the contractor to review current operations, adaptive management strategies, and potential revisions as needed. Potential daily construction operation revisions may include, but are not limited to:
    - Increase monitoring frequency, data collection, and placement analysis.
    - Installation of training berms, channel blocks, and/or modifying contractor equipment.
    - Grading of placed sediment to reduce elevation and/or excessive ponding.
    - Increase distribution of sediment using "Y" valves or other means and methods.
    - Increase number of inflow points to increase the manageability of the sediment.
    - Repeat inflow at previously pumped areas below target placement elevations.

2.2 Elevation

The following aspects of elevation that will be carefully monitored and managed during construction of Project Areas B and C:

- the elevation of the sediment slurry
- the elevation of placed sediment
- the elevation of re-graded berms during berm flattening
- the elevation of surplus sediment placed when re-establishing hydrology

It is important that the slurry spreads over a large area, and that the water freely flows across the site and drains into the surrounding waterways. Should greater retention be required, or if the placement results in ponding, target sediment slurry elevations will be monitored, and limits may be set to ensure sediment placement remains within the pre-determined "not to exceed" elevations.

During construction, the following items will be monitored daily, and actions taken as necessary:

- The contractor will establish a monitoring cell grid with the project team and install grade stakes in each cell. Target elevation, minimum elevation, and "not to exceed" elevation will be clearly marked on the plans and on each stake.
- The NJDOT/OMR team will monitor sediment elevation daily using a combination of aerial drone photography, RTK ground checks, and visual inspection, as necessary. They will identify areas where the placement elevations are not within vertical tolerances and communicate this to the contractor daily.

- Daily meetings will be held between the Project Team and the contractor to review current operations, adaptive management strategies, and potential revisions, as needed. Potential daily construction operation revisions may include, but are not limited to:
    - Redirect the slurry to avoid excessive elevation, as necessary.
    - Redirect the slurry to add elevation if needed.
    - Reduce inflow rate into any given cell or area.
    - Direct slurry flow using a combination of swales, training berms, diversion ditches, or equipment to meet target grades and avoid excessive elevation.
    - Redistribute areas of excessive elevation by directing flow and/or equipment.
    - Add sediment to cells as needed to achieve target grade and elevation.

2.3 Sediment Slurry Retention

It is important for the overall success of the restoration that the sediment slurry be retained long enough to allow the sediment to fall out of suspension and deposit into the targeted placement areas, as well as build elevation sufficient to achieve the grades necessary to promote marsh vegetation. It is also important that the pumped slurry does not create excessive scouring or channelization that will impede settlement, change the location or extent of desired platform features, or create off-site impacts like shoaling.

Based on analysis of the dredged material and the technology expected to be employed by the contractor, the slurry will be retained long enough to build the desired elevations and grades without additional controls or structures outside of the structures installed to close gaps in the perimeter berm before pumping. The inflow of the slurry will be monitored during construction and an evaluation made as to whether the inflow needs to be adjusted to increase retention during construction.

During construction, the following items will be monitored daily, and actions taken as necessary:

- Using a combination of visual and aerial observation techniques, the inspector will observe and record:
    - Occurrences and locations of scouring or channelization of inflow
    - Erosion of marsh platform or bottom sediments
    - Excessive ponding on existing or built marsh platform
    - Excessive shoaling in adjacent waterways
    - Efficiency of slurry water drainage

- The construction team will manage the inflow to retain as much sediment as possible using these or other techniques as necessary:
    - Construct ditches or swales to divert energy
    - Add flow restriction devices or distribution networks
    - Increase the number of inflow points

- Place into multiple cells simultaneously
- Change operator equipment
- Reduce the rate of dredging

2.4 Water Quality Impacts

The sediment from the channels to be dredged has been characterized and meets the site placement criteria for wetland restoration. Therefore, water quality impacts to be monitored and managed during construction is excessive turbidity and the presence of a sediment plume in nearby waterways. Initially, a sediment plume will be monitored visually using a combination of on-water, on-ground, and aerial methodologies. If a plume is seen to extend beyond the permitted limit of disturbance, efforts will be made to quantify suspended sediments being transported and to employ methods to reduce the concentration of sediment or the extent of the plume.

During construction, the following items will be monitored daily, and actions taken as necessary:

- Using a combination of on-water, on-ground, and aerial methods, the character and extent of a sediment plume will be noted.
- If a plume is seen to extend beyond the permitted limits of disturbance, the plume will be further evaluated using a nephelometer and/or by taking water samples to determine the concentration of suspended solids and the extent of the plume both linearly and with depth in the water column. This information will be used to determine the amount of sediment carried by the plume and the rate of sediment loss and estimate the potential for the plume to cause shoaling in adjacent waterways.
- The NJDOT/OMR team will take action to reduce excessive turbidity using these, or other techniques as necessary:
    - Install channel blocks, turbidity curtains, haybales or other sediment retention devices into the return drainage channels as needed to reduce off site sediment loss.
    - Install silt fence, training berms, or other appropriate devices and/or construct diversion ditches or swales as needed to encourage sediment retention and reduce loss.
    - Reduce the rate of dredging
    - Increase the number of inflow point

2.5 Hydrology

Changes to the tidal hydrology within the project area are expected and desired to achieve project goals. The project has been designed to achieve hydrology that will encourage growth of native marsh vegetation across the site. The project is currently designed to maintain the existing main tidal channels within the limit of disturbance for the purposes of 1) maintaining

effective tidal flushing within the project area; 2) maintaining existing drainage and navigation patterns outside of the project area by minimizing shoaling; and 3) encouraging establishment of native marsh vegetation across the site. Smaller tidal creeks and runnels will be initially filled during initial placement activities and then re-established following placement of the dredged material and a period of material settlement.

During construction, the following items will be monitored daily, and actions taken as necessary:

- Existing marsh channels designated to remain open to tidal flow will be monitored and measured for sedimentation using RTK, lead lines, or bathymetric surveys.
- Up to five tide gauges will be installed around the project area to monitor tidal fluctuations and off-site water surface elevations.
- Daily meetings will be held between the Project Team and the contractor to review operations, adaptive management strategies, and potential revisions, as needed. Potential daily construction operation revisions may include:
    - Install additional channel blocks and/or turbidity curtains.
    - Reduce inflow and/or change the distribution of sediment inflow.
    - Improve site hydrology by excavating runnels or channels within the approved limits of disturbance.
    - Keep excavated soil on site at or below maximum elevation.
    - Remove sediment from channels on-site or off-site as needed. Replace dredged sediment into approved placement areas.
    - Adjust design grades as needed.

Final marsh placement grades and elevations achieved during construction will be documented in an as-built plan.

III. Post-Construction Monitoring and Adaptive Management Strategies

It is expected that following sediment placement, the material will consolidate as water content decreases. The weight of the dredged material will also cause some settlement of the underlying (original) soil layers. As-built marsh grades will be influenced by daily tidal actions as fine particles are redistributed. While the placement design assumes an expected rate and extent of consolidation and settlement rates based on geotechnical testing, final grades at any given location may slightly deviate from those shown on the plans. Variances in design versus constructed grades may or may not prove critical to the overall goal of restoring, elevation, hydrologic function and plant communities. The degree to which distinct types of monitoring will occur may depend on the rate at which different areas of the project progress. Practically speaking, the site will be monitored by the TNC-led restoration team for a minimum of 2 years to learn and share how the project evolves.

The proposed project has an Adaptive Management and Monitoring Plan that will guide decision making during construction and post-construction activities. Adaptive management recognizes

that working in dynamic natural systems like the proposed project site brings some uncertainty about how environmental conditions will respond to the proposed restoration design and construction approach. The Adaptive Management and Monitoring Plan articulates the steps for monitoring the site during construction to minimize environmental impacts (e.g. turbidity, loss of sediment) outside the limits of disturbance and provides strategies for the field teams to take corrective action. The Plan also establishes protocols for post-construction monitoring to gather data on site performance and evaluate how the project is achieving its restoration goals over time.

3.1 Elevation Monitoring

It is expected that placed material will move across the site post-construction during the equilibration period and that some consolidation and settlement will occur from the as-built condition over time. NJDOT/OMR plans to conduct elevation monitoring of the project site for 2 years after construction to monitor the nature and extent of sediment movement and evaluate consolidation and settlement. A digital elevation model will be developed annually and used to inform hydrologic analysis. A monitoring report will be prepared by mid-December of each calendar year.

3.2 Hydrology Monitoring

A series of pressure transducers will be installed by NJDOT/OMR at various locations within the site to monitor the tidal hydrology up to 2 years after sediment placement. The gauges will continuously measure water level at 30-minute intervals. It is anticipated that up to five gauges will be installed within the site, in similar locations as proposed to measure existing conditions and the preferred design alternative.

The collected data will be used to develop a tidal hydrograph to show daily tidal fluctuations. Photographs will be used to document changes in tidal elevation across a single tidal cycle. The tidal and visual data will also be used to help interpret the response of plant communities over the monitoring period.

If hydrology monitoring, in coordination with elevation monitoring, shows that the site is not functioning as expected, the project team will discuss whether to apply post-construction adaptive management actions. These actions may include:

- Improve site hydrology by excavating runnels or channels within the approved limits of disturbance.
- Retain excavated soil on site at or below maximum elevation.
- Remove sediment from channels on-site or off-site as needed. Replace dredged sediment into approved placement areas.
- Utilize shell bags or other natural features to support sediment retention.
- Adjust design grades as needed.

Overall, the existing conditions indicate that tidal attenuation does not occur within the project limits. Referring to historical images, main channels which once provided tidal flushing to the entire site have since silted in, causing more water to remain onsite. Similarly, the channel that was created within Project Area B mudflat is located in an area that has been silted in and does not have enough capacity to aid in draining water from the site. The developed existing model reasonably replicates the available onsite gauge data within the site as well as the inundation conditions that support the different vegetation currently found within the marsh.

3.3 Vegetation Monitoring

The proposed project area is expected to revegetate with native species once proposed marsh elevations are established, and hydrologic connections are restored. The project team will monitor wetland vegetation coverage through its Adaptive Management and Monitoring Plan. Adaptive management strategies will be evaluated and applied if project goals are not met within expected project milestones.

Vegetation monitoring will be conducted in late summer by TNC led team over the first two growing seasons. Metrics will include species present, percent cover of all species, and special attention will be given to wetland areas considered temporarily impacted by construction efforts. Monitoring will be conducted primarily using unmanned aerial vehicles (UAV) due to the site's potentially unconsolidated nature. Ground-based surveys will occur as the site allows. The data will measure effectiveness of the restoration project and will help determine appropriate future management actions, which may include supplemental planting and invasive species management.

3.4 Submerged Aquatic Vegetation Monitoring

Members of the TNC led habitat team (NJDEP, USFWS, NREF etc.) are developing and launching a "SAV-vy Seeder" restoration program using the best available science to identify suitable areas for SAV restoration in Barnegat Bay and piloting low-cost methods including buoy deployed seed systems to reseed and vegetate areas where SAV has been lost using locally collected seeds and shoots. Post construction monitoring efforts will occur at the project site and nearby suitable SAV restoration sites.

SAV monitoring will be conducted in late summer by TNC-led team. Monitoring will begin prior to construction to establish baseline. Subsequent monitoring events would occur annually for a minimum of 2-years post construction. Metrics will include species present, density, and percent cover of all species. The team will also collect environmental data such as flow rates, water quality (temperature, salinity, dissolved oxygen, and turbidity), and sediment composition. Monitoring will be conducted using quadrant sampling, autonomous underwater vehicles, and remote sensing to gather data and assess metrics. The data will measure effectiveness of the restoration project and will help determine appropriate future management actions, which may include supplemental planting and invasive species management.