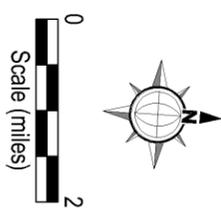
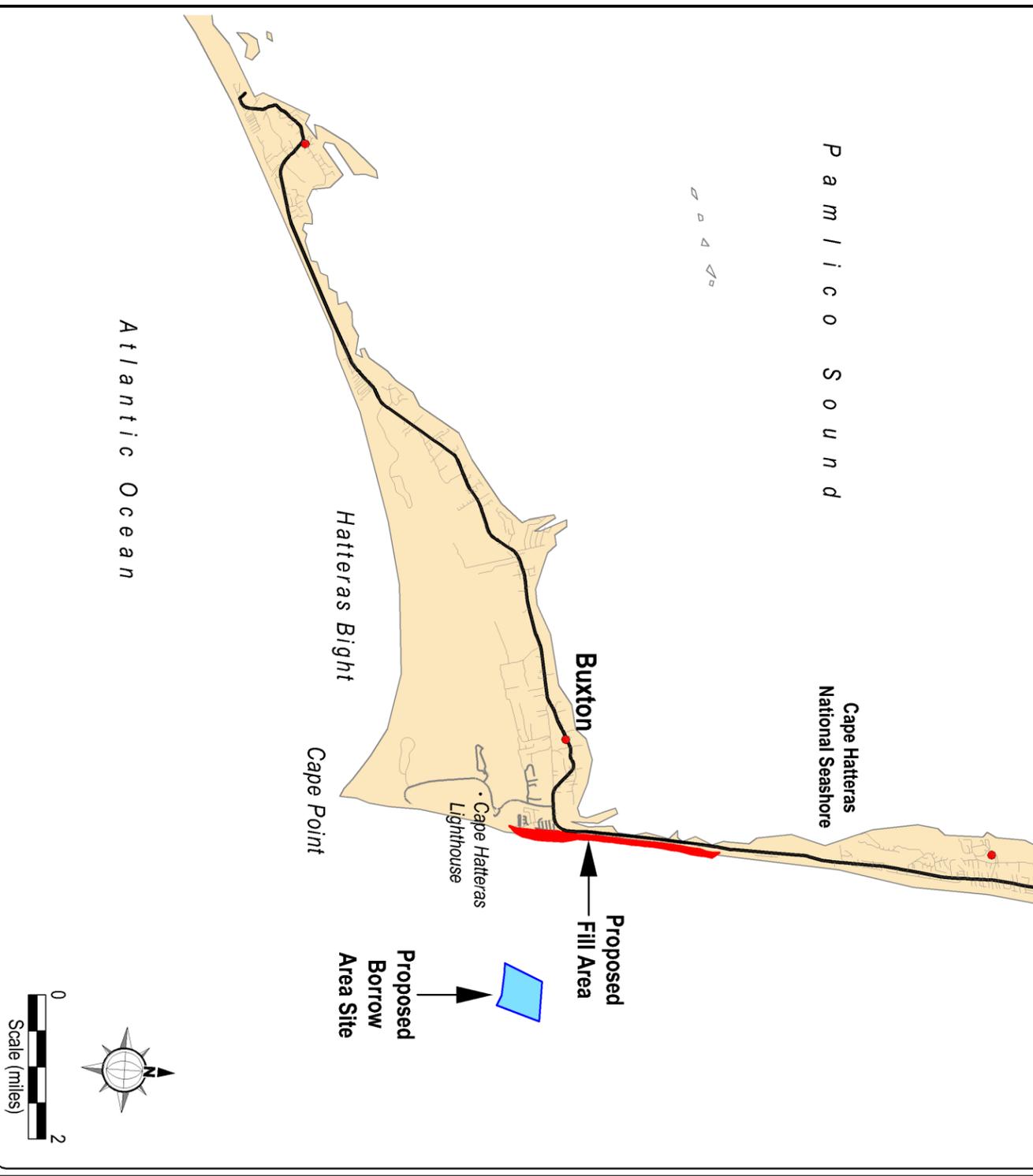
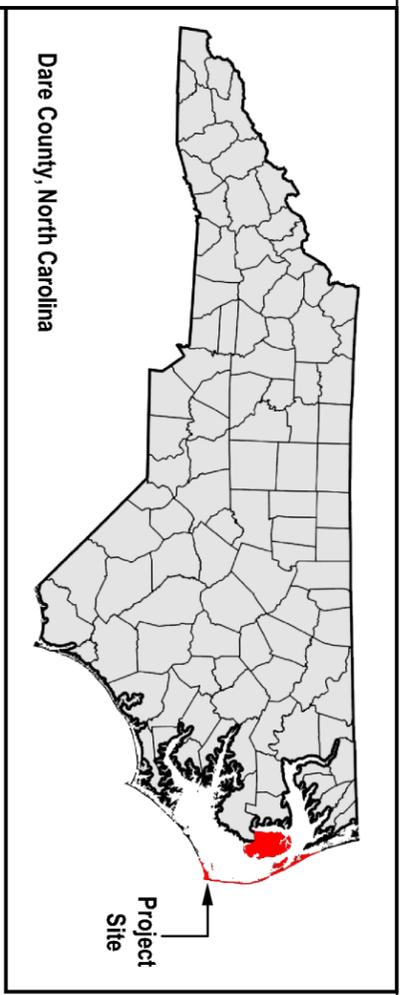
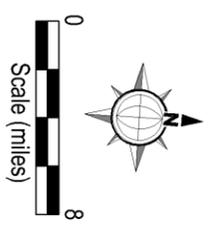


**Project Site Coordinates**  
 Latitude: 35° 16' 36" N  
 Longitude: 75° 31' 00" W



**Project site directions, from Nags Head, NC:**  
 Follow NC-12 S/Cape Hatteras National Park Hwy South.  
 Continue to follow NC-12 S for 44.3 miles to Haulover public beach access parking area.  
 North project limit is on beach side of NC-12 (National Park Service Beach) and extends 15,500 feet South toward Buxton, NC. South project limit is in the vicinity of the old Cape Hatteras Lighthouse location.



**Applicant:**  
 Dare County  
 954 Marshall Collins Dr.  
 Manteo, NC 27954

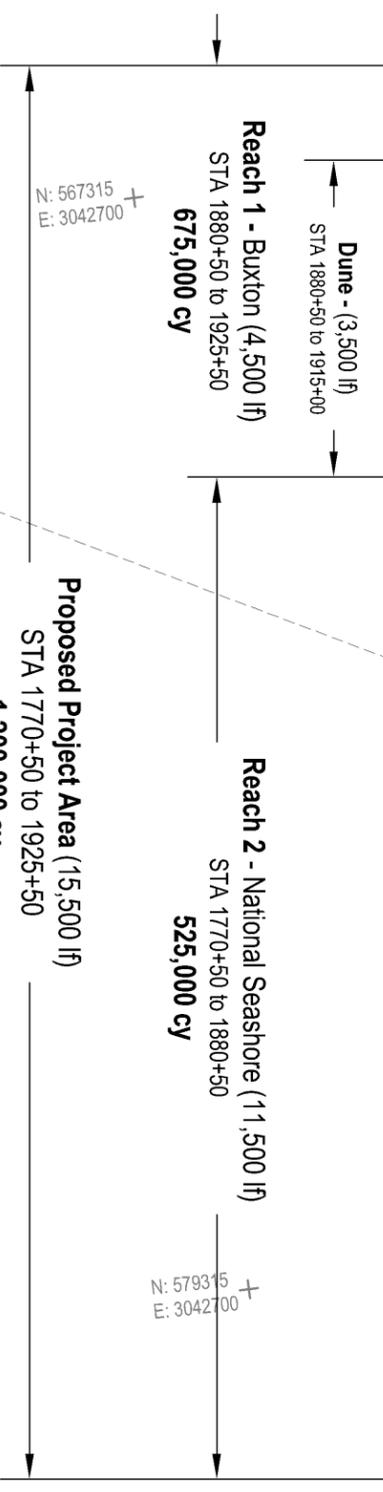
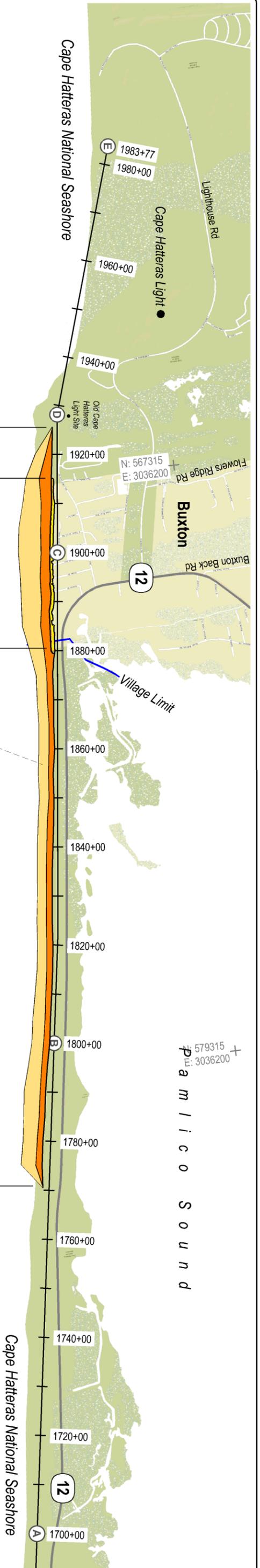
**Project:**  
 Beach Renourishment To Protect  
 NC Highway 12 At Buxton  
 Dare County, NC

**Drawing Title:**  
 Project Location  
 & Vicinity Map



SCALE: AS SHORNN  
 DATE: 28 May 2021  
 DRAWN BY: JIH  
 APPROVED BY: HLK  
 PROJECT #: 2403M

**01**

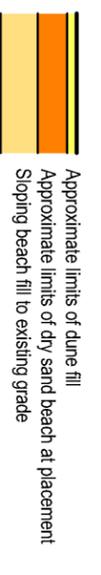
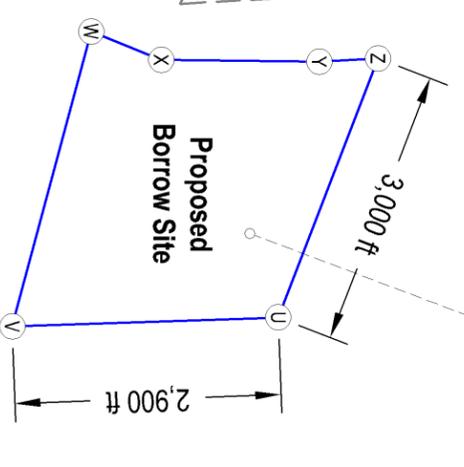
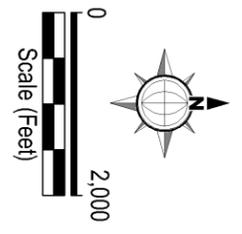


Project Baseline A-E Coordinate Chart		
Description	Northing	Eastng
A	588,679.534	3,041,236.832
B	578,776.557	3,039,847.210
C	568,839.562	3,038,736.306
D	566,043.964	3,038,445.962
E	560,711.538	3,036,849.925

**Fill Schedule**

- Reach 1 - Buxton (4,500 lf):**  
Fill volume = 675,000 cy/ft; Average Fill Density = 150 cy/ft  
Berm Elevation = +7 ft NAVD  
Seaward Slope = 1 on 15
- Dune Construction:**  
Dune Crest Elevation = +13 ft NAVD  
Dune Crest Width = ~40 ft  
Dune Seaward Slope = 1:4
- Reach 2 - National Seashore (11,000 lf):**  
Fill Volume = 525,000 cy; Average Fill Density = ~48 cy/ft  
Berm Elevation = +7 ft NAVD  
Seaward Slope = 1 on 15

Borrow Area Coordinates		
Point	Northing	Eastng
U	568721.83	3049889.64
V	568516.05	3052788.54
W	566396.01	3051592.00
X	565786.15	3050865.37
Y	565984.17	3049153.82
Z	566016.58	3048509.49



**Survey Datum:**  
Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
Project Baseline after CSE / CZR (2013)  
**Shoreline erosion assessment and plan for beach Restoration: Feasibility Report to Dare County Board of Commissioners, Coastal Science & Engineering, Inc. and CZR Inc.**



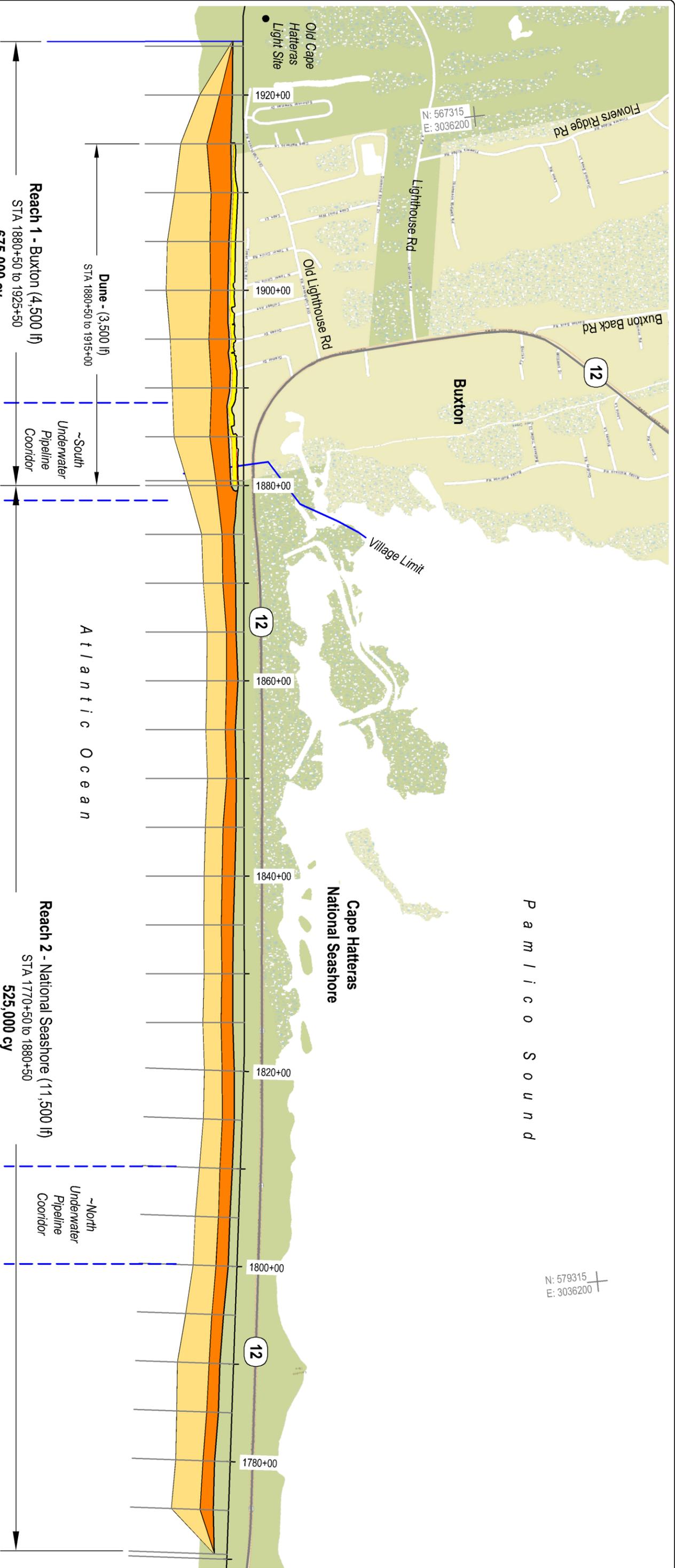
**Applicant:**  
Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

**Drawing Title:**  
**OVERALL PROJECT PLAN**



SCALE: AS SHOWN  
DATE: 28 May 2021  
DRAWN BY: JHH  
APPROVED BY: HLK  
PROJECT #: 2403M



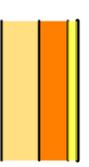
**Note**  
Fill design is based on the beach condition in August 2020. The actual limit of fill will be the +7' NAVD contour at the time of construction.

The final configuration and limits of beach construction will be determined based on conditions at the time of construction and the aggregate total fill volume that can be accomplished within the available budget for the project. The indicated quantities are maximum amounts to be permitted.

N: 567315  
E: 3042700

**Note**  
The project will not fill or cover any emergency shore protection structures such as sandbags. Buffers (no work areas) alongshore will be maintained around areas of active bird nesting at the time of construction in consultation with NPS biologists. To extent practicable, the construction berm will shift seaward of Mean Low Water at sites of nests then reemitter the existing beach outside of the buffer zone.

**Note:**  
A minimum of two underwater pipeline corridors will be used for transport of the sand slurry. From those points, land based pipes will run along the constructed berm.  
The order of beach filling alongshore will be determined in consultation with the National Park Service (NPS) biologists so as to avoid areas of active nesting by colonial water birds to the extent practicable.



**Survey Datum:**  
Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
Vertical: NAVD 88 (Feet)  
Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
Data collected: August 2020

MHW (+1.05 ft NAVD)  
MLW (-1.94 ft NAVD)



**Applicant:**  
Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

**DRAWING TITLE:**  
OVERALL PROJECT PLAN



SCALE: AS SHOWN  
DATE: 28 May 2021  
DRAWN BY: JHH  
APPROVED BY: HLK  
PROJECT #: 2403M

**03**

P a m l i c o S o u n d

N: 579315  
E: 3036200

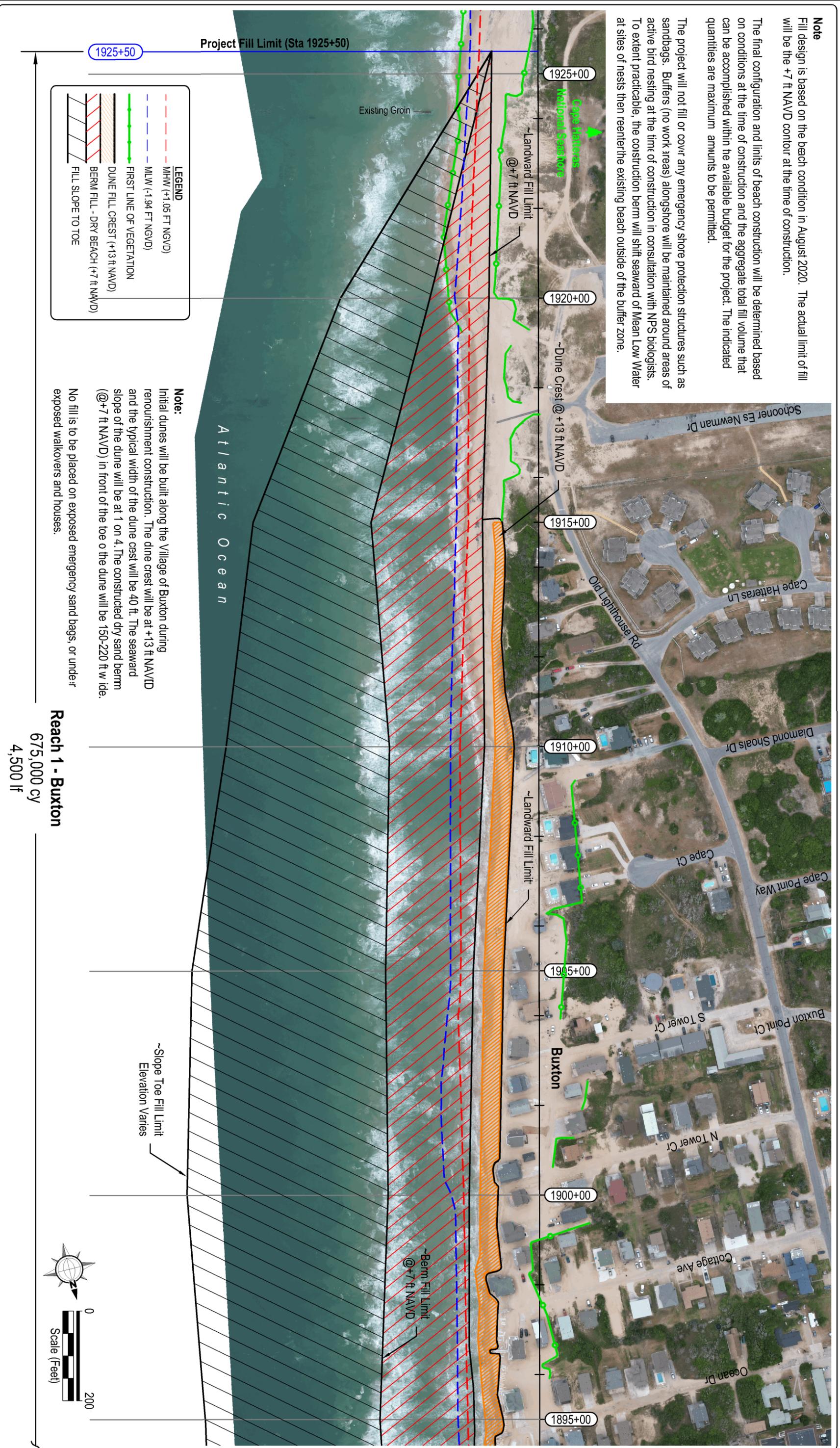
N: 579315  
E: 3042700

**Note**

Fill design is based on the beach condition in August 2020. The actual limit of fill will be the +7 ft NAVD contour at the time of construction.

The final configuration and limits of beach construction will be determined based on conditions at the time of construction and the aggregate total fill volume that can be accomplished within the available budget for the project. The indicated quantities are maximum amounts to be permitted.

The project will not fill or cover any emergency shore protection structures such as sandbags. Buffers (no work areas) alongshore will be maintained around areas of active bird nesting at the time of construction in consultation with NPS biologists. To extent practicable, the construction berm will shift seaward of Mean Low Water at sites of nests then reenter the existing beach outside of the buffer zone.

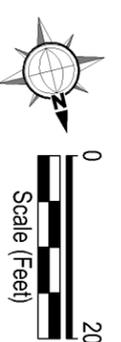


**LEGEND**

- - - MHW (+1.05 FT NAVD)
- - - MLW (-1.94 FT NAVD)
- FIRST LINE OF VEGETATION
- DUNE FILL CREST (+13 ft NAVD)
- BERM FILL - DRY BEACH (+7 ft NAVD)
- FILL SLOPE TO TOE

**Note:**  
Initial dunes will be built along the Village of Buxton during renourishment construction. The dune crest will be at +13 ft NAVD and the typical width of the dune crest will be 40 ft. The seaward slope of the dune will be at 1 on 4. The constructed dry sand berm (@+7 ft NAVD) in front of the toe of the dune will be 150-220 ft wide. No fill is to be placed on exposed emergency sand bags, or under exposed walkovers and houses.

**Reach 1 - Buxton**  
675,000 cy  
4,500 lf



**Survey Datum:**  
Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
Vertical: NAVD 88 (Feet)  
**Notes:** Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
Data collected: August 2020  
Aerial Image: 07 May 2021

MHW (+1.05 ft NAVD)  
MLW (-1.94 ft NAVD)



**Applicant:**  
Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

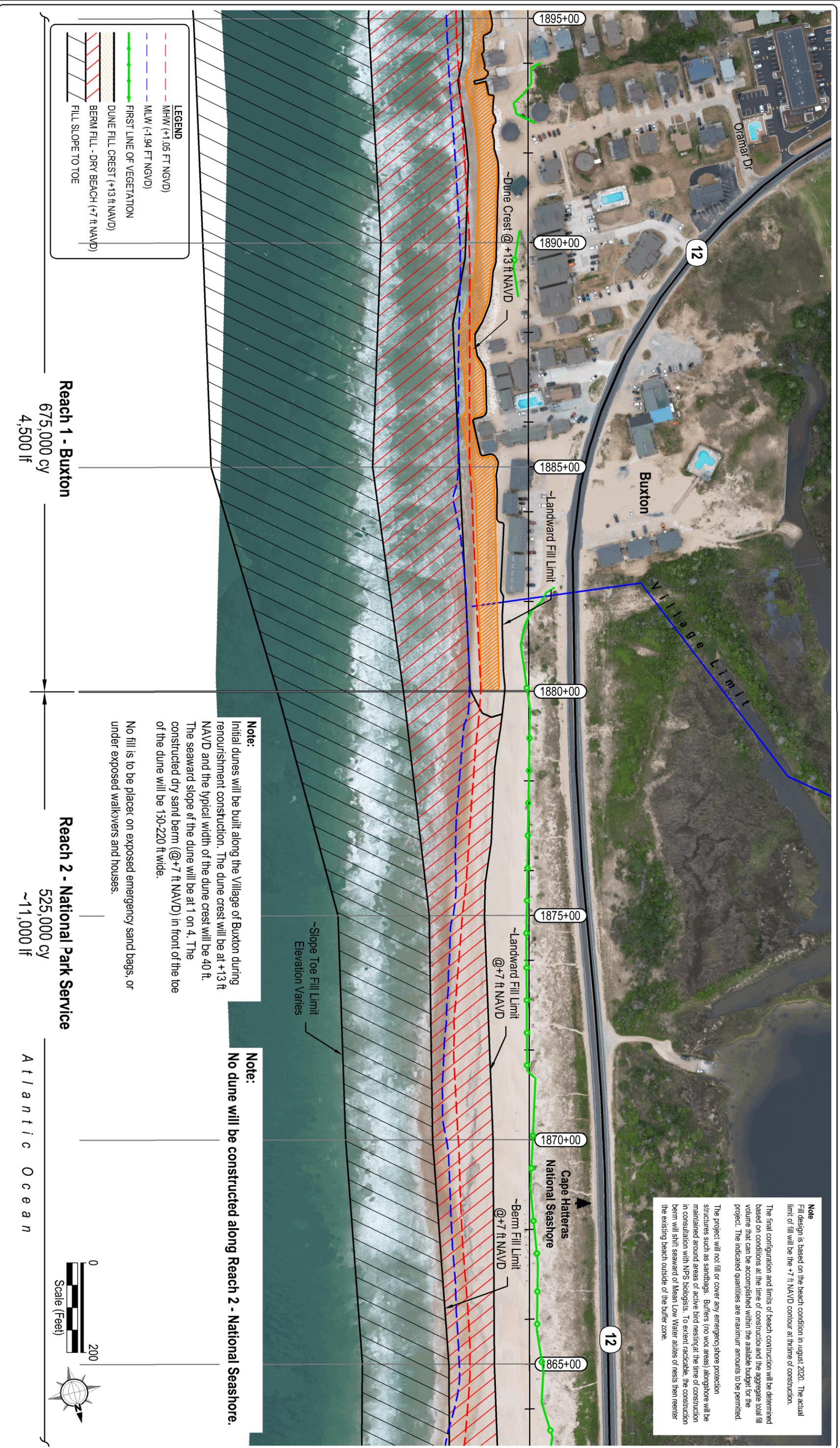
**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

**DRAWING TITLE:**  
PROJECT PLAN  
STA 1925+50 to STA 1895+00



SCALE:	AS SHOWN
DATE:	28 May 2021
DRAWN BY:	JJH
APPROVED BY:	HLK
PROJECT #:	2493M

**Note:**  
 Fill design is based on the beach condition in August 2020. The actual limit of fill will be the +7 ft NAVD contour at the time of construction.  
 The final configuration and limits of beach construction will be determined based on conditions at the time of construction and the aggregate total fill volume that can be accomplished within the available budget for the project. The indicated quantities are maximum amounts to be permitted.  
 The project will not fill or cover any emergency, shore protection structures such as sandbags. Buffers (no woody areas) alongshore will be maintained around areas of active bird nesting at the time of construction in consultation with NPS biologists. To extent practicable, the construction berm will shift seaward of Mean Low Water unless of necessity then reenter the existing beach outside of the buffer zone.



**Note:**  
 Initial dunes will be built along the Village of Buxton during renourishment construction. The dune crest will be at +13 ft NAVD and the typical width of the dune crest will be 40 ft. The seaward slope of the dune will be at 1 on 4. The constructed dry sand berm (@+7 ft NAVD) in front of the toe of the dune will be 150-220 ft wide.

No fill is to be placed on exposed emergency sand bags, or under exposed walkovers and houses.

**Note:**  
 No dune will be constructed along Reach 2 - National Seashore.

**Reach 1 - Buxton**  
 675,000 cy  
 4,500 lf

**Reach 2 - National Park Service**  
 525,000 cy  
 ~11,000 lf



A t l a n t i c O c e a n

**LEGEND**

- - - MHW (+1.05 FT NAVD)
- - - MLW (-1.94 FT NAVD)
- FIRST LINE OF VEGETATION
- DUNE FILL CREST (+13 ft NAVD)
- BERM FILL - DRY BEACH (+7 ft NAVD)
- FILL SLOPE TO TOE

**Survey Datum:**  
 Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
 Vertical: NAVD 88 (Feet)  
 Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
 Data collected: August 2020  
 Aerial Image: 07 May 2021



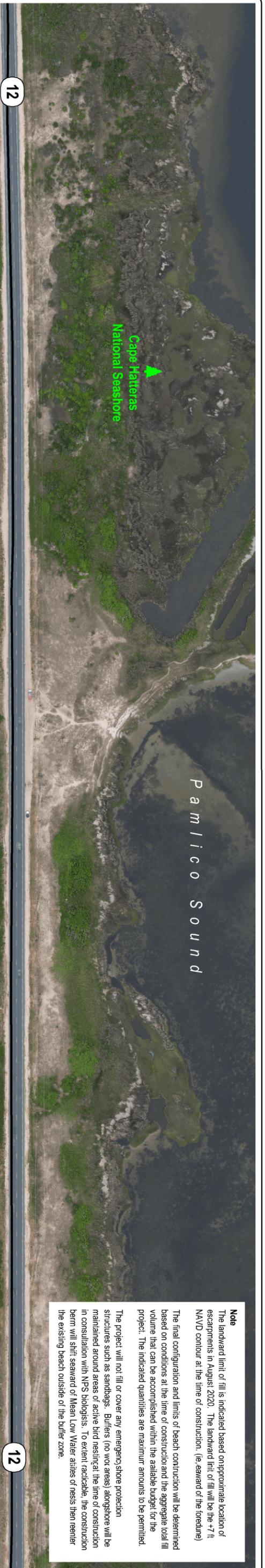
**Applicant:**  
 Dare County  
 954 Marshall Collins Dr.  
 Manteo, NC 27954

**Project:**  
 Beach Renourishment To Protect  
 NC Highway 12 At Buxton  
 Dare County, NC

**DRAWING TITLE:**  
 PROJECT PLAN  
 STA 1895+00 to STA 1864+00



SCALE:	AS SHOWN
DATE:	28 May 2021
DRAWN BY:	JJH
APPROVED BY:	HLK
PROJECT #:	2403M

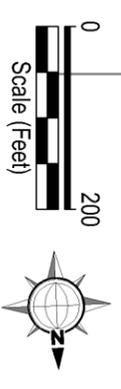


**Note**  
 The landward limit of fill is indicated based on approximate location of escarpments in August 2020. The landward limit of fill will be the +7 ft NAVD contour at the time of construction. (ie, seaward of the fence line)  
 The final configuration and limits of beach construction will be determined based on conditions at the time of construction and the aggregate total fill volume that can be accomplished within the available budget for the project. The indicated quantities are maximum amounts to be permitted.  
 The project will not fill or cover any emergent, shore protection structures such as sandbags. Buffers (no woody areas) alongshore will be maintained around areas of active bird nesting at the time of construction in consultation with NPS biologists. To extent practicable, the construction berm will shift seaward of Mean Low Water unless of nests then reenter the existing beach outside of the buffer zone.

LEGEND	
	MHW (+1.05 FT NAVD)
	MLW (-1.94 FT NAVD)
	FIRST LINE OF VEGETATION
	DUNE FILL CREST (+13 ft NAVD)
	BERM FILL - DRY BEACH (+7 ft NAVD)
	FILL SLOPE TO TOE

**Note:**  
 No dune will be constructed along Reach 2 - National Seashore.

**Reach 2 - National Park Service**  
 525,000 cy  
 ~11,000 lf



**Survey Datum:**  
 Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
 Vertical: NAVD 88 (Feet)  
 Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS:  
 Data collected: August 2020  
 Aerial Image: 07 May 2021

MHW (+1.05 ft NAVD)  
 MLW (-1.94 ft NAVD)



**Applicant:**  
 Dare County  
 954 Marshall Collins Dr.  
 Manteo, NC 27954

**Project:**  
 Beach Renourishment To Protect  
 NC Highway 12 At Buxton  
 Dare County, NC

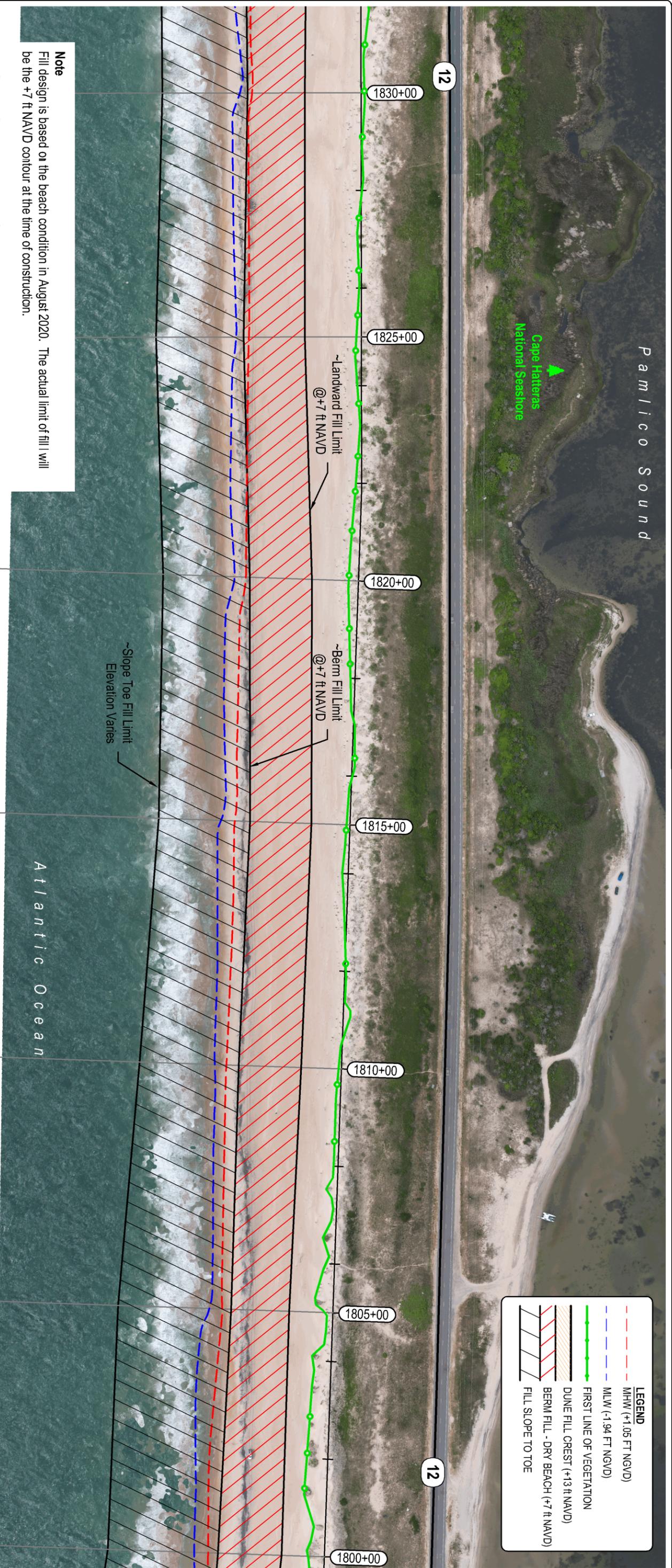
**DRAWING TITLE:**  
 PROJECT PLAN  
 STA 1862+00 to STA 1832+00



SCALE:	AS SHOWN
DATE:	28 May 2021
DRAWN BY:	JJH
APPROVED BY:	HJK
PROJECT #:	2403M

**06**

Cape Hatteras  
National Seashore



**Note**  
Fill design is based on the beach condition in August 2020. The actual limit of fill will be the +7 ft NAVD contour at the time of construction.

The final configuration and limits of beach construction will be determined based on conditions at the time of construction and the aggregate total fill volume that can be accomplished within the available budget for the project. The indicated quantities are maximum amounts to be permitted.

The project will not fill or cover any emergency shore protection structures such as sandbags. Buffers (no work areas) alongshore will be maintained around areas of active bird nesting at the time of construction in consultation with NPS biologists. To extent practicable, the construction berm will shift seaward of Mean Low Water at sites of nests then reenter the existing beach outside of the buffer zone.

~Slope Toe Fill Limit  
Elevation Varies

A t l a n t i c O c e a n

**Note:**  
No dune will be constructed along Reach 2 - National Seashore.

**Reach 2 - National Park Service**

525,000 cy  
~11,000 lf



LEGEND	
	MHW (+1.05 FT NGVD)
	MLW (-1.94 FT NGVD)
	FIRST LINE OF VEGETATION
	DUNE FILL CREST (+13 ft NAVD)
	BERM FILL - DRY BEACH (+7 ft NAVD)
	FILL SLOPE TO TOE

**Survey Datum:**  
Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
Vertical: NAVD 88 (Feet)  
Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
Data collected: August 2020  
Aerial Image: 07 May 2021

MHW (+1.05 ft NAVD)  
MLW (-1.94 ft NAVD)



**Applicant:**  
Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

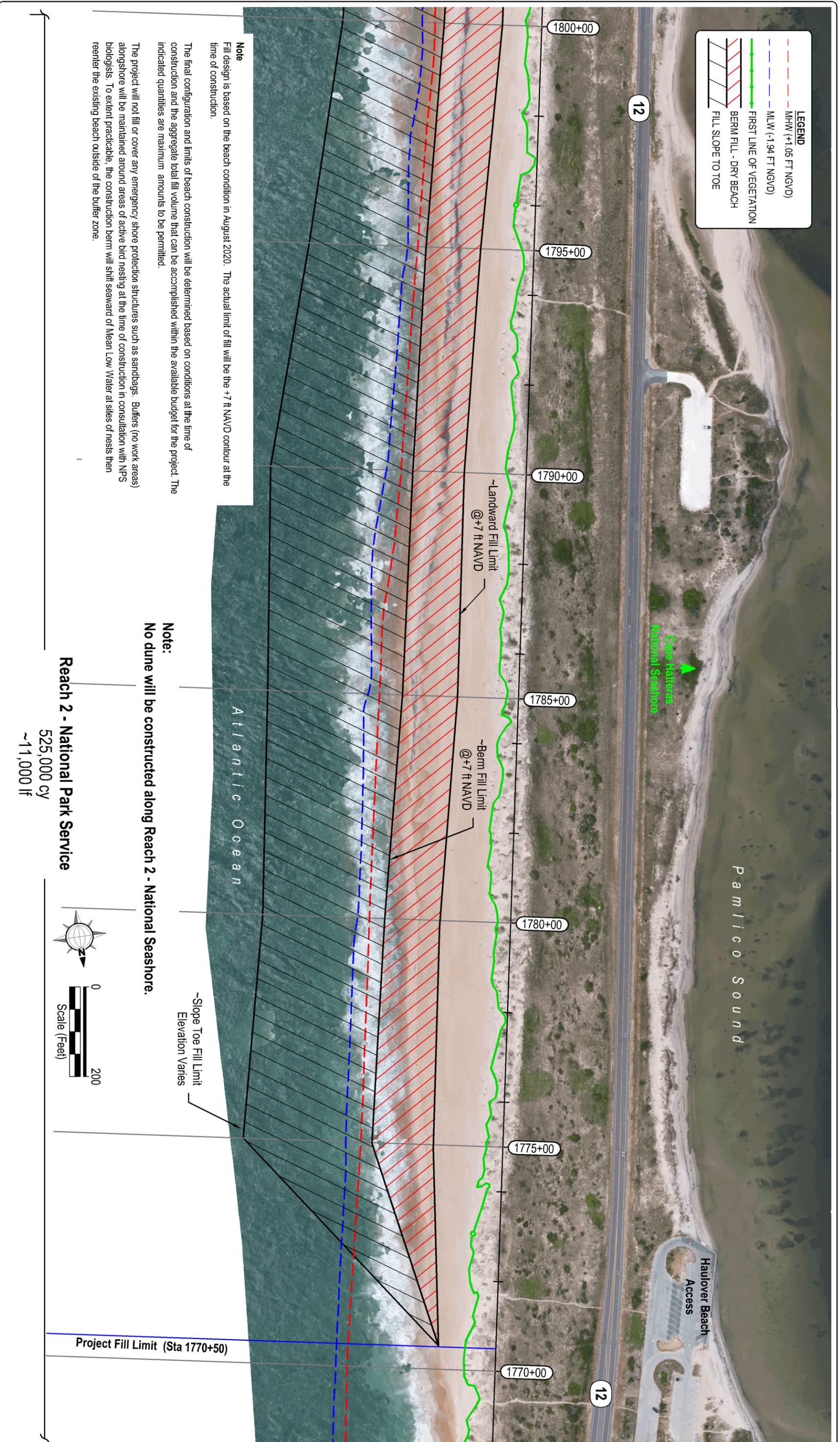
**DRAWING TITLE:**  
PROJECT PLAN  
STA 1832+00 to STA 1800+00



SCALE:	AS SHOWN
DATE:	28 May 2021
DRAWN BY:	JH
APPROVED BY:	HLK
PROJECT #:	2403M

**LEGEND**

- - - MHW (+1.05 FT NAVD)
- - - MLW (-1.94 FT NAVD)
- FIRST LINE OF VEGETATION
- BERM FILL - DRY BEACH
- FILL SLOPE TO TOE



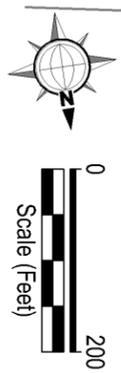
**Note**  
Fill design is based on the beach condition in August 2020. The actual limit of fill will be the +7 ft NAVD contour at the time of construction.

The final configuration and limits of beach construction will be determined based on conditions at the time of construction and the aggregate total fill volume that can be accomplished within the available budget for the project. The indicated quantities are maximum amounts to be permitted.

The project will not fill or cover any emergency shore protection structures such as sandbags. Buffers (no work areas) alongshore will be maintained around areas of active bird nesting at the time of construction in consultation with NPS biologists. To extent practicable, the construction berm will shift seaward of Mean Low Water at sites of nests then reenter the existing beach outside of the buffer zone.

**Note:**  
No dune will be constructed along Reach 2 - National Seashore.

**Reach 2 - National Park Service**  
525,000 cy  
~11,000 lf



**Survey Datum:**  
Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
Vertical: NAVD 88 (Feet)  
Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
Data collected: August 2020  
Aerial Image: 07 May 2021



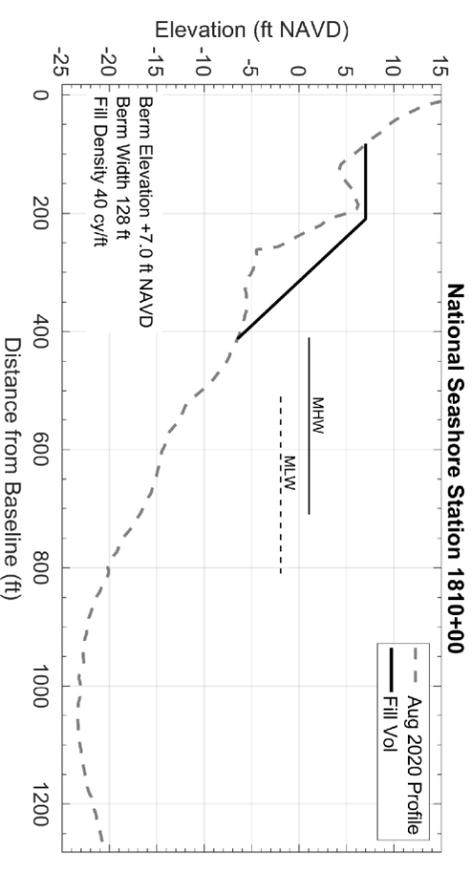
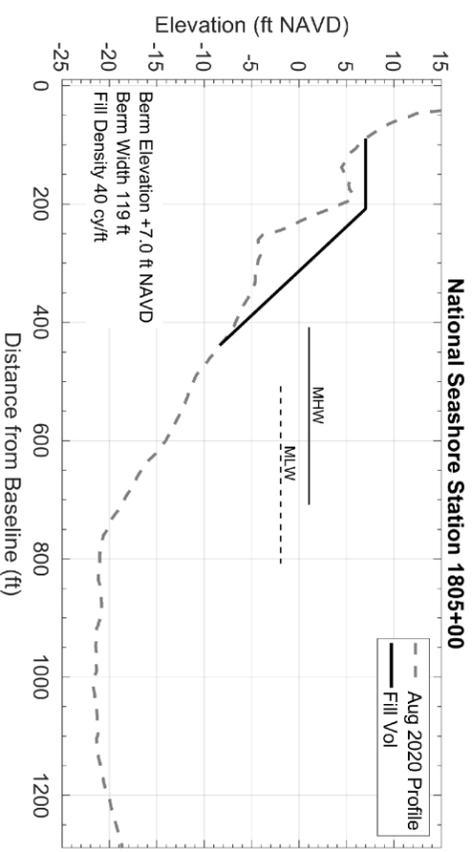
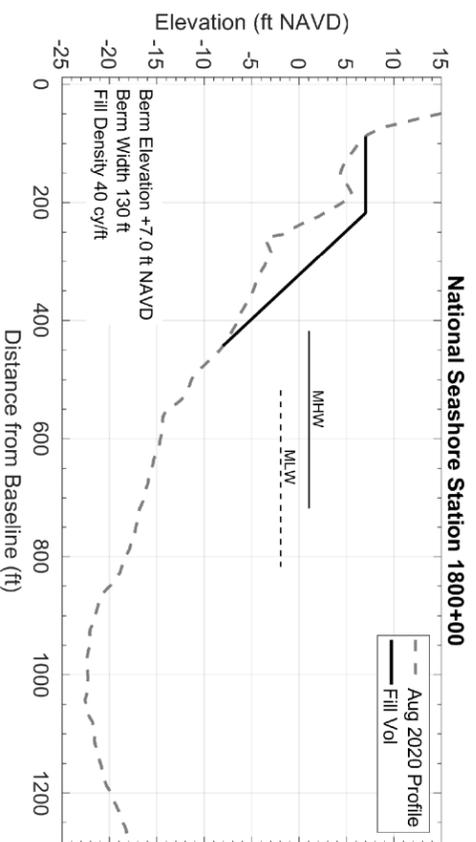
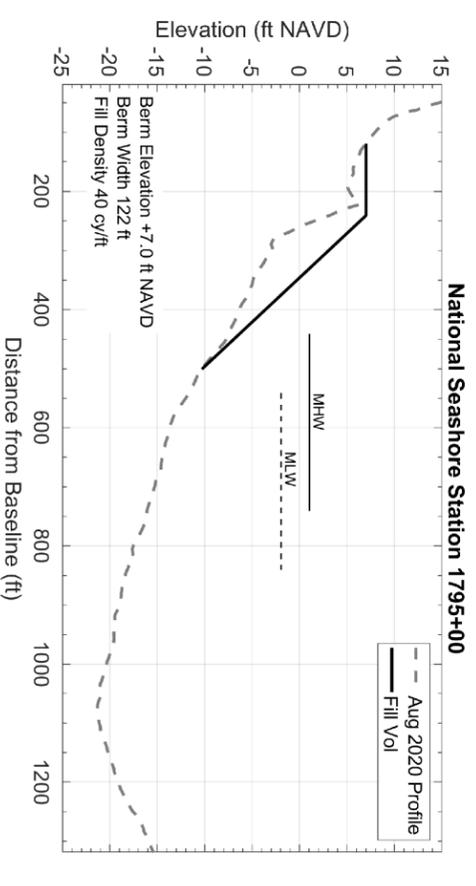
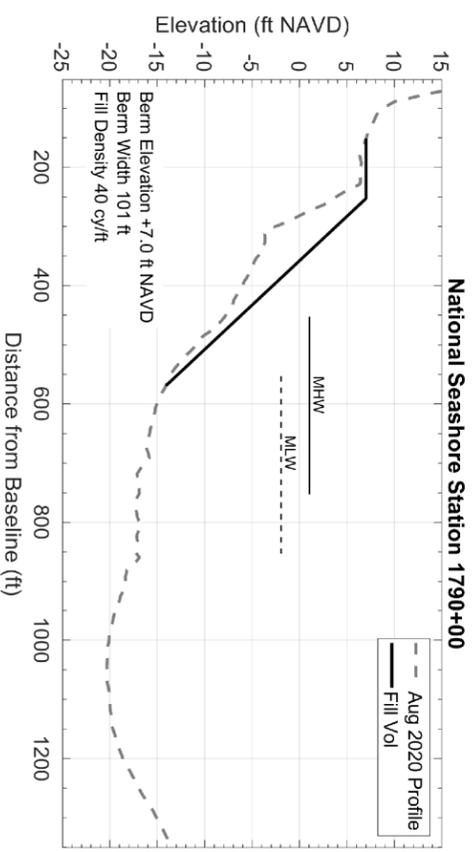
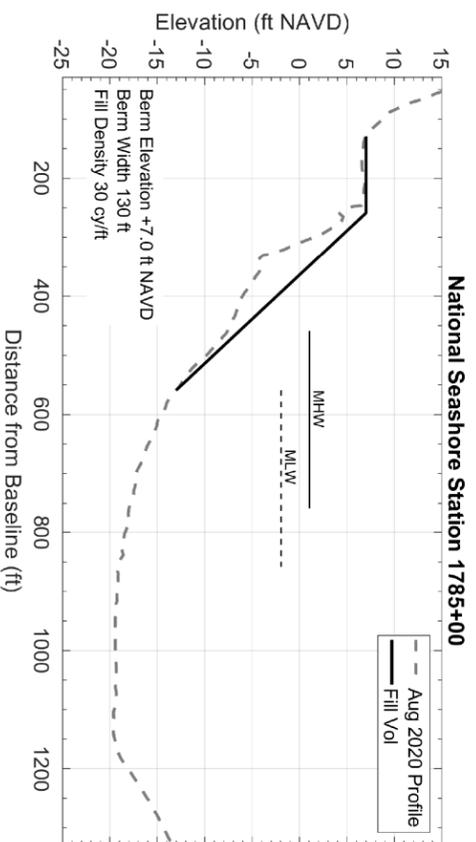
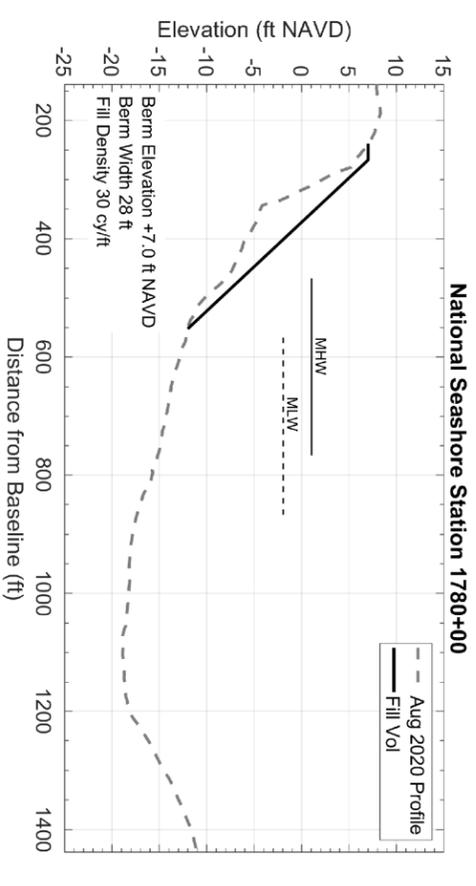
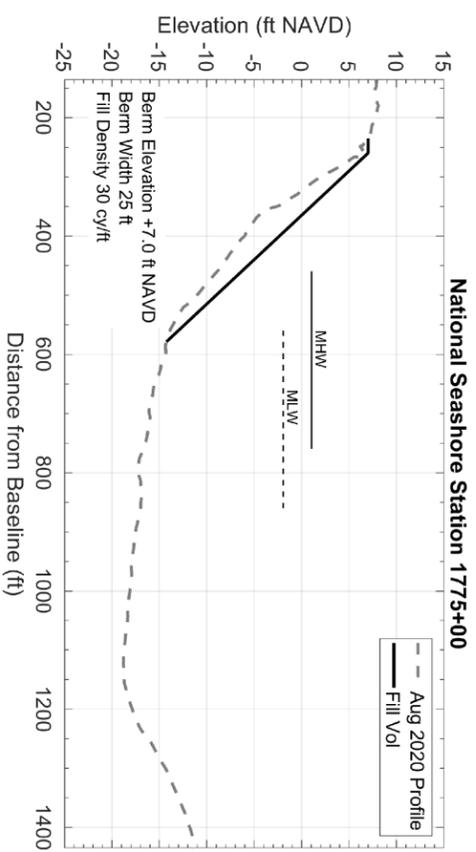
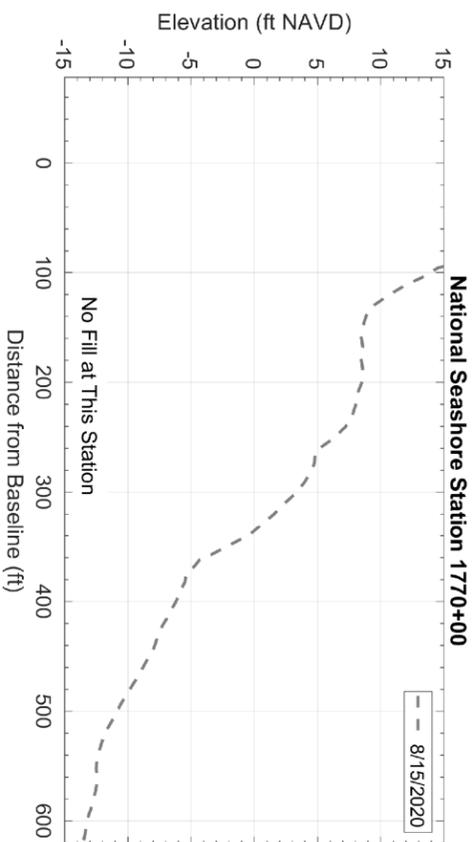
**Applicant:**  
Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

**DRAWING TITLE:**  
PROJECT PLAN  
STA 1800+00 to STA 1770+00



SCALE	AS SHOWN
DATE	28 May 2021
DRAWN BY	JH
APPROVED BY	HJK
PROJECT #	2403M



**Survey Datum:**  
 Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
 Vertical: NAVD 88 (Feet)  
 Vertical Exaggeration: 10:1  
 Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
 Data collected: August 2020

MHW (+1.05 ft NAVD)  
 MLW (-1.94 ft NAVD)



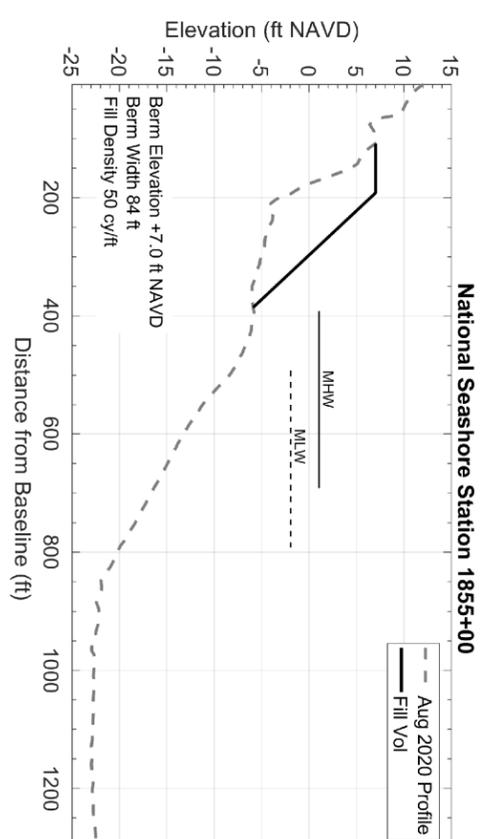
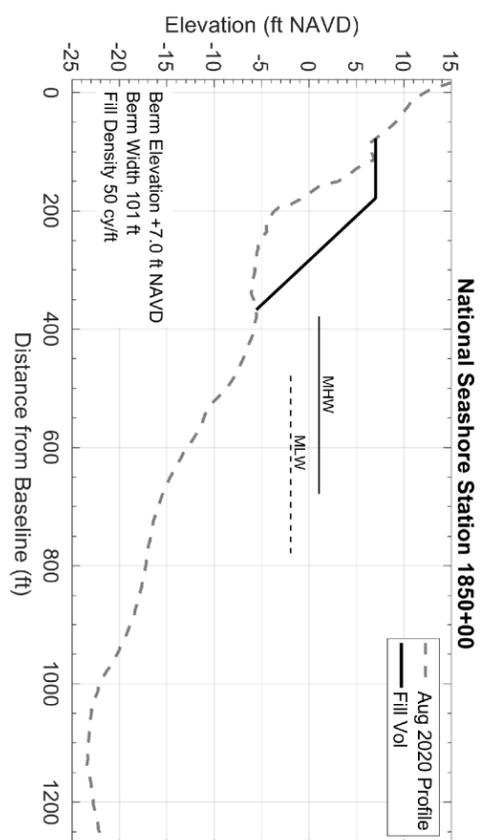
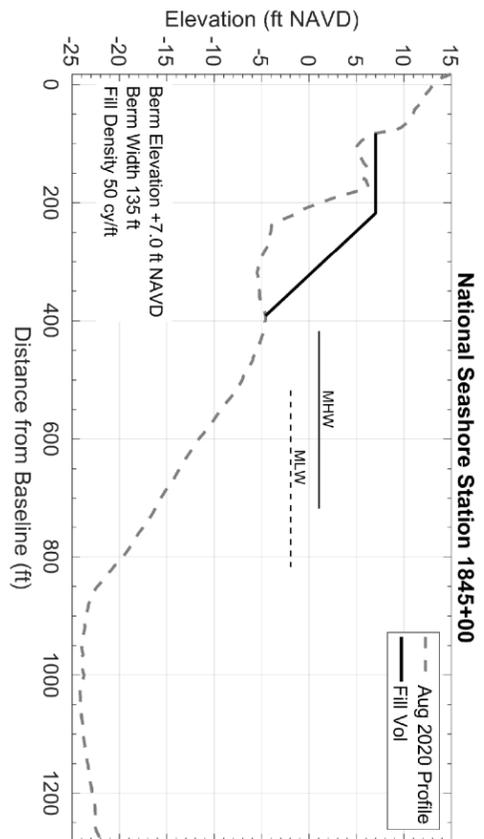
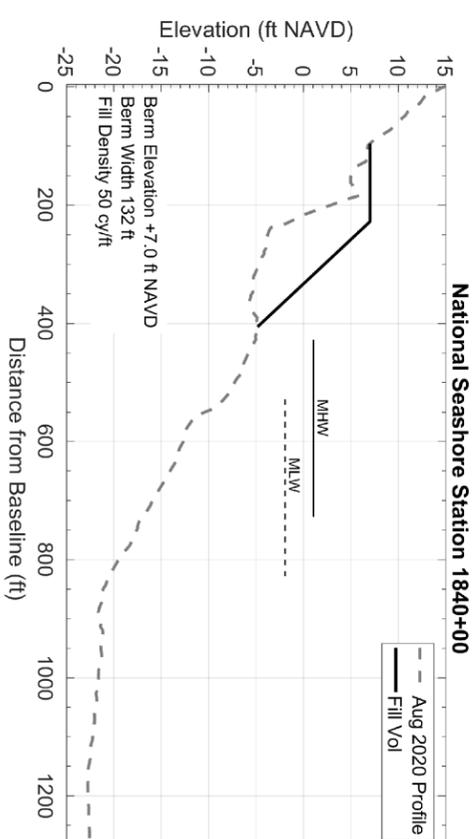
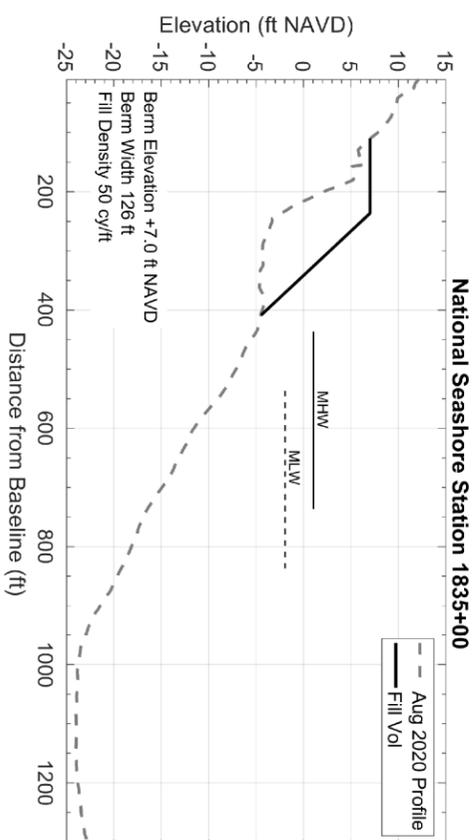
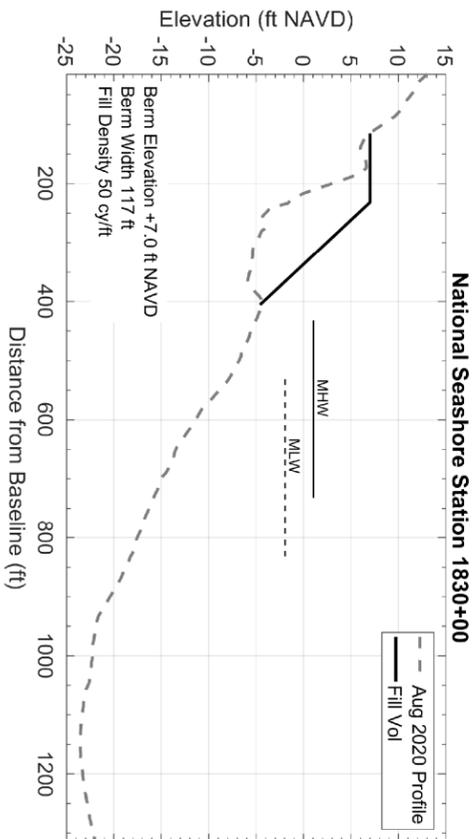
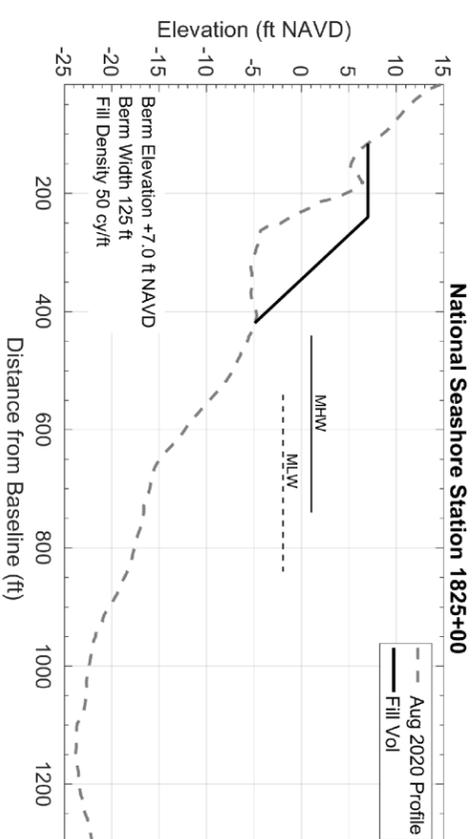
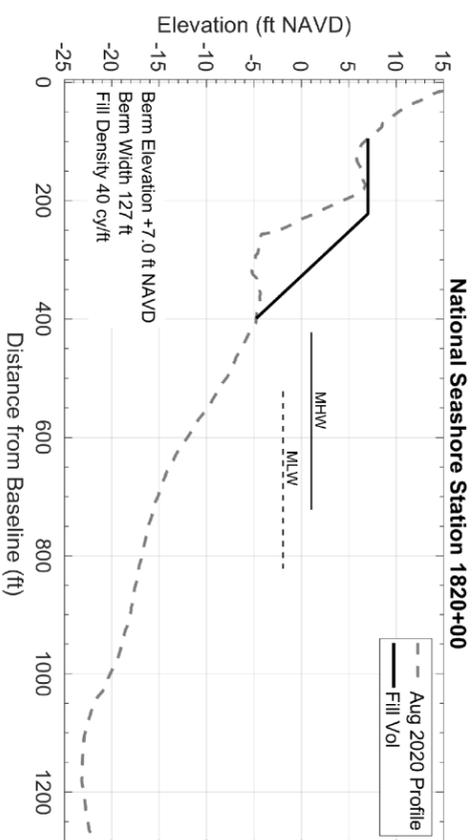
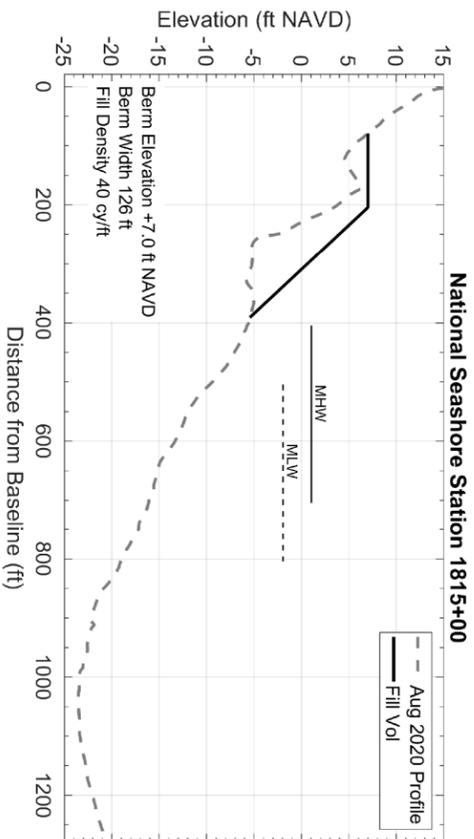
**Applicant:**  
 Dare County  
 954 Marshall Collins Dr.  
 Manteo, NC 27954

**Project:**  
 Beach Renourishment To Protect  
 NC Highway 12 At Buxton  
 Dare County, NC

**DRAWING TITLE:**  
 PLAN FILL SECTIONS  
 STA 1770+00 to 1810+00



SCALE: AS SHORNI  
 DATE: 28 May 2021  
 DRAWN BY: JIH  
 APPROVED BY: HLK  
 PROJECT #: 2403M



**Survey Datum:**  
 Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
 Vertical: NAVD 88 (Feet)  
 Vertical Exaggeration: 10:1  
 Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
 Data collected: August 2020

MHW (+1.05 ft NAVD)  
 MLW (-1.94 ft NAVD)



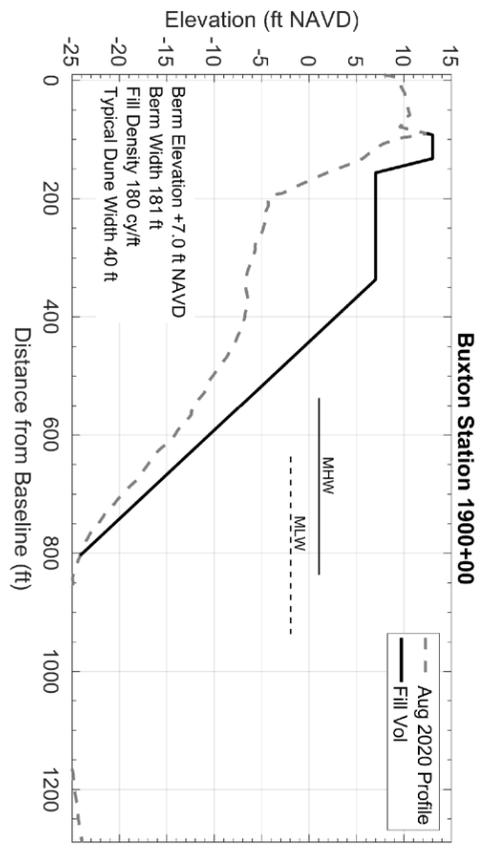
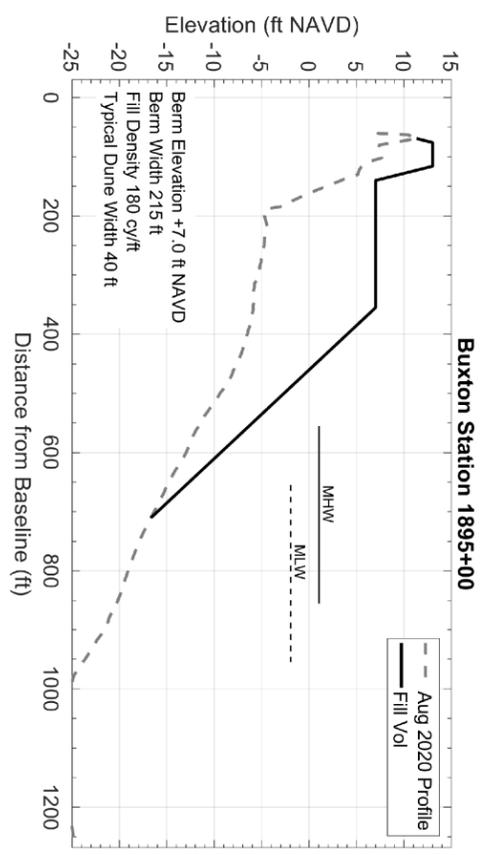
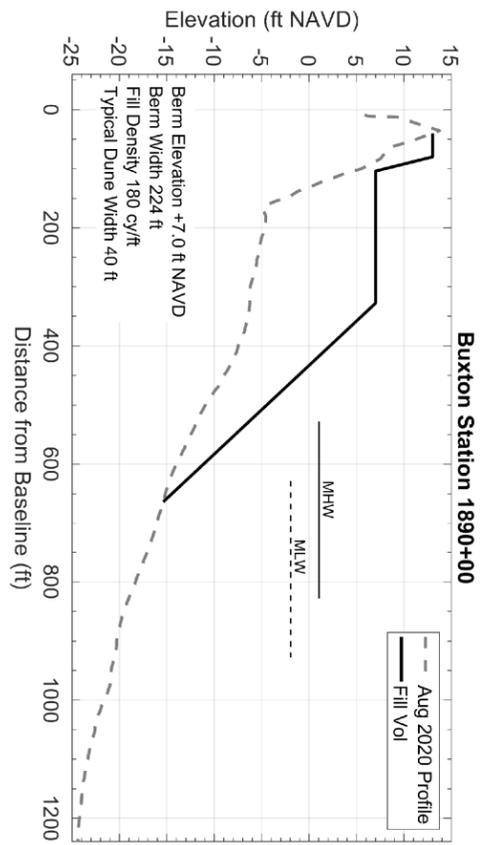
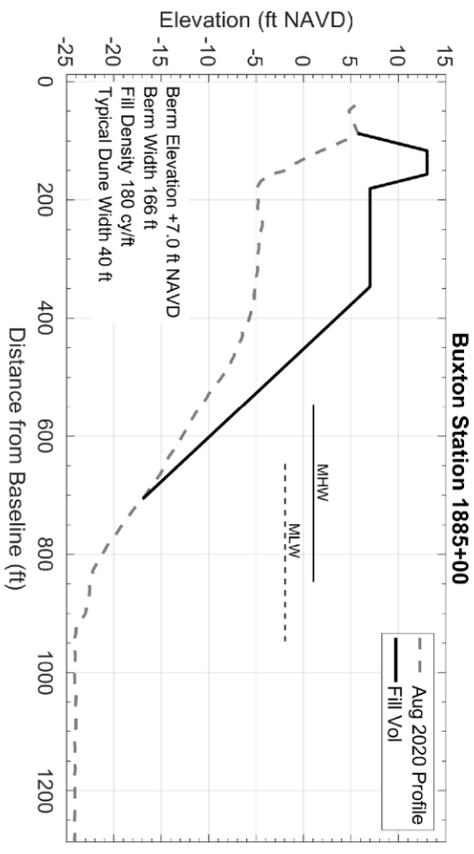
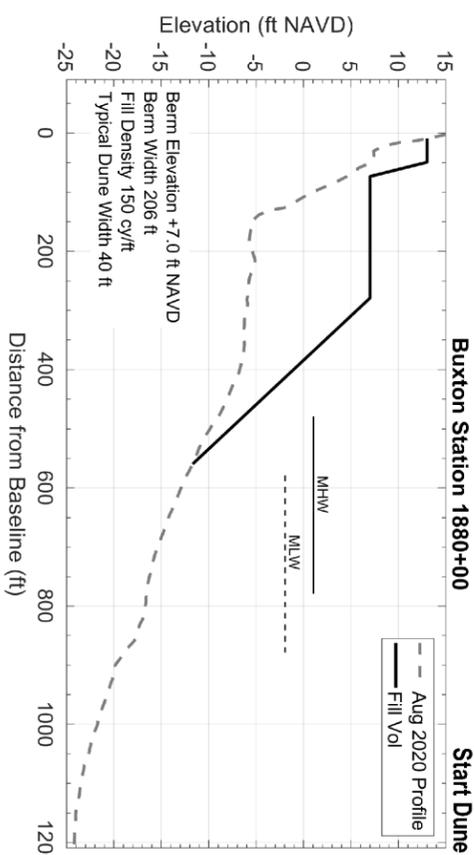
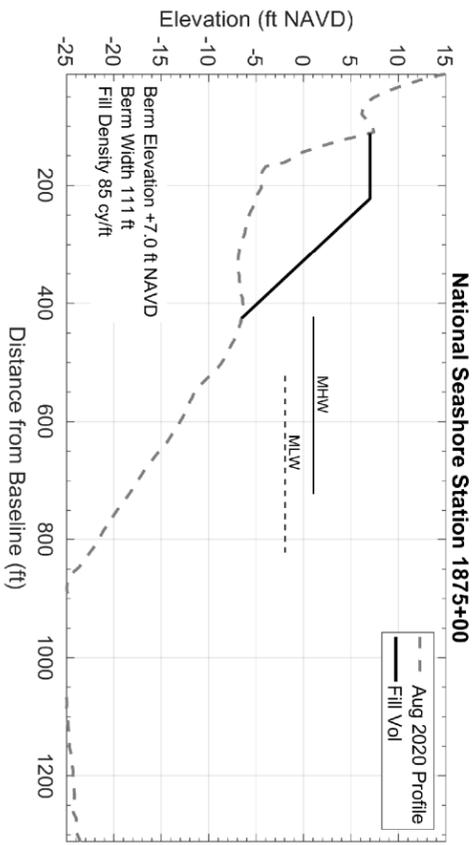
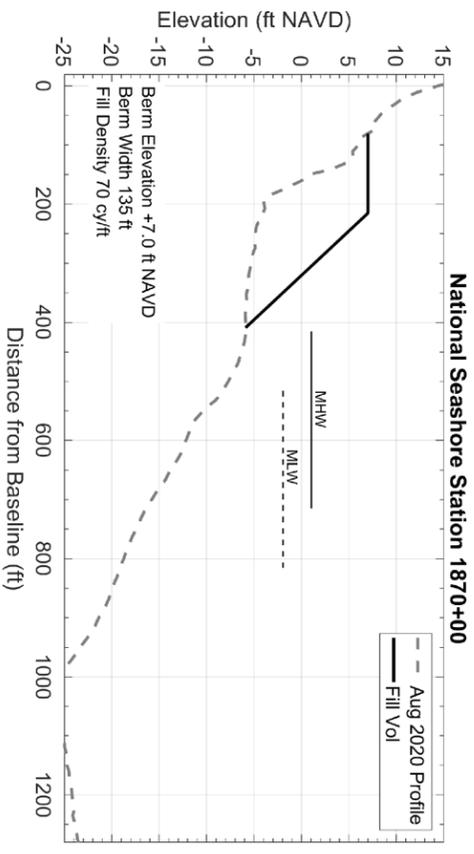
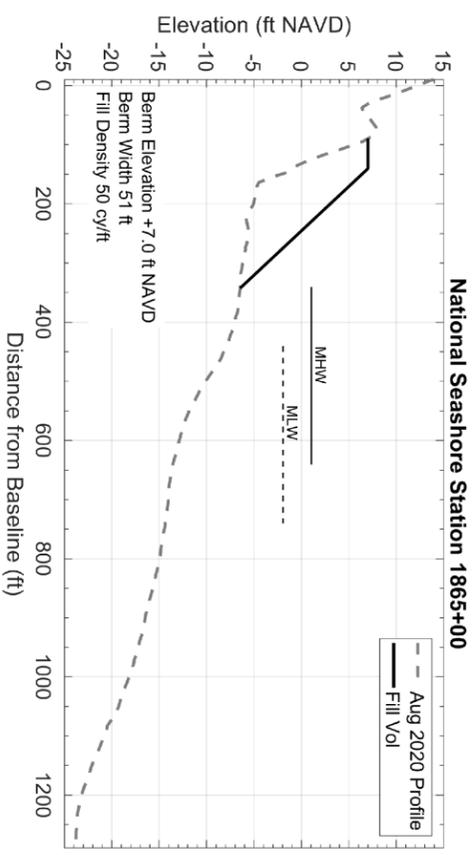
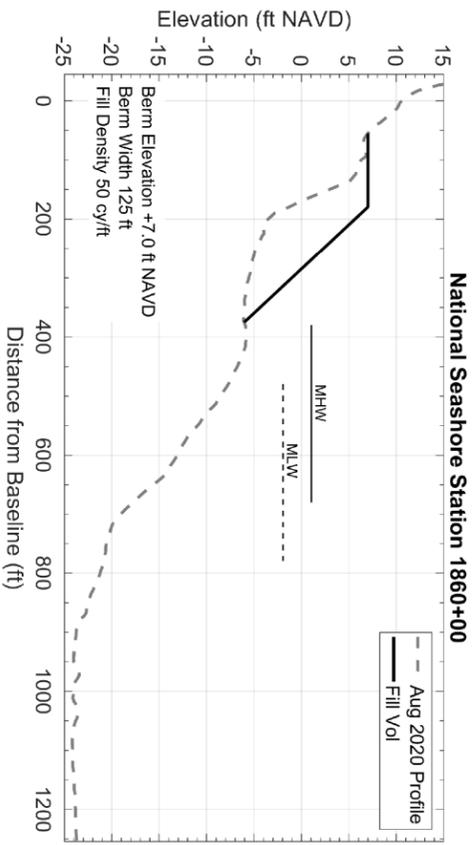
**Applicant:**  
 Dare County  
 954 Marshall Collins Dr.  
 Manteo, NC 27954

**Project:**  
 Beach Renourishment To Protect  
 NC Highway 12 At Buxton  
 Dare County, NC

**DRAWING TITLE:**  
 PLAN FILL SECTIONS  
 STA 1815+00 to 1855+00



**SCALE:** AS SHORNN  
**DATE:** 28 Mar 2021  
**DRAWN BY:** JIH  
**APPROVED BY:** HLK  
**PROJECT #:** 2493M



**Survey Datum:**  
Horizontal: SPOS NAD 83 (Feet) NC Zone 3200  
Vertical: NAVD 88 (Feet)  
Vertical Exaggeration: 10:1  
Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
Data collected: August 2020

MHW (+1.05 ft NAVD)  
MLW (-1.94 ft NAVD)



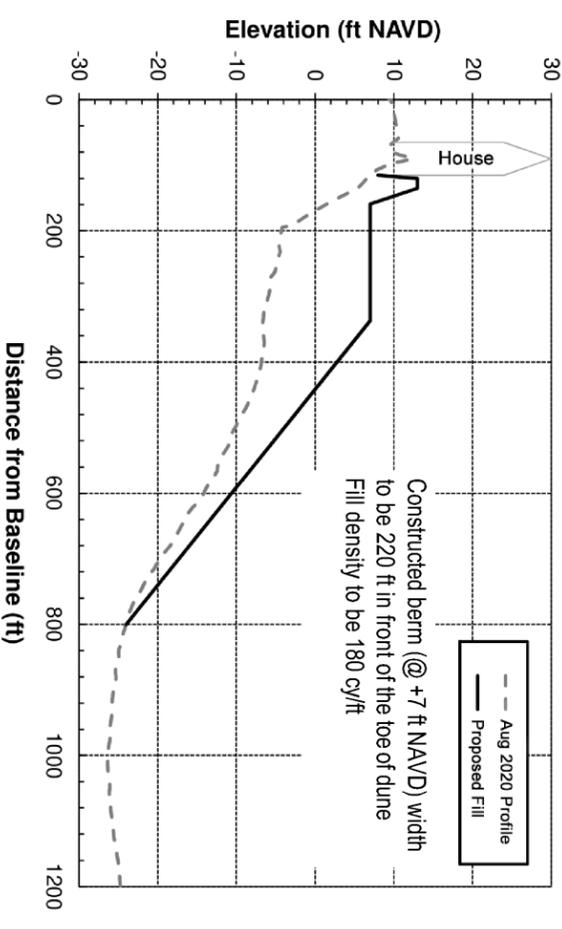
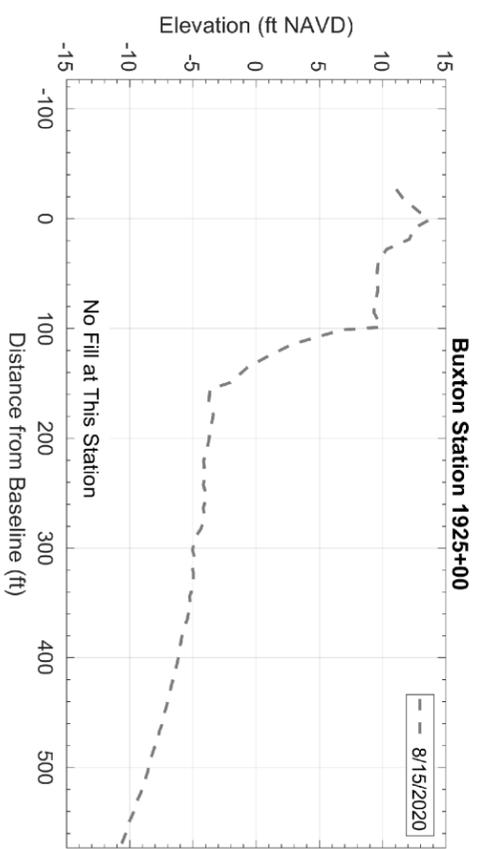
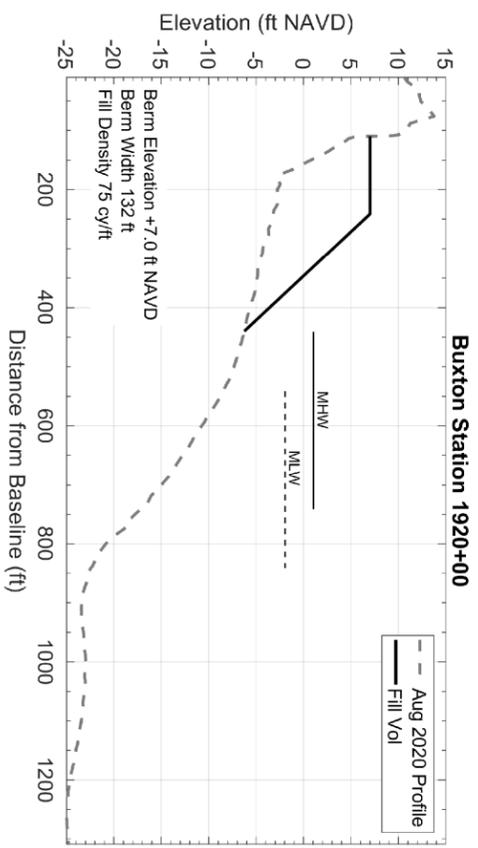
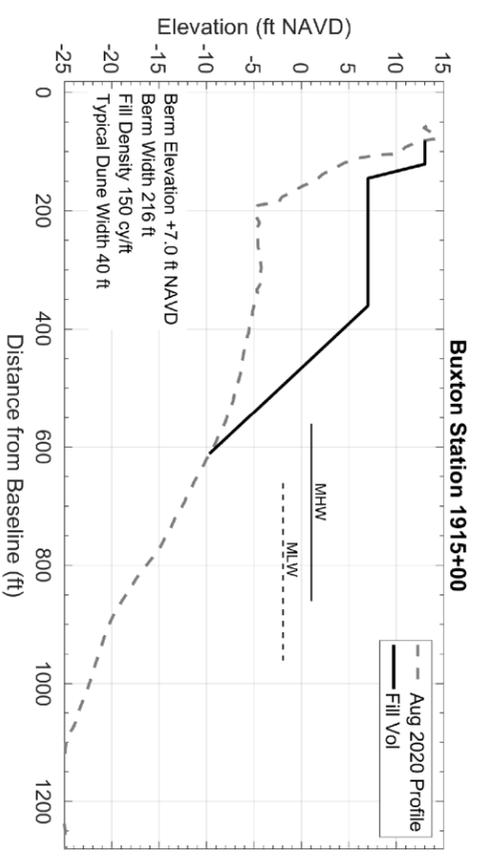
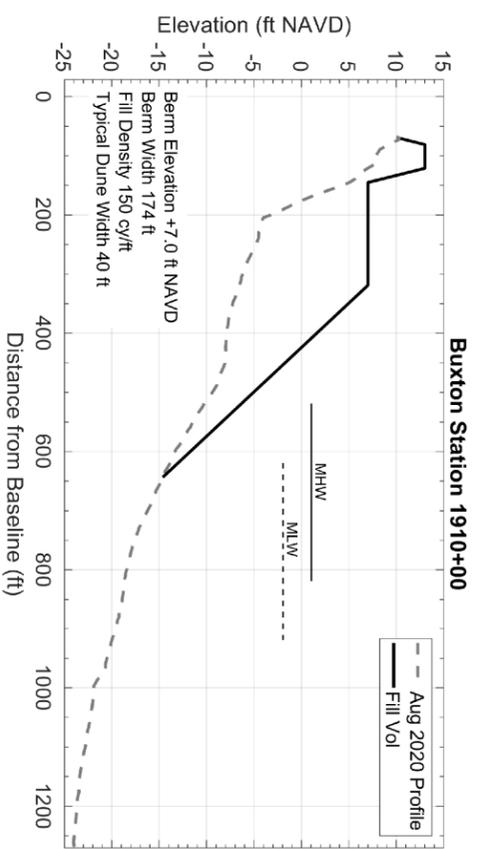
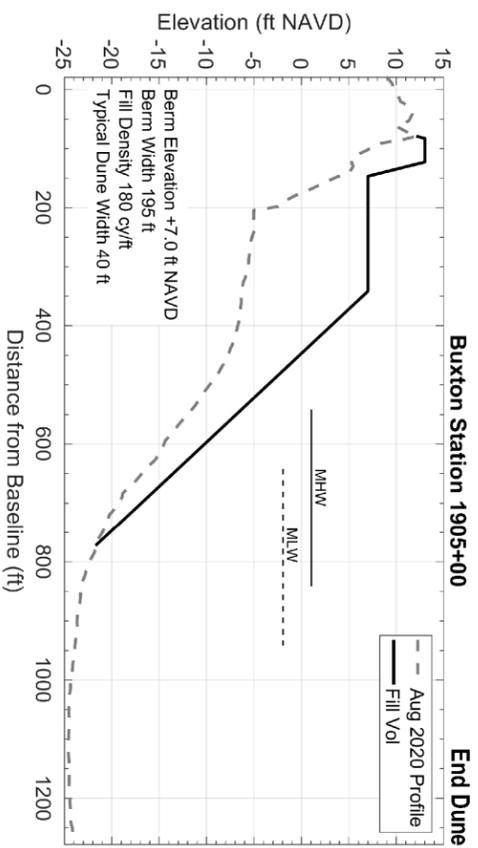
**Applicant:**  
Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

**DRAWING TITLE:**  
PLAN FILL SECTIONS  
STA 1860+00 to 1900+00



SCALE: AS SHORNI  
DATE: 28 May 2021  
DRAWN BY: JIH  
APPROVED BY: HLK  
PROJECT #: 2403M



**Note**

Fill design is based on the beach condition in August 2020. The actual limit of fill will be the +7 ft NAVD contour at the time of construction.

The final configuration and limits of beach construction will be determined based on conditions at the time of construction and the aggregate total fill volume that can be accomplished within the available budget for the project. The indicated quantities are maximum amounts to be permitted.

The project will not fill or cover any emergency shore protection structures such as sandbags. Buffers (no work areas) alongshore will be maintained around areas of active bird nesting at the time of construction in consultation with NPS biologists. To extent practicable, the construction berm will shift seaward of Mean Low Water at sites of nests then reenter the existing beach outside of the buffer zone.

**Note:**

Initial dunes will be built along the Village of Buxton during renourishment construction. The dune crest will be at +13 ft NAVD and the typical width of the dune crest will be 40 ft. The seaward slope of the dune will be at 1 on 4. The constructed dry sand beach in front of the toe of the dune will be 150-220 ft wide.

No fill is to be placed on exposed emergency sand bags, or under exposed walkovers and houses.

**Note:**

**No dune will be constructed along Reach 2 - National Seashore.**

**Survey Datum:**  
Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
Vertical: NAVD 88 (Feet)  
Vertical Exaggeration: 10:1  
Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
Data collected: August 2020

MHW (+1.05 ft NAVD)  
MLW (-1.94 ft NAVD)



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Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

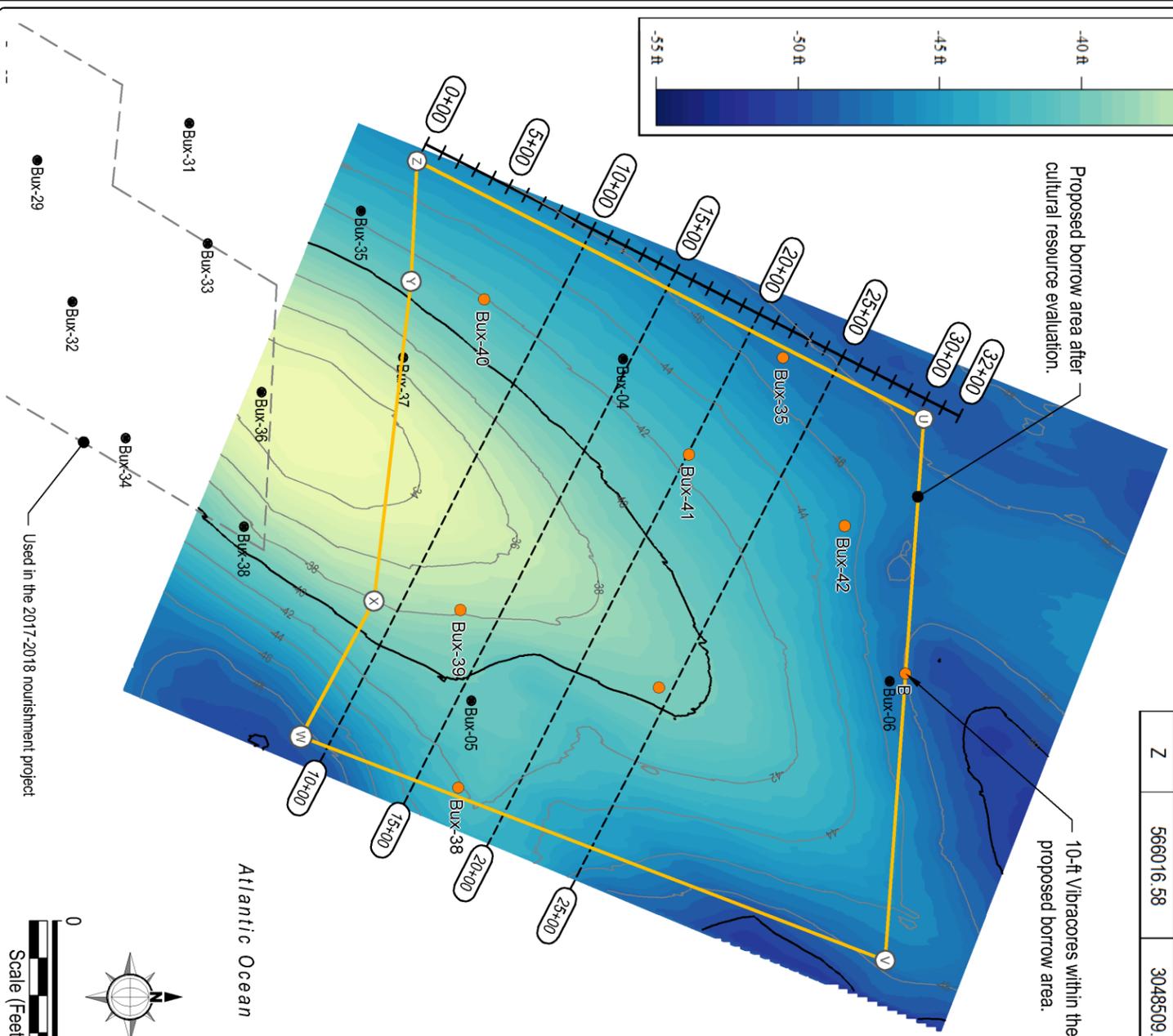
**DRAWING TITLE:**  
PLAN FILL SECTIONS  
STA 1905+00 to 1925+00



SCALE: AS SHOWN  
DATE: 28 May 2021  
DRAWN BY: JH  
APPROVED BY: HLK  
PROJECT #: 2403M

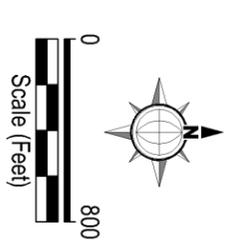
**Core Density**  
200 acres Proposed Borrow Area  
10 10-ft Borings - 1 core per 20 acres

Point	Northing	Eastng
U	568721.83	3049889.64
V	568516.05	3052788.54
W	565396.01	3051592.00
X	565786.15	3050865.37
Y	565994.17	3049153.82
Z	566016.58	3048509.49



Proposed borrow area after cultural resource evaluation.

10-ft Vibracores within the proposed borrow area.



**Survey Datum:**  
Horizontal: SPCS NAD 83 (Feet) NC Zone 3200  
Vertical: NAVD 88 (Feet)  
Vertical Exaggeration: 20:1  
Notes: Data collected by Coastal Science & Engineering, Inc via RTK GPS.  
Bathymetric Data collected: October 2020



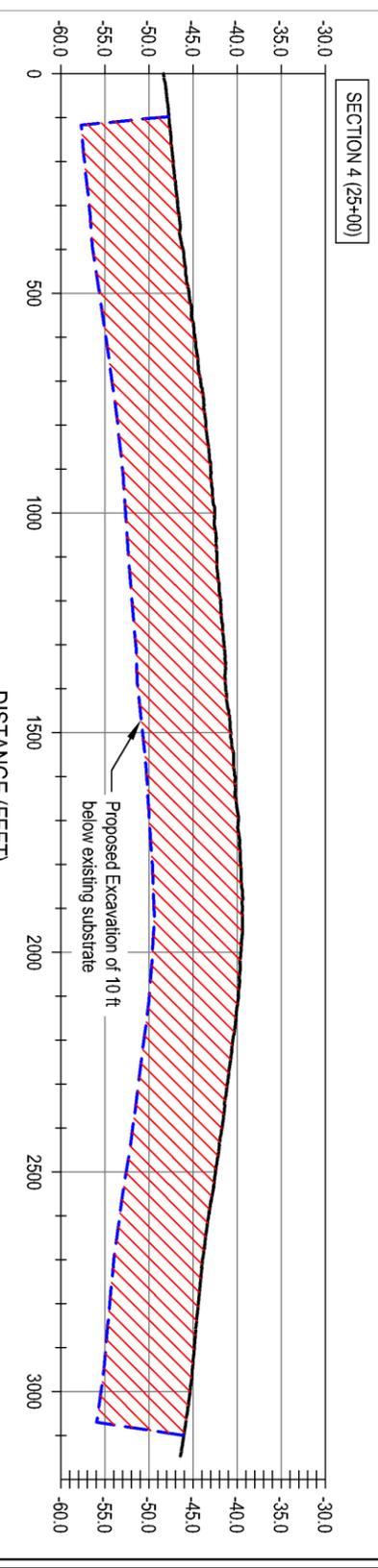
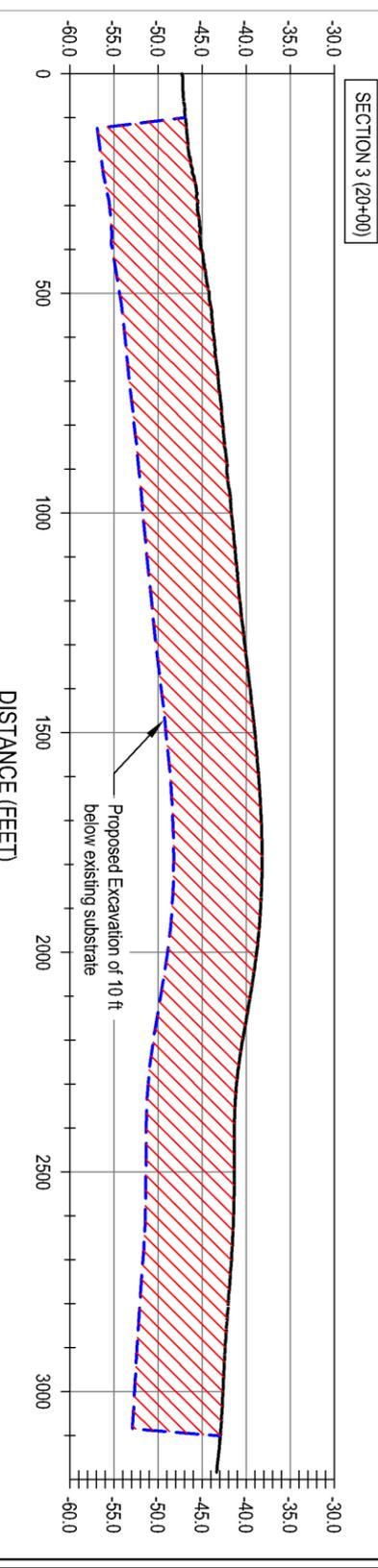
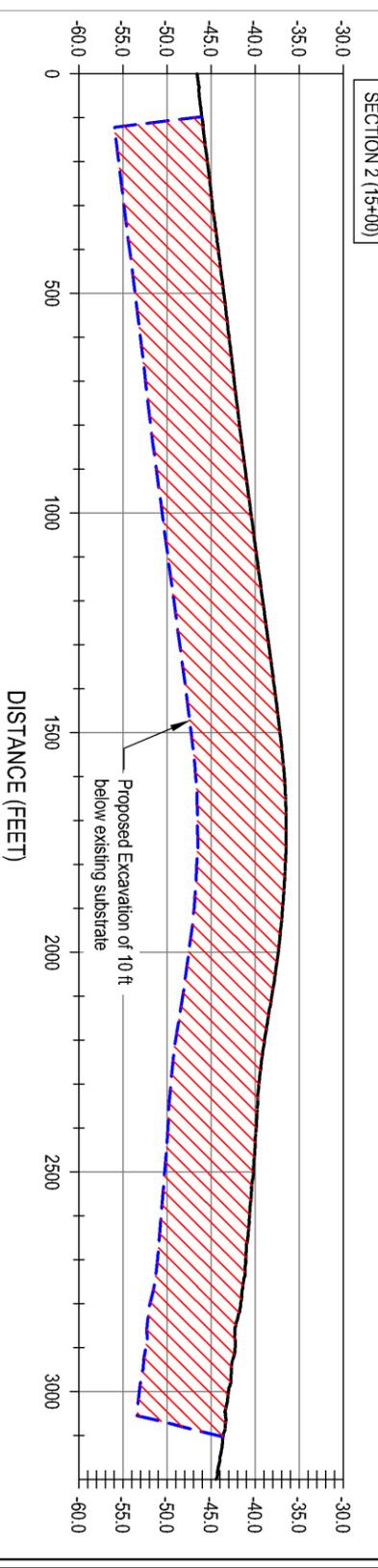
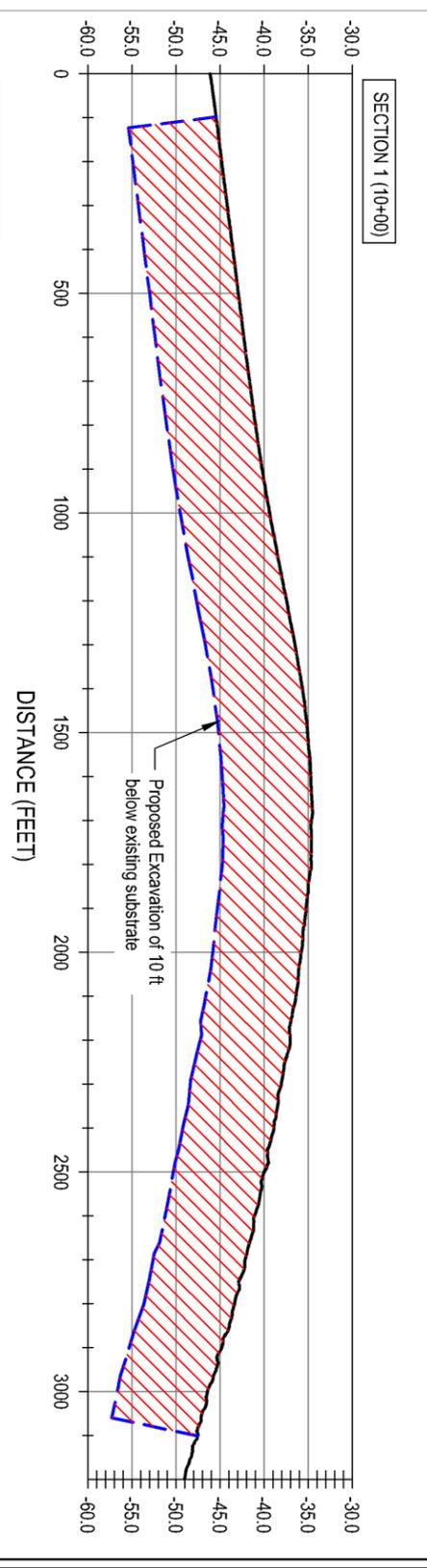
**Applicant:**  
Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

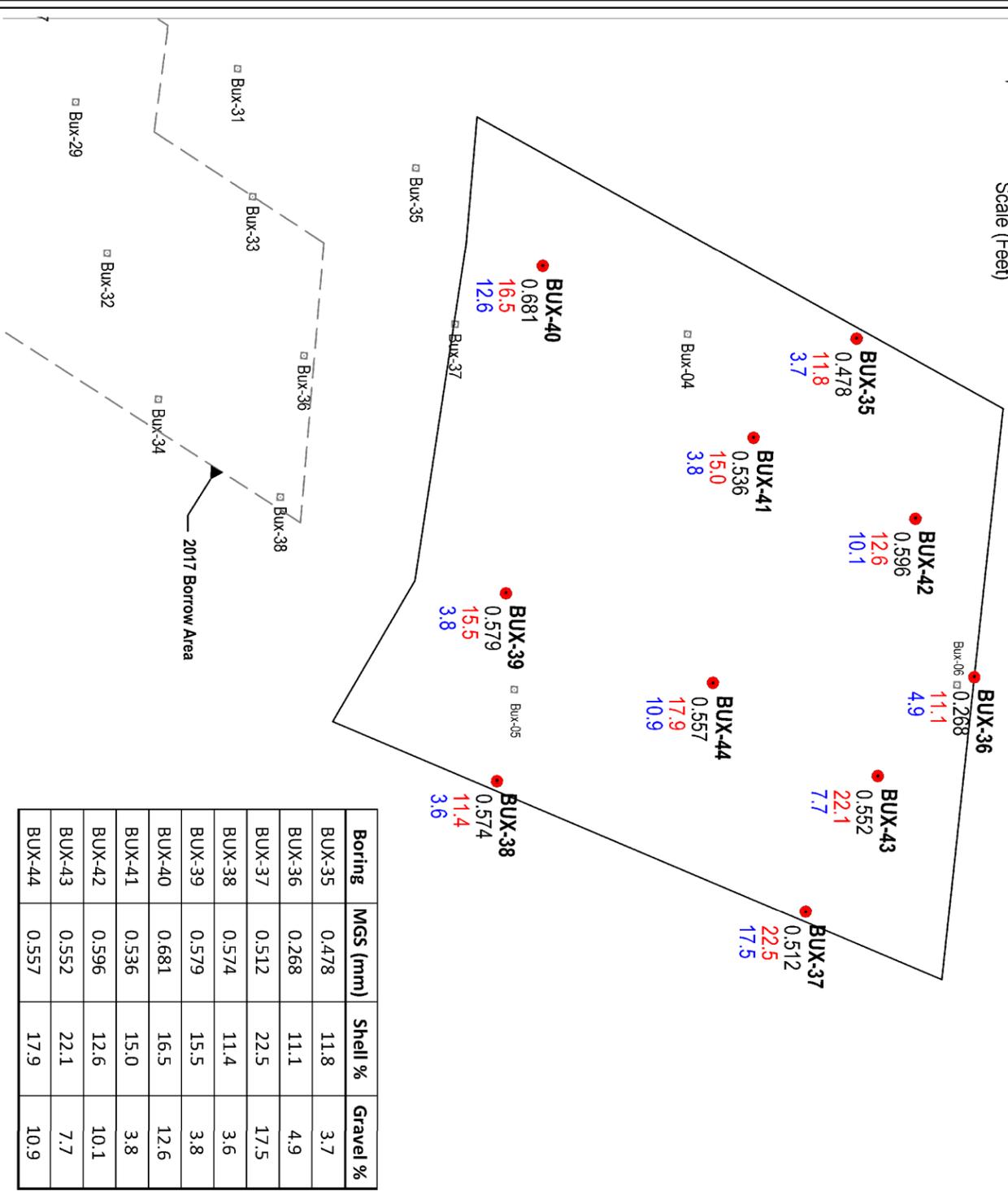
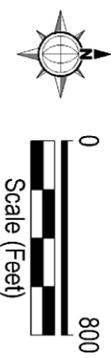
**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

**DRAWING TITLE:**  
BORROW AREA PLAN &  
EXCAVATION SECTIONS



**SCALE:** AS SHOWN  
**DATE:** 28 May 2021  
**DRAWN BY:** JIH  
**APPROVED BY:** HLK  
**PROJECT #:** 2403M



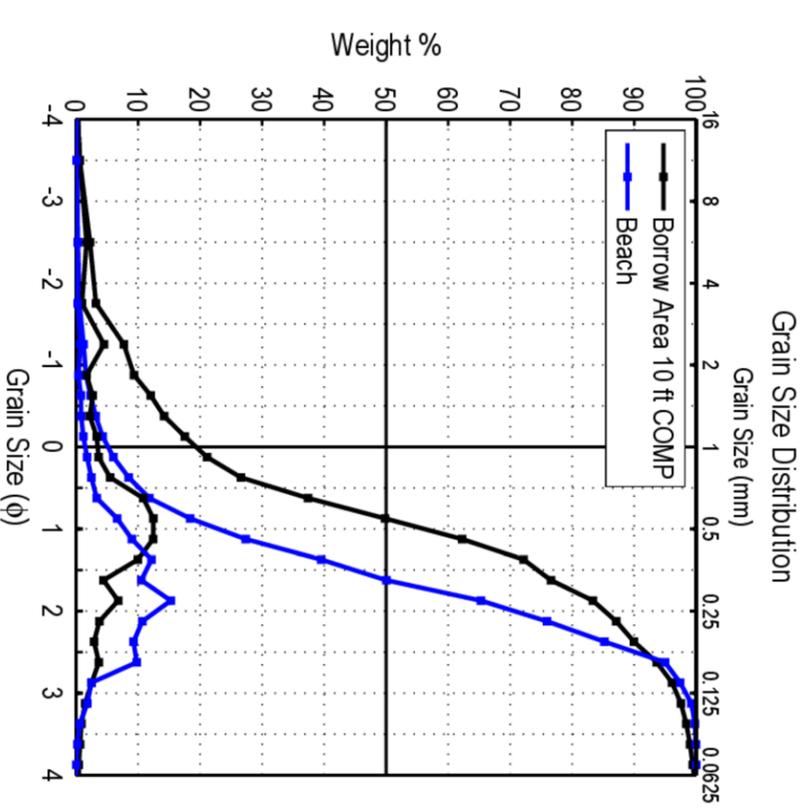


Boring	MGS (mm)	Shell %	Gravel %
BUX-35	0.478	11.8	3.7
BUX-36	0.268	11.1	4.9
BUX-37	0.512	22.5	17.5
BUX-38	0.574	11.4	3.6
BUX-39	0.579	15.5	3.8
BUX-40	0.681	16.5	12.6
BUX-41	0.536	15.0	3.8
BUX-42	0.596	12.6	10.1
BUX-43	0.552	22.1	7.7
BUX-44	0.557	17.9	10.9

Locations, mean grain size, percent shell, and percent gravel for core composite samples to 10 ft in the proposed Buxton borrow area based on borings obtained in April 2021.

	Mean	STD	Granules	Dry Fines (%)	Shell	* Ra (all)	* Ra (vis)	
BUX-35	10 ft COMP	0.478	0.486	3.7	1.5	11.8	1.00	1.11
BUX-36	10 ft COMP	0.268	0.417	4.9	2.5	11.1	1.34	1.82
BUX-37	10 ft COMP	0.512	0.282	17.5	1.6	22.5	1.16	1.33
BUX-38	10 ft COMP	0.574	0.530	3.6	0.9	11.4	1.00	1.02
BUX-39	10 ft COMP	0.579	0.531	3.8	0.9	15.5	1.00	1.02
BUX-40	10 ft COMP	0.681	0.421	12.6	0.0	16.5	1.01	1.07
BUX-41	10 ft COMP	0.536	0.539	3.8	0.0	15.0	1.00	1.02
BUX-42	10 ft COMP	0.596	0.490	10.1	0.0	12.6	1.00	1.04
BUX-43	10 ft COMP	0.552	0.467	7.7	0.5	22.1	1.00	1.08
BUX-44	10 ft COMP	0.557	0.386	10.9	0.0	17.9	1.04	1.17
ALL	10 ft COMP	0.517	0.426	7.7	0.6	15.6	1.02	1.15

\* Ra - Overfill factor. It provides a measure of how a particular sediment will perform as beach nourishment. Low Ra's are generally preferred, with ideal being equal to 1.0. See Appendix A for detailed geotechnical data.



Project: CSE 2403-M  
 Location: Buxton (NC)  
 Date: May 2021

BA 10 ft COMP Mean 0.517 mm  
 BA 10 ft COMP STD 0.426 mm  
 BA 10 ft COMP Skew-0.489 mm  
 BA 10 ft COMP Kurt 4.107 mm  
 BA 10 ft COMP Shell 12.3%

All Beach Mean 0.321 mm  
 All Beach STD 0.552 mm  
 All Beach Skew -1.045 mm  
 All Beach Kurt 5.621 mm  
 All Beach Shell 7.2%

**Notes:**  
 Beach sediment samples (n=140) obtained in August 2019 and analyzed by Coastal Science & Engineering, Inc.  
 Offshore borings obtained in April 2021 (10-ft long, 3 inch tubes). Grain size distributions based on dry sieving at 0.25 phi intervals.



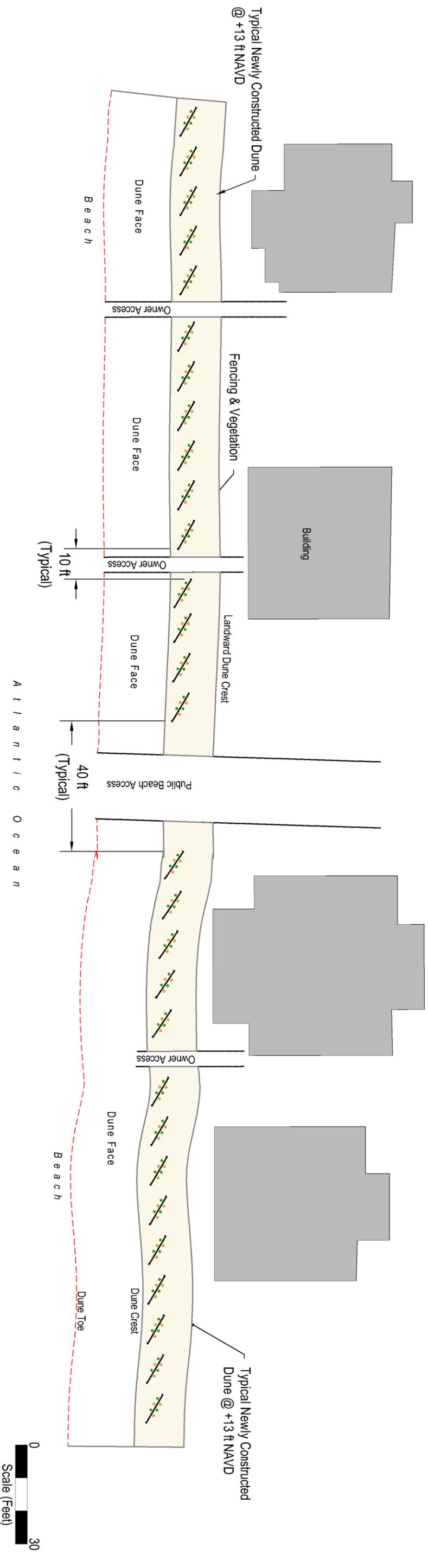
**Applicant:**  
 Dare County  
 954 Marshall Collins Dr.  
 Manteo, NC 27954

**Project:**  
 Beach Renourishment To Protect  
 NC Highway 12 At Buxton  
 Dare County, NC

**DRAWING TITLE:**  
 BORROW AREA CORES &  
 SEDIMENT ANALYSIS

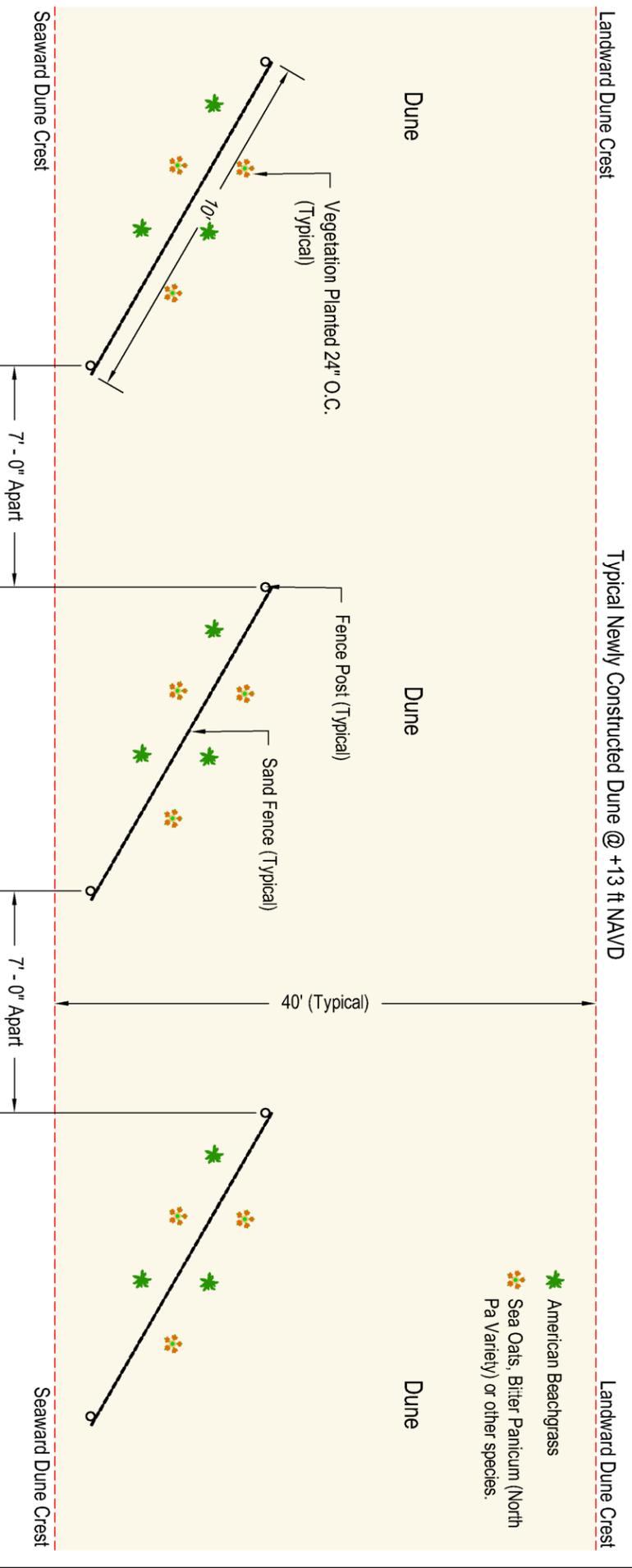


SCALE: AS SHORNI  
 DATE: 28 May 2021  
 DRAWN BY: JHH  
 APPROVED BY: HLK  
 PROJECT #: 2403M



**The general sand-fencing installation guidance issued by USFWS/NCDCM states below.**

- All sand fencing installations will comply all current statutes and regulations as specified by the NCDCM and under the NC Coastal Area Management Act (CAMA).
- Sand fence will be placed in a sea turtle compatible design and be made of biodegradable material.
- Sand fence will be designed and installed as follows: a maximum of ten (10) foot long spurs of sand fencing spaced at a minimum of seven (7) feet on a diagonal alignment (facing the predominate wind direction - from the south for the Buxton project area)
- Only one row of sand fencing will be installed in sea turtle nesting habitat.
- Existing native dune vegetation will be disturbed only to the minimum extent necessary. Only native, salt tolerant plan species will be installed.
- Education signs will be placed where appropriate at beach access points explaining the importance of the area to sea turtles and/or the life history of sea turtle species that nest in the area.



**Notes:**

Sand fencing will only be installed along Reach 1 - Buxton.  
Vegetation will only be planted along Reach 1 - Buxton



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Dare County  
954 Marshall Collins Dr.  
Manteo, NC 27954

**Project:**  
Beach Renourishment To Protect  
NC Highway 12 At Buxton  
Dare County, NC

**DRAWING TITLE:**  
SAND FENCING &  
VEGETATION



**SCALE:** AS SHORINI  
**DATE:** 28 May 2021  
**DRAWN BY:** JIH  
**APPROVED BY:** HLK  
**PROJECT #:** 2403M