

# Nags Head 2026 Beach Nourishment Project

December 17, 2025

THE TOWN OF NAGS HEAD  
NORTH CAROLINA



moffatt & nichol



# Presentation Overview

- Multi-Decadal Beach Nourishment Master Plan
- Fall Survey Results
  - Widespread dune scarping
  - Losses above -14 ft NAVD88
  - Sand movement offshore
- Beach Nourishment History
- 2026 or 2027 Project Design: 2.2 Mcy + 2 Alts @100,000 cy each, Nourished Oceanfront
- 2026 & 2027 Bids Received
  - 2026 Apparent Low Bidder: WMI \$34.9M base + \$965,000 alts
  - 2027 Apparent Low Bidder: GLDD \$37.2M base + \$1.04M alts
- Q&A

# Multi-Decadal Beach Nourishment Master Plan

## **Long-term strategy to permit, schedule, and finance ongoing beach nourishment efforts**

- Alternatives, Preliminary Costs, and Maintenance & Storm Response Schedules Developed

## **Ensure availability of viable sand source**

- Estimated Conservative 50-Year Need: 58.6 Mcy; Total Available in Borrow area: 67.9 Mcy

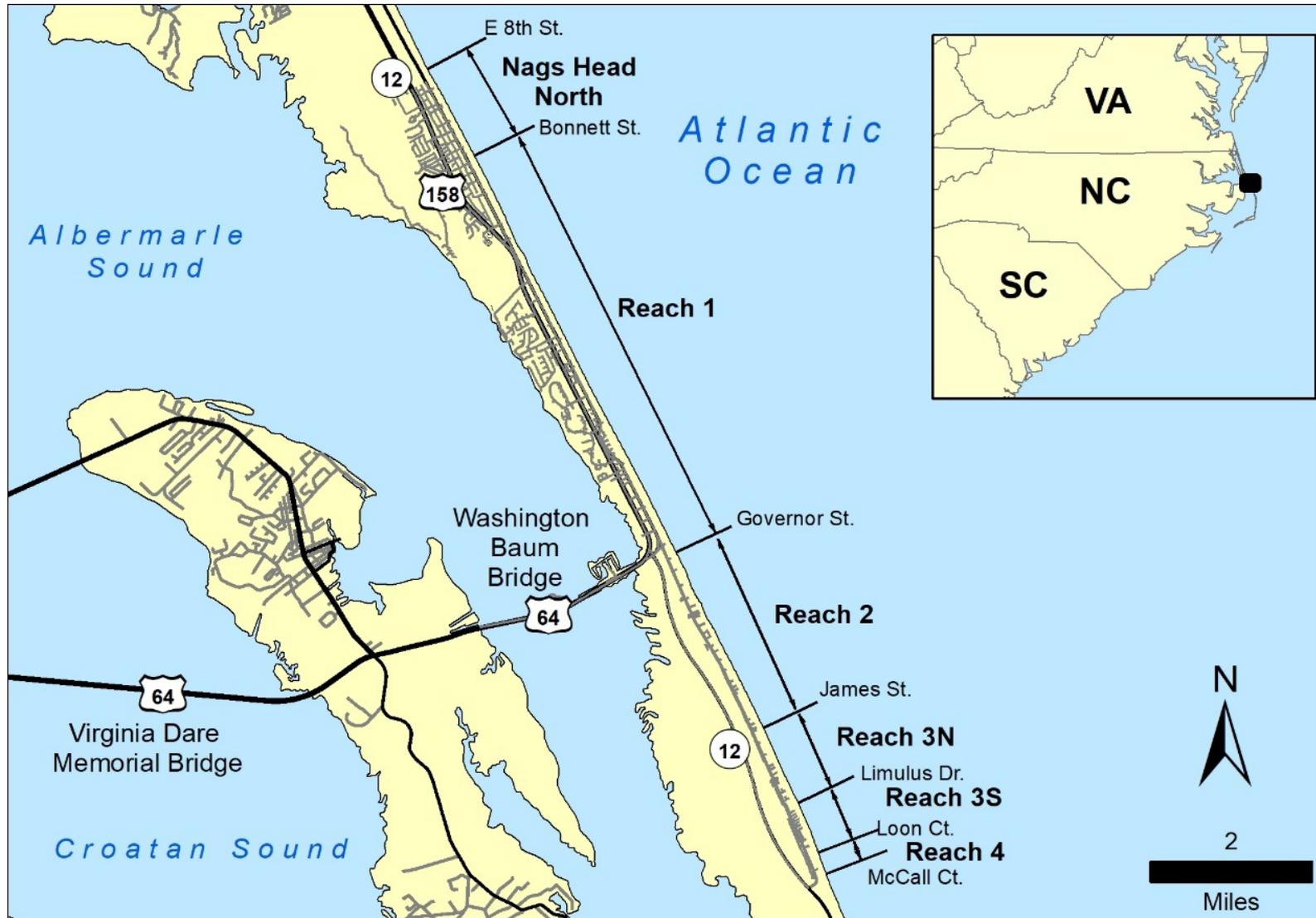
## **Establish volumetric triggers for equivalent Level of Protection (LoP) across the Town's shoreline**

- Numerical Modeling of 25-Year Storm Conditions to Determine Volume Triggers (Design LoP) for Each Reach

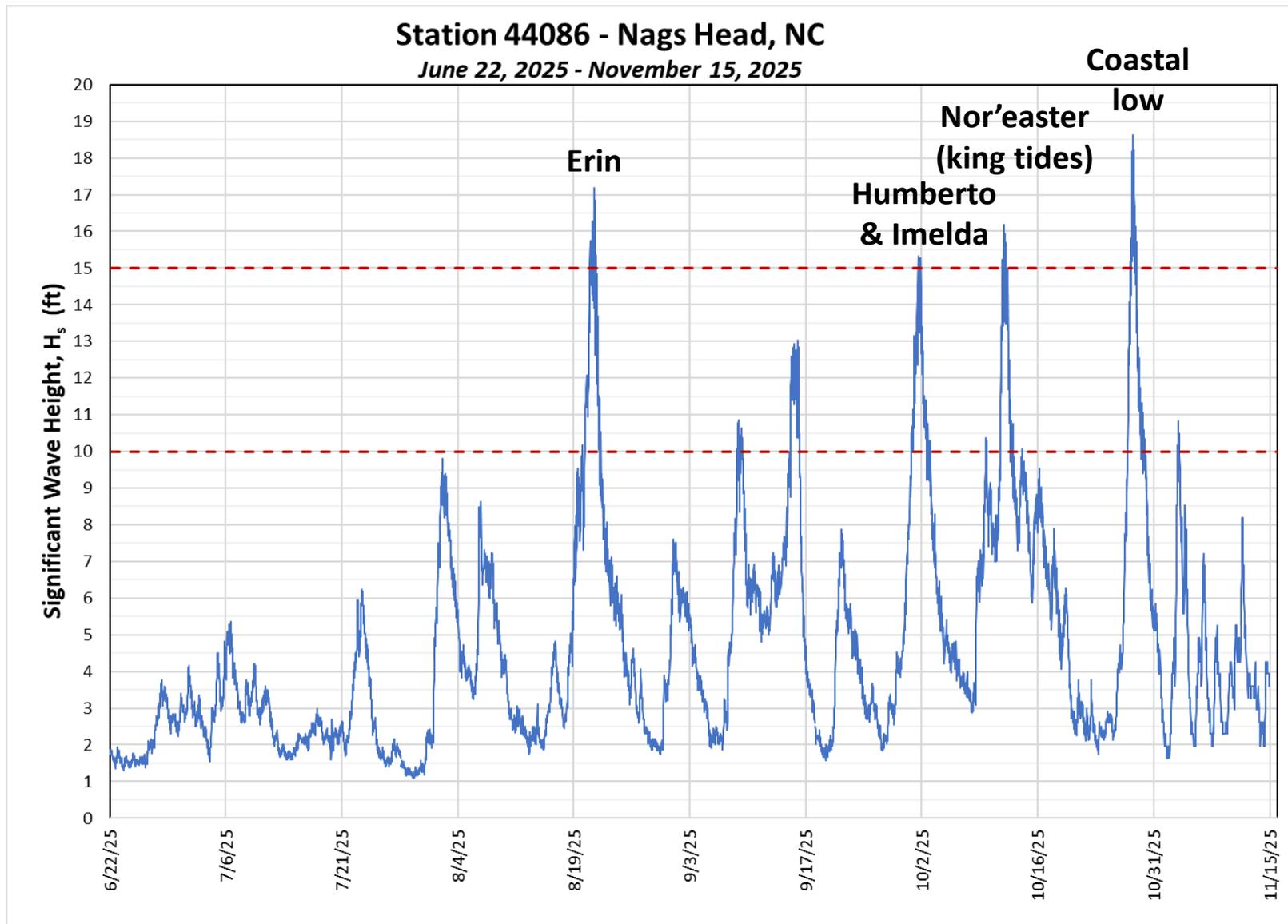
## **Provide basis to continue to qualify for FEMA reimbursement for sand lost during a federally-declared disaster**

- Updated FEMA approved Beach Maintenance & Monitoring Plan

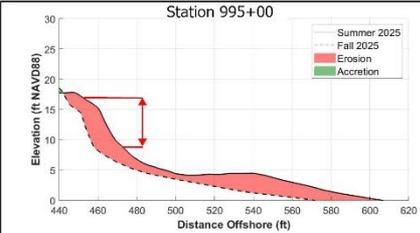
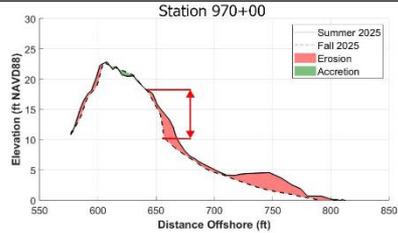
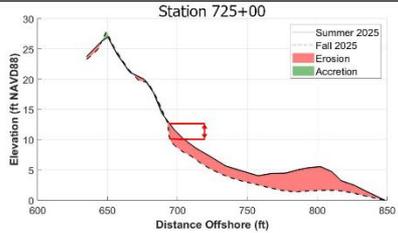
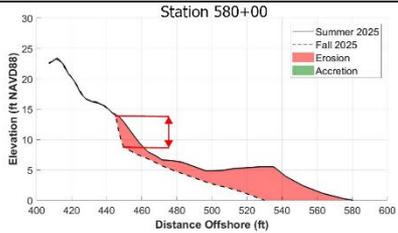
# Reach Extents



# Wave Events in Fall 2025 (June-November)



# Field Observations

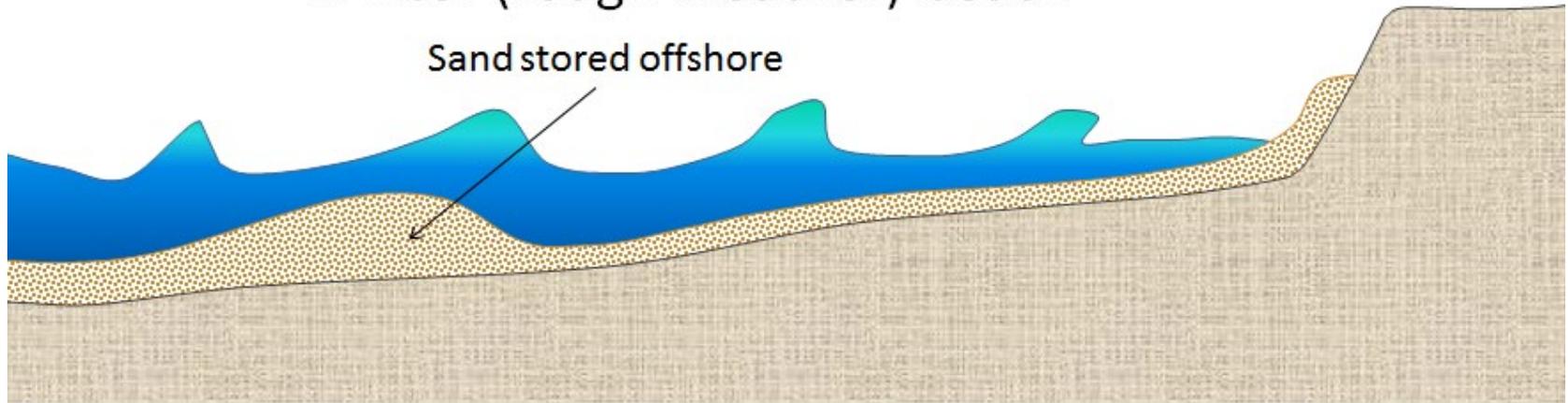


Dune scarping was experienced throughout the Town with numerous localized areas of severe erosion

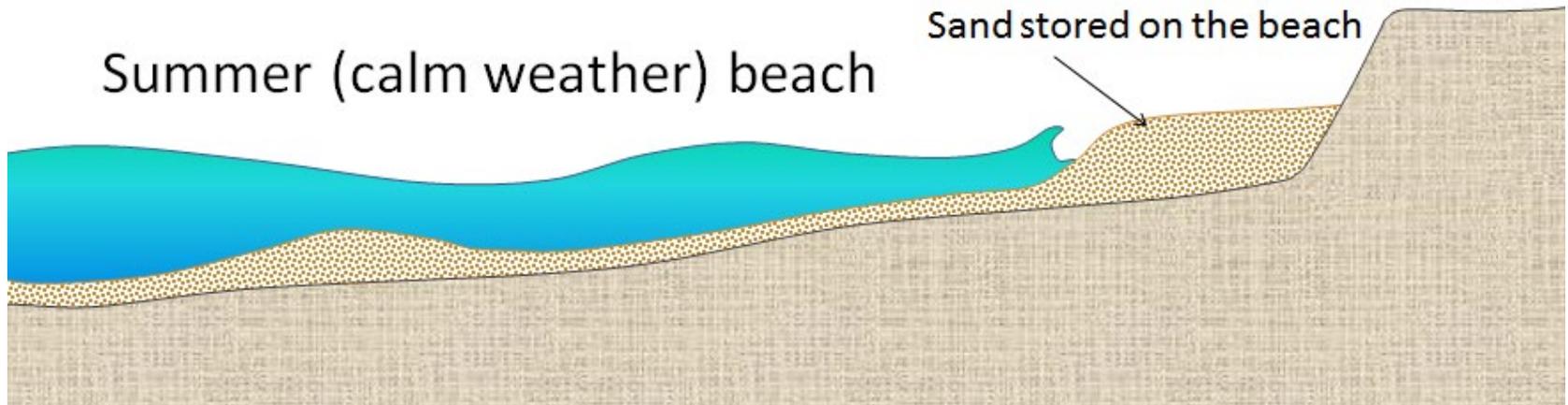


# Typical Seasonal Beach Profile Changes

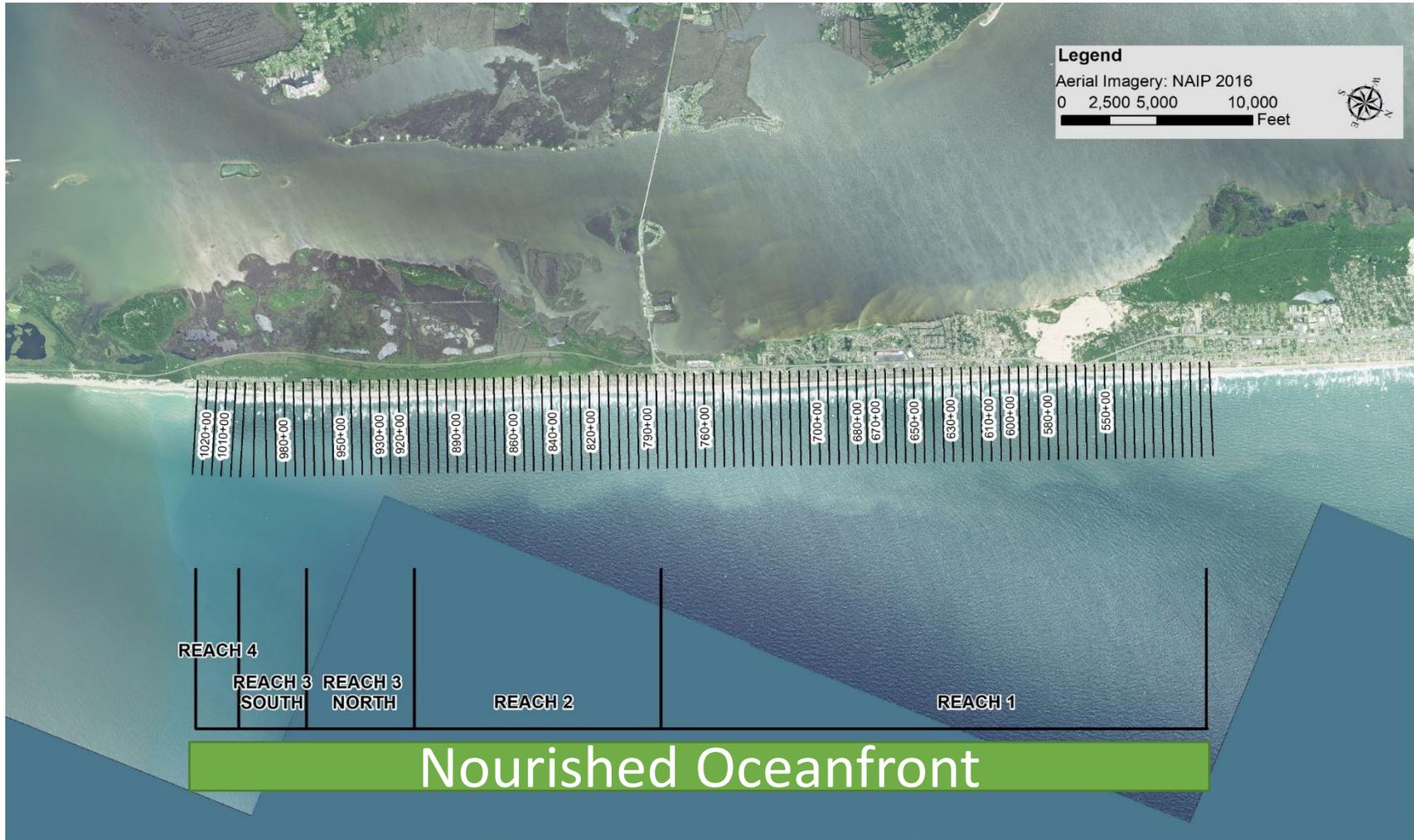
Winter (rough weather) beach



Summer (calm weather) beach

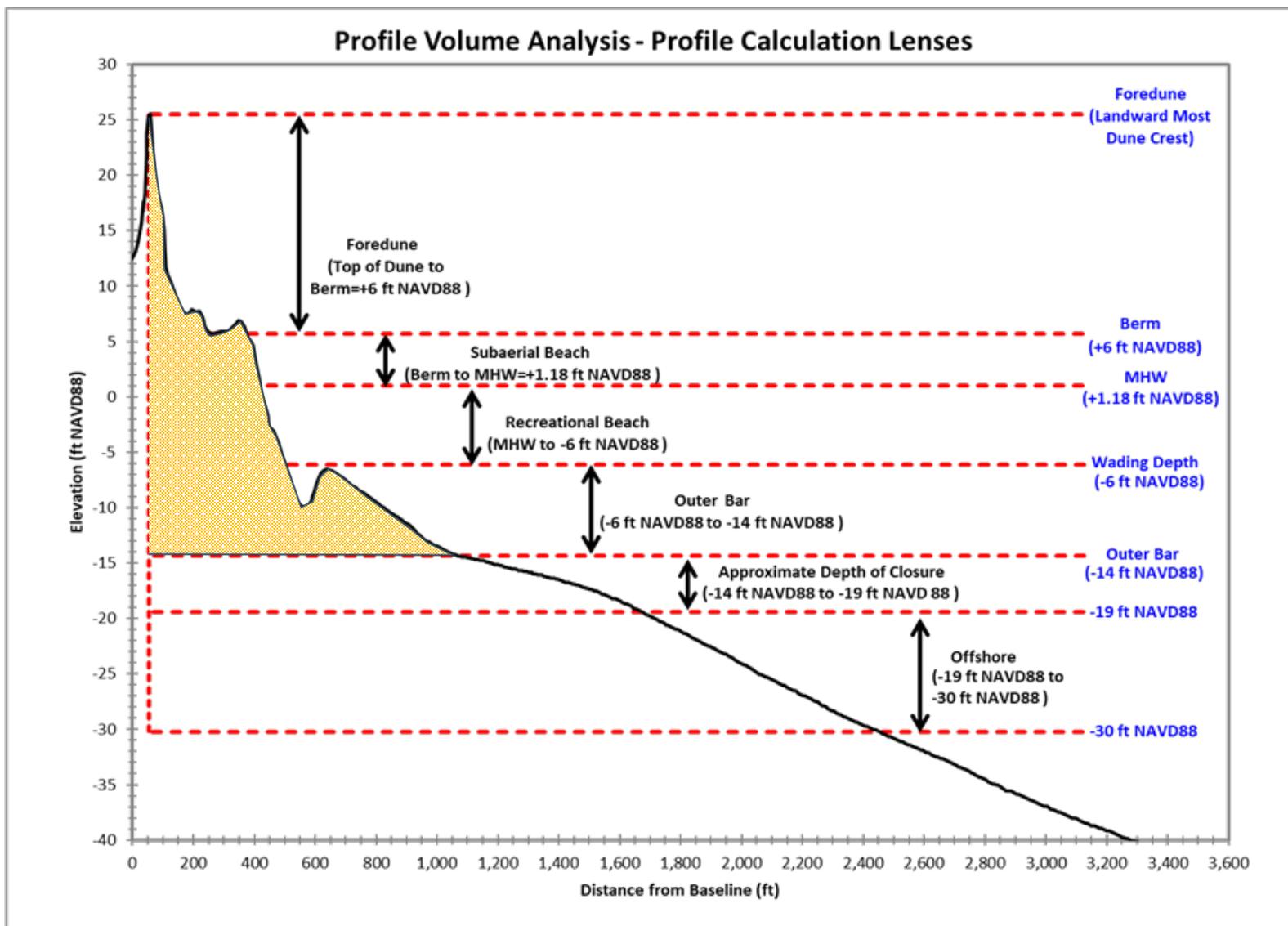


# Fall 2025 Monitoring Survey

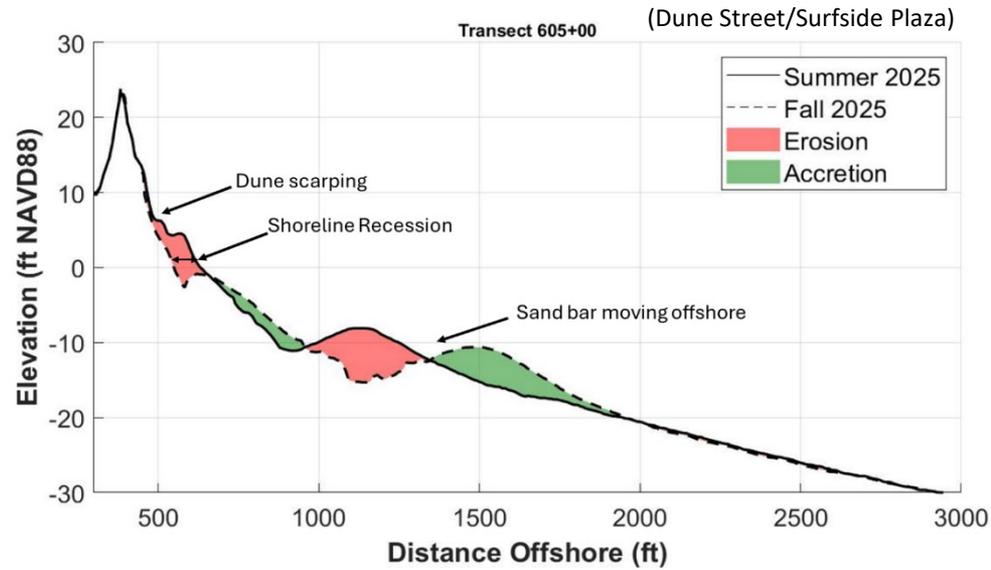


- 109 Monitoring Transects Surveyed in Fall 2025

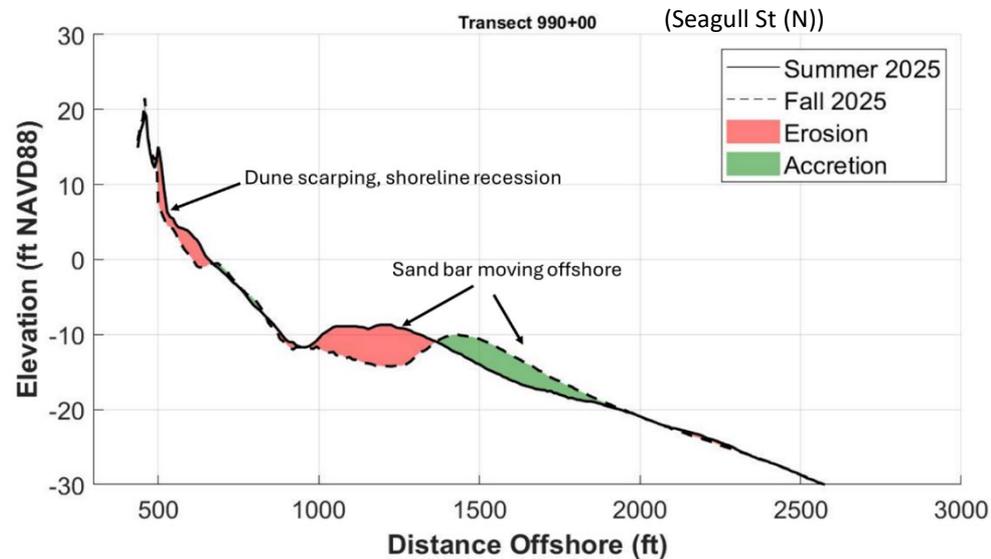
# Volume Calculation Lenses



# Typical Profiles



Reach 1



Reach 3S

# Shoreline Change & Unit Volume Change

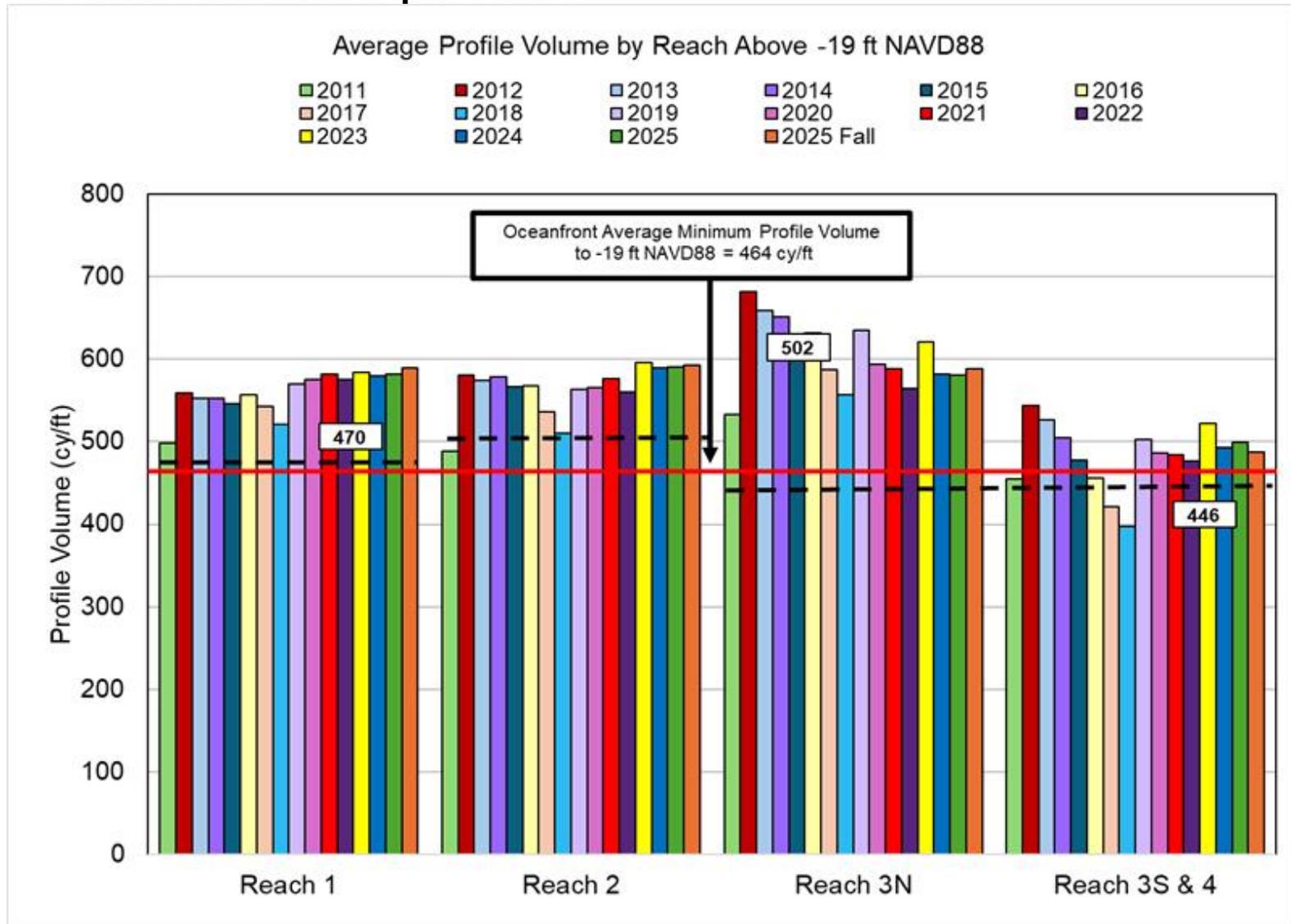
<b>June 2025 vs. October 2025</b>	Transects	Reach Length	avg shoreline change @ +1.18 ft NAVD88	Change above +6 ft NAVD88	Change above +1.18 ft NAVD88	Change above -6 ft NAVD88	Change above -14 ft NAVD88	Change above -19 ft NAVD88	Change above -30 ft NAVD88
Reach	#	ft	ft	cy/ft	cy/ft	cy/ft	cy/ft	cy/ft	cy/ft
Reach 1	495+00 - 790+00	29,500	-20.2	-2.3	-9.5	-4.5	-12.3	7.4	1.9
Reach 2	790+00 - 920+00	13,000	-30.0	-2.0	-11.1	-6.1	-18.7	2.5	-1.0
Reach 3N	920+00 - 975+00	5,500	-38.8	-1.6	-7.5	-5.2	-16.9	9.1	10.5
Reach 3S	975+00 - 1010+00	3,500	-49.7	-3.1	-10.9	-11.7	-35.1	-7.4	-14.2
Reach 4	1010+00 - 1025+00	1,500	-48.6	-5.3	-12.8	-7.6	-31.5	-5.5	0.0
	Transects	Reach Length	weighted avg	weighted avg	weighted avg	weighted avg	weighted avg	weighted avg	weighted avg
<b>Nourished Oceanfront</b>	<b>495+00 - 1025+00</b>	<b>53,000</b>	<b>-27.3</b>	<b>-2.3</b>	<b>-9.9</b>	<b>-5.5</b>	<b>-16.4</b>	<b>5.0</b>	<b>1.0</b>

# Cumulative Volume Change

<b>June 2025 vs. November 2025</b>	Transects	Reach Length	Change above +6 ft NAVD88	Change above +1.18 ft NAVD88	Change above -6 ft NAVD88	Change above -14 ft NAVD88	Change above -19 ft NAVD88	Change above -30 ft NAVD88
Reach	#	ft	cy	cy	cy	cy	cy	cy
Reach 1	495+00 - 790+00	29,500	-67,437	-275,063	-131,426	-355,506	213,175	55,918
Reach 2	790+00 - 920+00	13,000	-26,058	-143,759	-79,686	-243,224	32,649	-12,498
Reach 3N	920+00 - 975+00	5,500	-8,715	-41,197	-28,489	-92,991	50,154	57,850
Reach 3S	975+00 - 1010+00	3,500	-10,739	-38,220	-40,859	-122,735	-25,783	-49,539
Reach 4	1010+00 - 1025+00	1,500	-10,525	-25,535	-15,119	-62,963	-10,927	-21,775
	Transects	Reach Length	total	total	total	total	total	total
<b>Nourished Oceanfront</b>	<b>495+00 - 1025+00</b>	<b>53,000</b>	-123,474	-523,775	-295,580	<b>-877,419</b>	259,267	29,956

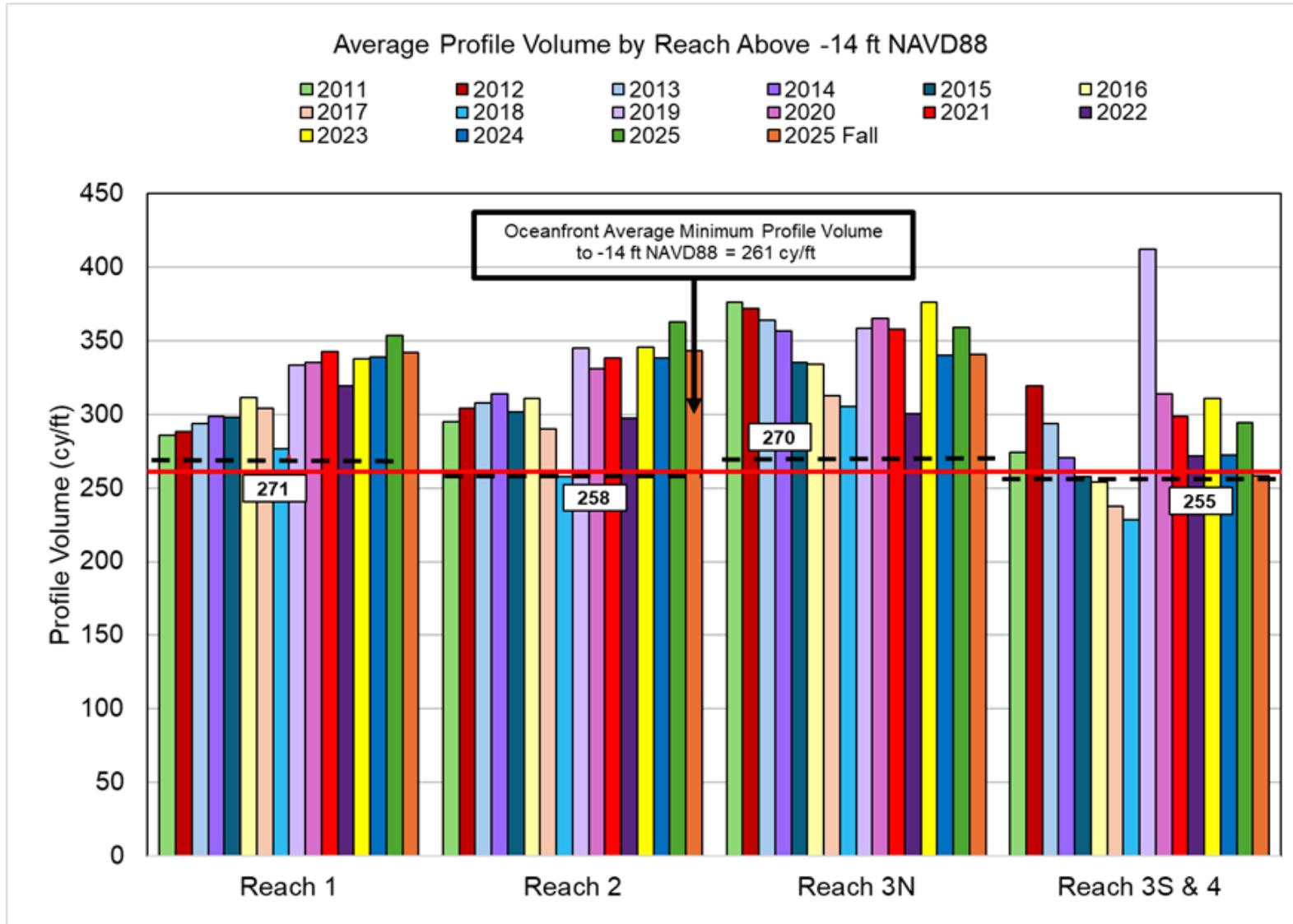
# Master Plan Nourishment Triggers (-19 ft NAVD8)

## ➤ Historical Comparison



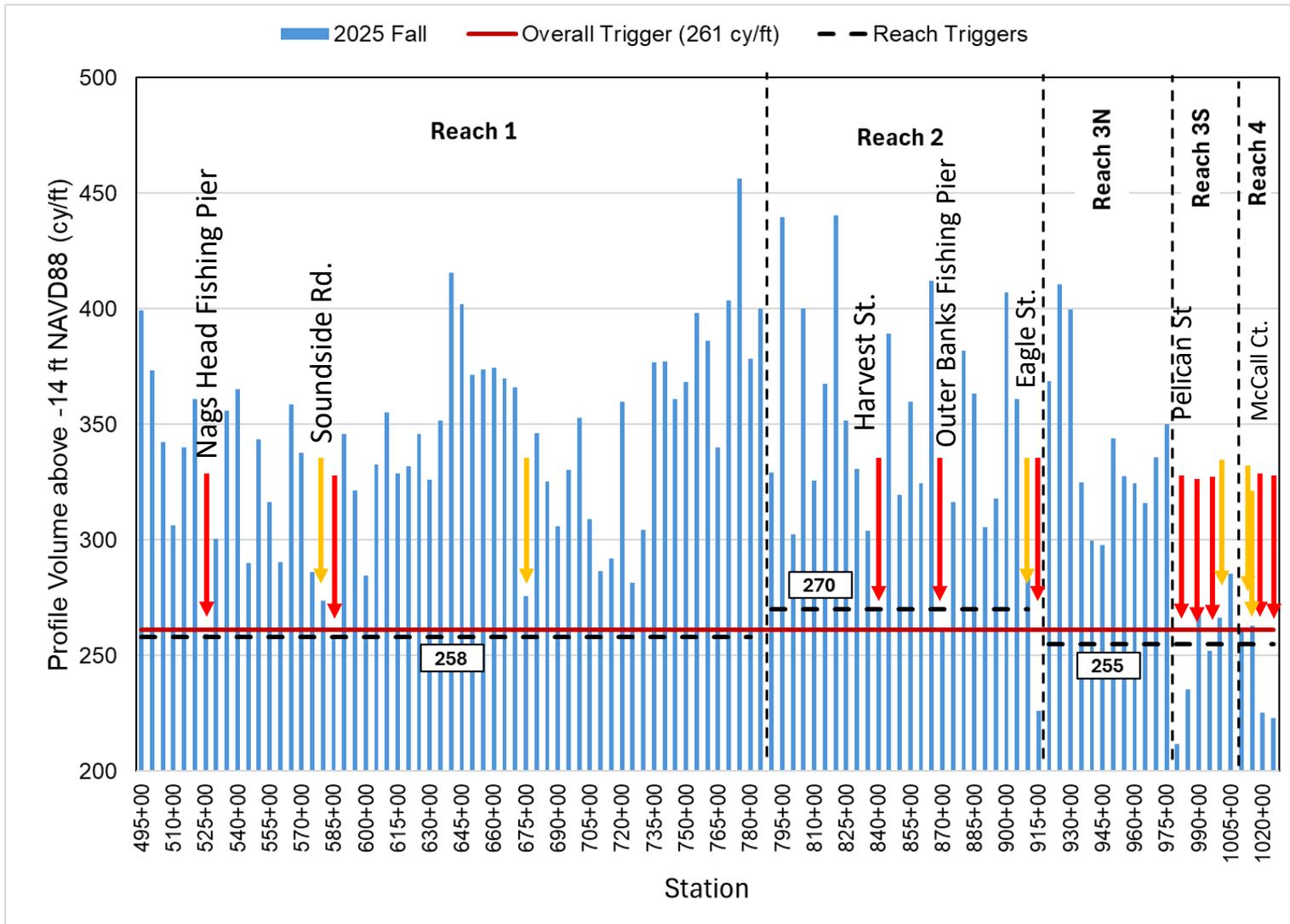
# Nourishment Triggers (-14 ft NAVD8)

## ➤ Historical Comparison

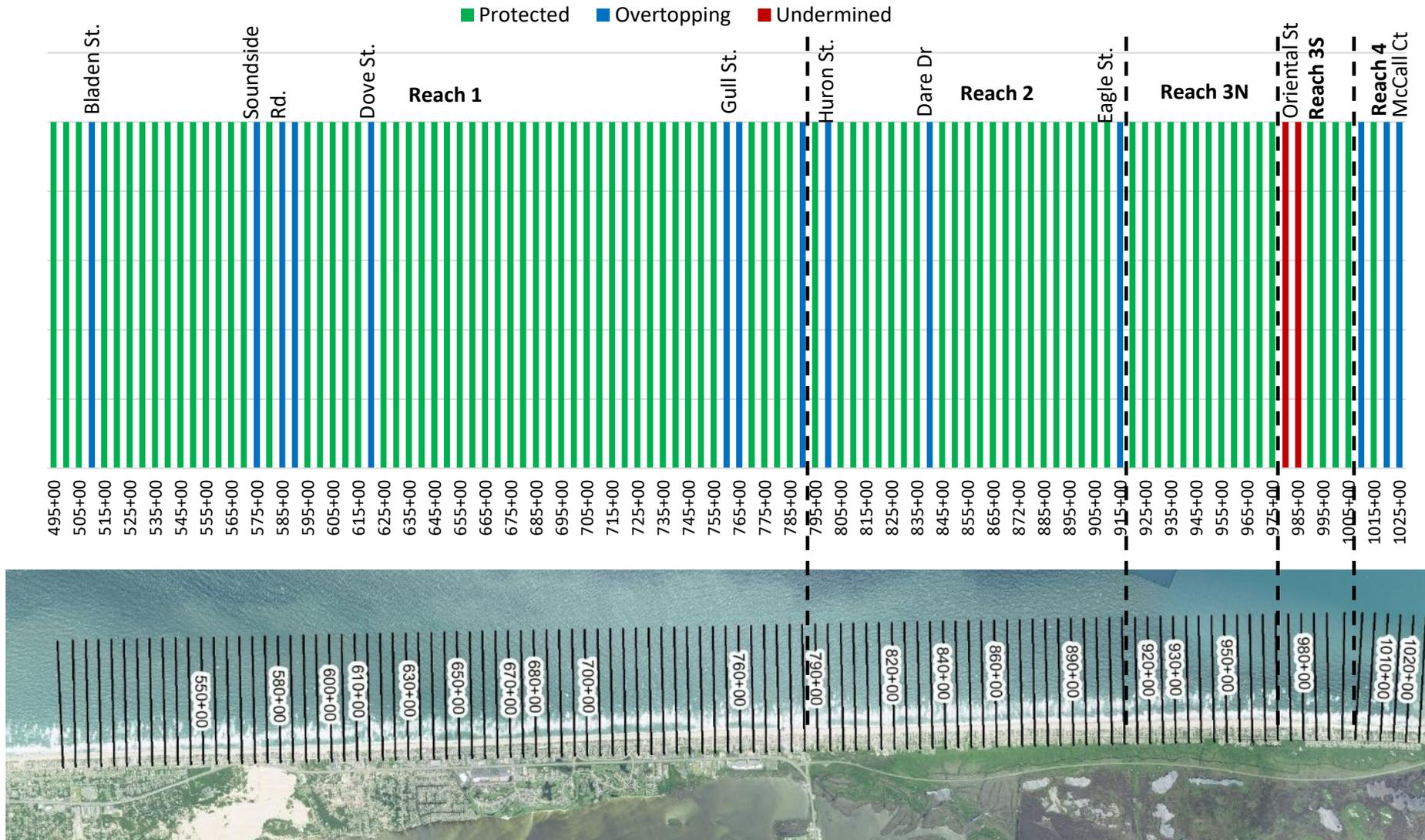


# Nourishment Triggers (-14 ft NAVD88)

## ➤ Fall 2025 Status By Individual Transect



# CSHORE Modeling Results



# Fall Monitoring Key Takeaways

- Atypically frequent high wave events in Fall 2025
- Visible dune escarpments and loss of dry beach, offshore migration of bar
- Losses above the -14 ft NAVD88 elevation indicate less sand available to provide level of protection to Town infrastructure
- Multiple transects along the nourished oceanfront at or nearing the -14 ft NAVD88 triggers
- Modeling with CSHORE shows that if a similar coastal low happens localized major overtopping will occur
- The typical winter wave climate may cause additional transects to fall below or approach the triggers

# Beach Renourishment Project



# Historical Projects

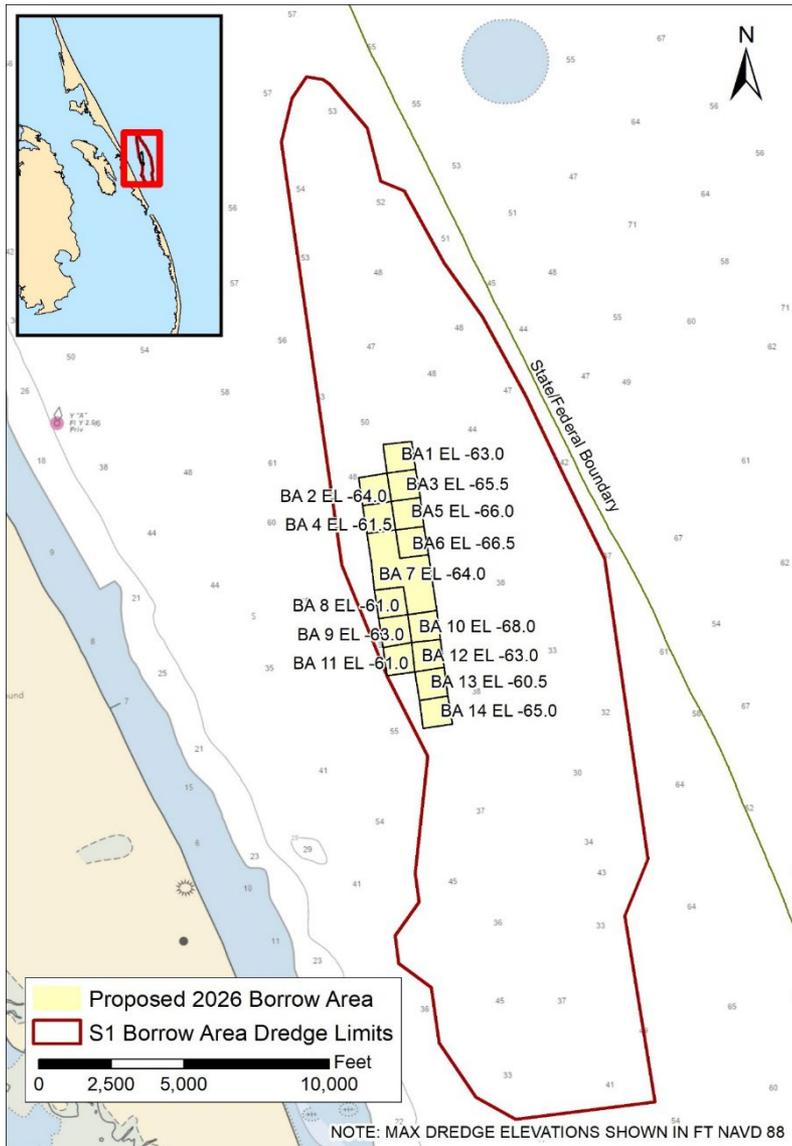
- 2004-2005 Post Hurricane Isabel Emergency Dune Restoration Project (320,066 cy from Currituck County Borrow Pit)\*
- 2011 Town of Nags Head Beach Nourishment Project (4.6 Mcy from Offshore Borrow Area)
- 2019 Town of Nags Head Beach Nourishment Project (4 Mcy from Offshore Borrow Area)\*
- 2022 Post Hurricane Dorian Beach Restoration Project (614,000 cy from Offshore Borrow Area)\*

\* *FEMA Funding*

# 2026 or 2027 Project Extents: Reach 1 to Reach 4



# 2026 Project – Proposed Borrow Area & Extents



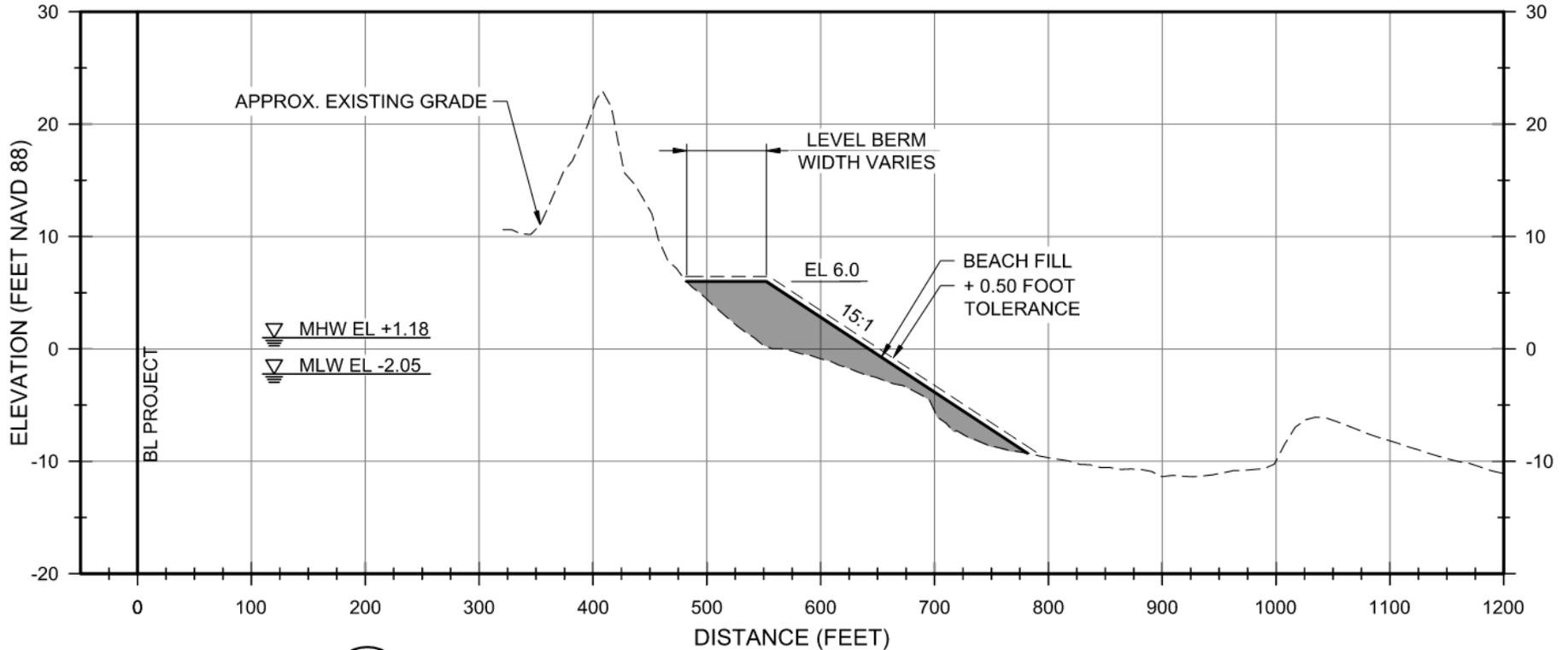
- Permitted up to 3.3 Mcy of placement to allow for changing conditions
- Available in Proposed Borrow Area: 7.6 Mcy

# 2026 or 2026 Renourishment Bid Volumes

**Beach Renourishment Fill Table**

Shoreline Segment	Stations			Length	Average Placement Density (CY/LF)	Estimated Placement Volume (CY)
Reach 1	496+00	to	790+00	29,400	28.7	843,000
Reach 2	790+00	to	920+00	13,000	30.9	402,000
Reach 3N	920+00	to	975+00	5,500	51.5	283,000
Reach 3S (Berm Only)	975+00	to	991+00	1,600	111.9	455,000
Reach 3S (Dune & Berm)	991+00	to	1010+00	1,900	145.3	
Reach 4	1010+00	to	1025+00	1,500	162.0	243,000
Reach 5 (NPS Taper)	1025+00	to	1030+00	500	20.0	10,000
<b>Total Base Bid</b>						<b>2,236,000</b>
Add Alternate #1	500+00	to	1025+00		NA	100,000
Add Alternate #2	500+00	to	1025+00		NA	100,000
<b>Total Base Bid + Add Alternates</b>						<b>2,436,000</b>

# 2026 or 2027 Project - Typical X-Sections



D1  
C-110

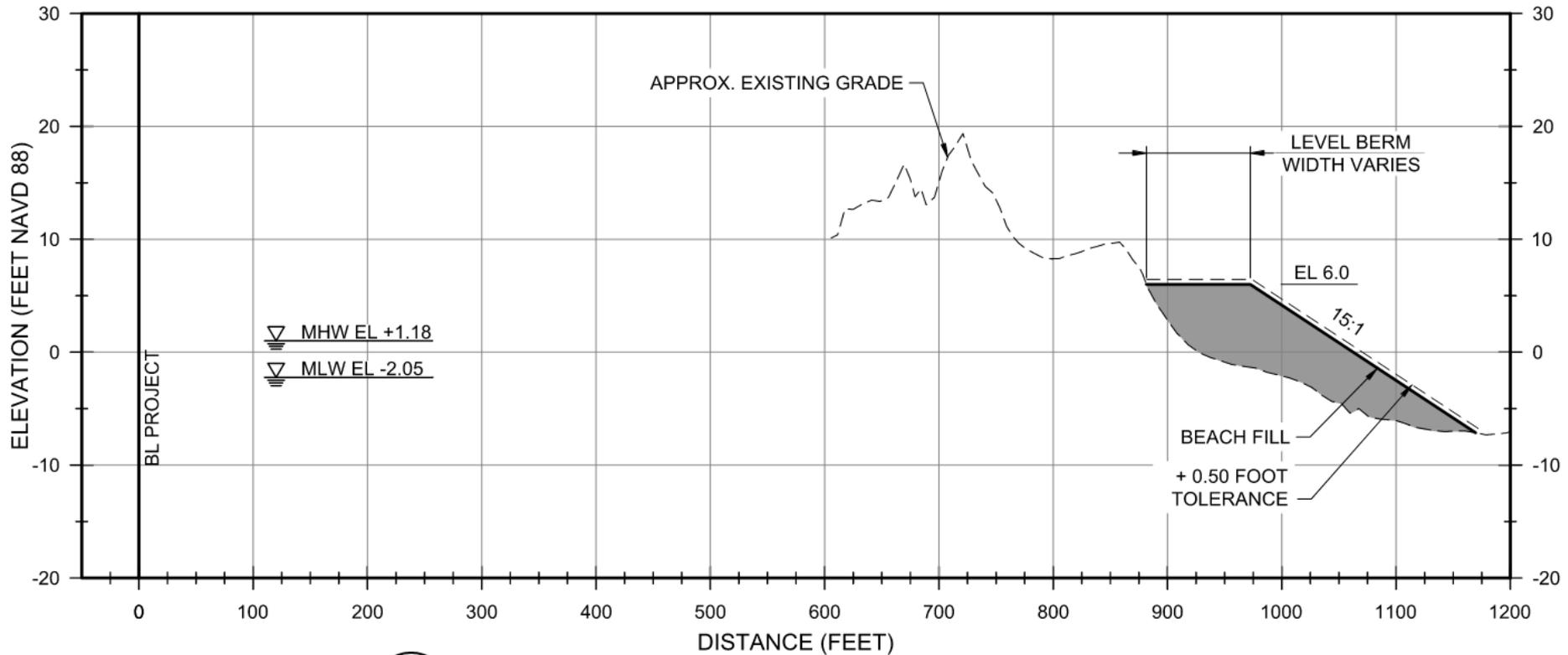
REACH 1 TYPICAL SECTION (STA 496+00 TO 790+00)

(Bonnett St. to Governor St.)

SCALE: AS NOTED

C-111 THRU C-121

# 2026 or 2027 Project - Typical X-Sections



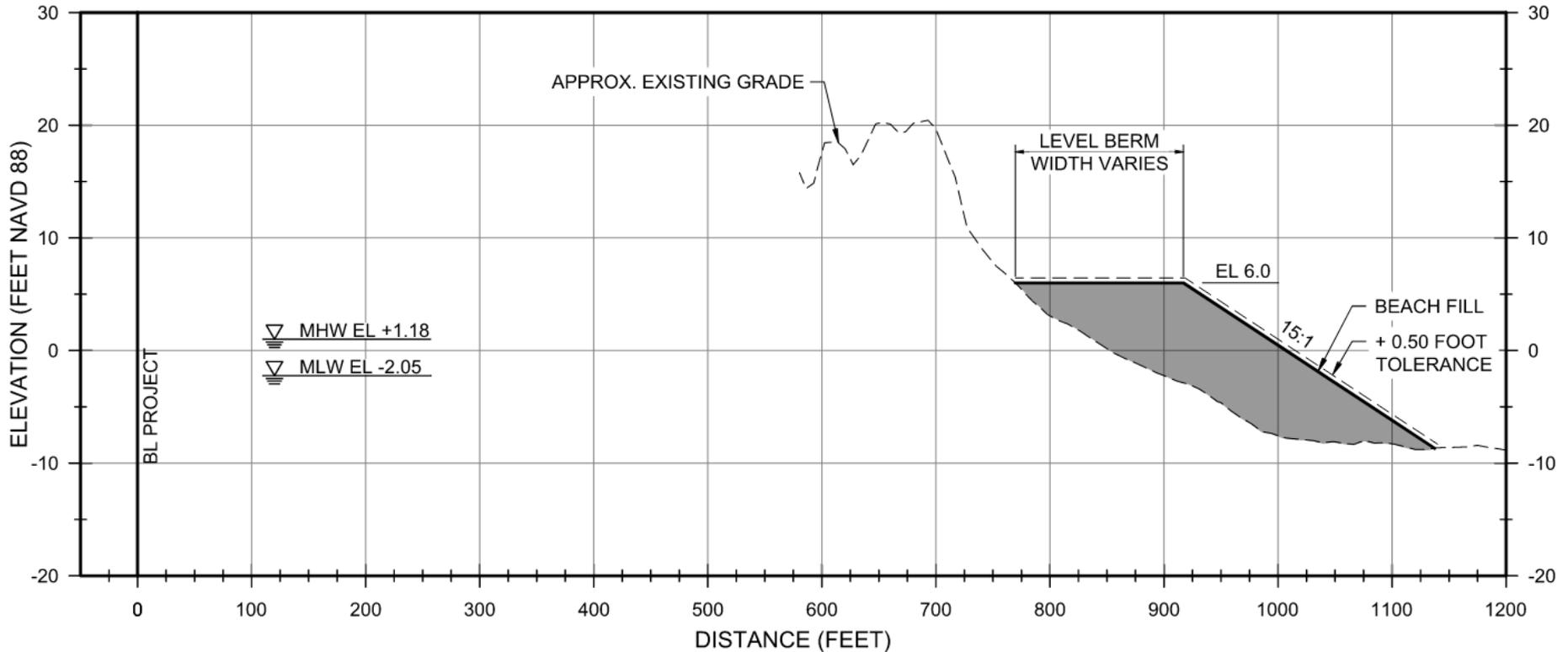
D4  
C-121

REACH 2 TYPICAL SECTION (STA 790+00 TO 920+00) (Governor St. to James St.)

SCALE: AS NOTED

C-122 THRU C-125

# 2026 or 2027 Project - Typical X-Sections



C1  
C-125

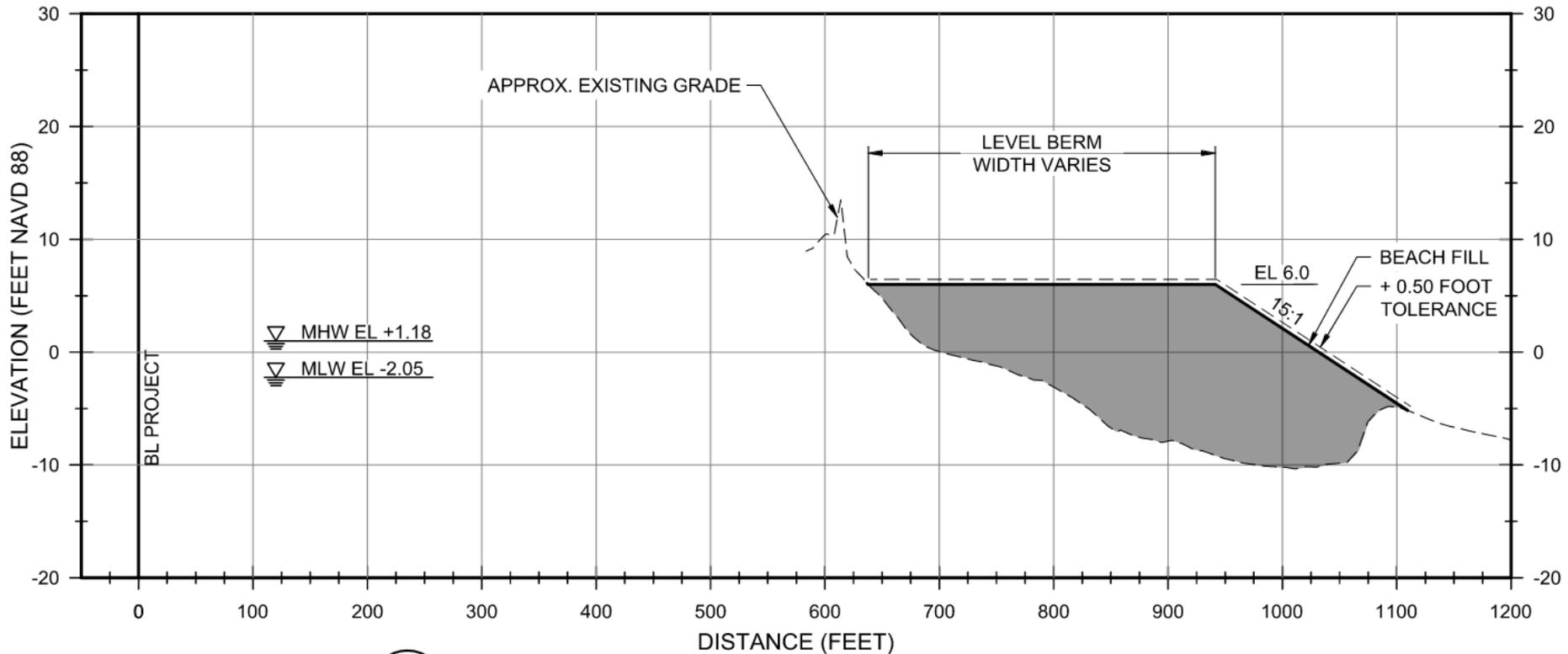
REACH 3N TYPICAL SECTION (STA 920+00 TO 975+00)

(James St. to Pelican St.)

SCALE: AS NOTED

C-126, C-127

# 2026 or 2027 Project - Typical X-Sections



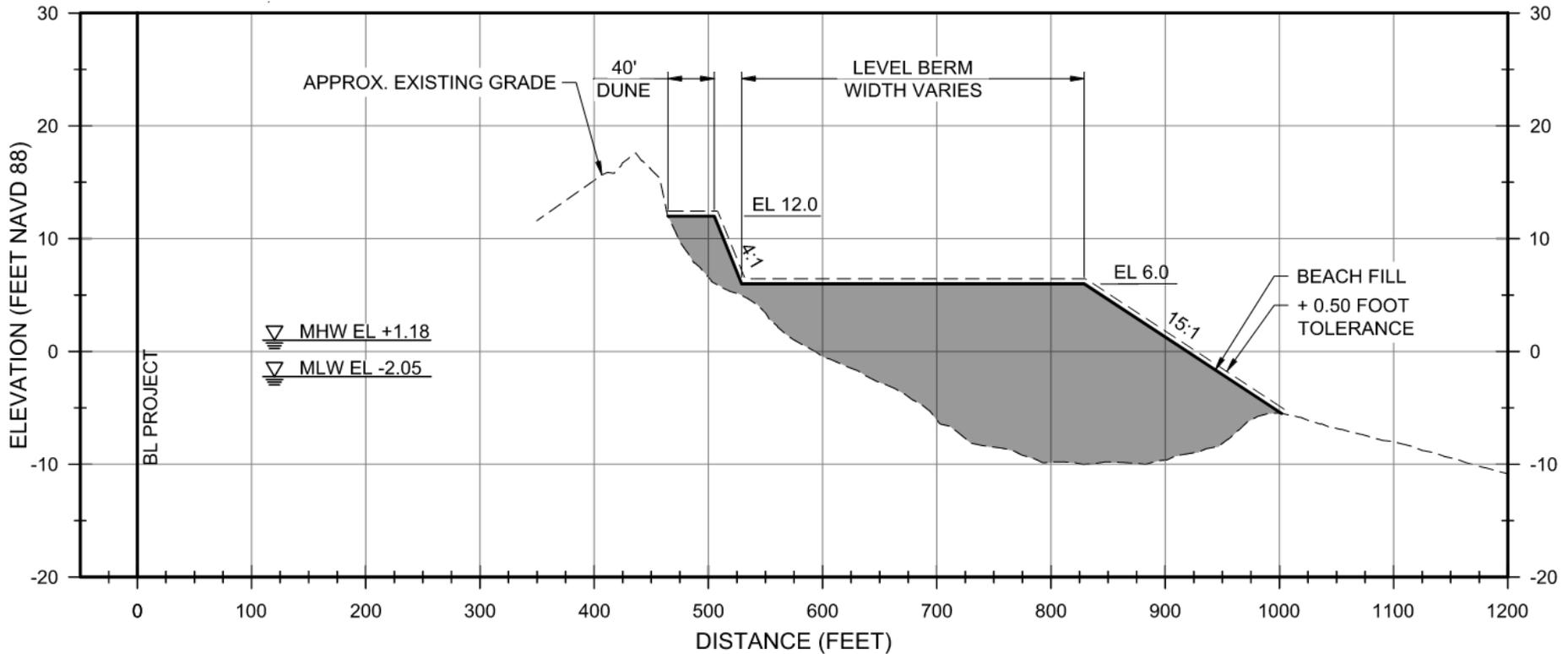
C4  
C-127

C-128

REACH 3S TYPICAL SECTION (STA 975+00 TO 991+00) (Pelican St. to Seagull Dr.)

SCALE: AS NOTED

# 2026 or 2027 Project - Typical X-Sections



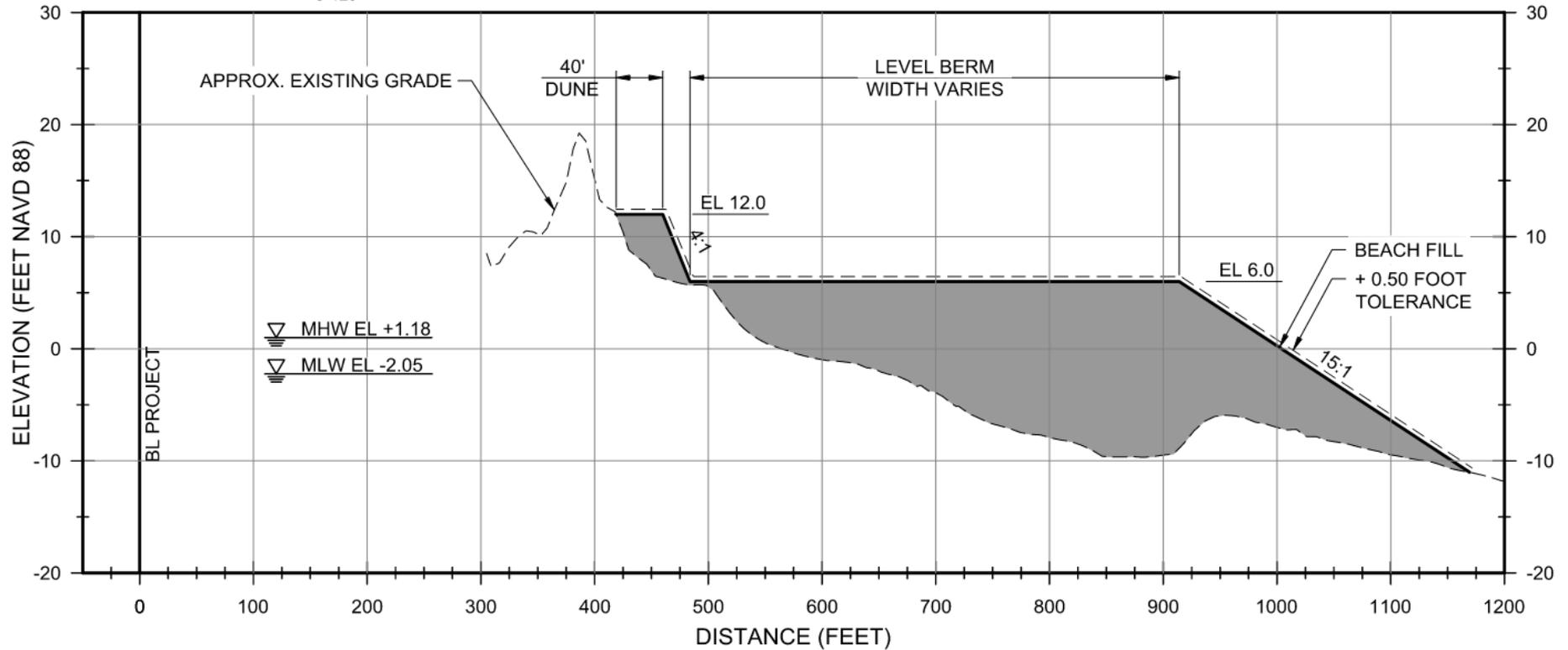
A1  
C-128

REACH 3S TYPICAL SECTION (STA 991+00 TO 1010+00) (Seagull Dr. to E Tern St.)

SCALE: AS NOTED

C-129

# 2026 or 2027 Project - Typical X-Sections

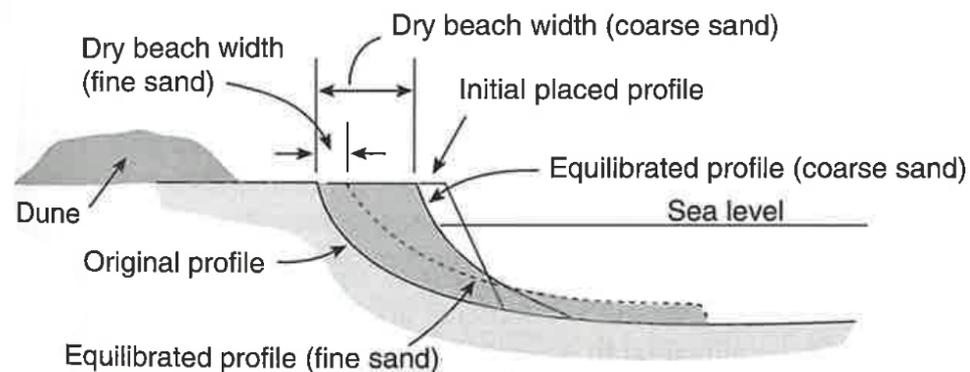
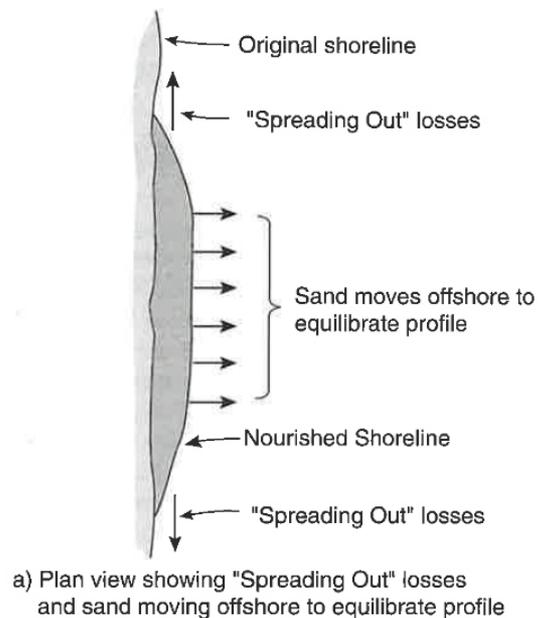


A4  
C-129

REACH 4 TYPICAL SECTION (STA 1010+00 TO 1030+00) (McCall Ct.)

SCALE: AS NOTED

# Beach Nourishment Profile Equilibration



*Credit: National Research Council, Beach Nourishment & Protection*

# Bid Review and Discussion

- **Bid A (2026 Construction): Weeks Marine Inc. (WMI)**
  - Total Base Bid A: \$34,934,100.00 [unit price for placement \$11.40/cy]
  - Additive Alternate 1A: \$965,000.00 [unit price for placement \$9.50/cy]
  - Additive Alternate 2A: \$965,000.00 [unit price for placement \$9.50/cy]
  -
- **Bid B (2027 Construction): Great Lakes Dredge & Dock (GLDD)**
  - Total Base Bid B: \$37,280,751.00 [unit price for placement \$11.55/cy]
  - Additive Alternate 1B: \$1,040,900.00 [unit price for placement \$10.25/cy]
  - Additive Alternate 2B: \$1,040,900.00 [unit price for placement \$10.25/cy]

# Factors Affecting Beach Nourishment Pricing

- Several larger dredging companies selling older, smaller hopper dredges (less market capacity)
- Construction of new, larger hopper dredges (requiring higher return on investment)
- Increasing demand and general inflationary pressures
- Mobilization/demobilization increases due to reduction in market capacity
- Pricing for both seasons lower than the Engineer's Estimate

# Award Considerations

- **Fall Survey Results (Summer-Fall 2025)**

- Nourished Oceanfront shoreline change ~ -27 ft
- Volume loss above -14 ft NAVD88 -877,419 cy indicates loss of material available to protect infrastructure
- Localized areas in all reaches at or nearing triggers for -14 ft NAVD88 elevation
- Upcoming typical winter season with generally higher wave events

- **Financial Considerations**

- Base Bid A (2026) ~ \$2.3M less than Base Bid B (2027)
- Placement of Base Bid and both Add Alts in 2026 less than just Base Bid in 2027
- Pricing for Add Alts lower because they will increase placement density (more cost-efficient)
- Add Alts allow Town flexibility to respond to localized hotspots at the time of construction

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# QUESTIONS?



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# Cumulative Volume Change Relative to Pre-Nourishment

Nourished Oceanfront, Cumulative Volume Change Relative to Pre-Nourishment (April 2019)

