

EVOLUTION OF THE DEERFIELD-HILLSBORO COASTAL MANAGEMENT PROGRAM

Dylan Nestler, P.E., Coastal Protection Engineering (CPE)

Co-Authors: Thomas Pierro, P.E., BC.CE, Stacy Buck (CPE)



Deerfield Beach
Florida



FLORIDA SHORE & BEACH
PRESERVATION ASSOCIATION
A League of Cities and Counties on Beach and Coastal Issues

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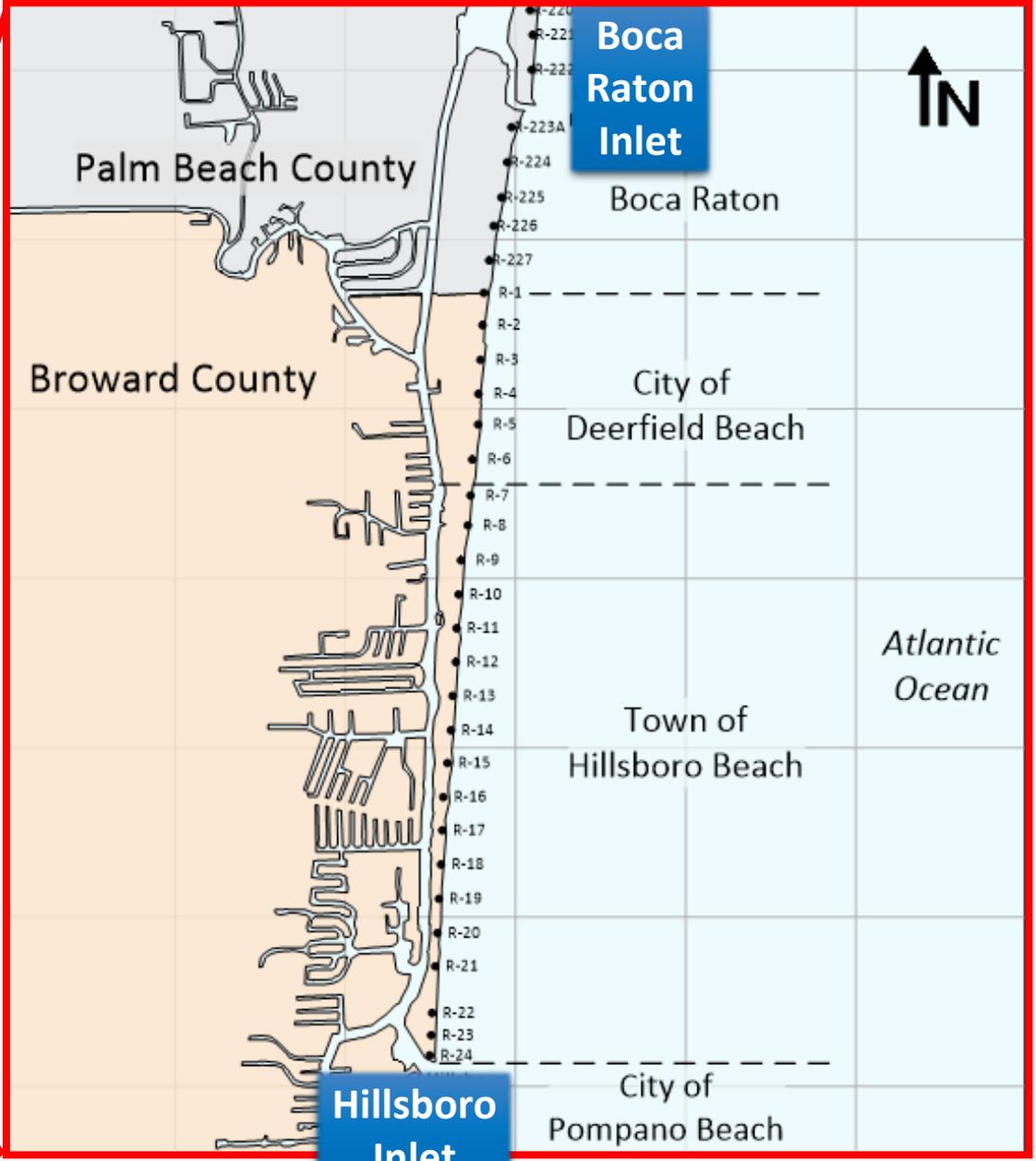
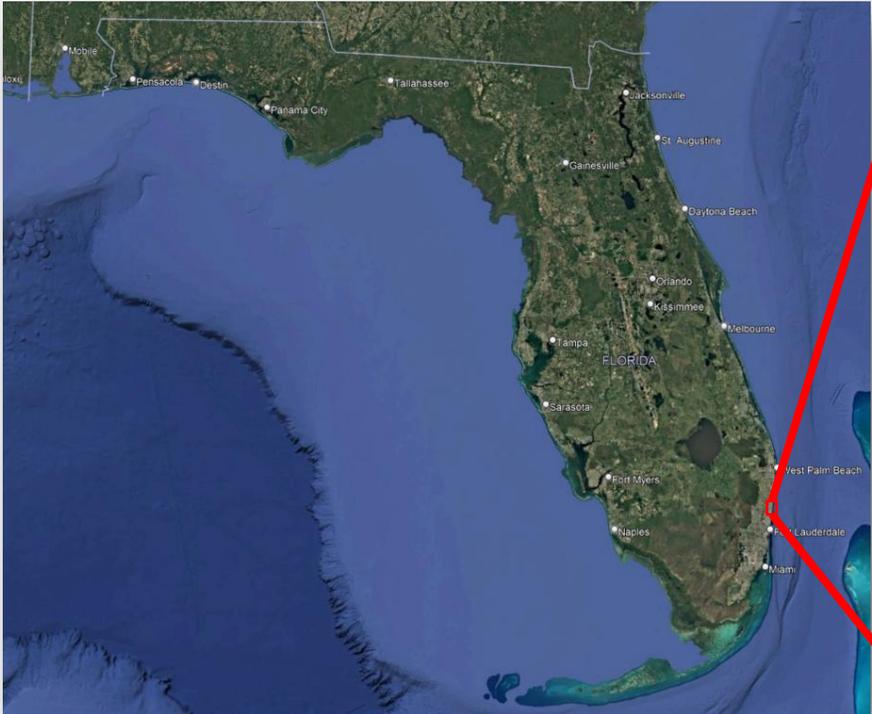
OUTLINE

- Background
- Historic Coastal Management
- Contemporary Coastal Management
- Proposed Management Strategy

BACKGROUND

PROJECT LOCATION

- Broward County “Segment I”
- R-1 to R-24



PRE-1970s

- Deerfield beach groin field construction began 1962
 - Rock rubble mounds
 - Concrete H-pile and timber panels stems



PRE-1970s



PRE-1970s



PRE-1970s



Deerfield Beach, Florida, from the new Fishing Pier

MODERN CONDITIONS

- Northern groins covered
- Southern groins exposed
- Stems removed



1972-2020

RECENT BEACH FILL PLACEMENT HISTORY

- 1.41 Mcy placed in 48 years
- Municipal boundary at R-6+750

Year	Project Area	Project Limits	Volume (cy)	Sand Source
1972	Town	R7 to R12	360,000	Offshore
1998	Town and City	R6 to R12	555,000	Offshore
2008	Town	R7	10,350	Upland
2011	Town and City	R6.4 to R12.5	339,151	Offshore
2015	Town and City	R6+300 to R7+655	45,600	Upland
2018	Town	R6+750 to R9	33,770	Upland
2020	Town	R6+750 to R9+500	68,980	Upland



SETTLEMENT AGREEMENT

- Effective Date: October 8, 2020
- Provisions to jointly manage and monitor beaches
- Beach nourishment every 5 years for 30 years
- City of Deerfield Beach
 - 1,500 feet: SE 6th St (R-5+350) to SE 10th St (R-6.7)
 - Coordinate with City of Boca Raton (inlet ebb shoal)
 - Cover groins with sand after projects
- Town of Hillsboro Beach
 - 2,300 feet - SE 10th St (R-6.7) to R-9
 - Coordinate with Hillsboro Inlet District
- Initial construction April 2023, next winter 27/28



2023 BOCA RATON INLET PROJECT



- Constructed March - April 2023
- 388,943 cy of fill in three areas
 - Boca Raton: 209,643 cy (53.9%)
 - Deerfield Beach: 33,667 cy (8.7%)
 - Hillsboro Beach: 145,633 cy (37.4%)
- Total Project Cost \$9.4M
 - Boca Raton: \$4.5M
 - Deerfield Beach: \$834K
 - Hillsboro Beach: \$4.0M
 - Eligible for FDEP cost share



2023 BOCA RATON INLET PROJECT

- Dry beach placement in Deerfield led to “mounding” sand over groins for Settlement Agreement compliance



1972-2025

RECENT BEACH FILL PLACEMENT HISTORY

- 1.68 Mcy placed in 53 years
- Municipal boundary at R-6+750

Year	Project Area	Project Limits	Volume (cy)	Sand Source
1972	Town	R7 to R12	360,000	Offshore
1998	Town and City	R6 to R12	555,000	Offshore
2008	Town	R7	10,350	Upland
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2018	Town	R6+750 to R9	33,770	Upland
2020	Town	R6+750 to R9+500	68,980	Upland
2023	Town and City	R5 to R12+400	201,700	Boca Ebb Shoal
2025	Town	R6+750 to R12	64,500	Upland

Settlement Agreement Executed



ANALYSES

NEARSHORE HARDBOTTOM

- Protected resource
- Design constraint

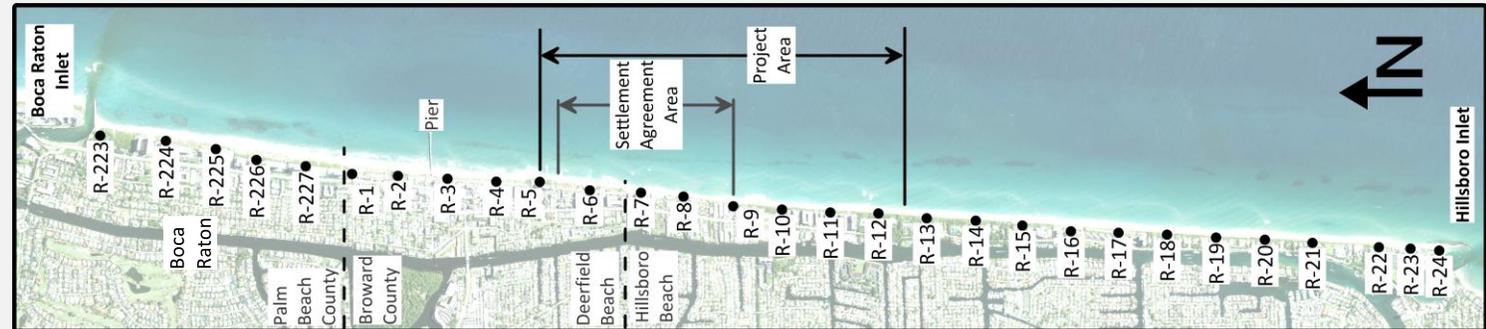
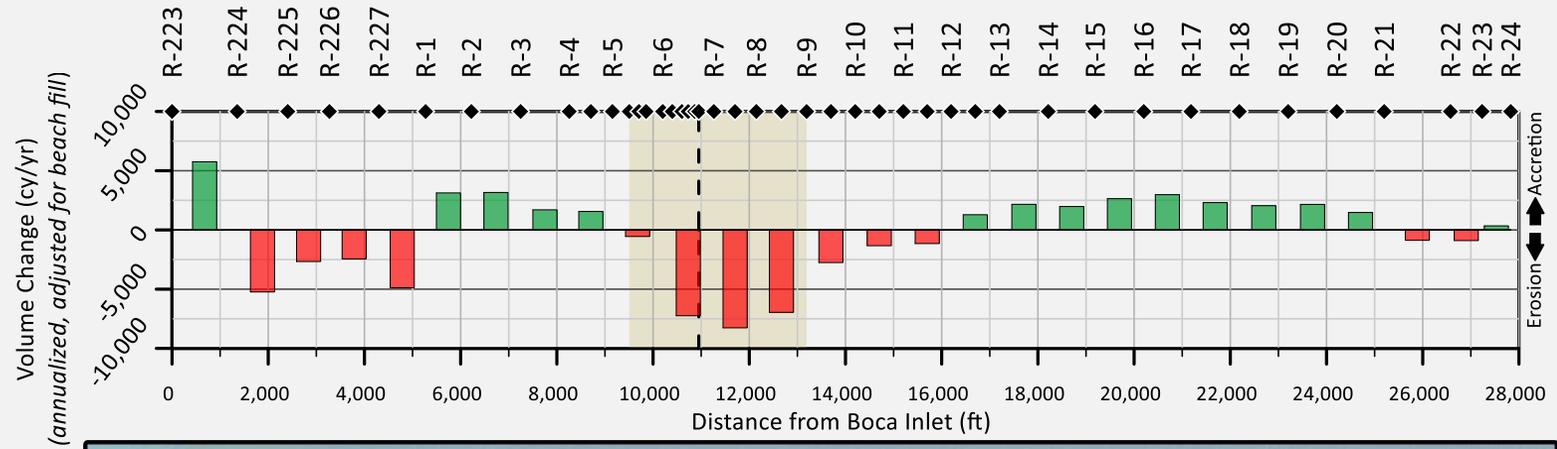
Typical distances from MHW to nearshore hardbottom edges

Monument	Distance (ft)	Monument	Distance (ft)	Monument	Distance (ft)
R-1	350	R-6	480	R-11	1,130
R-2	950	R-7	675	R-12	880
R-3	600	R-8	700	R-13	1,070
R-4	500	R-9	860	R-14	1,115
R-5	340	R-10	900	R-15	1,200



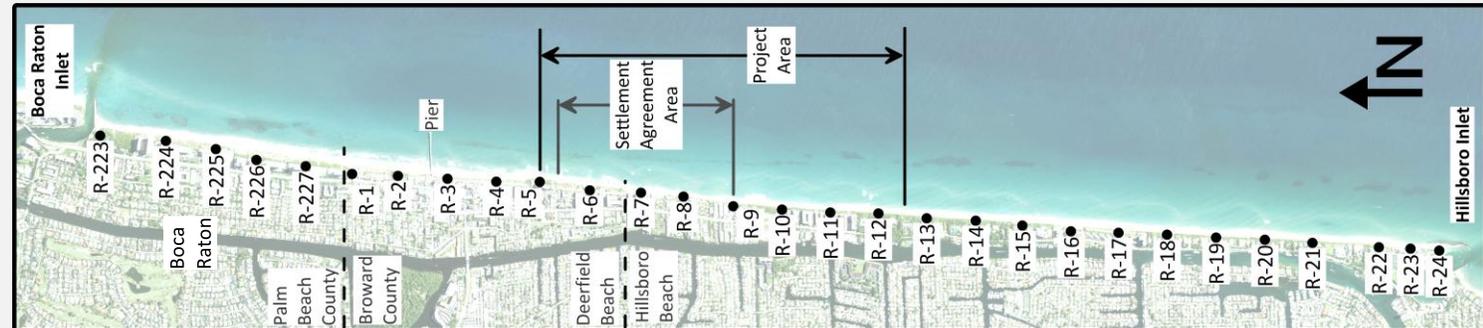
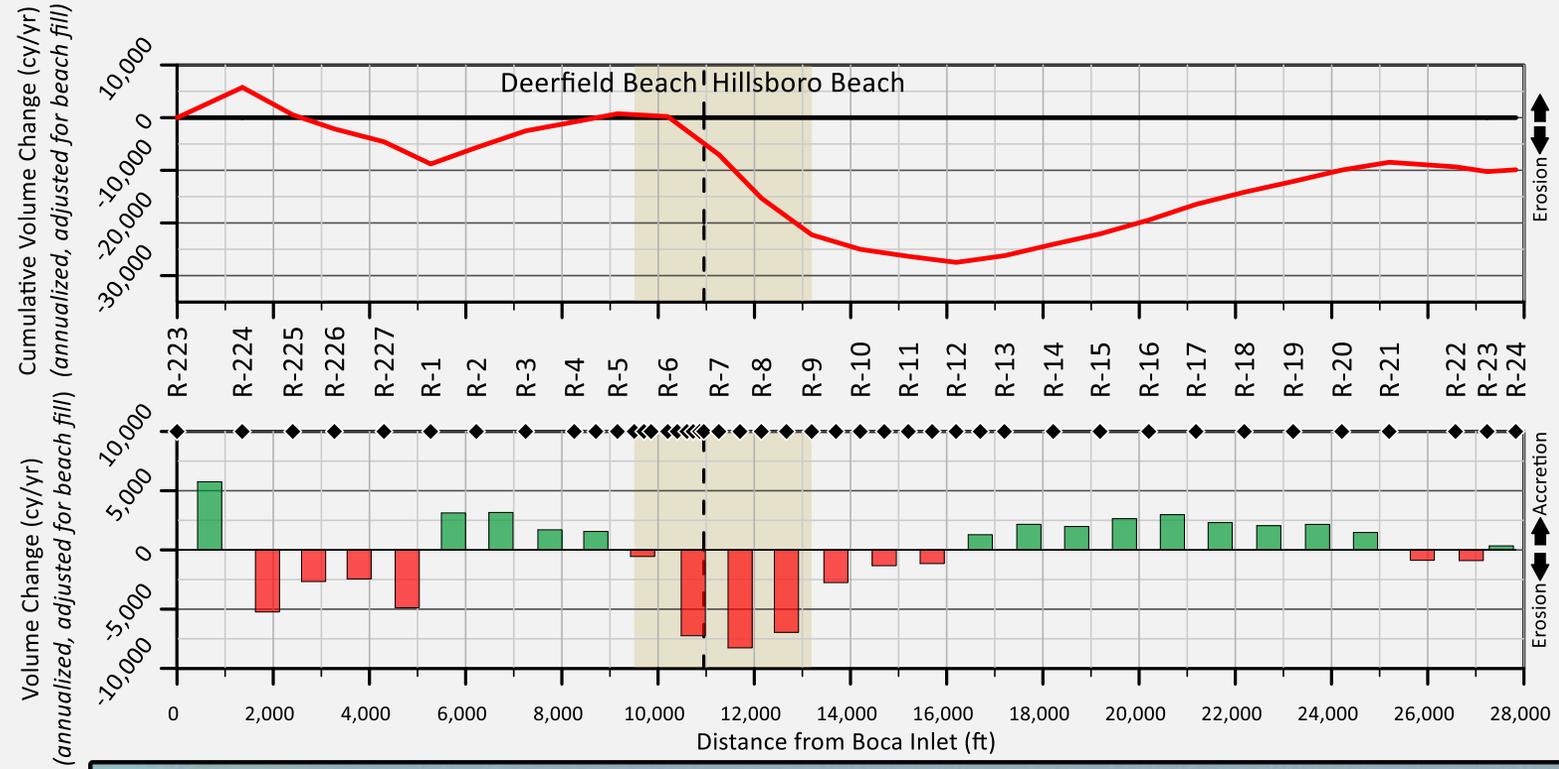
VOLUME CHANGE TRENDS (2011-2023)

- North Deerfield (R-3 to R-5)
 - +3,000 cy/yr accretion
- Settlement Agreement area (R-5 to R-9)
 - -20,400 cy/yr erosion
 - ~100,000 cy for 5 years
- Project Area (R-5 to R-12)
 - -25,700 cy/yr erosion
- South of Project (R-12 to R-21)
 - +20,000 cy/yr accretion
- Southern island (R-21 to R-24)
 - -1,000 cy/yr erosion



CUMULATIVE VOLUME CHANGE RATE

- 10,000 cy deficit from inlet to inlet



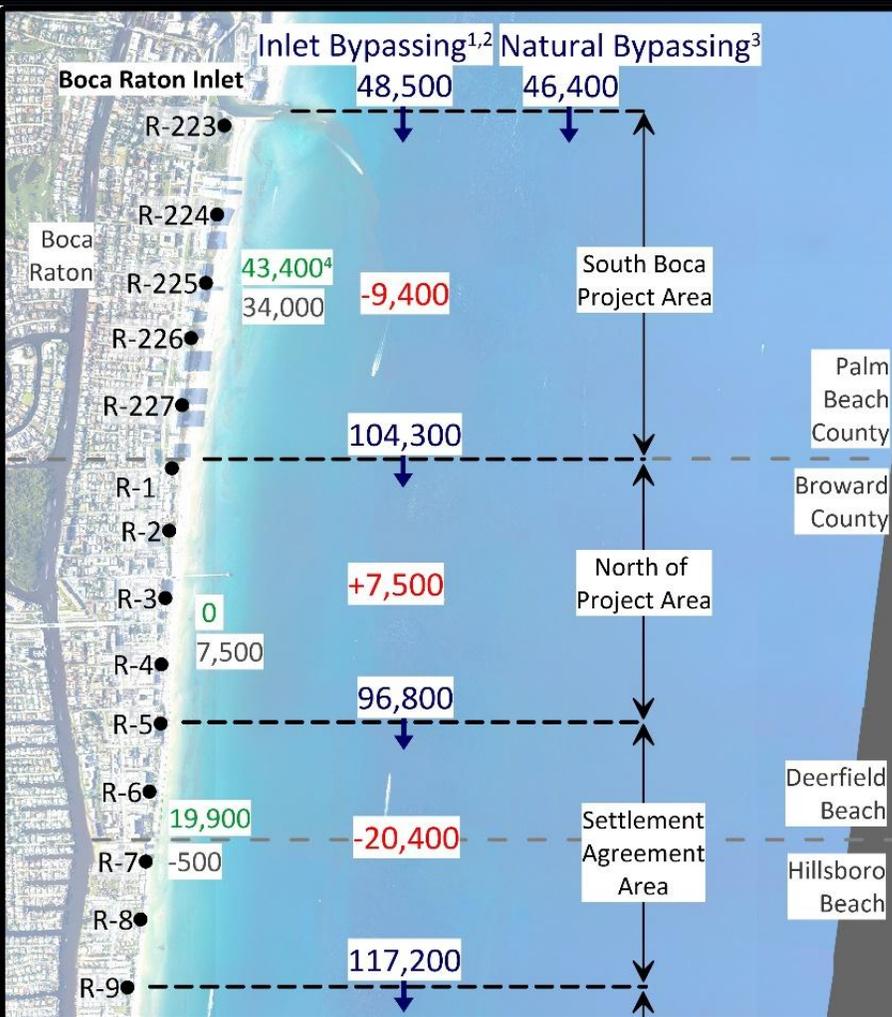


**February 2025
Post-Construction**



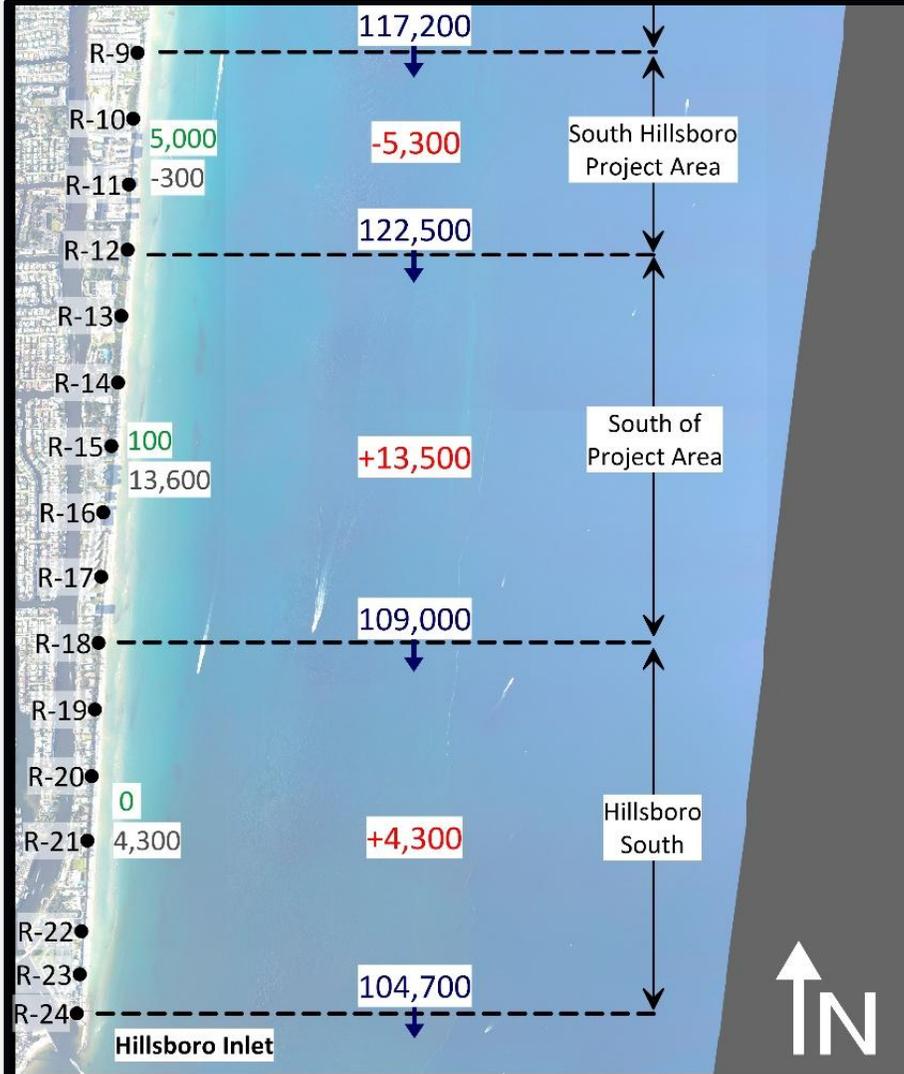
December 2025

SEDIMENT BUDGET: 2011 - 2023



Legend (cy/yr)
 Transport Rate
 Measured Change
 Placement Rate
 Net Change

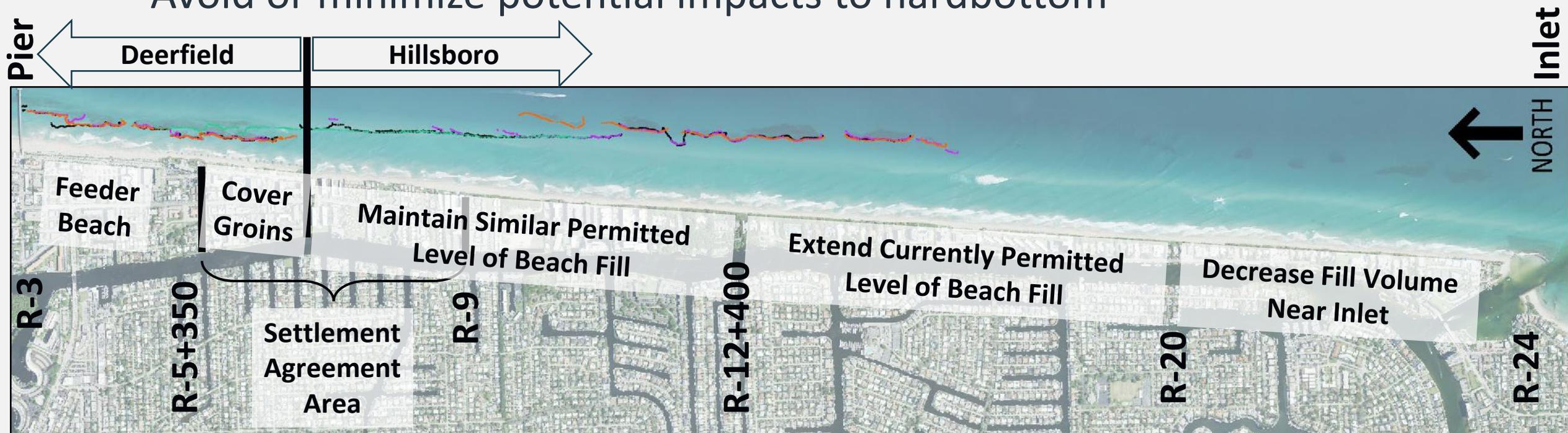
- Inlet bypassing from FDEP (2023c).
- The total mechanical bypassing rate across Boca Raton Inlet was 91,900 cy/yr during the studied time period.
- Natural bypassing from ATM (2016).
- South Boca Raton beach renourishment from Boca Raton Inlet ebb shoal.
- Volume changes in Boca Raton were calculated from April 2011 to April 2023.
- Volume changes in Deerfield/Hillsboro were calculated from May 2011 to December 2023.



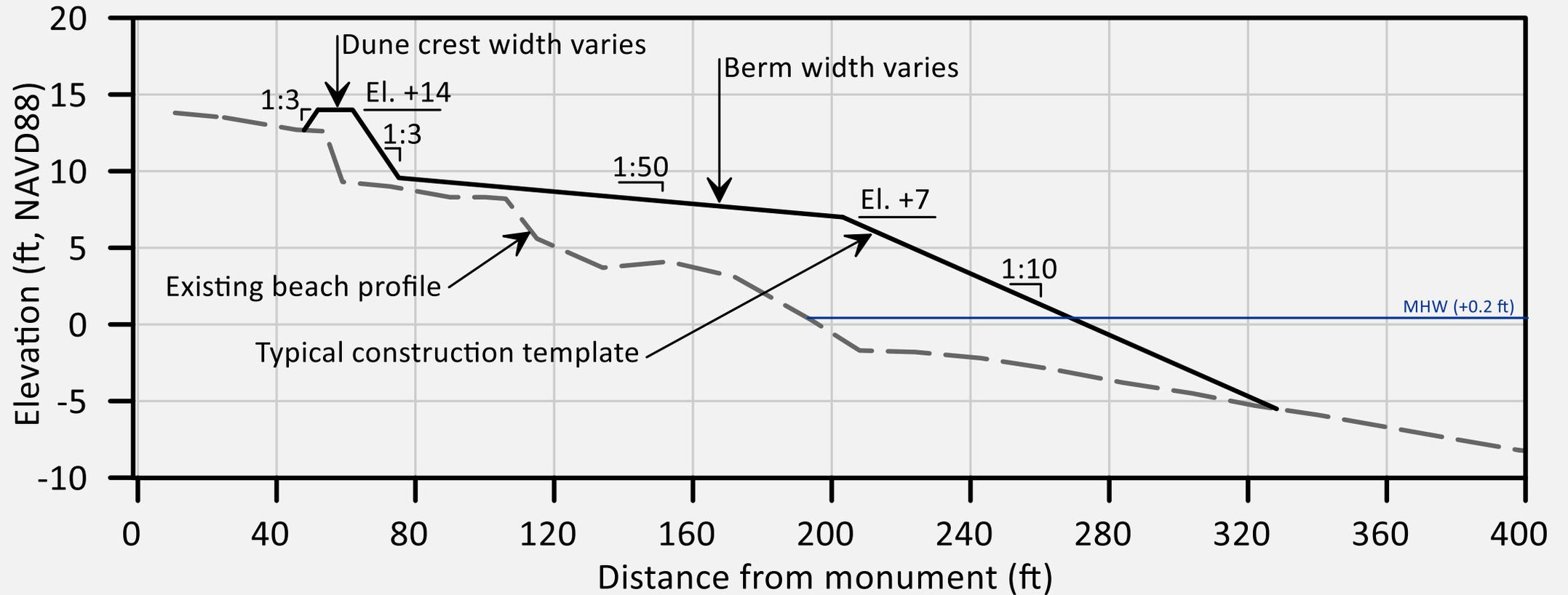
DESIGN

DESIGN GOALS

- R-3 to R-24 (Pier to inlet)
- Create feeder beach in southern Deerfield (SBMP)
- Avoid or minimize potential impacts to hardbottom

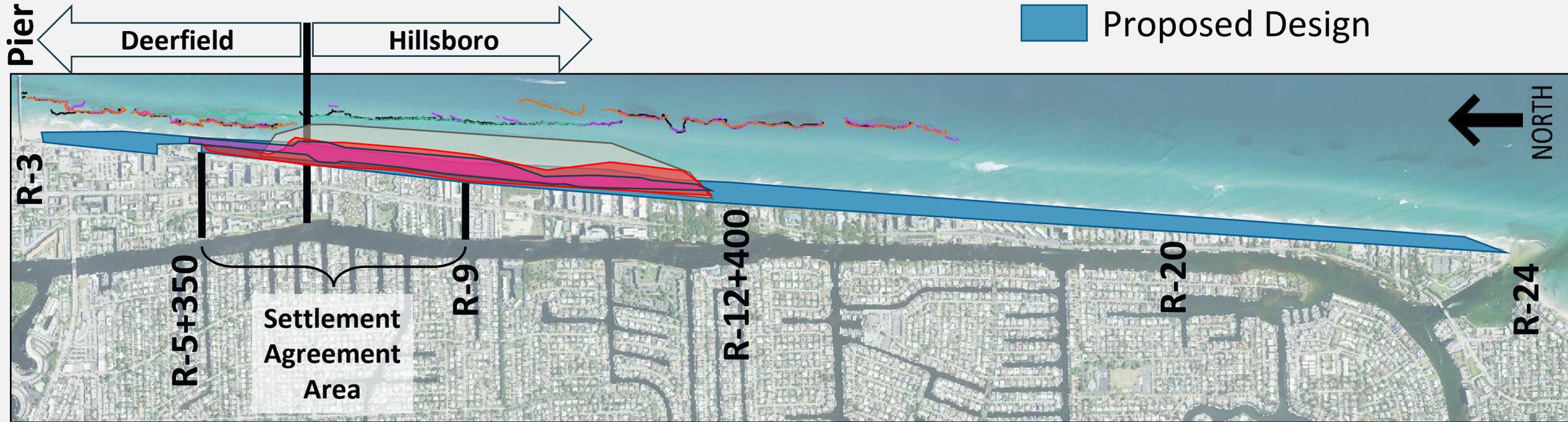


PROPOSED DESIGN

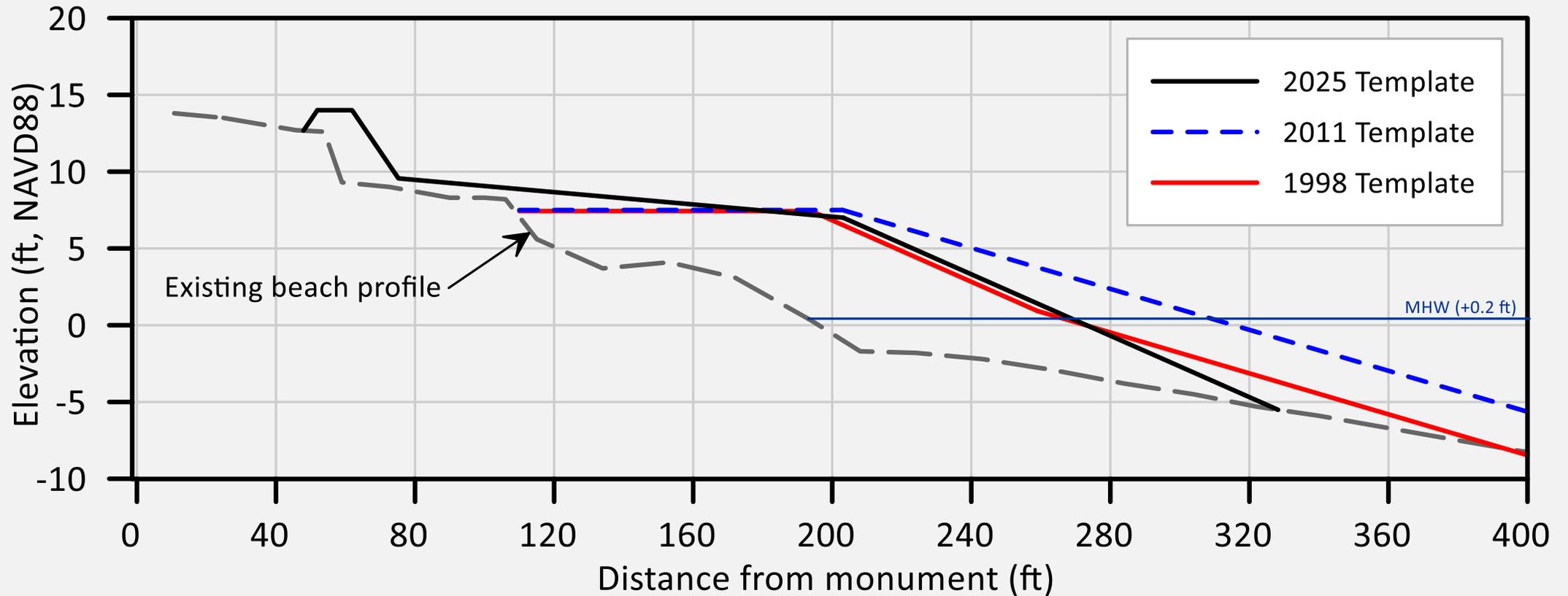


COMPARISON - PLAN VIEW

- 1998 Project
- 2011 Project
- 2023 Project
- Proposed Design



COMPARISON – CROSS SECTION

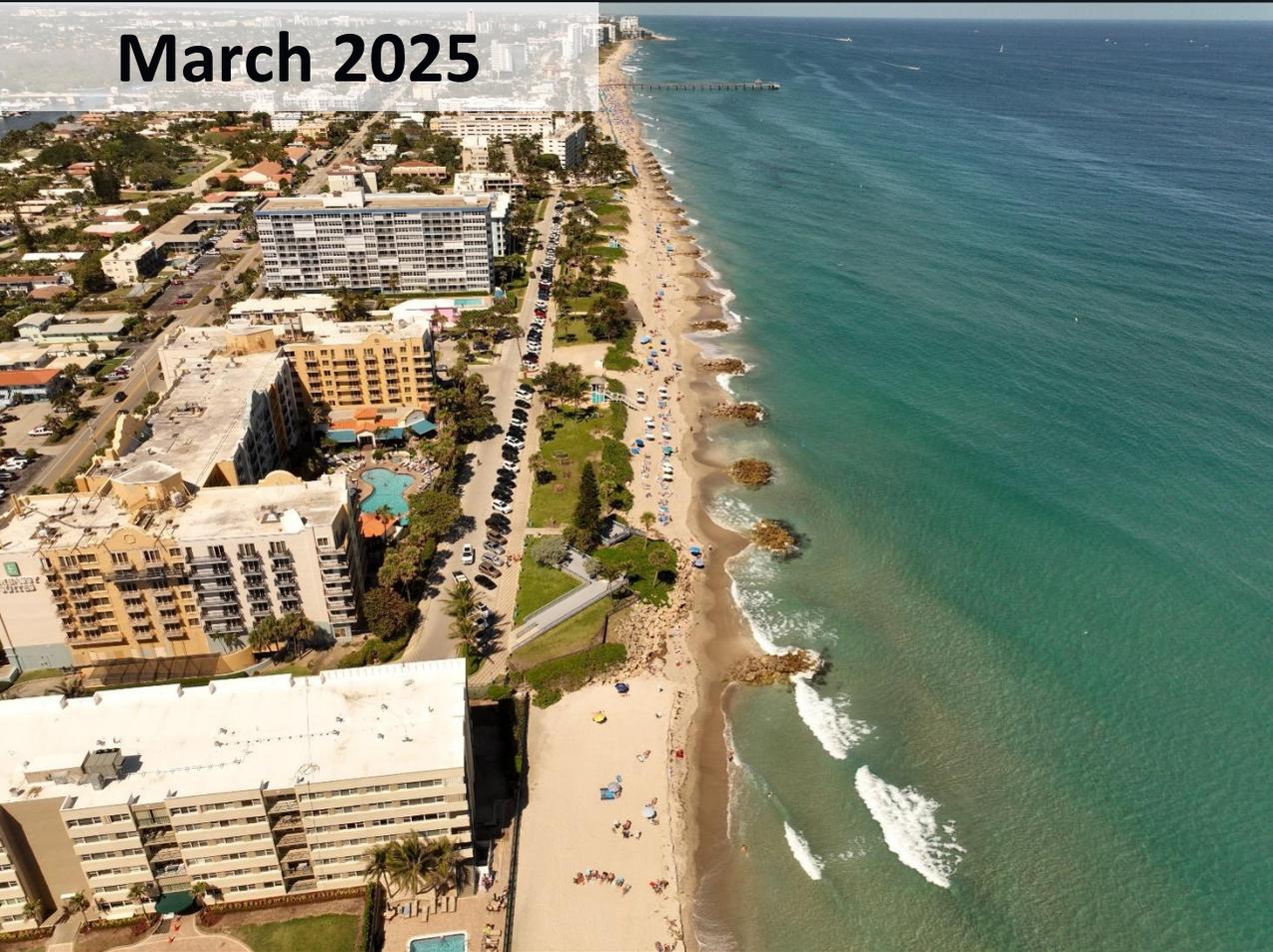


1998 PROJECT

- Groins south of R-6 buried with fill
 - Magenta box
- Settlement Agreement requires groin burial 680 ft to the north
 - Blue box



March 2025



December 2025



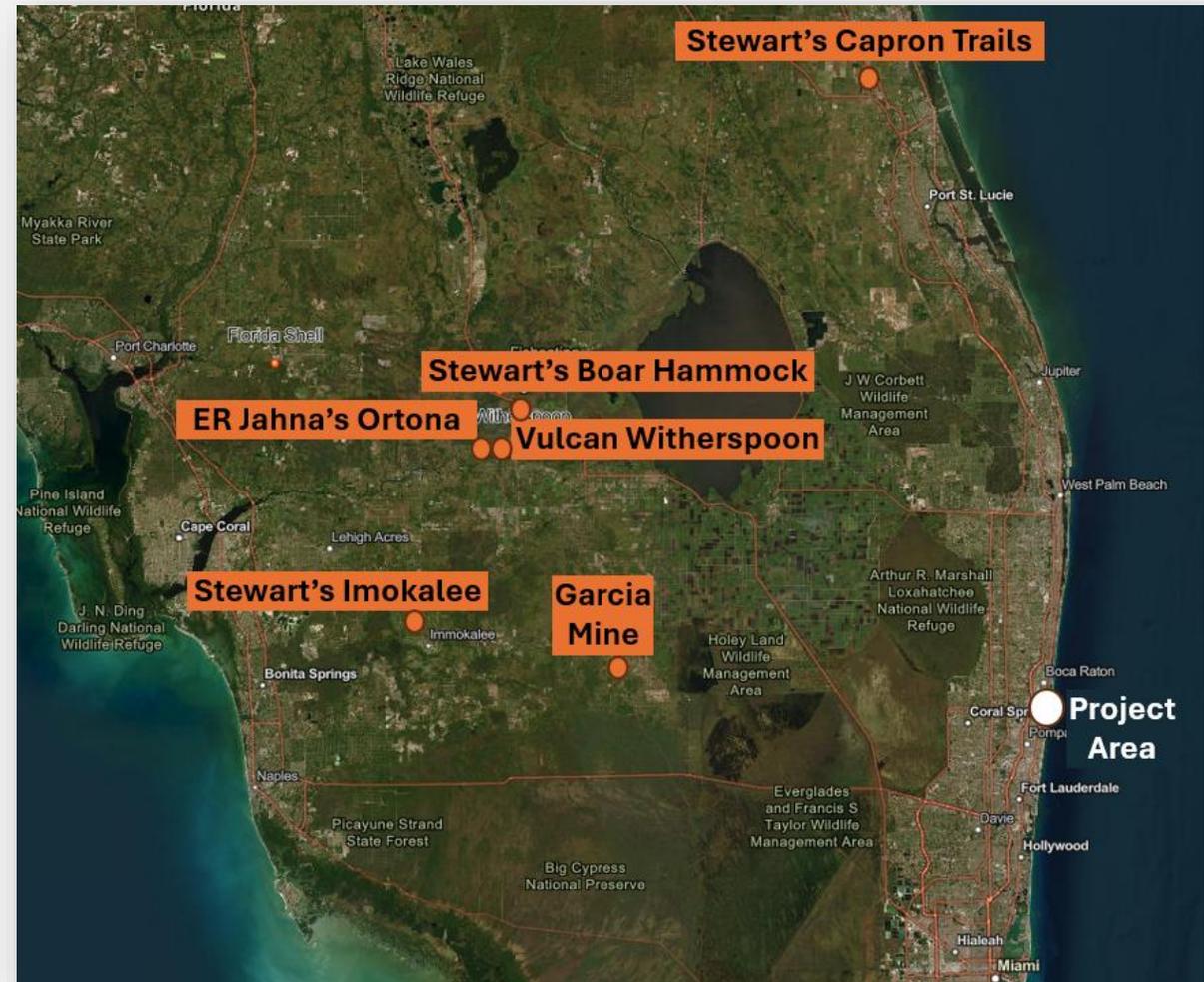


ETOF analysis to avoid or minimize potential impacts to hardbottom

SAND SOURCES

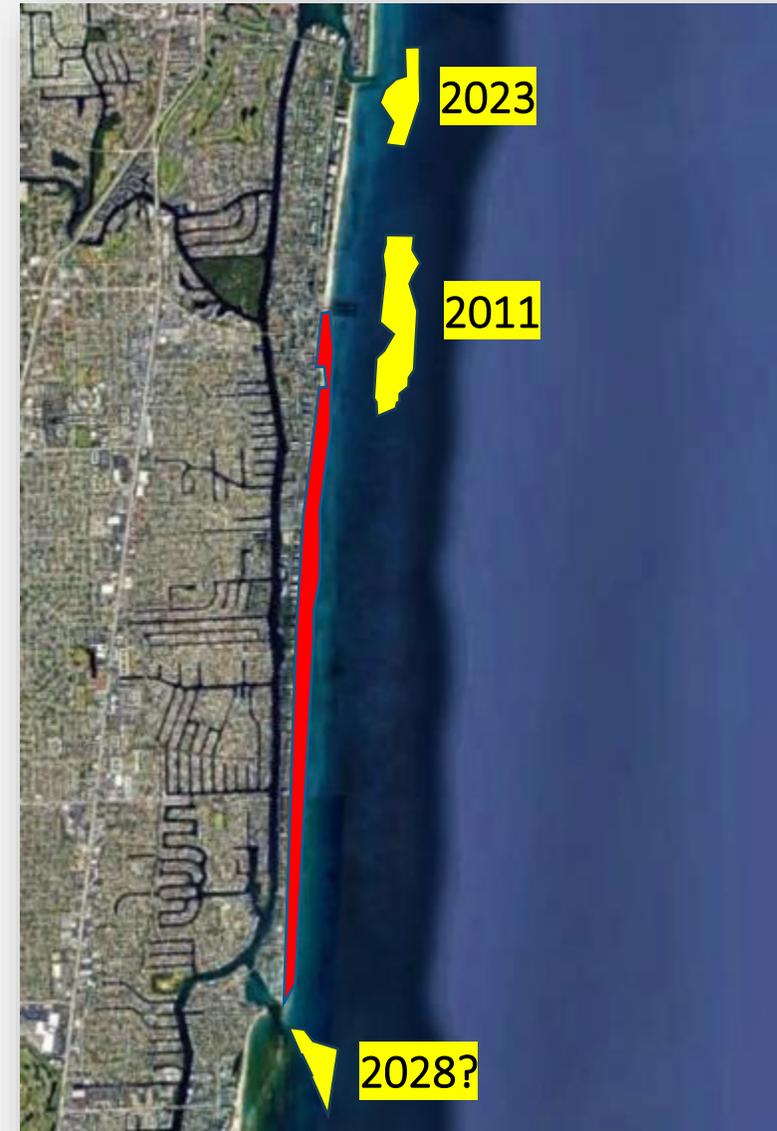
UPLAND SAND MINES

- Permitted
 - Garcia Mine
 - Stewart's Immokalee
 - ER Jahna's Ortona
 - Vulcan Witherspoon
- Proposed
 - Stewart's Boar Hammock
 - Stewart's Capron Trails



OFFSHORE SAND SOURCES

- Boca Raton Inlet ebb shoal
- Broward County Borrow Area 1
- Hillsboro Inlet ebb shoal
- Additional offshore borrow area search in future



OVERALL STRATEGY

- Comply with Settlement Agreement
- Update design template
 - Mitigate erosional areas
 - Extend sand placement area to north and south
 - Dune placement everywhere
- Diversify upland and offshore sand source portfolio
- Seek regional sand-sharing and cost-sharing project partners

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THANK YOU!

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