

Lovers Key – Bonita Beach Hurricane Recovery

FSBPA
FEBRUARY 7, 2024



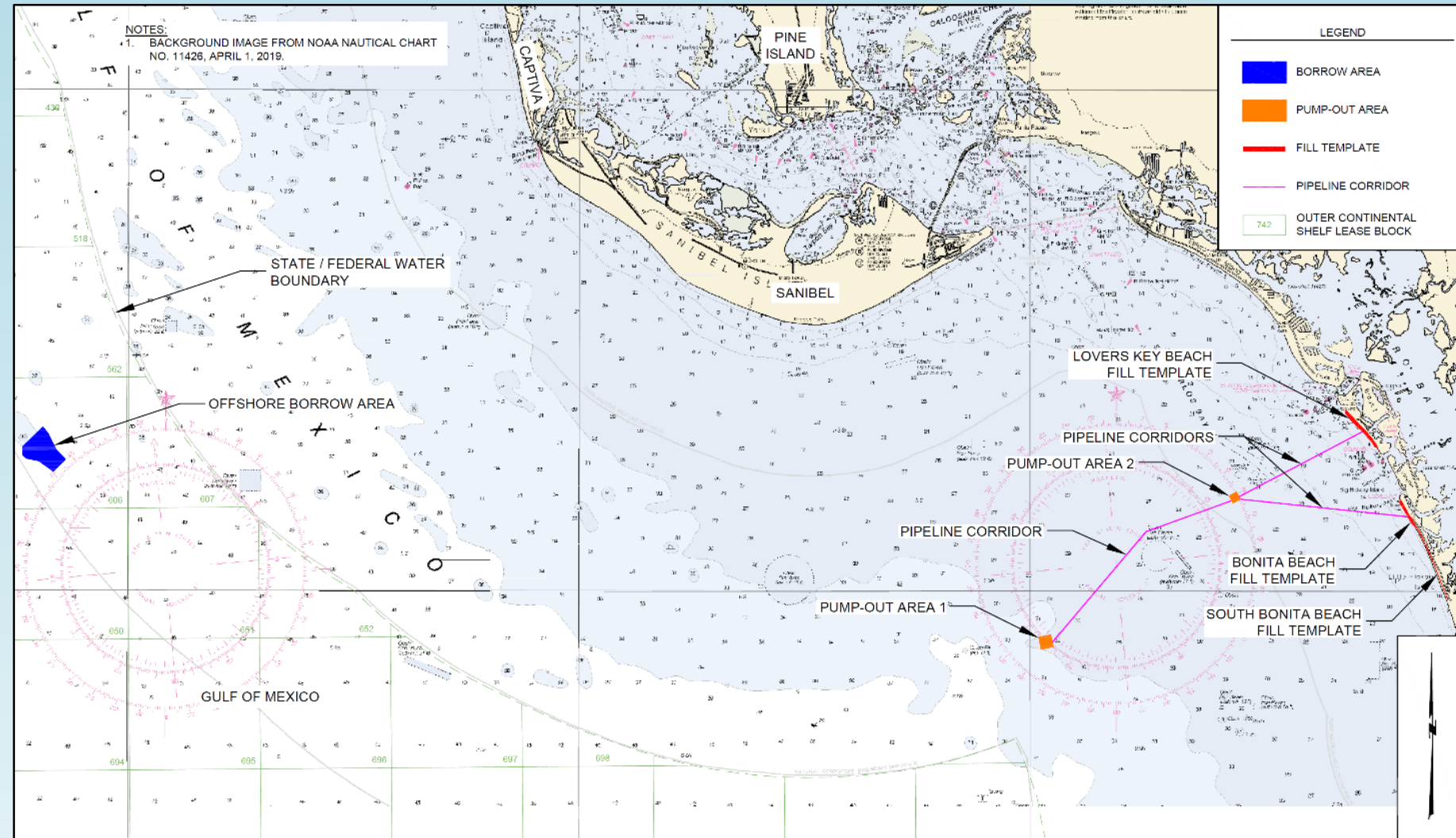
Steve Boutelle
Mike Campbell



Michael Poff
Vadim Alymov

OUTLINE

- Hurricane Impacts
- Lovers Key
- Bonita Beach
- Agency Coordination
- Challenges



HURRICANE IMPACTS

HURRICANE IAN (2022)

- Fifth-strongest hurricane on record to strike the U.S.
- Cat 5 with maximum sustained winds of 160 mph
- Landfall near Cayo Costa on Sep. 28, 2022 at 3:05 PM EDT with maximum sustained winds of 155 mph



HURRICANE IMPACTS

Tram &
Pedestrian Bridge



Lovers Key Aerial View Before (left) and After (right) Hurricane Ian
Note Breach in Island

HURRICANE IMPACTS



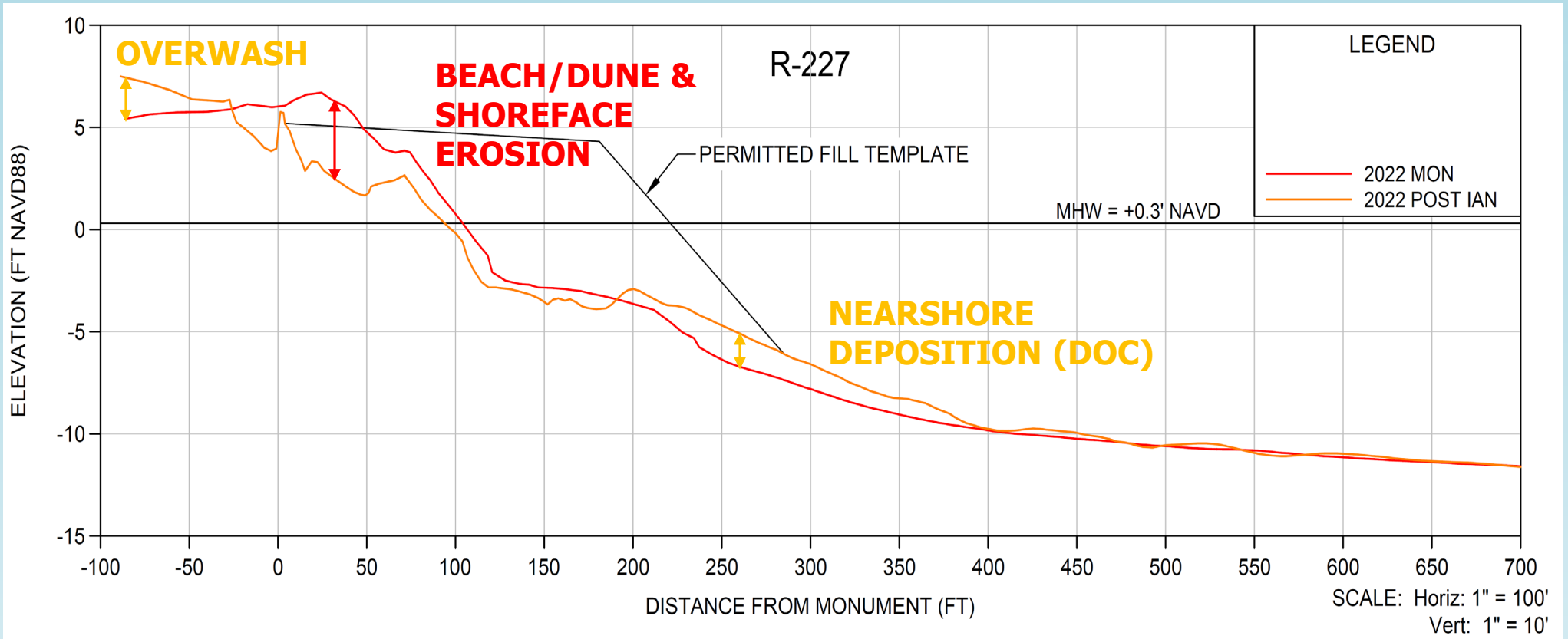
January 2021



October 2022

Bonita Beach Aerial View Before (left) and After (right) Hurricane Ian

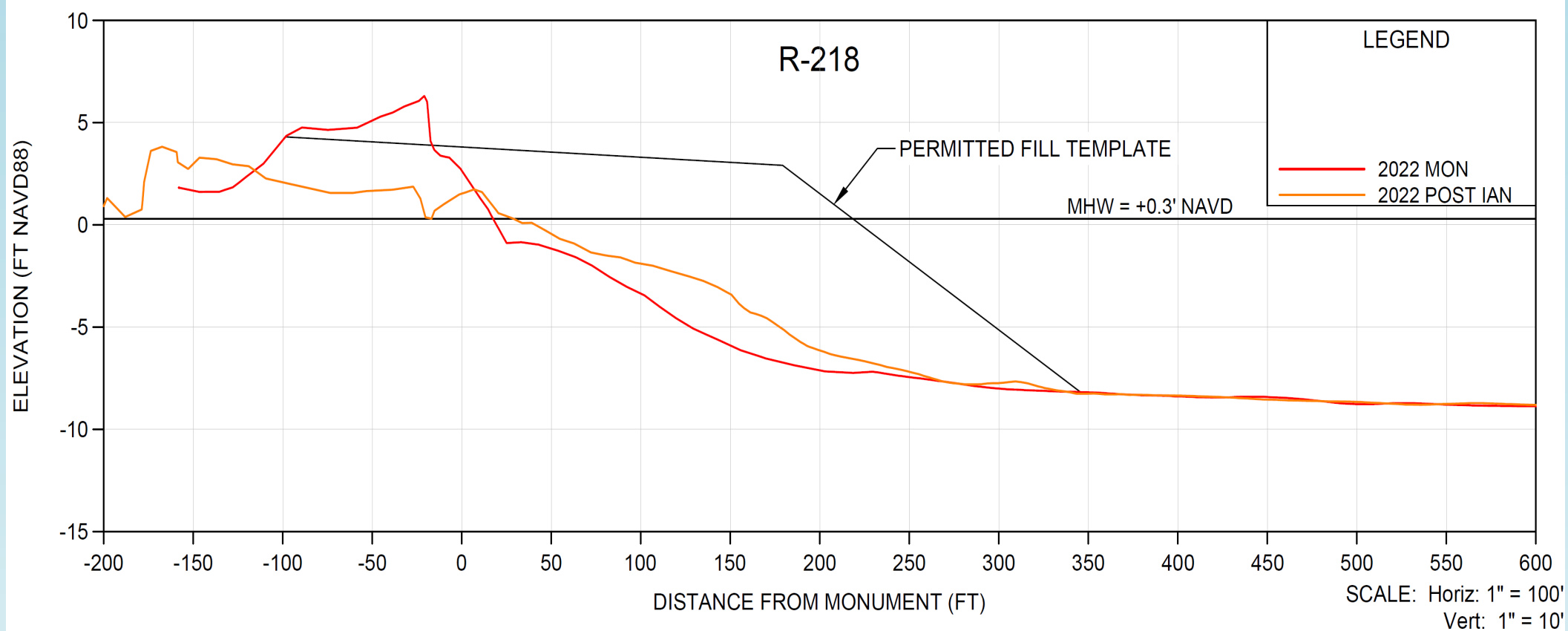
Bonita Beach



SEGMENT	DESCRIPTION *	EROSION (CY)	DENSITY (CY/LF)
North	Managed-Cat G	9,810	-2.5
North	Managed-Template	37,720	-9.6
South	Natural	70,900	-7.4

* Category G calculation to depth of closure (with background erosion)
 Template calculation within permitted template (with pro-rata background erosion)
 Natural beach calculation to MHW (with background erosion [net accretion])

Lovers Key

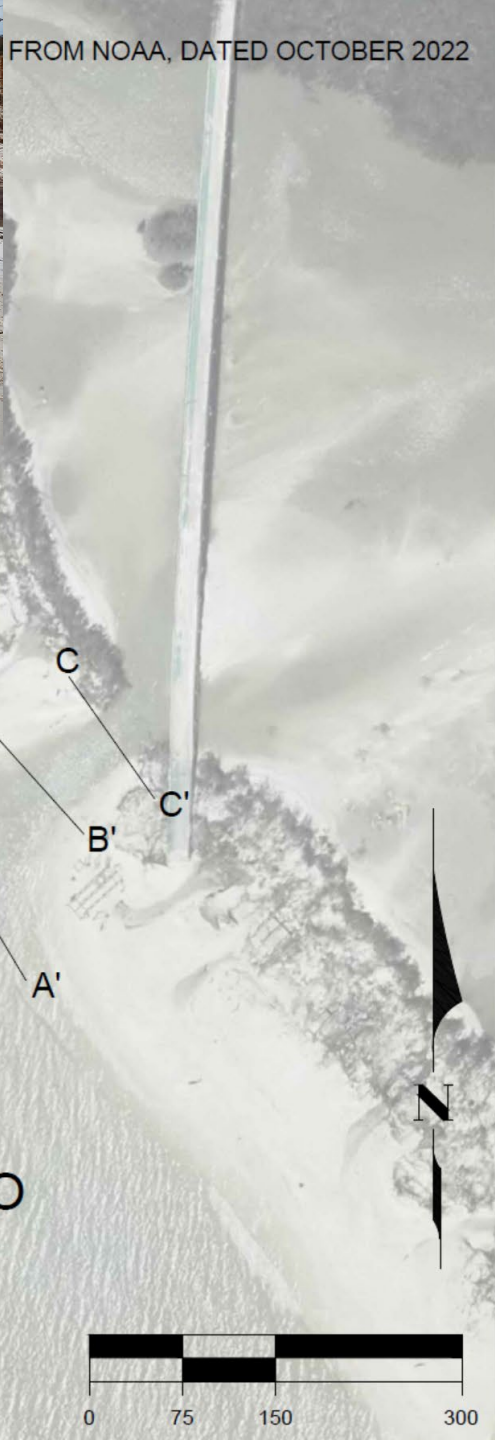


SEGMENT	DESCRIPTION *	EROSION (CY)	DENSITY (CY/LF)
Fill Limits	Managed-Cat G	27,540	-4.2
Breach		15,240	
Total		42,780	-6.6

* Category G calculation to depth of closure (with background erosion)

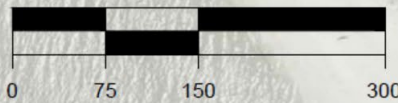


FROM NOAA, DATED OCTOBER 2022

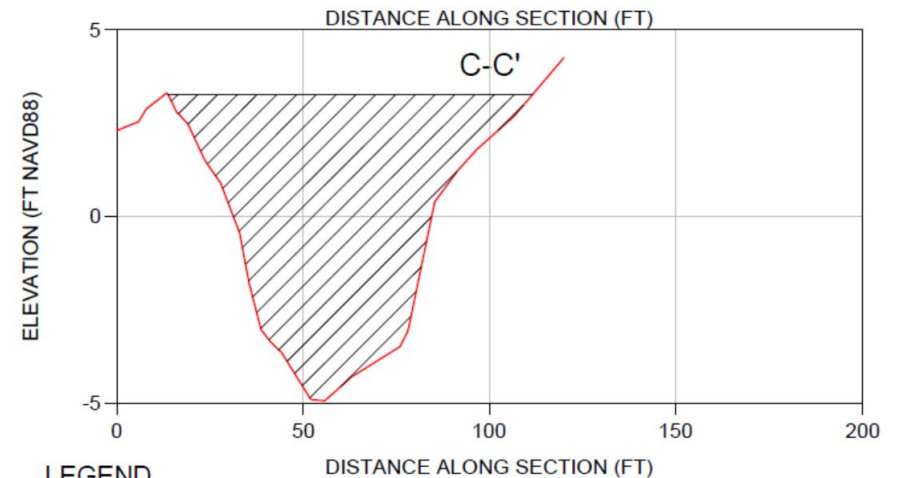
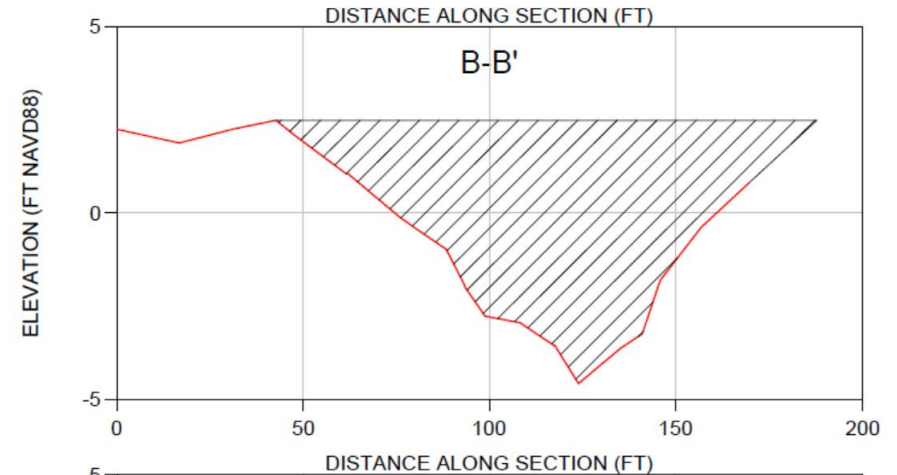
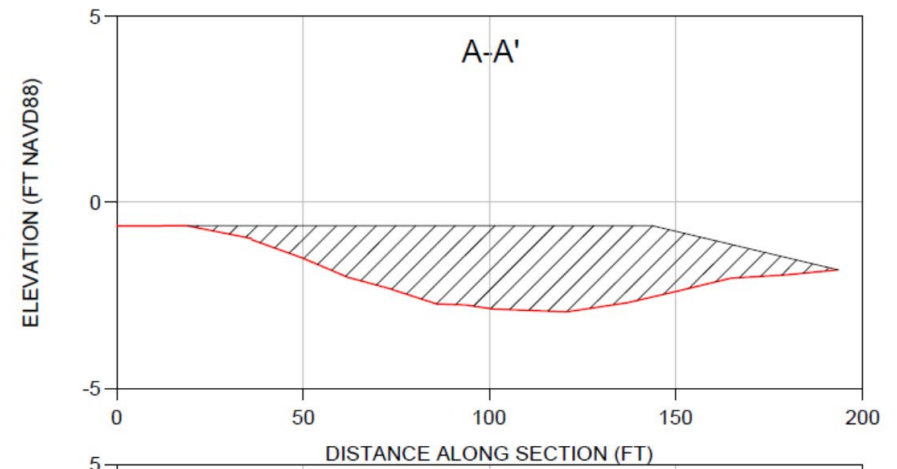


LOVERS KEY

GULF OF MEXICO



Category G Assessment



LEGEND

- OCT. 12, 2022 SURVEY
- PROPOSED FILL

SCALE: Horiz: 1" = 50'
Vert: 1" = 5'

Hurricanes Ian, Nicole & Idalia Combined Impacts

- Erosion Losses
 - 52,600 CY – Category G Claim
 - 40,000 CY – State of Florida Hurricanes Ian & Nicole Recovery Plan (Losses within Dune and Dry Beach in addition to Cat G claim)
 - Nicole & Idalia Volumes Losses Unquantified
- Damages to Park Infrastructure
 - Pavilions, Restroom, Boardwalks
 - Tram/Pedestrian Bridge (condemned)
 - Lost Direct Construction Access



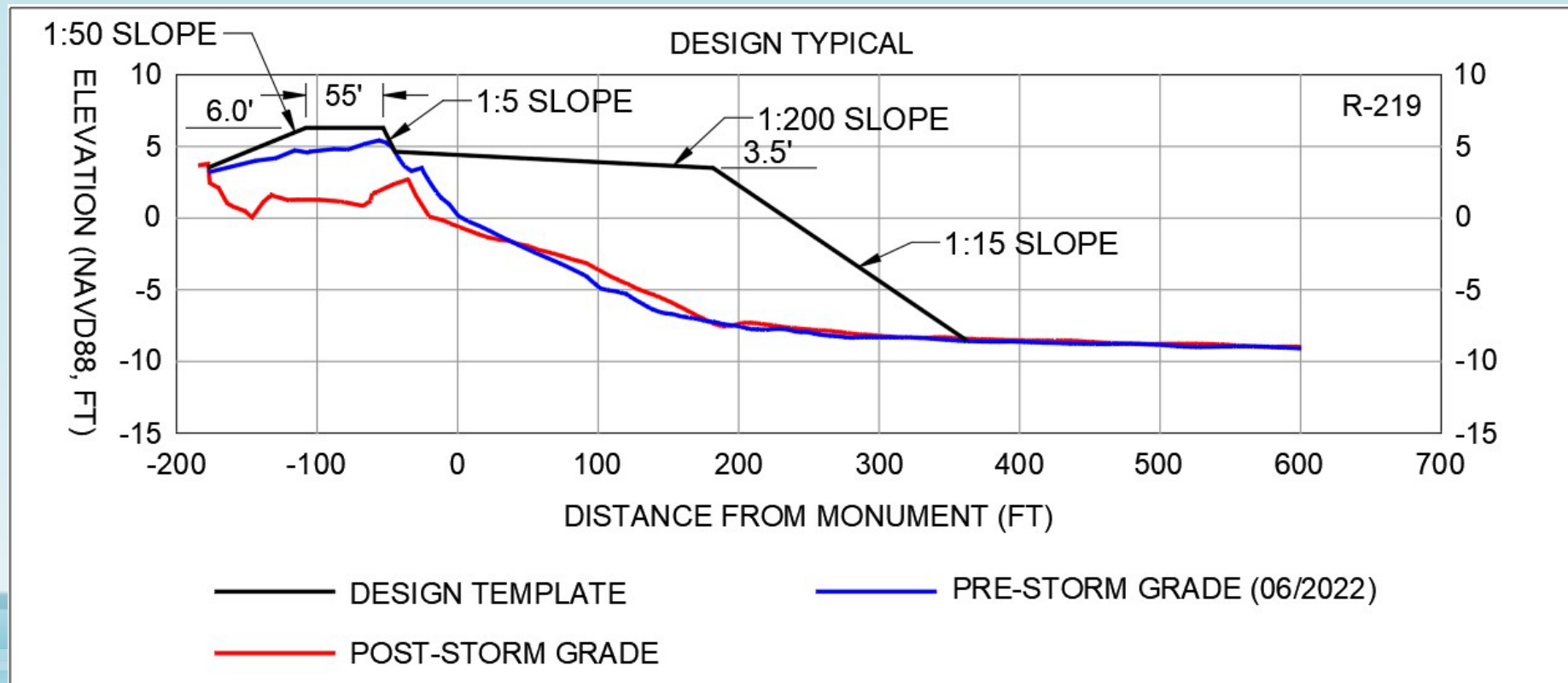
Hurricanes Ian, Nicole & Idalia Combined Impacts

- Lovers Key Natural Resource Habitats
 - 37 Sea Turtle Nests (2023)
 - 105 False Crawls
 - 16 Nests Complete Washout
 - 12 Nests Washed Over
 - Lowering of Profile – Inundations
 - 0% Hatch Success ~ Project Limits
 - 25% Hatch Success ~ Adjacent Beaches
- South Bonita Beach
 - 70,000 CY of Erosion Loss
 - Wiped out Dunes
 - Major Scouring / Property Damage



LOVERS KEY REDESIGN

- Incorporate Recovery Components: EA, Permits, FEMA Cat G
- Restore Dune Feature
- Coordination with Parks Service



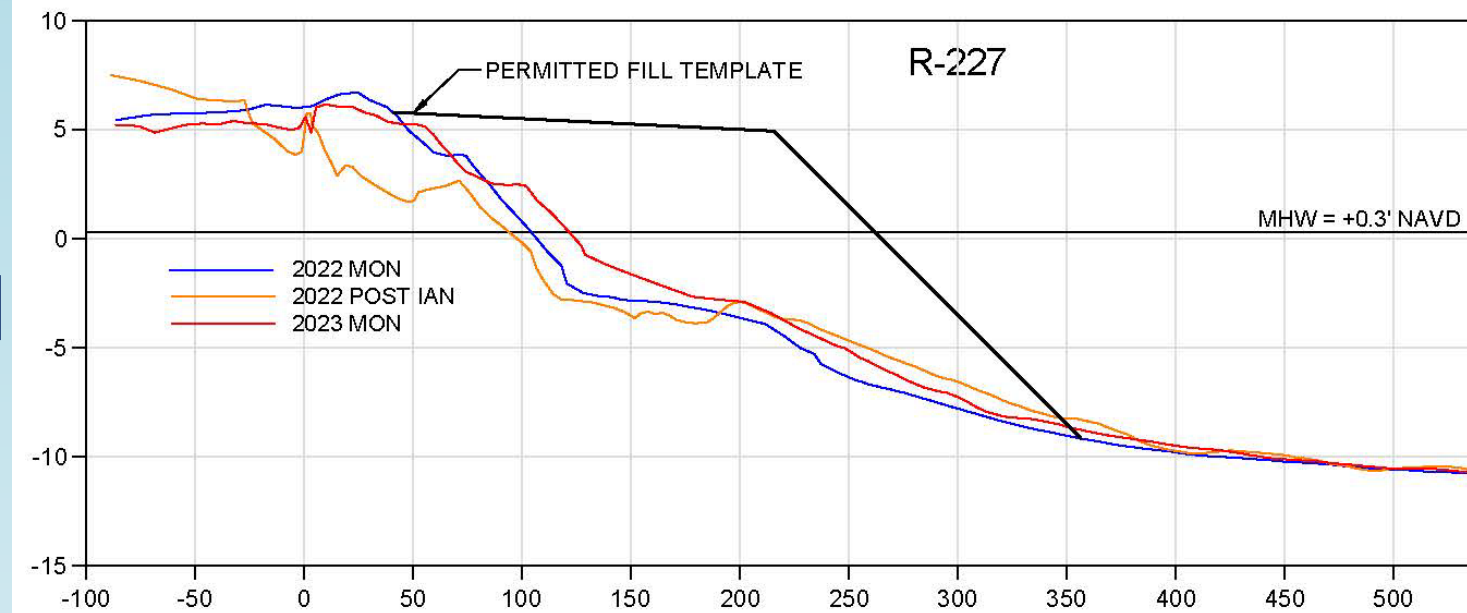
BONITA BEACH – NORTH

- Erosion Losses to Dry Beach ~ 38K CY
- County Aggressively Pursued Recovering, Screening, and Returning Sand to Bonita-North
 - Easements
 - ECL



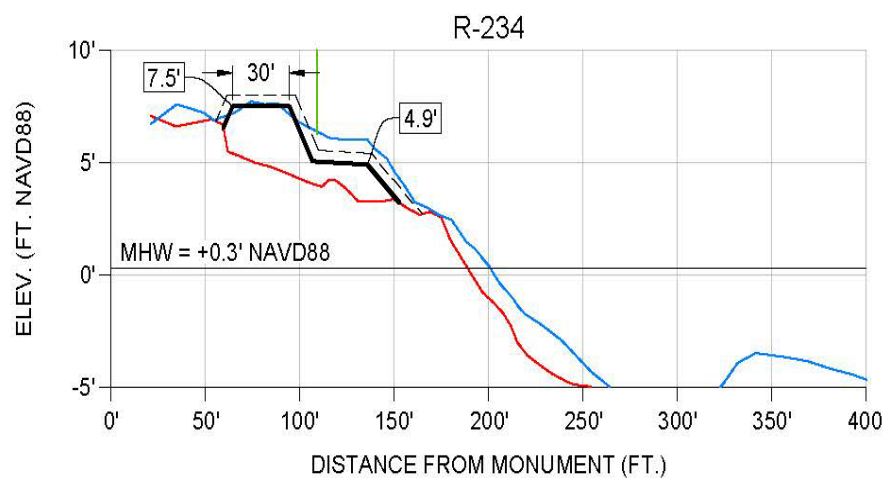
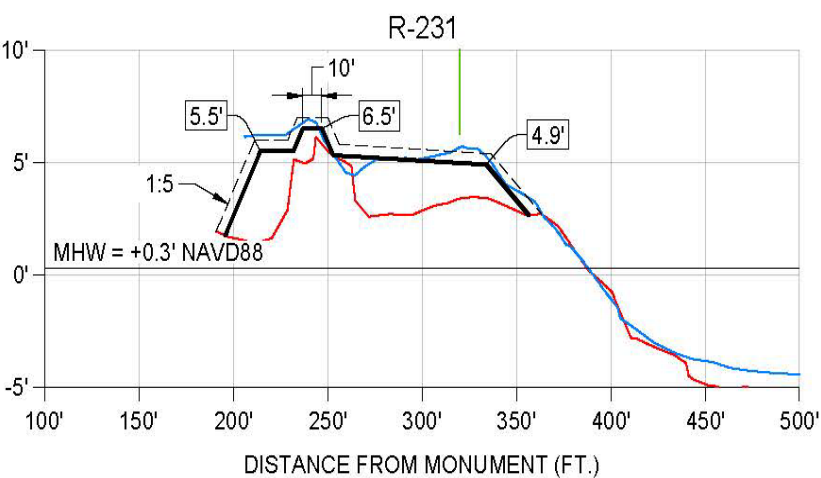
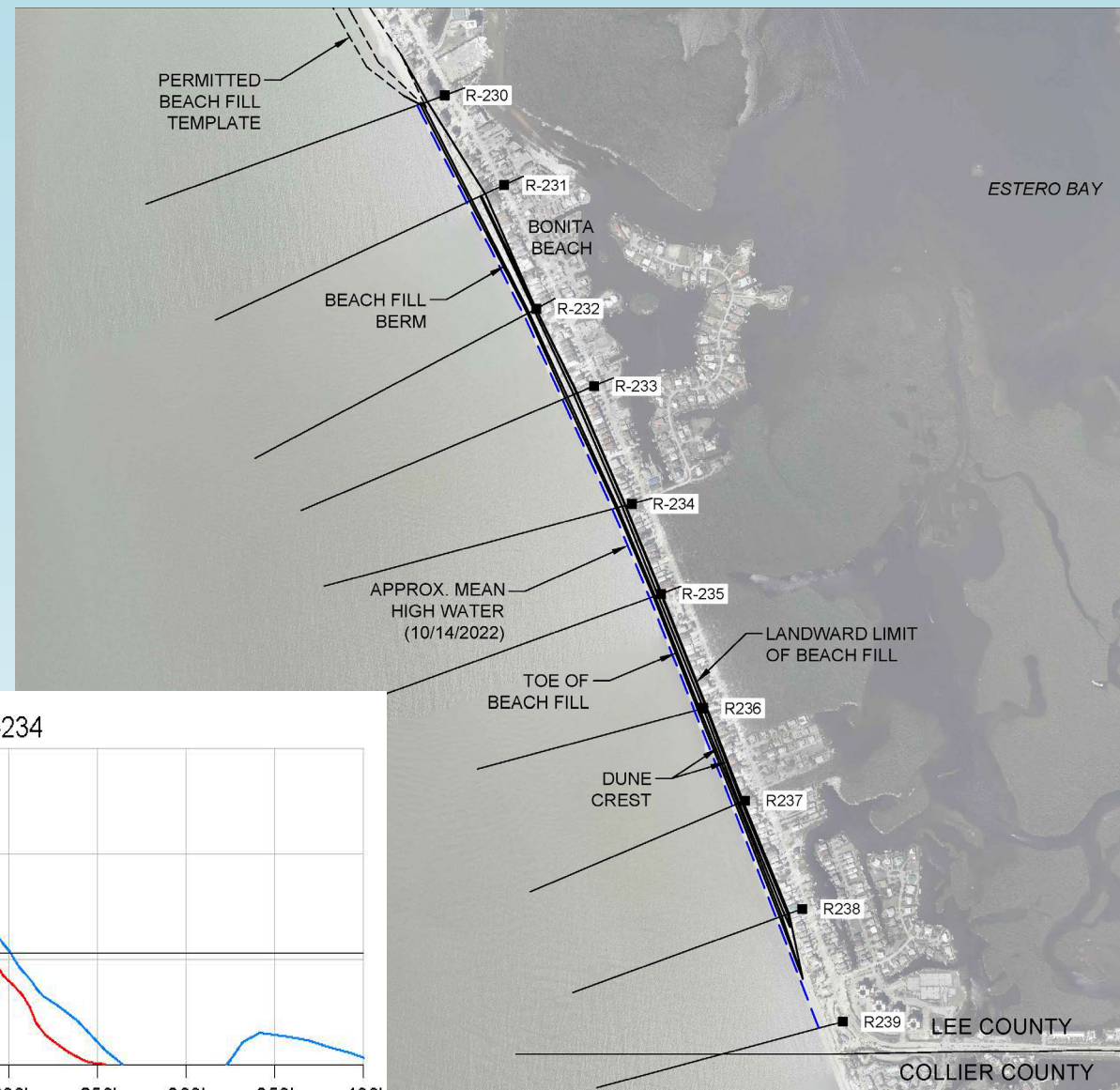
BONITA BEACH – NORTH

- Sand Recovery Efforts Offset Majority of Impact
- Terminal Groins Damaged



BONITA BEACH – SOUTH

- Historically Stable Beach
- ~ 71K CY of Dry Beach / Dune Loss (State Recovery Plan)
- Partner with County to Address Impacts Concurrent with BB-N



AGENCY COORDINATION: STATE

- FDEP State Permit ~ Major Modification
 - Add OCS Sand Source
 - Enhance Bonita Beach Fill Design
 - Incorporate Hurricane Recovery
 - Incorporate Bonita Beach South
- FL Fish and Wildlife Conservation Commission
 - Coordinate Major Mod
 - Incidental Take Permit Application
 - Non-injurious Deterrents

AGENCY COORDINATION: STATE

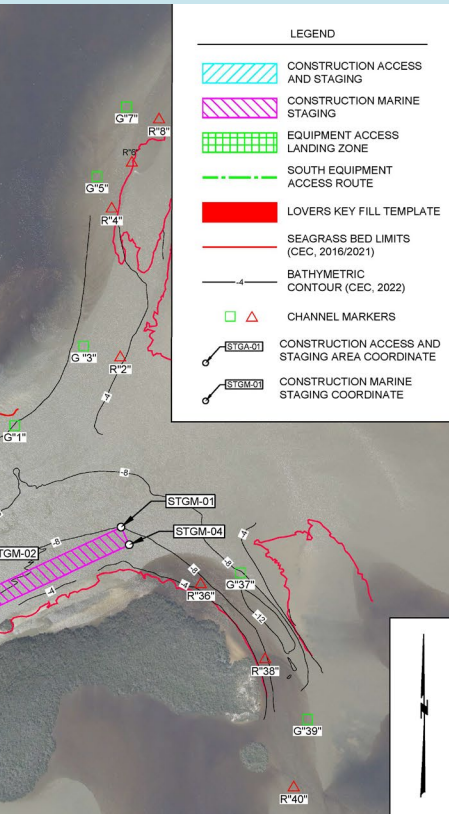
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CHALLENGES

- Environmental Windows
- Time Frame Implementation
 - Other Projects in the County
- Multiple Funding Streams
 - Local-TDC & City of Bonita Springs
 - State-LGFR
 - State-Hurricane Recovery
 - FEMA-Category G Public Assistance
- Construction Easements
 - City of Bonita Springs
- LK Construction Access and Staging
- Terminal Groin Repair/Hazard Mit.



Lovers Key Construction Access & Staging



TERMINAL GROIN REPAIR

- Assessment & Recommendations for Bonita Beach Groin Repair (Kevin Bodge, Olsen Associates, 2023)
 - Repair groins and increase resiliency and their functionality
 - Improve structures' stability (storm durability) and keep up with SLR
 - 2-ft increase in elevation (50-yr horizon)
 - Extend seaward length ~ 18-20 ft
 - Increase armor stone size to 3-4 ft

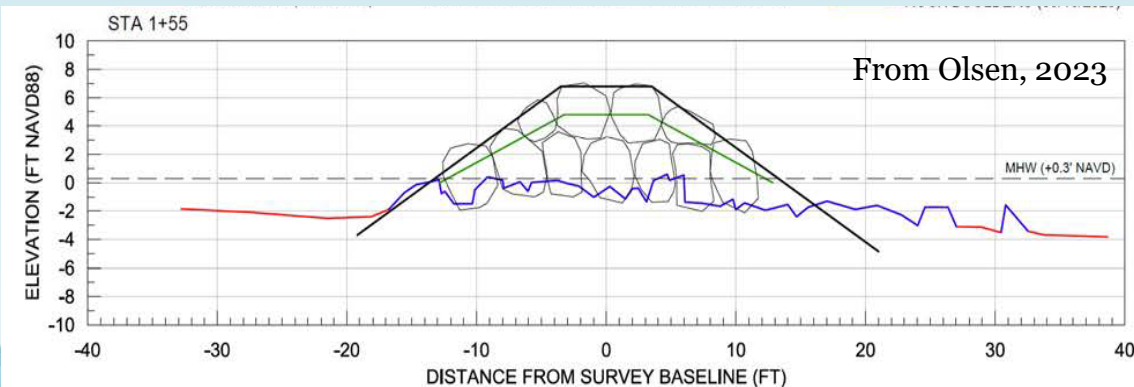
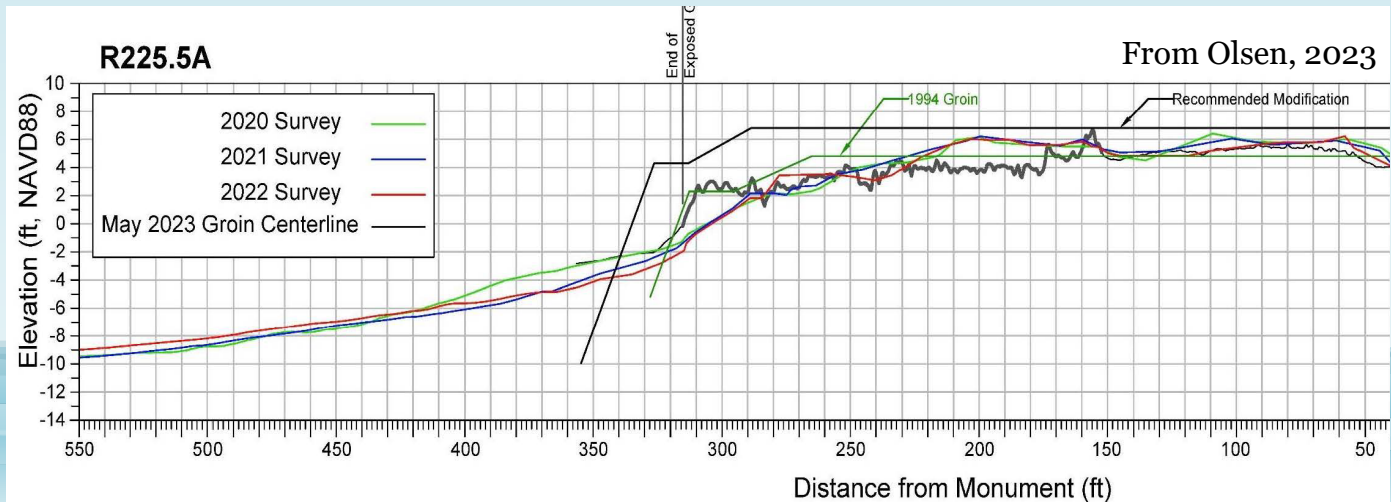
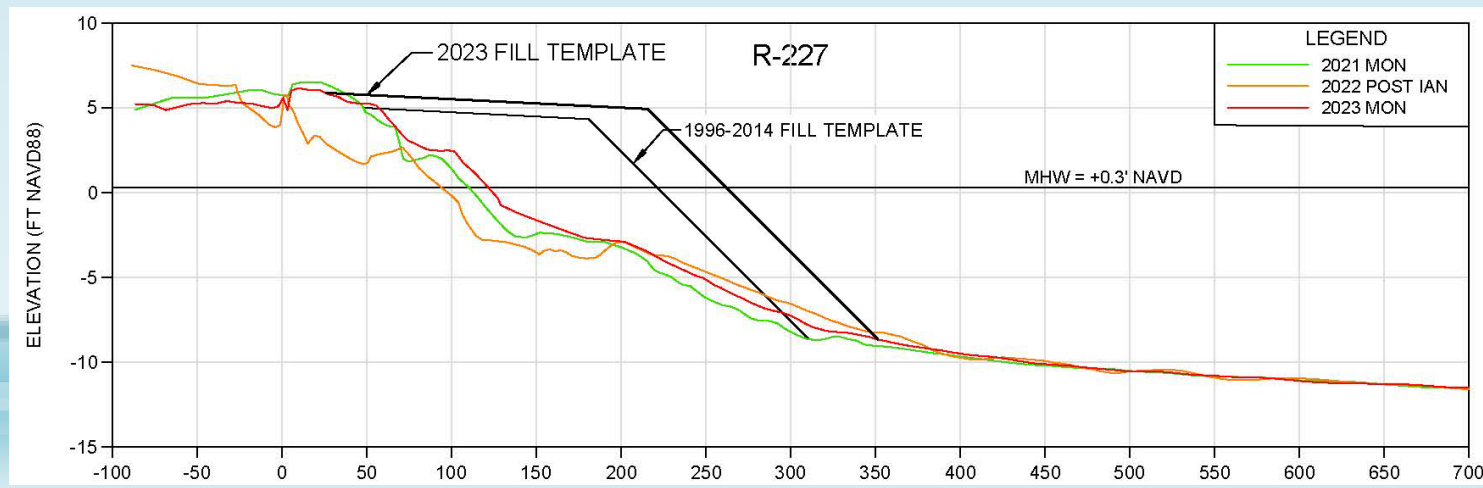


Figure 19: Representative cross-sections of the **South Groin** with May 2023 existing grade and rock boulders (red and blue line, respectively), recommended modification (black line) and 1994 groin plan (green line).



THAT WAS THEN...THIS IS NOW

DATE	BONITA-N (CY)	BONITA-S (CY)	LOVERS KEY (CY)	TOTAL (CY)	PERCENT CHANGE
June 2021 (Design)	102,000	0	456,000	558,000	
November 2021 (Enhanced-Mod)	196,000	0	485,000	681,000	22%
December 2021 (BG Erosion-JCP)	234,000	0	551,000	785,000	41%
October 2022 (Post Ian)	272,000	71,000	594,000	937,000	68%
June 2023 (Annual Monitor)	234,000	70,000	646,000	950,000	70%



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- Brendan Myers ~ USFWS
- Alexis Cardas & Becky Schneider ~ FWC
- Kevin Bodge ~ Olsen Associates
- Matt Feeney ~ City of Bonita Springs
- Steve Boutelle & Mike Campbell ~ Lee County
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