

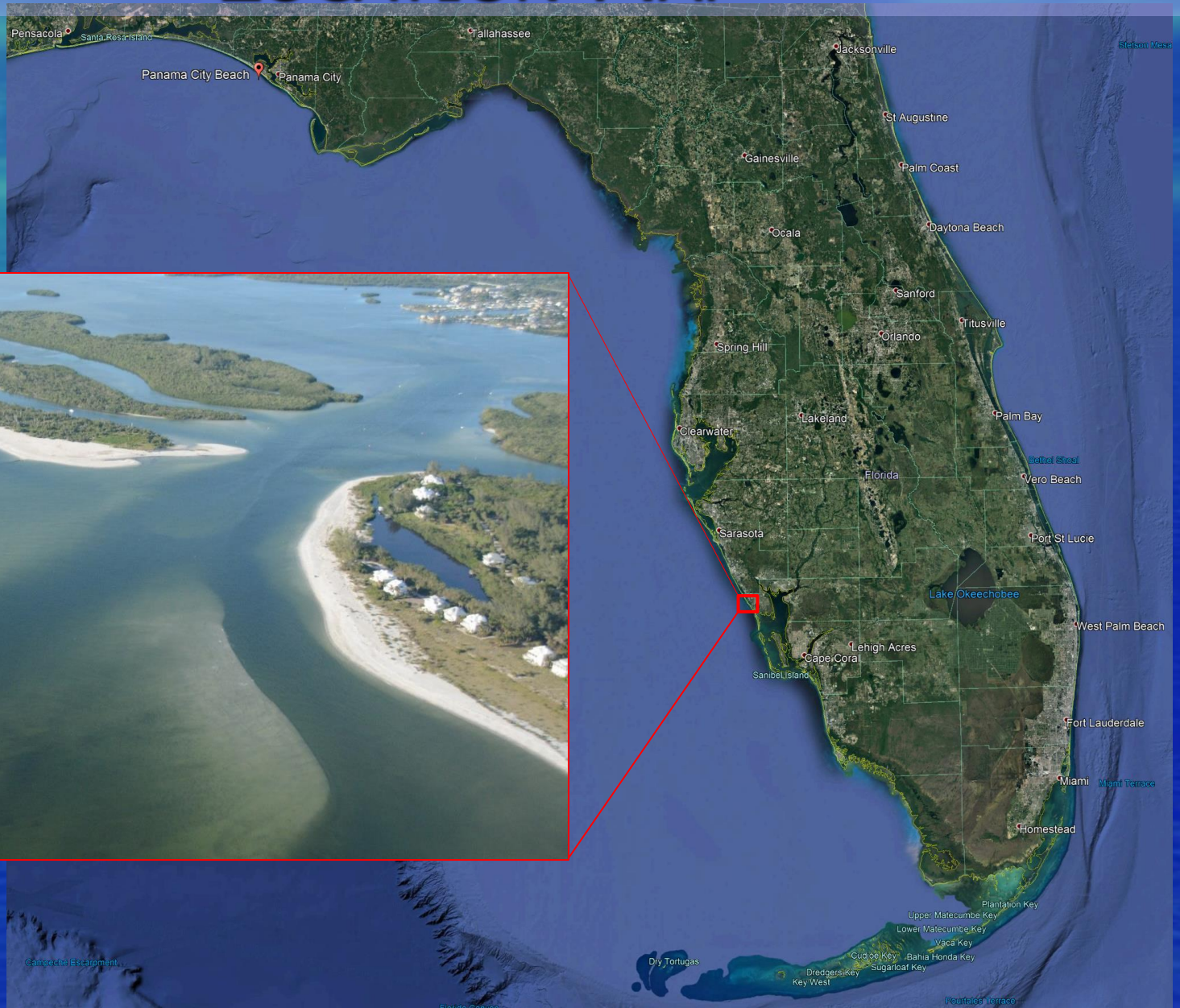
NATIONAL CONFERENCE ON
BEACH PRESERVATION TECHNOLOGY
FEBRUARY 8, 2018

INLET STABILIZATION AT STUMP PASS CHARLOTTE COUNTY, FL

VADIM ALYMOV, PH.D.
MICHAEL POFF, P.E.



LOCATION MAP



OUTLINE

- History
- Project Description
- Permitting
- Design
- Schedule
- Construction
- Quantities & Cost

HISTORY

- 1982-2003

Significant Erosion Updrift of Stump Pass Beach State Park
No Beach as MHW was Pinching Against Existing Seawall
Breaching Occurred along Park Beach (Central Segment)
Spit Formation and Growth Impacted Navigation

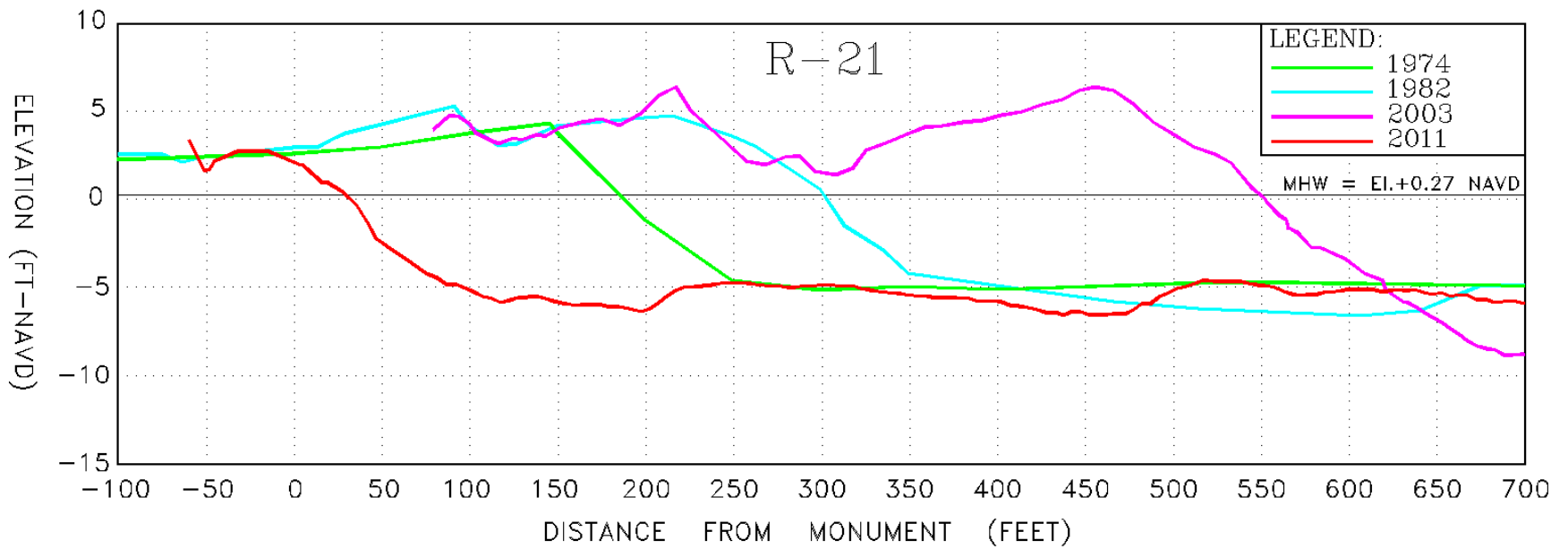
- 2003 Project

1980 Channel Alignment Restored
Southern End of Beach State Park Became Erosional
Downdrift Shoreline Remained Dynamic

- 2006 & 2011 Projects

Maintenance Dredging and Beach Renourishment (Post-Storm Recovery Projects)

HISTORY



PERMITTING

- Desktop Analysis
- Borrow Area Search
- Alternatives Analysis/Numerical Modeling
- Development of Monitoring Plans

State Park Raised Concern: Immediate Downdrift Impact
in Park

Was Addressed Through Additional Numerical Modeling
and Adjustments to Groin (Lowering Crest and Seaward
Slope)

JCP Application Submitted May 2014

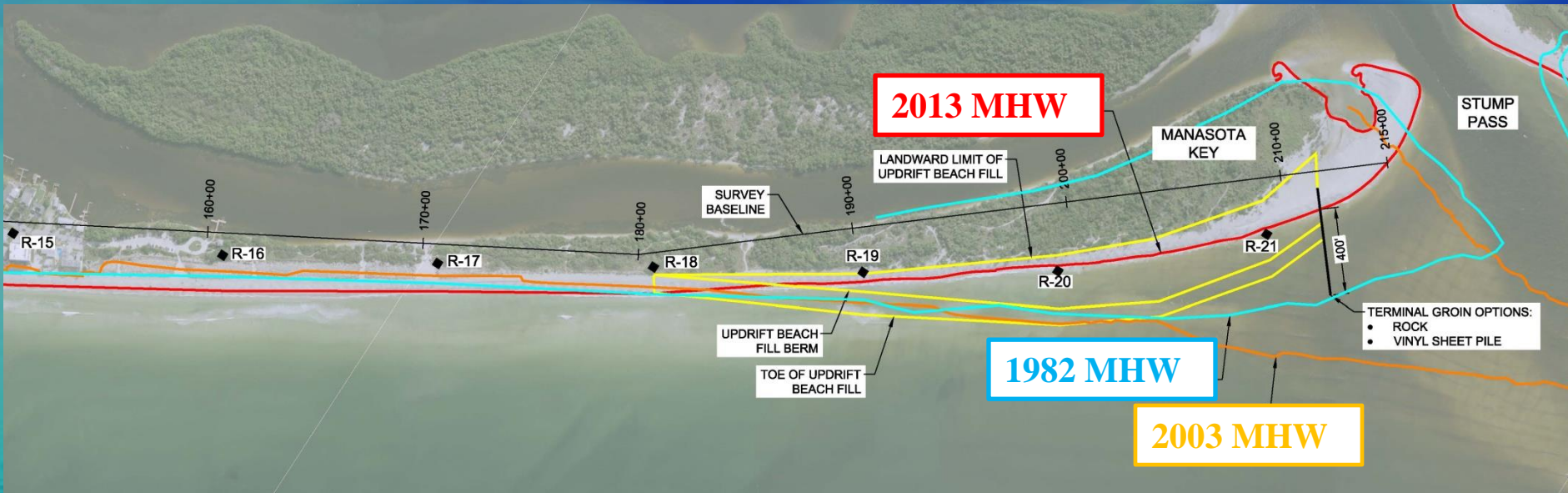
15-Year Permit Issued September 2015

PROJECT DESCRIPTION

Fill Renourishment and New Structural Complement to

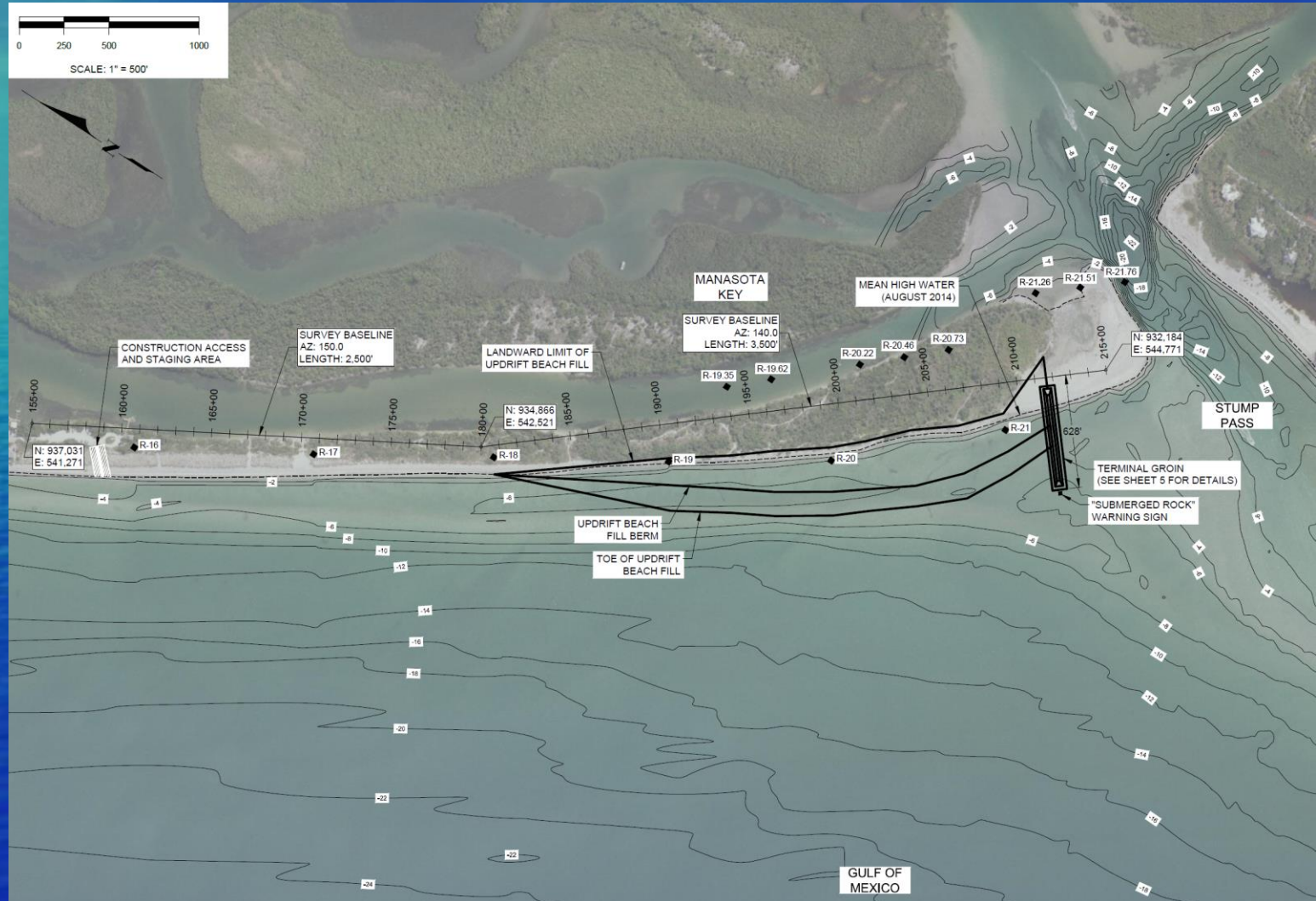
- Restore & Maintain Critically Eroding Beaches
- Provide Storm Damage Reduction Benefits Along Developed Shoreline Through “Engineered Beach Design”
- Provide for Improved Navigation Through Stump Pass
- Enhance Recreational Opportunities
- Provide Environmental Protection and Enhancement for Threatened & Endangered Species
- Apply Adaptive Management

TERMINAL GROIN LOCATION

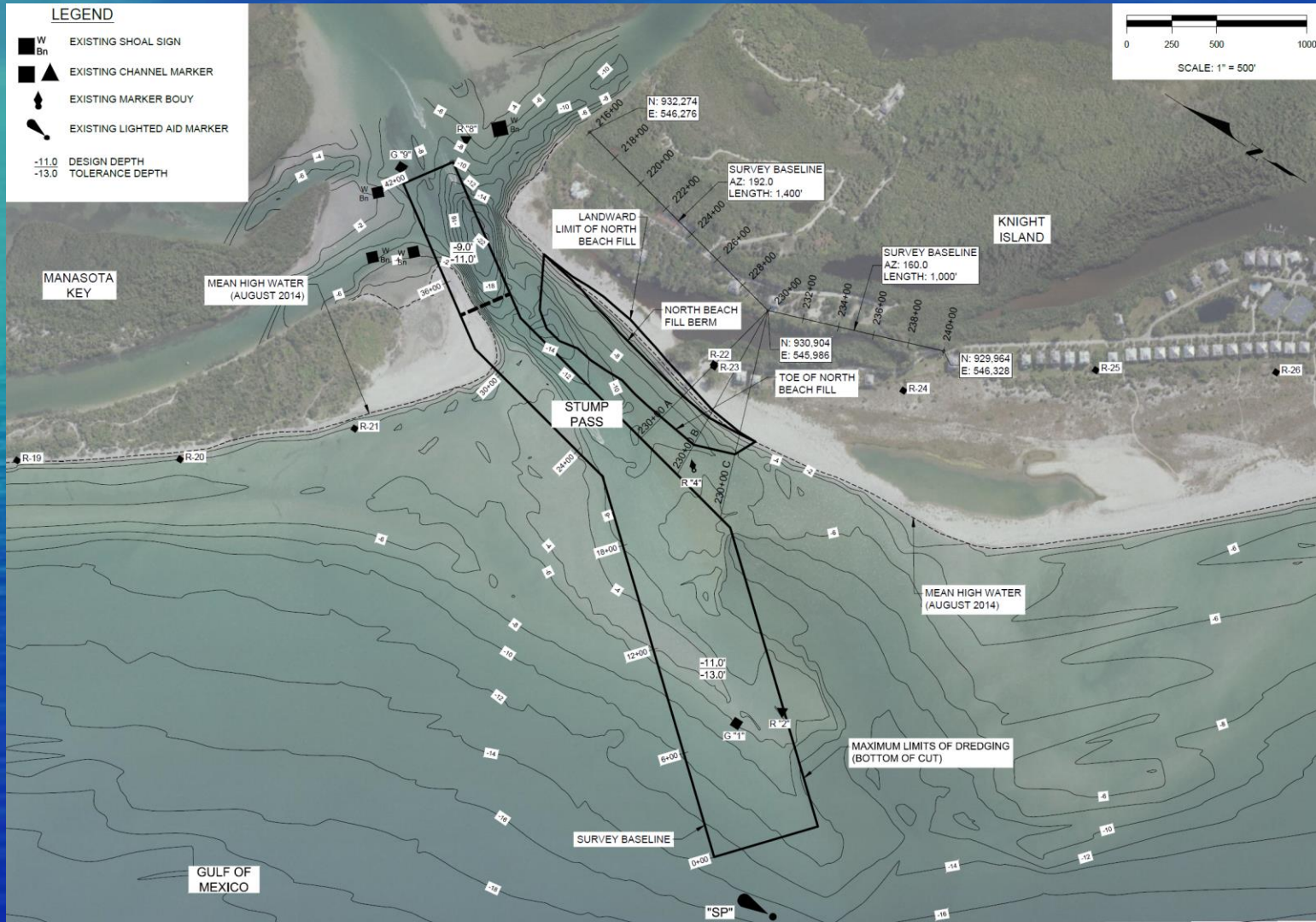


- Inflection in 1982 Shoreline Indicates a Point where Shoreline Re-curves to Form South End of Manasota Key's "Drumstick"
- Structure was Sited at Inflection Point to Help Recreate Quasi-stable 1980's Conditions North of Structure Approximately 1,000 Feet North of Channel

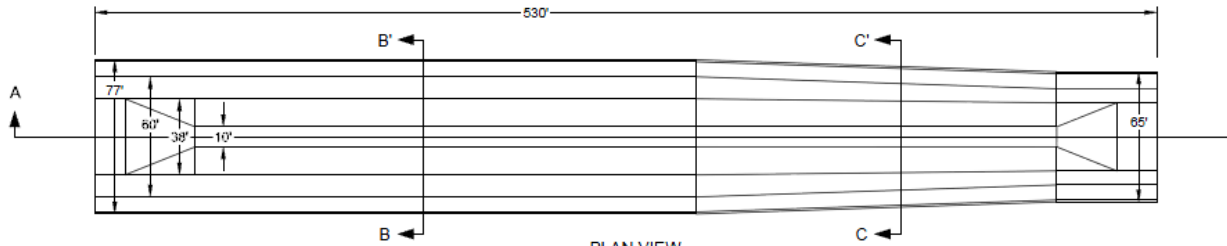
UPDRIFT BEACH FILL DESIGN



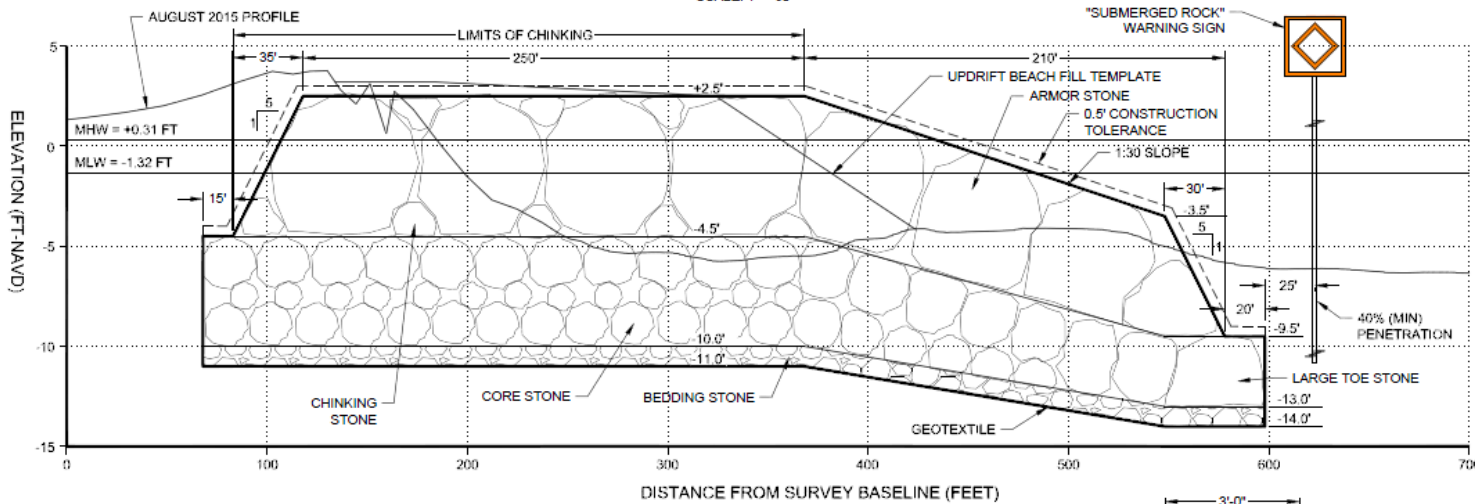
NAV CHANNEL & NORTH BEACH FILL DESIGN



TERMINAL GROIN DESIGN

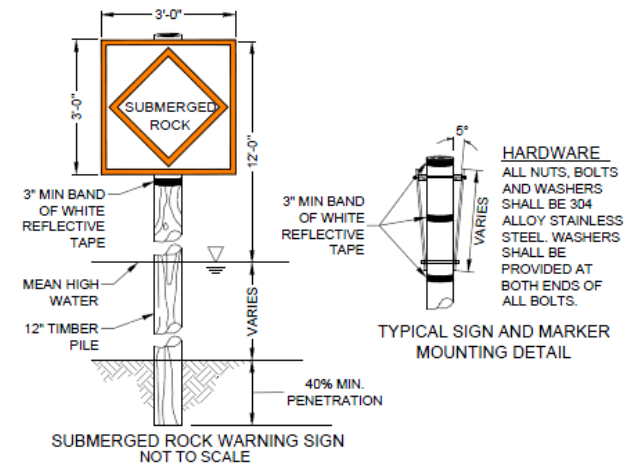
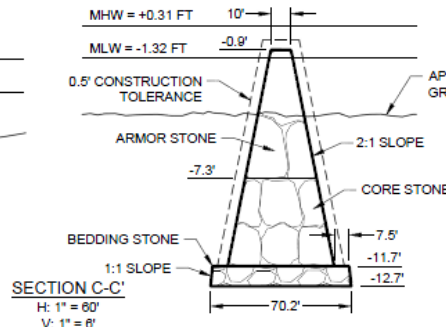
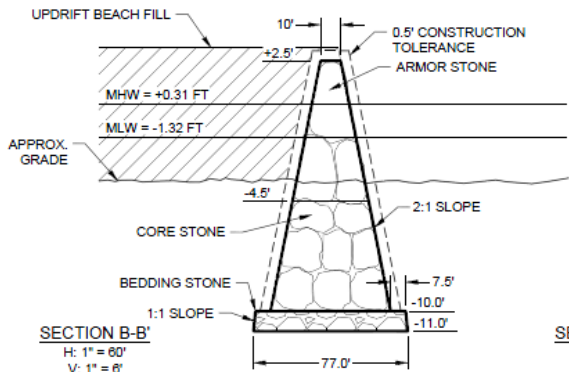


- NOTES:
1. STONE SIZES EXAGGERATED FOR ILLUSTRATIVE PURPOSES ONLY.
 2. REFER TO TECHNICAL SPECIFICATIONS FOR ROCK SIZE, DENSITY, AND GRADATION.
 3. CEC CONDUCTED JET PROBE SURVEY OF FOOTPRINT OF TERMINAL GROIN ON NOV. 4, 2015. NO ROCK LAYERS WERE DETECTED. PROBES EXTENDED 10 FEET BELOW EXISTING GRADE.



DISTANCE FROM SURVEY BASELINE (FEET)

SECTION A-A'
SCALE: H: 1" = 60' / V: 1" = 6'



SCHEDULE: 2017

Channel Dredging & Beach Fill (GLDD)

- March 3 – Dredging Initiated
- May 12 – Updrift Beach Fill on Manasota Key Completed
- June 1 - North Beach Fill on Palm Island Completed

Terminal Groin (Luhr Bros)

- March 18 – Construction Initiated
- June 1 – Substantial Completion

CONSTRUCTION – DREDGING & BEACH FILL



Great Lakes Dredge and Dock's Dredge 'Commodore'

03/03/2017

CONSTRUCTION – DREDGING & BEACH FILL



View looking North at Starting Point of Beach Fill

03/03/2017

CONSTRUCTION – DREDGING & BEACH FILL



Beach fill looking South toward Stump Pass

03/09/2017

CONSTRUCTION – DREDGING & BEACH FILL



The New Beach Fill on Manasota Key (View North)

06/03/2017

CONSTRUCTION – DREDGING & BEACH FILL



The New Beach Fill on Manasota Key (View South)

06/03/2017

CONSTRUCTION – DREDGING & BEACH FILL



Least Terns Starting to Enjoy the New Beach Fill on MK

06/01/2017

CONSTRUCTION – TERMINAL GROIN



Barges from Missouri Arrive with High Quality
165+ lbs/cf Bedding, Core, and Armor Stone

03/21/2017

CONSTRUCTION – TERMINAL GROIN



Excavating First Section of Terminal Groin

03/30/2017

CONSTRUCTION – TERMINAL GROIN



Stretching out Geotextile Fabric and Placing Bedding Stone to Sink into Place as Foundation of Groin

04/01/2017

CONSTRUCTION – TERMINAL GROIN



Armor Stone Being Placed on Groin

04/03/2017

CONSTRUCTION – TERMINAL GROIN



Groin Sloping up from Landward Toe & Seaward Progress

04/12/2017

CONSTRUCTION – TERMINAL GROIN



Excavating Next Section of Groin

04/15/2017

CONSTRUCTION – TERMINAL GROIN



Beach Fill Placement Advancing

04/24/2017

CONSTRUCTION – TERMINAL GROIN



Beach Fill Placement Complete to Groin

05/29/2017

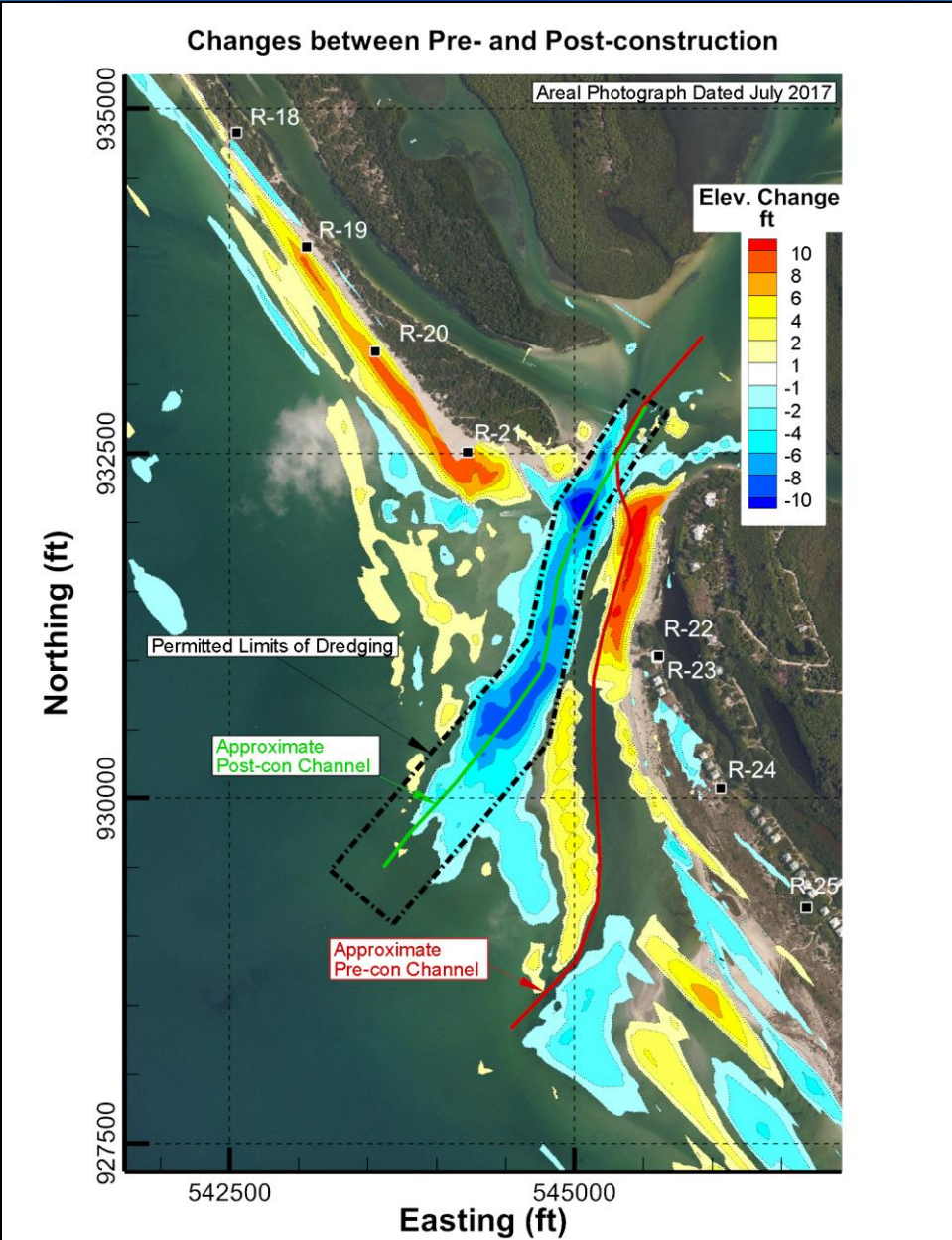
CONSTRUCTION – TERMINAL GROIN

A Fishing Amenity

06/14/2017



CONSTRUCTION



QUANTITIES

Channel Dredging & Beach Fill (GLDD)

- 233,480 CY Removed from Navigation Channel
- 145,380 CY From Navigation Channel Placed on UBF
- 88,100 CY From Navigation Channel Placed on NBF

Terminal Groin (Luhr Bros)

- 23,000 CY from Terminal Groin Excavation Placed on UBF
- 2,630 Tons of 12" Bedding Stone
- 7,420 Tons of 18"-36" Core Stone
- 4,840 Tons of 2-3 Ton Armor Stone
- Total = Approximately 15,000 Tons of Rock

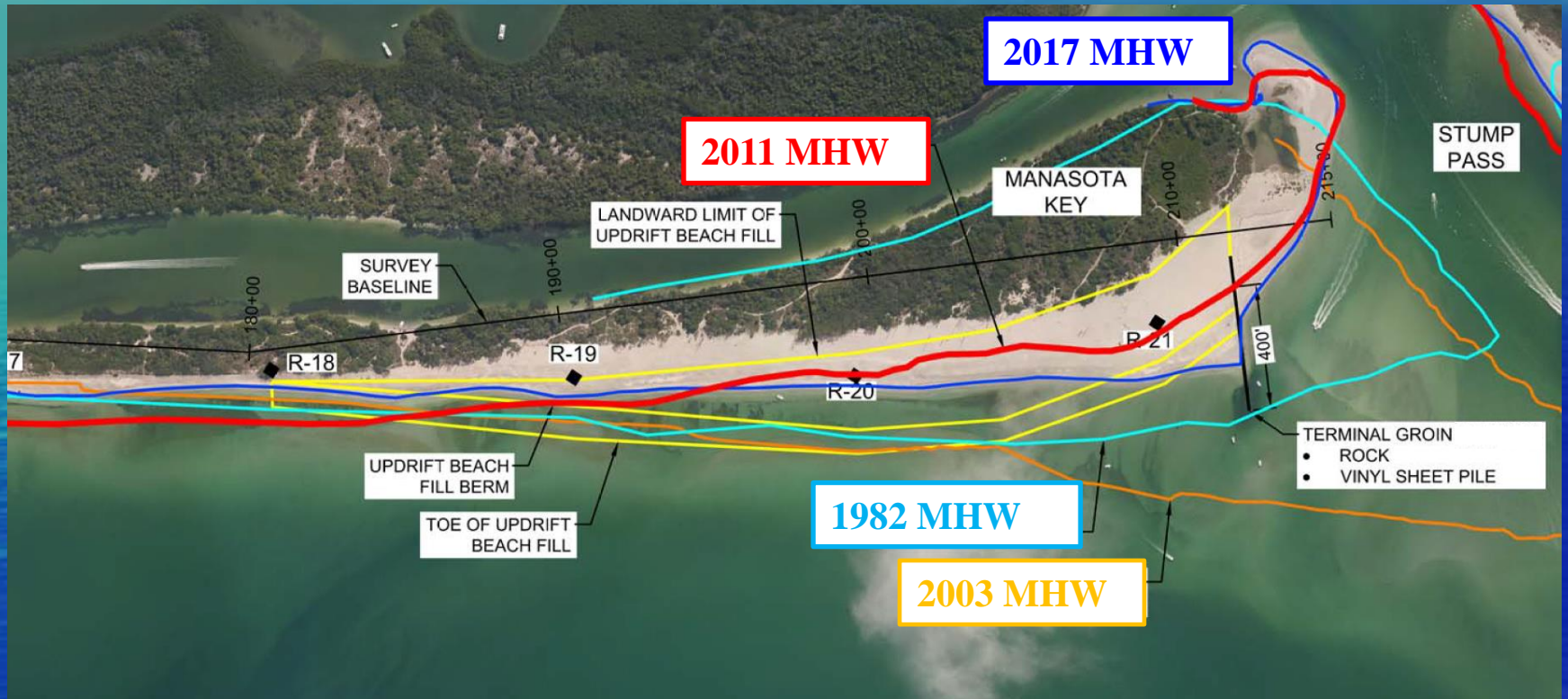
COST

Project Items	Opinion of Cost	Bids		
		Low	High	Average
Beach Fill	\$ 2,945,000	\$ 2,692,500	\$ 5,156,500	\$ 3,369,604
Terminal Groin	\$ 2,182,780	\$ 2,230,970	\$ 2,869,644	\$ 2,914,992
Total	\$ 5,127,780	\$ 4,923,470	\$ 8,026,144	\$ 6,284,596

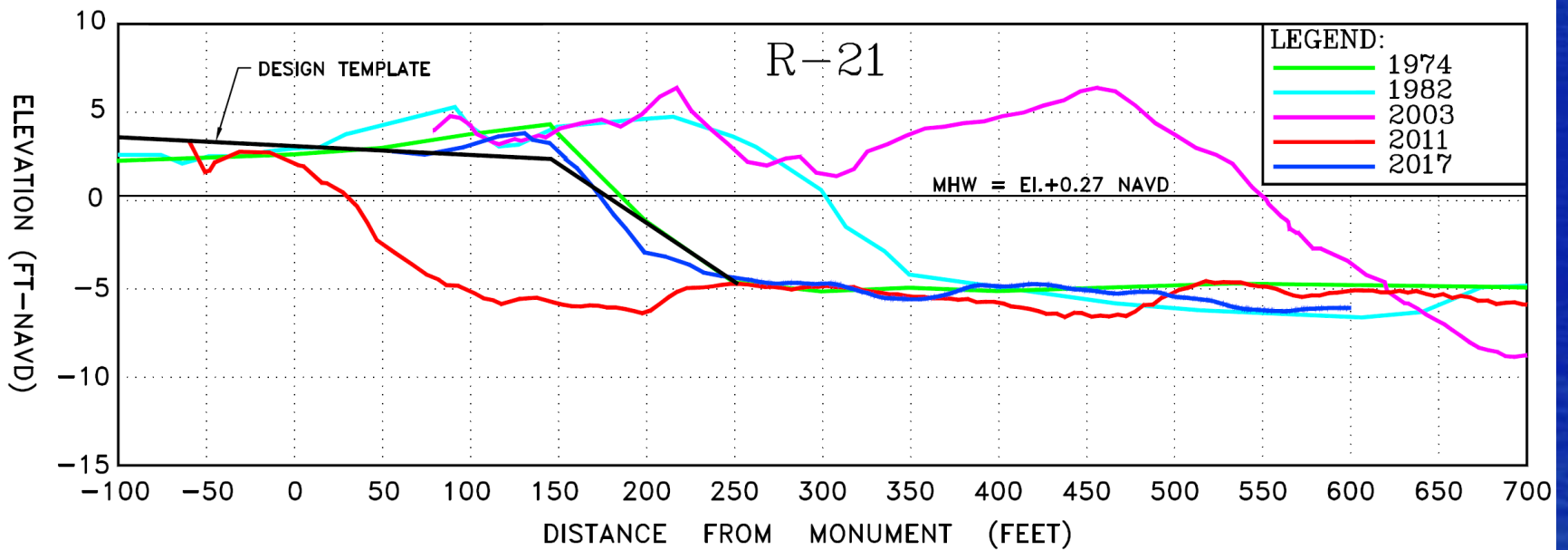
Two (2) Change Orders Were Executed During Construction to Increase Dredge Volume / Beach Fill Quantities

Total Cost of Construction \$5,135,720

SUMMARY

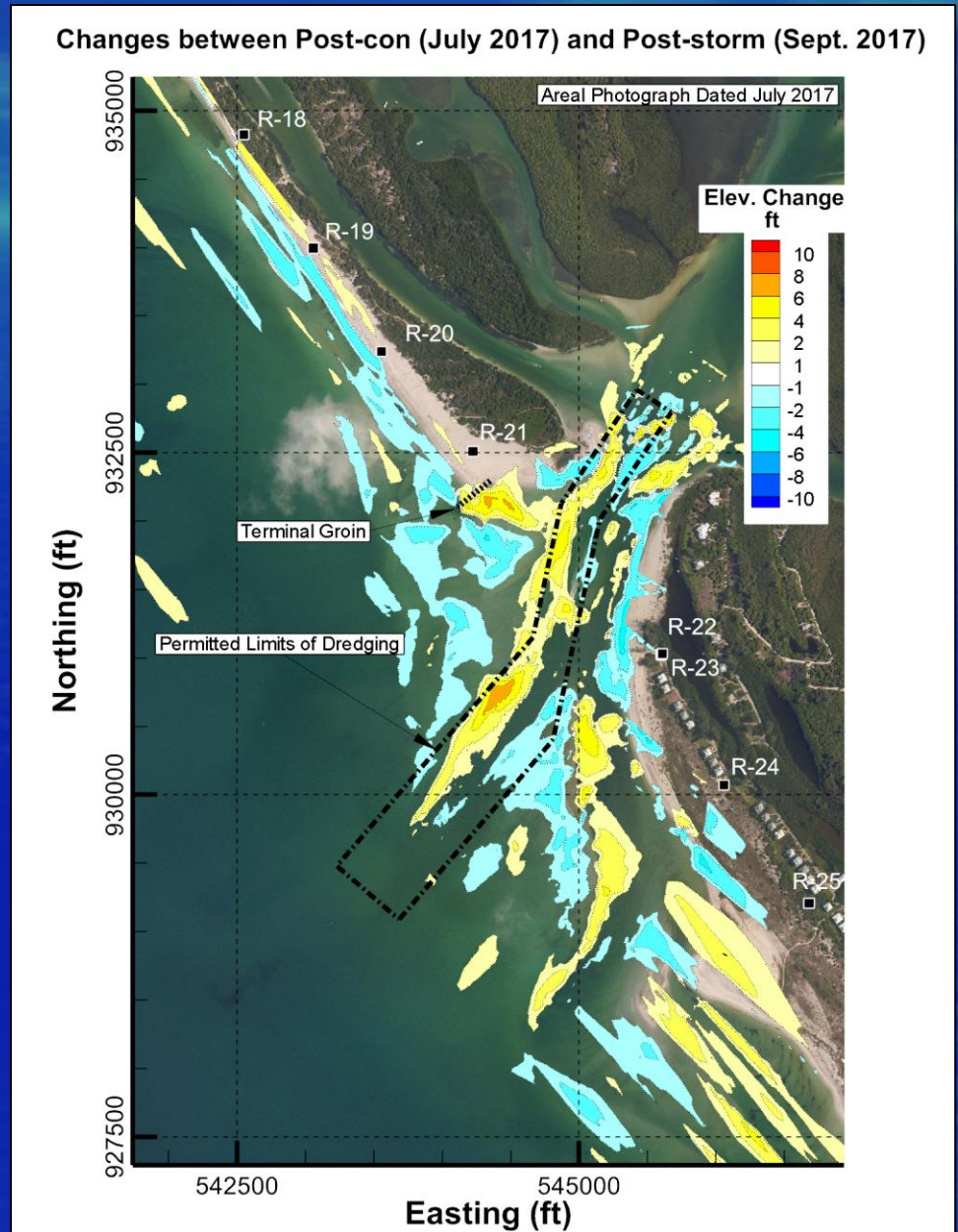


SUMMARY



HURRICANE IRMA IMPACT

- July 11-14, 2017
Post-construction Survey
Serves as Pre-storm Survey
- September 26-27, 2017
Post-storm Survey



HURRICANE IRMA IMPACT

Updrift Beach Fill

- Shoreline receded on average 12.2 feet
- Volume Change to Depth of Closure:
Net erosion of approximately 27,860 cubic yards

South of Terminal Groin

- Shoreline advanced on average 11.5 feet
- Volume Change to Depth of Closure
Net erosion of approximately 1,810 cubic yards

North Beach Fill

- Shoreline receded on average 32.5 feet
- Volume Change to Depth of Closure
Net erosion of approximately 16,840 cubic yards

ACKNOWLEDGEMENTS

- Charlotte County BCC & Staff
- Advisory Committees
- Residents & Boating Community
- FDEP Beaches
- FL State Park Staff
- FFWCC & Aquatic Preserves
- Federal Agencies
- Shorebird and Sea Turtle Monitors
- Great Lakes Dredge & Dock
- Luhr Bros