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Hurricanes Matthew and Irma Category B Emergency Berm Restoration Project

→ **FSBPA 35th National Conference on Beach Preservation Technology**
Feb 2-4, 2022

Welcome



Agenda

- Project Background
- Project Overview – Reach Limits
- Project Overview – Reach Volumes
- Challenges & Solutions
 - Design & Permitting
 - Threatened and Endangered Species
 - Dune Planting
 - Sand Fencing and Boardwalk Variation
 - Fill Sources – Mine Locations
 - Construction Schedule and Sequencing
- Current project status

Project background

- St. Johns County was impacted by two major hurricanes:
 - Hurricane Matthew- 2016, Category 5 storm
 - Hurricane Irma- 2017, Category 5 storm
- FEMA Environmental Assessment complete in 2019
- St. Johns County brings Continental Heavy Civil (CHC) and GHD under contract as Design-Build Team in March 2021 to restore 20 miles of impacted Atlantic Ocean Shoreline
 - Design and Construct the repair of vulnerable upper beach berm and dune
 - Over 8 individual reaches and 20 miles of shoreline, up to 750,000 CY of sand sourced from inland mines and placement via truck haul



Project overview - Reach volumes

St. Johns County – FEMA Category B Berms – Matthew & Irma Totals

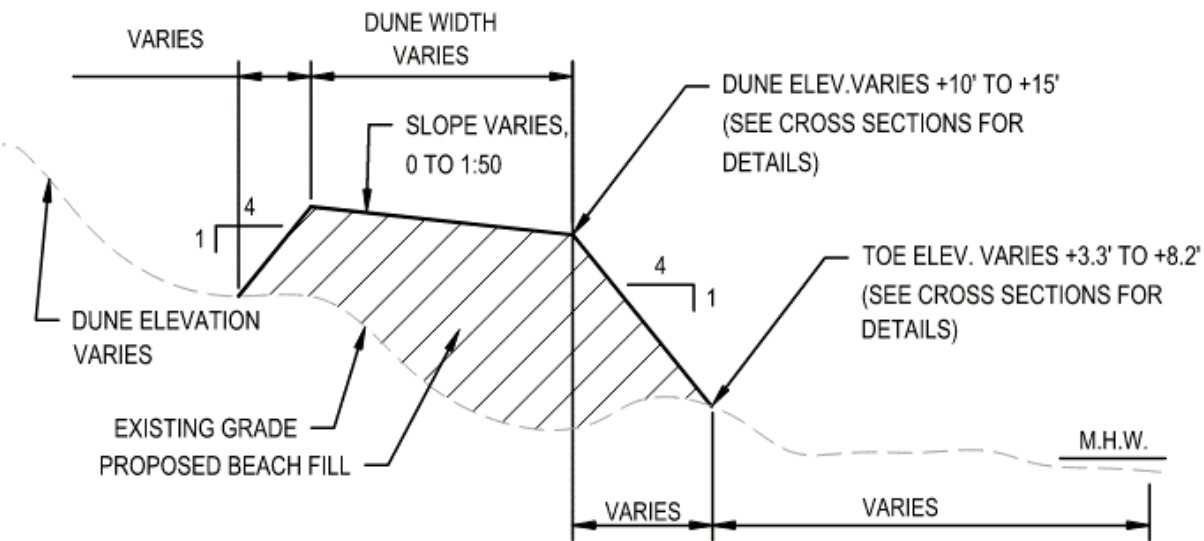
		Length		Volume	
Beach	Reach	ft	mi	cy	cy/lf
Ponte Vedra Beach I	R1-R23	22,822	4.3	187,539	8.2
Ponte Vedra Beach I	R23-R46.2	24,106	4.6	194,490	8.1
South Ponte Vedra	R67-R76	9,366	1.8	68,031	7.3
Vilano Beach I	R117.5-R122	5,008	0.9	31,140	6.2
Vilano Beach II	R122-R122.37	370	0.07	1,308	3.5
Butler Beach	R151-R173	22,272	4.2	89,695	4.0
Crescent Beach	R173-R193.65	20,811	3.9	156,989	7.5
Summer Haven	R197-R198.4	1,671	0.3	18,933	11.3
	Totals	<u>106,426</u>	<u>20.16</u>	<u>748,125</u>	

Challenges & Solutions

Design & Permitting

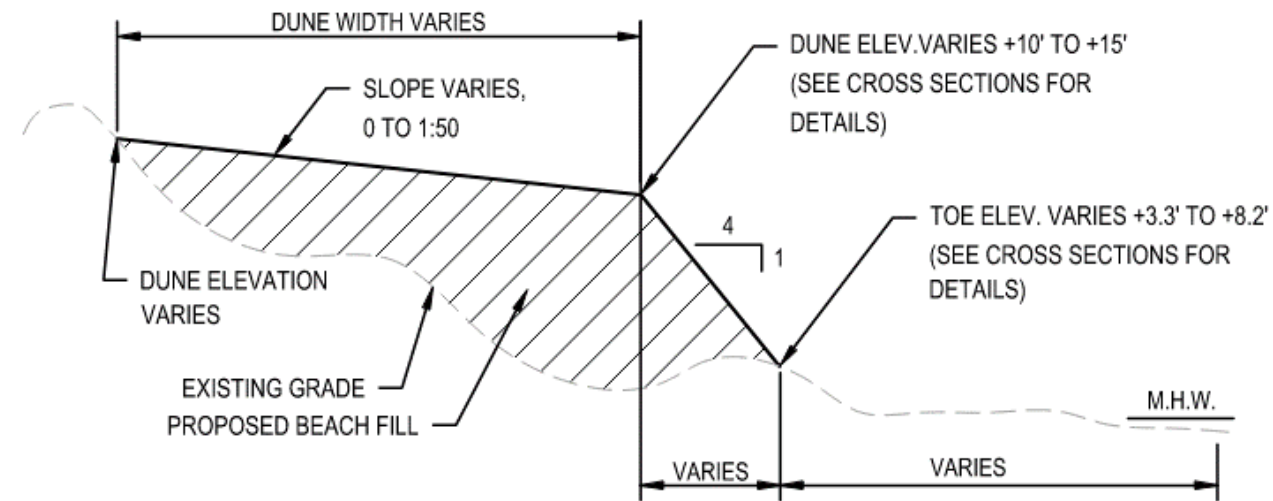


- FEMA authorized funding timeframe constraint
- Design-Build Team fast-tracked 60% design submittal and Florida Joint Coastal (JCP) application – both completed in *six weeks*
- Permit secured within *three months* of application
 - 15 year duration covering current sand placement and future events



TYPICAL DUNE RESTORATION FILL SECTION

SCALE: NTS



TYPICAL DUNE RESTORATION FILL SECTION

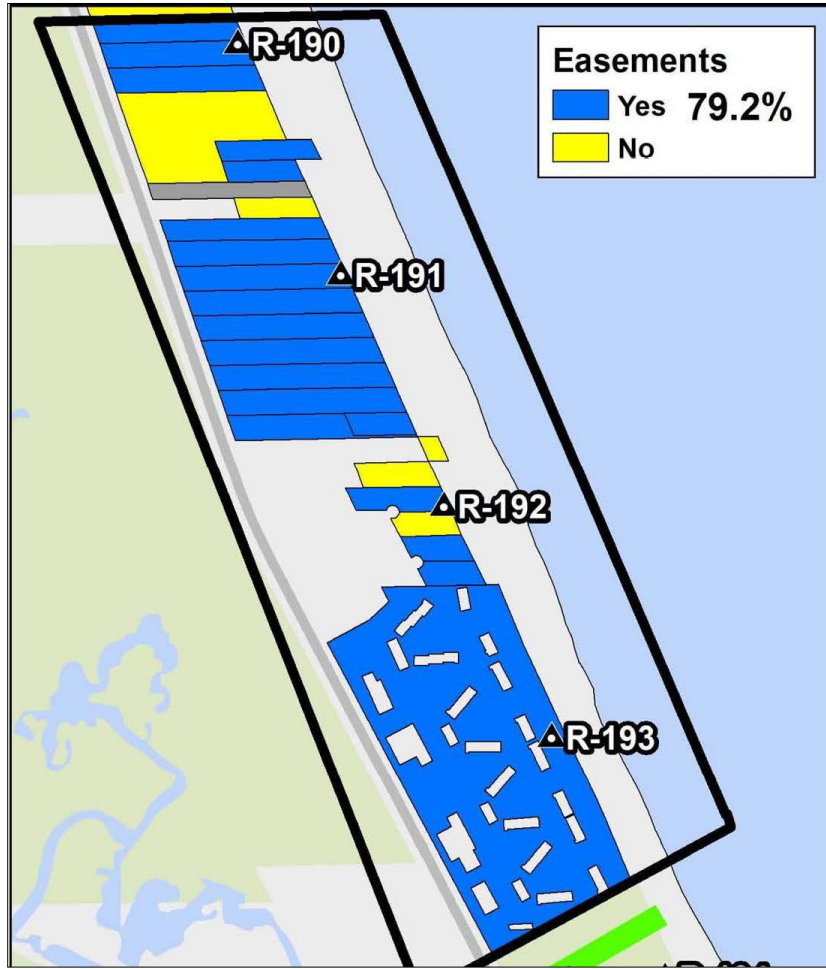
SCALE: NTS



- Federal and State agency coordination – FDEP, USFWS, FWC, and SHPO for project permits, relocate threatened and endangered species, and modify permit conditions
- Discontinuous sand placement – Initial sand placement event to be ~480,000 CY of sand along 11.4 miles of County shoreline
 - Volume changes, tapers, difficult to construct
- Existing infrastructure – hundreds of dune walkovers, irrigation, sand fencing



Design & Permitting



Initial Easement Map

Original

Final

Threatened and Endangered species

Requirements:

- USFWS 2008 BO – Emergency FEMA berm repair in Florida
- FEMA 2019 EA / FONSI – Emergency beach berms in St. Johns County

Wildlife Identified within project limits –

- Marine Turtles
 - FWC approved permit holders able to survey, monitor, and relocate
 - Construction requirements: No fill compaction, no lighting
 - Nesting Season: April 15 through November 30
 - Density of nesting controlled construction sequencing

- Migratory Birds
 - Survey required
 - Piping Plover Nesting Season: July 15 through May 15
- Beach Mice
 - Best management practices: Staging, access, and signage
- Gopher Tortoises
 - Survey of access points required
 - Avoidance or relocation. To date, 114 adult gopher tortoises relocated!



Threatened and Endangered species

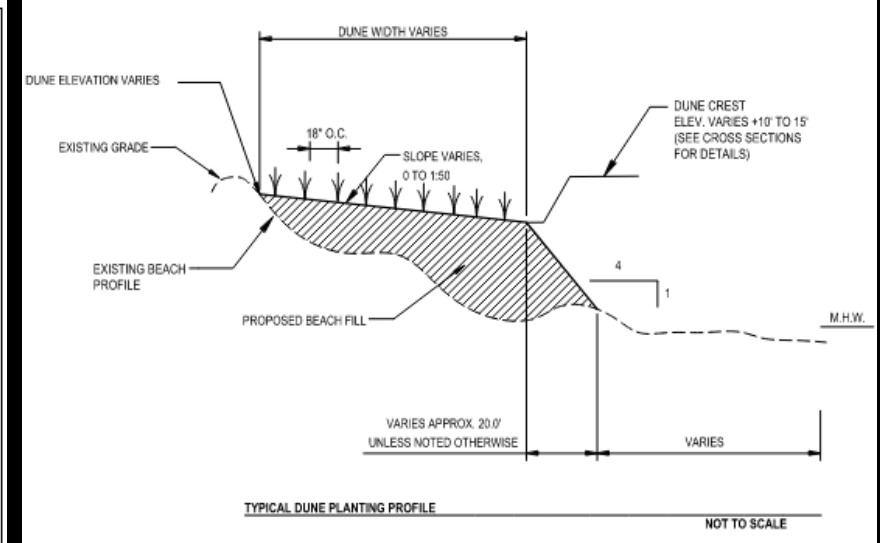
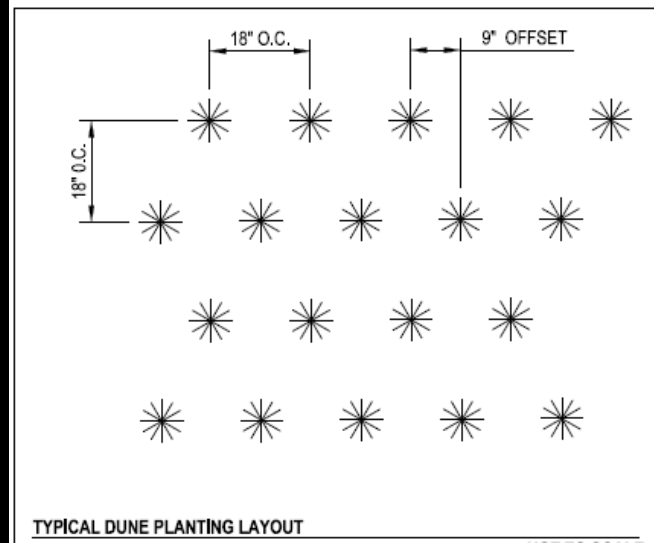




Beach	Reach	Approximate # of nests (2020)
Ponte Vedra Beach (N 1/2)	R1-R23	42
Ponte Vedra Beach (S 2/2)	R23-R46.2	102
South Ponte Vedra Beach	R67-R76	42
Vilano Beach I	R117.5-R122	24
Vilano Beach II	R122-R122.37	N/A
Butler Beach	R151-R173	51
Crescent Beach	R173-R193.65	44
Summer Haven	R197-R198.4	4



Typical dune planting



PLANTING DETAILS					
PLANT TYPE	SCIENTIFIC NAME	PERCENT DISTRIBUTION	QUANTITY (APPROX)	SIZE	SPACING
SEA OATS	UNIOLA PANICULATA	100%	850,000	2" LINER	18" O.C.

- Estimated 1.4 million Sea Oats
- At least 4 emergent stems and no less than 8"
- Planted 18" on center
- Planted to depth of 6"-8"
- Fertilizer and Hydrogel

Typical dune planting



Sand Fencing and Boardwalk Variation

- Sand fencing varying in location, size, condition, and material
- Boardwalks not constant in length, height, condition



Sand Fencing and Boardwalk Variation

– Historic shipwreck, likely the *Caroline Eddy*

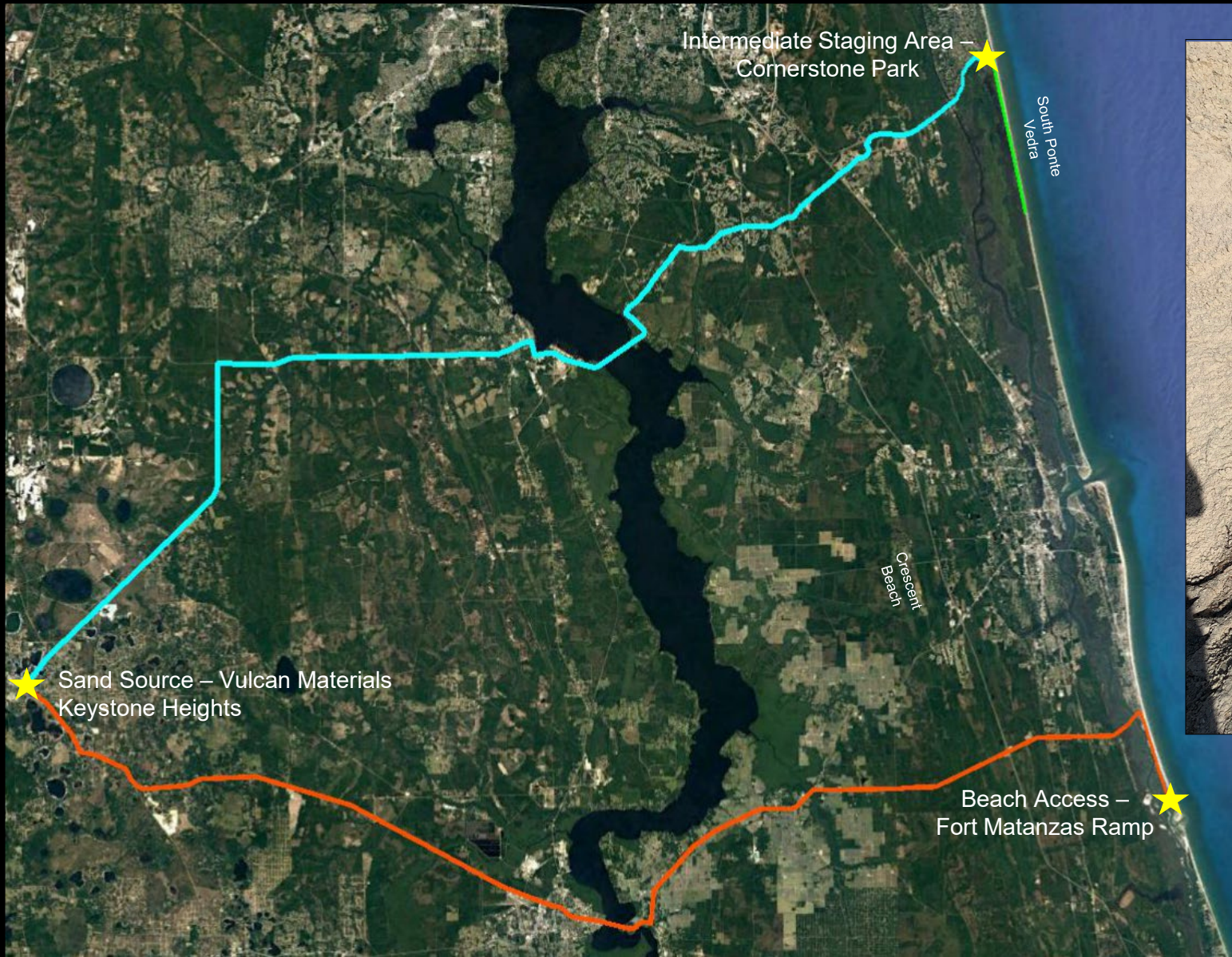


Inland sand sources



- FEMA Funding required inland sand sourcing and therefore mechanical/ truck haul placement
- Miles of shoreline with limited public access locations
 - CHC coordinated private residential access points
 - Extensive parcel improvement and restoration required
 - Reduced access points increases haul distances and reduces efficiencies
- Current labor shortage of inland mine drivers and truck availability
 - Limiting construction schedule based on material availability

Fill Sources – Mine Locations



Construction schedule & sequencing

- Schedule:
 - Begin sand placement construction:
 - Crescent Beach – September 20, 2021 (Completed November 3, 2021)
 - South Ponte Vedra – October 15, 2021 (Completed February 1, 2022)
 - Ponte Vedra I – November 29, 2021
 - Ponte Vedra II – January 13, 2022
- Sequencing
 - Public Impact
 - Micklers Closing
 - Full Beach Closures
 - Beach Access Closures
 - Safety Concerns with Construction Activity
 - Environmental Impact
 - Strategically started certain segments after peak nesting season
 - Worked closely with turtle patrol to work while nest were present
 - Avoid Gopher tortoise habitat

Current project status



- Ponte Vedra Beach 1 – In process 13%
- Ponte Vedra Beach 2 – In process 8%
- South Ponte Vedra Beach – In process 95%
- Crescent Beach – Completed sand placement and planting

BEFORE



AFTER



BEFORE



AFTER







Thank you

→ sjcfl.us/CoastalProjects/FEMADunes.aspx

→ chcivil.com/

→ ghd.com/



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