Re-Building the Texas Coast – Project Update on McFaddin Beach Nourishment

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WEDA Gulf Coast CHAPTER

McFaddin National Wildlife Refuge Beach, Texas

Who's who?

Christine Magers, CWB

Environmental Program Lead

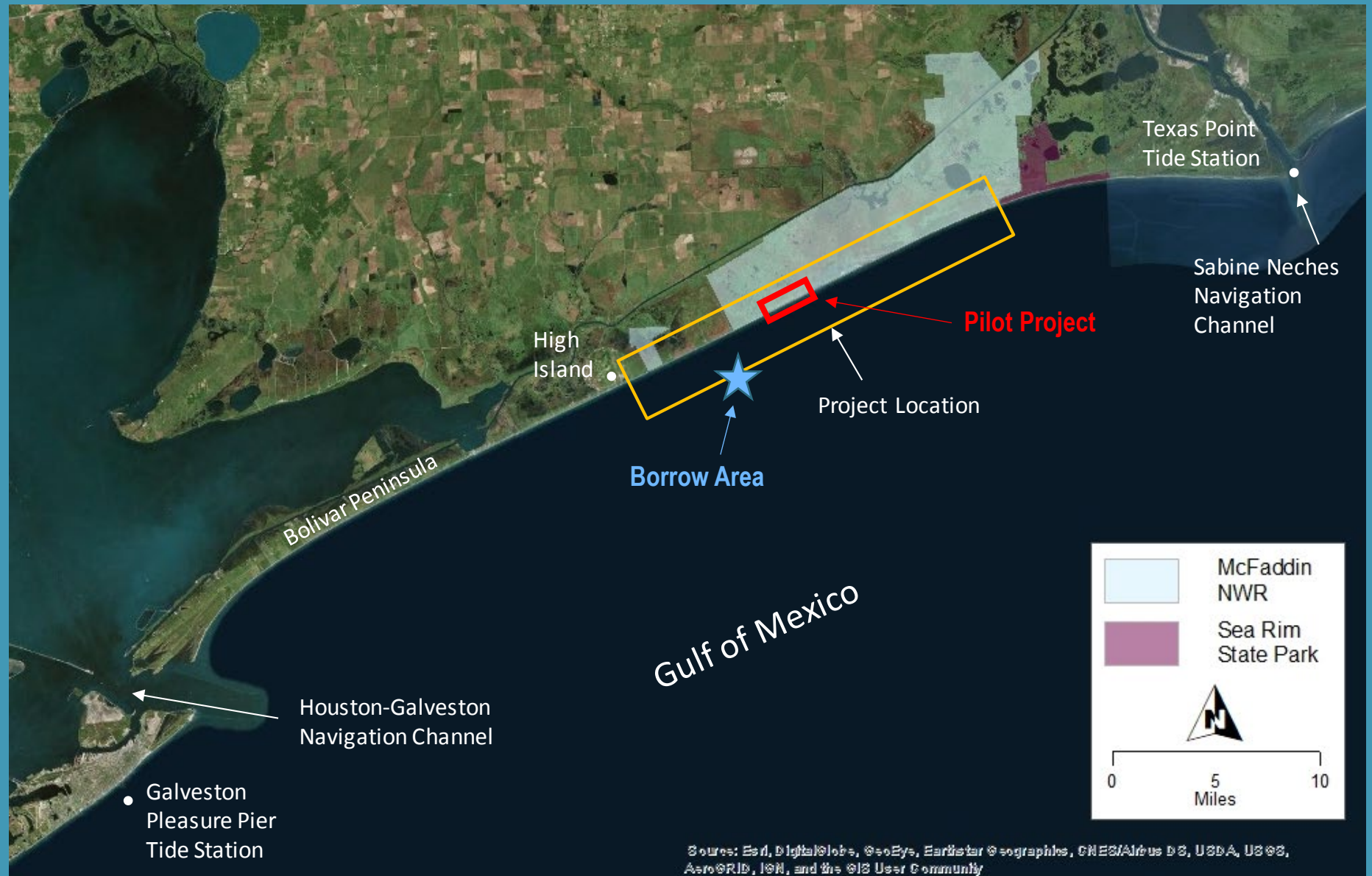
HDR Engineering, Inc.

Philip Blackmar, P.E.

Coastal Project Manager

HDR Engineering, Inc.

Project Location



McFaddin's Background

- Salt Bayou ecosystem - largest continuous estuarine marsh complex in Texas.
- The marsh also provides storm protection for Texas' infrastructure
- BEG results show average loss of 3 feet/year between 1956 to 1982 - current rates exceed 20 feet
- Efforts to restore
  - Clay berm construction in 2016
  - Pilot project construction in 2017
  - Phase II

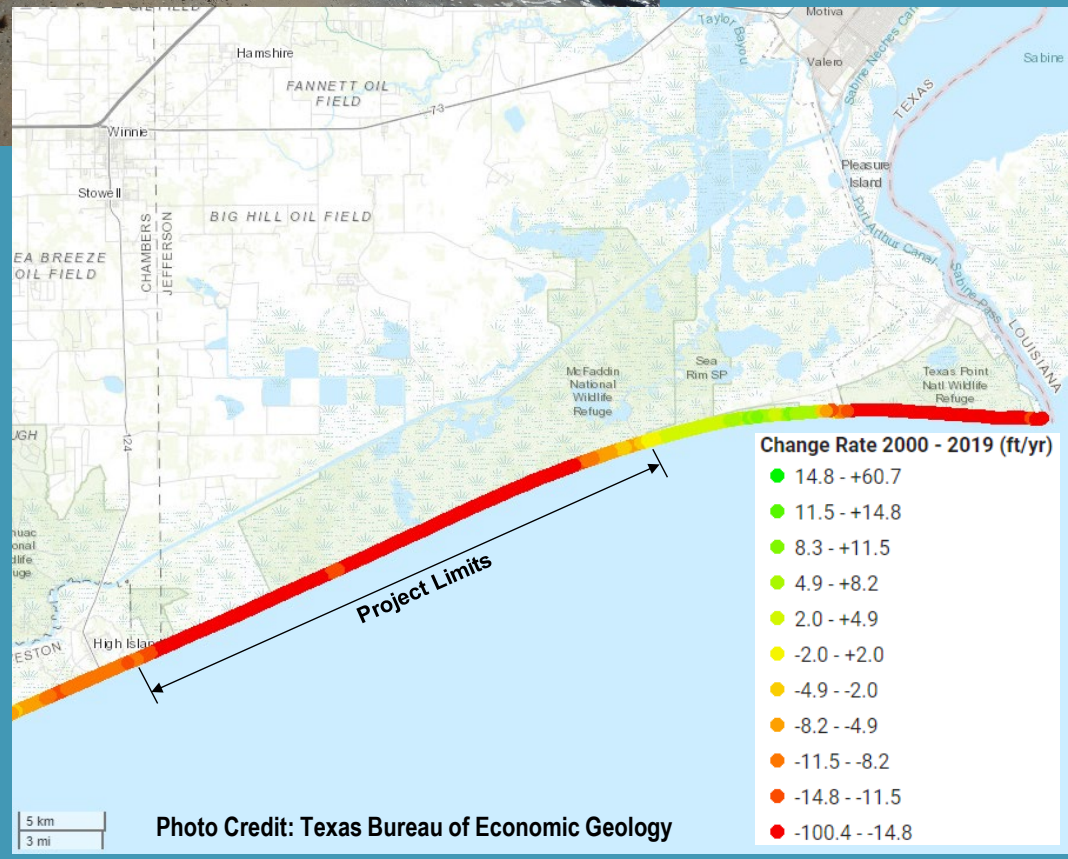


Photo Credit: Texas Bureau of Economic Geology

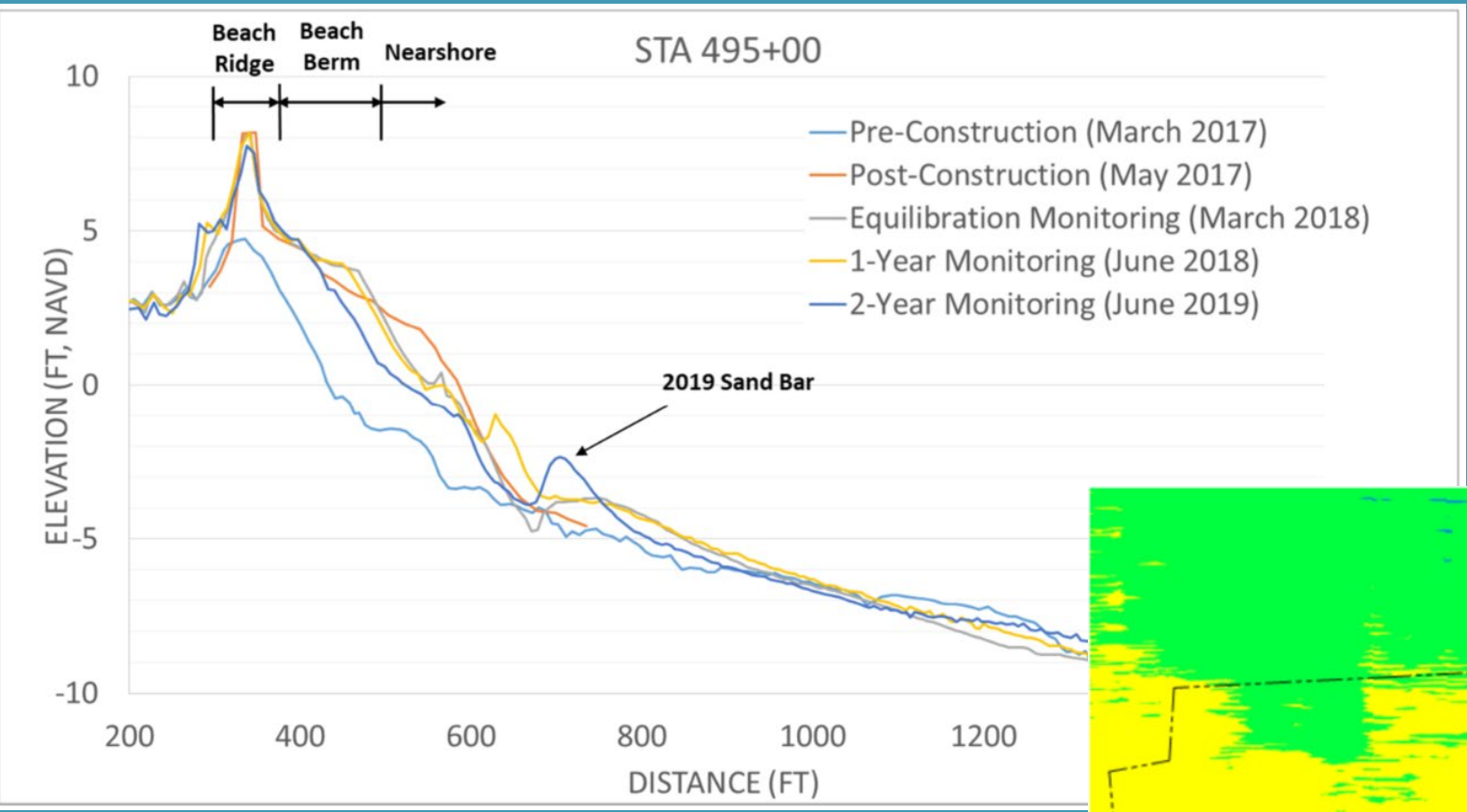
Pilot Project

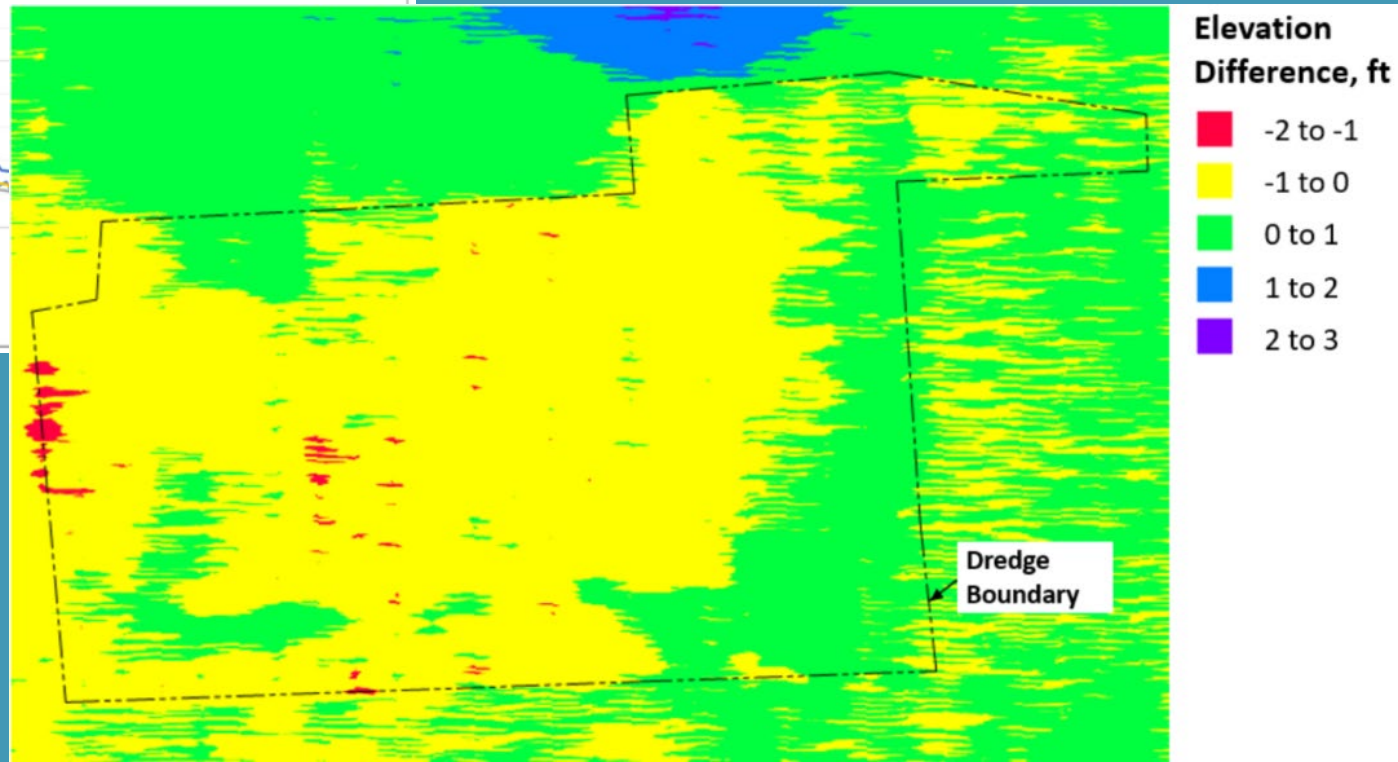
Photo: Texas General Land Office

- Construction completed May 2017
  - Contractor: Weeks Marine, Inc.
  - 535,000 cubic yards
  - No Overburden
- 3-mile project along most critical section of beach
  - Permit Condition Constraints
  - Beach access

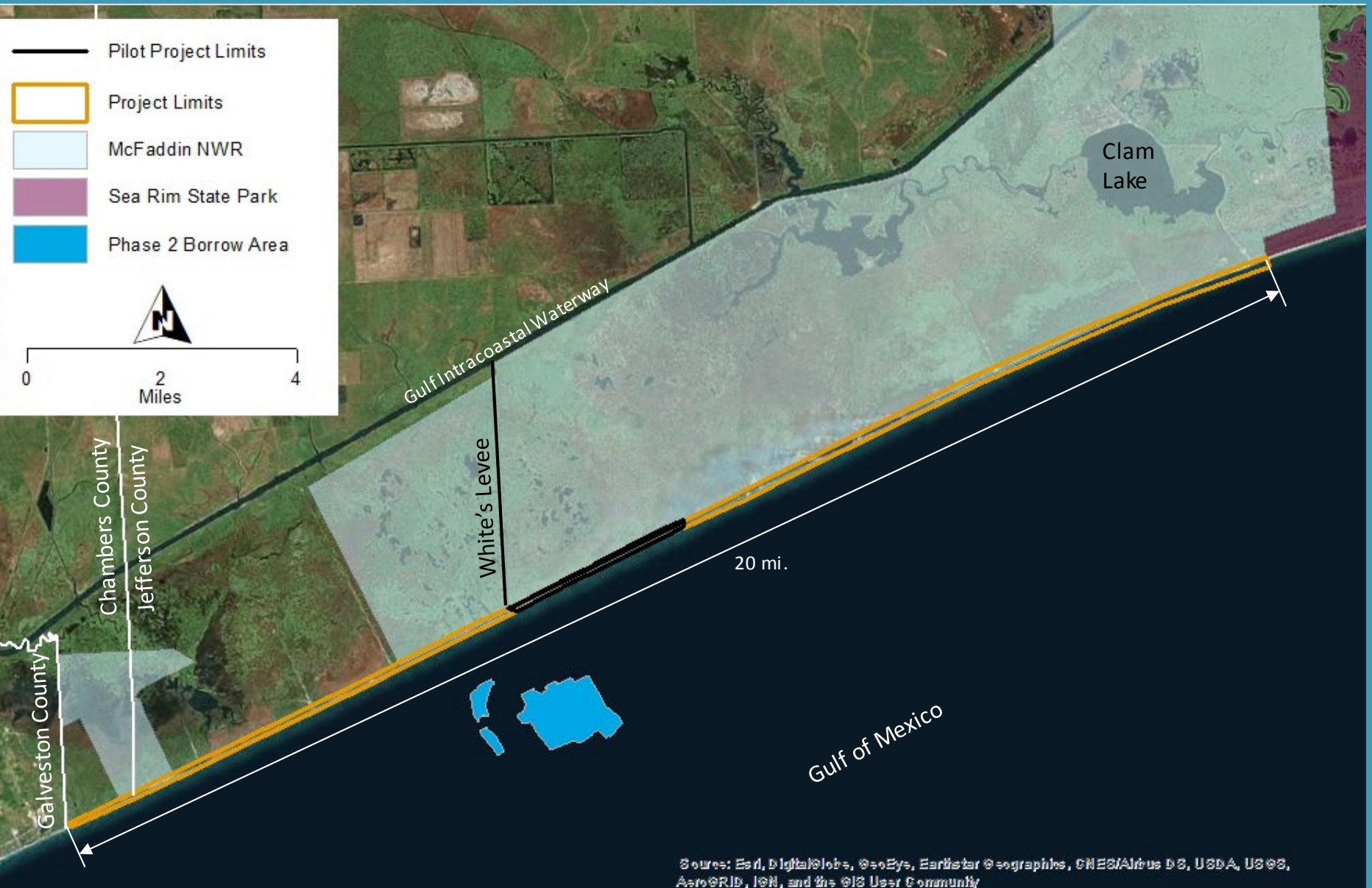
Pilot project Monitoring

- Natural sand bar system forming
- Borrow area in-filling





Phase II



- Scope
  - 17 miles of beach
  - Nourishment and planting
- Permit Amendment
- Review cross-section design
- Plans and Specifications
- Coordination

Permits and Environmental - Past

October 2013 – Clay Berm

- 6-month monitoring

November 2016 – Original Permit

- Water Quality, Bathymetric surveys

April/May 2017 - Pilot Project

- Reports made to USFWS and USACE

Photo: Michael Stravato for the Texas Tribune

Photo Credit: Texas General Land Office

Permits and Environmental – Pilot Project

- Birds and bird deterrents
- Sand source changes
- Access restrictions
- Archeological Monitoring

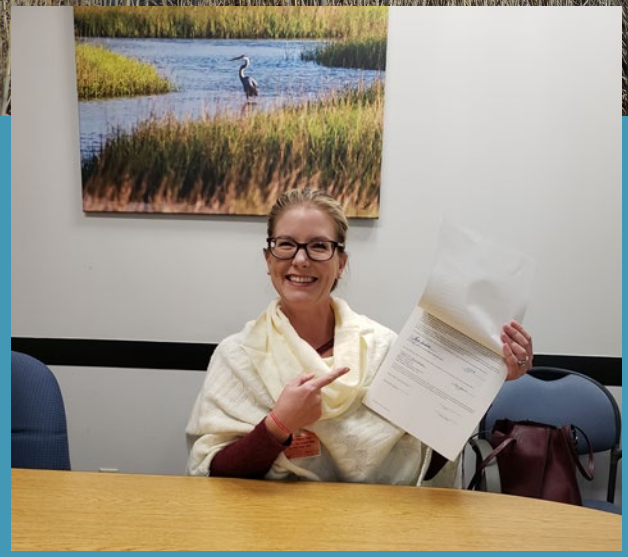
Photos: LJA and DESCO

Permits and Environmental - Current

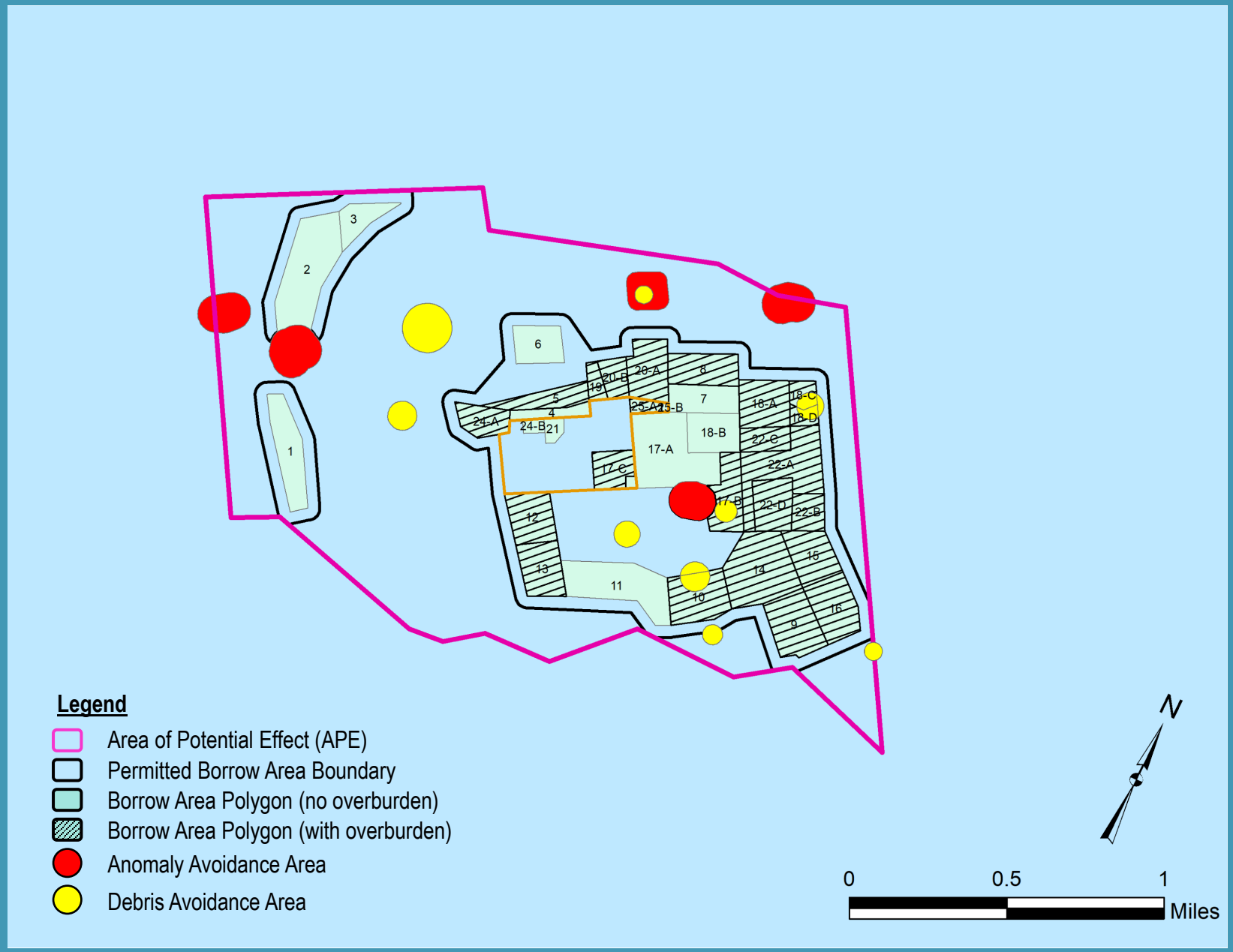
November 2019 - Permit Amendment
- Borrow area/placement changes
- 5-year for water quality, bathymetric
- Remove wave modeling
- Remove access restrictions
- Archeological Monitoring
- Add jurisdictional information

Oil and Gas Infrastructure
- Getting a LONO and ownership

Pre-Construction Surveys
- Archeological Surveys
- Protected Species Crew Training and Surveys
- Planting Plans
- Birds on beach July 15 to May 15
- Turtles on beach March 15 to October 1



Borrow Area

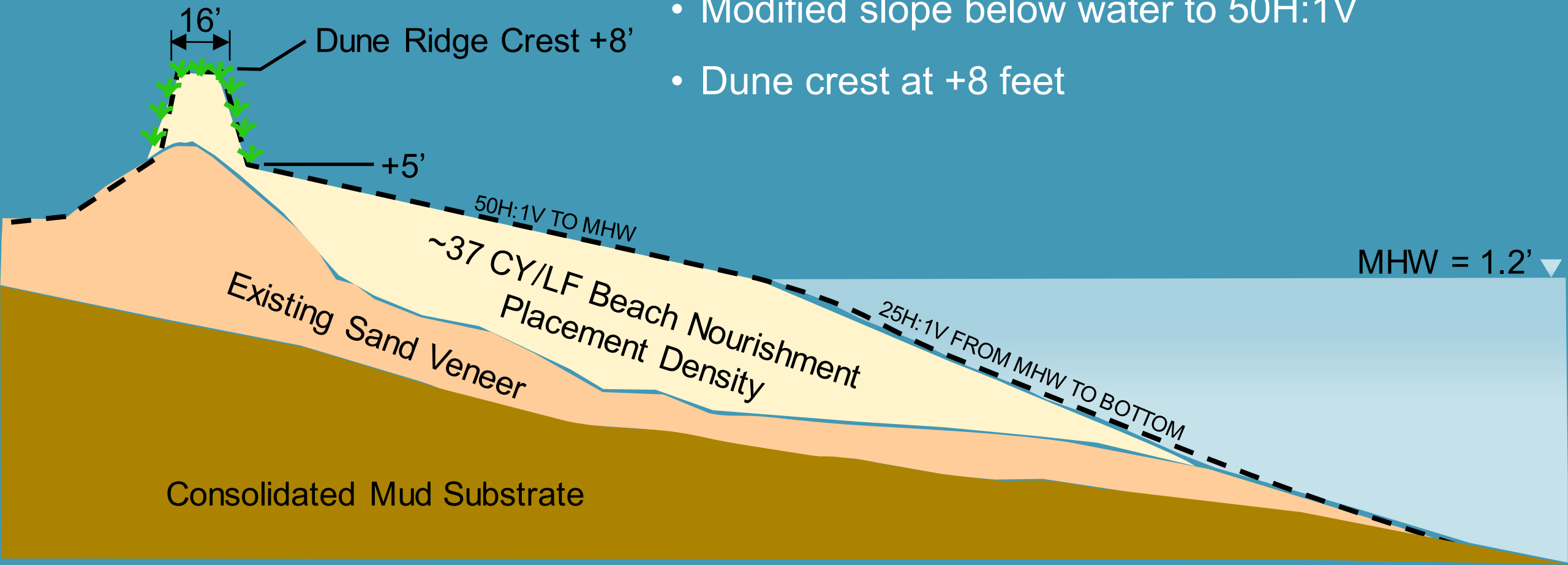


- Sand Available = 10.3 million cubic yards
- Overburden = 3.2 million cubic yards
- Project Design - 3.4 million cubic yards in place (>7million cubic yards cut)
  - Expect ~ 500,000 cubic yards overburden
- Overburden cut: 0 to 15 feet
- Sand cut: 7 to 23 feet
- Overburden Placement: Within the Area of Potential Effect

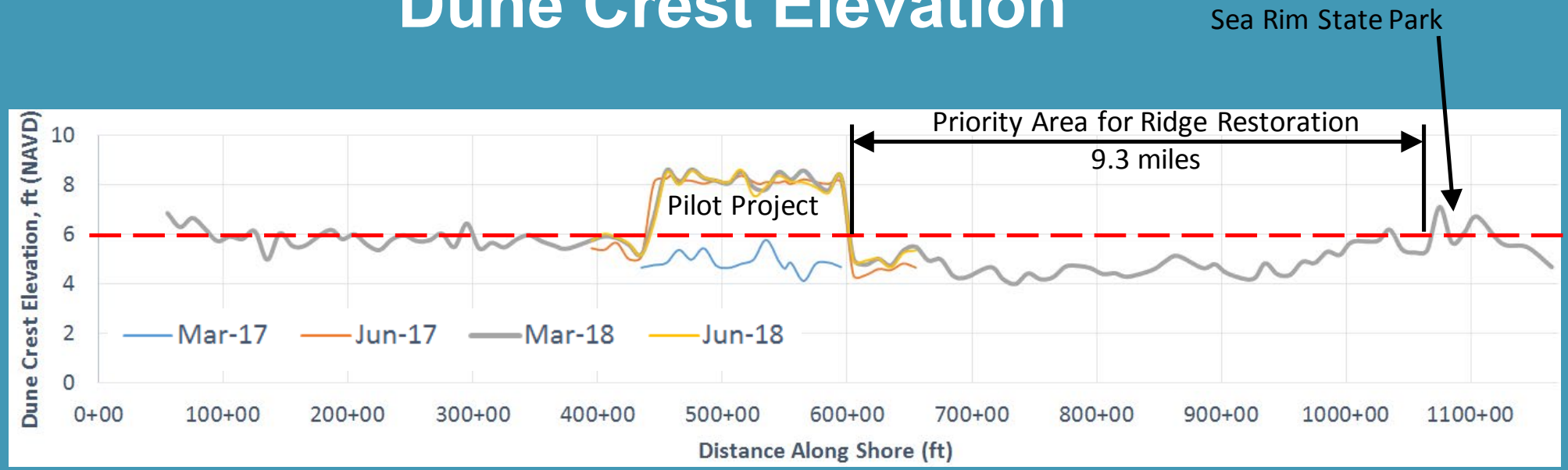
Location	Phi Median	Median (mm)	Mean (mm)	Phi Mean	Phi Sorting[1]	% Silt[2]
2018 McFaddin Borrow Area	3.03	0.12	0.14	2.81	0.64	19.30

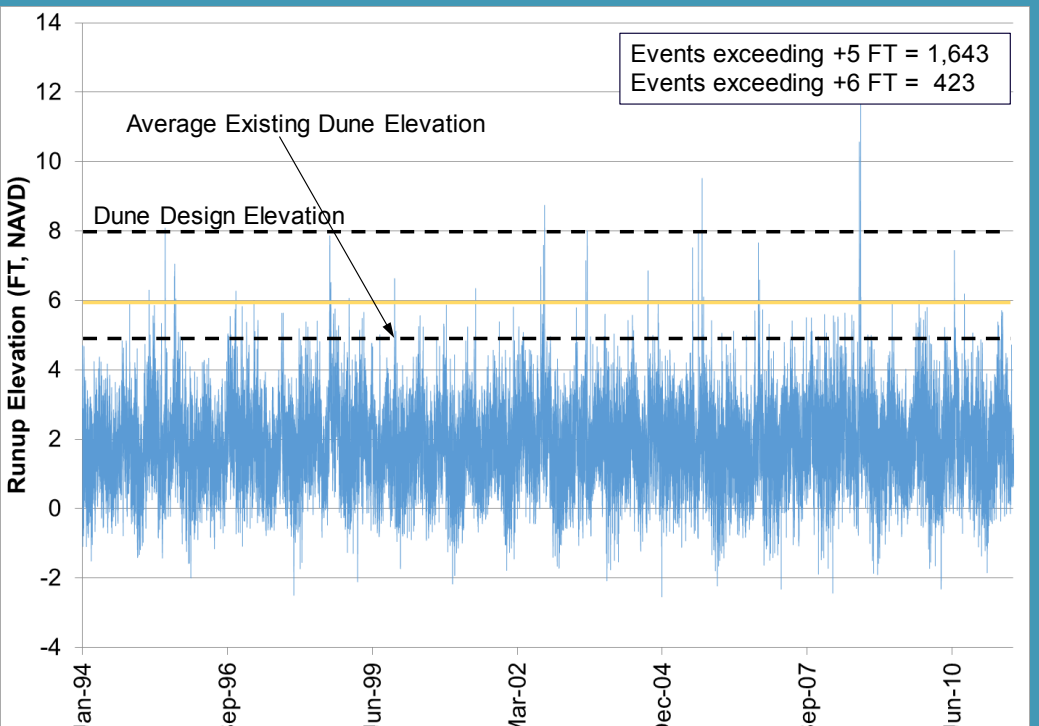
Beach Design Considerations

- Berm slope to reduce scarping for turtles
- Modified slope below water to 50H:1V
- Dune crest at +8 feet



Dune Crest Elevation





- Average of +6 feet west of Pilot project
- Average +4.5 feet east of Pilot project
- Approximately 75% reduction if dune elevation increased to +8 feet
- Dune will naturally evolve in sandy system

Planform Design

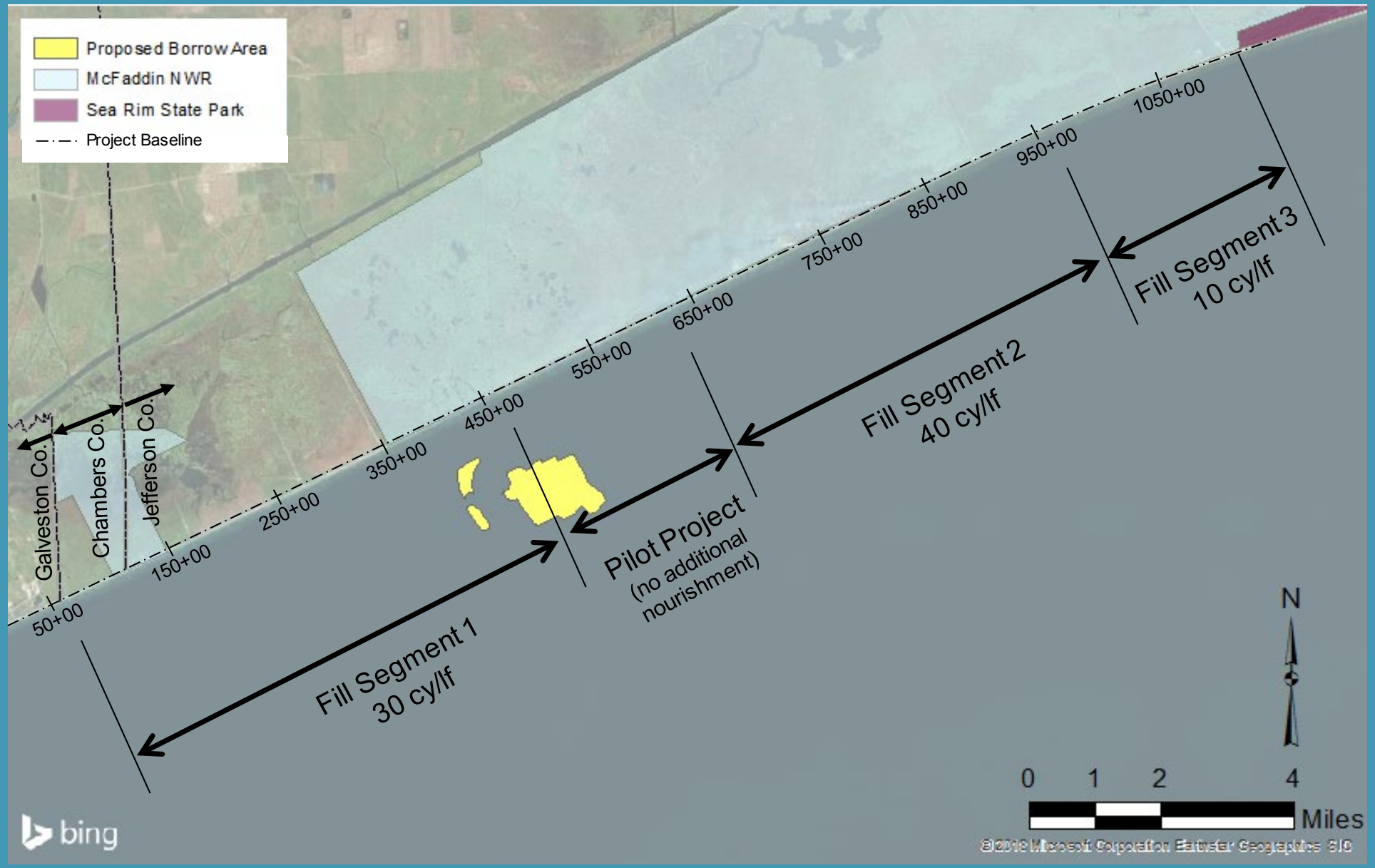



Photo Credit: Texas General Land Office

Plans and Specifications

- Payment based on material in place
- Schedule flexibility
- Borrow area specifics
- Oil and Gas Infrastructure

Phase II Additional Scope

- Debris removal (under dredging contract)
  - Oil and Gas infrastructure
  - Derelict vehicles
  - Posts and Gates
  - General debris
- Planting
  - Separate contract
  - Schedule to stay within 2 to 4 miles of beach nourishment
  - Bird nesting expected to be a challenge

Phase 2 Update

- Proposal solicitation 3/25/2021
- Proposals received 5/20/2021
- Contract award:
  - Weeks Marine – Dredging
  - RES – Planting
- Anticipated mobilization winter 2021/2022
- Anticipate approximately 2 years for construction

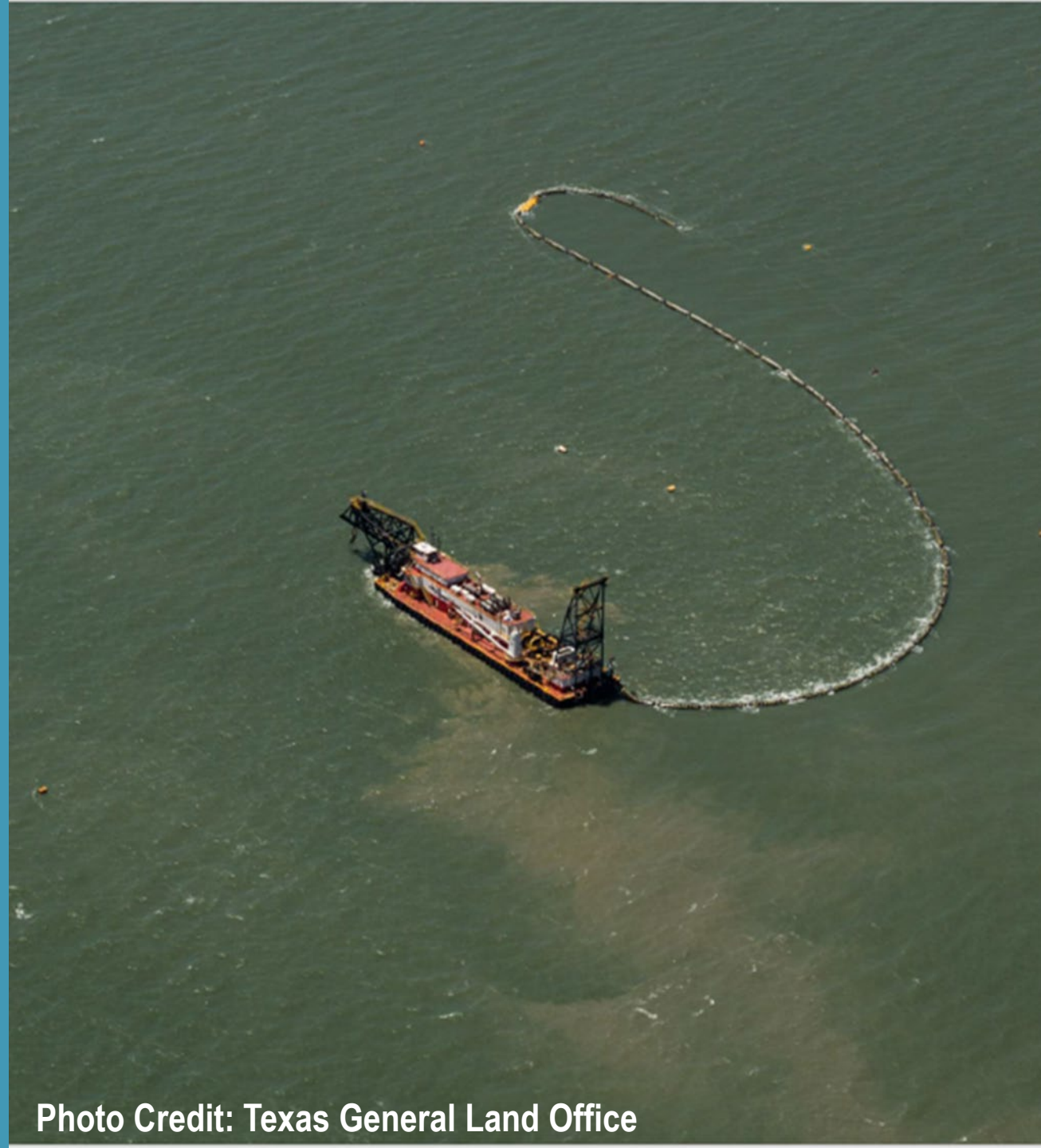


Photo Credit: Texas General Land Office

Monitoring Surveys

- Pre-construction archeological survey

Monitoring Methodology	Pre-Construction Monitoring	Construction	Post-Construction					
		As-Built Monitoring	3-6 Months	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Visual Inspections	--	X	--	X	X	X	X	X
Topographic & Bathymetric Surveys	X	X	--	X	X[1]	X	--	X
Aerial Photography	--	X	--	X	X	X	X	X
Planting Subplots	--	X[a]	--	--	--	--	--	--
Equilibration Survey	--	--	X	--	--	--	--	--
Borrow Area Survey[2]	--	X	--	X	X	--	X	--
Water Quality Sampling	X	--	--	X[3]	X[3]	--	--	--

[1] Yr 2 survey required by USACE

[2] Borrow Area Survey could be required to continue annually until 5 years post construction, but USACE allows consideration to reduce to every other year after 2 years. This situation is assumed in this table.

[3] Water Quality Sampling will be performed twice per year where indicated. In addition, water quality sampling could be required for a longer period, but this table assumes USACE will approve a request to discontinue after 2 years based on Pilot Project monitoring.

Who Came to the Rescue?

Salt Bayou Marsh Workgroup includes:

- Ducks Unlimited
- Texas General Land Office
- Jefferson County
- National Oceanic and Atmospheric Administration
- Texas Parks and Wildlife Department
- Texas Water Development Board
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers

Phase II Stakeholders include:

- Jefferson County
- USFWS and the McFaddin National Wildlife Refuge
- The Texas General Land Office
- The National Fish and Wildlife Foundation
- The Deep-Water Horizon Natural Resource Damage Assessment Trustees (NRDA Trustees)
- The RESTORE Council

Summary

- Total of 20 miles of beach to be restored
  - Phase I – 3 miles
  - Phase II – 17 miles
- Establish natural sandy beach system
- Increase dune elevation and plant
- Debris clean-up
- Major coordination effort and collaboration

Questions