Adaptability During Design and Construction of Large Scale Coastal Restoration Projects
Riverine Sand Mining / Scofield Island Restoration Project (BA-40)

Scofield Island
May 2011

October 24, 2013

COASTAL ENGINEERING CONSULTANTS INC.

©CEC

Outline

- **Project Introduction**
- Design Changes Prior to Construction
- Design Changes During Construction
- Lessons to be Learned

Funding Agencies – Client – Design Team

DESIGN TEAM

COASTAL ENGINEERING CONSULTANTS INC.

SJB GROUP, LLC
QUALITY BY DESIGN

ALPINE OCEAN SEISMIC SURVEY, INC.

COASTAL TECH
COASTAL TECHNOLOGY CORPORATION

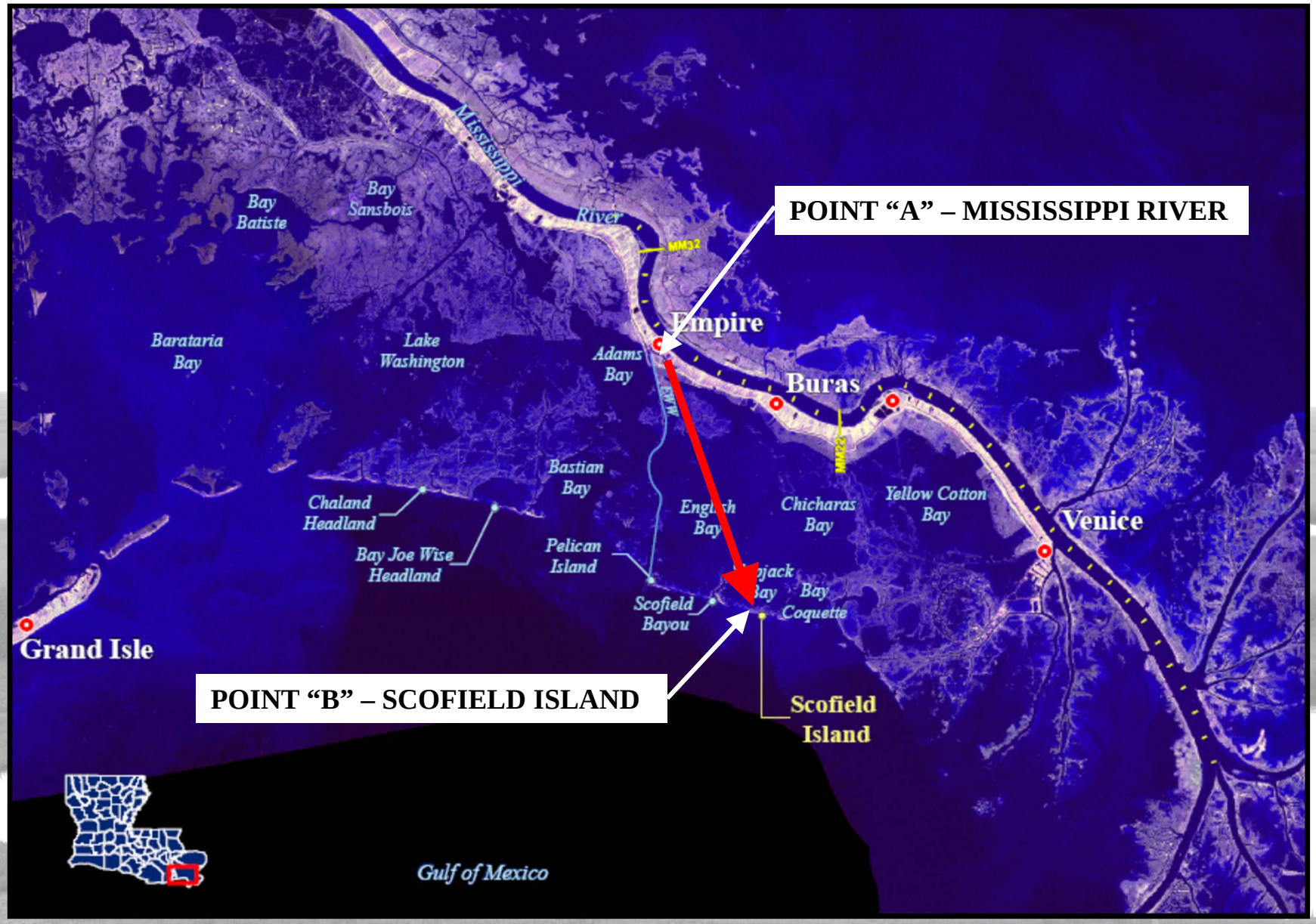
C-K ASSOCIATES • LLC

EUSTIS ENGINEERING COMPANY, INC.
GEOTECHNICAL ENGINEERING & CONSTRUCTION QUALITY CONTROL SERVICES

ARCHAEOLOGICAL RESEARCH, INC.

C. H. Fenstermaker & Associates, Inc.
Civil Engineers · Environmental Consultants · Land Surveyors

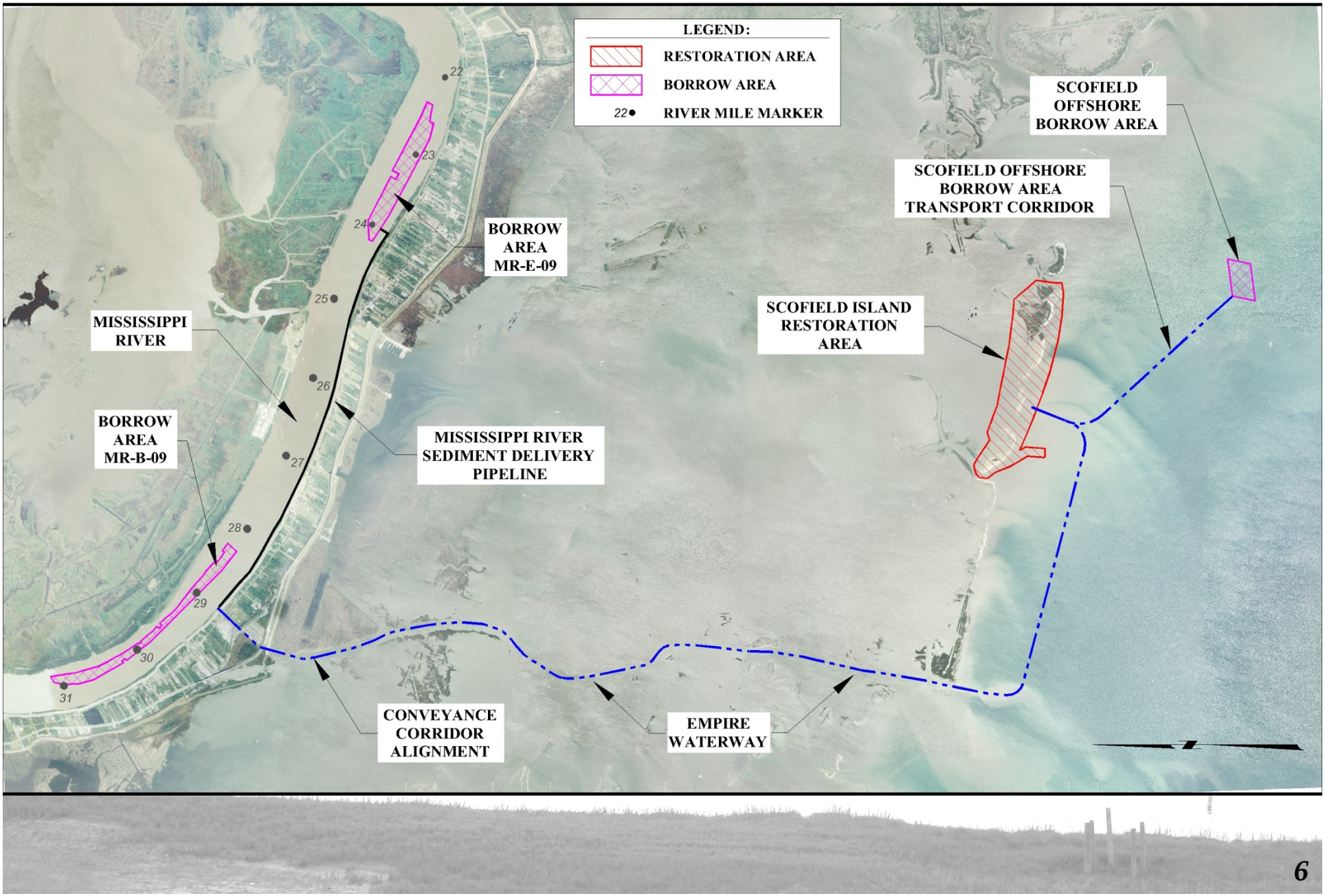
Project Location



Project Unique Aspects

- Excavation of riverine sediments in one of the nations busiest navigational waterways
- Delivery of riverine sediments over 22 miles
- Conveyance corridor that requires:
  - Casing pipe installation under two highways
  - Crossing of 2 levees and a harbor canal
  - Pipeline installation along 16 miles of Empire Waterway
  - Providing 6 navigational crossings for commercial and recreational use over the sediment pipeline

Project Design



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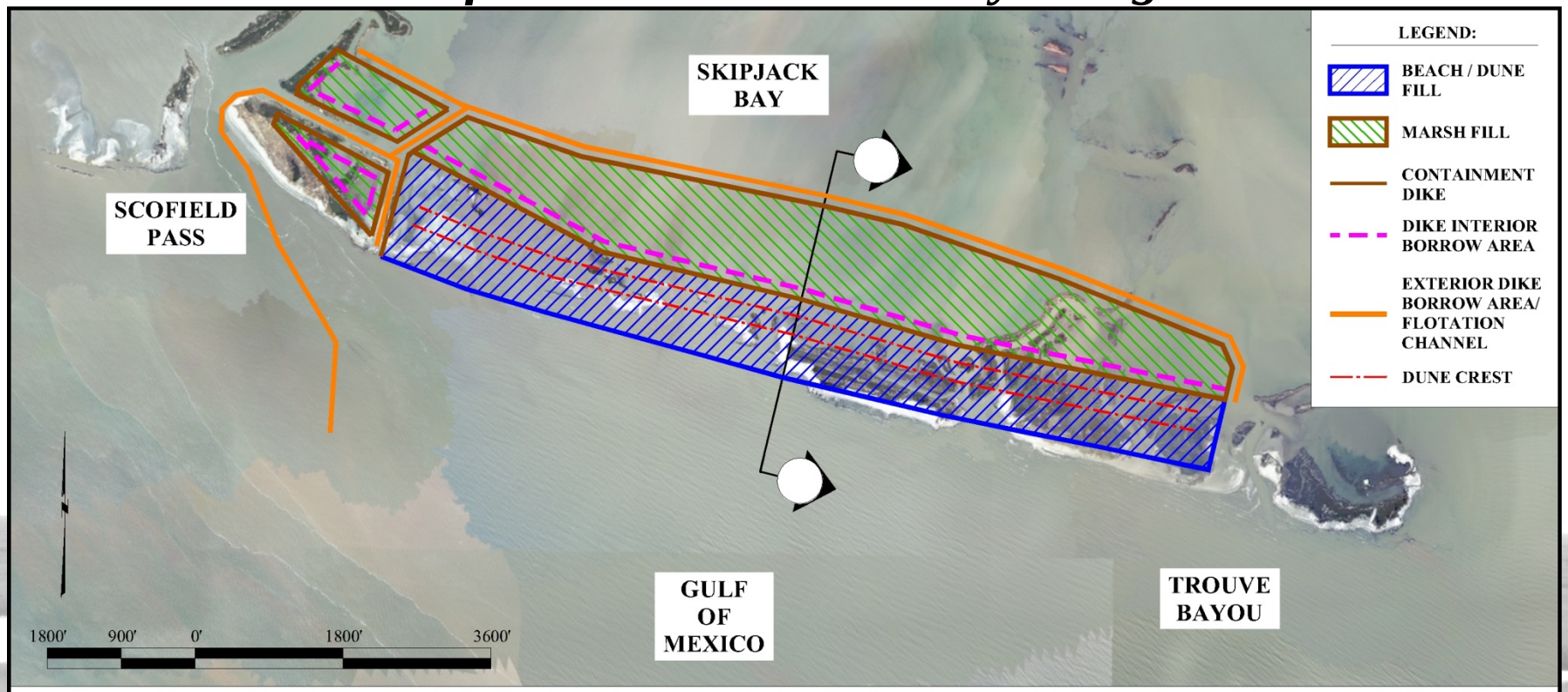
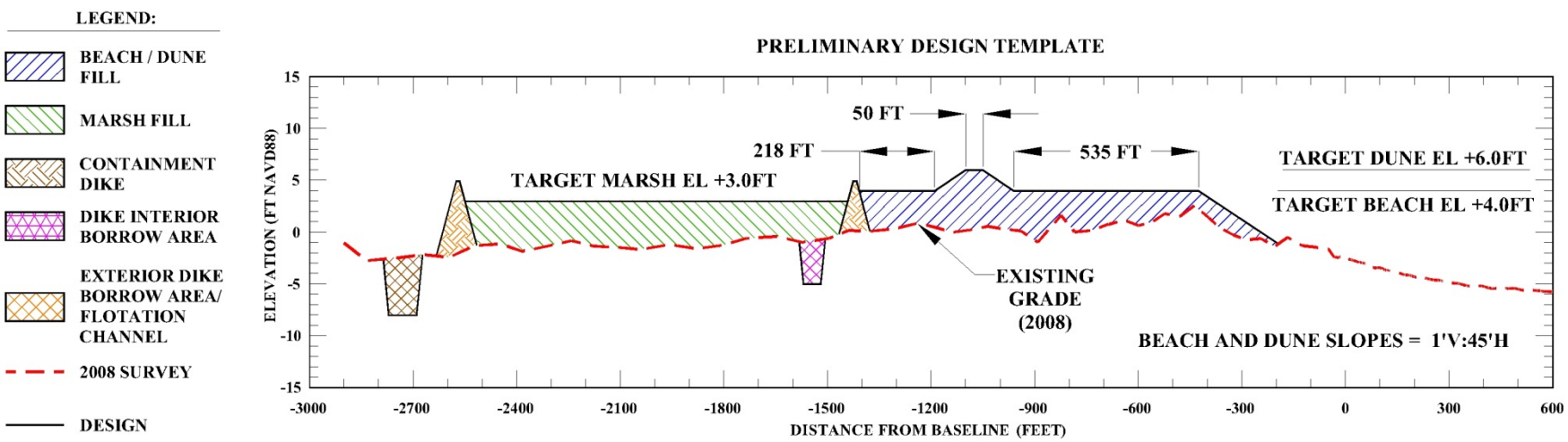
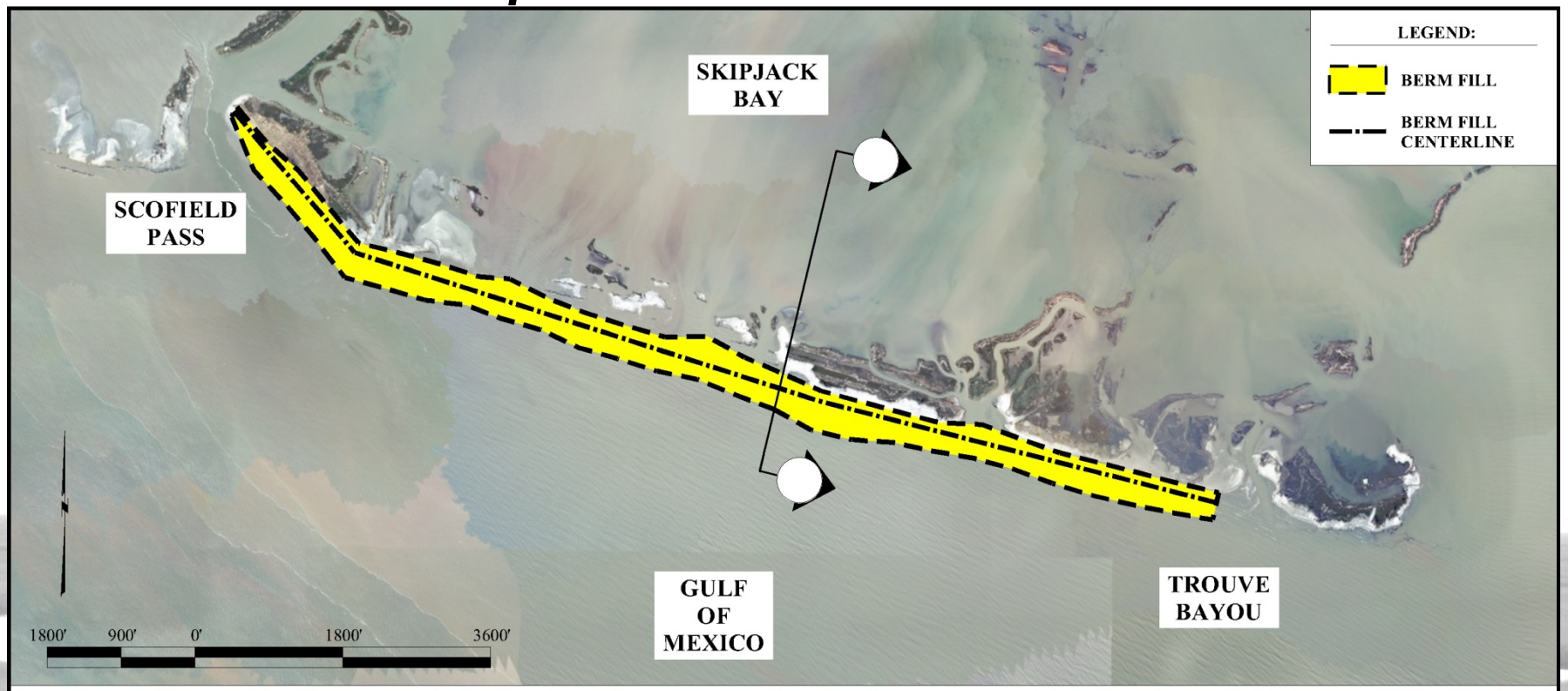
Berm to Barrier Island

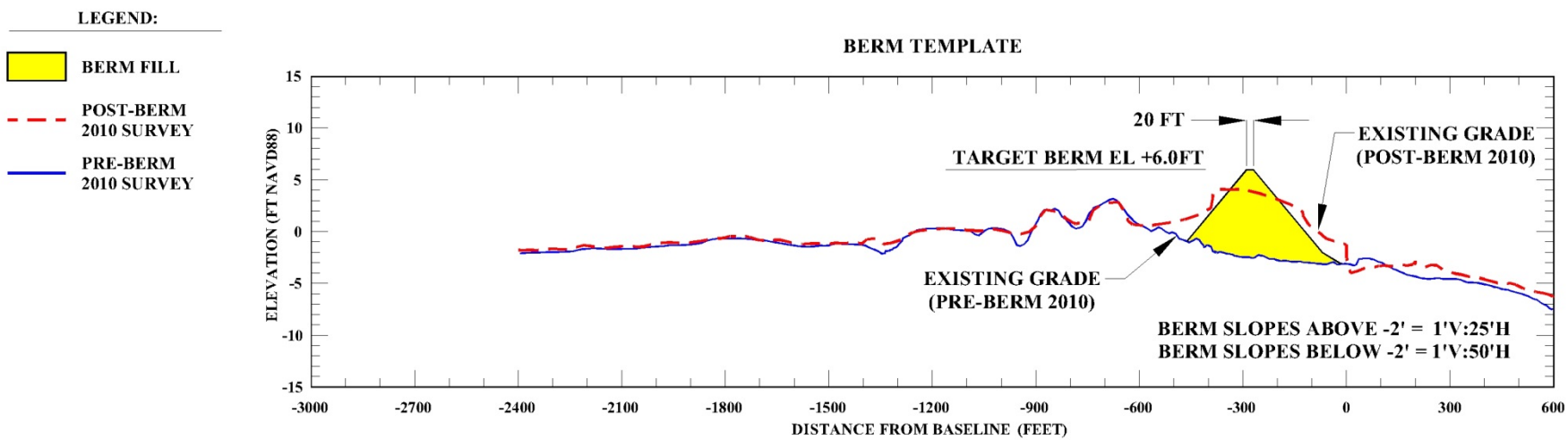
Scofield Island Preliminary Design



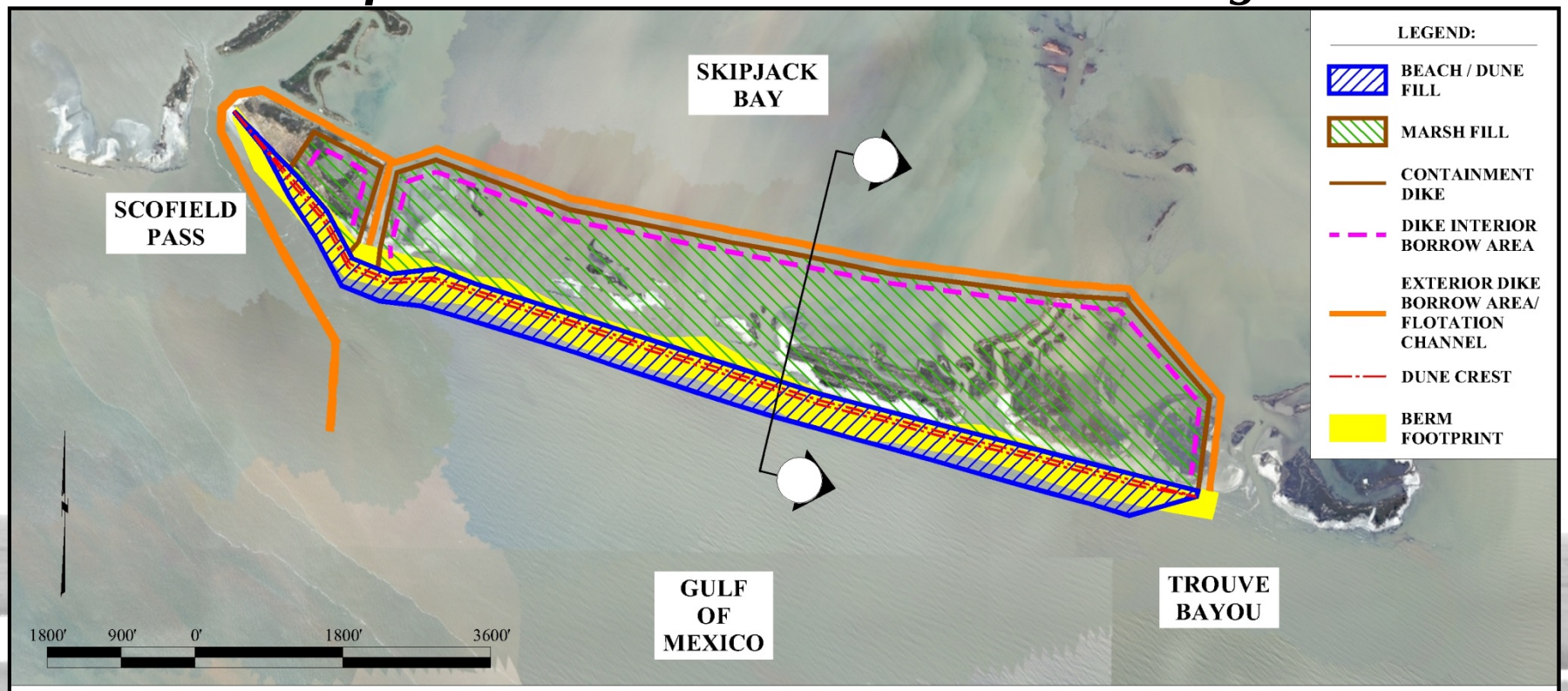


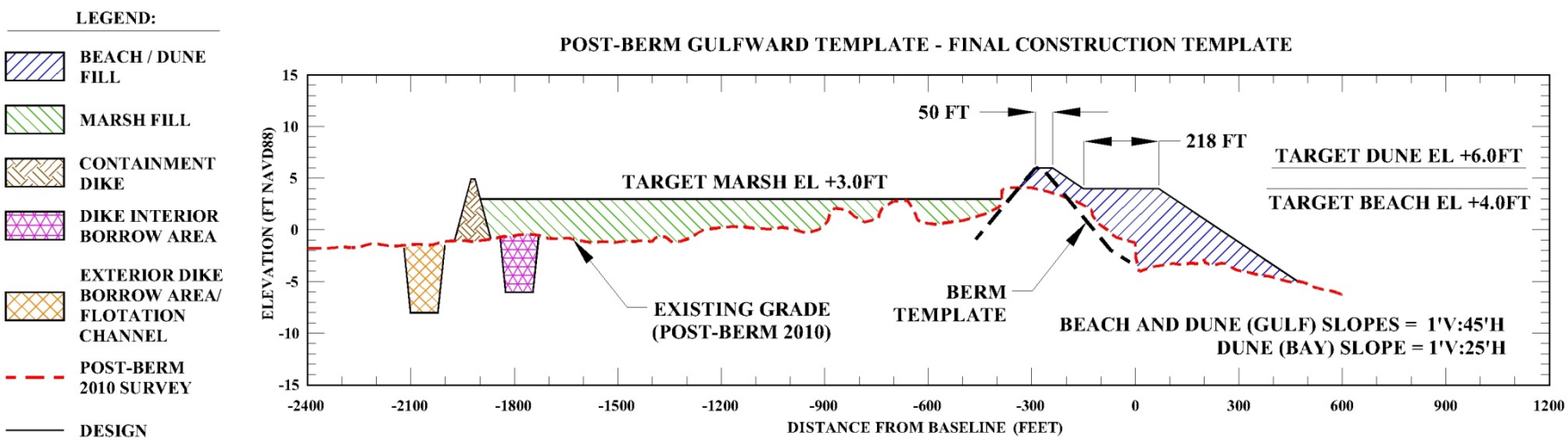
Scofield Island Protective Berm





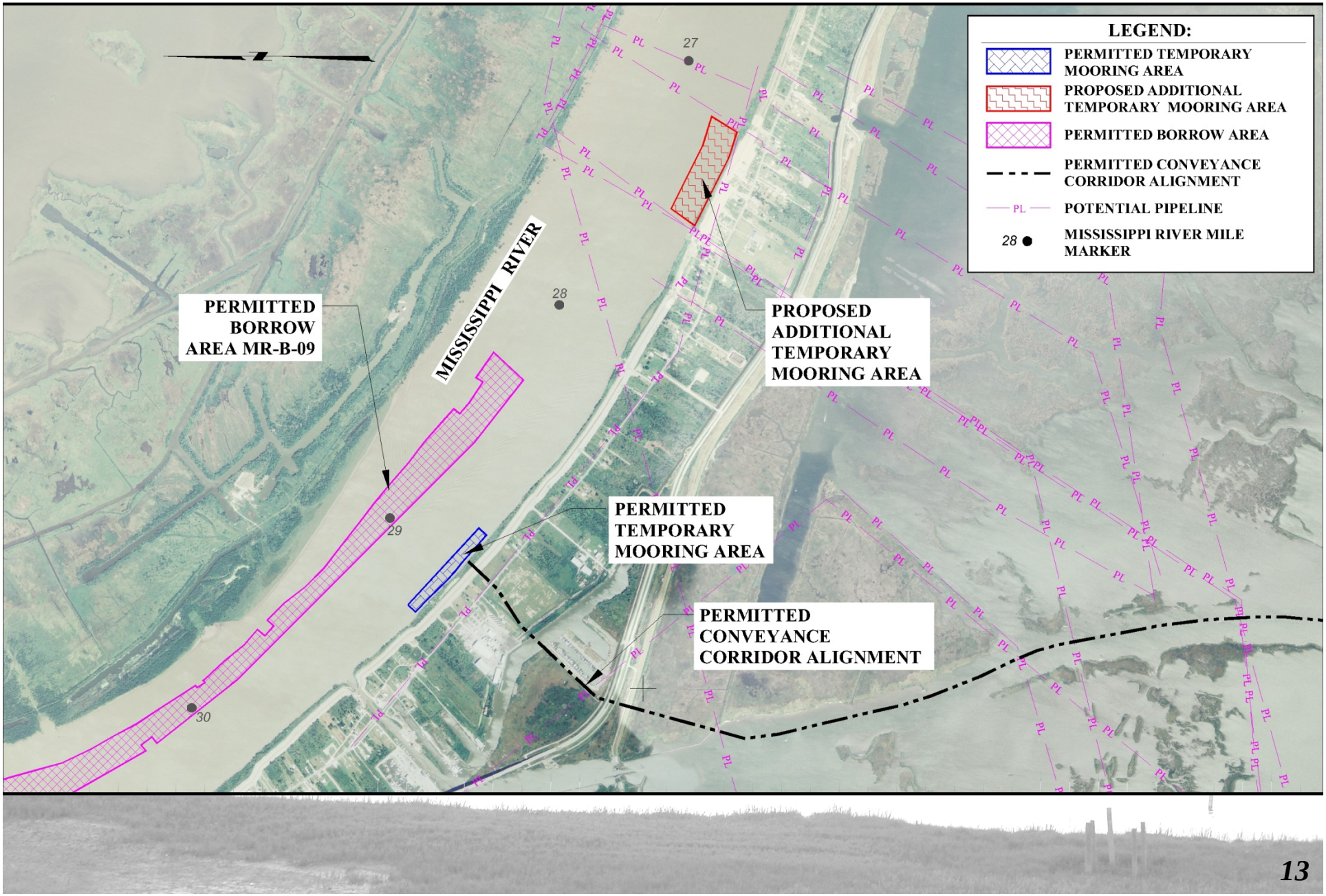
Scofield Island - Final Construction Design



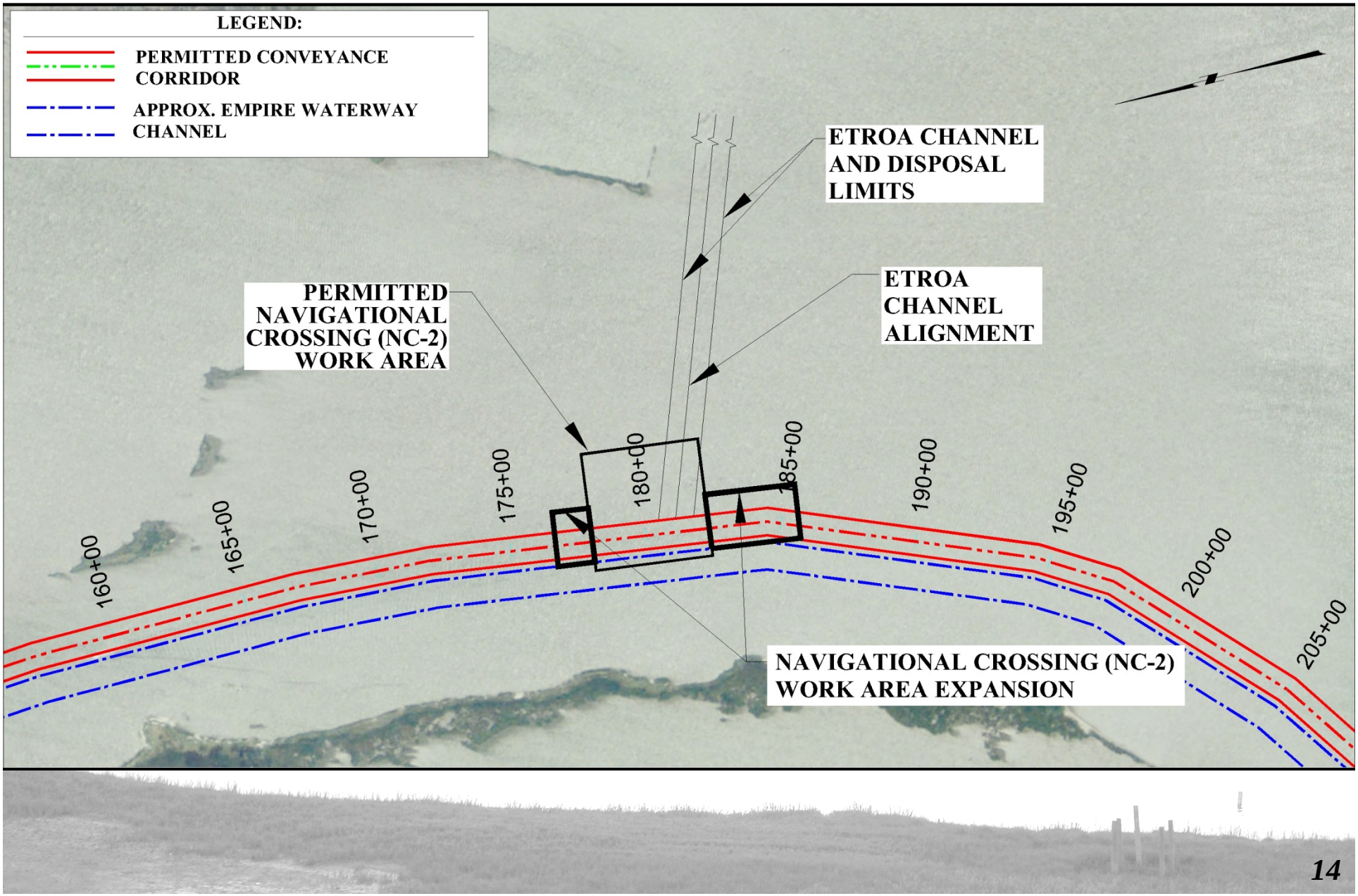


Permit Modifications

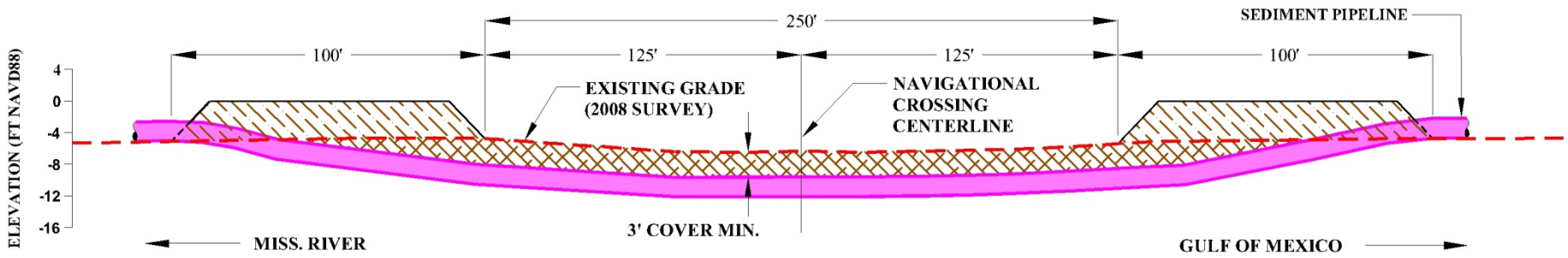
Permit Modifications - Additional Temporary Mooring Area

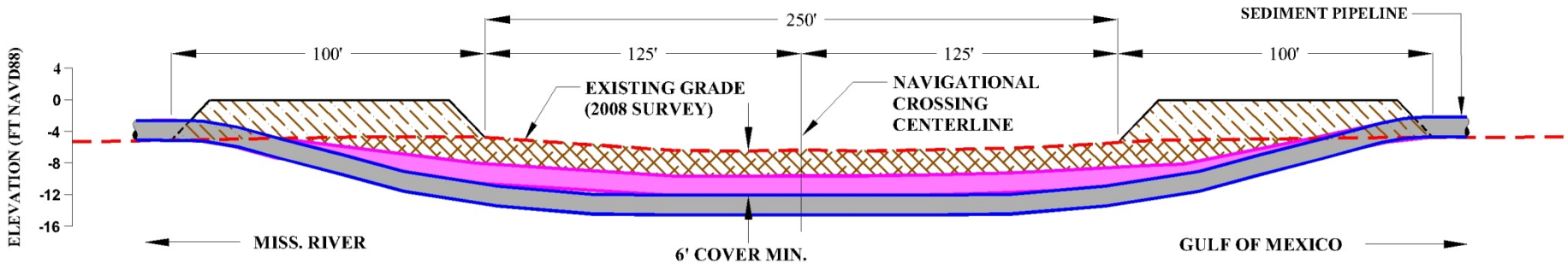


Permit Modifications - Navigational Crossing



Permit Modifications - Navigational Crossing





LEGEND:

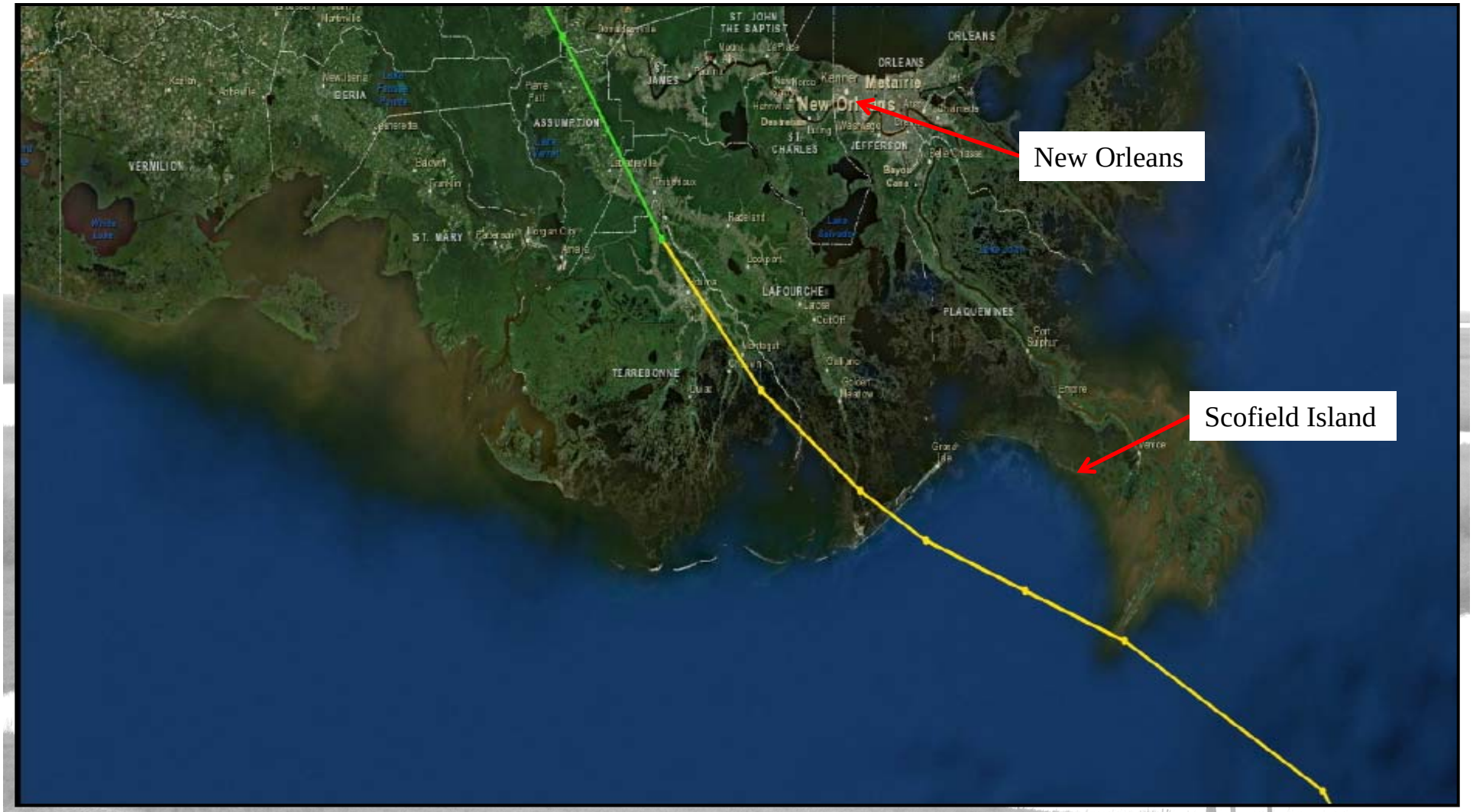
- TRENCH EXCAVATION (EXTENDS TO BOTTOM OF PIPE)
- TEMPORARY SIDECAST DISPOSAL
- ORIGINAL SEDIMENT PIPELINE ELEVATION
- MODIFIED SEDIMENT PIPELINE ELEVATION

Outline

- Project Introduction
- Project Overview
- Design Changes Prior to Construction
- **Design Changes During Construction**
- Lessons to be Learned

Hurricane Isaac

Hurricane Isaac Track



Pre – Hurricane Isaac

Post – Hurricane Isaac

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Scofield Island

Image # 121002 6049
Date 10.02.12

Pre – Hurricane Isaac Breach

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Date 08.02.12

Post – Hurricane Isaac Breach

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Date 10.02.12

Hurricane Isaac Impacts

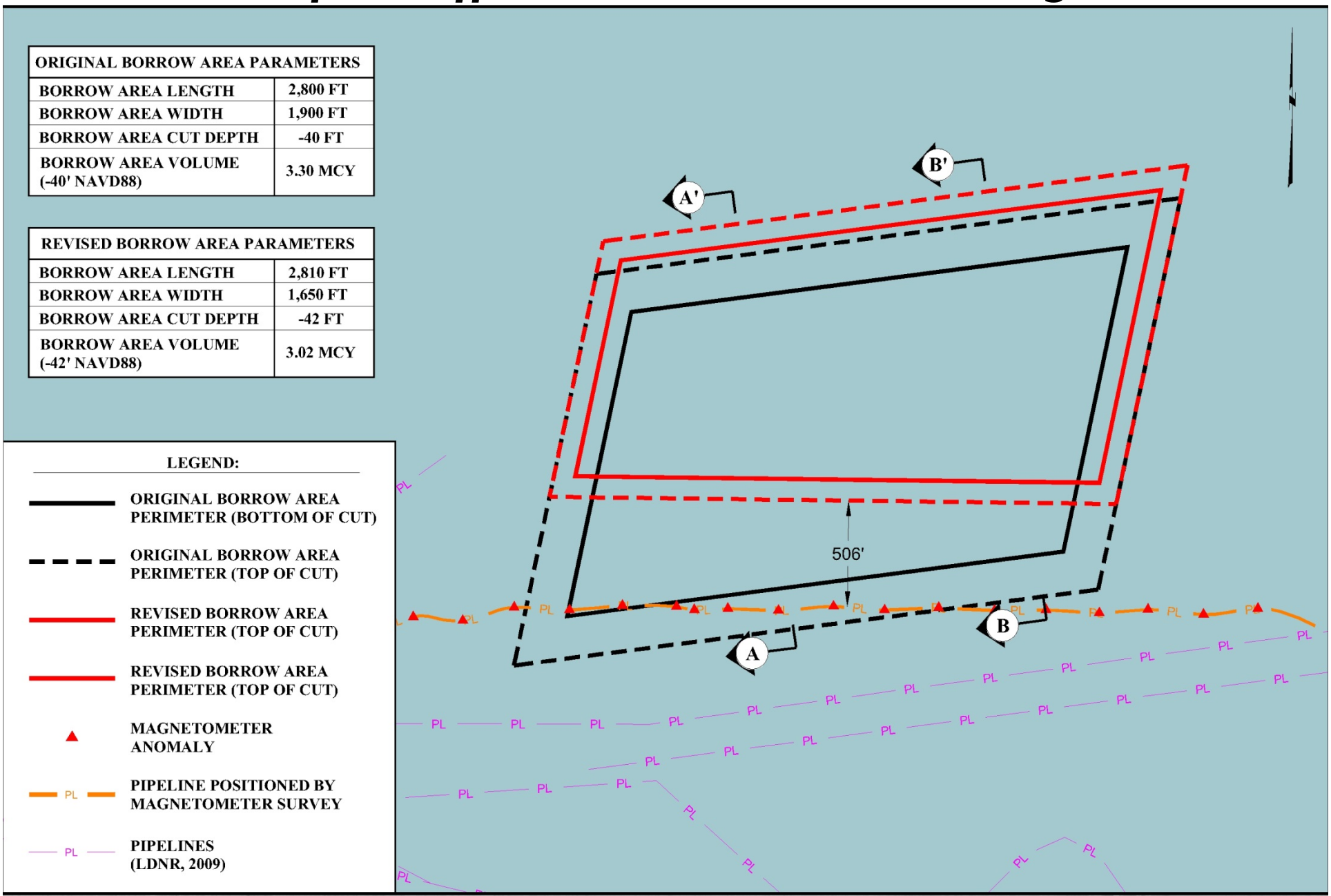
Original Construction Volumes	
Beach and Dune	1,632,000 cy
Marsh	1,761,500 cy
Hurricane Impacts	
Beach and Dune	- 257,310 cy (-15.8%)
Marsh	+133,260 cy (+7.6%)
Final Construction Volumes	
Beach and Dune	1,889,310 cy
Marsh	1,628,240 cy

Offshore Borrow Area Redesign

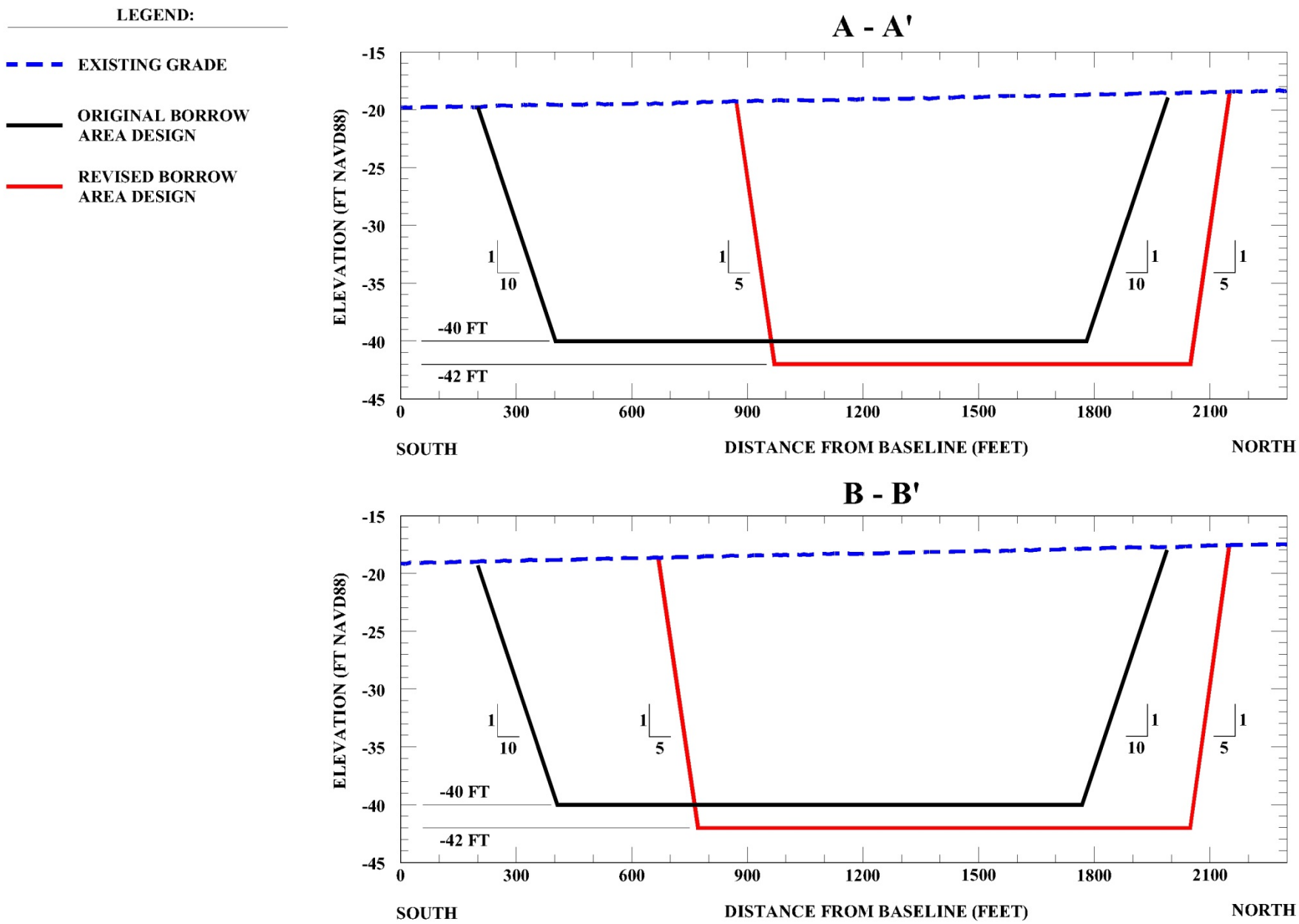
Scofield Offshore Borrow Area Redesign

ORIGINAL BORROW AREA PARAMETERS	
BORROW AREA LENGTH	2,800 FT
BORROW AREA WIDTH	1,900 FT
BORROW AREA CUT DEPTH	-40 FT
BORROW AREA VOLUME (-40' NAVD88)	3.30 MCY

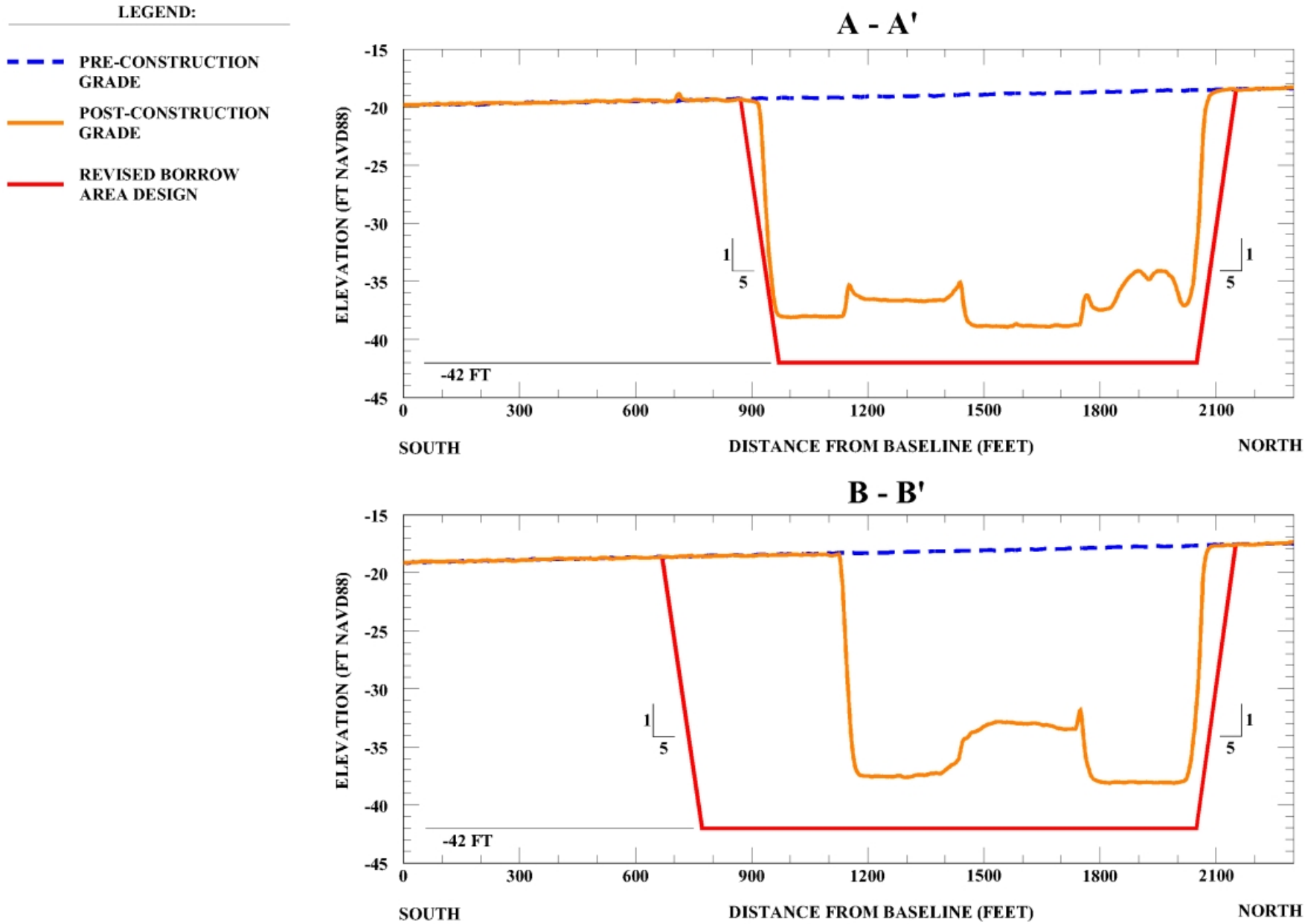
REVISED BORROW AREA PARAMETERS	
BORROW AREA LENGTH	2,810 FT
BORROW AREA WIDTH	1,650 FT
BORROW AREA CUT DEPTH	-42 FT
BORROW AREA VOLUME (-42' NAVD88)	3.02 MCY



Scofield Offshore Borrow Area Redesign

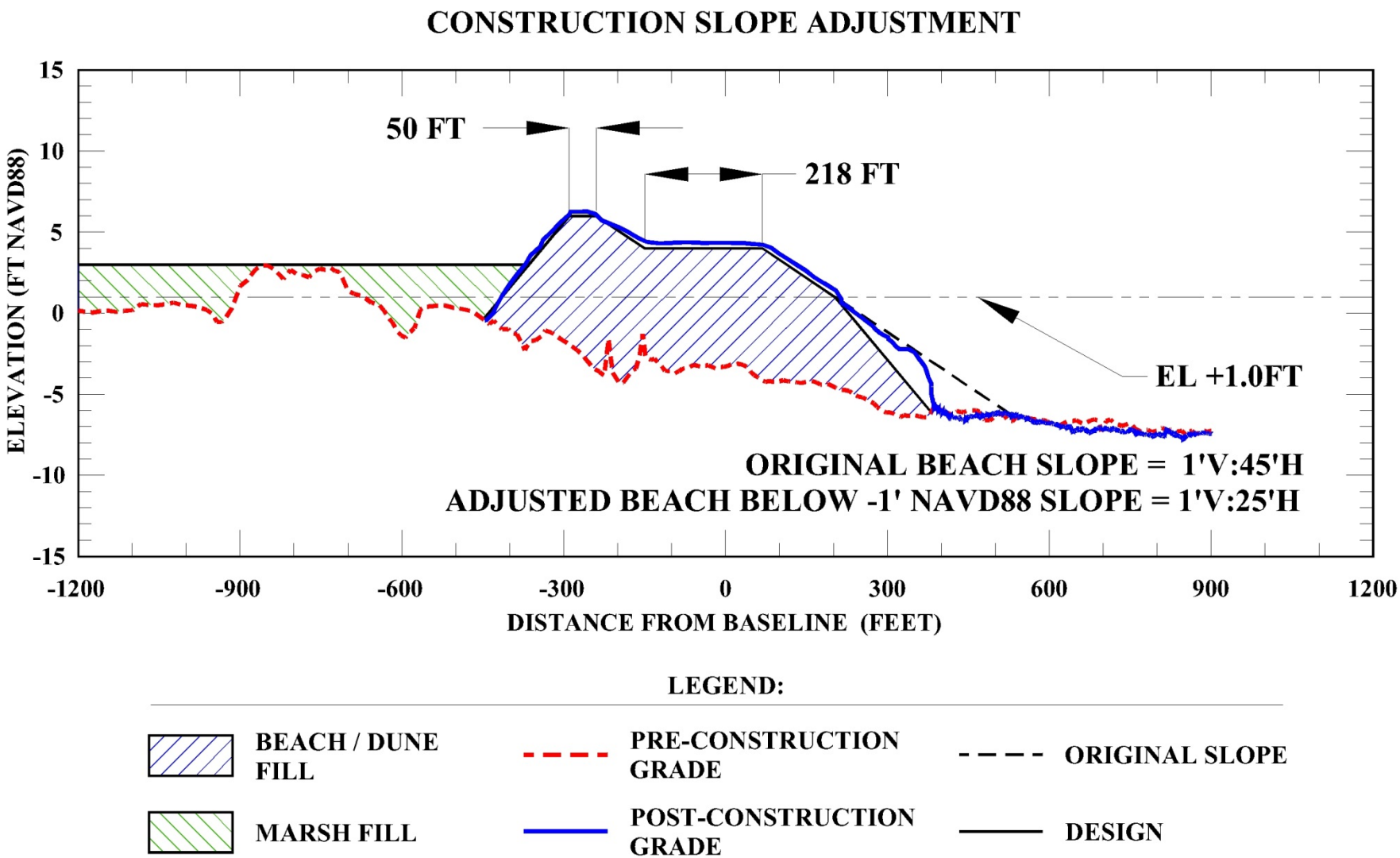


Scofield Offshore Borrow Area Post-Construction



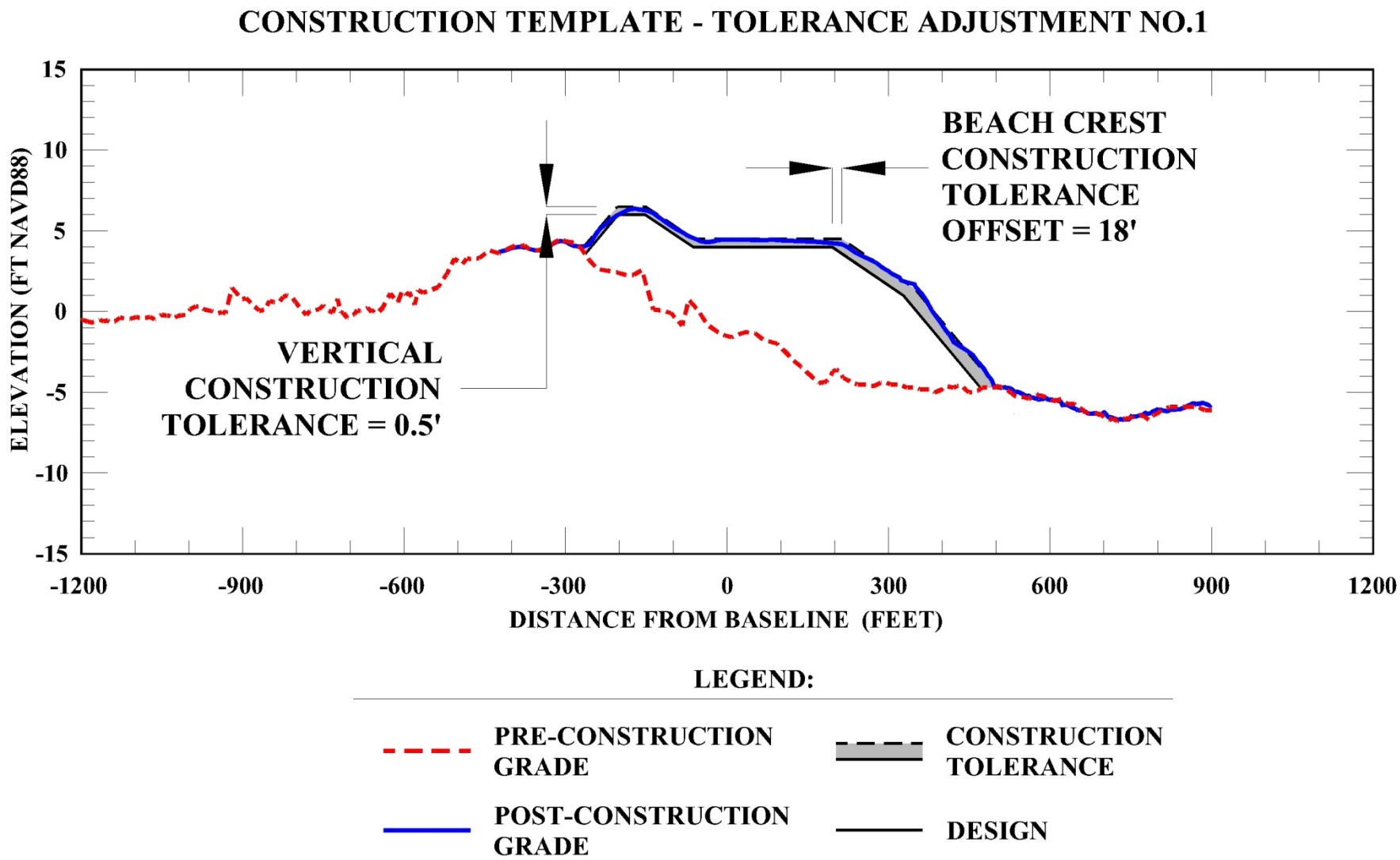
Beach Fill Design Slope Adjustment

Design Slope Adjustment

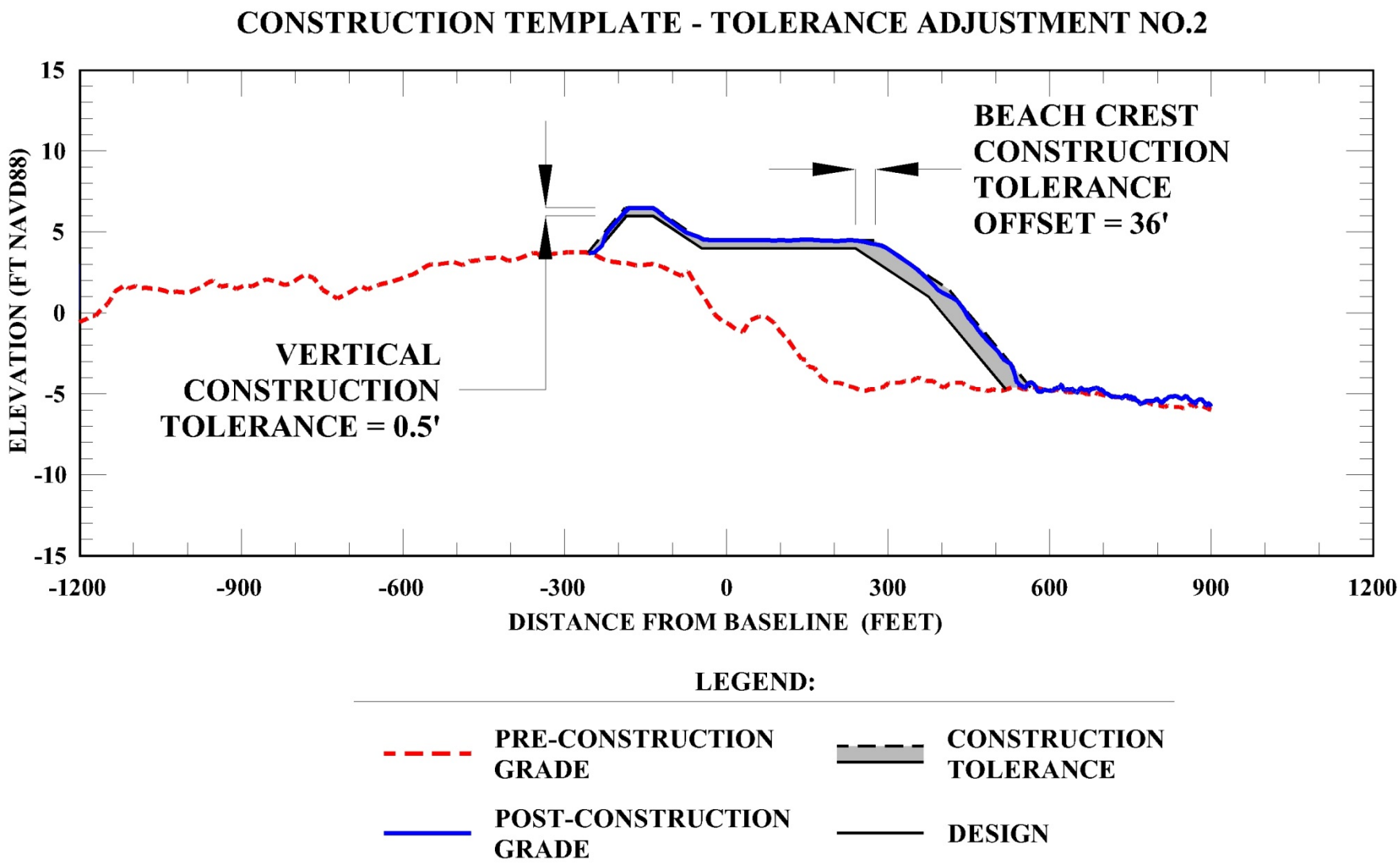


Construction Tolerance Adjustments

Construction Tolerance Adjustment No. 1



Construction Tolerance Adjustment No. 2



Outline

- Project Introduction
- Design Changes Prior to Construction
- Design Changes During Construction
- **Lessons to be Learned**

Lessons Learned

- Stakeholder coordination early and continuously through the project to completion.
- Sand quality of the Mississippi River performance versus offshore sand source performance
- Flexibility of construction tolerances to benefit the Project, Owner, and Contractor.

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