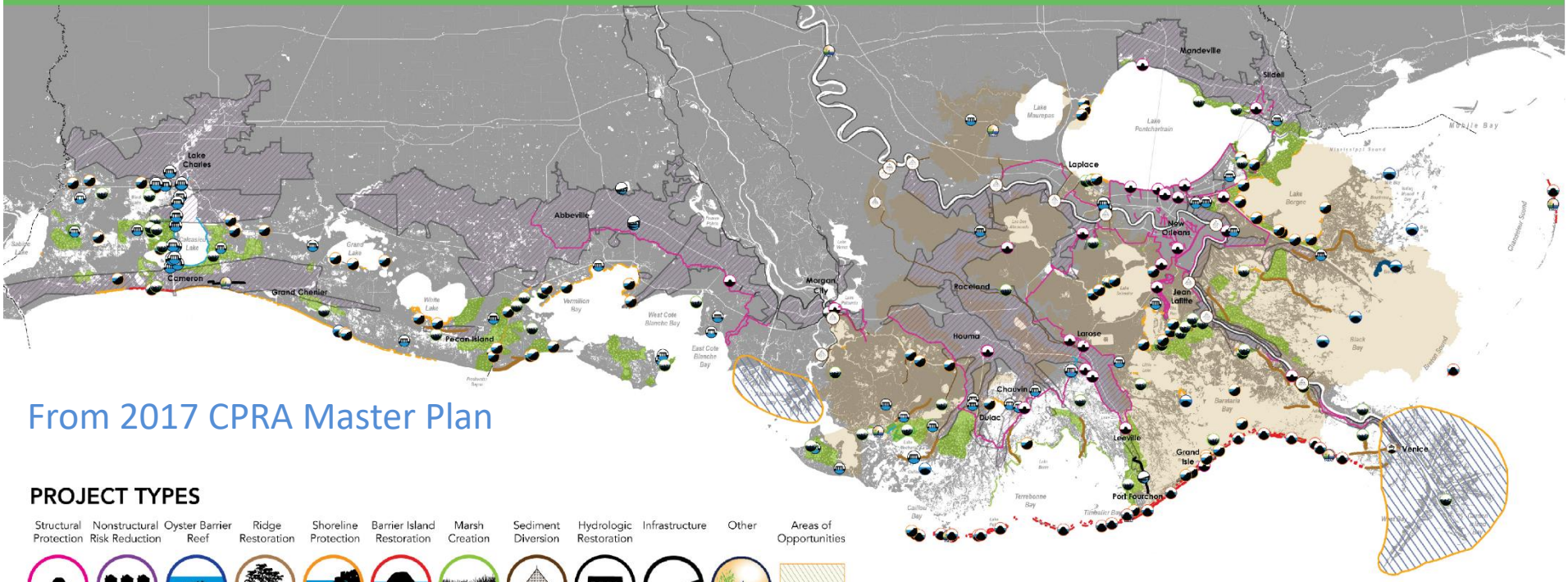
DREDGED MATERIAL SETTLEMENT FROM MARSH CREATION PROJECTS CONDUCTED IN COASTAL LOUISIANA

Thomas McGinnis
CPRA – Operations Division
Lafayette Regional Office
National Conference on Ecosystem Restoration
August 28, 2018

CPRA
Coastal Protection and Restoration Authority of Louisiana

committed to **our coast**

COMPLETED, ONGOING, AND FUTURE PROJECTS



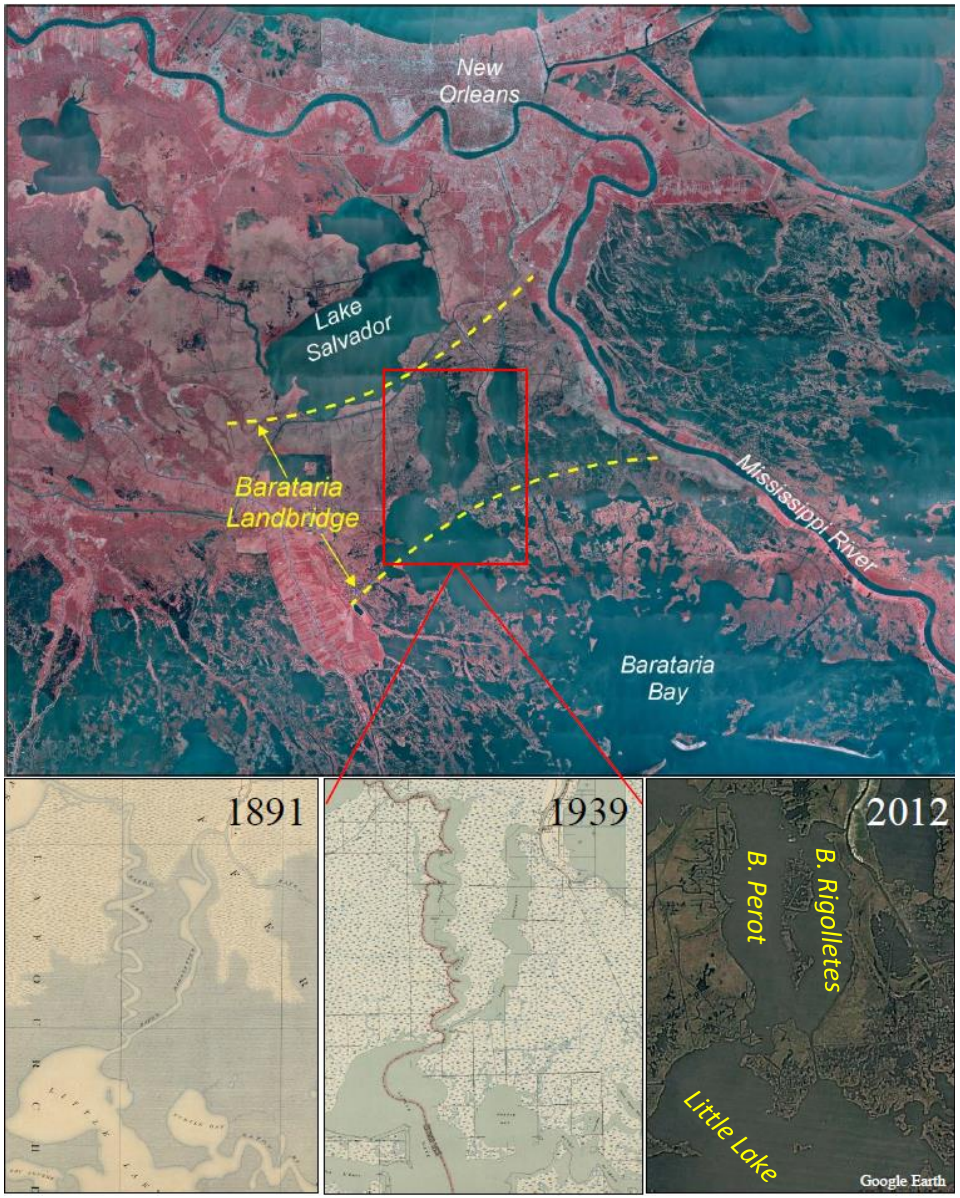
From 2017 CPRA Master Plan

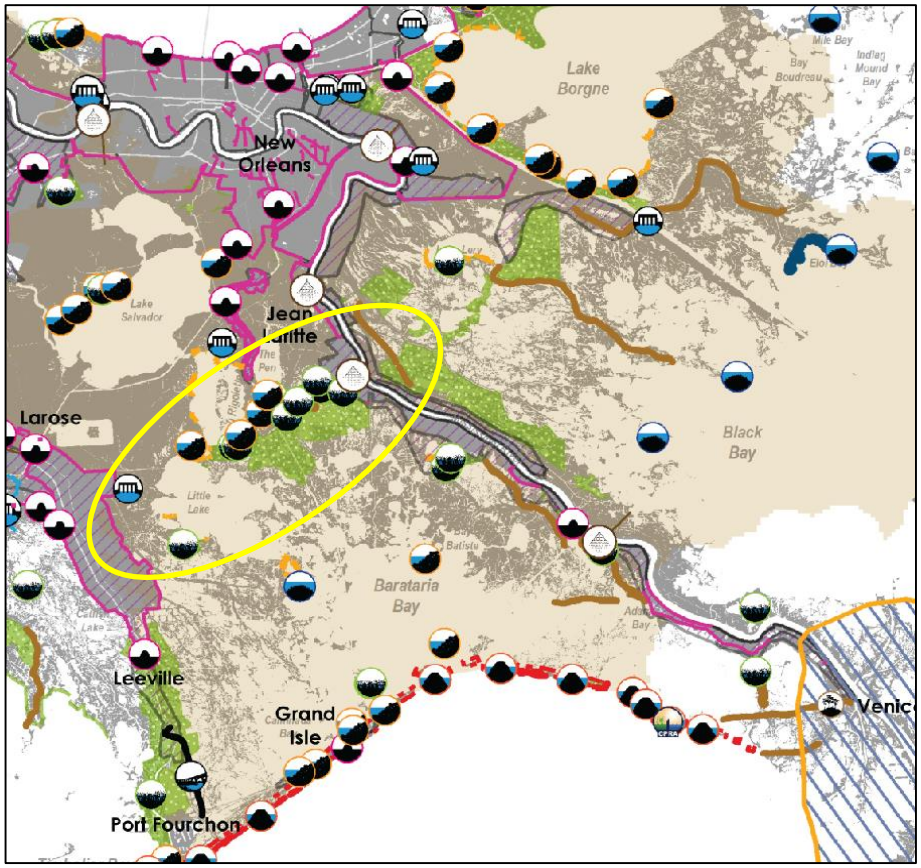
PROJECT TYPES

Symbols are completed or ongoing projects
Shading are future projects in Louisiana's Master Plan

Attributes	Deficiencies
Immediate correction of elevation deficiencies	Does not address the overall problem
Minimizes post construction costs	High planning and construction costs
Low liability during and after the project life	High resources cost

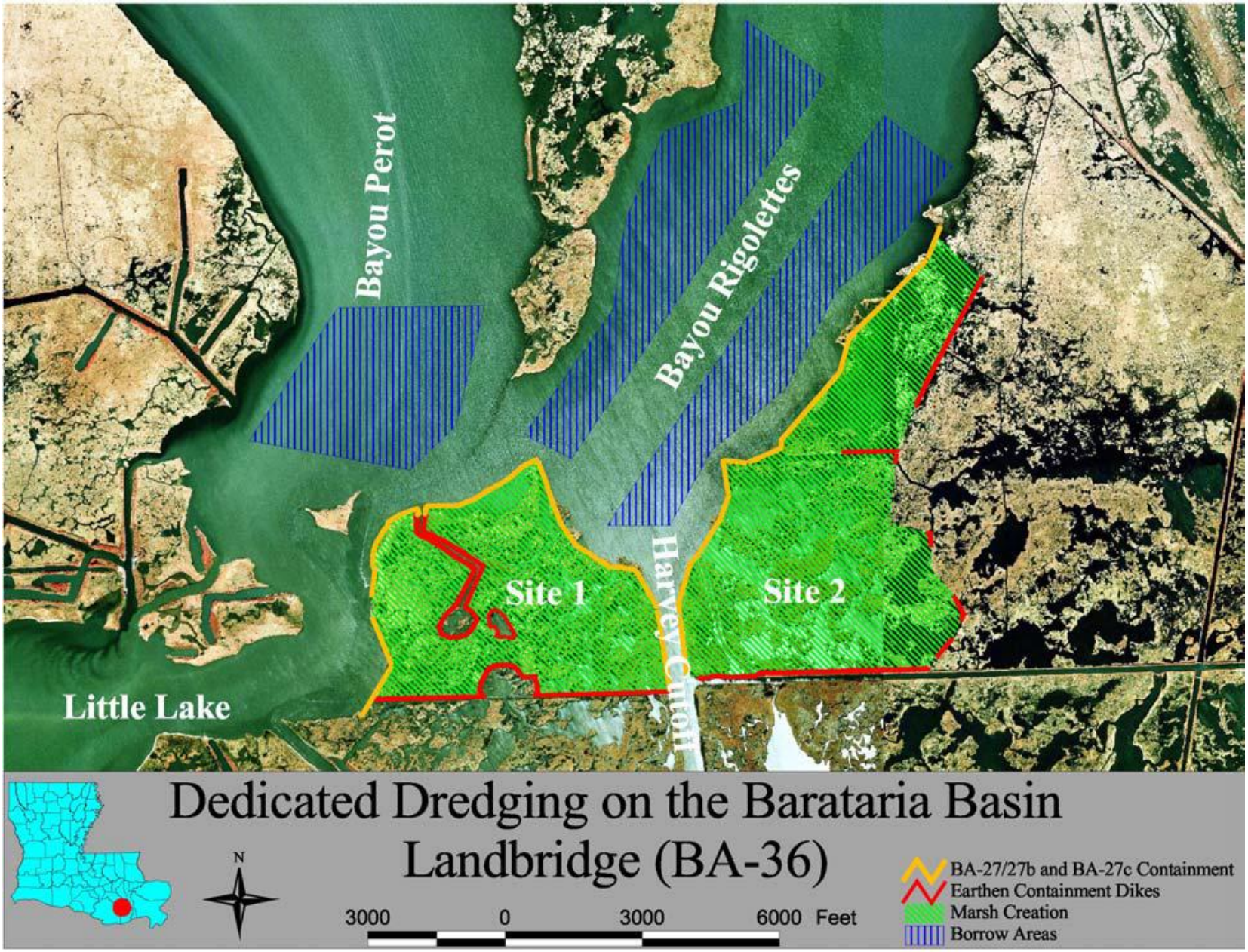
Barataria Landbridge

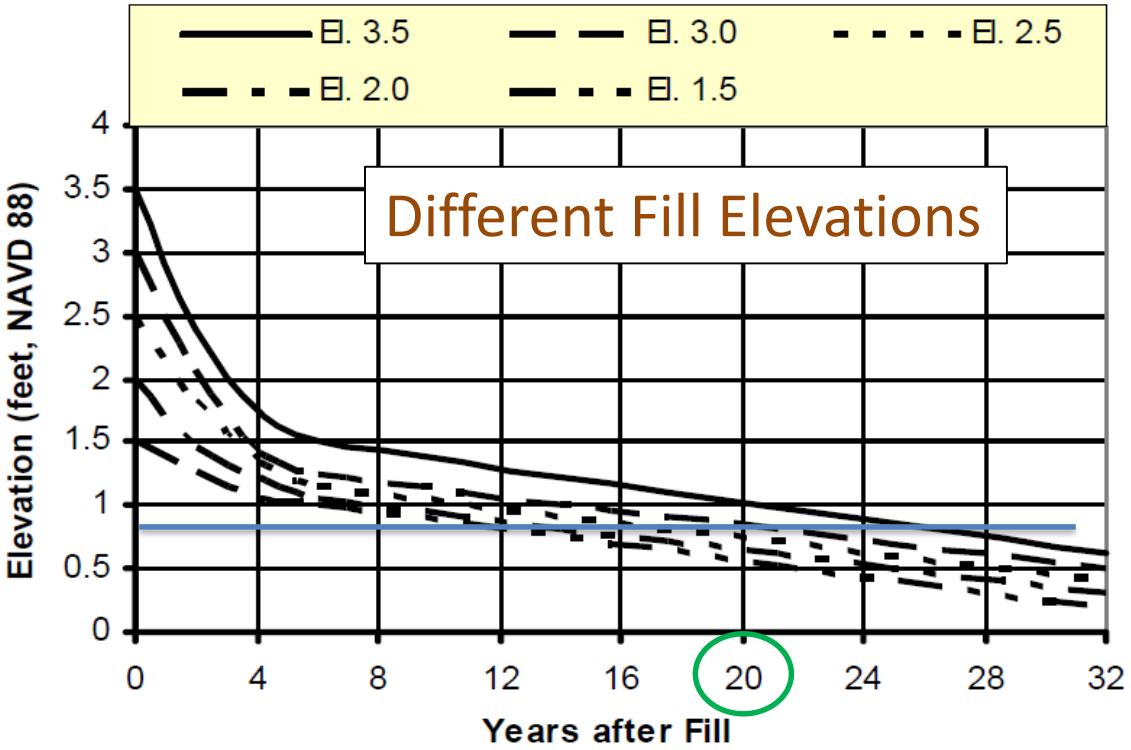


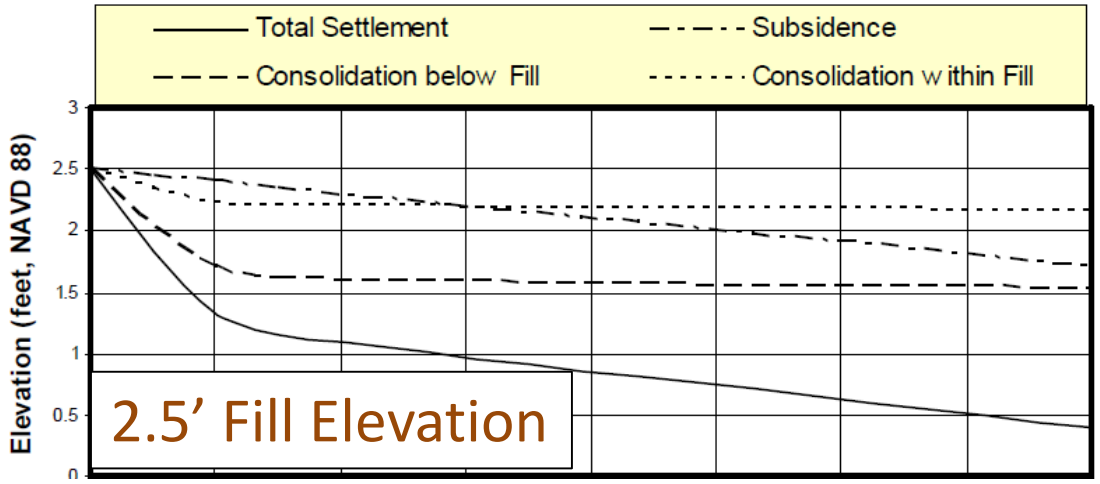


Current Projects
- 7 Marsh Creation
- 4 Shoreline Protection
- 2 Freshwater Diversions

Larger Scale Projects in 2017 Master Plan


Bayou Perot
Bayou Rigolettes
Site 1
Site 2
Harvey Canal
Little Lake
Dedicated Dredging on the Barataria Basin
Landbridge (BA-36)
N
3000 0 3000 6000 Feet
BA-27/27b and BA-27c Containment
Earthen Containment Dikes
Marsh Creation
Borrow Areas





From: LDNR. 2004. BA-36 Final Design Report

BA-36 Planning

- Geotech of borrow and fill areas

- Target Elevation of **MHW = 0.85 ft NAVD88** for most of project life

- Short-Term: Substrate Compaction
- Long- Term: Subsidence (3.7 cm/y)

BA-36 Construction

CWPPRA:	$16.2 M
CIAP:	17.5 M
State Surplus:	2.4 M
Total Cost:	$36.1 M

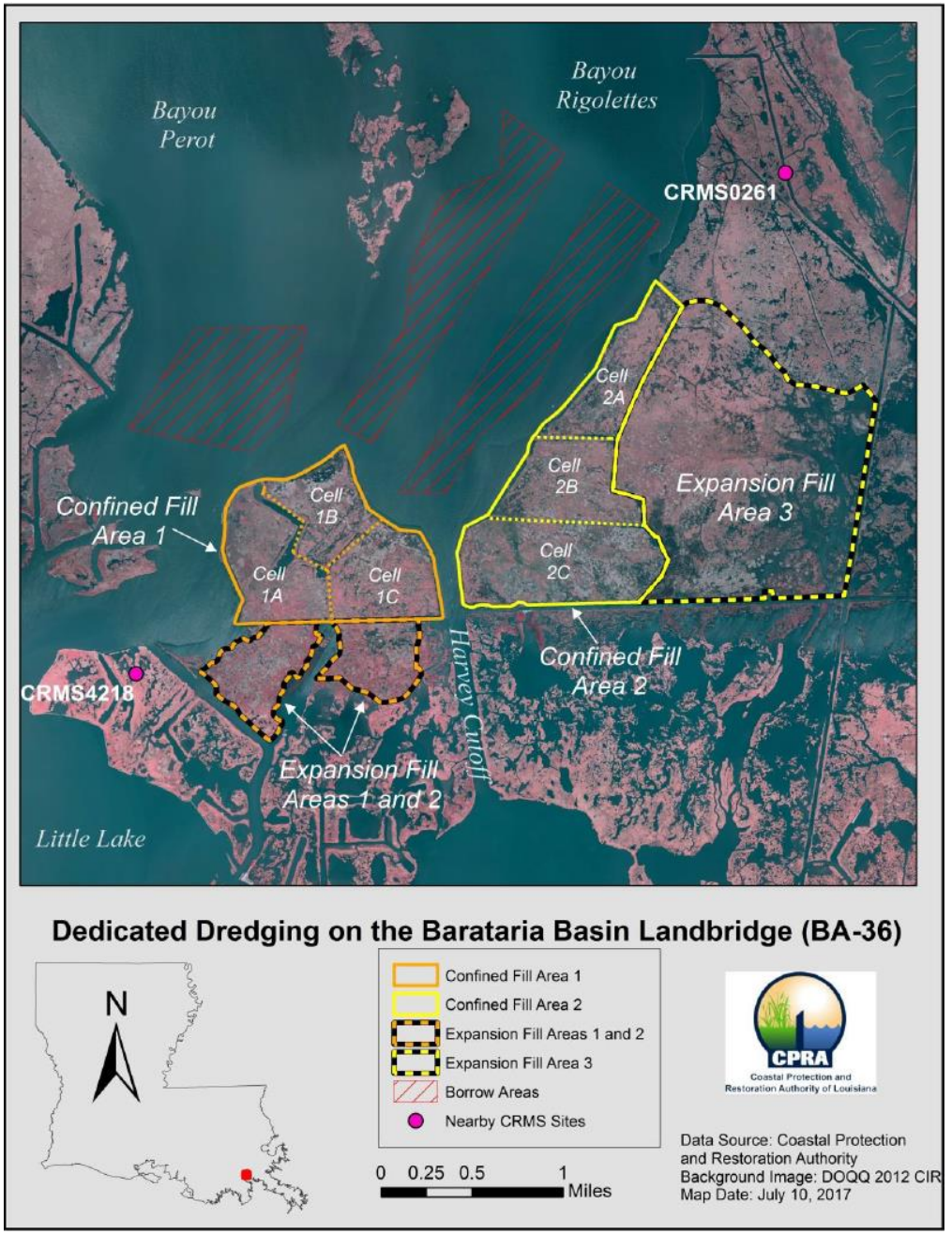
Constructed 10/2008 – 03/2010

Total Acres: 2,789
Dredged Material: ~9 M yd^3

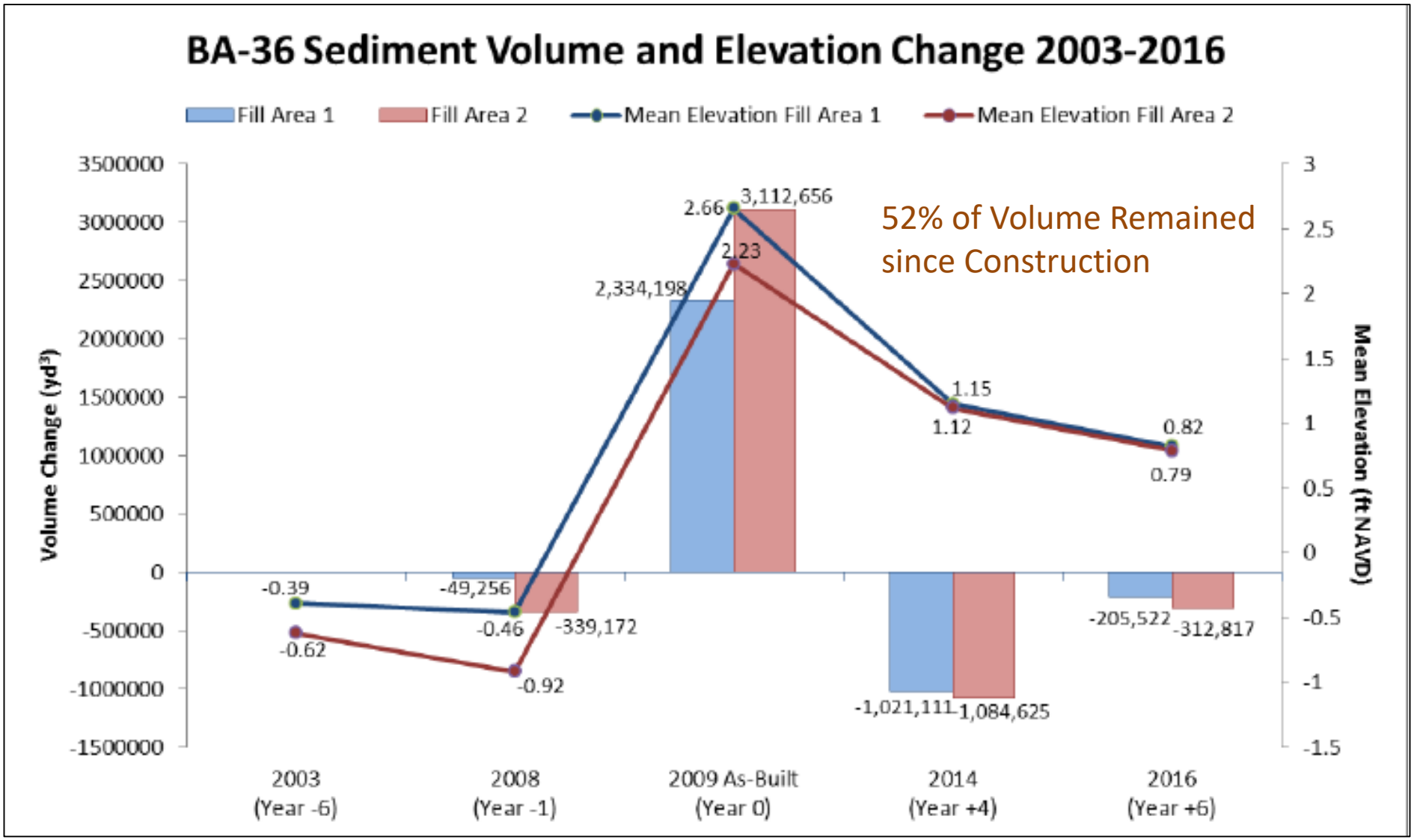
Iterative, Sequential Filling

Monitoring: 03/2010 – 02/2016

2017 OM&M Report by Melissa Hymel

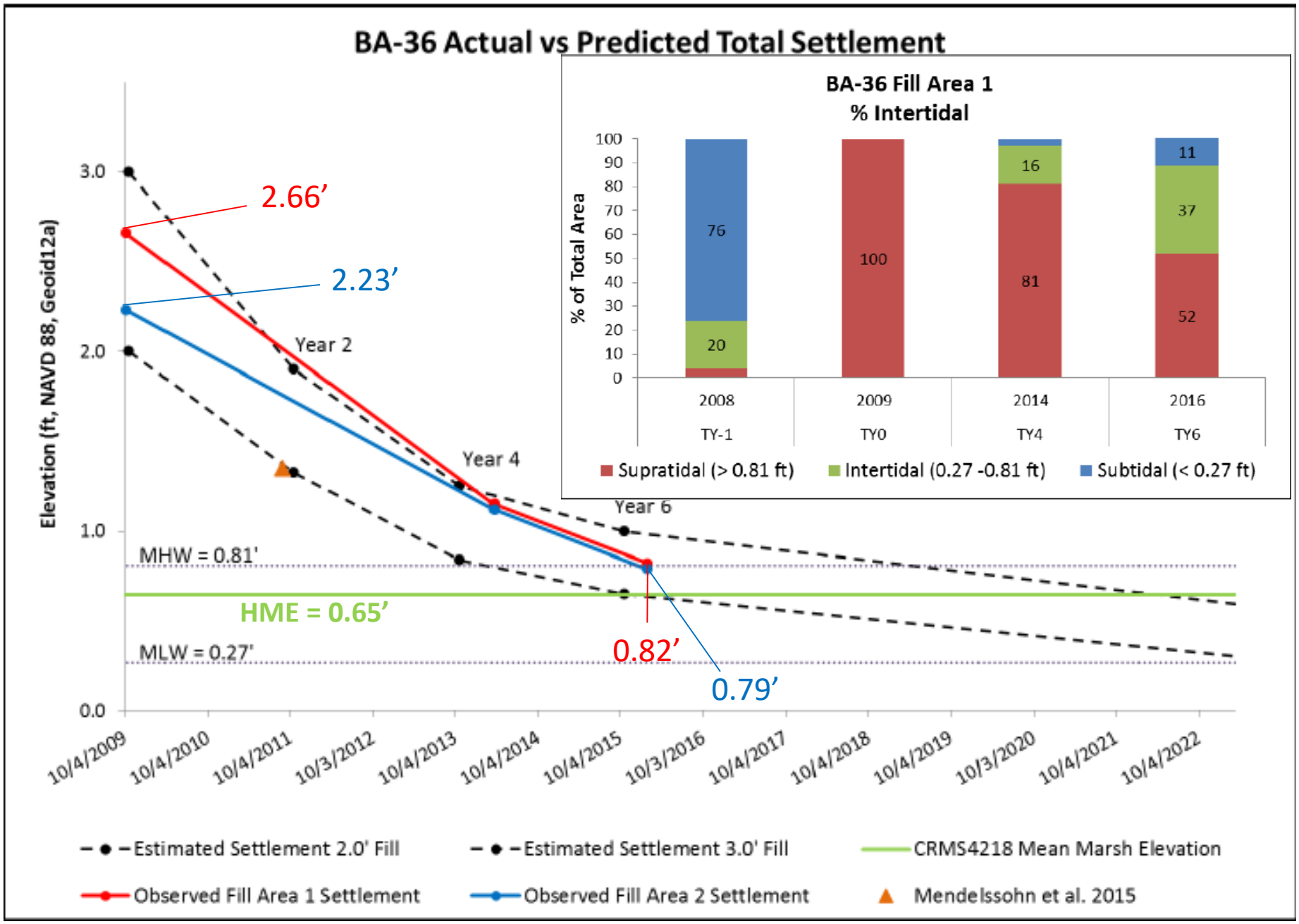


BA-36 Results



Based on a series of elevation surveys either conducted in or transformed to Geoid 12A

BA-36 Actual vs Predicted Total Settlement

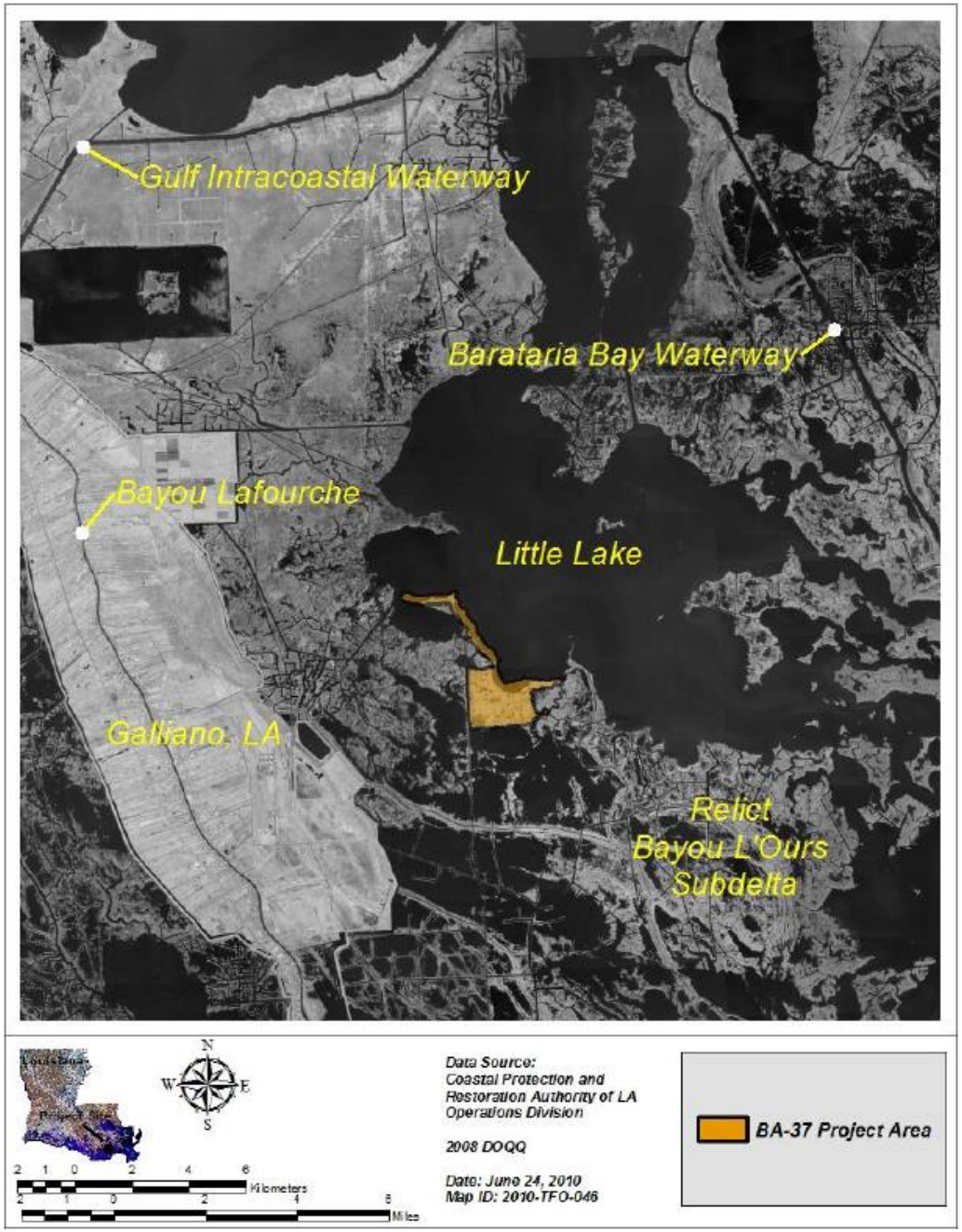


BA-37 Little Lake Shoreline Protection / Dedicated Dredging Near Round Lake

Southeastern lake rim of the Landbridge

Freshwater and Sediment cut-off when Bayou Lafouche was dammed at the Mississippi R.

2017 Operations, Maintenance, and Monitoring Report by Glen Curole and Ben Hartman



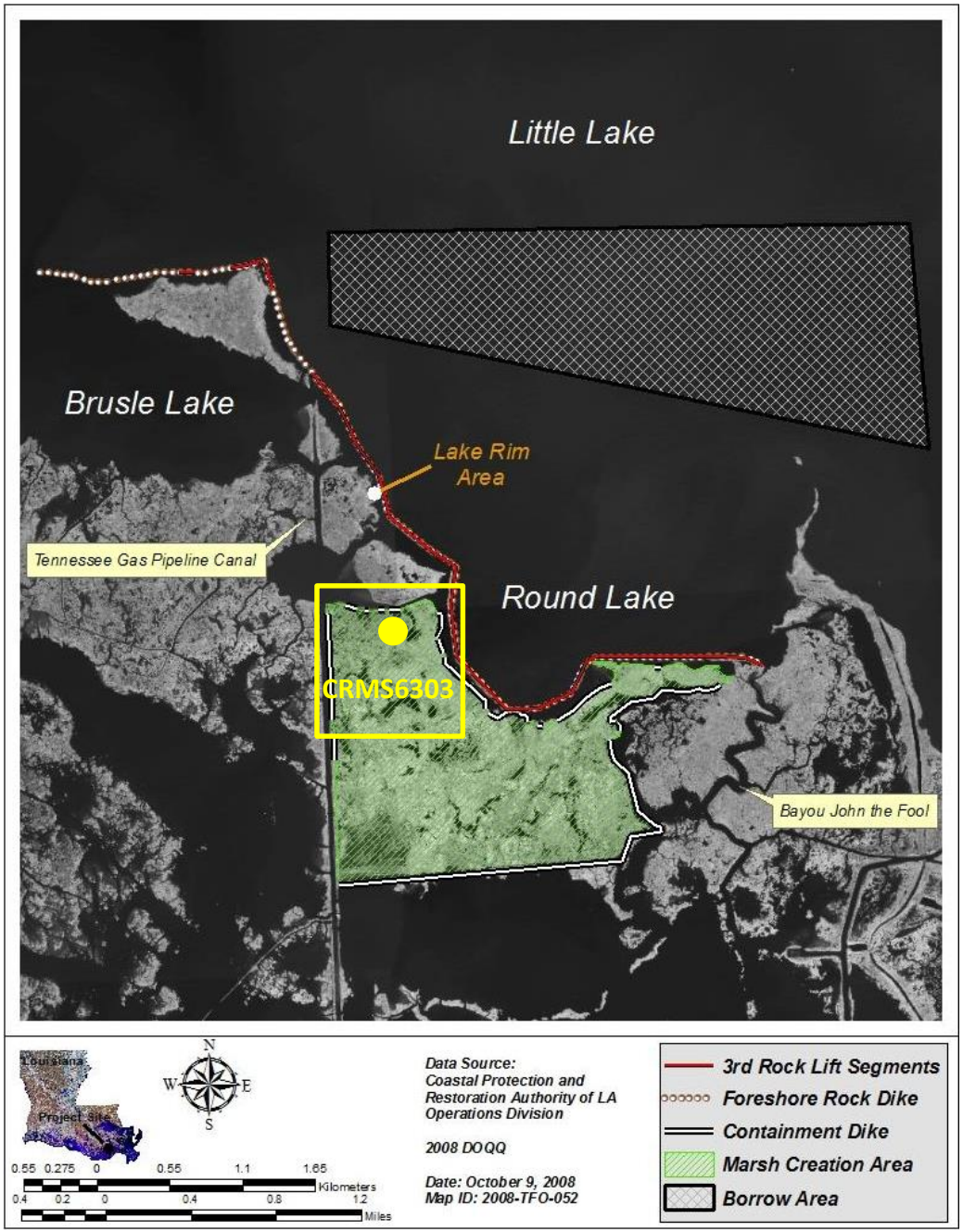
BA-37 Little Lake Shoreline Protection / Dedicated Dredging

Major Project Components:
- Shoreline Protection
- Marsh Creation/Nourishment

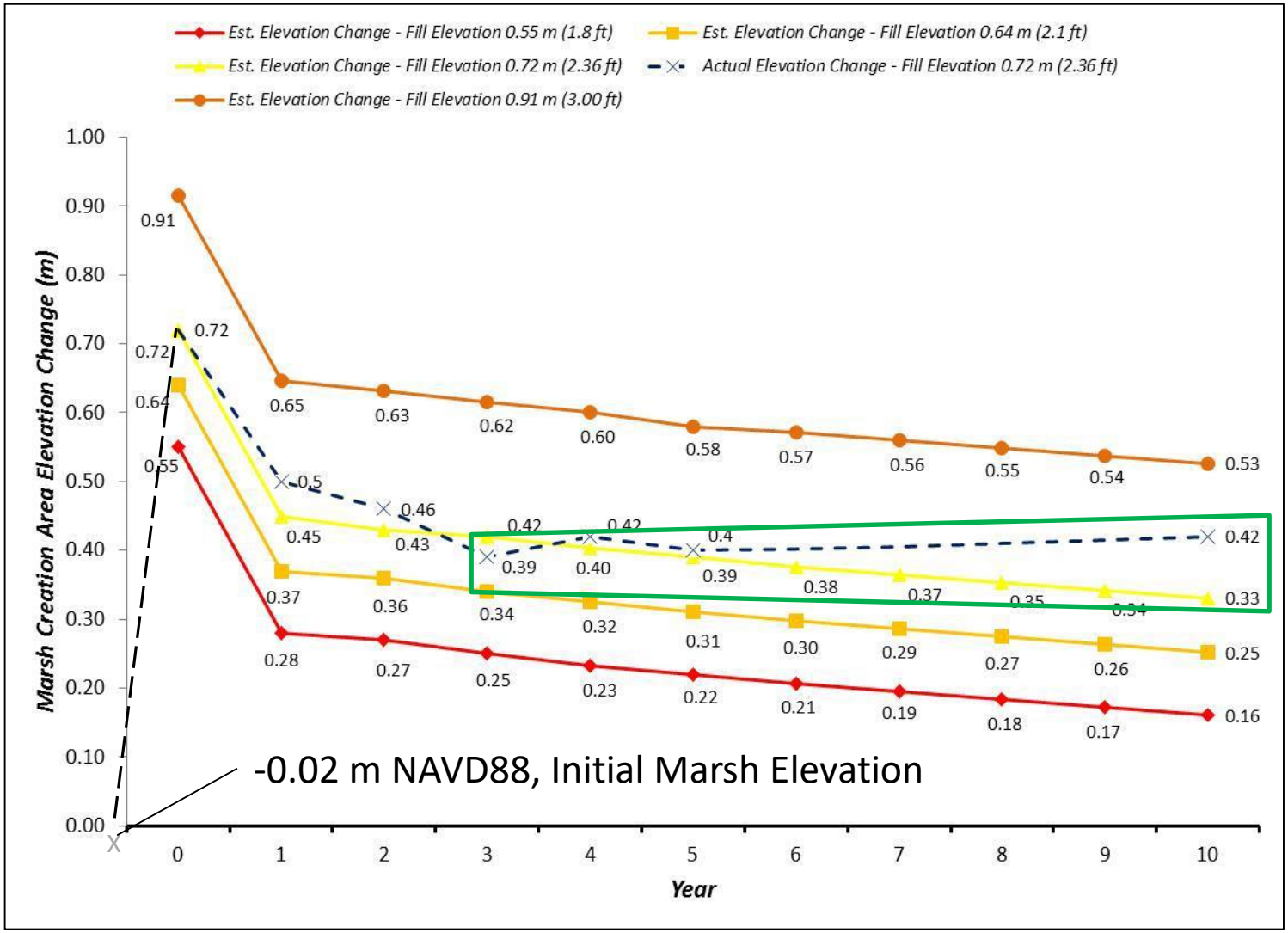
Program: CWPPRA

Constructed in Sp 2006 and has been monitored for 10 years

~3.6 M yd^3 of material was dredged from the adjacent lake bottom

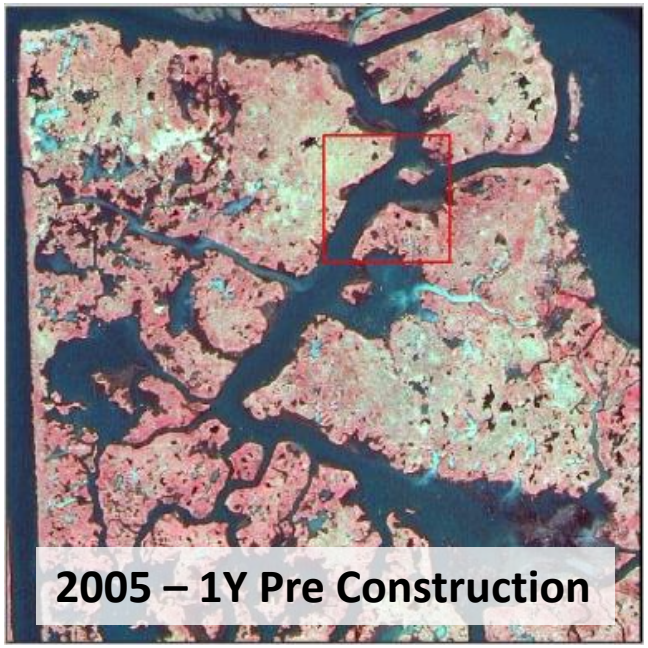


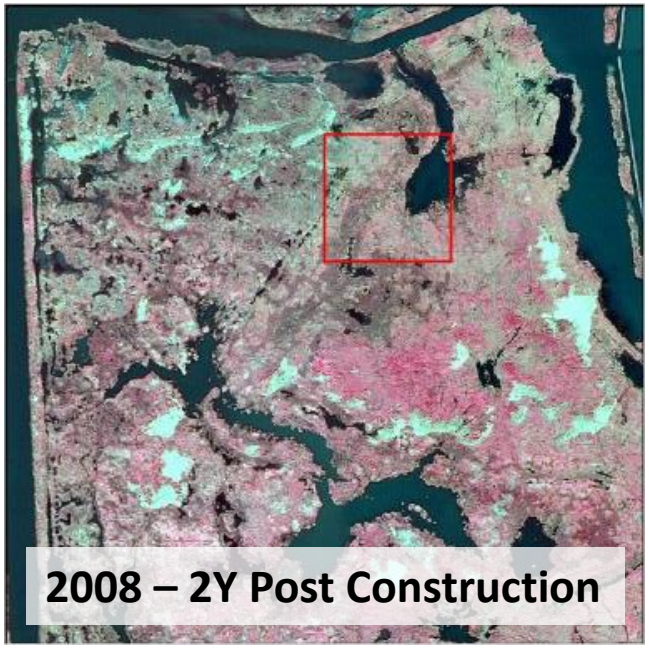
Planned and Actual Sediment Elevation Curves for BA-37



27 % > Estimated Elevation

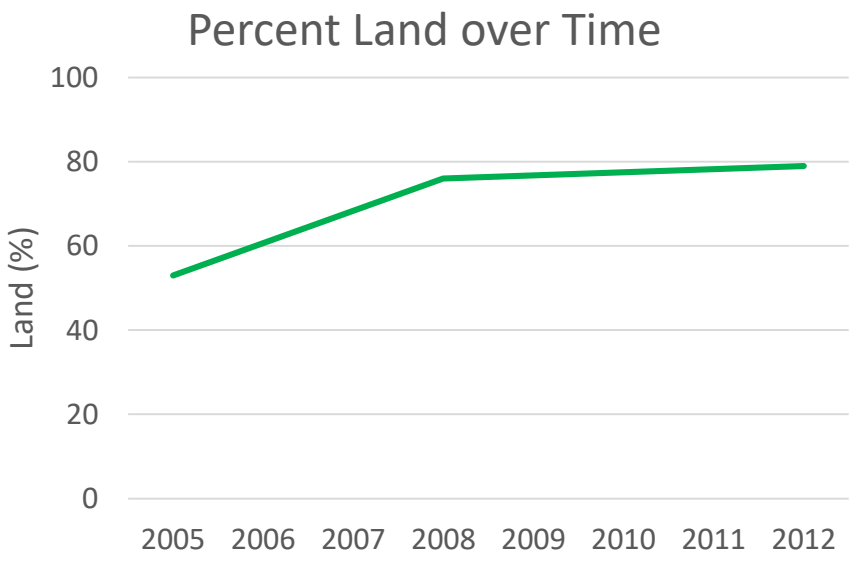
2005 ‘06 ’07 ‘08 ‘09 ‘10 ‘11 2016 Elevation Surveys





CRMS6303 in BA-37

Land Increased 49% by 6 years after the dredge addition



Queen Bess Island

Remnant marsh island in Barataria Bay Protected by Grand Isle and Grand Terre Islands.

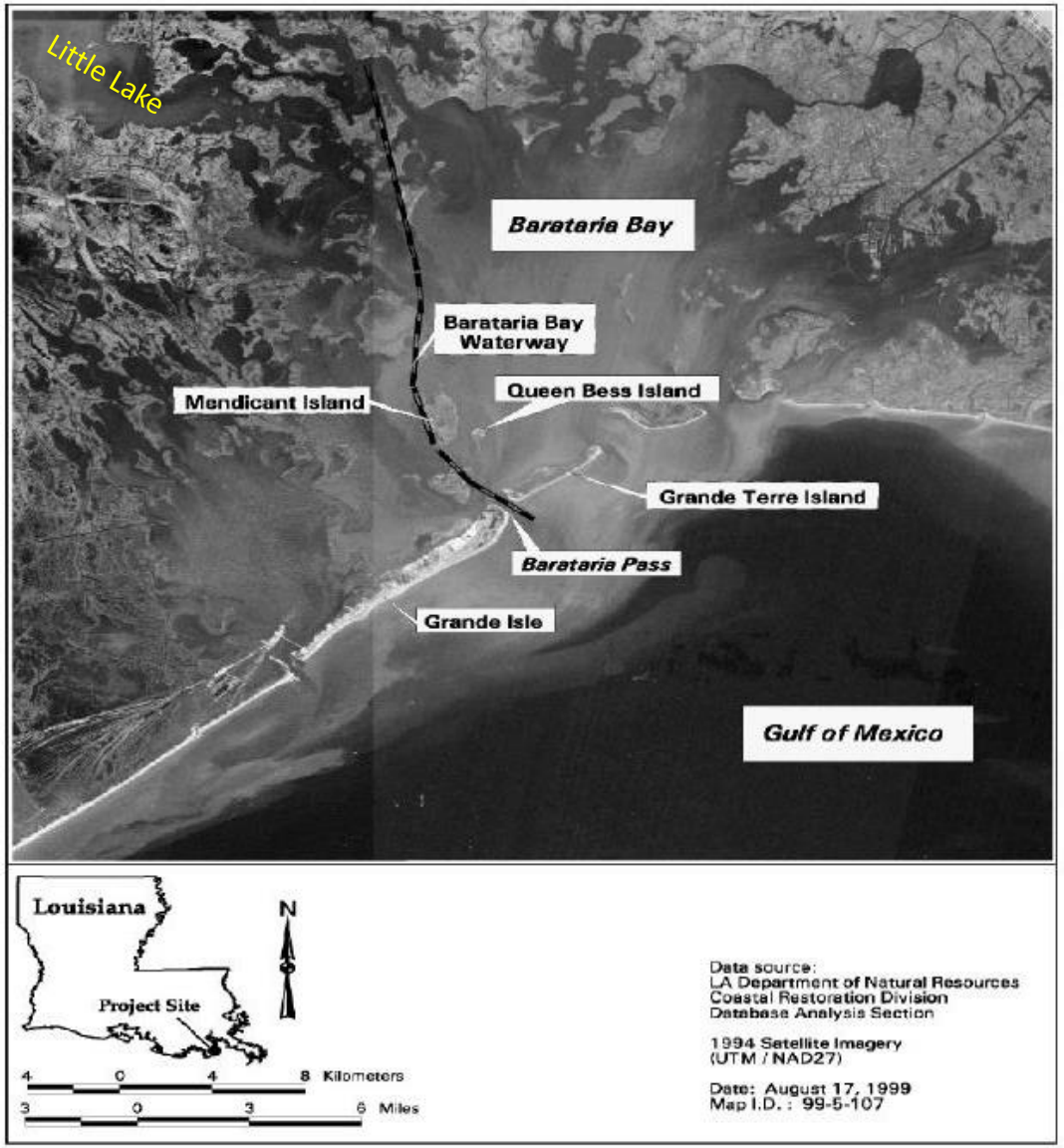
Critical Brown Pelican and other shorebird nursery

Early site of Beneficial Use of dredge Material Program (BUMP) projects from Barataria Bay Waterway (BBW) maintenance:

- BA-05b State Restoration 1990-1992
  LDNR-CRD and USACE
- BA-19 BBW Wetland Creation 1996
  CWPPRA: LDNR-CRD and USACE

Planned Habitat Restoration site for Natural Resource Damage Assessment From Deepwater Horizon Oil Spill

- BA-0202 – Queen Bess Island 2020(?)



Queen Bess Island (QBI) - Historical Background

Decline of Brown Pelicans and the need for restoring habitat

- The population of 1,000s of brown pelicans reported in 1958 was **extinct** by 1962, attributed to the use of **DDT**.
- Juvenile brown pelicans were reintroduced from Florida in the late 1960s and early 1970s.
- By 1989, **QBI** was 1 of only 4 remaining nesting sites in Barataria Bay because of habitat loss.
- **QBI** eroded from **45 ac in 1956** to **17 ac in 1989**.
- Elevation had reduced such that the island was over washed by small storms.
- December 1989 Freeze killed all of the black mangroves.

BA-05b Queen Bess Island State Restoration 1990 - 1992

Phase 1, 1990

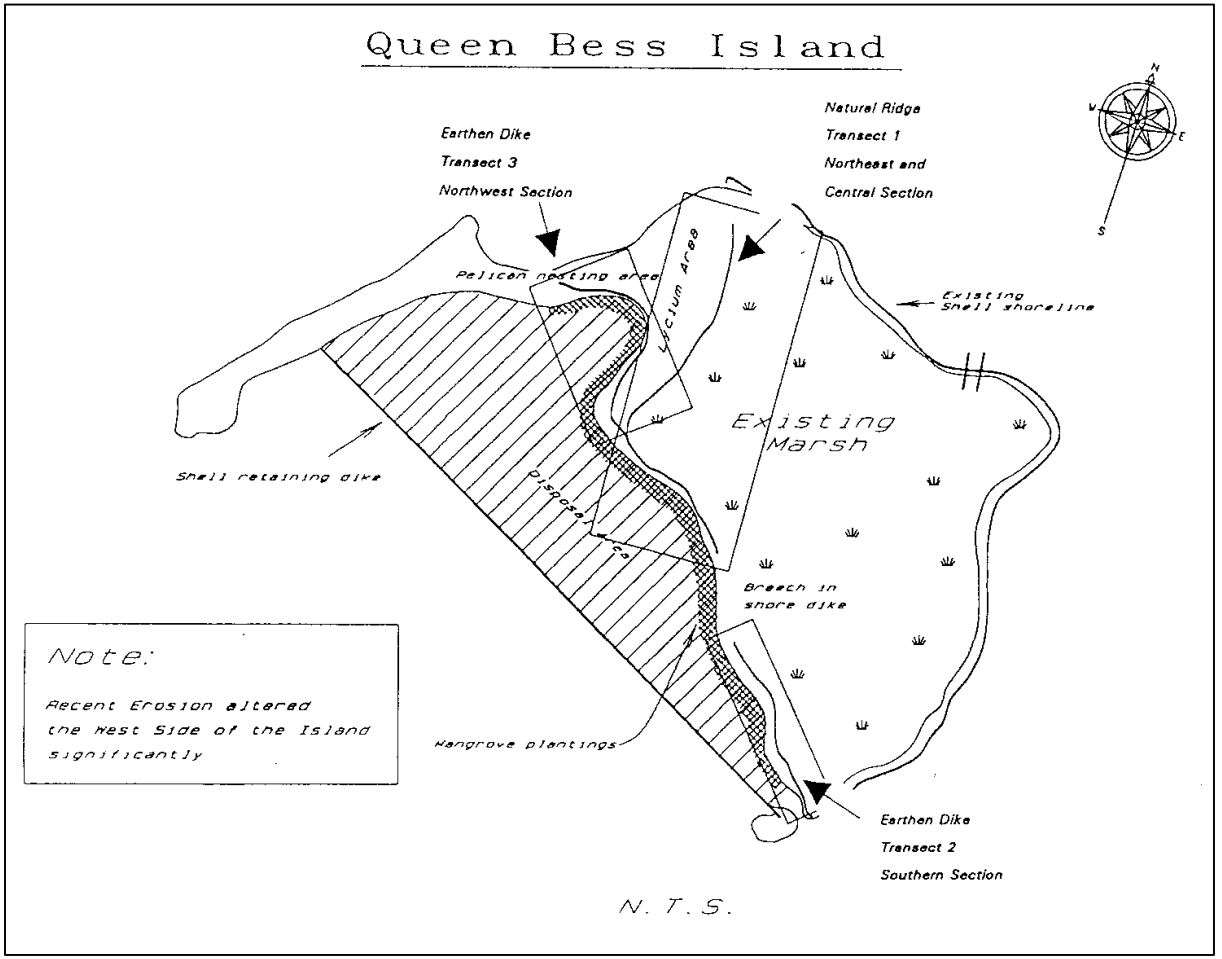
A retainment dike was constructed and dredged material from the Barataria Waterway was pumped inside (75,000 yd^3).

Nourished existing island to the east.

Ridges/Dikes = 3.5 ft NVGD29

Fill Elevation = 2-3 ft NGVD29

Target Elev = ~1 ft NGVD29



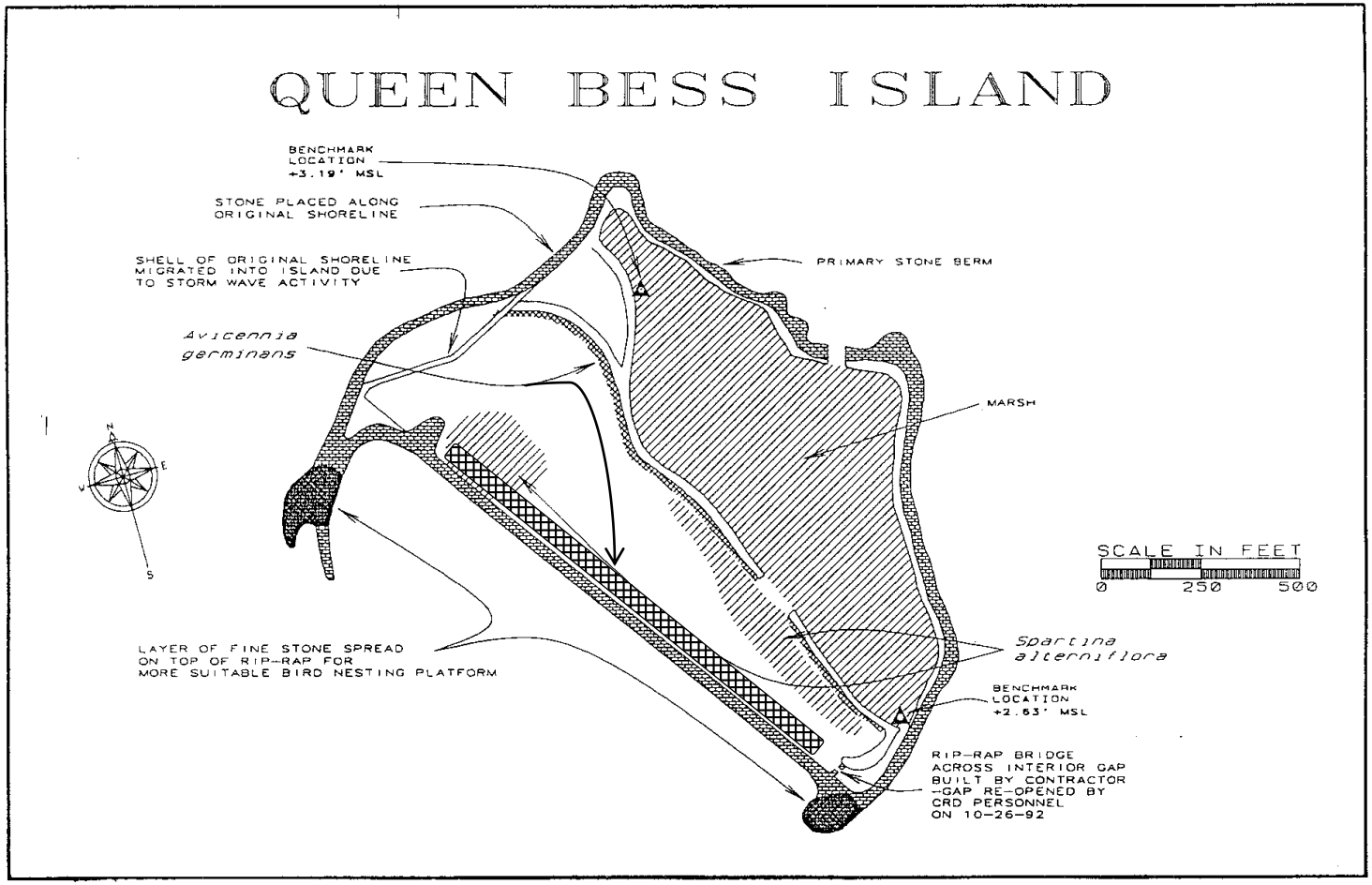
BA-05b Queen Bess Island State Restoration 1990 - 1992

Phase 2, 1991 -1992

Wax myrtle and black mangrove were planted along ridges for Brown Pelican nesting.

Rip-rap and crushed limestone was placed around the island.

Created raised platforms for seabird nesting area.



Increased island area from 17 to 32 acres

BA-19 Barataria Waterway Wetland Creation

1996

Added rock containment dike to enlarge SW side of island.

Dredge material from Barataria Bay Waterway intended to fill project area.

Goal: Disposal unit for the COE-BUMP.

Shell Dike Elevation = 5.22 ft NGVD29
Fill Elevation = 3.72 ft NGVD29
Target Marsh Elevation = 1.22 ft NGVD29
Marsh Elevation 3 yrs Post = 0.79 ft NGVD29, **-0.43 ft**

BA-19 dike increased island potential area from 32 to 41 acres; however, the large open water area is ~8 ac.

Queen Bess Island and Deepwater Horizon

P.J. Mann, an employee of Plaquemines Parish, Louisiana, rescues a brown pelican from oil-filled waters on Queen Bess Island, Louisiana, June 5, 2010. Oil from the massive BP oil spill in the Gulf of Mexico has fouled the marshlands and injured wildlife. UPI/A.J. Sisco


Courtesy: Darin Lee – CPRA TRO
(Post Isaac, 2012)

BA-0202 QBI Restoration Project

- National Resources Damage Assessment (NRDA) awarded $20,000,000
- - CPRA / LA Dept of Wildlife and Fisheries (LDWF)

- Goal: Restore suitable shorebird nesting and rearing habitat from < 5 acres to ~36 acres.

- The designed habitat breakdown:
  - 9.2 acres for Terns & Skimmers
  - 26.8 acres for Brown Pelicans and other colonial nesting water birds.

- Currently in Planning Stage

Cell 1

CMFE: 1.5 ft NAVD88

Target Elev: 0.75 – 1.0 ft NAVD88

Low Elevation - Fisheries Access

Black Mangrove/Salt Marsh

Cell 2

CMFE: 2.5 – 3.75 ft NAVD88

Target Elev: 2.0 – 2.5 ft NAVD88

Brown Pelican Nesting Area

Scrub-Shrub Vegetation

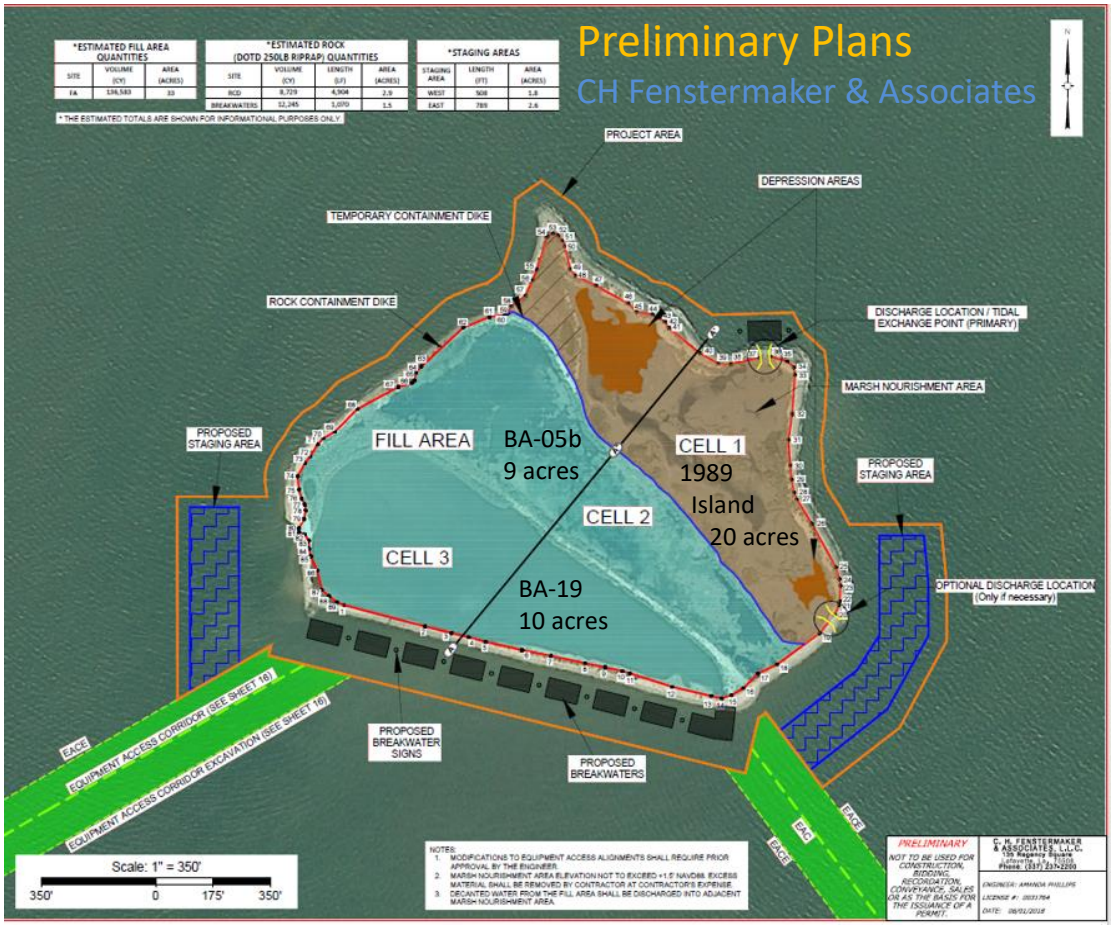
Cell 3

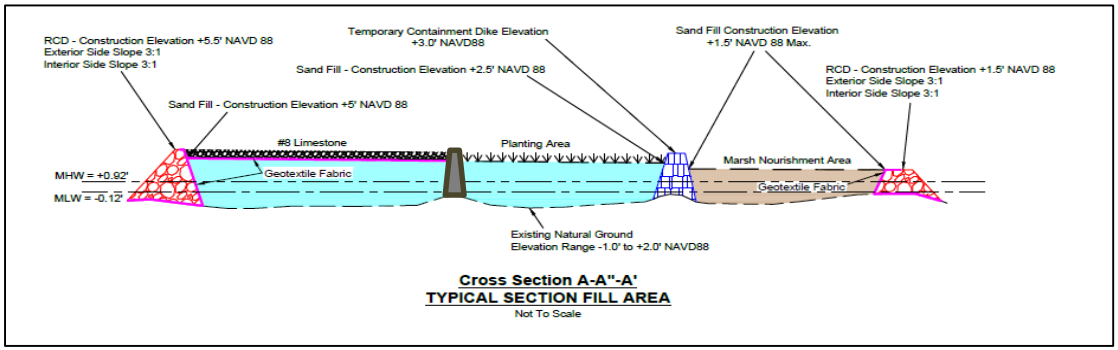
CMFE: 3.75 – 5.0 ft NAVD88

Target Elev: 2.5 – 3.5 ft NAVD88

Turn and Skimmer Habitat

Crushed limestone and shell





Legend

Proposed QBI Exploration

- 40' CPT
- 40' Cell Boring
- 40' Dike Boring
- Geotech Access Route

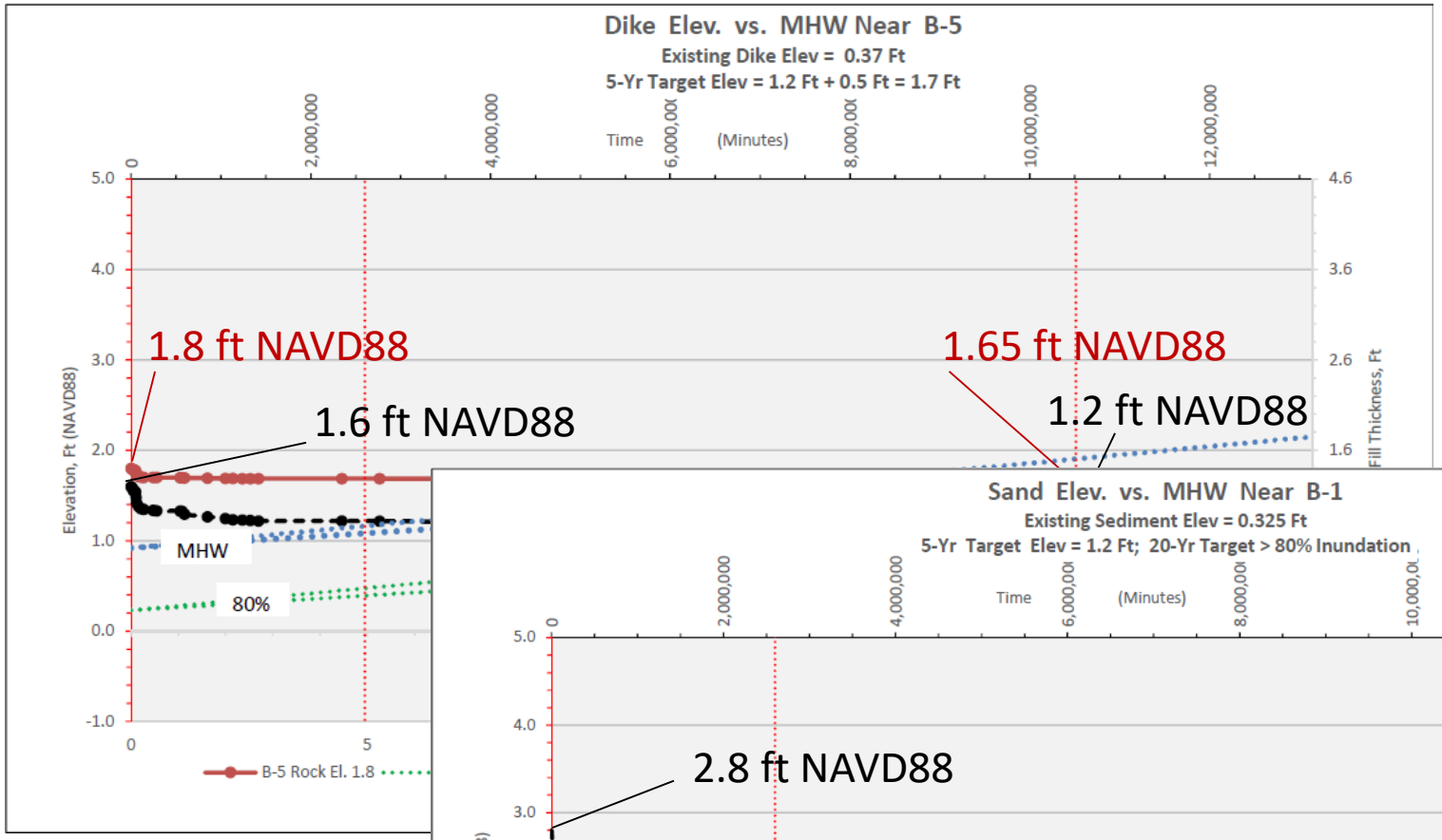
Exhibit F

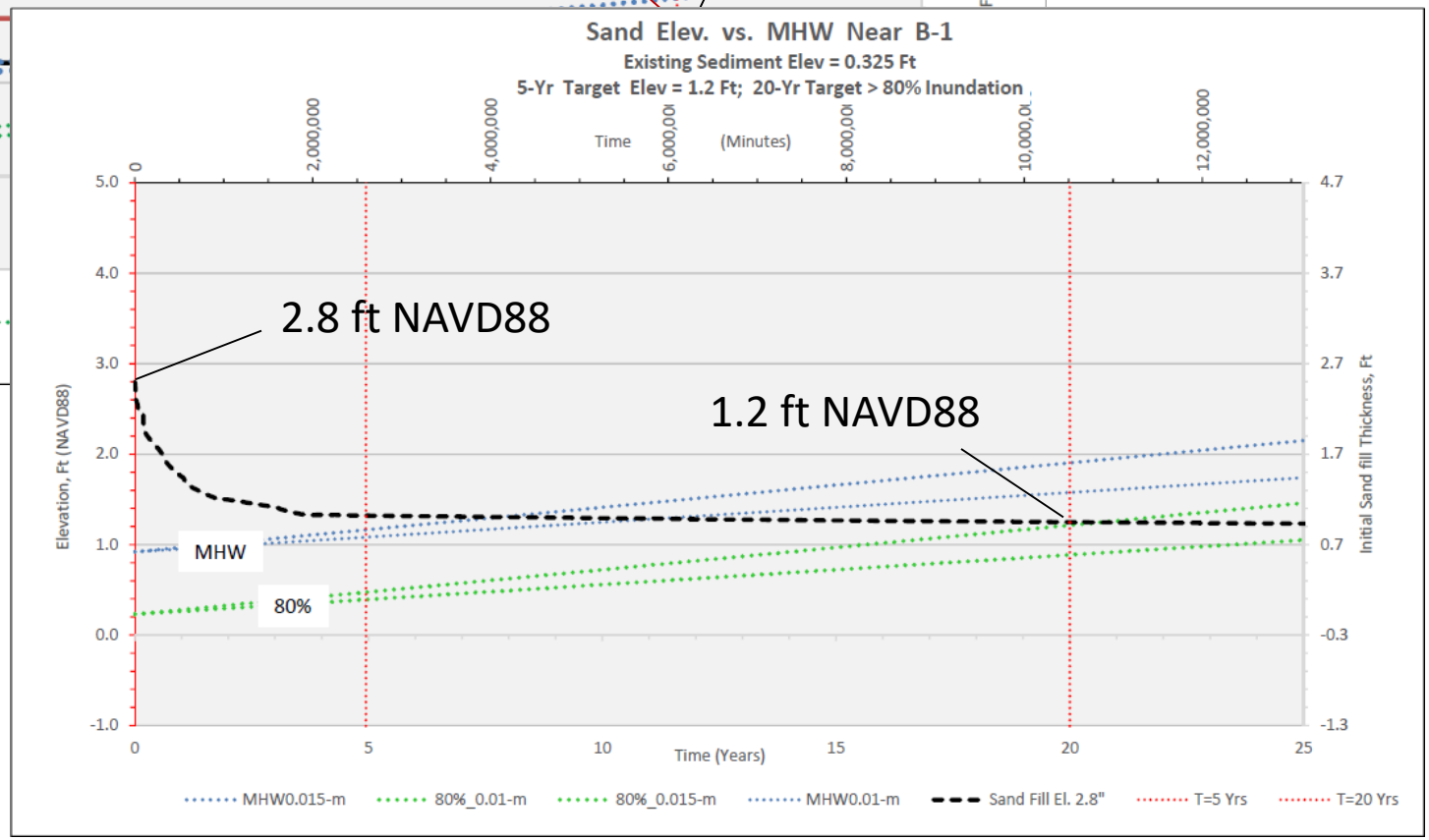
Queen Bess Island
Restoration Project (BA-0202)

CPRA BA-0202 PROJECT
BARATARIA BAY
JEFFERSON PARISH, LOUISIANA

FENSTERMAKER

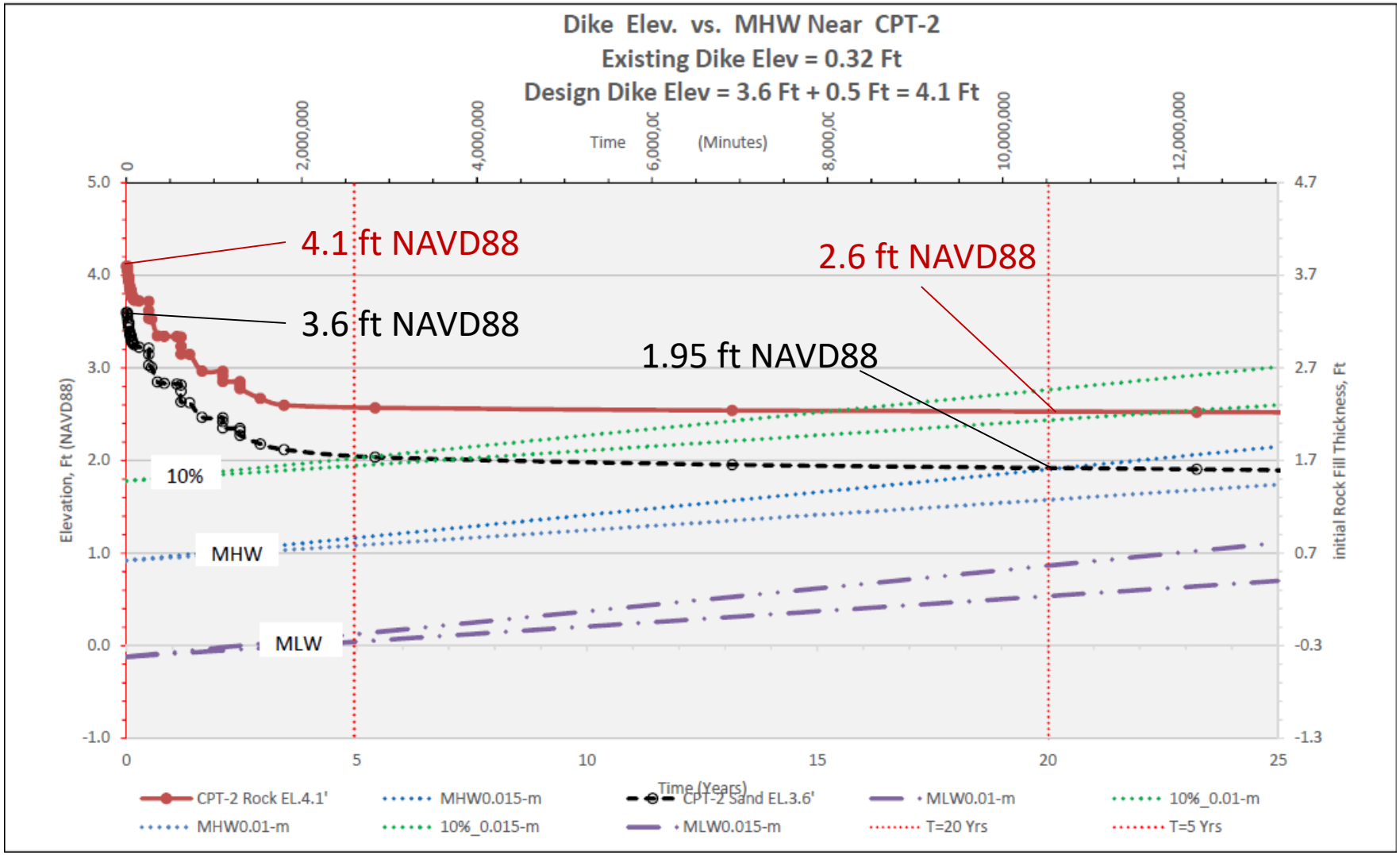
420 210 0 420
Feet





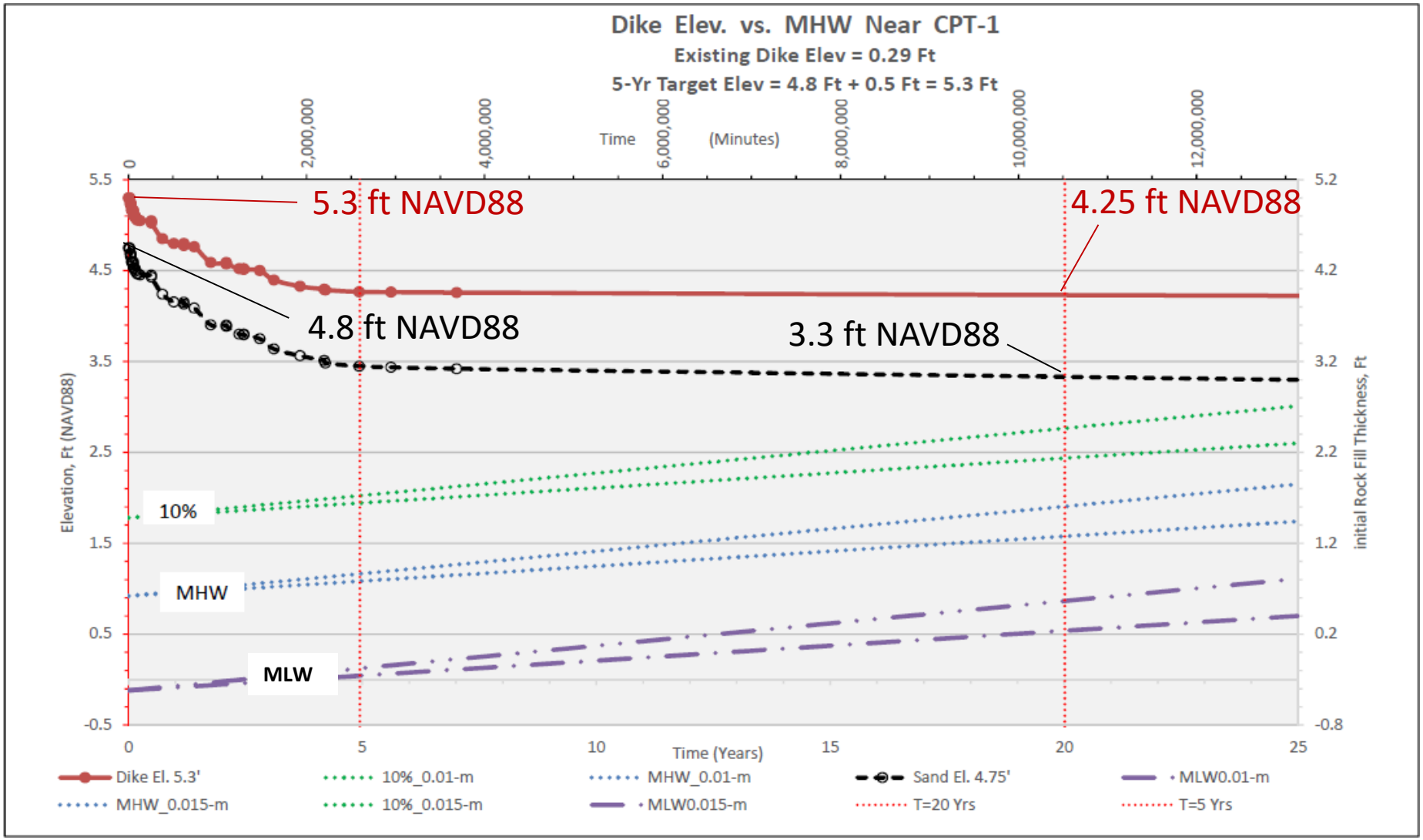
Cell 1 – Dike & Marsh
Low Elevation for Nourishment from Cells 1 & 2

Cell 1 – Salt Marsh Open Water Fill
80% Innundation



Cell 2 – **Scrub-Shrub** for **Brown Pelicans** and other colonial nesting birds

10% Exceedance - chance of surface flooding in a given amount of time



Cell 3 –Dike and Loose Rock Pad for Skimmers and Turns Higher Elevation to Simulate a Beach Ridge Habitat

Thanks!!!

Any Questions?

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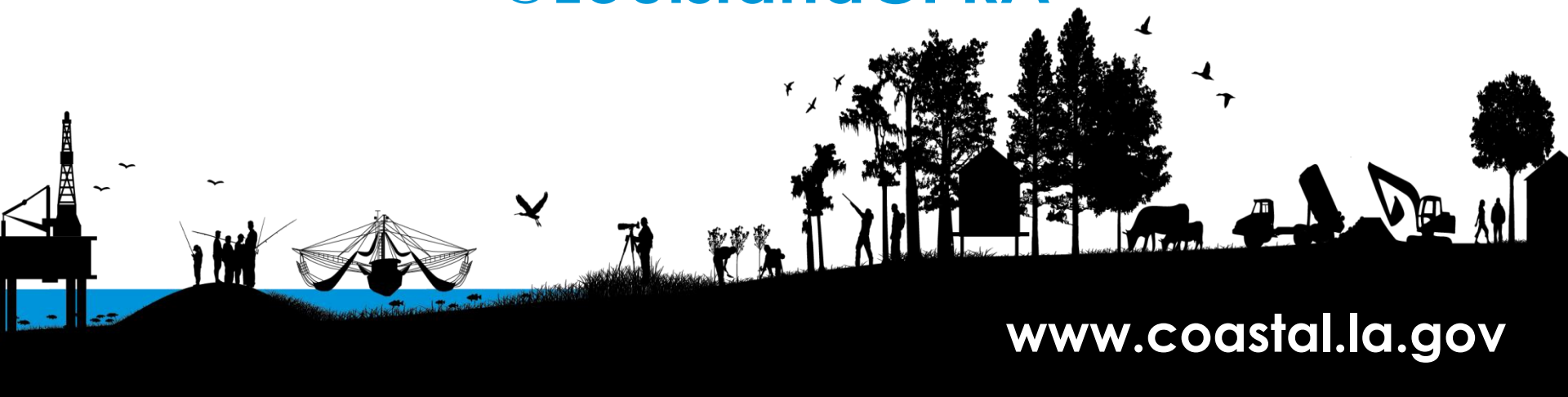

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