Horseshoe Bend Island – *Let the River do the Work*

Project Vignettes
July 25, 2017

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US Army Corps of Engineers
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OVERVIEW

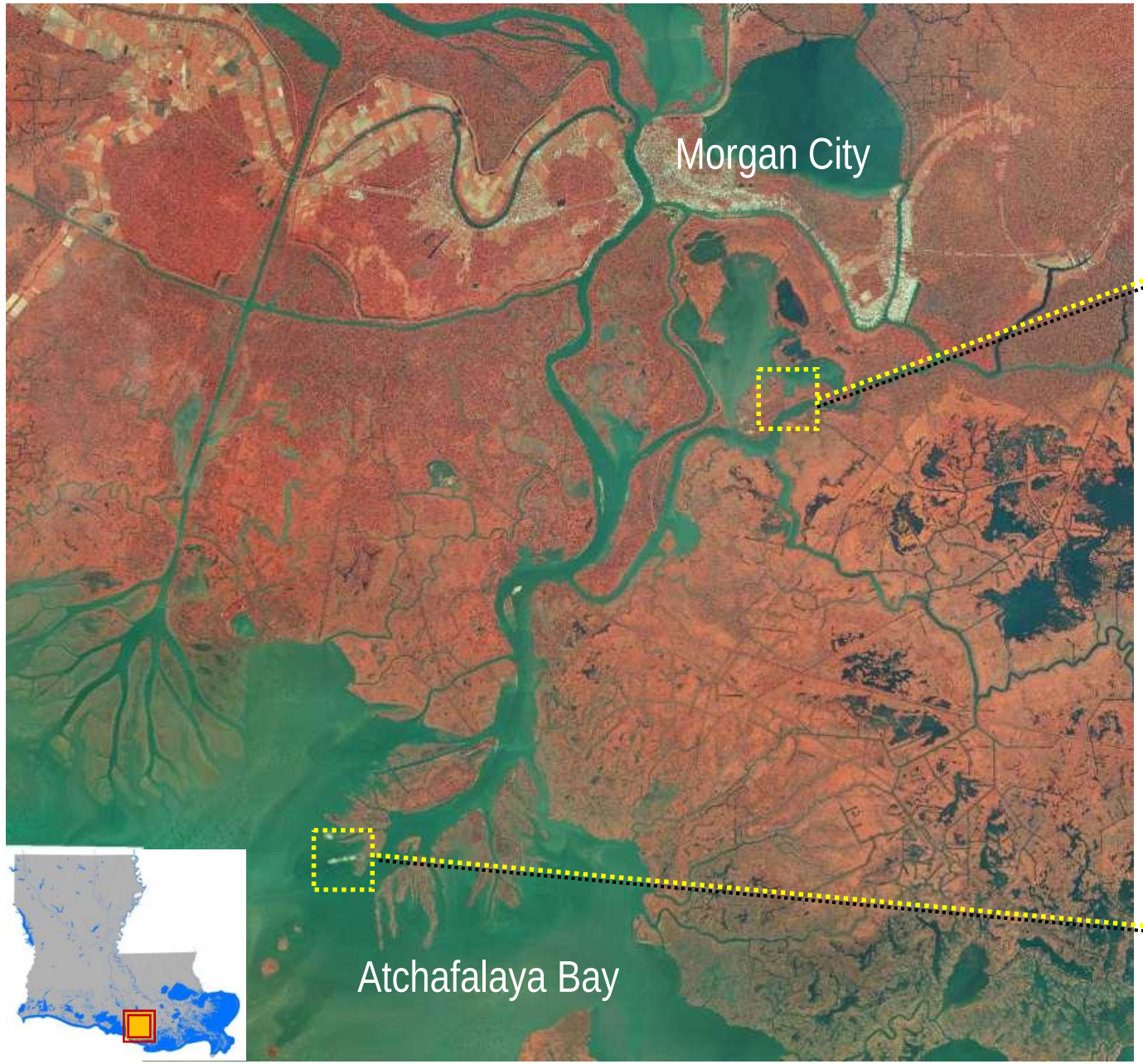
New Approach to the Beneficial Use of Dredged Material

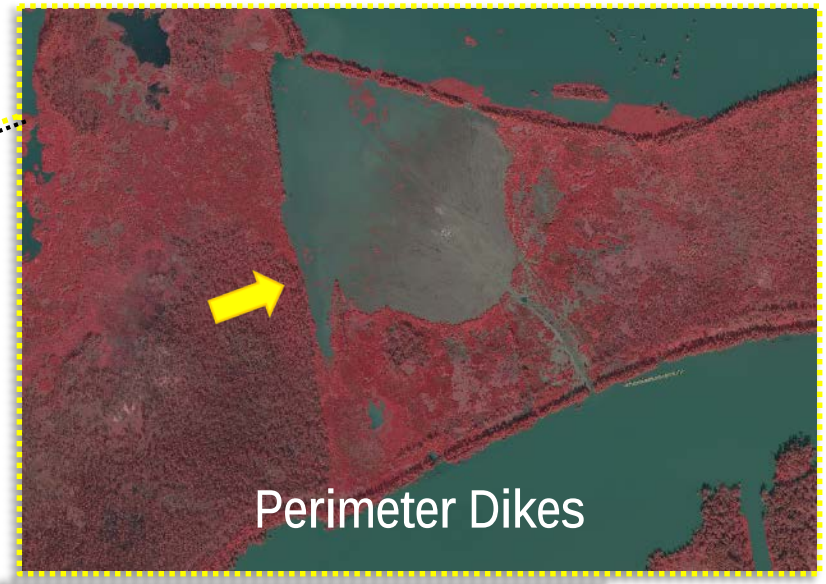
Project Planning and Execution

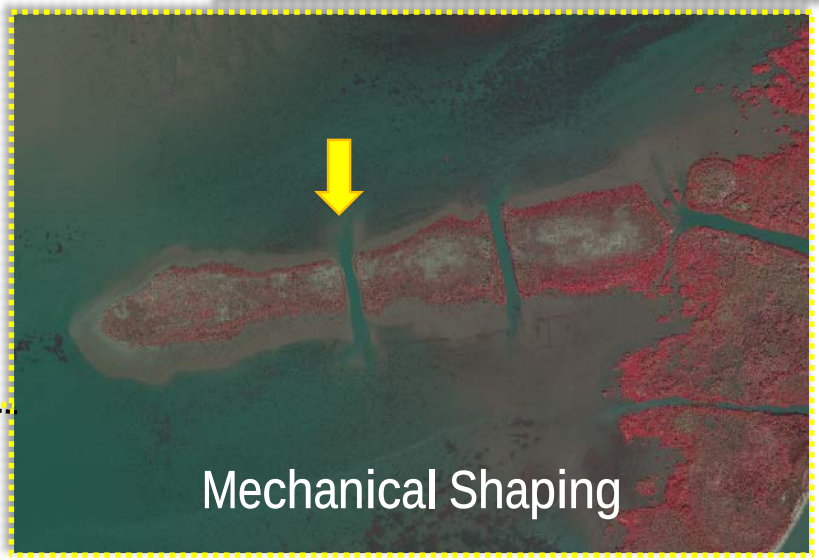
Management and Adaptation

Other Applications along the Atchafalaya River, *and Beyond…*

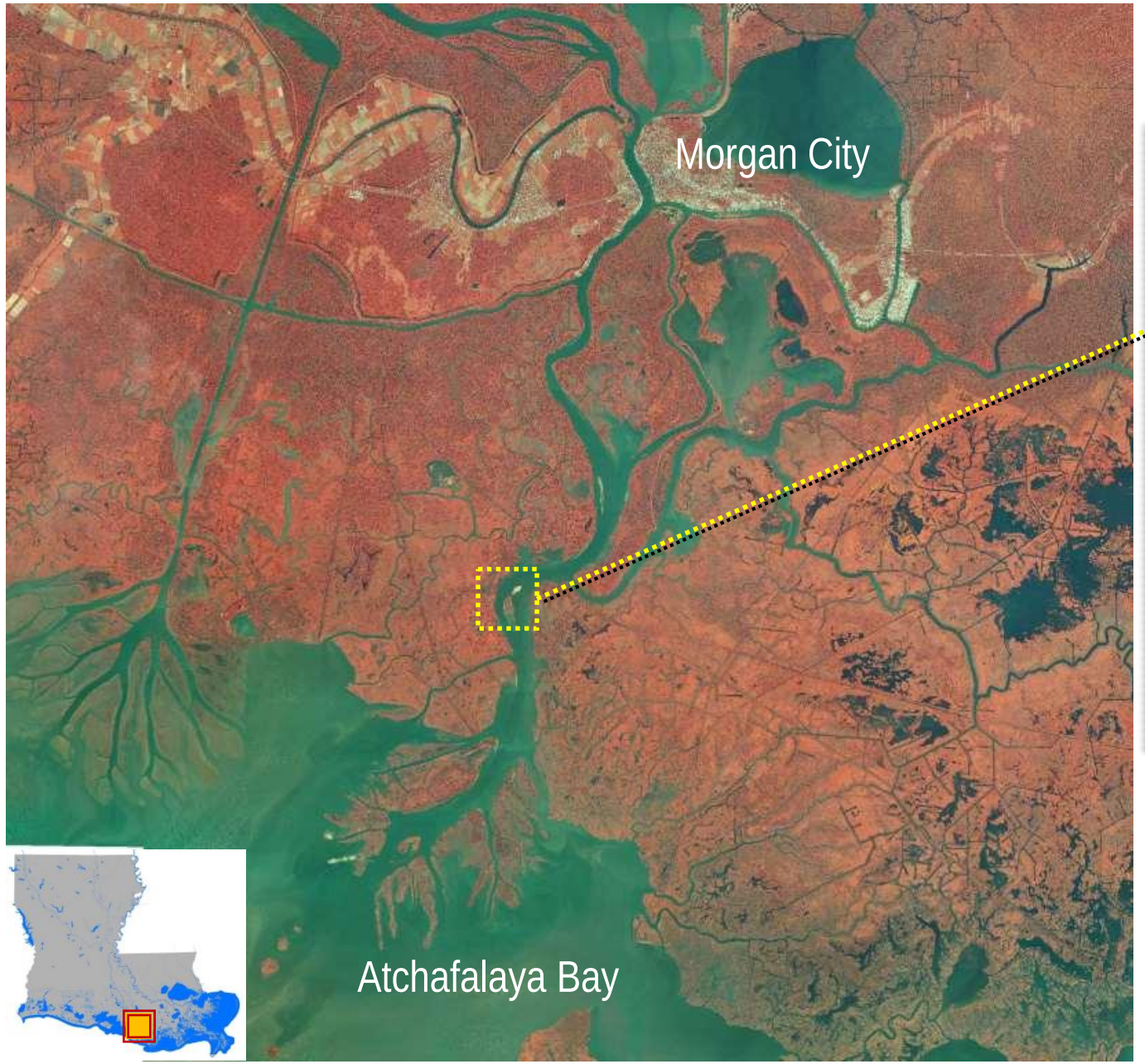
Common Practices







Let the River do the Work



Strategic Single-Point Discharges

(1) Place Material on Developing Sand Bar

(2) Upstream Mounds of Erodible Material

(3) Natural Sculpting during Annual Floods

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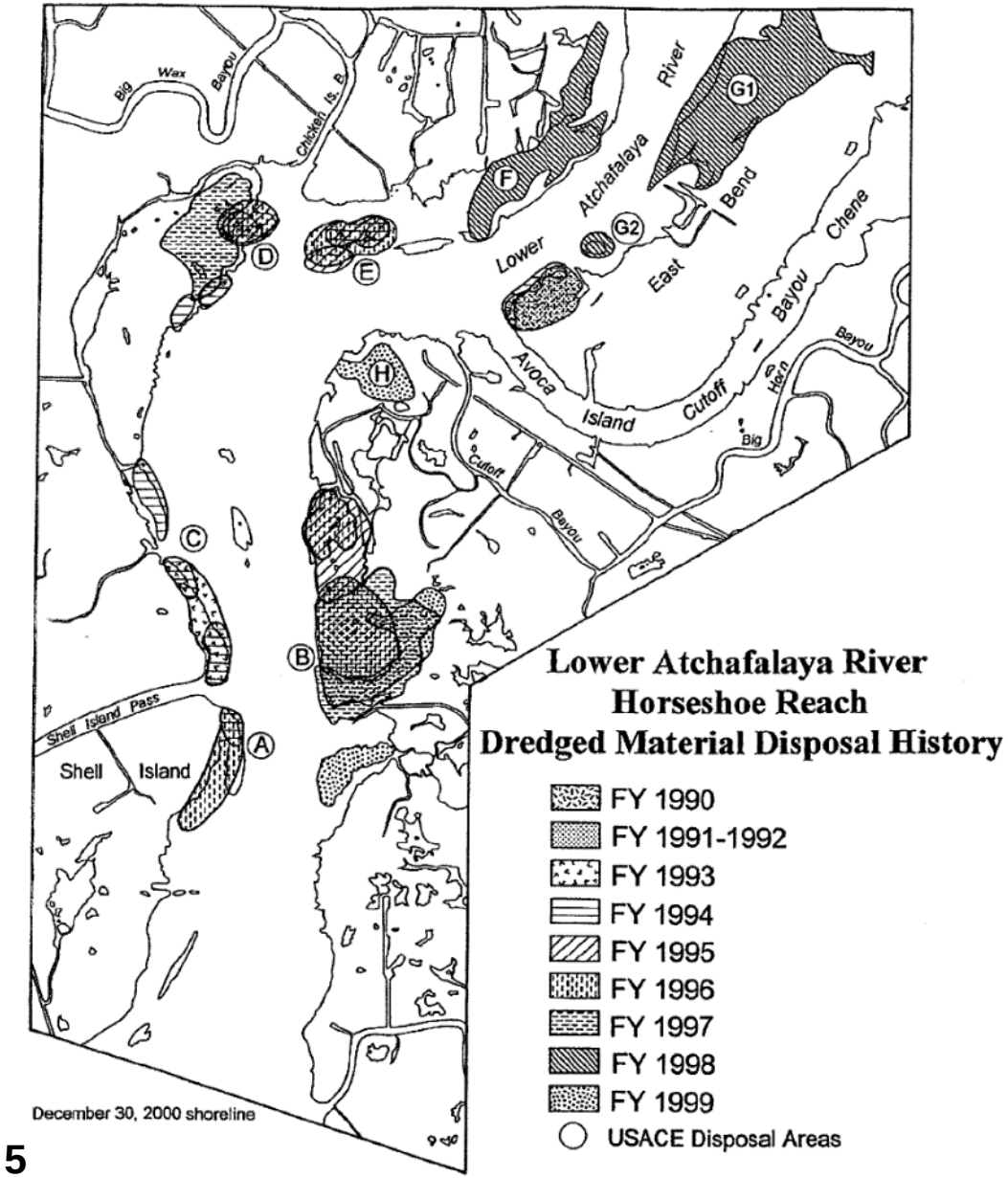
Plan Development



Problem

Capacity of Bankline Placement Areas Exhausted

Evaluation of Alternatives

(1) Convert Wetland Placement Areas into Uplands

(2) Transport Material to the Atchafalaya Bay

(3) Transport Material to Shell Island Pass for Dispersion

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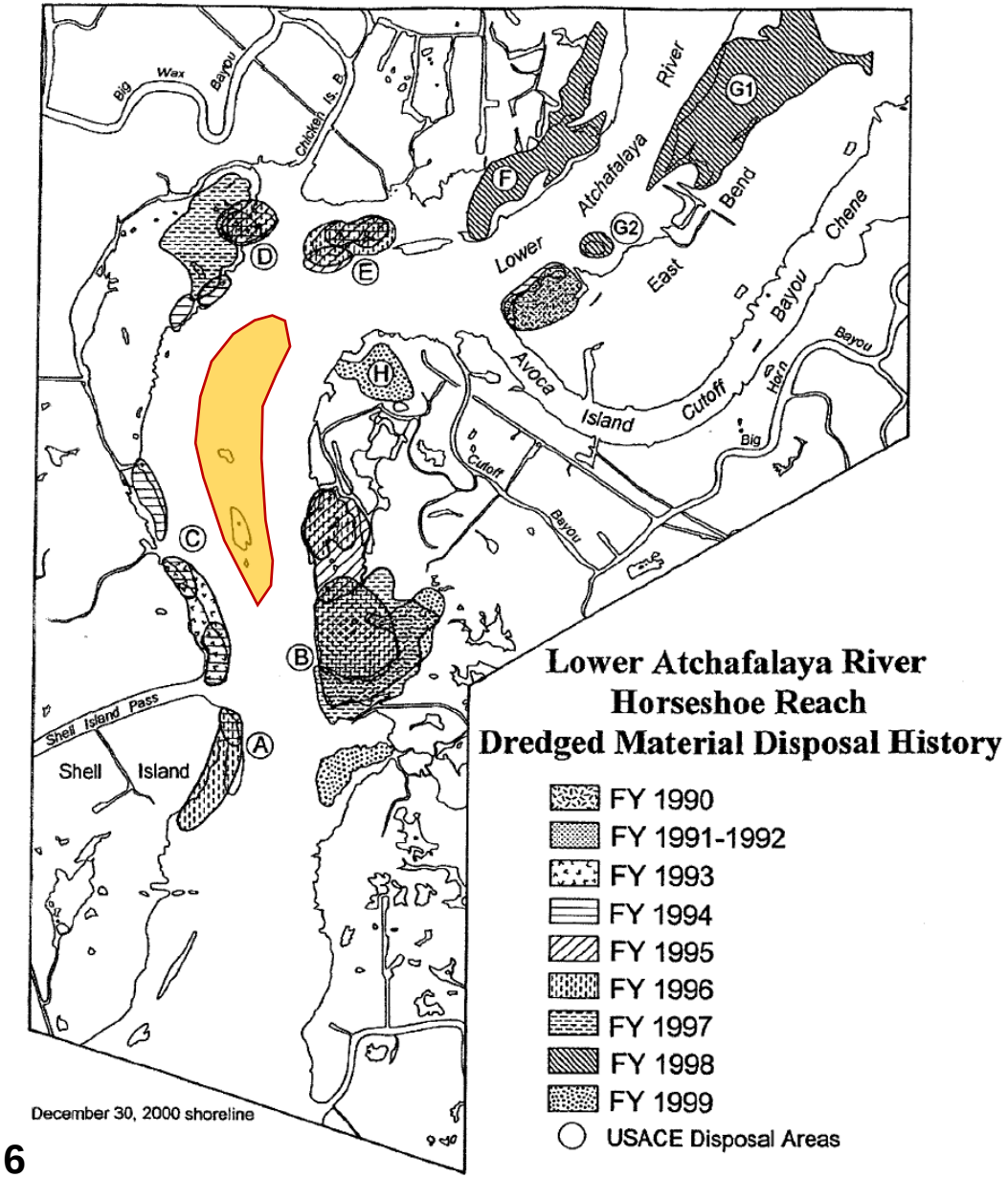
Plan Development



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~~(1) Convert Wetland Placement Areas into Uplands~~

~~(2) Transport Material to the Atchafalaya Bay~~

~~(3) Transport Material to Shell Island Pass for Dispersion~~

(4) Mid-River Mounding of Dredged Material

Implementation Hurdles

Could Pilots Safely Transit the Area?

Are We Pushing the Problem Downstream?

What Channel will the Atchafalaya Adopt?

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Project Execution (Part 1)

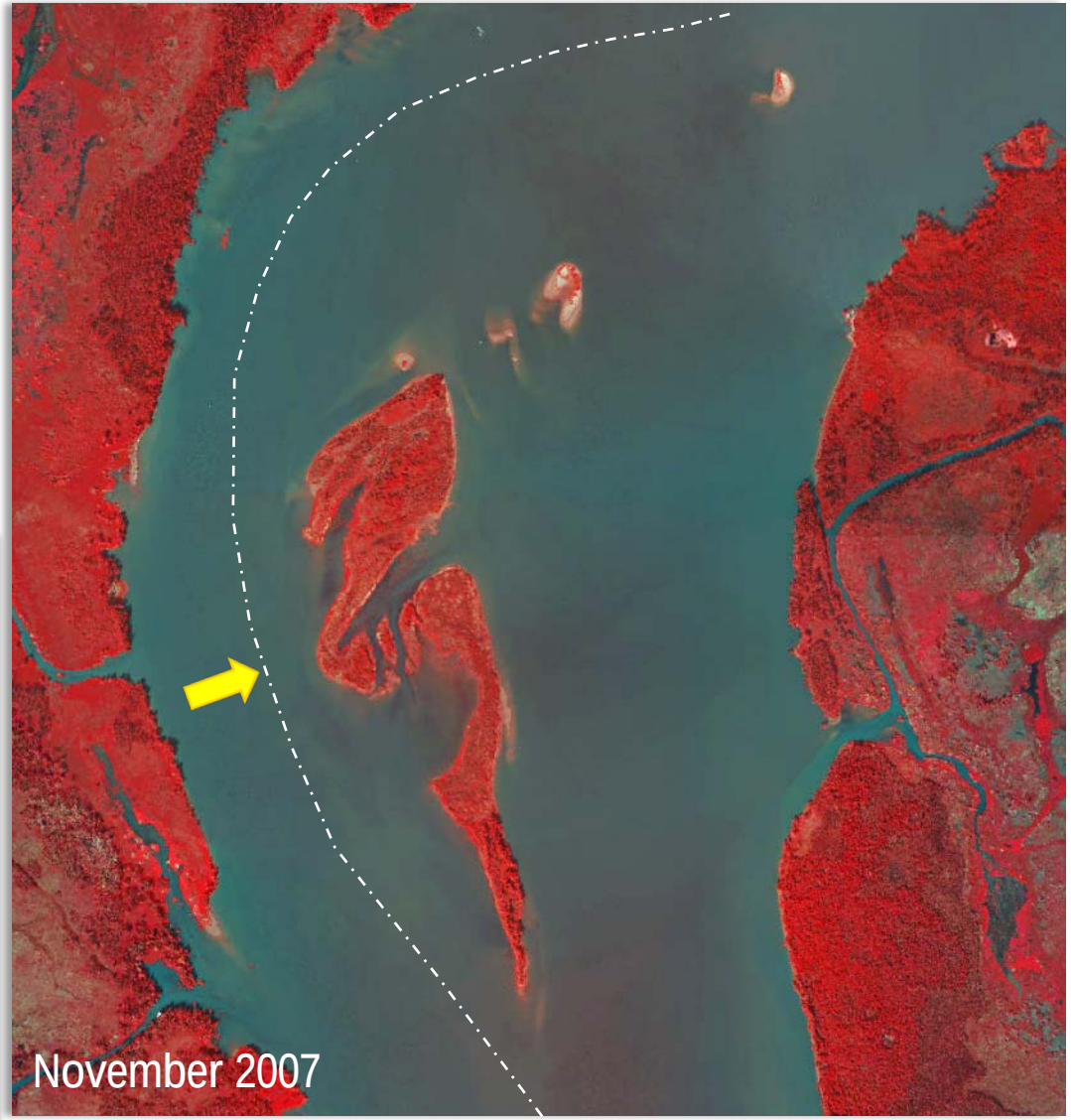
Construction Stats (Fiscal Years 2002 through 2011)

Number of Horseshoe Bend Maintenance Events: 8

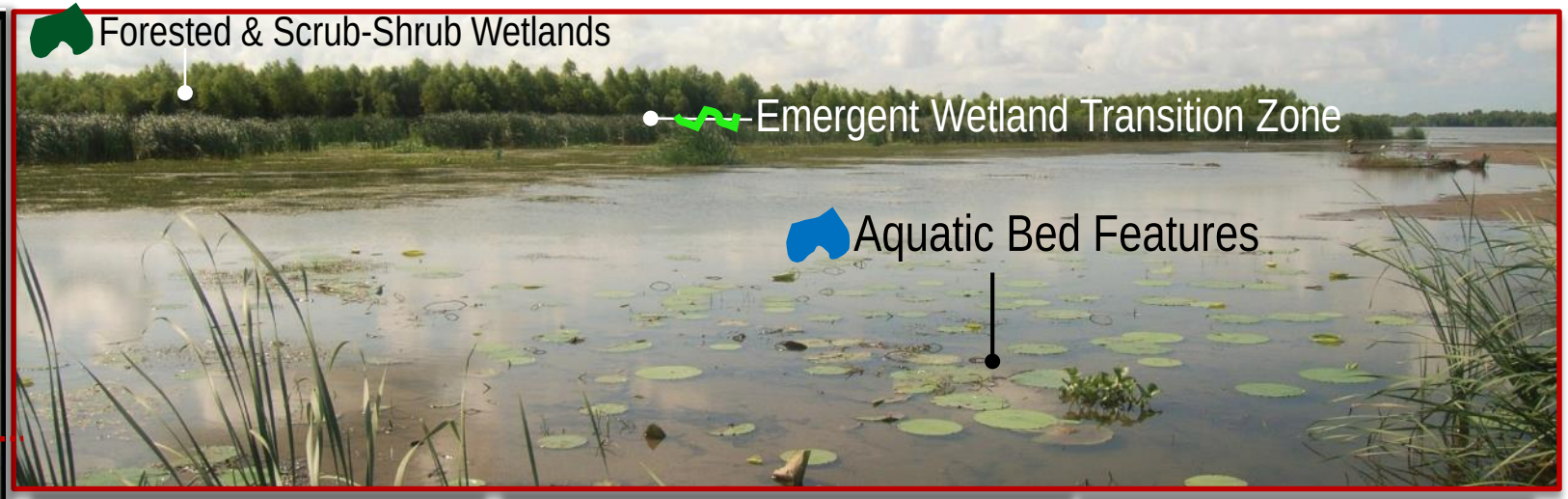
Project Partners: Port of Morgan City, Weeks Marine, Mike Hooks Inc., Vicksburg District

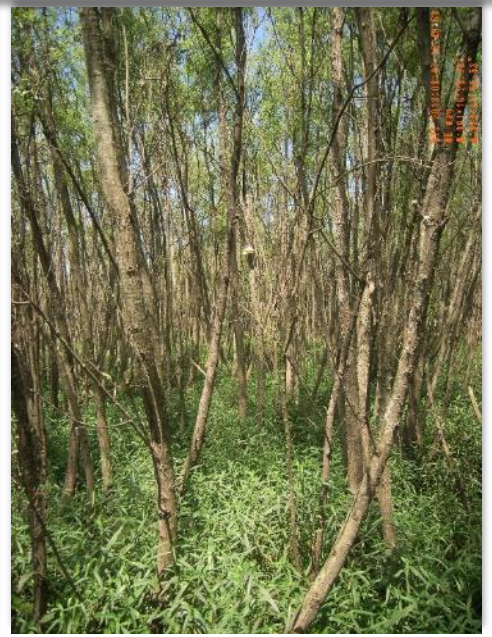
Total Quantity & Cost: 7.6 Million Cubic Yards / $27 Million

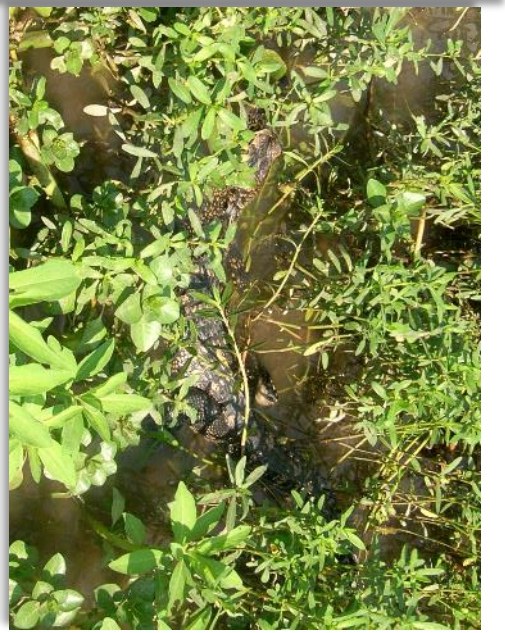
Mature Island Size: 100 Acres



What's Different about the Site?







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Management and Adaptation

Acknowledge that Crewboat Cut is more Efficient (2011)

Develop a new Dredged Material Management Plan and Construction Costs (2012)

Armor the Left-Descending Bankline (2014)

Dredge Crewboat Cut and Certify the new Route (2014)

Project Execution (Part 2)

Construction Stats (Fiscal Years 2012 through 2017)

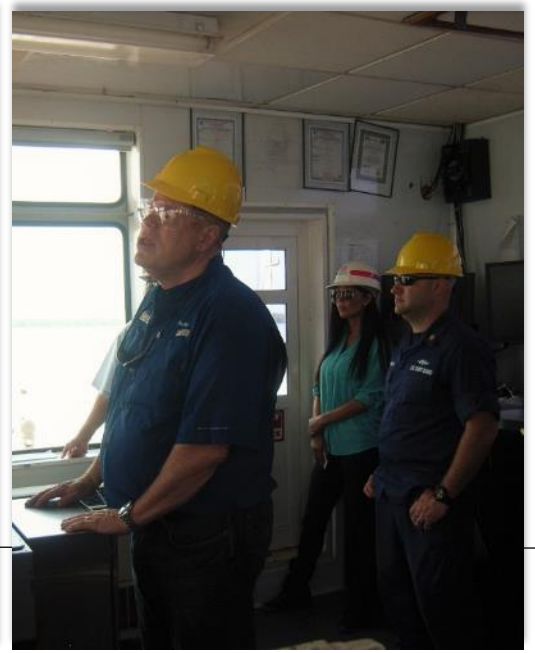
Crewboat Cut Construction (2014)

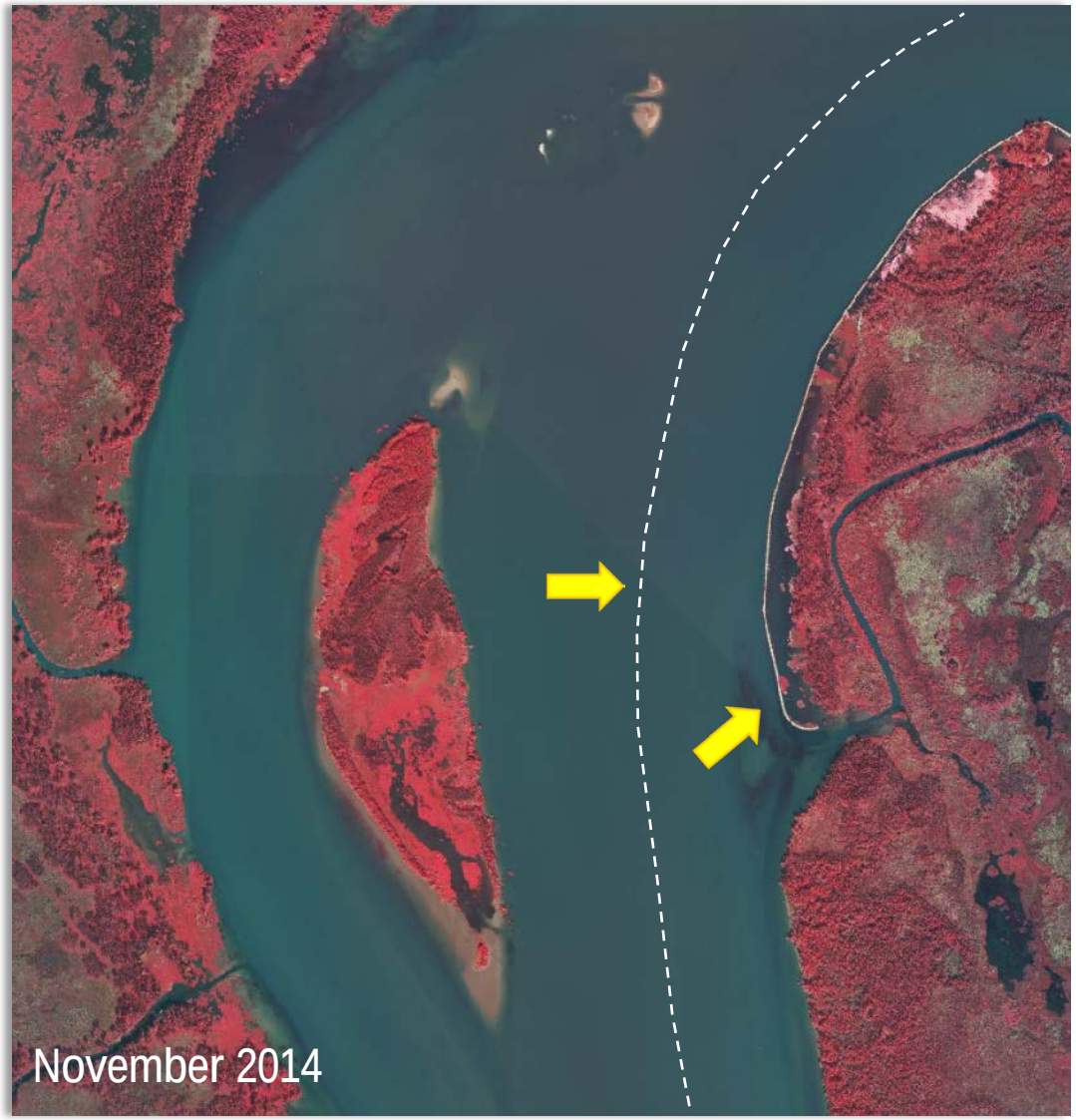
Dike Consrtuction: 74K Tons / $3.8 Million

Dredging: 870K Cubic Yards / $2.8 Million

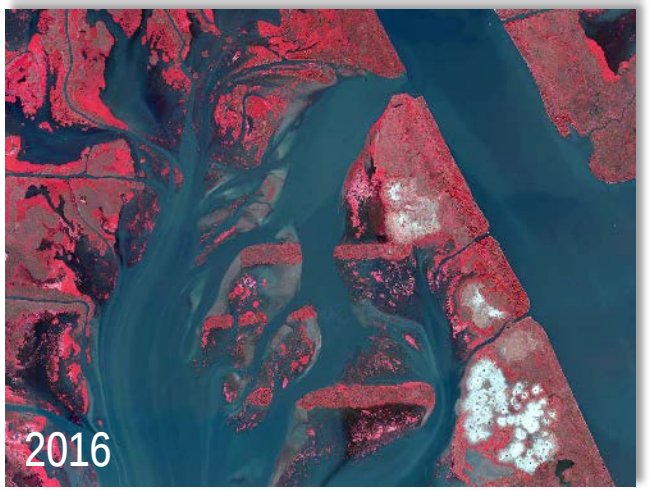
Number of Crew Boat Cut Maintenance Events: 0

Project Partners: Port of Morgan City, Luhr Bros. Inc., Great Lakes Dredge and Dock, US Coast Guard





Atchafalaya, and Beyond



West Bay “SREDs”
Constructed 2009 & 2013

ENGINEERING WITH NATURE

ERDC TN-EWN-14-4
August 2014

Use of Strategic Placement of Dredged Sediments to Support Horseshoe Island in the Atchafalaya River, Louisiana: A Preliminary Ecological Survey

By Jacob F. Berkowitz[1], Nathan R. Beane[2], Darrell E. Evans[1], Burton Suedel[3], and Jeffrey M. Corbino[4]

PURPOSE: This technical note describes an Engineering With Nature (EWN) project being conducted in the Atchafalaya River, LA. The current work presents a wetland classification, vegetation survey map, preliminary ecological inventory, and soil descriptions for an island receiving strategically placed dredged sediments (i.e., Horseshoe Bend Island) located within the Atchafalaya River. The practice of strategically placing dredged sediments upriver of a naturally-occurring island was conducted with the intent of aiding the islands growth to produce greater environmental benefits than otherwise would be present using more conventional placement practices. Results provide background information regarding ecosystem classification and mapping, floral and faunal composition of the island, and background data supporting future research efforts. Opportunities for additional research are also presented.

BACKGROUND: Horseshoe Bend is a segment of the Atchafalaya River and Bayous Chene, Boeuf, and Black Federal navigation channel located in the lower Atchafalaya River approximately 20 miles south of Morgan City, LA (Figure 1). Although dredging of the navigation channel received original authorization in 1910, active maintenance dredging of Horseshoe Bend was not required until 1990 because natural channel depths exceeded authorized dimensions. Beginning in 1990 and proceeding thru 2013, 17 maintenance dredging events within this segment occurred at a return interval of 1 to 3 years, with each event resulting in the removal of between 0.5 and 2.7 million cubic yards of shoal material.

During the 1990s, placement of shoal material dredged from Horseshoe Bend occurred at eight wetland development sites located along the river's banklines adjacent to the channel. Capacity of these placement sites was nearly exhausted by 1999. Thus, to meet the anticipated disposal requirements for future channel maintenance, the US Army Corps of Engineers (USACE) New Orleans District (MVN) evaluated three placement alternatives: (1) convert the wetland development sites into upland disposal areas; (2) open water placement of dredged material via a long-distance pipeline into the open waters of the Atchafalaya Bay; and (3) mounding of material at mid-river open water placement sites within a 350-acre (142 ha) area immediately adjacent to the navigation channel and upriver of a small naturally forming island (Figure 2). Environmental and cost concerns precluded the selection of alternatives (1) and (2). The third alternative was selected on a trial basis to investigate the impacts of mid-river placement on shoaling trends downriver of the site.

[1] USACE, ERDC, Environmental Laboratory, Wetlands and Coastal Ecology Branch.
[2] USACE, ERDC, Environmental Laboratory, Ecological Resources Branch.
[3] USACE, ERDC, Environmental Laboratory, Environmental Risk Assessment Branch.
[4] USACE, New Orleans District (MVN).

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ENGINEERING WITH NATURE is the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental and social benefits through collaborative processes.

ERDC Engineer Research and Development Center

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