

River Island Building using Engineering With Nature Principles

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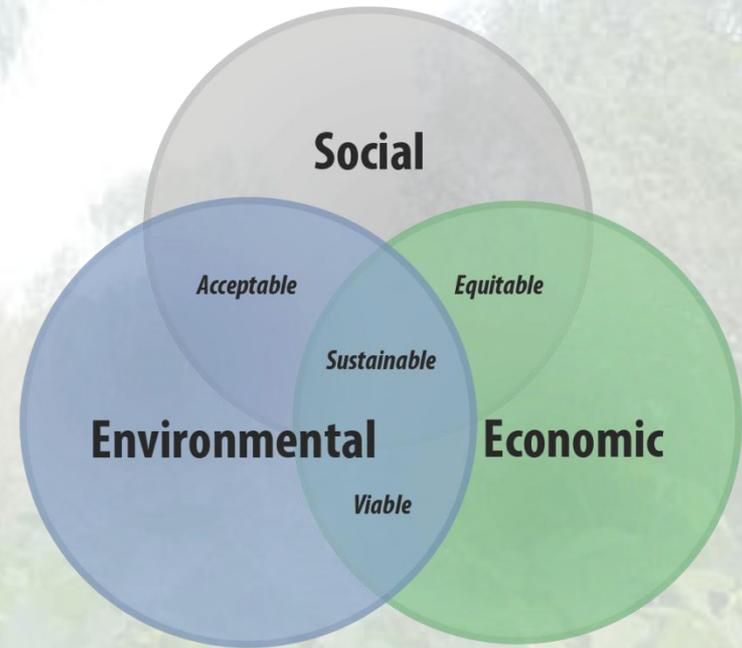
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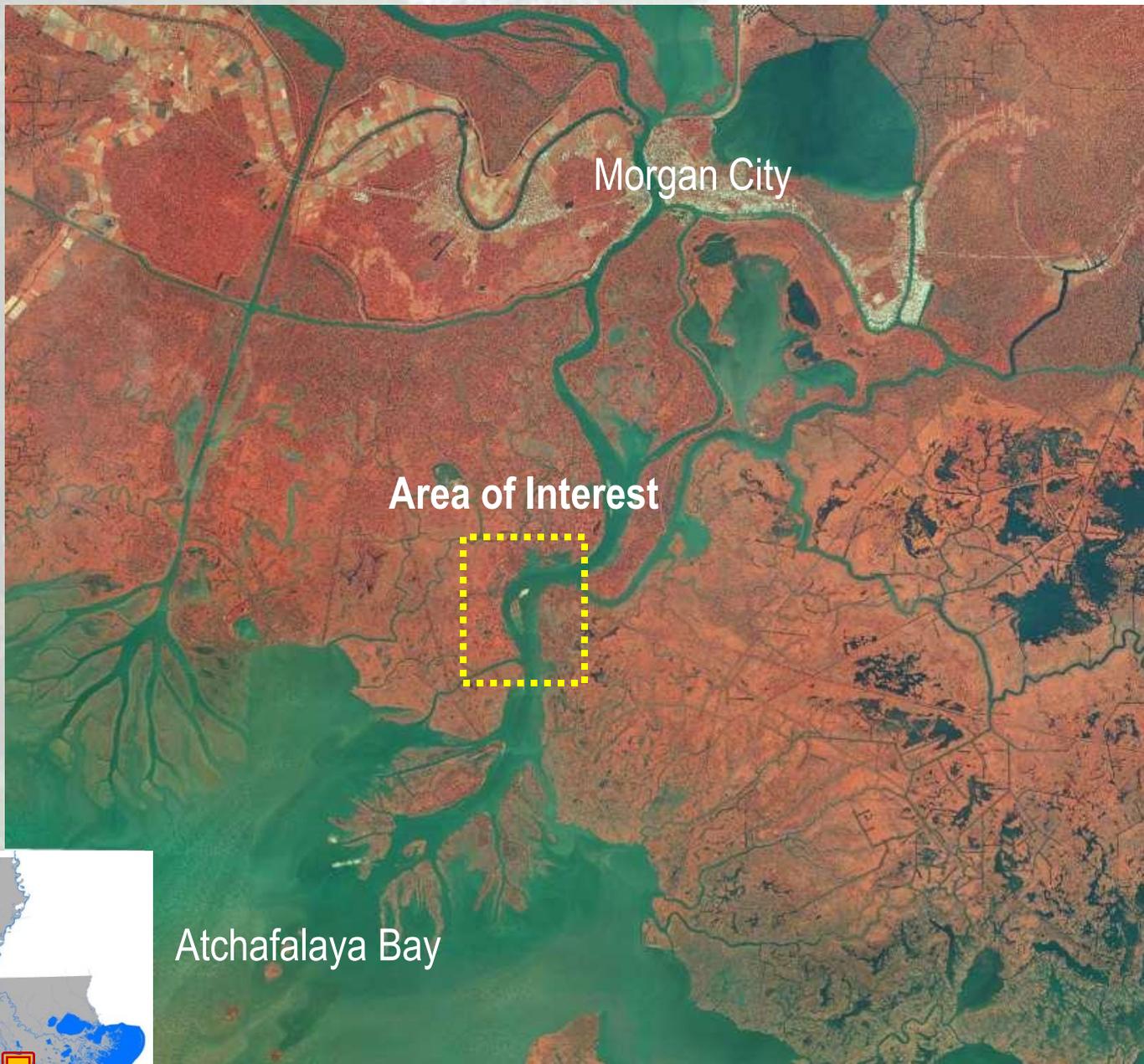
US Army Corps of Engineers
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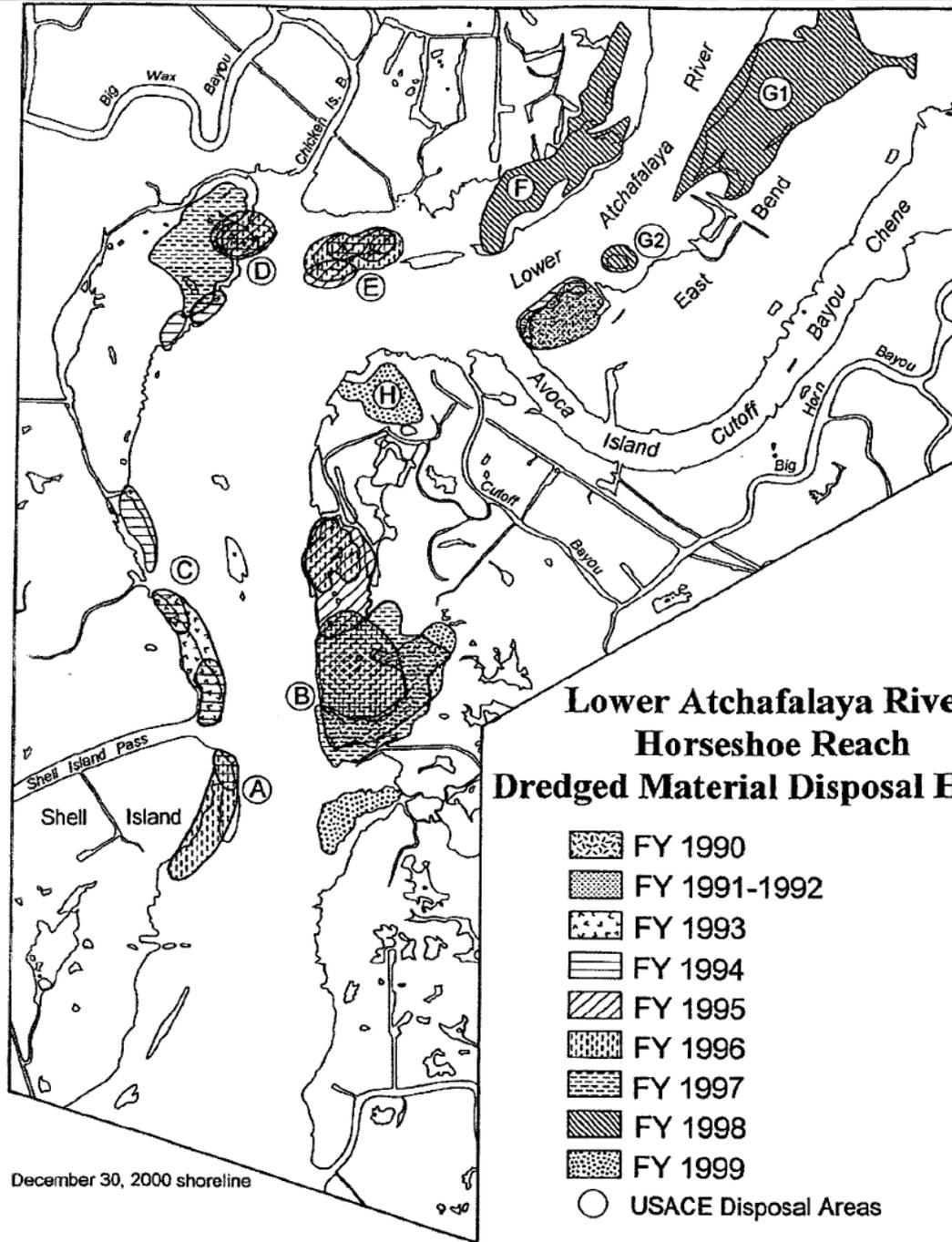


What is the Intent of this Initiative?

- * Improve Resilience & Sustainability of Projects in Coastal Systems
- * Identify & Implement Cost-Effective, Efficient Engineering Practices
- * Realize “Other” Benefits for USACE Projects
- * Gain Credibility & Respect of Stakeholders







Problem

Capacity of Bankline
Disposal Areas Exhausted

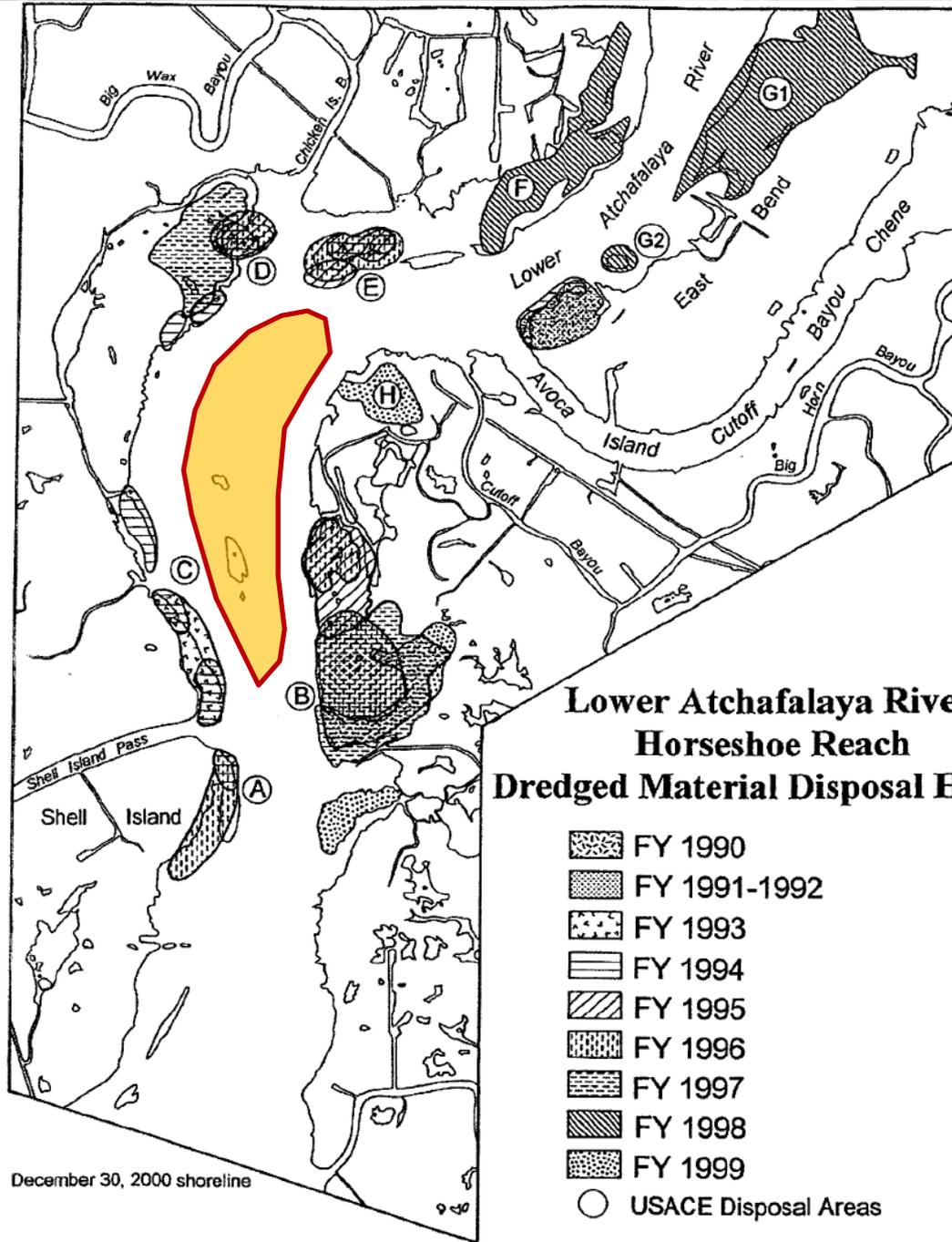
Alternatives

Conversion of Wetland
Disposal Areas into Upland

Open Water Disposal in
Atchafalaya Bay



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Mid-River Mounding of
Dredged Material



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Pre-Disposal (1998) – Natural Mid-River Sandbar



1998 DOQQ



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Initial Dredged Material Mounds (2002-2004)



2004 DOQQ



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Developed Island with Upriver Feeder Mounds (2010)



2010 BUMP



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Quantification of the Environmental Benefit

- * Identify & Classify Distinct Habitat Types
- * Catalogue Plants & Animals
- * Evaluate Soil Horizons



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Habitat Classification

Horseshoe Bend Dredged Material Island

Photo Area
(at Right)



Stability
Complexity
Age
Elevation



Mature Forested & Scrub-Shrub Wetlands

Young Forested & Scrub-Shrub Wetlands

Emergent Wetland Transition Zone

Aquatic Bed Features



Example of Classification Metrics: Stem Thickness & Density



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20" Soil Plugs Evaluated for Zonation, Color, Texture & Redox Features



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Summary of Environmental Benefits

- * Four Distinct Wetland Habitats within a Small Area (35 ha), Support a Larger than Expected Variety of Plants & Animals
- * 81 Plant Species Observed on Island, Compared to 53 Plant Species Noted for Natural Wetlands along the Lower River
- * Island Performs Like a Natural Wetland, Traditional Dredge & Fill Wetlands take 5-10 Years to Develop
- * Soils are Active, Function to Cycle Nutrients & Sequester Carbon



What Happens Next?

- * Continue Scientific Research
(Hydrology & Environment)
- * Document Positive / Negative
Channel Maintenance Impacts
- * Communicate Findings Widely
(Publications, Conferences,
Press Releases)
- * Seek other Applications for this
Novel Disposal Practice



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...and the Social Benefit???



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...Questions?

