River Island Building using Engineering With Nature Principles

Ms. Cynthia Banks Dr. Burton Suedel

U.S. Army Engineer Research and Development Center (ERDC) Vicksburg, MS

Mr. Jeff Corbino USACE New Orleans District



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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



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





Initial Dredged Material Mounds (2002-2004)

2004 DOQQ



Developed Island with Upriver Feeder Mounds (2010)

2010 BUMP



Quantification of the Environmental Benefit

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





Habitat Classification



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Example of Classification Metrics: Stem Thickness & Density











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



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





...and the Social Benefit???





...Questions?