Regional Sediment Management And Engineering With Nature

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Engineering With Nature
Galveston District
Collaborative Meeting

Galveston, TX
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Regional Sediment Management

A systems approach for efficient and effective use of sediments and management of projects in our Coastal, Estuarine, Riverine, and Watershed environments.
RSM = Sustainable Solutions for.....

<table>
<thead>
<tr>
<th>Navigation/Dredging</th>
<th>Flood Risk Management</th>
<th>Environmental Restoration</th>
</tr>
</thead>
</table>

RSM Operating Principles:
- Recognize sediments as a regional resource; prioritize use
- Link and leverage across multiple projects, business lines, authorities
- Improve operational efficiencies & natural exchange of sediments
- Economically viable, environmentally sustainable solutions
- Local sediment actions which benefit the region, consider regional impacts
- Enhance technical knowledge/tools for regional approaches
- Share information and data
- Communicate and collaborate – USACE, Stakeholders, Partners
RSM Program

- Regional Approaches
- Coordination
- Technology Data Gaps
- Integrate Across Projects and Authorities
- Operations & Maintenance
  - Continuing Authorities Program
  - Dredge Material Mgmt Plans
  - Feasibility Studies
- Other

Construction

[Images of construction sites]
USACE RSM Participation (2000-2014)

7 Division, 25 Districts (20 Coastal/5 Inland), ERDC, IWR
Understand Region
- Sediment Budget
- Beach Morphology
- Landcover Type
- Coastal/Inland Processes
  *Holistic/Systems Approach*

Identify Gaps/Improve Knowledge

Data Management/Regional Tools
  *Collaborative w/Partners*

Identify/Evaluate Opportunities to Optimize Use of Sediments Across Multiple Projects
  *Innovative, Efficient/cost effective, Science-based*

Take Action: Construct Pilot Projects
  *Collaborative w/Partners*

Monitor: Evaluate Performance
  *Adaptive Management*

Incorporate Standard Practice
  *Sustainable*
RSM Long-Term Goal
*Link with Engineering With Nature*

Bridge Regional Sediment Processes with Regional Environmental/Ecosystem Processes

Sediment/Engineering + Environmental/Ecosystem
Jacksonville District - St Johns, Duval, Nassau Counties

Northeast Florida Regional Sediment Management

Fernandina O&M/Kings Bay/Nassau Co SPP

Fernandina Harbor Entrance Channel

ODMDS ~14 miles from Channel

SHORE PROTECTION PROJECT BORROW AREA

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Approx $40M in added value

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Galveston, Gulf Intracoastal Waterway RSM

**Objectives**
- Determine/Confirm Erosion of barrier islands
- Identify causes of erosion and erosion rates (sediment budget)
- Design/Evaluate methods to decrease erosion
- Integrate alternative into O&M

**Challenges**
- PA’s along GIWW are eroding on the channel and bay sides due to currents, wind generated waves and ship wakes
- Once breached, material is deposited into GIWW
- Once they become submergent, they become potentially unavailable

**Opportunities to take action**
Implement construction by phase: PA 62 through PA 64 - Phase 1, North of Greens Lake & PA 65 to Chocolate Bay - Phase 2.
Address each individual reach according to its designated priority - How rapid is channel shoaling and shoreline erosion?
Recommend rip rap revetment on the channel side of the barrier islands based on cost, but ACB is more practical for this reach.
Recommend a combination of oyster castles, rip rap revetment, and sacrificial berms on the Bay side.
Why RSM is Important & Supports EWN

- Improve utilization of sediments - local & regional
- Link multiple projects & authorities, leverage funding, reduce timelines
- Increase benefits while reducing/maintaining costs
- Share data, tools, and capabilities
- Improve partnerships and collaboration
- Pilot Projects/Adaptive Management - Improve channel availability, shoreline erosion/flood protection, environmental habitat
Tools and Data
Sediment Budget Analysis System (SBAS)
CE-Dredge-RSM Dredging Manager & Viewer
Models and Databases
Etc…