Regional Sediment Management And Engineering With Nature

Linda S. Lillycrop Program Manager Coastal Engineer

US Army Engineer Research and Development Center Coastal and Hydraulics Laboratory

> Engineering With Nature Galveston District Collaborative Meeting

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US Army Corps of Engineers BUILDING STRONG® **ERDC** Engineer Research and Development Center

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....



RSM Operating Principles:

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





RSM Program





USACE RSM Participation (2000-2014)





7 Division, 25 Districts (20 Coastal/5 Inland), ERDC, IWR



RSM Long-Term Goal Link with Engineering With Nature Bridge Regional Sediment Processes with Regional Environmental/Ecosystem Processes





Sediment/Engineering

Environmental/Ecosystem





Jacksonville District Integrated Dredging Program



Jacksonville District - St Johns, Duval, Nassau Counties



Galveston, Gulf Intracoastal Waterway RSM

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

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

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 <u>a combination of oyster castles, rip rap revetment,</u> 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 portection, environmental habitat



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RSM Technical Notes, Reports, Manuals, Conference Papers



<u>Tools and Data</u> Sediment Budget Analysis System (SBAS) CE-Dredge-RSM Dredging Manager & Viewer Models and Databases Etc...



