REGIONAL SEDIMENT MANAGEMENT (RSM) IMPLEMENTATION UPDATE

Laurel Reichold Director RSM-RCX SAD Regional Sediment Management Center of Expertise Date: 12 May 2021











US Army Corps of Engineers ®



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REGIONAL SEDIMENT MANAGEMENT (RSM) IMPLEMENTATION UPDATE

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AGENDA

- Why is RSM Important?
- What is the Value of RSM?
- RSM and Navigation Implementation
- RSM Systems Approach
- Regional Initiatives
- Next Steps









- The Corps spends more than \$2 Billion annually to dredge over 200MCY of sediment.
- Navigation is by far the largest business line and the Corps moves more sediment than any other entity worldwide.
- Decisions made on a <u>project-by-project</u> basis divided by business line and appropriations is a thing of the past.
- Coastal resiliency must be approached from a comprehensive and regional perspective.

200 MCY IS AN ASSET!





SEDIMENT AS A LIABILITY Tampa "Spoil" (DMMA) Island



SEDIMENT AS AN ASSET Egmont Key Beach



REGIONAL SEDIMENT MANAGEMENT (RSM) DEFINED





- "A <u>systems</u> approach using best management practices for more efficient and effective use of sediments in <u>coastal</u>, <u>estuarine</u>, and <u>inland</u> environments for <u>healthier</u> and more <u>resilient</u> systems."
- Recognizes sediment as a valuable <u>resource</u>
- <u>Works across business lines, projects, and authorities</u> to create short and long-term economically viable and environmentally sustainable solutions
- Improves operational efficiencies and natural exchange of sediments
- <u>Considers</u> regional implications of project-scale actions and benefits
- <u>Applies/enhances</u> tools and technologies for regional approaches
- Shares lessons learned, information, data, tools, and technologies
- Communicates and collaborates





RSM GOALS AND STRATEGIES





- Keep Sediments in the System
- Mimic Natural Sediment Processes
- Reduce
 Unwanted
 Sedimentation
- Pursue Environmental Enhancement
- Maintain and Protect Infrastructure



Reduce Upland/CDF Disposal



Bypass/Backpass Sediments



Reduce Erosion



Reduce Channel Shoaling



Reduce Runoff



Ecosystem Habitat Restoration



Save Capacity



RSM AND NAVIGATION





USACE Navigation Strategic Vision

effective and environmentally sustainable waterborne transportation systems for movement of commerce, nationa security needs, and recreation.



US Army Corps of Engineers BUILDING STRONG®

December 2012

GOAL: MAINTAIN NAVIGATION CHANNELS AND MAXIMIZE COASTAL RESILIENCY BY KEEPING SEDIMENTS IN THE SYSTEM





RSM-RCX was established by USACE South Atlantic Division (SAD) IN 2015 to increase implementation of RSM Goals and Strategies

- Produce actionable RSM strategies that optimize efficient execution of the coastal NAV and FRM program budgets
- Support innovation
- Maximize the value of dredging events by integrating RSM opportunities
- Achieve long-term coastal resiliency

QUANTIFYING THE VALUE OF RSM

U.S.ARM







RSM OPTIMIZATION UPDATE



- Optimization Analysis identified >\$100M in annual value and >\$20M in opportunity
- Next step was to go after unrealized potential better understand hurdles, challenges, roadblocks
- SAD Pilot projects were established to take optimization to implementation



SAD Focus Areas

- TLP and In water placement
- Nearshore feeder berms
- Turbidity/Fate of fines
- Mitigation Credit
- Ecosystem Value
- Industry Collaboration
- Communication

Advancing policy and regulations to save millions annually

SNAPSHOT OF SAD RSM IMPLEMENTATION



SOUTH ATLANTIC DIVISION (SAD) REGIONAL SEDIMENT MANAGEMENT (RSM) CENTER WORK (EST. DECEMBER 2015)



DIVISION-WIDEWORK

- 37. SAD (1122) Beneficial Use Pilot Projects Program Management
- 38. South Atlantic Coastal Assessment
- 39. South Atlantic Coastal Study (SACS) 40. 2020 RSM Optimization Update
- 41. Sand Availability & Needs Determination (SAND) (SACS)
- 42. DMMA Offloading and Sediment Exchange Study (SAD) (SACS)
- 43. BOEM/USACE Fate of Fines Phase
- 44. GIWW DROP (RSM-centric Permits)
- 45. Jacksonville District Program Management (1122)
- 46. "Implementing RSM Policy Guidance & Authorities Pertinent to Improving the Use of Dredged
- 47. "Historical Analysis of the Change in Percent Fines During Beach
- 48. Thin Layer Placement (TLP)
- 49. "South Atlantic Division Regional Sediment Management Optimization Pilot"
- 50. SAD Coastal FRM-NAV Mapping Portfolio (SAD)



DMMA OFFLOADING AND SEDIMENT EXCHANGE STUDY



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DMMA: Dredged Material Management Area

Beneficial Re Use Opportunity	Excavation Costs (\$/CY)	Transport Costs (\$/CY)	Placement Costs (\$/CY)	Mobilization/Demobilization/ Other Associated Costs
Upland Land Development (Truck)	\$3-\$5	\$8-\$32	\$2-\$5	\$100,000 -\$200,000
Beach Placement (Truck)	\$3-\$5	\$8-\$32	\$2-\$5	\$100,000 -\$200,000
Beach Placement (Pipeline)	\$10-\$30	I ^{\$5-\$33}	\$2-\$5	\$400,000 - \$1,200,000
Upland Habitat Development (Truck)	\$3-\$5	\$8-\$32	\$2-\$5	\$100,000 -\$200,000
Wetland Habitat Development (Pipeline or Barge)	\$10-\$30	\$5-\$33	\$30-\$50	\$300,000 - \$1,700,000
Unconfined Aquatic Placement (Pipeline or Barge)	\$10-\$30	\$5-\$33	\$2-\$5	\$300,000 - \$1,200,000
Confined Aquatic Placement (Pipeline or Barge)	\$10-\$30	\$5-\$33	\$10-\$30	\$300,000 - \$1,200,000
Island Placement (Pipeline or Barge)	\$10-\$30	\$5-\$33	\$25-\$30	\$300,000 - \$1,200,000
https://data-sacs.opendata.arcgis.com/pages/sand				





Notes: Offloading quantities range from 50,000 CY - 1,000,000 CY of dredged material. Transport distances range from 5-30 miles. Cost information adapted from actual projects, and/or USACE 1987 BUDM, with an escalation factor to 2020 dollars. Values are consistent with 2020 industry standards.

MA OFFLOADING AND SEDIMENT EXCHANGE STUDY



- Inventory of offloadable DMMAs
- Allows end users to identify beneficial use opportunities by sediment type
- Representative and site-specific examples
- Estimated project costs
- Outline of existing opportunities



MANATEE HARBOR DMMA OFFLOADING





Offloading to generate future capacity >150kcy



Use of offloading material to create recreational park







LIFECYCLE EVALUATION: \$5/CY VS. \$25/CY







- Tampa Harbor, FL Egmont Key
 AIWW, GA Bird Islands

- Condado Lagoon/San Juan Harbor
- Miami Harbor, FL
- Mobile Harbor, AL

Marsh: Jekyll Creek, AIWW (GA) • Subtidal: Mobile Harbor, AL; **Biloxi Harbor**, MS; Gulfport, MS

ENGINEERING WITH NATURE ATLAS

https://ewn.el.erdc.dren.mil/



Beach Harbor Port **Everglades** Miami-Dade County

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- Save money in the long run if we can better understand the sediment dynamics
- Multiple projects with different site-specific challenges
- Regional approach to identify RSM opportunities and leverage available budgets





SOUTH ATLANTIC COASTAL STUDY (SACS)



Section 1204, WRDA'16 Requirements

(1) Identify risks and vulnerabilities of coastal areas within SAD AOR to increased hurricane and storm damage as a result of sea level rise (SLR).

(2) Conduct a comprehensive analysis of current CSRM measures with an emphasis on RSM practices to sustain/enhance current storm protection.

(3) Recommend measures to address coastal vulnerability of areas affected by SLR.

(4) Develop a long-term strategy to address increased hurricane/storm damages resulting from SLR and identify opportunities to enhance resiliency and lower risks.





COMPONENTS

- 50-Year Beach Sand Analysis
 - ► 50-year sand needs for all beach projects
 - Sand resources evaluated: offshore, RSM, DMMAs
 - ► 50-year sand balance and recommendations
- DMMA Beneficial Use and Sediment Exchange Study

PRODUCTS

- Final Report
- Databases: Sand needs, sand resources, DMMA resources
- Regional workshops





Kings Bay DMMA Beneficial Uses



HIGHLIGHTS

- 1.2 Bcy need in the South Atlantic Division over the next 50 years
- All states have areas with significant sediment deficits
 - Most of North Carolina
 - South Florida
 - Florida Panhandle
- Maximize use of available resources
 - Navigation channels can help too!
 - Develop criteria for prioritization
 - Analyze borrow area inefficiencies, dredging losses, sediment sorting
 - Identify regulatory opportunities (nearshore placement, beneficial use placement, fate of fines)







IMPLEMENTATION NEXT STEPS



- (1) Leverage opportunities for RSM identified in the Optimization Update
- (2) Continue to work with states, ports, and stakeholders to highlight RSM projects done by others (Brunswick Harbor/Jekyll Island driftwood beach)
- (3) Evaluate Regulatory constraints, flexibilities, and consistencies
 - Fate of Fines Results
 - 404 process and RSM opportunities
 - SARBO implementation
- (4) Assess Back Bay opportunities for RSM implementation to reduce risks







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THANK YOU









RSM | TAMPA BAY, FL

OLD TAMPA BAY

TAMPA BAY

BRAEDENTON

PETERSBURG



- Liability versus asset
- Early identification of RSM opportunities
- Collaboration with stakeholders

MMA







\$6 MILLION IN ANNUAL RSM VALUE

Brookley Dredge Hole fill

Gaillard Island

- Marsh creation
- Biogradable containment of sediment
- In-bay thin layer placement
- **Mined Oyster Holes fill**
- Sand Island Beneficial Use
 - No ODMDS Placement
 - Dredged material from upper end used to help reduce erosion along the island

*ODMDS: Ocean Dredged Material Disposal Area