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REGIONAL SEDIMENT MANAGEMENT (RSM) IMPLEMENTATION UPDATE

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 project-by-project 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!
LEVERAGING REGIONAL OPPORTUNITIES

SEDIMENT AS A LIABILITY
Tampa “Spoil” (DMMA) Island

SEDIMENT AS AN ASSET
Egmont Key Beach

SAVINGS: $8M
REGIONAL SEDIMENT MANAGEMENT (RSM) DEFINED

“A systems approach using best management practices for more efficient and effective use of sediments in coastal, estuarine, and inland environments for healthier and more resilient systems.”

- Recognizes sediment as a valuable resource
- Works across business lines, projects, and authorities to create short and long-term economically viable and environmentally sustainable solutions
- Improves operational efficiencies and natural exchange of sediments
- Considers regional implications of project-scale actions and benefits
- Applies/enhances 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

GOAL: MAINTAIN NAVIGATION CHANNELS AND MAXIMIZE COASTAL RESILIENCY BY KEEPING SEDIMENTS IN THE SYSTEM
RSM-RCX IMPLEMENTATION
REGIONAL SEDIMENT MANAGEMENT CENTER OF EXPERTISE

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

eHydro
Channel Shoaling & Analysis Tool (CSAT)
Channel Portfolio Tool

National Channel Framework

<table>
<thead>
<tr>
<th>Project</th>
<th>Annual RSM Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charleston Harbor</td>
<td>$37.2 M</td>
</tr>
<tr>
<td>Mobile Harbor</td>
<td>$13.2 M</td>
</tr>
<tr>
<td>Tampa Harbor</td>
<td>$5.3 M</td>
</tr>
<tr>
<td>Folly Beach-Folly River</td>
<td>$5.1 M</td>
</tr>
<tr>
<td>Kings Bay - Nassau County</td>
<td>$4.5 M</td>
</tr>
<tr>
<td>St. Augustine Inlet - St. Johns County</td>
<td>$4.1 M</td>
</tr>
<tr>
<td>Baker's Haulover</td>
<td>$3.9 M</td>
</tr>
<tr>
<td>Wilmington Harbor</td>
<td>$3.8 M</td>
</tr>
<tr>
<td>Morehead City Harbor</td>
<td>$2.8 M</td>
</tr>
<tr>
<td>Fort Myers Inlet</td>
<td>$2.3 M</td>
</tr>
</tbody>
</table>

PLACEMENT

- **UPLAND/OFFSHORE**: 19%
- **BEACH**: 15%
- **NEARSHORE**: 16%
- **ESTUARINE/RIVERINE**: 50%

Annual RSM Value

- NAV: $68.8 M
- FRM: $19.4 M
- OTHER: $16.0 M
- TOTAL: $104.2 M

Beneficial Use of Dredged Material: 50%
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
**DMMA OFFLOADING AND SEDIMENT EXCHANGE STUDY**

**DMMA: Dredged Material Management Area**

<table>
<thead>
<tr>
<th>Beneficial Re Use Opportunity</th>
<th>Excavation Costs ($/CY)</th>
<th>Transport Costs ($/CY)</th>
<th>Placement Costs ($/CY)</th>
<th>Mobilization/Demobilization/Other Associated Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upland Land Development (Truck)</td>
<td>$3-$5</td>
<td>$8-$32</td>
<td>$2-$5</td>
<td>$100,000 - $200,000</td>
</tr>
<tr>
<td>Beach Placement (Truck)</td>
<td>$3-$5</td>
<td>$8-$32</td>
<td>$2-$5</td>
<td>$100,000 - $200,000</td>
</tr>
<tr>
<td>Beach Placement (Pipeline)</td>
<td>$10-$30</td>
<td>$5-$33</td>
<td>$2-$5</td>
<td>$400,000 - $1,200,000</td>
</tr>
<tr>
<td>Upland Habitat Development (Truck)</td>
<td>$3-$5</td>
<td>$8-$32</td>
<td>$2-$5</td>
<td>$100,000 - $200,000</td>
</tr>
<tr>
<td>Wetland Habitat Development (Pipeline or Barge)</td>
<td>$10-$30</td>
<td>$5-$33</td>
<td>$30-$50</td>
<td>$300,000 - $1,700,000</td>
</tr>
<tr>
<td>Unconfined Aquatic Placement (Pipeline or Barge)</td>
<td>$10-$30</td>
<td>$5-$33</td>
<td>$2-$5</td>
<td>$300,000 - $1,200,000</td>
</tr>
<tr>
<td>Confined Aquatic Placement (Pipeline or Barge)</td>
<td>$10-$30</td>
<td>$5-$33</td>
<td>$10-$30</td>
<td>$300,000 - $1,200,000</td>
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<tr>
<td>Island Placement (Pipeline or Barge)</td>
<td>$10-$30</td>
<td>$5-$33</td>
<td>$25-$30</td>
<td>$300,000 - $1,200,000</td>
</tr>
</tbody>
</table>

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.

DMMA 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

https://data-sacs.opendata.arcgis.com/pages/sand
Offloading to generate future capacity >150kcy

Use of offloading material to create recreational park
LIFECYCLE EVALUATION: $5/CY VS. $25/CY
RESTORING HISTORICAL HABITATS
- Jacksonville Harbor, FL Salt Marsh
- Tampa Harbor, FL Egmont Key
- AIWW, GA Bird Islands

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

THIN LAYER PLACEMENT
- Marsh: Jekyll Creek, AIWW (GA)
- Subtidal: Mobile Harbor, AL; Biloxi Harbor, MS; Gulfport, MS

ENGINEERING WITH NATURE ATLAS
https://ewn.el.erdc.dren.mil/
- 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
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.
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)

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

St. Lucie County Offshore Sand Resources
Kings Bay DMMA Beneficial Uses
SAND RECOMMENDATIONS

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
CONTACT AND LINKS OF INTEREST

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https://rsm.usace.army.mil/
https://www.sad.usace.army.mil/RSM-RCX/
https://www.sad.usace.army.mil/SACS/
https://data-sacs.opendata.arcgis.com/pages/sand
http://sajgeo.saj.usace.army.mil/rsm-dash
https://data-sacs.opendata.arcgis.com/
https://ewn.el.erdc.dren.mil/

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THANK YOU
- Liability versus asset
- Early identification of RSM opportunities
- Collaboration with stakeholders
$6 MILLION IN ANNUAL RSM VALUE

- Brookley Dredge Hole fill
- Gaillard Island
  - Marsh creation
  - Biodegradable 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