

MEMORANDUM FOR RECORD

SUBJECT: Minutes from the Regional Sediment Management Technical Working Group Meeting, August 25-26, 1999

1. The concept of Regional Sediment Management (RSM) and the U.S. Army Corps of Engineers' (USACE) role in such an initiative was a product of the 67th meeting of the Coastal Engineering Research Board (CERB) held in Fort Lauderdale, FL in May 1998. As a result of the CERB meeting, Mobile District volunteered to initiate a demonstration which would cover the region from St. Joseph Bay, Florida, to the west end of Dauphin Island, Alabama. The proposed region encompasses 135 miles of shoreline in Florida and 60 miles in Alabama including 8 State parks, the Gulf Islands National Seashore, Eglin Air Force Base, and Tyndall Air Force Base. Also included are five Federal navigation projects (Panama City Entrance, East Pass and Pensacola Pass in Florida, Perdido Pass on the Florida/Alabama border, and Mobile Bay Entrance in Alabama). An in-house team from Mobile District's Planning, Operations, and Engineering Divisions was established to develop the demonstration process. A follow-up workshop held in February 1999 initiated discussions concerning the applicability and need for management of coastal sediments, i.e. sandy material dredged from coastal navigation projects/material used in beach nourishment projects, on a geophysical basis rather than a geopolitical basis. The workshop also established the objectives to guide the RSM demonstration program, which are as follows:

- Improvement of economic performance by linking projects;
- Development of new engineering techniques to optimize/conservate sediment;
- Determination of bureaucratic obstacles which have to be overcome; and
- Management in concert with the environment.

2. As a continuation of the initiative established by the previous activities, a Regional Sediment Management Technical Working Group (TWG) meeting for the northern Gulf of Mexico was hosted by the Mobile District, which met on August 25-26, 1999. On the 25th, interested group members were invited to visit the Dredge *Newport* and were briefed on the post-Georges dredging operation and placement of sediment along on Mobile Bay ebb shoal. The following day, the TWG met at the International Trade Center in Mobile. Those who volunteered their involvement at the February 1999 workshop were invited and attendance included agencies of the States of Alabama and Florida, key Federal agencies, and local academia that have identified a stake in regional sediment management. The agenda and a list of attendees are included in Enclosures 1 and 2 respectively. Moderator, Susan Rees of the Mobile District, introduced the meeting with opening remarks and statement of objectives. The purpose of the technical meeting was to formulate definitive objectives for each sub-region, develop plans toward reaching these objectives, and address the needs and constraints requiring the attention of the TWG. Another primary objective was to formulate recommendations concerning the direction of the RSM initiative to be presented at the 70th Coastal Engineering Research Board (CERB) meeting scheduled for October 26-27 1999 at the Dauphin Island Sea Lab.

3. Presentations and technical discussions of ongoing studies pertinent to regional management along the northern Gulf of Mexico were provided by representatives from the Engineering Research and Development Center (ERDC, formerly WES), Coastal Hydraulic Laboratory (ERDC-CHL), Mobile District, Florida Department of Environmental Regulation (FLDEP) and are summarized below. Visual materials used for the presentations are included in Attachment 3.

a. Sediment Budget. Linda Lillycrop and Andy Morang gave a presentation and lead discussion on the initial Regional Sediment Budget: St. Joseph Bay, FL to Dauphin Island, AL. Because the COE often focuses on individual projects rather than taking a regional approach to project impacts and coordination, development of a sediment budget over the entire demonstration region has been initiated. Ongoing development of the sediment budget will assist in maintaining a regional focus throughout the project.

The Sediment Budget Analysis System (SBAS), under development through the Coastal Inlets Research Program, is being applied to develop the sediment budget for the demonstration area. SBAS is a PC based system used to formulate sediment budgets for multiple inlets and adjacent beaches. The system was designed to organize the user's workspace and organization of sediment budget alternatives. SBAS formulates a sediment budget by allowing the user to create a series of cells and arrows representing sources and sinks that characterize the conceptual budget. Values are then assigned to the various components of the budget topology, and the system automatically formulates and substitutes quantities into the sediment budget equation. Emphasis on balancing of individual cells within the budget is a central property of SBAS, therefore, color-coding indicates whether a cell is balanced or at a loss or gain. Alternatives such as time periods, boundary conditions, or modifications to assumptions may be evaluated.

The initial sediment budget was developed and input to SBAS based on data obtained through available sources. The budget revealed there are areas of high, medium, and low confidence in the obtained data, and that many areas are lacking in data. Presently, there is high confidence in the Pensacola Pass, East Pass, and Mexico Beach data, medium confidence in the data for St. Joseph Spit and the area east of Panama City, and low confidence in the Panama City Inlet data. Areas that lack data are Mobile Bay Entrance, Perdido Pass, and areas between the inlets. In depth research to obtain available data for those areas lacking data and those areas with low and medium confidence levels is required. Those areas with high confidence levels should be reevaluated throughout the sediment budget development process.

b. Joan Pope spoke about the DOER Nearshore Mixed Sediment mound project. Under the USACE Dredging Operations and Environmental Research (DOER) Program, the US Army Engineer Research and Development Center and the US Army Engineer District, Mobile, are jointly conducting a research effort to evaluate dredging and placement properties of mixed sediments, improve and validate the erosion and transport algorithms in the Long-Term FATE numerical model, and evaluate the use of mixed sediments as a source for beach nourishment. Placing mixed sediments in the nearshore zone may result in dispersion of the fines while the sand incorporates into the littoral system potentially providing sand to nourish the shoreline.

The Mobile District provided the opportunity to construct a mixed sediment dredged material mound offshore of Mobile Bay, AL. Material was bucket dredged from Mobile River, at the north end of the bay, and transported by barge scows to the placement site. Approximately

350,000 cy of material were dredged and disposed from October through November 1998. Resulting mound peaks were 7-9 ft in height with slopes of 1:50.

Sediment samples collected pre- and post-placement and 6-months later. Preliminary sediment sampling suggested that the material was 50% sand, however, post-placement sampling determined a very fine-grained material. Barge positioning was collected throughout placement to determine how mound was formed. Data may be used to validate Multiple Dump FATE numerical model for this type of material. Bathymetric surveys collected pre- and post-construction and about every 3-months following construction. Deployed a probe to measure change in mound density with time; however, a vessel snagged the cable and probe is no longer usable. Density change and erodability tests now being conducted in laboratory. Water level and non-directional wave gages were deployed to collect data for wave hindcast validation. Wave hindcast and transformation techniques will be used to predict wave conditions at various locations at the site. A bottom mounted Acoustic Doppler Profiler was deployed to collect tidal, wave, and storm currents.

Data collected are presently being used to modify LTFATE algorithms for cohesive materials, evaluate changes in geotechnical properties of pre- and post-placement material, analyze sediment and bathymetric changes in study area. From initial analysis, the mound has changed very little since placement. Present Mobile Bar Channel disposal operation may interfere with this effort. Upon completion of the ongoing disposal operation, an evaluation will be conducted to determine necessary adjustments to the study.

c. Pat Langan and Linda Lillycrop presented the monitoring effort being conducted for the Mobile Harbor Entrance/Dauphin Island Post-Georges Down-drift Placement. Approximately 3-million cy of new work and maintenance material are being dredged from the Mobile Bar Channel and disposed in the adjacent Sand Island Beneficial Use Area. Dredging began on May 5, 1999 and completion is scheduled for mid-September 1999. The disposal area will be monitored to determine changes in hydrodynamic processes and evaluate sediment transport and deposition processes and dynamics at the mouth of Mobile Bay in the vicinity of the ebb shoal. The ebb shoal is large and impacts the evolution of Sand Island and affects the eastern end of Dauphin Island. Of particular interest is to determine how sediment moves around the ebb shoal and affects the adjacent barrier islands and navigation channel shoaling. Components of this study will provide design and implementation guidance for monitoring programs to investigate the fate of dredged material and evaluate sediment transport pathways. Procedures, field techniques, and data analysis tools identified and developed through this study may be applied to future studies in the area. Study findings will help develop hypotheses on the processes active along this coast.

Pre- and post-placement monitoring include dredge positioning throughout the dredging and disposal operation and the collection and analysis of pre- and post placement sediment samples, pre- and post placement multibeam bathymetric surveys, and post-placement Acoustic Doppler Current Profiler (ADCP) surveys within the placement area and adjacent channel. Additional data collected in the area as part of the DOER Nearshore Mixed Sediment Mound study includes a wave gage, bottom mounted ADCP current meter, and several multibeam surveys of bathymetry in the vicinity of the mound constructed in December 1998. These data will provide fixed near continuous wave and current data in the area and additional coverage of bathymetric change. Characterization of sediment disposal and movement with time as well as the hydrodynamic

processes of the area will be conducted through analysis of collected data. Post-placement monitoring will be conducted for two years. Since storms are a major agent in sediment movement, additional surveys and sediment sampling will be conducted after a major storm has impacted the area.

d. Paden Woodruff of the FLDEP discussed the state of beach management throughout Florida's shorelines. Results of their efforts indicate that the State has 325 miles of critically eroding coastline. To address this and other important coastal issues, the State of Florida has allocated millions of dollars in an effort to develop a proactive approach to management of this valuable natural resource. The management effort includes storm recovery plans and identification of sand sources for rebuilding dunes and beaches following such events. Also included is the development of inlet management plans.

Also discussed is the use of a geographic information system to analyze Florida's coastal processes and manage data as part of the Coast of Florida Erosion and Storm Effects Study. The study summarizes the impacts of Hurricanes Earl and Georges to the Florida Panhandle coastline and consequently provides a strategic plan for recovery of damaged coastal resources, which includes implementation both remedial and long-term sediment management of the area. Two tasks have been identified that are important to post-hurricane recovery plans, identification of suitable sand sources and development of a coastal storm response plan.

Florida has developed a Strategic Beach Management Plan that defines regions based on geomorphology rather than political boundaries. The plan incorporates a system approach to coastal management and identifies area-wide needs in addition to the management strategies already in place. Such efforts already underway by the State of Florida may be of valuable assistance to the TWG in developing regional coastal needs, sources of data and information, and identification of data deficiencies.

4. Further technical discussions identified various needs and constraints that the TWG should address in order to meet the objectives of the RSM program. The most prominent program needs include identifying sources of funding and better coordination between Federal, State, and local agencies pertaining to policy, data collection and monitoring programs, and formulation of management procedures. Other identified program needs range from determining specific data requirements and technologies, project monitoring modifications, to incentives towards improved effectiveness of regional management. A detailed list of the program needs as established by the TWG and recorded on the meeting flip charts is included in Attachment 4.

Major constraints that were identified by the TWG pertained to inconsistencies between the Florida and Alabama coastal management practices. Problems did not necessarily exist at the state line but more of a lack of communication between the two states concerning beach activities. The lack of communication may be attributed to little or no involvement of the State of Alabama in beach management versus total involvement by Florida in such issues, which in turn creates a lack of an overall beach management plan for the AL/FL region.

5. The development of objectives for various sites throughout the demonstration area was addressed by the TWG. These sites include Perdido Pass, Mobile Harbor/Dauphin Island, Panama City, East Pass, and Mobile Harbor. Specific comments for each site as recorded during

the TWG meeting on the flip charts are included in Attachment 4. The best use of sand and investigation of current placement options was the primary recommendation by the TWG for all the sites within the RSM demonstration area. Jetties and navigation channels associated with navigation projects, such as those included in the proposed region, act to interrupt the natural transport of sand within the littoral system. Some of the possible solutions recommended for consideration that may alleviate the littoral problems include sand bypassing, beach nourishment, and effective placement of dredged material within the littoral zone (littoral zone vs. direct beach placement vs. upland location). Other issues that should be considered are identification of emergency sand needs and the relationship of the existing problems to ongoing nourishment studies.

Another important goal identified from discussions of the various sites is the understanding of sediment transport mechanisms and processes for each site as well as the entire region, including identifying how much material has been dredged, where has it been placed, and what are the impacts on the adjacent areas. Understanding sediment transport pathways will aid in determining the most effective placement and to provide maximum benefits to the adjacent areas. Information from ongoing monitoring efforts will play an important role and should be continued and expanded to include larger areas. Attaining such an understanding will allow the modification of existing project plans and/or development of new management plans for existing projects. Other recommended data collection includes long-term wave climate data to support the ongoing sediment budget study and towards understanding storm impacts on both a local and regional scale.

In support of a better understanding of these issues, Alabama Department of Economic and Community Affairs (ADECA) is planning to fund the University of South Alabama for the development of an Inlet Management Plan (IMP) for Perdido Pass. The USACE expressed an interest in contributing towards this effort. Regardless of the ongoing activities at these sites, the TWG recommended taking measures to generate increased involvement of private property owners and other agencies such as the USAF.

6. Post hurricane recovery efforts would be an important component of a regional management plan. As stated earlier, FLDEP has already been involved in the development of storm recovery activities that include developing storm response plans, identifying suitable sand sources, and rebuilding and stabilizing dune fields and beach berms. The TWG recognizes that the RMS program can directly benefit from State of Florida experiences.

7. The TWG concluded with discussions as to what direction the RSM initiative should take from here. Specific projects that the TWG felt deserved attention as part of the RSM initiative includes the development of management plans for East Pass and Perdido Pass inlets. As discussed earlier, ADECA has already committed to provide funding to USA to develop an IMP for Perdido Pass. USACE also expressed an interest in contributing funding toward that effort. Monitoring at Panama City Beach and analysis of existing data should continue as well as investigations into using Apalachicola River sand as a potential source of material for littoral placement in that area

The TWG strongly recommended the continuation of the regional sediment budget with interagency support provided by Mobile District, ERD/CHL, FLDEP, and USA. Direction was given by the TWG to identify funding needs, data requirements and needs, and develop a

schedule. It would be beneficial for all parties involved to cost-share towards the sediment budget study. An important part of the sediment budget is the acquisition of regional wave conditions related to transport processes. The NOAA Data Buoy Center (NDBC) was identified as a potential source for this information. A representative from the NDBC confirmed that they could provide this information providing that the type of data be identified and what measurements can be collected and provided by NDBC. Identification of the wave requirements will be the responsibility of ERD/WES. More inshore gauges would also be beneficial if funding were available.

The TWG concluded that a RSM initiative for northern Gulf of Mexico would be beneficial. The TWG recommendation to the 70th Coastal Engineering Research Board (CERB) meeting is to continue the RSM initiative. Upon approval of requested funding, initial efforts supporting the program should include baselining the proposed demonstration area using airborne lidar and other appropriate technologies, continuing and expanding monitoring for the Mobile Harbor Entrance/Dauphin Island Post-Georges Down-drift Placement program, continuing work on the regional sediment budget, and producing Inlet Management Plans, beginning with the Perdido Pass Inlet.

REGIONAL SEDIMENT MANAGEMENT INITIATIVE

Technical Working Group Meeting Agenda

August 25-26, 1999

Mobile, Alabama

August 25, 1999 - **Field Trip to Hopper Dredge Newport

(Site Visit: Post-Georges Downdrift Placement)

- 1100 Depart Fairfield Inn for Dauphin Island (Gov't Vans)
- 1200 - 1245 Dauphin Island Sea Lab
- Lunch/Orientation/Meeting Purpose
- 1245 Depart Dauphin Island for Dredge Newport
- On Board Briefing of Post-Georges Downdrift Placement
- 1545 Depart Dredge Newport
- 1630 Depart Dauphin Island
- 1730 Arrive Mobile (Fairfield Inn)

** Inclement Weather Plan – Window Tour Dauphin Island or
Tour of Estuarium (\$5.00 fee)

August 26, 1999 - Technical Working Group Meeting:

International Trade Club, Downtown Mobile
Killian Room - 1st floor

| Time | Topic | Speaker |
|-------------|---|------------------|
| 0800 – 0815 | Welcome and Introductions | Rees |
| 0815 - 0830 | Initial Regional Sediment Budget St. Joseph Bay, FL to Dauphin Island, AL | Lillicrop/Morang |
| 0830 - 0845 | DOER Mixed Sediment Mound | Pope |
| 0845 – 0900 | Status: Mobile Harbor Entrance/Dauphin Island Post-Georges Down-drift Placement | Langan/Lillicrop |
| 0900 - 1000 | Develop Objectives for Remaining Sites Storm Recovery Plan for FL Panhandle Beaches East Pass/Eglin | Woodruff |
| 1000 - 1015 | Break | |
| 1015 – 1115 | Develop Objectives for Remaining Sites Perdido Pass Sediment Budget/Assessment Panama City Harbor/Beaches | |
| 1115 – 1130 | Develop Objectives for Remaining Sites (Con't) Refine Objectives for Mobile Harbor/Dauphin Island | |
| 1130- 1200 | Develop Next Step and Action Items Summary and Adjourn | |

Regional Sediment Management Technical Working Group Meeting List of Attendees

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|--------------------|-------------------------|-------------------------|----------------------|
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Initial Regional Sediment Budget
St. Joseph Bay, FL to Dauphin Island, AL

Lilycrop/Morang

DOER Mixed Sediment Mound

Pope

Status: Mobile Harbor Entrance/Dauphin Island
Post-Georges Down-drift Placement

Langan/Lillycrop

Regional Sediment Management Technical Working Group Meeting Flip Chart Notes

Needs

1. Sediment budget funding
2. Sediment budget data needs
3. OB&S - \$200K
 - state wide sediment budget
 - data gap areas
 - inlets and passes pretty well known
4. Need consistency/commonality of assumptions etc.
5. Inlet management plans of Perdido and Mobile
6. Involve two CZM programs
7. Expand ADCP to the west
8. Expand ADCP frequency
9. Coordinate data collection efforts
 - better communication, scopes, and scheduling
10. Coordinate state wide monitoring program
 - SHOALS component, concern with scheduling problems
 - won't work everywhere
 - identify other methods and technologies to fill gaps
11. Add Bruce Taylor to RSM tech. team (East Pass element)
12. Add Bob Dean and/or CERB members to RSM team
13. Beach database available for FL
14. May need to expand monitoring of PCB to west of Phillips Island
15. Relationship between PCB and borrow sites ("hot spots")
16. Ensure that PCB monitoring data are analyzed
 - interpretation between beach and inlet
17. Effect of storm water outfalls on sediment budget
18. Incentives for improved efficiencies
 - improved technologies
 - increased cost sharing

Constraints

1. Lack of communication between states in past on beach activities
 - problems are not in the state line
2. FINANCIAL: funds required
3. Lack of overall beach management plan for AL/FL region
4. No AL involvement in beach management vs. FL involvement
 - need to establish economic importance to state (AL)
5. Crisis response t management
6. Ownership issues – customary public use. Get information to AL State Lands Division

7. Authority feasibility study
 - Noriego Pt
 - study of Mobile inlet, past history
8. Ecological vs. physical resource management
9. Dredging equipment – availability and contracting restrictions

Perdido Pass

1. Littoral site problems – location
2. Develop expanded plan
3. Esthetic problems
4. Involve private property owners
 - state activities
5. Sand by-pass system
6. Emergency sand needs
7. Littoral zone vs. direct beach placement vs. upland
8. Relationship to new “Perdido Key” beach nourishment study
9. Downdrift stress due to sand trapping by jetties
10. ADECA funded inlet management plan (USA)

Mobile Harbor/Dauphin Island

1. Mixed sediment analysis
2. Determine efficiency/effect - material placement on ebb tidal shoals
3. Develop project modification plan
4. Dauphin Island Beach management plan
5. Extend ADCP surveys
6. Determine transport mechanisms for inlet
 - sediment budget
 - expand east-west
7. Need to know where placed sands go
8. How much has been dredged and where has it been placed
 - impact on Sand/Pelican Island
 - impact on ebb tidal delta elevation
9. Long term wave climate
10. Storm impacts

Panama City

1. Best use of sand – O&M
2. Management Plan – navigation and beach projects
 - section 111 – needs to be completed
 - analysis of monitoring data
3. Shoaling quantities/frequency
 - relationship to renourishment schedule
4. Investigate current placement options
 - post Opal placement

- Gator Lake protection
- 5. Impact on Phillips Inlet from beach nourishment
 - investigate management options – pipes to control water level

East Pass

1. Inlet Management Plan
2. Include USAF as partner
3. Joint effort Governors Official
 - SAD to get USAF as partner- MUST
4. Private landowners involved – MUST
5. Inadequate protection provided by USAF property to Hwy 98
6. USCG possible partner
7. Noriego Point – “future” design/use
8. Section 107 to be included (Small Navigation Projects)

Mobile Harbor

1. Role of aerial shoals, etc.
2. Need to look at Fort Morgan
3. Impact of Mobile Pass/freshwater flows
4. Impact of 1890’s shore protection
5. Groin field on south side of Dauphin Island

Post Hurricane Recovery - Woodruff

1. Identify suitable sand sources
2. Develop storm response plan
3. Sea oats planting guide specs
4. Address beach berm as well as dune field
5. Pensacola/Inlet Beach project
 - need sand
 - look at budget schedules
 - combine projects
6. Identify other potential projects

Where do we go from here?

1. Address East Pass management
2. Perdido Pass Inlet Management Plan
3. Regional sediment budget
 - Scott, Linda, Paden, Andy
 - four party agreement/cost sharing
 - funding needs/schedule/data needs
4. Regional wave conditions related to transport processes
 - NOAA data essential, identify what measurements can be collected and provided by NBDC (WES-POC)
 - more inshore gauges beneficial
5. PCB monitoring data analysis

6. Apalahicola River – sand source for beach activities
- new area