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NATIONAL REGIONAL SEDIMENT MANAGEMENT DEMONSTRATION

DISTRICT: SAM

PROGRAM: NORTHERN GULF OF MEXICO REGIONAL SEDIMENT MANAGEMENT DEMONSTRATION PROGRAM

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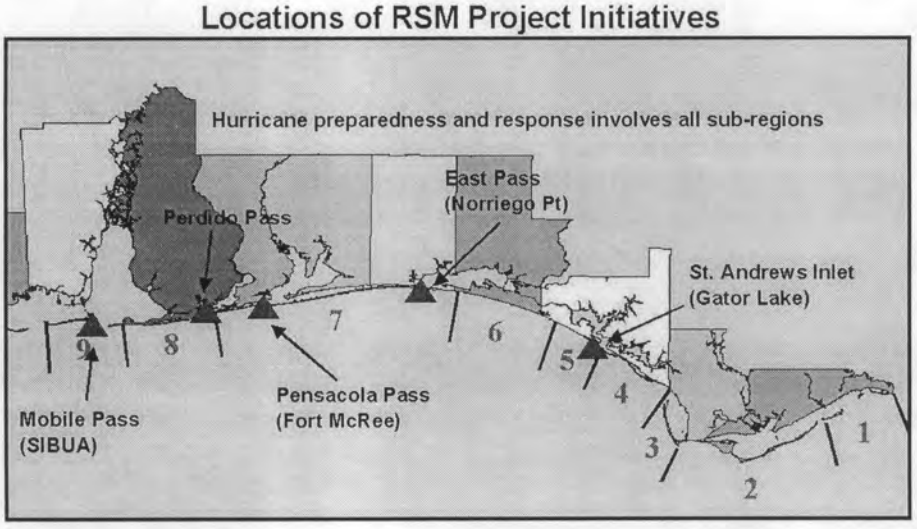
PROGRAM GOALS: The goal of the Northern Mexico Regional Sediment Management Demonstration Program is to change the paradigm of project specific management focusing on a regional approach in which the US Army Corps of Engineers (USACE) in cooperation with other levels of government would stop managing projects and begin "managing the sand." The objectives of the demonstration program are:

- Implement Regional Sediment Management Practices
- Improve Economic Performance by Linking Projects;
- Development of New Engineering Techniques to Optimize/Conserve Sediment;
- Determine Bureaucratic Obstacles to Regional Sediment Management; and Manage in Concert with the Environment.

Figure 1. Location of the RSM demonstration area, sub-regions, and initiatives



DESCRIPTIO N OF REGION: The RSM the demonstration area established to represent the Northern Gulf of Mexico region (Figure 1) encompasses approximately 245-miles of coastal shoreline along the northern Gulf of Mexico bounded to the east by the Mobile District boundary at St. Marks River in the Florida panhandle and to the west by the western end

of Dauphin Island in Alabama. The RSM program will include future expansion into the state of Mississippi of which the exact area has not yet been fully defined. Included within the region are nine Federal projects, eight State parks, the Gulf Islands National Seashore, three military installations, and various other state and local projects. The demonstration region was divided into nine sub-regions based on coastal processes and geomorphic characteristics. The sub-regions identified in the Florida panhandle are coincident with the Florida Department of Environmental Protection's sub-regions defined in their Strategic Beach Management Plan for the Panhandle Gulf Coast Region. Individual projects were subsequently identified within each sub-region for the purpose of defining project initiatives.

DEMONSTRATION INITIATIVES:

There are many projects at various levels throughout the RSM demonstration area, each having its associated problems and management issues. It must be realized that not all of the projects and issues can be dealt with simultaneously and that the RSM process is an ongoing management program hat will take years to implement on a regional level. A main focus toward implementing the RSM goals and objectives is to identify and prioritize those projects and associated issues that can be addressed in a timely manner. In doing so, many of the primary issues and concerns can be quickly solved allowing for a rapid realization of regional management benefits. The experience gained from these initiatives can then be extended to other projects throughout the region and so on. Listed below with their locations illustrated in Figure1 are six primary initiatives that have been identified by the TWG:

Mobile Pass (Sand Island Beneficial Use Area) - In the past O&M requirements and logistics dictated placement of dredged material from the Mobile Pass navigation bar channel outside the limits of littoral processes. Disposal of the material in such locations removes it from the local littoral system. Keeping the dredged material in the littoral zone requires placement in a location where natural processes are able to move the material to the adjacent downdrift shorelines. However, the Bay entrance channel, ebb tidal shoal (bar), adjacent shorelines, and all other components are all part of a large complex system that has potential impacts to the evolution of Sand Island and 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. Understanding of this process is incomplete. Alternative placement of dredged material from the bar channel requires investigation and monitoring to determine optimum placement for the return to the littoral system.

Perdido Pass - Since 1971 over 5.2 million cubic yards of sediment has been dredged from the navigation channels at Perdido Pass. Traditionally, most of this material has been placed at six disposal sites in and around the Pass. The problem lies in that much of the sandy material is slow to return to the littoral system. Some of the dredged material stockpiled west of the west jetty is being mined by locals for hurricane restoration, which

is also removed from the littoral zone. Placement of the dredged material further downdrift raises other potential problems such as private property issues and attaining easements and right-of-ways required for equipment access. Not allowing the material to be bypassed downdrift could have potential impacts to beaches further to the west or downdrift.

Pensacola Harbor (Fort McRae) - As part of maintaining navigable waterways in the vicinity of Pensacola Pass, the USACE conducts periodic dredging of the GIWW. Some of the dredged material is stockpiled on Fort McRae which is a 40 acre diked upland site created on an island in the mouth of Big Lagoon near the eastern end of Perdido Key. The disposed material appears to be of beach quality sand, however, disposal at this location does not allow the material to disburse into the local littoral system. Such material can be of benefit to the adjacent beaches of Santa Rosa Island and Perdido Key for shoreline stabilization as well as preservation of critical habitat. Use of the stockpiled sand for beach replenishment would require investigations as to the ownership of the sand and what funding sources are available to transport the material where it is needed.

East Pass (Norriego Point) - The Inlet Management Plan (IMP) for East Pass adopted by the FLDEP and the City of Destin recommends downdrift bypassing of approximately 80,000 cy of sand per year. This would require placing dredged material from the navigation channels in nearshore zone or directly on the downdrift beaches, which is the property of the USAF. Under the current maintenance practices much of the material dredged from the navigation channels is being placed on Norriego Point for stabilization, which does not allow for satisfying the recommended bypassing requirements. If the material was available for placement downdrift of the pass, the Corps does have formal authorization from Eglin AFB to place the material their property. If an alternative for shoreline stabilization at Norriego Point was implemented and the proper permissions obtained from Eglin AFB, the inlet bypassing requirements recommended by the IMP could be met. However, it is anticipated that transporting the sand downdrift would require the use of additional pipelines, which would increase the cost of the maintenance dredging operations. The use of other alternatives for protecting Norriego Point may also affect the easement currently held by the Corps.

St. Andrews Inlet (Gator Lake) - Periodic maintenance dredging of the St. Andrews Inlet navigation project is conducted by USACE. Traditionally, most of the beach suitable dredged material (84,000 cy/yr) is bypassed to the western downdrift beaches. However, some of the material (39,000 cy/yr) is placed along the western interior shoreline of the inlet fronting Gator Lake. The material is placed at this location to prevent the inlet from breaching into the environmentally sensitive freshwater habitat. Material placed along the Gator Lake shoreline does not return to the littoral system. Alternative techniques for protecting Gator Lake would allow more beach quality material to be available for bypassing to the downdrift beaches.

Hurricane Preparedness/Response - Increasing development and population of coastal

regions along the northern Gulf of Mexico necessitates a need for storm preparedness as well as rapid damage assessment and response. Increased storm activity will, sooner or later, have devastating effects to the highly developed and populated coastal areas throughout the RSM Demonstration region. Rapid post-storm damage assessment of severely impacted areas is necessary to expedite recovery operations such as emergency repairs to beaches, navigation channels, and coastal structures.

UNIQUE ASPECTS OF THE STUDY: Implementation of the RSM program will result in the modification of procedures on how the Mobile District manages coastal projects. The program will develop and implement management tools that have never before been accomplished on a regional scale. Such tools will include a working regional sediment budget, calibrated regional prediction modeling system, regional data management and GIS, implementation of regional management practices, and a regional sediment management plan. The RSM program will also identify and assess benefits of managing coastal projects at the regional scale. The benefits analysis will not only consider the typical economic benefits used to evaluate the Federal objectives, but will also consider aesthetic and environmental benefits as well. The program will bring together numerous Federal, state, and local agencies, universities, and privates entities toward focusing on implementing the RSM concept.

PARTNERS: To steer the program towards the goals and objectives, a RSM Technical Working Group (TWG) was established with participants from Alabama and Florida, key Federal agencies, and local academia. The purpose of the TWG is to assist in the development and direction of the RSM Program and to identify and oversee implementation of program initiatives. Members of the TWG included:

- Florida Dept. of Environmental Protection (FDEP)
- USACE, Engineering Research Center (ERDC)
- USACE, Jacksonville District (SAJ)
- NOAA/National Data Buoy Center (NDBC)
- Geological Survey of Alabama (GSA)
- Florida Geological Survey (FGS)
- US Geological Survey (USGS)
- US Air Force - Eglin AFB
- US Navy
- Gulf Islands National Seashore
- University of Florida
- University of South Alabama
- Federal Emergency Management Agency (FEMA)
- Alabama Emergency Management Agency (AEMA)
- Minerals Management Service (MMS)
- Alabama Dept. of Conservation and Natural Resources (ADCNR)
- Alabama Dept. of Environmental Management (ADEM)
- Alabama Coastal Erosion Task Force (ACETF)
- South Alabama Regional Planning Commission (SARPC)

FEDERAL CONGRESSIONAL DISTRICT REPRESENTATIVES AND SENTATORS:

Alabama
- Sen. Richard Shelby
- Sen. Jeff Sessions
- Rep. Sonny Callahan

Florida
- Sen. Bob Graham
- Sen. Connie Mack

Mississippi
- Sen. Thad Cockran
- Sen. Trent Lott
- Rep. Gene Taylor

STATUS: The Northern Gulf of Mexico RSM program is entering into its second year. Three Technical Working Group meetings were held to provide program direction. Two CERB briefings were also given to inform the board of program status and obtain additional direction. Numerous other accomplishments have been achieved including a historical data search; a regional baseline consisting of hydrographic and topographic data, beach profile data, and aerial photography; development of regional Geographic Information System (GIS) by the Mobile District's Spatial Data Branch to manage all of the data and information; initiation of a regional sediment budget to determine regional sediment migration and pathways; sub-regional workshops to inform and solicit involvement of local interests; and submittal of a proposal to investigate the benefits of using IKONOS digital satellite imagery as a regional data collection tool. Also underway is the identification of economic and environmental benefits as a result of regional sediment management.

where is this report?

PRODUCTS:

TITLE	SCH	RESCHD	COMP
CERB Briefings	9910		9910
	0006		0006
Historical Data and Information	0109		ONGOING
Regional Baseline	0009		0009
Regional Data Management and GIS	0009		ONGOING
Sub-regional Workshops	0008		0008
Regional Sediment Management Plan	0009	0101	
Working Regional Sediment Budget	0109		
Calibrated Regional Prediction System	0209		

Implementation of Regional Management Practices 0209

FUNDING (K$):

	FY00	FY01	FY02	FY03	FY04	TOTAL
TOTAL	1000	800	1500	0	0	2600

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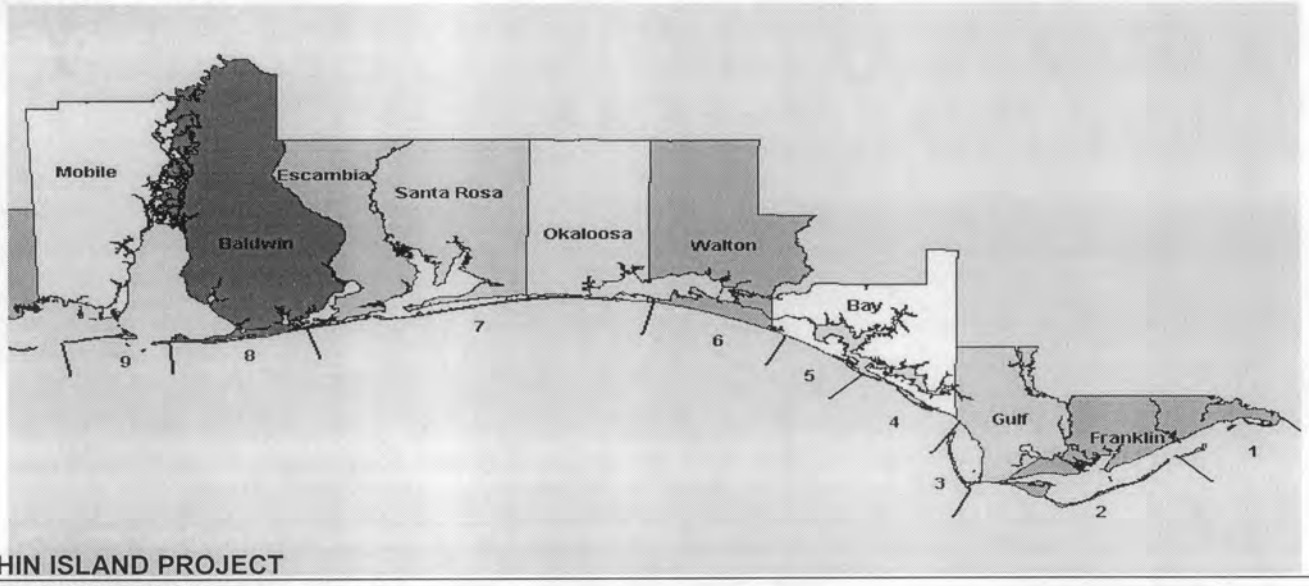
MANAGEMENT DEMO AREA AND SUB-REGIONS



DAUPHIN ISLAND PROJECT STUDY MATRIX

Study Task Items	Regional Sediment Management	DIPOA[1]	OTHER	MH GRR[2]	Section 103[2]	Section 111[2]
Surveys and Maps						
Hydrographic survey of channel (acoustic impedance survey data)		x		x		x
Historic			x			
Future			ongoing			
Beach Profiles - Mobile Co.	Collected (00) need QC, additional needed funding not yet identified	x		x	x	x
Beach Profiles - Baldwin Co.	Collected (00) need QC, additional needed funding not yet identified	x		x	x	x
Ebb Shoal Survey	additional needed funding not yet identified	x	complete (00)	x		x
Topographic Shoreline Survey Daupin Island	Collected (00), not processed, additional needed funding not yet identified	x		x	x	x
Topographic Shoreline Survey Fort Morgan	Collected (00), not processed, additional needed funding not yet identified	x		x		x
Monitoring SIBUA						
Multibeam surveys	Collected (99/00), Planned (01)	x	x	x		x
ADCP transects	Collected (00), Planned (01)	x	x	x		x
Sediment sampling	Collected (99/00), Planned (01)	x	x	x		x
Hydrology and Hydraulic Studies						
Historical Conditions						
Historical Information	Ongoing	x			x	x
Historical survey data	Ongoing	x			x	x
Historical shoreline trends	Ongoing	x			x	x
Calculate volumetric changes	Ongoing	x			x	x
Historical sediment budget	Ongoing	x			x	x
Historical sediment pathways/patterns	Ongoing	x			x	x
Evaluate historical changes to ebb shoal/entrance channel		x				x
Evaluate historical feature/berm migration		x				x
Evaluate historical migration of barrier island chain		x				x
Historical Accident Reports	NA	NA		x		
Historical aerial photography	Obtained, not rectified	x			x	x

Maintenance Dredging Records	x	x	inhouse, needs compiling	x		x
Historical Conditions - Tides, Currents, Waves, Winds, storm parameters.	Ongoing	x			x	x
Existing Conditions						
Existing Physical Conditions - Tides, Currents, Waves, Winds, surge	Ongoing	x		x	x	x
Existing shoreline	Ongoing	x		x	x	x
Existing sediment budget	Ongoing	x		x	x	x
Navigation Channel Characteristics	NA	NA?		x		x
Existing Maintenance Dredging Requirements	x	x	Complete	x		x
Design Vessel	NA	NA		x		
Pipeline and Cable Permits	NA	NA		x		
Quantities of materials to be dredged	NA	NA		x	x	x
Existing conditions aerial photography	Collected by state of AL, not rectified, not inhouse	x		x	x	x
Existing subsurface data and surveys	NA	NA		x	x	x
Develop basemap	Ongoing	x		x	x	x
ADCP currents through mobile pass	x	x		x	x	x
Collect directional wave information	Have offshore gage, nearshore required, funding not identified	x		x	x	x
Sediment sampling ebb delta, nearshore, beaches	x	x		x	x	x
W/Project Improved						
Navigation channels, bends, maneuvering and berthing areas at several alternative depths and/or widths	NA	NA		x		
Maintenance Dredging Requirements	NA	NA		x		
Quantities of beach fill required	NA	NA			x	x
Engineering design analysis	NA	NA		x		
Structural Design and Analysis	NA	NA		x		x
Sediment budget based on alternatives	NA	NA		x	x	x
Design Drawings (plans and cross section)	NA	NA		x		
Geotechnical Analyses						
Stratigraphic profiles and x-sections boring of marine subsurface soil	NA	NA		x		
characteristics (Plan Sheets)	NA	NA		x		
Soil Laboratory Tests	NA	NA		x		
Slope Stability Analysis with Changing Depths in Channel	NA	NA		x		
Fill material requirements for disposal area dikes	NA	NA		x		
Contour Maps of extent of contaminated areas (depth, lateral)	NA	NA		x		
Hydrodynamic Modeling (MH)						
Water Surface Data				x		
Velocity Data				x		
Salinity Patterns Data	NA	NA		x		
Shoaling Problems of Area	NA	NA		x		
Sedimentation Processes		x		x		
Hydrodynamic Modeling (Coastal)						
Sediment Processes	x	x		x	x	x

SBEACH		x			x	x
STWAVE	Sub-region level only	x		Project	Project	Project
GENESIS	Sub-region level only	x		Project	Project	Project
ADCIRC	Sub-region level only	x		Project	Project	Project
Ship Simulation Study	NA	NA		x		
Environmental Hydrodynamic Model	NA	NA		x	x	x
Water Quality, Sediment, Salinity	NA	NA		x	x	x
Resource Inventory Report	NA	NA		x	x	x
Mitigation Analysis Report	NA	NA		x	x	x
Section 404(b)(1)	NA	NA		x	x	x
Sediment Suitability	NA	NA		x	x	x
401 State Water Quality Certification	NA	NA		x	x	x
Section 103	NA	NA		x	x	x
Coastal Zone Management Consistency Determination Report	NA	NA		x	x	x

[1] **Tasks that SAM feels are relevant to law suit**

Elements included in Project Study Plans