

FACT SHEET

CESAM-OP-OE
Bradley/3319
9 Nov 90

UNDERWATER BERM CONSTRUCTION, MOBILE HARBOR, ALABAMA

• General Hatch, as Civil Works Director, approved a national demonstration project to assess and document potential physical and fishery benefits associated with underwater berms as a beneficial uses application of dredged material. It was agreed that the demonstration be conducted by the Mobile District because of its record of responding innovatively to the environmental challenges brought about by NEPA and the CWA, and its long-standing and productive association with the applied R&D community.

• Mobile District proposed construction of a feeder berm in relatively shallow water and a stable berm in deeper water in the Gulf south of Dauphin Island.

• The feeder berm was constructed in Feb 87 with maintenance material from routine hopper dredging of the Bar Channel. The berm is intended to provide a supplemental sand source to Sand and Dauphin Islands.

- Berm was constructed in 18-19 feet of water, 1 mile long, 6 feet high.

- Located about 1 mile southeast of Sand Island, and about 4 miles from Dauphin Island and west of the Ship Channel.

- Monitoring includes bathymetric surveys, wave gauge, and deployment of seabed drifters to track movement of sand.

• Results of two years of monitoring indicate gradual movement of sand westward and toward shore. Highest percentage of seabed drifters have been retrieved on Dauphin Island indicating favorable current movement. Monitoring is scheduled through December 1990.

- Monitoring costs funded through O&M program.

• The stable berm was constructed as the disposal plan for Mobile Harbor, Phase I Deepening.

- Center of berm is located about 3.5 miles from Sand Island; 5 miles from Dauphin Island.

- Berm is the largest underwater feature ever constructed.

20 feet high in about 45 feet of water.

Disposal Drop Zone: 1,000 feet by 9,000 feet long.

- Monitoring is being conducted on a test section of the berm to determine whether the feature remains stable, contributes to wave energy dissipation, and/or provides an improved fisheries habitat. EPA participated on the design of the monitoring plan. Monitoring techniques include: bathymetric, subbottom profile and side scan sonar surveys, sediment samples, wave, wind and barometric pressure gauges, and fisheries investigations.
 - Baseline surveying was conducted during October 1987. Construction of the test section began in February 1988. Test section was completed in August 1988. First monitoring survey was conducted in August 1988. Stable berm construction completed in May 1990. Monitoring will continue through FY-91 and possible longer for fisheries and bathymetry.
 - Monitoring costs as a requirement of ocean dump regulations funded under Const Gen; additional costs for beneficial uses monitoring funded under O&M.
 - Monitoring Participants:
 - Mobile District
 - WES-CERC
 - WES-EL
 - NOAA - Mississippi Labs
 - Mississippi - Alabama Sea Grant
 - State of Alabama
 - Private contractors
 - Monitoring Results:
 - Berm was constructed to specifications.
 - Berm is stable.
 - Berm appears to be serving as fish attractant; however, too early to draw definite conclusions.
 - Berm is serving to reduce long period wave (i.e., storm waves) energy. Preliminary estimates show a reduction of as much as 75% of energy generated by these waves.
 - Supplemental Activities:
 - DRP Work Unit One utilized Mobile Berm disposal operations during plume tracking activities in late CY-89.
 - Have received unsolicited proposal from USA Engineering Faculty to study ability of bottom currents to move material deposited in berms.
- Results of monitoring programs for both berms are expected to have nationwide application. In addition to the potential physical, and fishery (stable berm) benefits that might accrue, if proven feasible, application of the concept could result in significant cost savings by reducing haul distances for future new work and maintenance projects. Due to the relative close proximity of the channel to the designated disposal area, it is recognized that Mobile Harbor does not offer the large-scale cost savings that appear possible at other locations; however, some savings will be realized.

FIGURE 1

LOCATION OF FEEDER AND STABLE BERMS
MOBILE HARBOR, ALABAMA

