

JAN 26 1999

CESAM-OP-TN (1110-2-1150a)

MEMORANDUM FOR CDR, USAED (CESAD-CO-O), ATLANTA, GA 30335-6801

SUBJECT: Advanced Maintenance Dredging Mobile Bar Channel, Mobile, Alabama

1. Reference ER 1130-2-520.
2. Additional advanced maintenance dredging is proposed for the Mobile Bar Channel in order to maintain the channel in the most efficient and cost effective manner. The proposed advanced maintenance would be utilized to widen the east side of the bar channel by 100 feet over a distance of 12,000 feet in the location shown on the enclosed drawings.
3. The Mobile Bar Channel is currently authorized to a depth of 55 feet by 700 feet. This portion of the project has been constructed and is currently maintained to a depth of 47 feet and width of 600 feet, along with 2 feet of advanced maintenance approved by previous documentation dated October, 1996.
4. Historically the project has been maintained by hopper dredges with the material removed and disposed of into a deep water Gulf disposal area. The current dredging methodology used to maintain this portion of the channel is comprised of utilizing rental hopper dredges which are primarily contracted for bay channel work. This method of maintenance has been determined to be the most economical means to maintain the channel given the small volume of material per dredging cycle. Typically, material accumulates on the eastern side of the bar channel on a cycle of 1 to 2 years. This volume varies considerably but would range from 100,000 to 400,000 cubic yards per dredging event. This small volume of material develops in an area of the channel known as the Dixie Bar where the longshore currents move sand from a massive offshore bar into the channel from the eastern side. As the material moves into the channel from the east, the channel width is restricted, effecting the need to dredge. This volume of material that migrates into the channel does not warrant a separate contract action to remove and for this reason, the bay channel rental hopper contracts are utilized for this effort.

5. On 28 September, 1998, HURRICANE GEORGES struck the Alabama-Mississippi coastline and drastically impacted the area channels. As a result of the hurricane, the Dixie Bar shoal moved approximately 2 million cubic yards of material into the Mobile Bar Channel. In response to the large shoaling in the channel, the hopper dredge EAGLE I, which was under contract at the time, was mobilized to the bar to remove sufficient shoaling to allow the channel to re-open. Later the Corps dredge WHEELER was also used to dredge the channel. The efforts of these two dredges restored the dimensions of the channel to approximately 46 X 500 feet. The hopper dredges worked from the center of the channel, eastward, into the encroaching Dixie Bar, until the bank of material, which would not flow to the dredge, became too steep for a large hopper dredge to work safely. At this point, dredging efforts by hopper dredges on the bar channel were halted until a more efficient and economical plan for removal of the remaining material could be effected. The cost for removal of the material by the two hopper dredges was approximately \$2.00 per cubic yard.

6. After considerable analysis, the Mobile District determined that the only economical means to move the large volume of material safely from the channel was by utilizing a pipeline dredge, disposing of the material into the Sand Island Beneficial Use Area, on the west side of the channel. The large volume of material would dilute the high cost of mobilizing a large pipeline dredge to the area and cost estimates revealed an even more significant savings as the volume of material increased.

7. We determined that if advanced maintenance width dredging occurred, east of the channel into the Dixie Bar shoal, the dredging cycle could be reduced significantly. Also, this additional advance maintenance would act as a trap to capture material before it could migrate into the channel impacting traffic. The quantity of material removed per dredging cycle would increase from the average annual requirement of 200,000 cubic yards to approximately 1 million cubic yards every 5 years. This large quantity of material will justify bar channel maintenance contracts utilizing pipeline dredges.

8. ER 1130-2-520, requires that we no longer utilize any advanced maintenance, without permission. With approval of the requested advanced maintenance, the dredging frequency of the bar channel can be lengthened to once every 5 years at a savings estimated to be approximately \$.50 per cubic yard as shown by the enclosed cost estimates.

9. Request that Mobile District be granted the additional advanced maintenance as described above for the Mobile Bar Channel. Your prompt attention to this matter is requested as the impacts to the channel remain and a solicitation is currently being developed to address the channel shoals.

FOR THE COMMANDER:

Patrick A. McFarlane
Acting Chief
Operations Division

Enclosure

Dyess/ *[Signature]*
Bradley/ *[Signature]*
Warren/ *[Signature]*
Fuller/ *[Signature]*
McFarlane/ *[Signature]*

Mobile Bar Channel 29.

Dredging Cost for the Mobile Bar Channel, Mobile Harbor, Alabama				
Cost are with historic advanced maintenance of 2 feet as previously described				
Estimated current shoaling rate = 200,000 cubic yards annually				
Prior to dredging, shoals will develop from 4 to 10 feet on the eastern side of the channel.				
Cost is based on a rental hopper dredge from Mobile Bay contract dredging the bar every 2 years.				
Item	Quantity	Unit	Unit Cost	Cost
Dredging Contract				
Mobilization and Demob	1	job	LS	\$0
Dredging	400,000	cubic yard	\$2.00	\$800,000
Subtotal				\$800,000
Contingencies				\$80,000
Subtotal				\$880,000
E&D/surveys				\$2,000
S&I				\$14,000
Total Cost with current level of advanced maintenance per dredging event				\$896,000

Cost are with traditional 2 feet of advanced maintenance plus 100' widener				
Initial contract will require removal of 3,334,000 cubic yards from the channel and the widener. Approx. 1,000,000 cubic yards of this material is in the widener.				
Maintenance will require removal of approximately 1,000,000 cu yds every 5 years.				
It is assumed that a pipeline dredge will perform the work however small hoppers could get the job. Maintenance work could be performed by pipeline or any hopper as the shoal will be smaller allowing the larger hoppers sufficient water depths to perform the work.				
Item	Quantity	Unit	Unit Cost	Cost
Initial dredging of Advanced Maintenance Widener				
Mobilization and Demob *	1	job	LS	\$0
Dredging	1,000,000	cubic yard	\$1.19	\$1,190,000
Subtotal				\$1,190,000
Contingencies				\$178,500
Subtotal				\$1,368,500
E&D/surveys				\$20,000
S&I				\$36,000
Total Cost for construction of advanced maintenance widener				\$1,424,500
* Mobilization is not applicable for initial construction as a pipeline dredge must be mobilized to perform channel maintenance with or without the widener.				
Maintenance dredging of Advanced Maintenance Widener				
Mobilization and Demob	1	job	LS	\$400,000
Dredging	1,000,000	cubic yard	\$1.19	\$1,190,000
Subtotal				\$1,590,000
Contingencies				\$238,500
Subtotal				\$1,828,500
E&D/surveys				\$20,000
S&I				\$24,000
Total Cost for maintenance of advanced maintenance widener				\$1,872,500

	Without Advance	With Advance		
	Maintenance	Maintenance		
	Widener	Widener		
Year 1	\$896,000	\$1,424,500		
Year 2				
Year 3	\$896,000			
Year 4				
Year 5	\$896,000			
Year 6		\$1,872,500		
Year 7	\$896,000			
Year 8				
Year 9	\$896,000			
Year 10				
	\$4,480,000	\$3,297,000		
Potential savings over 10 years		\$1,183,000		
Potential annual savings		\$118,300		

