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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION

JUN 19 1981


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Lieutenant General J. K. Morris
Chief of Engineers
Corps of Engineers
Department of the Army
Washington, D.C.

Dear General Morris:

We recently completed a survey of the Corps of Engineers' operation and maintenance activities on the Intracoastal Waterways (Code [illegible]). The survey was performed at the Corps' district offices in Norfolk, Virginia; Wilmington, North Carolina, and New Orleans, Louisiana. We also had discussions with Corps headquarters officials in Washington, D.C.

We identified the following three areas in the [illegible] that might [illegible] to the Corps:

--Consolidation of small dredging jobs to obtain lower contract rates;

--More extensive dredging, where feasible, to reduce both long term cost and dredging frequency; and

--More efficient scheduling of Corps-owned sidecasting dredges.

These areas are not included in our follow-on review of the operation of Corps facilities on the Atlantic Intracoastal Waterway (Code [illegible]). Although we have not attempted to validate the expected savings, this letter brings our observations on these matters [illegible] your attention for any action or follow-up you feel is warranted.

BACKGROUND

In carrying out its responsibility for constructing, operating, maintaining federal rivers and harbor projects, the Corps each year [illegible] the capabilities of active projects to serve current navigation requirements. Following such determinations, requests are made for authorizations

and funds to perform maintenance dredging. The actual volume of waterway traffic and the availability of funds govern the extent of [illegible]. According to Corps headquarters officials, Corps-wide expenditures for maintenance dredging amounted to [illegible] for fiscal year [illegible].

[illegible]

Corps' policy requires that dredging be done in the most economical manner. One [illegible] available to the Corps, which may afford [illegible] is [illegible] all dredging jobs into larger contracts. [illegible] district [illegible] stated that larger dredging contracts usually [illegible] in lower costs per cubic yard. The contractors view the [illegible] [illegible] because they can better [illegible] [illegible] and [illegible] expensive set up costs.

[illegible] districts we visited tend to place different [illegible] [illegible]. For instance, the Wilmington District [illegible] [illegible] [illegible] district [illegible] contracts under [illegible] [illegible] district [illegible]

[illegible]

[illegible] that [illegible] [illegible] cubic [illegible]

[illegible] cubic yards per [illegible] per cubic yard [illegible] [illegible] cubic yard [illegible] total [illegible] cost to be $ [illegible] for [illegible] per cubic yard [illegible] contracts offer a lower cubic yard rate [illegible]

[illegible] contracts [illegible] cubic yard rate [illegible] rate for

Norfolk's 21 contracts which exceeded 300,000 cubic yards. The analysis, on page 4, illustrates (1) the decreased per cubic yard rate of the larger contracts and (2) the potential for a decrease in costs of $1.3 million for the other 29 contracts. Similar savings may be possible if contracts are combined in the future.

District officials agreed that the principle of consolidation has merit but stated it is not always feasible because of contingencies or funding constraints. Moreover, it is not always economical to combine dredging contracts at sites which require different types of dredging equipment or which are not in close proximity. These officials also told us that consolidating contracts would not exclude any contractor because of size and that the contractors prefer the larger contracts.

Although we do not advocate any particular volume as ideal and we realize that some dredging contracts may not be feasibly combined, our survey indicates that the practice of combining dredging contracts, whenever possible, could be cost-beneficial to the Government and should be considered in preparing contract bid packages.

MORE EXTENSIVE DREDGING

While Corps' policy provides for "advance maintenance" dredging, particularly in fast shoaling areas, our survey indicated that some districts do not use this practice to achieve savings. The principle of more extensive dredging (deeper, wider, and to more distances) in some areas requiring repetitive dredging could increase the time intervals between dredgings. We realize, however, that some areas refill quickly regardless of the extensiveness of the dredging. Nevertheless, Corps district officials stated that, where feasible, "advance maintenance" dredging offers the following types of benefit and savings:

--reduce mobilization and demobilization costs for dredges;

--encourage better contract prices because of larger dredging volume, as discussed previously; and

--decrease Corps' efforts in locating and acquiring disposal sites, and costs for studies associated with dredging and disposing of dredged materials.

Equipment mobilization and demobilization costs may be quite extensive. These expenses include moving, setting up, and dismantling equipment. Between 1968 and 1976, the Norfolk District administered 51

Cubic yards dredged	Contracts	Actual: Volume (cu. yds.)	Actual: Contract cost	Actual: Cost per cu. yd.	Ideal cu. yds. rate (note a)	Ideal cost	Potential decrease in costs
50,000 or less	9	247,361	$ 405,526	$1.60	$.63	$ 155,837	$ 249,689
50,001 - 100,000	7	559,306	715,219	1.41	.63	352,733	363,486
100,001 - 150,000	6	700,934	601,206	.92	.63	441,588	159,618
150,001 - 300,000	7	1,477,302	1,469,094	.96	.63	931,074	538,976
Totals	29	2,984,903	$3,221,105	$1.08	$.63	$1,881,236	$1,341,669

a/Based on average cost of Norfolk's 21 contracts which exceeded 300,000 cubic yards during the period.

contracts with equipment mobilization and demobilization costs totaling $1,283,000. Theoretically each dredging interval which could be avoided could result in savings of about $25,000 (based on Norfolk's average cost for mobilization and demobilization).

Environmental costs associated with dredging is another area in which savings may be realized. In the past, the Corps has frequently dredged many waterway sections to the required depth without extensive advance maintenance dredging. This practice minimized the quantity of material requiring disposal and limited the amount of research efforts needed to satisfy environmental requirements. Corps district officials told us that the costs for research to comply with environmental requirements are currently about the same for small as well as large dredging jobs. Increasing the interval between dredging jobs through more extensive dredging may reduce some of the costs. The environmental costs for the Corps' South Atlantic Division totaled about $3 million for fiscal years 1974-76 for operation and maintenance projects.

The Norfolk District currently has a project underway which may serve as an example of this principle. This project involves extensive advance maintenance dredging for several shoaling areas on the Pungo River. The river has many isolated shoaling areas along its length which have different fill rates. Some of these areas have required dredging about once every 3 years. In the current project Norfolk is studying whether the more extensive dredging could prolong the dredging interval to 6 or 7 years and thus result in long-term savings.

We noted many areas that require frequent repetitive dredging. Within the Norfolk District, there are 12 areas which are dredged every 1 to 5 years. The following table summarizes the number of frequently dredged areas on the Intracoastal Waterway for the Wilmington District.

Areas requiring repetitive dredging	Dredging Intervals (months)
4	6
9	12
10	24
11	36
10	48
1	60

In addition, the Wilmington District dredges 28 other areas not on the Intracoastal Waterway as frequently as every 6 months. If the Wilmington District were able to perform advance maintenance dredging on some of the above areas requiring repetitive dredging, long-term savings may result.

Corps officials at the districts we visited agreed that more extensive dredging should prolong the dredging interval and would result in reduced maintenance costs. However, they pointed out that further implementation of this principle would necessitate a higher initial outlay of funds. This initial outlay should be compared to the long-term savings possible when considering more extensive dredging.

UTILIZATION OF CORPS DREDGES

We reported to the Congress in May 1972 on selected aspects of the Corps' dredging activities and problems. One issue in the report was the low utilization of nonhopper dredges owned and operated by the Corps. The report noted that the sidecasting dredge Schweizer was transferred to the Wilmington District from New Orleans to improve its utilization. Our survey at Wilmington showed that this dredge is still not being used extensively. The Wilmington District operates another sidecasting dredge, the Merritt. Both dredges are generally operated on a one-shift, 40-hour week basis and cost over $700,000 annually. The following summarizes their productive use:

Fiscal year	Percentage of time used productively for working (note a)	
	Schweizer	Merritt
1973	-	14.0
1974	8.8	17.2
1975	7.6	14.6

a/Based on 24-hour day, 365 days per year. Nonproductive time for the dredges consists primarily of lay time (nonwork hours), loss due to natural elements, transferring between jobs, traveling to and from wharf or anchorage, and minor operating repairs.

During fiscal years 1973-75, the Merritt spent about 1,100 hours traveling between North Carolina, Florida, South Carolina, and New Jersey. While the Merritt spends some time dredging emergency shoals, improved scheduling might reduce transit time if areas could be dredged in geographical sequence. A typical dredging operational pattern for the Merritt is shown below.

Dredging period	Location	Approximate distance traveled
Sept. 3-30, 1972	New River Inlet, N.C.	Start
Oct. 1-29	Barden Inlet, N.C.	North-65 miles
Oct. 30 - Nov. 4	Wilmington, N.C.	South-130 miles
Nov. 5 - Dec. 12	St. Lucie Inlet, Fla.	South-625 miles
Dec. 13 - Jan. 6	Core Creek, N.C.	North-715 miles
Jan. 7 - Feb. 1	Oregon Inlet, N.C.	North-125 miles
Feb. 2 - Mar. 10	New River Inlet, N.C.	South-125 miles
Mar. 11-27	Ponce de Leon Inlet, Fla.	South-525 miles
Mar. 28 - May 12	Murrells Inlet, S.C.	North-[illegible] miles
May 13 - June 10, 1973	New Bern, N.C.	North-[illegible] miles
TOTAL MILES		2,[illegible]

From the above table, it appears that opportunities may exist to plan dredging patterns more realistically. Although these sites and others have a predictable need for dredging, we recognize that some sites have to be dredged at different times than scheduled because of emergencies.

A Corps official stated that the Schweizer is primarily used to dredge only two areas annually because its deeper draft restricts its efficient usage to fewer areas. This contributes to the Schweizer's lower utilization. The areas the Schweizer dredges are more subject to storms which also causes lower utilization.

Despite the apparent low productivity of these dredges, we were told that they are required for sites which can only be dredged by sidecasters, and that private contractors do not have this type of dredge. Nevertheless, more efficient dredging patterns might increase the productive time of these dredges. Increased operating hours (beyond 40 hours a week) offers another possibility for increasing the productive time.

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In summary, we believe that potential may exist for reducing operation and maintenance costs through consolidating dredging jobs into fewer and larger contracts, making more extensive use of advance maintenance dredging, and improving utilization of Corps-owned dredges. We would appreciate any comments you may have on these areas in particular regard to (1) whether you believe they offer potential for savings, (2) an estimate of the amount of Corps-wide savings, if any, and (3) any actions or plans you may have to pursue these matters further.

We are sending copies of this report to the Secretary of Defense; ~~Secretary of the Army; and the Chief, U.S. Army Audit Agency.~~

We appreciate the cooperation received during our survey and we will be glad to meet with you or your representatives to discuss these matters. If you have any questions, please call Mr. Carl Bannerman of my office at [illegible].

Sincerely yours,

[illegible]
Assistant Director