



Report to the Chairman, Subcommittee
on Transportation and Infrastructure,
Committee on Environment and Public
Works, U.S. Senate

September 2015

ARMY CORPS OF ENGINEERS

Action Needed to Ensure the Quality of Maintenance Dredging Contract Cost Data

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE SEP 2015		2. REPORT TYPE		3. DATES COVERED 00-00-2015 to 00-00-2015	
4. TITLE AND SUBTITLE Army Corps of Engineers: Action Needed to Ensure the Quality of Maintenance Dredging Contract Cost Data				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Government Accountability Office, 441 G Street NW, Washington, DC, 20548				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

GAO Highlights

Highlights of [GAO-15-810](#), a report to the Chairman, Subcommittee on Transportation and Infrastructure, Committee on Environment and Public Works, U.S. Senate

Why GAO Did This Study

The Corps maintains the navigation for thousands of miles of waterways and hundreds of ports of harbors. The Corps conducts maintenance dredging primarily under contract with private industry to remove sediment from waterways. Maintenance dredging is often cyclical in nature, with dredging needed annually or every few years.

GAO was asked to review Corps' maintenance dredging contract costs. This report examines (1) agency data available about the total costs of maintenance dredging contracts, and factors that contributed to any changes, during fiscal years 2004 through 2013, and (2) approaches the Corps reports it has undertaken to manage maintenance dredging contract costs

GAO reviewed laws, regulations, and Corps guidance; analyzed cost data from the Corps' dredging database for fiscal years 2004-2013 and assessed the reliability of these data; reviewed a nongeneralizable sample of four projects selected to reflect geographic variation and a range of contract sizes; reviewed documentation on approaches to manage costs; and interviewed Corps officials from headquarters, divisions, and districts (selected for geographic variation and range of dredging work) and dredging industry stakeholders.

What GAO Recommends

GAO recommends that the Corps require that its district offices establish systematic quality controls to regularly verify the completeness and accuracy of maintenance dredging contract data. The Department of Defense concurred with the recommendation.

View [GAO-15-810](#). For more information, contact Anne-Marie Fennell at (202) 512-3841 or fennella@gao.gov.

September 2015

ARMY CORPS OF ENGINEERS

Action Needed to Ensure the Quality of Maintenance Dredging Contract Cost Data

What GAO Found

Cost data in the U.S. Army Corps of Engineers' (Corps) dredging database are unreliable and, therefore, the total costs of maintenance dredging contracts during fiscal years 2004 through 2013 are unclear. In particular, about 19 percent (264 out of 1,405) of the contract records marked as "complete" did not contain information on the final contract costs or the actual quantity of material dredged. The Corps relies on cost data from its dredging database to assess trends in maintenance dredging contract costs over time, among other things, but its district offices do not have systematic quality control measures in place to ensure these data are complete and accurate. Federal internal control standards indicate that managers should maintain quality information, including accurate and complete operational and financial data, for the effective and efficient management of their operations. Without systematic quality controls at the district-office level to regularly verify the completeness and accuracy of their maintenance dredging contract data, the Corps risks undertaking analyses on incomplete information, and drawing conclusions about cost trends based on unreliable information.

Multiple factors likely contributed to changes in contract costs during fiscal years 2004 through 2013, according to Corps officials. Corps officials, as well as representatives from the dredging industry, told GAO that during this period they believed the cost of dredging had increased for many maintenance projects. However, Corps officials said that it is difficult to discern which factors may have led to specific cost increases for a particular contract given the many factors that influence the cost of a contract. Factors that Corps officials commonly cited as likely contributing to changes in contract costs over the 10-year period included the number of contractors available to bid on the work; fluctuations in the market prices for labor, fuel, and steel; and the costs for transporting dredged material to a placement site, with farther placement sites generally being more costly because of additional time, fuel, and equipment needed to transport the material.

Corps districts reported undertaking various approaches to manage maintenance dredging contract costs, largely on a project-by-project basis because of the unique nature of each project. For example, officials from 11 of 12 Corps district offices interviewed said they have combined work under one or more projects that had historically had separate contracts into a single contract to help manage costs. In combining contracts, Corps district officials estimated reducing total mobilization costs—the costs to transport dredge equipment—based on the need to mobilize dredge equipment once under a combined contract, instead of multiple times for individual contracts. For example, Corps officials estimated that combining dredge work across projects from several West Coast districts saved up to \$7 million annually in mobilization costs. Corp officials pointed out, however, that combining contracts may not always be feasible, such as when projects have time-sensitive dredging needs. Additionally, officials from a few district offices said that, in specifying the dredging requirements for a project, they may emphasize performance requirements and not necessarily the type of equipment needed to achieve those requirements, which may result in an increase in the number of contractors available to bid on the work and, therefore, more competitive bids.

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September 29, 2015

The Honorable David Vitter
Chairman
Subcommittee on Transportation and Infrastructure
Committee on Environment and Public Works
United States Senate

Dear Mr. Chairman:

With more than \$1.7 trillion of import and export cargo passing through U.S. waterways in 2013, maintaining the nation’s waterborne navigation system—including ports, harbors, and other waterways—is critical. The navigation mission of the U.S. Army Corps of Engineers (Corps), the world’s largest public engineering, design, and construction management agency, is to provide safe, reliable, efficient, effective and environmentally sustainable waterborne transportation systems for movement of commerce, national security needs, and recreation in the United States. Vessels known as dredges are used to remove sediment from waterways to construct or maintain navigation channels at depths and widths necessary for shipping. Many waterways need regular maintenance dredging because of ongoing accumulation of sediment. Since the late 1970s, the Corps has carried out most of its dredging under contract with private companies. Specifically, in 1978, legislation directed the Corps to contract with industry to conduct dredging—as industry demonstrated that it could perform the work at reasonable prices and in a timely manner—and to maintain a minimum fleet of federal vessels to diminish risks to navigation by performing urgent or emergency work, among other things.¹

According to Corps reports, overall expenditures on dredging-related activities over the last 10 years have increased, though the total amount of material dredged has decreased.² Specifically, for fiscal year 2004, the

¹Pub. L. No. 95-269 (1978). As of 2015, the Corps’ minimum fleet comprises 10 vessels of differing types of dredges. Dredging conducted by the Corps’ minimum fleet is not included in the scope of this review.

²Army Corps of Engineers, *The U.S. Waterway System, Transportation Facts & Information*, published from December 2005 through June 2015.

Corps reported spending about \$903 million on dredging-related activities, removing about 275 million cubic yards of material.³ By fiscal year 2013, the Corps reported spending about \$1 billion for the removal of about 197 million cubic yards of material.⁴ Dredging-related expenditures reported by the Corps included costs for all dredging activities related to maintenance dredging and dredging for the construction of new or expanding projects, such as for an additional shipping channel at a harbor. The Corps also reported that during fiscal years 2004 through 2013, maintenance dredging activities accounted for the majority of its dredging-related expenditures.

You asked us to examine the costs associated with Corps maintenance dredging contracts since fiscal year 2004. This report examines (1) agency data available about the total costs of maintenance dredging contracts, and factors that contributed to any changes, during fiscal years 2004 through 2013, and (2) approaches the Corps reports it has undertaken to manage maintenance dredging contract costs.

To conduct our work, we reviewed relevant laws, regulations, and Corps policy and guidance related to maintenance dredging. For both objectives, we conducted interviews with, and obtained documentation from, officials from Corps headquarters, 7 division offices, and 12 district offices (out of a total of 8 division and 38 district offices, respectively). We selected this nongeneralizable sample of Corps offices to represent various geographic regions and a range of maintenance dredging work carried out by the districts. We also interviewed officials from the Dredging Contractors of America, a national association for the dredging industry, as well as industry representatives from five dredging companies that participated in our interviews, about their views on factors that contributed to any changes in maintenance dredging contract costs

³Dollars reported have not been adjusted for inflation. Reported spending encompasses all dredging-related activities undertaken by the Corps and includes expenditures for, among other things, engineering and advance surveys to determine dredging needs at specific locations, work by Corps dredges, contract administration, and work by industry through contracts. Expenditure amounts were developed based on annual data requests from Corps headquarters to its division and district offices, according to Corps officials.

⁴This was the most recent information available from the U.S. Army Corps of Engineers in its report, *The U.S. Waterway System, Transportation Facts & Information*, published in June 2015.

and on contracting approaches the Corps has undertaken to manage contract costs.

To examine agency data available about the total costs of maintenance dredging contracts, and factors that contributed to any changes, during fiscal years 2004 through 2013, we reviewed data collected for those fiscal years from the Corps' dredging database, the Dredging Information System.⁵ To assess the reliability of the data elements needed to conduct our review—including final contract costs, actual quantity of material dredged, and other related contract information—we performed electronic testing of the data elements (such as looking for missing values or outliers), reviewed related documentation, and interviewed agency officials knowledgeable about the data. We concluded the data were not sufficiently reliable for the purposes of reporting information on total costs and quantities of maintenance dredging contracts.⁶ We also reviewed a nongeneralizable sample of four reoccurring maintenance dredging projects to determine factors that contributed to any changes in contract costs during the time period of our review.⁷ We selected the projects to reflect geographic variations and a range of contract sizes in terms of the total estimated cost of the contract and the total estimated quantity of material dredged. For each of the projects, we reviewed contract information and supporting documentation to identify key cost components and determine to the extent possible how, if at all, various cost components contributed to any changes in maintenance costs for contracts over the 10-year period of our review.

⁵We did not include data from fiscal year 2014 in the 10-year period we reviewed because, at the time of our review, data for all contracts for that fiscal year had not been entered into the dredging database.

⁶We also explored using other data to determine Corps maintenance dredging contract costs, but we were unable to use these data because complete information for the total costs of maintenance dredging contracts were not available from these sources. Appendix I provides additional information on our efforts to obtain the total costs of Corps maintenance dredging contracts from the Federal Procurement Data System-Next Generation, the Corps of Engineers Financial Management System, and the Corps Resident Management System (a system to manage construction contracts).

⁷According to data in the Corps' dredging database, the Corps completed 1,405 maintenance contracts during fiscal years 2004 through 2013, with an average of approximately 140 contracts undertaken annually; many of these contracts were for maintenance dredging projects reoccurring annually or every few years, according to Corps officials.

To examine approaches the Corps reports it has undertaken to manage maintenance dredging contract costs, we interviewed Corps headquarters, division, and district officials and asked officials to identify approaches they have taken. We also requested and reviewed supporting documentation from Corps offices when officials identified specific examples of approaches to manage costs. Information obtained from our interviews with Corps officials and industry representatives, and from the projects we reviewed, cannot be generalized to those officials, representatives, or maintenance projects we did not interview or review. However, we believe our interviews and review of a sample of projects provided important insights into factors that may have contributed to changes in contract costs over the 10-year period, as well as approaches the Corps has undertaken to manage maintenance dredging contract costs. Appendix I presents a more detailed description of our objectives, scope, and methodology.

We conducted this performance audit from June 2014 to September 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The Corps maintains the navigation for over 25,000 miles of inland and intracoastal waterways and channels and more than 900 ports and harbors across the United States. The accumulation of sediment in these waterways—known as shoaling—reduces navigable depth and width and, without dredging, may result in restrictions on vessels passing through the waterways. These restrictions often apply to the vessels' draft—the distance between the surface of the water and the bottom of the hull—which determines, in part, the minimum depth of water in which a vessel can safely navigate. Draft restrictions may result in delays and added costs as ships may need to off-load some of their cargo to reduce their draft, wait until high tide or until waterways are dredged, or sail into another port. These restrictions are imposed at times on various waterways throughout the United States due to shoaled conditions, which could disrupt the shipment or delivery of millions of dollars' worth of cargo, according to Corps documents and officials. Maintenance dredging needs across these waterways vary significantly, with the majority of dredging occurring along the Atlantic and Gulf Coasts, according to Corps officials.

A variety of dredge vessels and other supporting equipment are used for dredging, with variation in their sizes and capabilities, and the conditions under which they best perform. For example, mechanical dredges excavate and remove material by applying mechanical force to the material by means of an implement such as a bucket on the end of a cable suspended from a crane, and deposit the material on a barge for transportation to a placement site. Dustpan and cutterhead dredges, in contrast, are hydraulic dredges that use a pump and either a cutterhead or high-pressure water jets to erode material and remove it from the bottom of a waterway, and then transport the dredged material through a pipeline to a placement site. One of the largest dredge types, the hopper dredge, is a self-propelled ocean-going vessel that hydraulically dredges material and places it into the hold or “hopper” of the ship, where the material is stored while being transported to a placement site where the material may be released from the dredge into open water or pumped to a placement site.⁸ Dustpan and cutterhead dredges may work in shallower waterways and have the ability to maneuver in river traffic, whereas hopper dredges perform much of the dredging work in ports, harbors, and other coastal channels and waterways exposed to the ocean.

Corps headquarters and its 8 regional division offices generally provide guidance and policy oversight to 38 district offices located throughout the United States (see fig.1). District offices are generally responsible for managing dredging projects located within their district boundaries, including planning, awarding, and administering maintenance dredging contracts with industry.

⁸For more information on hopper dredging, see GAO, *Army Corps of Engineers: Actions Needed to Further Improve Management of Hopper Dredging*, [GAO-14-290](#) (Washington, D.C.: Apr. 10, 2014).

Figure 1: Locations of the U.S. Army Corps of Engineers' Division and District Offices



Sources: GAO representation of U.S. Army Corps of Engineers data; Map Resources (map). | GAO-15-810

The Corps owns and operates a small fleet of dredge vessels, but it relies mostly on contracts with industry for its maintenance dredging work. According to Corps officials, the Corps typically solicits fixed-price competitive bids from contractors. To help evaluate contractor bids, Corps district offices are to develop an independent government cost estimate for each contract solicitation. The estimates are to be developed using information on the costs of owning and operating dredges—such as acquisition, fuel, labor, and shipyard costs—along with the project information for which the dredging is needed—including the amount and type of material to be removed, the distance from the dredging site to a placement site, and other factors that affect productivity such as environmental requirements. In soliciting bids from contractors, Corps districts have most commonly used a sealed-bid process, resulting in a fixed-price contract between the Corps and the contractor, with the contract generally awarded to the lowest responsible bidder with a responsive bid that is no more than 25 percent above the government cost estimate.⁹ Corps officials noted that if the Corps uses a solicitation type other than sealed bidding, Corps districts generally have flexibility in determining the specific contract type to employ for their projects, and may choose other types, such as an indefinite delivery, indefinite quantity contract. An indefinite delivery, indefinite quantity contract is a type of delivery contract that provides for an indefinite quantity of supplies or services within stated limits, during a fixed period.

The basic cost components of a maintenance dredging contract generally include (1) mobilization of the dredge and related equipment to the dredging site; (2) utilization of the dredge and related equipment to conduct the dredging, as well as other project-specific activities required under the contract, such as environmental monitoring; (3) transport of the material to a placement site, which can include among others, open water placement sites, confined placement facilities, or beneficial use sites,

⁹In addition to being no more than 25 percent above the government cost estimate, under sealed bidding, bidders must be considered responsive and responsible in order to be awarded a contract. One element in making the responsibility determination is whether the bidder has the necessary production, construction, and technical equipment and facilities to perform the contract, or the ability to obtain them. When the Corps has not received any bids, or if all bids exceed the government cost estimate by more than 25 percent, the Corps may pursue different options, to the extent permitted by law, including negotiating with bidders to get the bid within an awardable range of the cost estimate; reviewing the cost estimate and revising it based on additional information, as appropriate; and performing the work itself if a government-owned dredge is available. Corps officials stated that the Corps may also rescope and readvertise the work.

such as for building a wetland or renourishing a beach; and (4) demobilization of the dredge and related equipment. Each dredging project is unique and a number of factors influence the cost of these components across projects, including the type and quantity of material to be dredged, allowable locations for placement of material, timing, environmental requirements, and the location and weather conditions where dredging occurs. Much of the maintenance dredging the Corps undertakes is cyclical in nature, with dredging needed annually or every few years, according to Corps officials.

A limited number of companies have conducted the majority of maintenance dredging contracted by the Corps. Industry data provided by the Dredging Contractors of America indicate that nationwide, during fiscal years 2004 through 2013, an average of about 50 companies were awarded one or more dredging contracts by the Corps annually, though over 50 percent of the contracts, on average, were awarded to 8 companies. According to Corps and industry information, the ownership and operating costs of dredges often require large capital outlays to cover fixed costs such as equipment, insurance, and depreciation, as well as variable costs such as payroll for crews, fuel, and equipment repairs and upgrades—and therefore it may be difficult for companies to quickly enter the dredging market.

Through its dredging database, the Corps maintains data on its dredging projects, including all maintenance contracts. Information in the database is used for a variety of purposes, including tracking anticipated and actual project scheduling information, and tracking information across contracts on anticipated and actual contract costs and quantities of material dredged. For each contract, the dredging database includes data elements to capture information on the project name, status, dredging location, government cost estimate, type of contract, type of dredge used, number of bidders, winning bidder, bid amounts, estimated quantities of material dredged, and final contract costs and actual quantities of material dredged after the contract is complete. The database also contains data elements for specific cost components, such as mobilization and demobilization costs, as well as data on the location and types of placement sites used. District offices are responsible for entering data into the database for the contracts they manage, and the database is overseen by Corps headquarters.

Corps Data on Total Maintenance Dredging Contract Costs Are Unreliable, but Corps Officials Cited Multiple Factors That Likely Contributed to Cost Changes

Cost data in the Corps' dredging database are unreliable and, therefore, the total costs of maintenance dredging contracts during fiscal years 2004 through 2013 are unclear, but Corps officials report that multiple factors likely contributed to cost changes during this period. The Corps relies on data from its dredging database for assessing trends in maintenance dredging contract costs over time, among other things, but we found that many of the records in the database did not contain information on final costs or actual quantities of material dredged. Corps headquarters officials said they review some data in the dredging database monthly and generally notify district offices when they identify errors or omissions, but corrections may not always be made by the districts. We found that Corps districts do not have systematic quality control measures in place to ensure the data are complete and accurate, but rather the district offices have taken various approaches to entering cost and cost-related data into the database. Through our interviews with Corps officials and review of a sample of projects, we found that multiple factors—such as the level of competition for contracts and the need to comply with environmental requirements—likely contributed to changes in maintenance dredging contract costs during the period of our review.

Corps Data on Maintenance Dredging Contract Costs Are Unreliable

The total cost of maintenance dredging contracts during fiscal years 2004 through 2013 are unclear because data in the dredging database are unreliable. Specifically, of the 1,405 contract records in the database that were marked as "complete," we found that about 19 percent (264 out of 1,405) did not contain information on the final contract costs or the actual quantity of material dredged.¹⁰ In addition, for those 1,141 contract records marked complete that had final contract cost and actual quantity information entered, we found instances where other related contract information was incomplete, including the following:

- About 20 percent (224 out of 1,141) of the records did not contain a contract number, contractor identification number, or contract award date, raising questions about the validity of these records overall.

¹⁰According to Corps officials, not all contracts are awarded based on quantities of material to be dredged and therefore, for some contracts, the quantity of material dredged may not be available because it is not relevant to contract terms and conditions. For example, under "plant rental" type contracts, the Corps may direct dredging activities at multiple locations within a channel or waterway, specifying the depth to be dredged, but not a specific amount of cubic yards.

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- About 7 percent (75 out of 1,141) of the records did not have costs for mobilization and demobilization specified, and it was not clear whether these cost components may have been entered into the database.

We also identified anomalies that raised questions about the accuracy of some of the cost and cost-related information in the database. Specifically, in analyzing the data to determine the cost per cubic yard of dredging during fiscal years 2004 through 2013, we found wide variation, with the cost per cubic yard ranging from \$0.03 to \$1,736, with an average cost of \$16.08 across the 1,141 records marked as complete and with final contract cost and actual quantity information. In comparison, through its analysis of dredging costs, the Corps has reported that, over this same period, the cost of maintenance dredging—which included work conducted by both Corps-owned dredges, as well as through contracts—was an average of \$4.12 per cubic yard.¹¹ In further examining the cost data in the dredging database, we identified several contract records that could contain incorrect information, potentially explaining the wide variation in the cost per cubic yard across the 10-year period and

¹¹Through its Navigation Data Center website (found at: <http://www.navigationdatacenter.us/dredge/ddcosts.htm>), the Corps provides an annual analysis of its dredging costs, including a breakout of the cost per cubic yard for maintenance dredging. According to Corps headquarters officials, these maintenance costs encompass all maintenance-related activities undertaken by the Corps—including expenditures for, among other things, engineering and advance surveys to determine dredging needs at specific locations, work by Corps dredges, contract administration, and work by industry through contracts—and are based on information provided by the division and district offices. We did not review the accuracy or reliability of these data. Rather, though the two data sets are not directly comparable because they contain different cost elements, we believe it is useful to present both data sets here for comparative purposes, given their similarity. We believe that the wide variation on the average cost per cubic yard for maintenance dredging between what the Corps reported through its Navigation Data Center website and what we found through our analysis of the Corp's dredging database data raises questions about the reliability of the information contained in the dredging database.

potentially skewing the average cost per cubic yard, including the following:¹²

- One contract record showed the Corps paying a final contract cost of almost \$1.1 million for about 3,900 cubic yards of material dredged, at a cost per cubic yard of \$282. Upon further review of notes contained within the database for the record, however, we found that the quantities listed in the record likely represented the number of hours the dredge operated, rather than cubic yards of material dredged.
- Another contract record indicated that the final contract cost was \$875,104 for 504 cubic yards of material dredged, or \$1,736 per cubic yard dredged—more than 400 times the average cost per cubic yards for other complete records in the database.
- One contract record indicated that a contractor bid \$1.1 million to dredge 2,258 cubic yards, at a cost of \$487 per cubic yard. The final contract cost entered, however, indicated that \$2,484 was paid for dredging 2,258 cubic yards of material, or about \$1.10 per cubic yard, calling into question the accuracy of the cost amounts entered for this record.

Corps headquarters officials said they have taken several steps to encourage the district offices to enter complete and accurate information into the dredging database, but they acknowledged that updates or corrections may not always be made by the district offices. The Corps' dredging database user guide provides detailed instructions for what information should be entered for each data element in the database at the different points along the contracts' development and execution. Corps headquarters officials told us that they run monthly database queries designed to test for errors and omissions across various data elements and that they may notify individual district offices via e-mail regarding incomplete information. Headquarters and division officials said

¹²We did not compare information entered into the dredging database with the actual contracts—which are located and maintained for a limited number of years at the district offices according to Corps officials—to assess the accuracy of the information in the database. Instead, in analyzing the information in the database, we identified anomalies that raised questions about the accuracy of the information contained within the database. For example, we identified 19 records where the cost of dredging on a per cubic yard basis was reported as more than \$100 or more, compared with about 90 percent of the records where the cost per cubic yard was less than \$25, raising questions about these records' accuracy.

that they also emphasize the importance of the data to districts before national and regional dredging meetings and send out e-mail reminders or contact district offices by phone asking them to ensure dredging data are updated before these meetings take place. Headquarters and division officials further explained, however, that it is the district offices that are responsible for entering and maintaining data in the dredging database for their respective contracts. Headquarters officials said they generally check to see if updates they request are made, but the officials emphasized that the responsibility for making updates resides with the district offices, and that updates may not always be made by the district offices.

In discussing the dredging database with Corps division and district officials, we found that the district offices have taken various approaches to entering cost and cost-related data into the database. The dredging database user guide specifies how contract-related information is to be entered, but the Corps does not have agency-wide guidance specifying steps the districts should take to verify and ensure the completeness and accuracy of the data.¹³ Officials from most of the 12 district offices we spoke with said that they assign one person to enter data into the dredging database and that having a single person enter all the data is an important quality control step and helps ensure that data are entered in a consistent manner. On the other hand, officials from 4 district offices said they have the data reviewed by someone else to verify the data's completeness and accuracy. In addition, officials from 5 of the 12 district offices we spoke with said that entering cost data into the database has not been a high priority because they use other systems or methods to maintain cost data for the contracts they manage. For example, officials from 4 district offices told us they maintain spreadsheets to track cost and other related information for the projects they manage in their district; according to these officials, these spreadsheets allow them to maintain detailed information in a more accessible and user-friendly manner than the information in the dredging database. Moreover, officials from 7 district offices told us that they primarily use the database for planning

¹³Some data elements in the dredging database (such as the type of dredge used in the contract or the status of the job) are "mandatory" whereby a value must be entered or the record will not save or update. Corps headquarters officials said that they would like to build additional automatic checks into the system, as well as develop a process to allow district offices to run a query that would identify missing or incomplete information, but officials did not specify a time frame for developing additional checks or such a process.

and scheduling upcoming dredging work, and thus entering scheduling information when preparing a solicitation for a contract may be a higher priority than entering in final costs and quantities when the contract is complete.

Corps headquarters officials said that, based on their observations of dredging database records, district offices have made improvements in entering information into the database over the last several years, but they acknowledged that some of the data may be of limited quality. Officials told us that having complete and accurate data in the database—including data on final contract costs and actual quantities of material dredged—is important for managing contract costs over time, and that they rely on data in the database to assess various trends. For example, officials stated that they utilize data from the dredging database to assess how the numbers of bids may be influencing the prices bid by contractors, how government cost estimates compare with bid prices, how final contract costs compare with government cost estimates or bid prices, and the extent to which there may be patterns or unexplained variations in the cost of dredging on a per cubic yard basis over time. One headquarters official further said that the Corps continuously looks for ways to increase competition for its maintenance dredging contracts and therefore seeks data to help understand factors affecting competition. For example, headquarters officials said they review scheduling data in the database on a weekly basis to try to help increase the number of contractors available to bid on upcoming work, which could in turn encourage lower contract bid prices. Federal internal control standards indicate that managers should maintain quality information, including accurate and complete operational and financial data, for the effective and efficient management of their operations.¹⁴ The Department of Defense's *Financial Management Regulation* also requires that relevant and reliable information related to program costs be provided to program managers so that management can use the information for decision making.¹⁵ Without systematic quality controls at the district-office level to regularly verify the completeness and accuracy of their maintenance dredging contract data, the Corps risks undertaking analyses on incomplete information, and may

¹⁴GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: November 1999).

¹⁵Department of Defense, *Financial Management Regulation*, Vol. 4, ch. 19, ¶¶ 190201, 190403(B).

be drawing conclusions about cost trends based on unreliable information. Furthermore, without complete information, the Corps may be missing opportunities to identify cost elements contributing to contract costs, changes in costs over time, or other factors important to the management of maintenance dredging contracts.

Corps Officials Cited Multiple Factors That Likely Contributed to Changes in Maintenance Dredging Contract Costs

Through our interviews with Corps officials and review of a sample of dredging projects, we found that multiple factors likely contributed to changes in contract costs during fiscal years 2004 through 2013. Corps officials across many of the headquarters, division, and district offices we spoke with, as well as representatives from the dredging industry, said that during this period they believed the cost of dredging had increased for many maintenance projects. Factors that Corps officials we interviewed commonly cited as likely contributing to changes in contract costs over the 10-year period of our review included the following:

- Weather conditions and other natural events, such as hurricanes, greatly influence the location, type, and volume of material that may need to be dredged from one dredging cycle to the next, which may affect the size and scope of the work and in turn the total cost of the contract.
- Federal funding available may affect the amount of dredging to be performed for particular projects, and reducing the scope of maintenance projects may contribute to higher costs on a per cubic yard basis for some contracts because dredging smaller volumes of material may result in less efficient use of dredge equipment given the fixed costs associated with maintaining and operating dredge equipment.
- Labor, fuel, and steel prices may represent a large portion of the cost to a contractor in conducting dredging, and fluctuations in the market prices for these costs may influence contractors' bids for contracts.
- Competition—the number of contractors available to bid on and conduct the work—may also affect bid prices and during times when there is a high demand for dredging, the number of contractors available to bid on work may be limited, which could in turn lead to higher bid prices.
- Material placement costs, which are influenced by nature of the material, the type of placement method used, and the location where

the material is placed, may affect contract costs with farther placement sites generally more costly because of additional time, fuel, and equipment needed to transport the material.

- Environmental requirements and dredging windows—requirements that specify the time of year when dredging may occur at a particular location—may affect contract costs such as by requiring the use of enhanced dredging equipment or other equipment, such as trawlers to monitor for sea turtles or other threatened or endangered species; restricting dredging to certain times of the year when contractor availability may be limited; or requiring contractors to conduct work during times of the year when conditions may be more severe, potentially making dredging operations more dangerous and less efficient.

In general, Corps officials we interviewed said it is difficult to discern which of these various factors may have led to specific cost increases for a particular contract. For example, officials from several districts we spoke with said that dredging windows have limited their ability to schedule work to maximize contractor availability, resulting in fewer bids and higher bid prices for some contracts. Additionally, some district officials told us that dredging windows have also led to dredging during times of the year when weather conditions have made dredging more dangerous or more difficult, increasing the risk to contractors, which in turn may have contributed to higher bid prices. Officials further explained, however, that though these factors likely influenced changes in contract costs, they could not determine by how much. However, in one instance, Corps officials identified how certain factors led to cost increases for a particular contract. Specifically, for one project we reviewed, contract costs rose when the traditional placement site reached capacity in 2011, and the new state-run placement site that the Corps began using levied a fee, on a per cubic yard basis, for material placed there. This fee added an average of about \$8 per cubic yard of material to the annual dredging contract starting in fiscal year 2012, resulting in an increase of more than \$2 million to the total cost of the contract that year.

Corps Districts Report Undertaking Various Approaches to Manage Contract Costs

Officials from Corps district offices we spoke with reported undertaking various approaches to manage maintenance dredging contract costs, largely on a project-by-project basis. Corps officials explained that, because each dredging project is unique, a one-size-fits-all approach for developing and executing contracts cannot be taken. Rather, district offices have the flexibility to manage their dredging contracts, including taking various approaches to manage costs. Several Corps officials noted that identifying approaches for managing their maintenance contracts has been especially important over the last several years because of increases in costs, as well as flat or reduced funding for some projects. We found that the district offices commonly cited approaches relating to combining contracts, using alternative contract types, and changing the specifications of the contract.

Corps officials from 11 of the 12 district offices we interviewed said that they have combined work under one or more projects that had historically had separate contracts into a single contract in an effort to manage costs. Combining contracts can result in reduced administrative, mobilization, and demobilization costs and, in some instances, a lower unit price per cubic yard, according to Corps officials. The officials explained that, in general, the larger the quantity of material included in a contract, the lower the price may be on a per cubic yard basis because contractors are able to spread out their fixed costs. For example, since fiscal year 2012, Corps districts on the West Coast have combined some of their hopper dredging work into one regional contract. Contractors with hopper dredges primarily work on the East and Gulf Coasts and mobilizing a hopper dredge from those areas for dredging on the West Coast can be costly given the distance the dredge must travel, according to Corps officials. Officials estimated that combining the hopper dredge work across projects from several West Coast districts saved up to \$7 million annually by having a single hopper dredge mobilize and demobilize once instead of multiple dredges for individual contracts. In another district on the East Coast, in fiscal year 2013, the district combined into one contract the dredging for a coastal storm damage reduction project with a nearby maintenance dredging project, with officials estimating that the cost per cubic yard and mobilization costs—about \$1.5 to \$2 million—were less than what they may have been had the work been completed under two separate contracts.

Before combining contracts, Corps district officials said they consider a variety of factors—such as contracting regulations and requirements, the nature of the project, dredging windows and other timing needs, allowing opportunities for small businesses to bid on the work, and availability of

funding—and that combining contracts may be feasible in limited instances. For example, because additional planning may be needed, it may not be feasible to combine contracts for projects with time-sensitive needs, according to the officials. Some Corps district officials noted that 2013 revisions to Department of Defense contracting regulations have affected the process for combining some contracts.¹⁶ Under the revisions, if the total combined value of the contract is \$2 million or above, the Corps districts must have, among other things, an acquisition strategy that includes market research, identifies alternative contracting approaches, and obtains approval for the contract from a division-level senior procurement executive. Previously, approval for combining contracts was not required at the division level unless the contract value was at least \$6 million. Some district officials told us that these additional steps can add to the contract preparation time and review process and, as a result, may preclude districts from combining contracts for projects with time-sensitive dredging needs.

In conjunction with combining contracts, some Corps district officials said that they have shifted from using fixed-price contracts to employing alternative contract types to help manage contract costs. For example, officials from a Gulf Coast district told us that, since fiscal year 2012, they have employed an indefinite delivery, indefinite quantity contract to help manage the costs of maintenance work in their district, instead of multiple fixed-price contracts. According to the officials, this contracting type provided flexibility related to the amount of material that could be dredged under the contract, as well as the timing of when dredging could occur. The district officials explained that given the dynamic nature of some of their projects, it was challenging to identify specific quantities and locations of material to be dredged, information that is required in advance of planning and executing a fixed-price contract. District officials said that using an indefinite delivery, indefinite quantity contract allowed the district to issue task orders for dredging needs as they arose across areas specified in the contract because, under the terms of the contract, a contractor would be available to conduct dredging as needed during the

¹⁶Department of Defense 2013 contracting revisions were part of requirements for agencies to identify negative impacts that combining contracts could have on small businesses and certify that steps would be taken to include small businesses in the acquisition strategy. See GAO, *Small Business Contracting: Updated Guidance and Reporting Needed for Consolidated Contracts*, [GAO-14-36](#) (Washington, D.C.: Nov. 26, 2013).

period outlined in the contract. By combining the district's work into one indefinite delivery, indefinite quantity contract, district officials estimated saving approximately \$670,000 in mobilization and demobilization costs annually because of the need to pay for these costs under one contract, instead of for three individual contracts.

Other district officials told us they have begun using multiple award task order contracts, in part, to help manage contract costs. Under multiple award task order contracts, officials said they can have a contractor undertake needed maintenance dredging quickly because, under this contracting type, contractors are preapproved and, once approved, can bid on maintenance work in a more streamlined manner than the solicitation process generally followed under a typical fixed-price contract. Officials in a Corps district on the East Coast said that, after the 2004 and 2005 hurricane seasons, working under a fixed-price contract—which generally takes about 45 days to solicit bids and identify a winning bidder—did not allow them to quickly respond to the substantial time-sensitive dredging needs that the hurricanes had caused. The district then decided to begin combining dredging for some of its projects into multiple award task order contracts, which provided them flexibility in scheduling the work and, according to the officials, reduced the time needed to award a contract by about 30 days. District officials estimated that by combining dredging from 17 projects into 7 multiple award task order contracts over the 3-year period covering fiscal years 2010 through 2012, they reduced the mobilization and demobilization costs for the work by approximately \$18.8 million.

Some Corps officials and industry representatives we spoke with, on the other hand, said there are trade-offs in using multiple award task order contract types. They explained that, from a contractor's perspective, multiple award task order contracts may be perceived as more risky than the typical sealed-bid process followed by a fixed-price contract because, among other things, less information may be available to contractors, including information on other bidders and their bid prices. According to Corps officials and industry representatives, higher risk may be reflected in higher bids. Additionally, they said that, under multiple award task order contracts, notification of the winning bidder is not made immediately—as it typically is under a sealed-bid solicitation process—and, therefore, contractors wait to bid on other contracts, potentially affecting their ability to bid on contracts for other dredging work.

Several Corps district officials also said that they alter the specifications or extend the time frames of maintenance dredging contracts, where

feasible, to manage costs. For instance, Corps officials from a few districts said that, in specifying the dredging requirements of a project, they may emphasize performance requirements and not necessarily the type of equipment needed to achieve those requirements. Officials in a Gulf Coast district said that, for one maintenance contract in fiscal year 2013, they did not specify a required dredge type in the solicitation. The officials explained that because of the lower amount of material to be dredged that year compared with past years, there was flexibility related to the type of dredge that could be used, and by opening up bid solicitations to contractors with multiple dredge types, a lower bid price could result from the potentially higher number of bidders. A contractor with a pipeline dredge had been used over the preceding 10 years but, in fiscal year 2013, a contractor with a hopper dredge—a dredge type that district officials said could operate at a lower cost than a pipeline dredge for that project—was awarded the contract for about \$2 million less than past contracts.

In other instances, Corps district officials said they have used multiyear contracting to conduct dredging work over more than one dredging cycle. Officials in a Pacific Northwest district told us that in past years, they awarded single-year maintenance dredging contracts for one project that needs annual dredging. Since fiscal year 2008, district officials said they employed a 1-year contract, but with the option to extend it up to 2 additional years. Structuring the contract in this way provided the district the ability to change contractors if the current contractor was performing poorly, by not exercising the next year's option. District officials were not able to estimate specific savings from this approach, but they said that extending the contract to 3 years stabilized the mobilization and demobilization costs because the contractor kept the dredge equipment in the area to carry out the entire contract, though keeping the equipment in the area was not a contract requirement. Officials from this district also noted, however, that multiyear contracts carry more risk for contractors because the contractors have to forecast fuel prices and other costs for the duration of the contract, which can in turn lead to higher bid prices than if the contract was for a single year.

In addition, Corps officials across all the offices we spoke with said they share lessons learned and seek opportunities to learn about approaches that might help them better manage contract costs through a variety of formal and informal coordination efforts. Several Corps district officials said they participate in regional dredging teams that meet on a weekly, monthly, or quarterly basis where they discuss dredging schedules, contracting approaches, and dredging techniques and technologies,

among other things. Districts that dredge the Mississippi River, for example, participate in a regional dredging team where they meet weekly to discuss the scheduling of some of their respective projects and to combine work where feasible. Corps headquarters also holds annual national dredging meetings, both internally and with industry, and a number of Corps district offices we spoke with said these meetings present regular opportunities to share or learn about cost-effective approaches others may be taking. Additionally, officials from several Corps districts said that for some projects—especially those that may be more complex or less routine in nature—they invite industry contractors to meet with them to discuss upcoming dredging needs. For example, officials from one East Coast district office said the district has held “industry days” since 2012 in advance of soliciting contracts for annual maintenance dredging in a harbor that includes multiple inner channels, to obtain industry input on structuring the order of dredging and material placement so as to efficiently complete dredging needs across these channels, among other things.

Conclusions

Dredging is a vital part of keeping the nation’s ports, harbors, and other waterways open for safe and efficient navigation and for the passage of import and export cargo crucial to commerce. The Corps removes millions of cubic yards of material from these waterways annually, relying mainly on contractors to do this work. Over the past decade, the Corps has reported that the cost of dredging activities has risen while the amount of material dredged has fallen. Recognizing the need to dredge efficiently, the Corps has reported taking some approaches, such as combining contracts, to manage the costs associated with maintenance dredging contracts.

The Corps uses data from its dredging database to assess trends in costs and quantities dredged for its maintenance contracts. The Corps has measures in place at headquarters to review data in the database, but these measures themselves have not been effective in ensuring that the Corps has reliable data. Because Corps district offices are not consistently populating the database, and because the district offices do not have systematic quality controls to regularly verify the completeness and accuracy of their dredging data, the Corps may have an incomplete picture of the costs of its maintenance dredging contracts. As a result, the Corps risks undertaking analyses and making conclusions on unreliable information, and may be missing opportunities to identify factors important to the management of maintenance dredging, such as cost elements

contributing to changes in costs over time, or additional areas where it could take further actions to manage costs.

Recommendation for Executive Action

To help ensure the completeness and accuracy of cost and cost-related data for maintenance dredging contracts in the Corps' Dredging Information System database, we recommend that the Secretary of Defense direct the Director of Civil Works of the U.S. Army Corps of Engineers to require that its district offices establish systematic quality controls to regularly verify the completeness and accuracy of their maintenance dredging contract data, including processes for ensuring that corrections are made when errors or omissions may be identified, such as through headquarters reviews.

Agency Comments and Our Evaluation

We provided a draft of this report to the Department of Defense for review and comment. In its written comments, reproduced in appendix II, the Department of Defense concurred with our recommendation. It stated that the Corps' dredging database is not uniquely different from other database systems with challenges achieving data quality and completeness. The Department said that the Corps' Director of Civil Works will direct district offices to establish systematic quality controls to regularly verify the completeness and accuracy of their maintenance dredging contract data, including processes for ensuring that corrections are made when errors or omissions may be identified through major subordinate commands (i.e., division offices) and headquarters reviews. The Department of Defense also provided technical comments that we incorporated, as appropriate.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the appropriate congressional committees, the Secretary of Defense, the Director of Civil Works of the U.S. Army Corps of Engineers, and other interested parties. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or fennella@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

Sincerely yours,

A handwritten signature in cursive script that reads "Anne-Marie Fennell". The signature is written in black ink and is positioned above a horizontal line.

Anne-Marie Fennell
Director, Natural Resources and Environment

Appendix I: Objectives, Scope, and Methodology

This report examines (1) agency data available about the U.S. Army Corps of Engineers (Corps) total costs of maintenance dredging contracts, and factors that contributed to any changes, during fiscal years 2004 through 2013, and (2) approaches the Corps reports it has undertaken to manage maintenance dredging contract costs.

For both objectives, we reviewed relevant laws, regulations, and Corps policy and guidance related to maintenance dredging and the development and execution of maintenance contracts. We conducted interviews with, and obtained documentation from, officials from Corps headquarters, 7 division offices, and 12 district offices (out of a total of 8 division and 38 district offices, respectively). We selected this nongeneralizable sample of Corps offices to represent various geographic regions and a range of maintenance dredging work carried out by the districts (relating to estimated numbers of contracts employed and estimated contract costs and quantities of material dredged). We conducted interviews with navigation managers, contracting officials, project managers, engineers, and other officials from the following Corps division and district offices:

- Division offices: Great Lakes and Ohio River, Mississippi Valley, North Atlantic, Northwestern, South Atlantic, South Pacific, and Southwestern.
- District offices: Baltimore, Buffalo, Galveston, Jacksonville, Mobile, New England, New Orleans, New York, Norfolk, San Francisco, Seattle, and Wilmington.

We also interviewed officials from the Dredging Contractors of America, a national association that represents the dredging industry, as well as industry representatives from five dredging companies that participated in our interviews, about their views on factors that contributed to any changes in maintenance dredging contract costs and on contracting approaches the Corps has undertaken to manage maintenance dredging contract costs.

To examine agency data available about the total costs of maintenance dredging contracts, and factors that contributed to any changes, during fiscal years 2004 through 2013, we reviewed dredging data collected for

those fiscal years¹ by the Corps through its dredging database, the Dredging Information System, and Corps documentation related to the database, including a database user's guide and data dictionary. Our analysis included 2,227 contract records labeled in the dredging database as maintenance dredging contracts having a "bid open" date (the date when a bid for a solicitation is opened and the Corps determines whether it can award a contract for a given project based on the bids received) during fiscal years 2004 through 2013. These contract records included maintenance dredging (about 99 percent) and maintenance and construction work combined (about 1 percent). According to the data, 1,405 of these maintenance contracts were completed during fiscal years 2004 through 2013, with an average of approximately 140 contracts completed annually. To assess the reliability of the data elements needed to conduct our review—including final contract costs, actual quantity of dredged material, and other related contract information—we performed electronic testing of the data elements (such as looking for missing values or outliers), reviewed related documentation, and interviewed agency officials knowledgeable about the data.² Specifically, we interviewed officials from the Corps headquarters Navigation Data Center who oversee the dredging database, and we interviewed officials from the 12 selected Corps district offices about their offices processes for entering and updating data for their respective maintenance dredging contracts. We concluded that the data were not sufficiently reliable for the purposes of reporting information on total costs and quantities of maintenance dredging contracts.

We also explored using other data to determine Corps maintenance dredging contract costs, but we were unable to use other data sources because complete information for all contracts were not available from these sources. Specifically, we sought information from the Federal Procurement Data System-Next Generation, the Corps of Engineers Financial Management System, and the Corps Resident Management System (a system to manage construction contracts). With regard to the

¹We did not include data from fiscal year 2014 in the 10-year period we reviewed because, at the time of our review, data for all contracts for that fiscal year had not been entered into the dredging database.

²We did not compare information entered into the dredging database with the actual contracts—which are located and maintained for a limited number of years at the district offices according to Corps officials—to assess the accuracy of the information in the database.

Federal Procurement Data System-Next Generation, we obtained data on Corps contracts from fiscal years 2004 through 2013 that were coded as “dredging” and attempted to separate out maintenance-related dredging contracts. However, we were unable to identify a subset of maintenance contracts given the number of dredging contract codes, as well as the varying contract descriptions. In addition, the Corps of Engineers Financial Management System and the Corps Resident Management System did not contain data in such a way that costs for all maintenance contracts could be broken out from other cost information.

Additionally, to examine factors that contributed to any changes in contract costs during fiscal years 2004 through 2013, we interviewed the selected Corps division and district offices and reviewed a nongeneralizable sample of four reoccurring maintenance dredging projects. We selected the following projects to reflect geographic variation and a range of contract sizes, based on data from the dredging database on the total estimated cost of the contract and the total estimated quantity of material dredged:

- Atchafalaya River Basin, Gulf Intracoastal Waterways, and Miscellaneous Project, located in Southern Louisiana;
- Baltimore Harbor Project, located in Baltimore, Maryland;
- Lorain Harbor Project, located in Lorain, Ohio; and
- Palm Beach Harbor Project, located in West Palm Beach, Florida.

For each of the projects, we reviewed contract information and other supporting documentation to identify key cost components for the projects and determine to the extent possible how, if at all, various cost components contributed to any changes in maintenance costs for contracts executed across the time period of our review. Specifically, we examined estimated and final contract costs, estimated and final quantities of material dredged, and various cost components in the contracts across different years, such as mobilization, demobilization, and material placement costs.

To examine approaches the Corps reports it has undertaken to manage maintenance dredging contract costs, we interviewed officials from Corps headquarters and the selected division and district offices and reviewed related documentation. Specifically, during our interviews across Corps offices, we asked Corps officials to identify approaches they have

undertaken to manage maintenance dredging contract costs. We then requested and reviewed supporting documentation when officials identified specific examples of approaches they indicated resulted in cost-effective approaches, including examining reports, studies, memorandums, or other documentation developed to estimate potential cost savings achieved as a result of a particular approach. Information obtained from our interviews with Corps officials and industry representatives and from the projects we reviewed cannot be generalized to those officials, representatives, or maintenance projects we did not interview or review. However, we believe our interviews and review of a sample of projects provided important insights into factors that may have contributed to changes in contract costs over the 10-year period, as well as approaches the Corps has undertaken to manage maintenance dredging contract costs.

We conducted this performance audit from June 2014 to September 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comments from the Department of Defense



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
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WASHINGTON DC 20310-0108

SEP 16 2015

Ms. Anne-Marie Fennell
Director
Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington DC 20548

Dear Ms. Fennell:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-15-810, 'ARMY CORPS OF ENGINEERS: Action Needed to Better Determine Maintenance Dredging Contract Costs,' dated August 19, 2015 (GAO Code 361577).

The Department of Defense (the Department) acknowledges receipt of the draft report. The Department concurs with comment with the recommendation of the GAO report. The Department's official written comments on the report are enclosed.

Thank you for the opportunity to address GAO's recommendation for establishing systematic quality controls to regularly verify the completeness and accuracy of maintenance dredging contract data and improving dredging contract costs.

Very truly yours,


Jo-Ellen Darcy
Assistant Secretary of the Army
(Civil Works)

Enclosure

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GAO DRAFT REPORT DATED AUGUST 19, 2015
GAO-15-810 (GAO CODE 361577)

“ARMY CORPS OF ENGINEERS: ACTION NEEDED TO BETTER DETERMINE
MAINTENANCE DREDGING CONTRACT COSTS”

DEPARTMENT OF DEFENSE COMMENTS

TO THE GAO RECOMMENDATION

Consolidated Review Comments by the US Army Corps of Engineers
15 September 2015

Recommendation for Executive Action

To help ensure the completeness and accuracy of cost and cost-related data for maintenance dredging contracts in the Corps’ Dredging Information System database, The GAO recommends that the Secretary of Defense direct the Secretary of the Army to direct the Chief of Engineers and Commanding General of the U.S. Army Corps of Engineers to require that its district offices establish systematic quality controls to regularly verify the completeness and accuracy of their maintenance dredging contract data, including processes for ensuring that corrections are made when errors or omissions may be identified through headquarters reviews.

Army Response

Concur with Comment. The Department’s position is that guidance related to systematic quality controls already exists, and that the DIS database is not uniquely different from other database systems with challenges achieving data quality and completeness when considering the database as a whole. However, the U.S. Army Corps of Engineers Director of Civil Works will direct district offices to establish systematic quality controls to regularly verify the completeness and accuracy of their maintenance dredging contract data, including processes for ensuring that corrections are made when errors or omission may be identified through major subordinate commands (MSC) and headquarters reviews.

Recommended Language:

To help ensure the completeness and accuracy of cost and cost-related data for maintenance dredging contracts in the Corps’ Dredging Information System database, we recommend that the Director of Civil Works of the U.S. Army Corps of Engineers establish systematic quality controls to regularly verify the completeness and accuracy of their maintenance dredging contract data, including processes for ensuring that corrections are made when errors or omissions may be identified through major subordinate commands (MSC) and headquarters reviews.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Anne-Marie Fennell, (202) 512-3841 or fennella@gao.gov

Staff Acknowledgments

In addition to the individual listed above, Alyssa M. Hundrup, Assistant Director; Hiwotte Amare; Arkelga Braxton; Stephanie Gaines; Cindy Gilbert; Richard P. Johnson; Julia Kennon; Michael Krafve; Gerald Leverich; Kirk D. Menard; Mehrzad Nadji; Cynthia Norris; and Tatiana Winger made key contributions to this report.

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