



December 2018

ARMY CORPS OF ENGINEERS

Budget Requests
Included Construction
Projects Located in
Over 30 States,
Selected Using a
Multi-level Process

GAO Highlights

Highlights of [GAO-19-99](#), a report to congressional requesters

Why GAO Did This Study

Through its civil works program, the Corps plans, designs, constructs, operates, and maintains a range of water resources projects for purposes such as aquatic ecosystem restoration, flood risk management, and navigation. To support these projects, the Corps requests funding through the annual budget and appropriation process. For fiscal year 2017, the President's budget requested \$4.6 billion for Corps' water resources projects, of which about \$1 billion was for construction projects.

GAO was asked to review budget requests for construction projects under the Corps' civil works program, including the geographic distribution of those projects. This report examines for fiscal years 2008 through 2017 (1) the geographic distribution of the construction projects included in the President's budget requests for the Corps, and (2) how the Corps prioritized such projects for inclusion in the President's budget requests. GAO summarized available budget data for fiscal years 2008 through 2017; reviewed the Corps' budget guidance and documents; mapped locations for construction projects in budget requests for years when sufficient information was available; and interviewed Corps headquarters and division officials.

What GAO Recommends

GAO is not making recommendations in this report. The Department of Defense stated that they had no comments on the draft report.

View [GAO-19-99](#). For more information, contact Anne-Marie Fennell at (202) 512-3841 or fennella@gao.gov.

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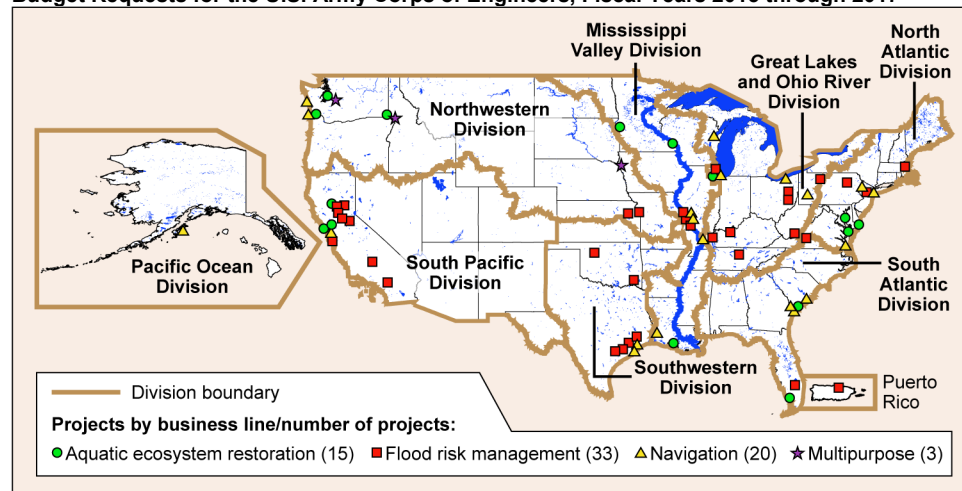
ARMY CORPS OF ENGINEERS

Budget Requests Included Construction Projects Located in Over 30 States, Selected Using a Multi-level Process

What GAO Found

For fiscal years 2008 through 2017, construction projects included in the President's budget requests to Congress for the U.S. Army Corps of Engineers (Corps) were geographically distributed in 31 states, the District of Columbia, and Puerto Rico. During this 10-year period, the President requested over \$12.9 billion for 164 construction projects included in the Corps' three main missions—aquatic ecosystem restoration, flood risk management, and navigation. The Corps provided GAO with detailed information on the location of construction projects included in the budget requests for the 3 most recent fiscal years at the time of its review—2015 through 2017. These projects, shown in the figure below, spanned 26 states and Puerto Rico. They were typically located near sources of water or Corps-constructed water infrastructure.

Figure: Locations of Construction Projects for Main Missions Included in the President's Budget Requests for the U.S. Army Corps of Engineers, Fiscal Years 2015 through 2017



Sources: GAO analysis of U.S. Army Corps of Engineers geospatial data; MapInfo (map). | GAO-19-99

To prioritize construction projects to include in the President's budget requests for fiscal years 2008 through 2017, the Corps used a process involving each of its three organizational levels—districts, divisions, and headquarters. Districts divided projects into work packages and assigned 1 of 6 priority levels to indicate the order in which work packages from the same project should be completed. Districts grouped these work packages by business line or appropriations account based on the Corps' budget guidance for the fiscal year and then ranked them. Then Corps divisions and headquarters ranked the work packages. To assign rankings, Corps officials applied criteria specific to the business line of each project. These criteria often varied by fiscal year to address changes to policy guidance. Across the organization, Corps officials ranked more than 25,000 packages for fiscal year 2017. After assigning rankings, headquarters developed final budget recommendations to submit to the Assistant Secretary of the Army for Civil Works, who in turn provided the recommendations to the Office of Management and Budget for review and potential inclusion in the President's budget requests.

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Abbreviations

Budget guidance	Corps policy guidance for budget development
Corps	U.S. Army Corps of Engineers
OMB	Office of Management and Budget

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December 19, 2018

The Honorable John Barrasso, M.D.
Chairman
Committee on Environment and Public Works
United States Senate

The Honorable Bill Shuster
Chairman
The Honorable Peter DeFazio
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives

The Honorable James M. Inhofe
United States Senate

The U.S. Army Corps of Engineers (Corps) is one of the world's largest public engineering, design, and construction management agencies. The Corps provides public engineering services across the nation and the world to strengthen the nation's security, protect and manage aquatic ecosystems, reduce risks from disasters, and support commerce.¹ More specifically, through its civil works program, the Corps plans, designs, constructs, operates, and maintains water resources projects to address the three primary missions of the program: (1) restoration, protection, and management of aquatic ecosystems; (2) flood risk management; and (3) support of commercial navigation.²

The Corps seeks funding for these water resources projects through the annual budget and appropriations process. Under this process, the Corps prioritizes projects to recommend for inclusion in the President's annual budget request to Congress. The Assistant Secretary of the Army for Civil

¹The Corps has both a military and a Civil Works program. The military program provides, among other things, engineering and construction services to other U.S. government agencies and foreign governments, while the Civil Works program is responsible for investigating, developing, and maintaining water resource projects. This report discusses only the Civil Works program.

²U.S. Army Corps of Engineers, *Sustainable Solutions to America's Water Resource Needs: Civil Works Strategic Plan 2014-2018*, EP 1165-2-503 (Washington, D.C.: Dec. 31, 2014), 2.

Works reviews the Corps' requested funding amounts and selected projects before submitting the finalized recommendation to the Office of Management and Budget (OMB). OMB reviews the recommendation before submitting the Corps' budget request to the President for review and approval. The fiscal year 2017 budget presentation for the Corps stated that the President's budget requested \$4.62 billion in discretionary funding for water resources projects under the Corps' civil works program.³ Of this total, the President's budget request included \$1.09 billion for the Corps' construction account; the remainder was largely for operations and maintenance of existing infrastructure.⁴ In fiscal year 2017, Congress appropriated \$1.88 billion for the Corps' construction account, of which \$985.6 million was to be used for to specific projects.

You asked that we review the budget requests for construction projects under the Corps' civil works program, including the geographic distribution of those projects. This report examines, for fiscal years 2008 through 2017, (1) the geographic distribution of the construction projects included in the President's budget requests for the Corps and (2) how the Corps prioritized construction projects for inclusion in the President's budget requests.

To examine the geographic distribution of the construction projects included in the President's budget requests for the Corps, we obtained and summarized descriptive data on construction projects—such as project name, state, business line, and requested funding amount— included in the budget requests from the Corps' annual Press Books and

³Discretionary funding refers to the level of budget authority, outlays, or other budgetary resources (other than those which fund mandatory programs) that is provided in, and controlled by, appropriation acts. Regular annual appropriation acts that provide funding for the continued operation of federal departments, agencies, and various government activities are considered by Congress.

⁴Among other things, the remainder of the request also included \$5 million for the Office of the Assistant Secretary of the Army for Civil Works, whose responsibilities include policy direction and oversight of the civil works program. See Department of the Army, Office of the Assistant Secretary of the Army (Civil Works), *Fiscal Year 2017 Civil Works Budget of the U.S. Army Corps of Engineers* (Washington, D.C.: Feb. 2016), 1-2.

Congressional Budget Justifications for fiscal years 2008 through 2017.⁵ Our work focused on the projects that the Corps prioritized within the construction appropriations account's three main business lines, which correspond to the three primary missions of the civil works program.⁶ These three main business lines are aquatic ecosystem restoration, flood risk management, and navigation.⁷ We also obtained detailed data from the Corps on the locations of the construction projects included in the budget requests. The detailed data we obtained was limited to fiscal years 2015 through 2017 because the Corps did not maintain the data for earlier years in its current database for budget development—the Civil Works Integrated Funding Database—and did not maintain the historic data in an accessible form.⁸ We analyzed the detailed data to map the locations of projects within states and Corps regional divisions.⁹ To

⁵The Press Book is one of the documents that make up the budget presentation for the Corps. The information included in the Press Book has varied in recent years, but the Press Book accompanying the fiscal year 2017 budget request consisted primarily of a listing of projects within the construction, investigations, and operations and maintenance appropriations accounts included in the budget request. The listing is organized by state and specifies the amount requested for each project. The budget justification is a document an agency submits to the appropriations committees in support of its budget request. OMB prescribes justification materials, which typically explain changes between the current appropriation and the amounts requested for the next fiscal year.

⁶The total construction amounts in the Corps budget documents include funding for one of the Corps' other business lines—hydropower. However, we excluded projects in the hydropower business line, in part because these projects are now mainly funded through the operations and maintenance account. They represented less than 4 percent of the construction appropriation requests from fiscal years 2008 through 2017. According to Corps guidance, hydropower projects generate power as an additional benefit of projects built for navigation and flood risk management.

⁷According to Corps budget guidance, aquatic ecosystem restoration is one of three distinct areas within the environment business line. Aquatic ecosystem restoration is the only area within the environment business line that requested funding from the construction appropriations account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration throughout this report.

⁸According to a Corps official, the Corps developed the Civil Works Integrated Funding Database without transferring the budget request data prior to 2016 from its previous database. The Corps developed the new database because the Oracle platform stopped supporting the Corps' prior database, the Oracle Financial Analyzer.

⁹The data came from the Corps' Civil Works Business Intelligence information system, which is made up of integrated information from the Corps' Operations and Maintenance Business Information Link and CorpsMaps. Within the system, the Corps geographically referenced each project and linked performance data to a location rather than a project, according to Corps officials.

assess the reliability of the detailed data and the descriptive data, we conducted electronic testing and compared the descriptive data with information from the annual Press Books; we found that they were sufficiently reliable for the purposes of our reporting objectives. We also interviewed Corps headquarters and division officials about the geographic distribution of the projects included in the President's budget requests.

To examine how the Corps prioritized construction projects for inclusion in the President's budget requests for fiscal years 2008 through 2017, we reviewed federal and Corps guidance on methods for evaluating construction projects. We reviewed and summarized the Corps' policy guidance for budget development (budget guidance) from fiscal year 2008 through fiscal year 2017, along with the guidance's annexes and business-line-specific appendixes, on the process and criteria for evaluating and prioritizing construction projects in the Corps' three main business lines for inclusion in the budget requests.¹⁰ We also reviewed additional guidance from the Assistant Secretary of the Army for Civil Works on how to prepare the Corps' budget requests. We compared the Corps' budget guidance across fiscal years 2008 through 2017 and tracked differences in the eligibility criteria and business-line-specific criteria. We interviewed Corps headquarters officials to gain perspective on any significant changes in the guidance, process, or criteria used. We interviewed and obtained information from Corps headquarters and division officials responsible for prioritizing projects for the budget requests, as well as from officials in the Assistant Secretary's office, about the application of the criteria and factors to consider when preparing the budget requests for fiscal years 2008 through 2017.

We conducted this performance audit from April 2017 to December 2018 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.

¹⁰According to the Corps' fiscal year 2017 budget guidance, the Engineer Circular provides policy guidance for the development and submission of the Corps' budget for the fiscal year. See U.S. Army Corps of Engineers, *Army Programs: Corps of Engineers Civil Works Direct Program Development Policy Guidance Fiscal Year 2017*, EC 11-2-208 (Washington, D.C.: Mar. 31, 2015), 1.

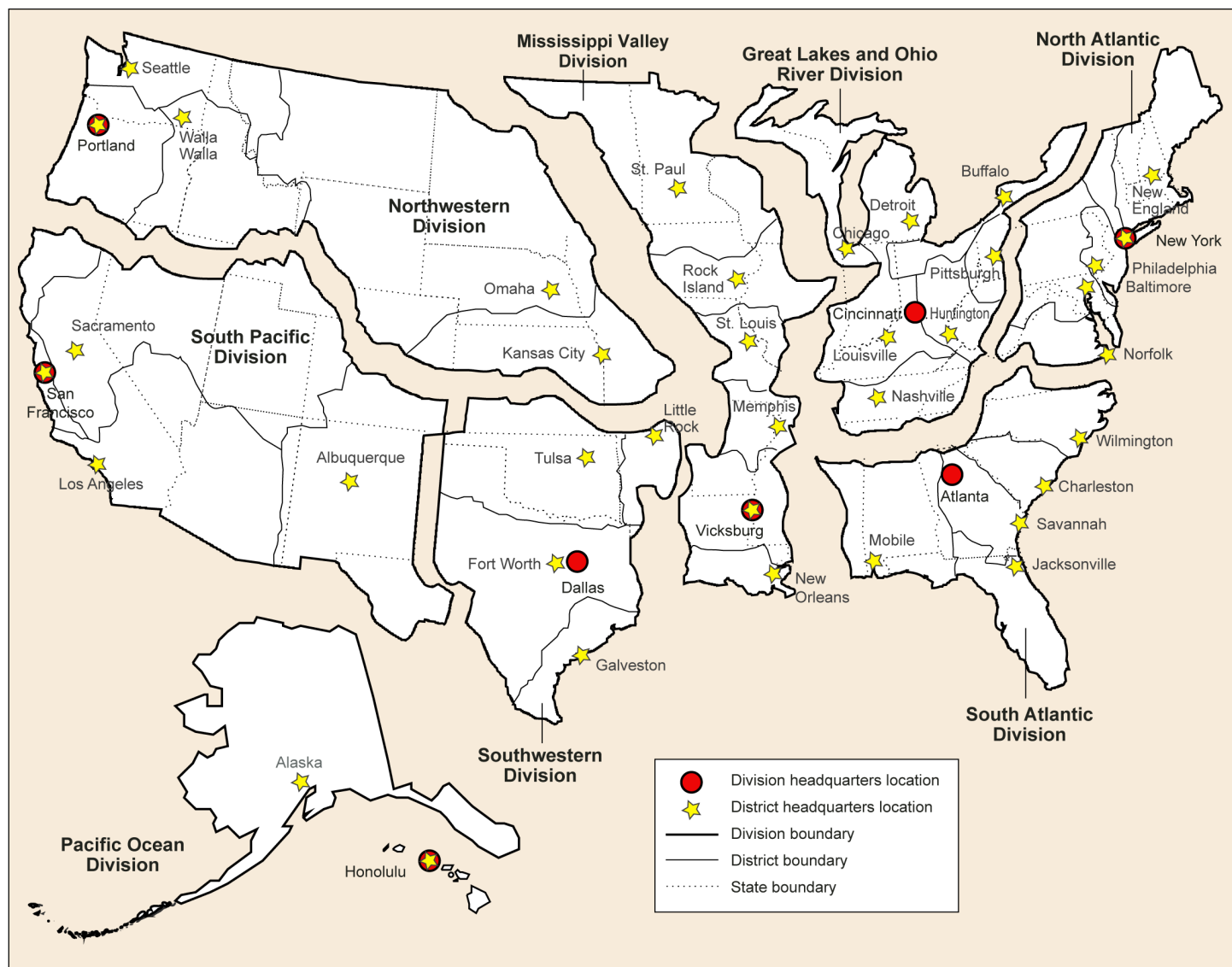
Background

Headquartered in Washington, D.C., the Corps has eight regional divisions and 38 districts that carry out its domestic civil works' program (see fig. 1). Corps headquarters primarily develops policies based on administration guidance; plans the direction of the organization; and approves projects to recommend for inclusion in the President's annual budget request to Congress.¹¹ The divisions approve projects for submission to headquarters and coordinate projects within their districts, while the districts plan and implement the projects. The Corps' construction appropriations account has three main business lines—aquatic ecosystem restoration, flood risk management, and navigation—that correspond to the three primary missions of its civil works program.¹² Some projects may be multipurpose and fit into more than one business line within the program.

¹¹In 2010, we reported on the transparency of the Corps' budget formulation process and the emphasis on agency-wide priorities. See GAO, *Army Corps of Engineers: Budget Formulation Process Emphasizes Agencywide Priorities, but Transparency of Budget Presentation Could be Improved*, [GAO-10-453](#) (Washington, D.C.: Apr. 2, 2010).

¹²The primary civil works missions are the restoration, protection, and management of aquatic ecosystems; flood risk management; and support of commercial navigation. The Corps has six additional business lines: recreation; hydropower; water supply; emergency management; regulatory program; and support for others, which covers the Corps' activities related to interagency and international support. See U.S. Army Corps of Engineers, *Civil Works Strategic Plan 2014-2018*, 9.

Figure 1: Locations of the U.S. Army Corps of Engineers' Civil Works Divisions and Districts



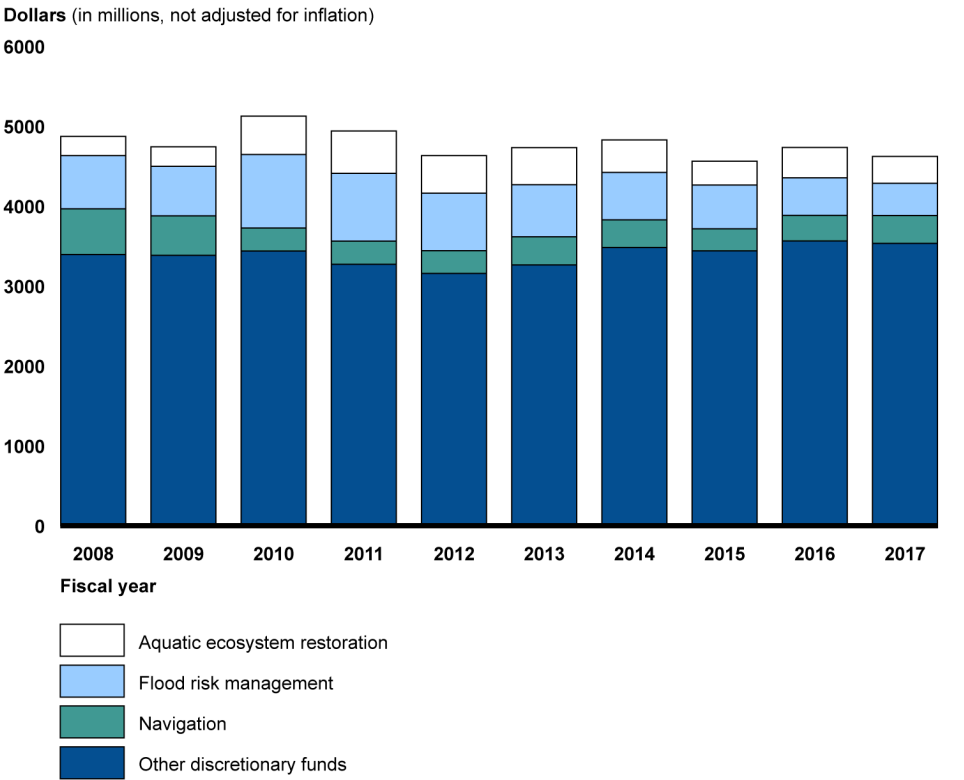
Sources: GAO representation of U.S. Army Corps of Engineers data; Map Resources (map). | GAO-19-99

Note: According to Corps documents, most of the division and district geographic boundaries are aligned with watershed boundaries.

For fiscal years 2008 through 2017, the President's budgets requested about \$4.78 billion per year, on average, in discretionary funding for the

Corps' civil works program to plan, construct, operate, and maintain a wide range of water resources projects (see fig. 2).¹³ Of this total, the budget requested an average of about \$1.39 billion total per year for construction projects in the aquatic ecosystem restoration, flood risk management, and navigation business lines.

Figure 2: President’s Annual Budget Request Amounts for Main Business Lines in the Construction Account and Other Discretionary Funding of the U.S. Army Corps of Engineers, Fiscal Years 2008 through 2017



Source: GAO analysis of U.S. Army Corps of Engineers data. | GAO-19-99

Notes: The Corps' three main business lines within the construction account are aquatic ecosystem restoration, flood risk management, and navigation. (Aquatic ecosystem restoration is one of three areas that fall within the environment business line, but it is the only area within this business line that requested funding from the construction account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration.)

¹³Averages based on data from the annual Press Books.

The total construction amounts in Corps budget documents include funding for the hydropower business line; hydropower funding is represented in the other discretionary funding in this figure. We excluded those funding amounts from our business line totals, in part because these projects are now mainly funded through the operations and maintenance account. They represented less than 4 percent of the construction account requests from fiscal years 2008 through 2017.

Discretionary funding refers to the level of budget authority, outlays, or other budgetary resources (other than those for mandatory programs) that is provided in, and controlled by, appropriation acts.

Construction Projects Included in the President's Budget Requests for the Corps Located In Over Half of the States

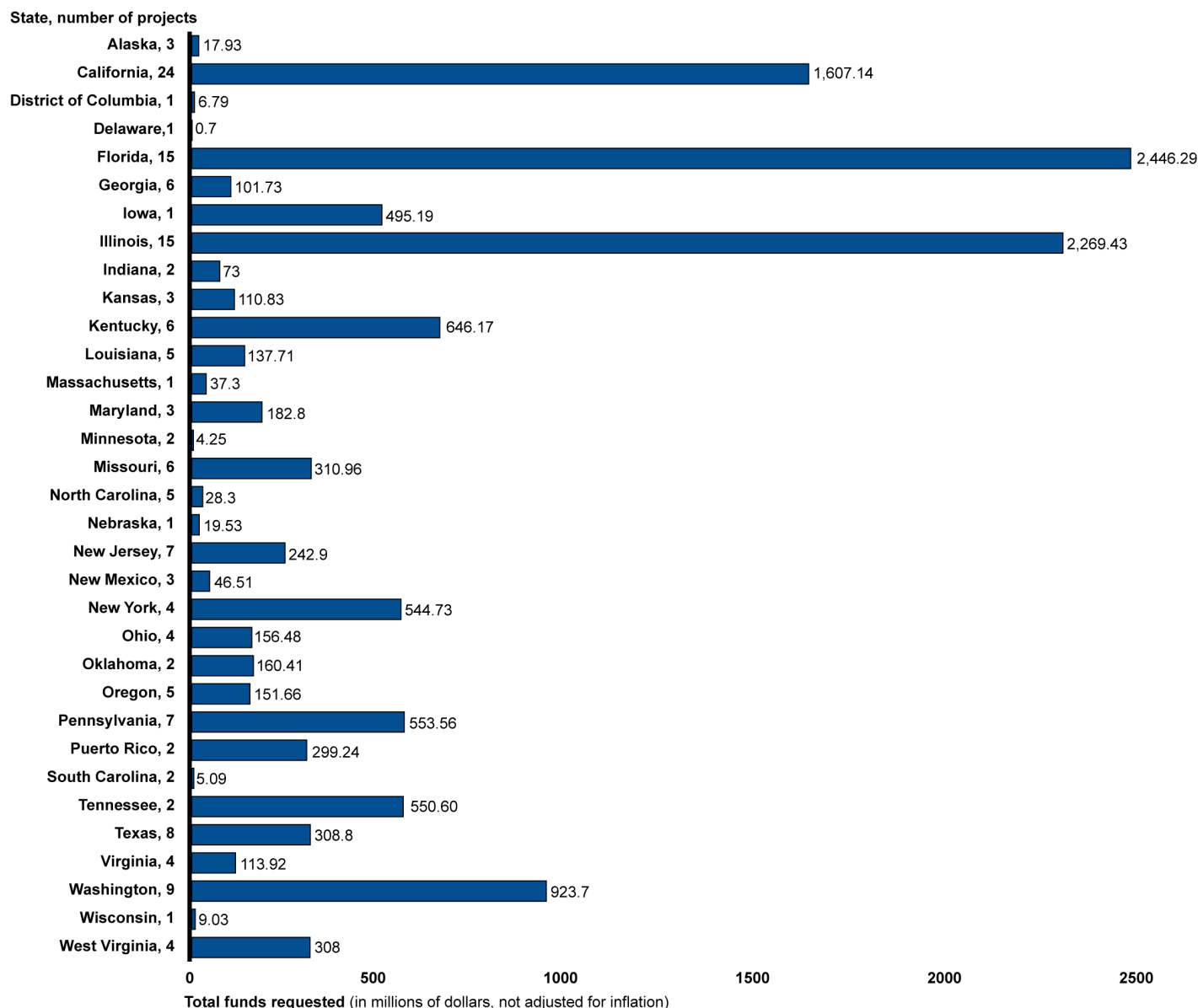
For fiscal years 2008 through 2017, the President's budget requests for the Corps included 164 construction projects located in 31 states, the District of Columbia, and Puerto Rico.¹⁴ The five states for which the most funds were requested in this period were:

- Florida, with \$2.4 billion requested for 15 construction projects,
- Illinois, with \$2.3 billion requested for 15 construction projects,
- California, with \$1.6 billion requested for 24 construction projects,
- Washington, with \$924 million requested for 9 construction projects, and
- Kentucky, with \$646 million requested for 6 construction projects.

The projects in these five states accounted for 61 percent of the \$12.9 billion that the President requested for Corps construction projects in these years. Figure 3 shows the total number of construction projects and funds included in the President's budget requests for fiscal years 2008 through 2017, by state, within the Corps' three main business lines—aquatic ecosystem restoration, flood risk management, and navigation. See appendix I for the number of construction projects and funds requested for each fiscal year during this period, by state. See appendix II for a list of the names of construction projects, locations, business lines, and funds requested per year during this period.

¹⁴These projects were included in the Corps' three main business lines within the construction account: aquatic ecosystem restoration, flood risk management, and navigation.

Figure 3: Number of Construction Projects and Total Funds Requested for Main Business Lines Included in the President's Budget Requests for the U.S. Army Corps of Engineers, by State, Fiscal Years 2008 through 2017



Source: GAO analysis of U.S. Army Corps of Engineers data. | GAO-19-99

Notes: The Corps' three main business lines within the construction account are aquatic ecosystem restoration, flood risk management, and navigation. (Aquatic ecosystem restoration is one of three areas that fall within the environment business line, but it is the only area within this business line that requested funding from the construction account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration.)

We excluded projects in the hydropower business line, in part because these projects are now mainly funded through the operations and maintenance account. They represented less than 4 percent of the construction appropriation requests from fiscal years 2008 through 2017.

We listed projects by state based on listings in the Corps' Press Books. The Press Book is one of the documents that make up the budget presentation for the Corps.

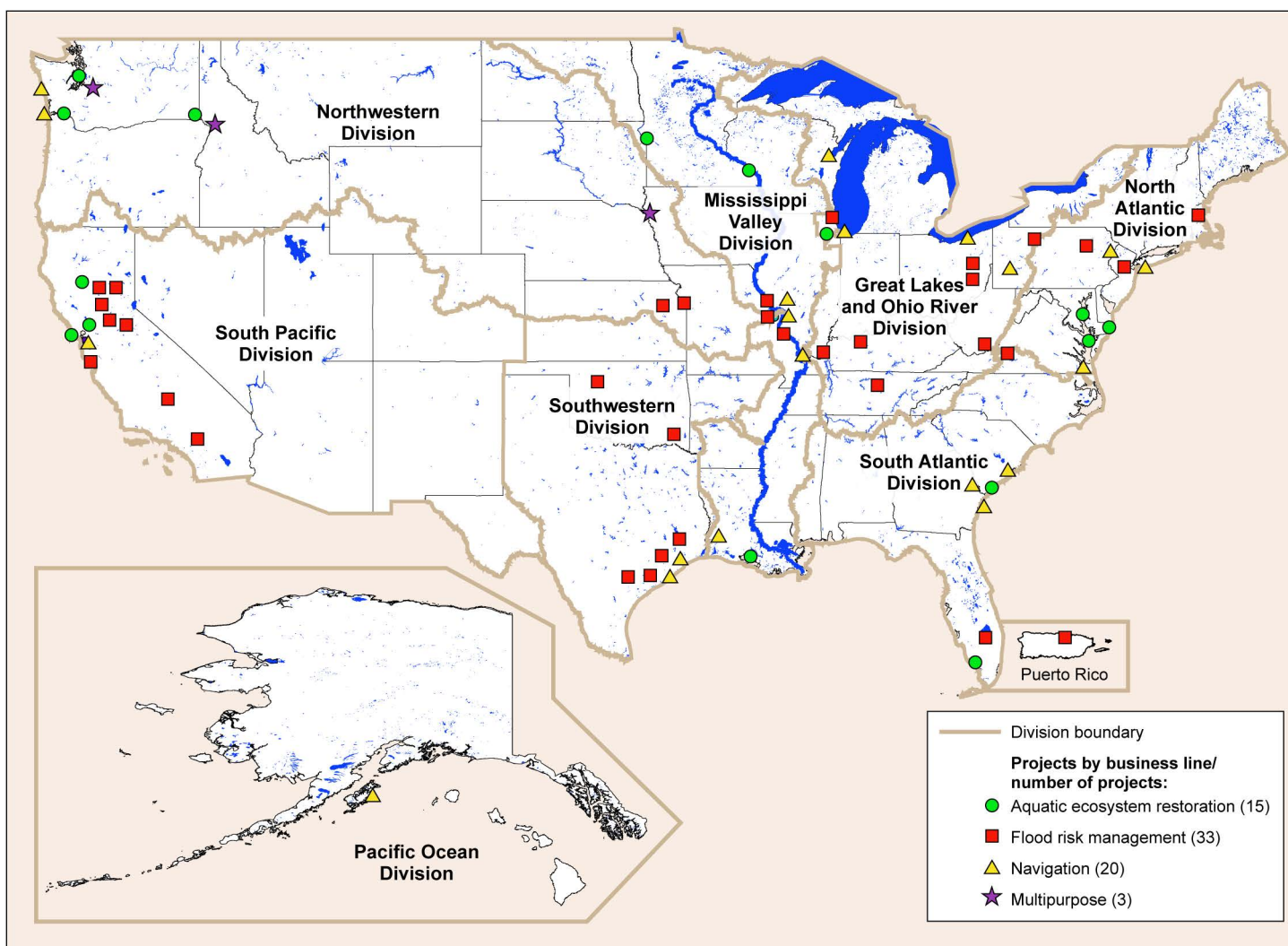
Interactive Graphic

Figure 4: Locations of Construction Projects for Main Business Lines Included in the President's Budget Requests for the U.S. Army Corps of Engineers, Fiscal Years 2015 through 2017

Instructions:

Online, hover over each symbol in the map below to see more information.

To print a version containing text, see appendix III, page 37.



Sources: GAO analysis of U.S. Army Corps of Engineers geospatial data; MapInfo (map). | GAO-19-99

Notes: The Corps' three main business lines within the construction account are aquatic ecosystem restoration, flood risk management, and navigation. (Aquatic ecosystem restoration is one of three areas that fall within the environment business line, but it is the only area within this business line that requested funding from the construction account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration.)

We excluded projects in the hydropower business line, in part because these projects are now mainly funded through the operations and maintenance account. They represented less than 4 percent of the construction appropriation requests from fiscal years 2008 through 2017.

For fiscal years 2015 through 2017, the Corps provided us with detailed data for the construction projects included in the President's budget requests. This information included latitudinal and longitudinal coordinates to locate projects within states and divisions, as well as business-line-specific data.¹⁵ A total of 71 projects were included in the budget requests for these business lines during this period. Construction projects included in the President's budget requests for the Corps' three main business lines for fiscal years 2015 through 2017 were geographically distributed in 26 states and Puerto Rico. According to our analysis of Corps budget data, most of the projects were near either water sources or Corps-constructed water infrastructure. Figure 4, which is an interactive map, identifies the locations and describes budget data for each construction project (see interactive instructions). See appendix III for a list of these construction projects by Corps division, state, business line, and funds requested for each fiscal year.

Corps headquarters officials said that the Corps does not specifically use geographic locations to select construction projects to recommend for inclusion in the President's budget requests. However, Corps officials explained that geographic characteristics, such as population, might have affected how they considered including construction projects within specific business lines. For example, Corps officials within the flood risk management business line may have considered a construction project located in a population center that could be severely impacted by a flooding event to be a higher priority over other projects in less populated areas.

For fiscal years 2015 through 2017, the Corps requested more than \$3 billion for the 71 construction projects that fell within the three main business lines:¹⁶

¹⁵The data were from the Civil Works Business Intelligence information system which is made up of integrated data—from the Corps' Operations and Maintenance Business Information Link and CorpsMap—that geographically reference each project and link performance data to a location rather than a project, according to Corps officials. According to a Corps official, budget data within the system initially came from the Civil Works Integrated Funding Database, used for the budget process.

¹⁶The total funding requested and number of projects in the President's budget requests also includes \$375 million for three Corps multipurpose construction projects, located in the states of Iowa and Washington, that either provided benefits or mitigated potential impacts to multiple business lines. Unless otherwise noted, all dollars are in nominal terms (unadjusted for inflation).

-
- Aquatic ecosystem restoration. The President's budget requested \$618 million for 15 Corps construction projects in the aquatic ecosystem restoration business line, which were located in California, Florida, Georgia, Illinois, Louisiana, Maryland, Minnesota, Oregon, and Washington. According to the Corps budget guidance, these projects were located in areas of federal significance that have some degree of habitat scarcity, connectivity, and special-status species,¹⁷ among other characteristics.¹⁸ Moreover, according to the Corps budget guidance, construction projects in this business line emphasize the restoration of nationally or regionally significant habitats where the solution primarily involves modifying the hydrology and geomorphology. For example, the goals of the South Florida Ecosystem Restoration program—a collection of several projects—includes improving the health of over 2.4 million acres of the south Florida ecosystem (including Everglades National Park), enhancing water supply, and maintaining flood mitigation, according to a Corps document and Corps officials.¹⁹ According to a Corps document, since 2000, the Corps has invested a total of \$2.4 billion in the program including other initiatives, such as the Comprehensive Everglades Restoration Plan and Central and Southern Florida.²⁰
 - Flood risk management. The President's budget requested \$1.33 billion for 33 Corps construction projects in the flood risk management business line, which were located in California, Florida, Illinois, Kansas, Kentucky, Massachusetts, Missouri, New Jersey, Ohio,

¹⁷According to Corps budget guidance, special-status species are federally listed as threatened or endangered species or are candidates for such listing. See U.S. Army Corps of Engineers, *Army Programs: Corps of Engineers Civil Works Direct Program Budget Development Guidance Fiscal Year 2016*, EC 11-2-206 (Washington, D.C.: Mar. 31, 2014), C-2-12.

¹⁸U.S. Army Corps of Engineers, *Army Programs: Corps of Engineers Civil Works Direct Program Development Policy Guidance Fiscal Year 2017*, EC 11-2-208 (Washington, D.C.: Mar. 31, 2015).

¹⁹According to a Corps document, as a result of the engineering performed—as early as the 1880s—to make south Florida more habitable, the natural flow of water to and through the Everglades was severely altered. The construction of roads, canals, and levees created barriers that interrupt the natural flow of water that is necessary for the Everglades to survive.

²⁰According to Corps documents, following congressional direction in the Water Resources Development Act of 2000, the Corps entered into a programmatic partnership with the state of Florida to restore, protect and preserve water resources in central and southern Florida, including the Everglades. See Pub.L.No.106-541 § 601(h) (2) (A), 114 Stat. 2572, 2687 (2000).

Oklahoma, Pennsylvania, Tennessee, Texas, Virginia, and West Virginia. According to the Corps' budget guidance and strategic plan, these projects are located in areas that may experience riverine and coastal flooding, and they are to provide water supply storage. For example, the Bluestone Lake project, in West Virginia, is to address deficiencies that could lead to a breach of a dam built by the Corps in the 1940s. According to the Corps, the dam's spillway cannot discharge enough water without substantially increasing the potential for a breach of the dam. According to the Corps, a breach could cause catastrophic flooding along the largest river valleys in West Virginia, including locations of major manufacturing and chemical industries, and put 165,000 lives at risk. The Corps started the project in 1998, and plans to award the next phase of the project in 2022. A draft supplementary study has been completed to identify a plan to address this additional deficiency, according to the Corps. The Corps is planning for a 10-year construction period, with an estimated cost of \$575 million, according to a Corps document and a headquarters official.

- Navigation. The President's budget requested \$908 million for 20 Corps construction projects in the navigation business line, which were located in coastal, inland, and intracoastal navigation systems in California, Georgia, Illinois, Louisiana, Missouri, New Jersey, New York, Ohio, Oregon, South Carolina, Texas, Virginia, Washington, and Wisconsin. According to Corps' budget guidance, these projects are intended to provide safe, reliable, cost-effective and environmentally sustainable waterborne transportation systems for the movement of commercial goods. For example, the Corps' Olmsted Locks and Dam project is located on the Ohio River, which connects to the Tennessee, Cumberland, and Mississippi rivers and is considered critical for commercial navigation. According to the Corps, the project consists of two 110-foot by 1,200-foot locks, which are located adjacent to the Illinois bank, and a dam comprising of five tainter gates,²¹ which control the amount of water that flows downstream. According to a Corps document, over the last several years, approximately 80 million tons of bulk commodities (for example, coal, grain, rock, and sand) per year, on average, have passed through navigation structures that are part of the project. The Corps estimates that this project has been under construction for nearly 30 years.

²¹A tainter gate is a device used for controlling the flow of water over spillways or into canals by having the upstream face curved in the form of an arc, the center of which is at the center of the gate hinge.

According to Corps documents and headquarters officials, the project became operational as of September 2018, with a total estimated cost of \$3 billion by the time of project completion.²²

Corps Used a Multi-level Process to Prioritize Construction Projects

To prioritize construction projects to recommend for inclusion in the President's budget requests for fiscal years 2008 through 2017, the Corps used a process involving the three levels of its organization—districts, divisions, and headquarters.

Districts Prepared Work Packages for Ranking

To begin the process, Corps district officials divided projects into work packages—increments of work that can be considered for inclusion in the budget. According to Corps policy guidance for budget development (budget guidance), these work packages should contribute to the overall project and be executed without being dependent on the funding of additional work packages.²³ According to a district official, district officials then assigned one of six priority levels to indicate the order in which work packages for the same project should be completed for that fiscal year.²⁴ Priority levels are categories used to differentiate work packages within the same project. Corps budget guidance instructed district officials to assign priority levels based on criteria including whether a project is new or continuing and where a work package falls within a project's overall work plan. Corps budget guidance also instructed officials to group work packages either by business line or appropriations account, depending on the fiscal year, based on the budget guidance for that fiscal year.²⁵

²²In 2017, we reported on factors that contributed to cost increases and schedule delays in the Olmsted Locks and Dam Project. See GAO, *Army Corps of Engineers: Factors Contributing to Cost Increases and Schedule Delays in the Olmsted Locks and Dam Project*, [GAO-17-147](#) (Washington, D.C.: Feb. 16, 2017).

²³U.S. Army Corps of Engineers, *Army Program: Corps of Engineers Civil Works Direct Program Development Policy Guidance Fiscal Year 2017*, EC 11-2-208 (Washington, D.C.: Mar. 31, 2015), 6.

²⁴Corps budget guidance refers to these priority levels as "increments."

²⁵According to Corps documents, there are nine appropriations accounts in the Civil Works Program: Investigations, Construction, Operation and Maintenance, Mississippi River and Tributaries, Regulatory, Expenses, Formerly Utilized Sites Remedial Action Program, Flood Control and Coastal Emergencies, and the Office of the Assistant Secretary of the Army for Civil Works. Corps construction projects are typically funded from the construction account, with some construction projects funded through the Mississippi River and Tributaries account.

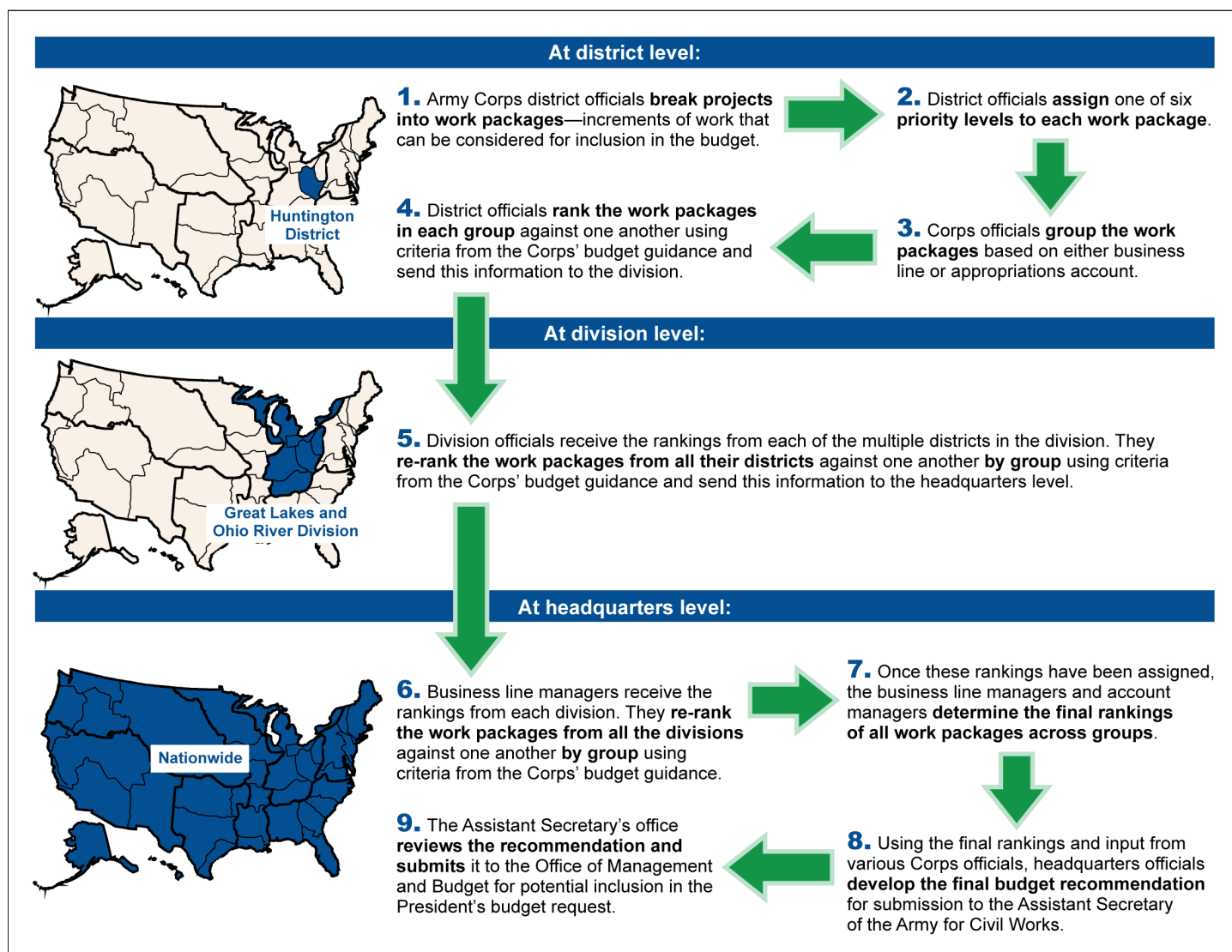
Districts, Divisions, and Headquarters Ranked Work Packages

Corps districts, divisions, and headquarters consecutively ranked the work packages, as shown in figure 5. In doing so, they established criteria specific to the business line for each project. Corps budget guidance provided instructions on which criteria to use for each business line to determine rankings in a particular year. The ranking criteria in the guidance—such as the rate of economic return, populations at risk, or the environmental impact—varied nearly every year from fiscal years 2008 to 2017 for two of the three main business lines: flood risk management and navigation (see appendix IV for the criteria used, by business line and fiscal year).²⁶ Corps officials said they routinely revised the criteria while developing the annual budget guidance, for reasons such as addressing changes in the policy guidance from the Assistant Secretary of the Army for Civil Works or OMB,²⁷ or improving the ranking process.

²⁶The criteria for the aquatic ecosystem restoration business line were largely the same from year to year. According to a headquarters official, business line managers have indicated that the aquatic ecosystem restoration criteria are appropriate indicators of potential project effects, and this was corroborated by a 2016 report from the Corps' Environmental Advisory Board. See U.S. Army Corps of Engineers, Chief of Engineers Environmental Advisory Board, *Recommendations for Improving the Process of Setting Priorities for Aquatic Ecosystem Restoration Projects*, (Washington, D.C.: Aug. 2016), 3.

²⁷Each year, the Assistant Secretary of the Army for Civil Works issues a memo with high-level policy guidance for formulating that year's budget request.

Figure 5: U.S. Army Corps of Engineers' Process Used to Prioritize Construction Projects for Inclusion in the President's Budget Requests, Fiscal Years 2008 through 2017



Source: GAO analysis of U.S. Army Corps of Engineers information. | GAO-19-99

Notes: Work packages are increments of work that can be considered for inclusion in the budget. Priority levels indicate the order in which work packages within the same project should be completed.

According to Corps guidance, business line managers' responsibilities include working to integrate resources, budgets, and activities, with a focus on executing the mission of each specific business line. Business line managers are also responsible for such activities as developing the ranking of all work packages within their business lines. Corps account managers are responsible for managing activities that occur within an appropriations account.

Corps officials we interviewed noted that although each level used the same criteria to rank work packages, the districts, divisions and headquarters had different focuses and increasing numbers of work packages to rank and compare. Specifically, officials at each level considered the overall needs of their respective jurisdictions when making ranking decisions: districts had a local focus; divisions had a regional or watershed focus; and headquarters had a national focus. The number of work packages to be ranked increased at each level according to Corps officials: districts ranked local work packages; divisions re-ranked work packages from four to seven districts; and headquarters re-ranked work packages from all of the divisions nationwide.

After ranking all work packages within their respective jurisdictions by business line or appropriations account, officials from all three levels entered the rankings into the database for use in the budget review process. According to information from the Civil Works Integrated Funding Database, the Corps ranked more than 25,000 work packages for the fiscal year 2017 budget recommendation.

Headquarters Developed Final Recommendations for Budget Requests

According to one headquarters official, Corps officials in the Program Development Branch at headquarters facilitated discussions among business line and account managers to develop the final rankings of all work packages.²⁸ As part of this process, headquarters officials noted that business line managers compared work packages with different characteristics across business lines or accounts. According to Corps budget guidance and headquarters officials, business line managers and account managers are instructed to consider two key factors when determining their final rankings each fiscal year. Specifically, those managers are instructed to give top priority to work packages that significantly impact the risk to human life posed by potential disasters. In addition, the managers are to prioritize work packages that address a

²⁸According to Corps officials, the Program Development Branch is responsible for developing the Corps' annual budget and work plan and ensuring that the appropriations go to the correct projects. Business line managers at each geographic level work to integrate resources, budgets, and activities, with a focus on executing the mission of each specific business line. According to Corps guidance, business line managers are also responsible for such activities as developing the ranking of all work packages within their business lines. Corps account managers serve as the primary point of contact and subject matter expert for an appropriations account. They provide information to senior officials in support of funding proposals and to customers and stakeholders in response to requests for information.

legal requirement to mitigate potential negative effects caused by construction, such as adverse environmental effects.

Using the final rankings, Corps headquarters officials said they developed the final budget recommendations for each fiscal year, including a recommended funding amount for each project, with input from various levels of the organization. More specifically, to determine the budget recommendations, Corps headquarters officials obtained feedback from district commanders, generals, directors, and the Chief of Engineers. In fiscal year 2017, the Corps used its final rankings to determine recommended funding amounts for 89 construction projects, each of which included one or more work packages; ultimately, these projects comprised about 298 work packages. Once the Corps headquarters officials developed these recommendations, they briefed the Assistant Secretary of the Army for Civil Works on their recommendations. An official from the Assistant Secretary's office said they reviewed the Corps recommendations and compared them with the Assistant Secretary's priorities, after which they developed the final recommendations to send to OMB for review and potential inclusion in the President's budget requests. According to a Corps official, 34 percent of construction projects included in the fiscal year 2017 President's budget request received funding.

Agency Comments and Our Evaluation

We provided a draft of this report for review and comment to the Department of Defense. The department told us they had no comments on the draft report.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, the Chief of Engineers and Commanding General of the U.S. Army Corps of Engineers, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff 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 V.

A handwritten signature in black ink that reads "Anne-Marie Fennell". The signature is written in a cursive style with a large, looping initial "A" and a horizontal line underneath the name.

Anne-Marie Fennell
Director, Natural Resources and Environment

Appendix I: Corps Construction Projects Included in the President's Budget Requests, by State, Fiscal Years 2008 through 2017

Table 1 lists the 164 construction projects and funds requested, by state,¹ within the U.S. Army Corps of Engineers' (Corps) three main business lines—aquatic ecosystem restoration, flood risk management, and navigation—for fiscal years 2008 through 2017.

Table 1: Number of Construction Projects and Funds Requested for Main Business Lines Included in the President's Budget Requests for the U.S. Army Corps of Engineers, by State, Fiscal Years 2008 through 2017

Dollars in millions											
	Fiscal year										
State	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Alaska											
Number of projects	-	-	1	1	-	-	-	-	1	-	3
Funds requested	-	-	3.00	7.00	-	-	-	-	7.93	-	17.93
California											
Number of projects	10	12	15	12	14	11	10	10	9	9	24 ^a
Funds requested	156.83	119.06	195.17	176.83	134.73	125.90	165.35	149.73	188.37	195.19	1,607.14
District of Columbia											
Number of projects	-	-	1	-	-	-	-	-	-	-	1
Funds requested	-	-	6.79	-	-	-	-	-	-	-	6.79
Delaware											
Number of projects	-	-	-	1	-	1	-	-	-	-	1 ^a
Funds requested	-	-	-	0.35	-	0.35	-	-	-	-	0.70
Florida											
Number of projects	3	4	5	12	11	11	6	2	2	2	15 ^a
Funds requested	223.18	269.17	356.27	319.80	274.88	319.77	199.28	140.55	187.88	155.50	2,446.29
Georgia											
Number of projects	1	-	-	1	2	3	3	1	2	1	6 ^a

¹Construction projects are located in 31 states, the District of Columbia, and Puerto Rico.

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Dollars in millions											
State	Fiscal year										Total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Funds requested	6.40	-	-	0.40	5.09	9.00	8.35	0.08	29.71	42.70	101.73
Iowa											
Number of projects	-	-	1	1	1	1	1	1	1	1	1^a
Funds requested	-	-	70.00	78.40	72.89	90.00	70.00	48.77	47.13	18.00	495.19
Illinois											
Number of projects	10	11	9	10	10	10	8	8	8	2	15^a
Funds requested	211.68	212.85	173.06	216.83	199.68	213.62	293.58	263.13	239.99	245.00	2,269.43
Indiana											
Number of projects	1	1	1	2	1	-	1	-	-	-	2^a
Funds requested	13.00	8.00	20.00	18.00	9.00	-	5.00	-	-	-	73.00
Kansas											
Number of projects	2	2	1	1	1	1	1	-	1	1	3^a
Funds requested	37.50	33.80	2.50	8.00	4.00	4.00	6.00	-	7.00	8.03	110.83
Kentucky											
Number of projects	2	2	3	3	1	1	1	1	1	-	6^a
Funds requested	97.00	28.60	125.00	142.27	132.00	85.00	5.80	25.00	5.50	-	646.17
Louisiana											
Number of projects	1	1	2	4	2	4	2	2	1	1	5^a
Funds requested	1.50	1.50	8.20	31.00	16.12	29.05	11.54	19.80	10.00	9.00	137.71
Massachusetts											
Number of projects	1	1	1	1	1	1	1	1	-	-	1^a
Funds requested	10.00	4.00	4.00	0.50	4.00	5.00	8.00	1.80	-	-	37.30
Maryland											
Number of projects	-	-	-	3	3	3	3	3	3	2	3^a

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Dollars in millions											
State	Fiscal year										Total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Funds requested	-	-	-	7.53	18.00	19.70	24.60	21.00	29.07	62.90	182.80
Minnesota											
Number of projects	-	1	-	-	1	-	-	-	1	-	2^a
Funds requested	-	0.30	-	-	1.25	-	-	-	2.70	-	4.25
Missouri											
Number of projects	3	4	6	6	6	5	4	3	3	1	6^a
Funds requested	30.60	33.71	50.78	53.08	45.17	19.21	65.70	2.57	3.14	7.00	310.96
North Carolina											
Number of projects	-	-	3	1	-	3	2	-	-	-	5^a
Funds requested	-	-	3.70	1.80	-	8.00	14.80	-	-	-	28.30
Nebraska											
Number of projects	1	1	1	-	-	-	-	-	-	-	1^a
Funds requested	9.00	4.83	5.70	-	-	-	-	-	-	-	19.53
New Jersey											
Number of projects	1	2	2	4	4	7	5	2	1	2	7^a
Funds requested	10.00	21.70	13.50	10.62	17.15	41.20	32.10	46.00	7.50	43.13	242.90
New Mexico											
Number of projects	2	2	1	1	1	2	-	-	-	-	3^a
Funds requested	5.00	5.00	0.80	10.00	10.00	15.71	-	-	-	-	46.51
New York											
Number of projects	3	3	4	4	4	4	2	1	-	-	4^a
Funds requested	103.65	95.95	74.22	58.70	66.76	74.15	49.30	22.00	-	-	544.73
Ohio											
Number of projects	1	1	1	1	1	2	2	3	1	1	4^a

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Dollars in millions											
State	Fiscal year										Total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Funds requested	11.85	4.00	18.50	36.00	5.00	15.55	36.25	20.83	3.50	5.00	156.48
Oklahoma											
Number of projects	1	1	1	1	1	1	1	2	2	-	2^a
Funds requested	17.30	21.20	24.25	24.33	11.10	6.00	16.30	34.33	5.59	-	160.41
Oregon											
Number of projects	3	3	3	1	1	2	4	2	2	1	5^a
Funds requested	27.03	40.62	13.15	4.70	4.20	3.84	9.51	2.40	24.30	21.90	151.66
Pennsylvania											
Number of projects	2	4	3	3	3	3	3	3	3	1	7^a
Funds requested	113.30	67.36	32.21	14.50	5.50	53.15	24.46	74.83	112.00	56.25	553.56
Puerto Rico											
Number of projects	2	2	2	2	2	2	1	1	1	-	2^a
Funds requested	46.50	57.00	50.00	51.54	52.00	20.25	17.25	3.00	1.70	-	299.24
South Carolina											
Number of projects	-	-	-	-	-	1	1	1	1	-	2^a
Funds requested	-	-	-	-	-	0.40	0.23	1.57	2.89	-	5.09
Tennessee											
Number of projects	2	1	2	1	1	1	1	1	1	1	2^a
Funds requested	60.20	42.00	57.00	77.80	78.70	75.00	36.50	53.40	30.00	40.00	550.60
Texas											
Number of projects	3	3	3	2	3	3	2	5	4	1	8^a
Funds requested	55.32	50.55	41.00	17.74	8.60	6.27	5.50	33.92	76.61	13.30	308.80
Virginia											
Number of projects	1	1	3	4	3	2	1	1	-	1	4^a

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Dollars in millions											
State	Fiscal year										Total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Funds requested	10.15	1.08	31.08	23.17	33.48	2.38	0.30	0.30	-	12.00	113.92
Washington											
Number of projects	2	2	7	7	5	6	4	3	2	2	9^a
Funds requested	21.70	2.41	115.80	147.12	139.47	112.75	112.65	73.16	92.30	106.35	923.70
Wisconsin											
Number of projects	-	-	-	-	-	1	1	1	-	-	1^a
Funds requested	-	-	-	-	-	7.00	1.90	0.13	-	-	9.03
West Virginia											
Number of projects	3	4	1	1	1	1	1	1	1	1	4^a
Funds requested	38.00	22.90	86.70	15.00	70.00	10.00	30.00	22.00	9.40	4.00	308.00

Legend:

- = project or funding not requested

Source: GAO analysis of U.S. Army Corps of Engineers data. | GAO-19-99

Notes: Amounts are in nominal dollars, which are not adjusted for inflation.

The Corps' three main business lines within the construction account are aquatic ecosystem restoration, flood risk management, and navigation. (Aquatic ecosystem restoration is one of three areas that fall within the environment business line, but it is the only area within this business line that requested funding from the construction account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration.)

We excluded projects in the hydropower business line, in part because these projects are now mainly funded through the operations and maintenance account. They represented less than 4 percent of the construction appropriation requests from fiscal years 2008 through 2017.

^aFor some projects, funding was included in the President's budget requests over multiple years; therefore, the total number of projects does not sum across the row.

Appendix II: Corps Construction Projects Included in the President's Budget Requests, Fiscal Years 2008 through 2017

Table 2 lists the names and locations of the 164 construction projects the U.S. Army Corps of Engineers (Corps) identified as included in the President's budget requests for its three main business lines for fiscal years 2008 through 2017. The Corps' three main business lines are aquatic ecosystem restoration, flood risk management, and navigation.

Table 2: Names of Construction Projects and Funds Requested in the U.S. Army Corps of Engineers' Main Business Lines Included in the President's Budget Requests, Fiscal Years 2008 through 2017

Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Akutan Harbor/AK	N	—	—	—	7.00	—	—	—	—	—	—
Port Lions Harbor (deepening and breakwater)/AK	N	—	—	—	—	—	—	—	—	7.93	—
St Paul Harbor/AK	N	—	—	3.00	—	—	—	—	—	—	—
American River Common Features, Natomas Basin/CA	F	—	—	—	—	—	—	—	—	—	21.15
American River Watershed (common features) /CA	F	—	13.00	6.70	4.20	25.55	6.40	2.50	—	—	—
American River Watershed (Folsom Dam modifications)/CA	F	—	9.00	66.70	78.00	21.00	86.70	66.40	92.60	56.02	20.74
American River Watershed (Folsom Dam Raise)/CA	F	—	—	0.60	0.50	1.00	5.10	3.15	1.20	18.64	21.04
American River Watershed/CA	F	36.50	—	—	—	—	—	—	—	—	—
Coyote & Berryessa Creeks/CA	F	—	—	—	—	—	—	—	—	12.74	—
Hamilton Airfield Wetlands Restoration/CA	E	4.90	4.90	14.25	20.00	8.25	2.20	—	1.30	—	—
Hamilton City/CA	E	—	—	—	—	8.00	7.50	15.00	3.80	15.00	8.50
Isabella Lake (dam safety) /CA	F	—	—	—	—	—	—	28.20	8.00	49.90	70.50
Kaweah River/CA	F	—	1.00	0.64	—	—	—	—	—	—	—

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
Fiscal Years 2008 through 2017**

Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Los Angeles County Drainage Area/CA	F	—	5.70	—	—	—	—	—	—	—	—
Los Angeles Harbor Main Channel Deepening/CA	N	—	—	0.89	—	—	—	—	—	—	—
Napa River/CA	F	7.50	7.40	5.00	—	—	—	—	—	—	—
Napa River, Salt Marsh Restoration/CA	E	—	—	6.75	12.00	9.50	2.50	3.20	1.00	—	—
Oakland Harbor (50-foot project) /CA	N	42.00	25.09	1.00	4.33	0.35	0.50	0.10	6.00	1.20	1.06
Sacramento Deepwater Ship Channel/CA	N	0.90	0.90	10.00	12.50	3.50	—	—	—	—	—
Sacramento River Bank Protection Project/CA	F	21.53	23.97	15.00	10.00	10.00	3.00	3.00	1.00	6.00	8.00
Sacramento River, Glenn-Colusa Irrigation District/CA	F	0.50	—	—	—	—	—	—	—	—	—
Santa Ana River Mainstem/CA	F	17.00	8.10	52.19	25.00	20.50	7.20	42.00	30.83	21.50	37.20
Santa Paula Creek/CA	F	—	—	—	—	2.08	—	—	—	—	—
South Sacramento County Streams/CA	F	8.00	12.00	2.50	4.80	5.00	—	—	—	—	—
Success Dam, Tule River(Dam Safety) /CA	F	18.00	8.00	10.00	0.50	18.00	3.00	—	—	—	—
West Sacramento/CA	F	—	—	2.96	5.00	—	—	—	—	—	—
Yuba River Basin/CA	F	—	—	—	—	2.00	1.80	1.80	4.00	7.36	7.00
Washington, DC & Vicinity/DC	F	—	—	6.79	—	—	—	—	—	—	—
Delaware Bay Coastline, Roosevelt Inlet to Lewes Beach/DE	N	—	—	—	0.35	—	0.35	—	—	—	—

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
Fiscal Years 2008 through 2017**

Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Brevard County, Canaveral Harbor/FL	N	—	—	—	0.35	0.35	0.35	—	—	—	—
Cedar Hammock, Wares Creek/FL	F	5.00	2.77	5.57	—	—	—	—	—	—	—
Dade County/FL	F	—	—	—	11.00	15.20	—	—	—	—	—
Duval County/FL	F	—	—	—	7.50	0.10	0.10	—	—	—	—
Fort Pierce Beach/FL	F, N	—	—	—	0.35	0.35	0.35	5.20	—	—	—
Herbert Hoover Dike(seepage control) /FL	F	55.78	77.40	130.00	104.80	85.00	153.00	86.00	75.00	64.14	49.50
Jacksonville Harbor/FL	N	—	—	—	6.00	7.00	3.20	—	—	—	—
Manatee County/FL	F	—	—	—	0.10	0.10	0.10	—	—	—	—
Martin County/FL	F	—	—	0.35	8.00	—	0.35	—	—	—	—
Nassau County/FL	F, N	—	—	—	0.35	0.70	0.35	9.00	—	—	—
Pinellas County/FL	F	—	—	6.00	—	—	—	7.70	—	—	—
South Florida Ecosystem Restoration/FL	E	162.40	185.00	214.36	180.00	162.72	153.32	88.00	65.55	123.74	106.00
St John's County/FL	N	—	—	—	0.35	0.35	0.35	—	—	—	—
St Lucie Inlet/FL	F, N	—	4.00	—	—	—	—	—	—	—	—
Tampa Harbor Main Channel/FL	N	—	—	—	1.00	3.00	8.31	3.38	—	—	—
Brunswick Harbor/GA	N	6.40	—	—	—	—	—	—	—	—	—
Lower Savannah River Basin/GA	E	—	—	—	—	0.05	0.03	0.05	0.08	—	—
Savannah Harbor Expansion/GA	N	—	—	—	—	—	—	—	—	21.05	42.70
Savannah Harbor/GA	N	—	—	—	0.40	—	—	—	—	—	—
Tybee Island/GA	F	—	—	—	—	—	0.15	0.30	—	—	—
Savannah Harbor Disposal Areas/GA & SC	N	—	—	—	—	5.04	8.82	8.00	—	8.66	—

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Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Missouri River Fish And Wildlife Recovery/IA, KS, MO, MT, NE, ND & SD	E, N	—	—	70.00	78.40	72.89	90.00	70.00	48.77	47.13	18.00
Chain Of Rocks Canal, Mississippi River (deficiency correction)/ IL	F, N	4.50	2.50	6.50	5.39	2.25	3.00	0.40	—	—	—
Chicago Sanitary and Ship Canal Dispersal Barrier/IL	E	0.75	5.75	5.00	5.20	13.50	24.50	27.60	29.00	28.00	—
Chicago Sanitary and Ship Canal, Second Barrier/IL	E	6.90	0.50	—	—	—	—	—	—	—	—
Chicago Shoreline/IL	F	9.00	1.00	—	—	—	—	—	—	—	—
Des Plaines River/IL	F	6.62	5.62	3.30	6.50	1.00	2.30	—	—	—	—
East St Louis/IL	F	2.50	0.20	2.00	1.00	1.35	1.29	12.86	9.81	0.05	—
Illinois Waterway, Lockport Lock and Dam(replacement) /IL	N	20.45	28.60	—	—	—	3.60	11.40	—	—	—
Lock and Dam No. 27, Mississippi River (major rehabilitation) /IL	N	—	—	—	0.35	0.10	0.85	—	—	—	—
McCook and Thornton Reservoirs/IL	F	33.50	34.00	25.00	40.00	12.00	12.00	25.50	18.50	9.00	—
Wood River Levee/IL	F	—	0.68	1.17	1.10	0.83	4.20	20.86	8.65	0.05	—
Calumet Harbor and River/IL & IN	N	—	—	—	—	—	—	—	0.20	1.10	—
Olmsted Locks and Dam, Ohio River/IL & KY	N	104.00	114.00	109.79	136.00	150.00	144.00	163.00	160.00	180.00	225.00
Alton to Gale Organized Levee Districts/IL & MO	F	—	—	0.30	0.15	0.50	—	—	—	—	—

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Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Melvin Price Lock and Dam/IL & MO	E, N	—	—	—	—	—	—	—	3.80	2.00	—
Upper Mississippi River Restoration/IL, IA, MN, MO & WI	E	23.46	20.00	20.00	21.15	18.15	17.88	31.97	33.17	19.79	20.00
Indiana Harbor, Confined Disposal Facility/IN	N	—	—	—	8.00	—	—	—	—	—	—
Little Calumet River/IN	F	13.00	8.00	20.00	10.00	9.00	—	5.00	—	—	—
Topeka/KS	F	—	—	—	—	—	—	—	—	7.00	8.03
Tuttle Creek Lake/KS	F	28.50	23.80	—	—	—	—	—	—	—	—
Turkey Creek Basin/KS & MO	F	9.00	10.00	2.50	8.00	4.00	4.00	6.00	—	—	—
Kentucky Lock and Dam, Tennessee River/KY	N	52.00	22.33	1.00	2.87	—	—	—	—	—	—
Ohio River Shoreline, Paducah/KY	F	—	—	—	—	—	—	—	—	5.50	—
Rough River Lake (major rehabilitation)/KY	F	—	—	—	—	—	—	5.80	25.00	—	—
Wolf Creek Dam, Lake Cumberland/KY	F	—	—	123.00	134.00 ^a	132.00 ^a	85.00 ^a	—	—	—	—
Markland Locks and Dam (rehabilitation)/KY & IN	N	—	—	1.00	5.40	—	—	—	—	—	—
McAlpine Locks and Dam, Ohio River/KY & IN	N	45.00	6.27	—	—	—	—	—	—	—	—
Calcasieu River and Pass/LA	N	—	—	—	—	—	5.22	10.54	9.80	—	—
J Bennett Johnston Waterway/LA	N	1.50	1.50	7.00	1.50	—	2.00 ^a	—	—	—	—
Larose to Golden Meadow (hurricane protection) /LA	F	—	—	1.20	5.50	5.50	5.00	—	—	—	—

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
Fiscal Years 2008 through 2017**

Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Louisiana Coastal Area Ecosystem Restoration/LA	E	—	—	—	19.00	10.62	16.83	1.00	10.00	10.00	9.00
West Bank and Vicinity, New Orleans/LA	F	—	—	—	5.00	—	—	—	—	—	—
Muddy River/MA	F	10.00	4.00	4.00	0.50	4.00	5.00	8.00	1.80	—	—
Assateague/MD	E	—	—	—	1.00	1.00	1.20	1.20	0.90	0.60	0.60
Poplar Island/MD	E	—	—	—	1.53	12.00	13.50	18.40	15.10	26.50	62.30
Chesapeake Bay Oyster Recovery/MD & VA	E	—	—	—	5.00	5.00	5.00	5.00	5.00	1.97	—
Crookston/MN	F	—	0.30	—	—	1.25	—	—	—	—	—
Marsh Lake (Minnesota River Authority)/MN	E	—	—	—	—	—	—	—	—	2.70	—
Blue River Channel, Kansas City/MO	F	3.50	1.70	5.60	4.50	3.00	1.00	3.01	—	—	—
Clearwater Lake (seepage control)/MO	F	25.00	25.00	40.00	40.00	32.90 ^a	—	—	—	—	—
Monarch - Chesterfield/MO	F	—	—	3.33	3.44	1.35	2.34	2.00	0.92	1.28	7.00
St Louis Flood Protection/MO	F	—	2.00	0.57	0.10	0.10	0.20	—	—	—	—
Mississippi River between the Ohio and Missouri Rivers (regulating works)/MO & IL	N	2.10	5.01	0.58	4.35	7.32 ^a	7.94 ^a	49.69 ^a	0.05 ^a	0.05 ^a	—
Kansas Citys/MO & KS	F	—	—	0.70	0.70	0.50	7.73	11.00	1.60	1.82	—
Carolina Beach and Vicinity/NC	F	—	—	1.50	—	—	—	—	—	—	—
Manteo (Shallowbag) Bay/NC	N	—	—	—	—	—	0.60	—	—	—	—
West Onslow Beach and New River Inlet/NC	F	—	—	0.40	—	—	0.20	—	—	—	—
Wilmington Harbor/NC	N	—	—	1.80	1.80	—	7.20	6.80	—	—	—

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
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Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Wrightsville Beach/NC	F, N	—	—	—	—	—	—	8.00	—	—	—
Antelope Creek/NE	F	9.00	4.83	5.70	—	—	—	—	—	—	—
Barnegat Inlet to Little Egg Harbor Inlet/NJ	F	—	11.70	—	—	—	0.60	—	—	—	—
Cape May Inlet to Lower Township/NJ	N	—	—	—	0.20	—	0.20	0.20	—	—	—
Great Egg Harbor Inlet and Peck Beach/NJ	F	—	—	6.50	0.50	0.50	7.00	0.50	—	—	—
Lower Cape May Meadows, Cape May Point/NJ	E	—	—	—	8.92	7.65	0.40	0.40	—	—	—
Raritan Bay and Sandy Hook Bay (Port Monmouth)/NJ	F	—	—	—	—	3.00	1.00	—	—	—	—
Raritan River Basin, Green Brook Sub-Basin/NJ	F	10.00	10.00	7.00	1.00	6.00	1.00	11.00	11.00	7.50	10.00
Delaware River Main Channel/NJ, PA & DE	N	—	—	—	—	—	31.00	20.00	35.00	—	33.13
Alamogordo/NM	F	4.20	4.20	—	—	—	—	—	—	—	—
Rio Grande Floodway, San Acacia to Bosque Del Apache/NM	F	0.80	0.80	0.80	10.00	10.00	10.00	—	—	—	—
Southwest Valley Flood Damage Reduction, Albuquerque/NM	F	—	—	—	—	—	5.71	—	—	—	—
Atlantic Coast of NYC, Rockaway Inlet to Norton Point/NY	F	8.50	3.80	3.00	0.30	0.10	0.10	—	—	—	—
Fire Island Inlet to Montauk Point/NY	F	4.15	2.15	5.80	1.10	1.35	5.55	0.30	—	—	—
Long Beach Island/NY	F	—	—	0.70	0.30	0.30	0.50	—	—	—	—

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
Fiscal Years 2008 through 2017**

Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
New York and New Jersey Harbor/NY & NJ	N	91.00	90.00	64.72	57.00	65.01	68.00	49.00	22.00	—	—
Bolivar Dam/OH	F	—	—	—	—	—	13.80	32.50	12.30	3.50	5.00
Cleveland Harbor/OH	N	—	—	—	—	—	—	—	5.73	—	—
Dover Dam, Muskingum River(dam safety assurance)/OH	F	—	—	18.50	36.00	5.00	1.75	3.75	2.80	—	—
Metropolitan Region of Cincinnati, Duck Creek/OH	F	11.85	4.00	—	—	—	—	—	—	—	—
Pine Creek Lake/OK	F	—	—	—	—	—	—	—	16.33 ^a	1.96 ^a	—
Canton Lake/OK	F	17.30	21.20	24.25	24.33	11.10 ^a	6.00 ^a	16.30 ^a	18.00 ^a	3.63 ^a	—
Elk Creek Lake/OR	F	11.03	3.12	0.50	—	—	0.19	1.18	—	—	—
Willamette River Temperature Control/OR	E	—	—	11.00	—	—	—	—	—	—	—
Columbia River at the Mouth/OR & WA	N	—	—	—	—	—	—	1.00	1.00	11.00	21.90
Columbia River Channel Improvements/OR & WA	N	15.00	36.00	—	—	—	—	0.25	—	—	—
Lower Columbia River Ecosystem Restoration/OR & WA	E	1.00	1.50	1.65	4.70	4.20	3.65	7.08	1.40	13.30	—
East Branch Clarion River Lake/PA	F	—	—	—	—	—	15.00 ^a	21.50 ^a	64.80 ^a	59.00 ^a	56.25 ^a
Emsworth Locks And Dam, Ohio River/PA	N	43.00	25.80	25.00	11.50	3.00	—	—	—	—	—
Grays Landing Lock And Dam, Monongahela River/PA	N	—	0.60	—	—	—	—	—	—	—	—

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
Fiscal Years 2008 through 2017**

Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Locks and Dams 2, 3 and 4, Monongahela River/PA	N	70.30	40.81	6.21	2.00	1.00	36.65	1.96	9.03	52.00	—
Presque Isle Peninsula (permanent)/PA	F	—	—	1.00	1.00	1.50	1.50	—	—	—	—
Wyoming Valley (levee raising)/PA	F	—	—	—	—	—	—	1.00	1.00	1.00	—
Point Marion, Lock and Dam 8, Monongahela River/PA & WV	N	—	0.15	—	—	—	—	—	—	—	—
Portuguese and Bucana Rivers/PR	F	35.00	45.00	45.00	39.54	45.00	6.00	—	—	—	—
Rio Puerto Nuevo/PR	F	11.50	12.00	5.00	12.00	7.00	14.25	17.25	3.00	1.70	—
Charleston Harbor/SC	N	—	—	—	—	—	—	0.23	1.57	2.89	—
Folly Beach/SC	F, N	—	—	—	—	—	0.40	—	—	—	—
Center Hill Lake/TN	F	25.00	—	56.00	77.80 ^a	78.70 ^a	75.00 ^a	36.50 ^a	53.40 ^a	30.00 ^a	40.00 ^a
Chickamauga Lock, Tennessee River/TN	N	35.20	42.00	1.00	—	—	—	—	—	—	—
Brays Bayou, Houston/TX	F	14.84	5.38	7.30	7.74	3.00	2.10	2.50	1.80	—	—
Buffalo Bayou and Tributaries/TX	F	—	—	—	—	—	—	—	18.99	36.41	13.30
Gulf Intracoastal Waterway, Chocolate Bayou/TX	N	—	—	—	—	—	—	—	4.67	13.91	—
Greens Bayou, Houston/TX	F	—	—	—	—	—	—	—	—	16.29	—
Houston - Galveston Navigation Channels/TX	E, N	16.32	21.70	—	—	0.60	—	—	—	—	—
Lower Colorado River Basin (Wharton/Onion)/TX	F	—	—	—	10.00	5.00	2.00	3.00	3.63	10.00	—

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
Fiscal Years 2008 through 2017**

Dollars in millions											
Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Sims Bayou, Houston/TX	F	24.15	23.47	25.70	—	—	2.17	—	—	—	—
Texas City Channel (50-foot Project) /TX	N	—	—	8.00	—	—	—	—	4.83	—	—
Atlantic Intracoastal Waterway Bridge Replacement at Deep Creek, Chesapeake/VA	N	—	—	1.50	1.59	—	—	—	—	—	12.00
Norfolk Harbor and Channels, Craney Island/VA	N	—	—	28.50	1.00	27.40	—	—	—	—	—
Roanoke River Upper Basin, Headwaters Area/VA	F	10.15	1.08	1.08	1.08	1.08	0.30	0.30	0.30	—	—
Levisa and Tug Forks and Upper Cumberland River/VA, WV & KY	F	—	—	—	19.50	5.00	2.08	—	—	—	—
Chief Joseph Dam Gas Abatement/WA	E	—	—	1.00	0.20	—	—	—	—	—	—
Columbia River Accords, Pacific Lamprey Passage/WA	E	—	—	—	—	—	—	—	2.00	—	—
Duwamish and Green River Basin/WA	E	—	—	2.60	5.50	2.06	2.50	8.50	2.16	—	—
Grays Harbor (38- foot deepening)/WA	N	—	—	—	—	—	—	—	—	7.00	—
Howard Hanson Dam/WA	E, F	—	—	13.00	0.50	—	6.00 ^a	—	—	—	—
Mount Saint Helens Sediment Control/WA	F	10.20	1.41	1.50	0.80	6.50	3.50	0.60	—	—	—
Mud Mountain Dam/WA	E, F	11.50	1.00	0.40	1.00	1.00 ^a	0.75 ^a	—	—	—	22.35 ^a
Columbia River Fish Mitigation/WA, OR & ID	E, N	—	—	95.80	137.62	128.41	98.00	101.55	69.00	85.30	84.00

**Appendix II: Corps Construction Projects
Included in the President's Budget Requests,
Fiscal Years 2008 through 2017**

Dollars in millions

Project name/ Location	Business line(s)	Total funds requested									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lower Snake River Fish and Wildlife Compensation/WA, OR & ID	E	—	—	1.50	1.50	1.50	2.00	2.00	—	—	—
Green Bay Harbor/WI	N	—	—	—	—	—	7.00	1.90	0.13	—	—
Bluestone Lake/WV	F	12.00	12.00	86.70	15.00	70.00 ^a	10.00 ^a	30.00 ^a	22.00 ^a	9.40 ^a	4.00 ^a
Marmet Lock, Kanawha River/WV	N	25.00	9.00	—	—	—	—	—	—	—	—
Stonewall Jackson Lake/WV	F	—	0.90	—	—	—	—	—	—	—	—
Robert C. Byrd Locks and Dam, Ohio River/WV & OH	N	1.00	1.00	—	—	—	—	—	—	—	—
Total		1,316.68	1,147.58	1,582.37	1,553.01	1,418.75	1,372.25	1,250.26	1,060.29	1,124.21	1,045.25

Legend:

E = aquatic ecosystem restoration

F = flood risk management

N = navigation

— = no funding amount requested

Source: U.S. Army Corps of Engineers. | GAO-19-99

Notes: Amounts are in nominal dollars, which are not adjusted for inflation.

The Corps' three main business lines within the construction account are aquatic ecosystem restoration, flood risk management, and navigation. (Aquatic ecosystem restoration is one of three areas that fall within the environment business line, but it is the only area within this business line that requested funding from the construction account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration.)

We excluded projects in the hydropower business line, in part because these projects are now mainly funded through the operations and maintenance account. They represented less than 4 percent of the construction appropriation requests from fiscal years 2008 through 2017.

Some projects may be included under more than one business line, because projects may have requested funding from multiple business lines from fiscal year 2008 through 2017.

^aProject that requested funding from multiple business lines, in addition to the Corps' three main business lines.

Appendix III: Corps Construction Projects Included in the President's Budget Requests, by Division, Fiscal Years 2015 through 2017

Table 3 lists the names of the 71 construction projects, their locations, and the agency divisions that manage them, as shown in interactive figure 4 of this report, and includes the figure's rollover information. The U.S. Army Corps of Engineers (Corps) identified these projects as included in the President's budget requests for its three main business lines for fiscal years 2015 through 2017. The Corps' three main business lines are aquatic ecosystem restoration, flood risk management, and navigation.

Table 3: Construction Projects in the U.S. Army Corps of Engineers' Main Business Lines and Funds Requested in the President's Budget Requests, by Corps Division, Fiscal Years 2015 through 2017

Dollars in millions					
Division		Total funds requested			
Project name/Location	Business line	2015	2016	2017	All years
Great Lakes and Ohio River Division					
Bluestone Lake/WV	F	22.00	9.40	4.00	35.40
Bolivar Dam/OH	F	12.30	3.50	5.00	20.80
Calumet Harbor and River/IL & IN	N	0.20	1.10	—	1.30
Center Hill Lake/TN	F	53.40	30.00	40.00	123.40
Chicago Sanitary and Ship Canal Dispersal Barriers/IL	E	29.00	28.00	—	57.00
Cleveland Harbor/OH	N	5.73	—	—	5.73
Dover Dam, Muskingum River (dam safety assurance)/OH	F	2.80	—	—	2.80
East Branch Clarion River Lake/PA	F	64.80	59.00	56.25	180.05
Green Bay Harbor/WI	N	0.13	—	—	0.13
Locks and Dams 2, 3 and 4, Monongahela River/PA	N	9.03	52.00	—	61.03
McCook and Thornton Reservoirs/IL	F	18.50	9.00	—	27.50
Ohio River Shoreline, Paducah/KY	F	—	5.50	—	5.50
Olmsted Locks and Dam, Ohio River/IL & KY	N	160.00	180.00	225.00	565.00
Rough River Lake/KY	F	25.00	—	—	25.00
Division total		402.89	377.50	330.25	1,110.64
Mississippi Valley Division					
Calcasieu River and Pass/LA	N	9.80	—	—	9.80
East St. Louis/IL	F	9.81	0.05	—	9.86
Louisiana Coastal Area Ecosystem Restoration/LA	E	10.00	10.00	9.00	29.00
Marsh Lake (Minnesota River Authority)/MN	E	—	2.70	—	2.70
Melvin Price Lock and Dam/IL & MO	N	3.80	2.00	—	5.80

**Appendix III: Corps Construction Projects
Included in the President's Budget Requests,
by Division, Fiscal Years 2015 through 2017**

Dollars in millions					
Division		Total funds requested			
Project name/Location	Business line	2015	2016	2017	All years
Mississippi River between the Ohio and Missouri Rivers (regulating works)/MO & IL	N	0.05	0.05	—	0.10
Monarch-Chesterfield/MO	F	0.92	1.28	7.00	9.19
Upper Mississippi River Restoration/IL, IA, MN, MO & WI	E	33.17	19.79	20.00	72.96
Wood River Levee/IL	F	8.65	0.05	—	8.70
Division total		76.20	35.91	36.00	148.11
North Atlantic Division					
Assateague/MD	E	0.90	0.60	0.60	2.10
Atlantic Intracoastal Waterway Bridge Replacement at Deep Creek, Chesapeake/VA	N	—	—	12.00	12.00
Chesapeake Bay Oyster Recovery/MD & VA	E	5.00	1.97	—	6.97
Delaware River Main Channel/NJ, PA & DE	N	35.00	—	33.13	68.13
Muddy River/MA	F	1.80	—	—	1.80
New York And New Jersey Harbor/NY & NJ	N	22.00	—	—	22.00
Poplar Island/MD	E	15.10	26.50	62.30	103.90
Raritan River Basin, Green Brook Sub-Basin/NJ	F	11.00	7.50	10.00	28.50
Wyoming Valley (levee raising)/PA	F	1.00	1.00	—	2.00
Division total		91.80	37.57	118.03	247.39
Northwestern Division					
Columbia River Accords, Pacific Lamprey Passage/WA	E	2.00	—	—	2.00
Columbia River at the Mouth/OR & WA	N	1.00	11.00	21.90	33.90
Columbia River Fish Mitigation/WA, OR & ID	E, N	69.00	85.30	84.00	238.30
Duwamish and Green River Basin/WA	E	2.16	—	—	2.16
Grays Harbor (38-foot deepening)/WA	N	—	7.00	—	7.00
Kansas Citys/MO & KS	F	1.60	1.82	—	3.42
Lower Columbia River Ecosystem Restoration/OR & WA	E	1.40	13.30	—	14.70
Missouri River Fish and Wildlife Recovery/IA, KS, MO, MT, NE, ND & SD	E, N	48.77	47.13	18.00	113.90
Mud Mountain Dam/WA	E, F	—	—	22.35	22.35
Topeka/KS	F	—	7.00	8.03	15.03
Division total		125.93	172.54	154.28	452.76
Pacific Ocean Division					
Port Lions Harbor (deepening and breakwater)/AK	N	—	7.93	—	7.93

**Appendix III: Corps Construction Projects
Included in the President's Budget Requests,
by Division, Fiscal Years 2015 through 2017**

Dollars in millions					
Division		Total funds requested			
Project name/Location	Business line	2015	2016	2017	All years
Division total		—	7.93	—	7.93
South Atlantic Division					
Charleston Harbor/SC	N	1.57	2.89	—	4.47
Herbert Hoover Dike (seepage control)/FL	F	75.00	64.14	49.50	188.64
Lower Savannah River Basin/GA	E	0.08	—	—	0.08
Rio Puerto Nuevo/PR	F	3.00	1.70	—	4.70
Roanoke River Upper Basin, Headwaters Area/VA	F	0.30	—	—	0.30
Savannah Harbor Disposal Areas/GA & SC	N	—	8.66	—	8.66
Savannah Harbor Expansion/GA	N	—	21.05	42.70	63.75
South Florida Ecosystem Restoration/FL	E	65.55	123.74	106.00	295.29
Division total		145.50	222.19	198.20	565.89
South Pacific Division					
American River Common Features, Natomas Basin/CA	F	—	—	21.15	21.15
American River Watershed (Folsom Dam modifications)/CA	F	92.60	56.02	20.74	169.36
American River Watershed (Folsom Dam raise)/CA	F	1.20	18.64	21.04	40.88
Coyote & Berryessa Creeks/CA	F	—	12.74	—	12.74
Hamilton Airfield Wetlands Restoration/CA	E	1.30	—	—	1.30
Hamilton City/CA	E	3.80	15.00	8.50	27.30
Isabella Lake (dam safety)/CA	F	8.00	49.90	70.50	128.40
Napa River, Salt Marsh Restoration/CA	E	1.00	—	—	1.00
Oakland Harbor (50-foot project)/CA	N	6.00	1.20	1.06	8.26
Sacramento River Bank Protection Project/CA	F	1.00	6.00	8.00	15.00
Santa Ana River Mainstem/CA	F	30.83	21.50	37.20	89.53
Yuba River Basin/CA	F	4.00	7.36	7.00	18.36
Division total		149.73	188.37	195.19	533.28
Southwestern Division					
Brays Bayou, Houston/TX	F	1.80	—	—	1.80
Buffalo Bayou and Tributaries/TX	F	18.99	36.41	13.30	68.70
Canton Lake/OK	F	18.00	3.63	—	21.63
Gulf Intracoastal Waterway, Chocolate Bayou/TX	N	4.67	13.91	—	18.59
Greens Bayou, Houston/TX	F	—	16.29	—	16.29

**Appendix III: Corps Construction Projects
Included in the President's Budget Requests,
by Division, Fiscal Years 2015 through 2017**

Dollars in millions					
Division		Total funds requested			
Project name/Location	Business line	2015	2016	2017	All years
Lower Colorado River Basin (Wharton/Onion)/TX	F	3.63	10.00	—	13.63
Pine Creek Lake/OK	F	16.33	1.96	—	18.29
Texas City Channel (50-foot project)/TX	N	4.83	—	—	4.83
Division total		68.25	82.20	13.30	163.75
Annual total		1,060.29	1,124.21	1,045.25	3,229.74

Legend:

E = aquatic ecosystem restoration

F = flood risk management

N = navigation

— = funding amount not requested for a given fiscal year

Source: U.S. Army Corps of Engineers. | GAO-19-99

Notes: Amounts are in nominal dollars, which are not adjusted for inflation.

The Corps' three main business lines within the construction account are aquatic ecosystem restoration, flood risk management, and navigation. (Aquatic ecosystem restoration is one of three areas that fall within the environment business line, but it is the only area within this business line that requested funding from the construction account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration.)

We excluded projects in the hydropower business line, in part because these projects are now mainly funded through the operations and maintenance account. They represented less than 4 percent of the construction appropriation requests from fiscal years 2008 through 2017.

Some projects may be included under more than one business line, because projects may have requested funding from multiple business lines from fiscal year 2008 through 2017. Some states may appear more than once because division boundaries do not follow state lines. Therefore, different portions of a state may be located in different divisions.

Appendix IV: U.S. Army Corps of Engineers' Criteria Used to Rank Construction Projects in Main Business Lines

Table 4 lists the criteria included in the U.S. Army Corps of Engineers' (Corps) annual budget guidance for its three main business lines for fiscal years 2008 through 2017. The Corps' three main business lines are aquatic ecosystem restoration, flood risk management, and navigation.

Table 4: U.S. Army Corps of Engineers Business-Line-Specific Ranking Criteria for Construction Projects, Fiscal Years 2008 through 2017

Business line	Criteria	Fiscal year									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aquatic ecosystem restoration	significance ^a	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	acres	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	years to complete	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	other purpose outputs ^b	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Flood risk management	remaining benefits remaining costs ratio for project	Y	N	N	N	N	N	N	N	N	N
	benefits cost ratio for project	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	net benefits	Y	Y	Y	Y	Y	N	N	N	N	N
	other purpose outputs by business line ^b	Y	Y	N	N	N	N	N	N	N	N
	combined risk factors ^c	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	population at risk	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	population affected ^d	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	risk index ^e	N	N	N	N	Y	N	N	N	N	N
	flood risk management average annual benefits	N	N	N	N	N	Y	Y	Y	Y	Y
	levee safety action classification ^f	N	N	N	N	N	Y	Y	Y	Y	Y
	reliability-shore protection condition ^g	N	N	N	N	N	Y	Y	Y	Y	Y
	life safety hazard index ^h	N	N	N	N	N	N	N	Y	Y	Y
	relative risk of failure	Y	N	N	N	N	N	N	N	N	N
	dam safety action classification ^f	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	relative risk matrix value from condition assessment, consequence category	N	Y	Y	Y	Y	Y	Y	N	N	N
	probability of failure	N	N	N	N	Y	N	N	N	N	N
	number of people at risk in 100 year floodplain	Y	N	N	N	N	N	N	N	N	N

**Appendix IV: U.S. Army Corps of Engineers'
Criteria Used to Rank Construction Projects in
Main Business Lines**

Business line	Criteria	Fiscal year									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Navigation	dam safety program management tools ⁱ	N	N	N	N	Y	N	N	N	N	N
	remaining benefits	Y	N	N	N	N	N	N	N	N	N
	remaining costs ratio										
	benefits cost ratio	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Inland Waterways Users Board priority	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	commercial tonnage	N	N	N	N	N	N	N	N	Y	Y
	availability of Inland Waterway Trust Fund funding ^j	N	N	N	N	N	Y	Y	Y	Y	Y
	years to complete	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	other purpose outputs by business program ^b	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	relative risk of failure	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	critical loss of pool ^k and/or navigation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Legend:

Y = metric included in the guidance for a given fiscal year

N= metric not included for a given fiscal year

Source: U.S. Army Corps of Engineers. | GAO-19-99

Notes: Descriptions of criteria have been adapted from the U.S. Army Corps of Engineers' budget guidance for consistency and clarity.

According to Corps budget guidance, aquatic ecosystem restoration is one of three distinct areas within the environment business line. (Aquatic ecosystem restoration is the only area within this business line that requested funding from the construction account for each fiscal year within the scope of our review, according to the annual Press Books for fiscal years 2008 through 2017. Therefore, we refer to the environment business line as aquatic ecosystem restoration.)

^aMade up of seven criteria: (1) the scarcity of the habitat to be restored; (2) the extent to which a project facilitates the movement of native species by contributing to the connection of the ecosystem, adds a critical component to an ecosystem, or contributes to increased biodiversity; (3) whether the project provides a significant contribution to some key life requisite for a species; (4) the extent to which a project restores and sustains the natural hydrology of an area; (5) the extent to which a project restores the natural or attainable geomorphic processes (e.g., erosion) to the system or site; (6) whether the project contributes to watershed or basin plans emphasized in the Corps' Civil Works Strategic Plan; and (7) the extent to which the ecosystem will be self-sustaining in relation to the Corps' operations and maintenance costs.

^bMultipurpose benefits that are either authorized or derived from a project by business lines not executing the project.

^cNon-monetary aspects of flood damage reduction that examine the depth, velocity, and warning time for potential flooding, as well as the population at risk.

^dA subset of the population at risk, which includes the number of people located—living, working, and commuting—in the floodplain, who will be afforded risk reduction by the project at its design level.

^eCalculation based on the risk, velocity, depth, population at risk, and warning time for a flood event.

^fEvaluation of the condition of either a levee or dam that examines the likelihood, consequences, and economic impacts of potential structure failure.

**Appendix IV: U.S. Army Corps of Engineers'
Criteria Used to Rank Construction Projects in
Main Business Lines**

^gA qualitative assessment of how critical the need for project renourishment is and will be in the future for projects. This assessment helps identify projects that are in the greatest risk of not providing authorized storm damage reduction benefits.

^hA relative assessment of the potential loss of life that may occur in the absence of the project .

ⁱIndicates how quickly safety deficiencies in a dam project need to be studied and remediated.

^jFunds available from the Inland Waterways Trust Fund in amounts equivalent to a fuel tax imposed on commercial entities that use 27 inland waterways. For projects funded through the trust fund, the Corps generally provides a 50 percent match. The availability of funds for projects on these waterways is constrained by the amount of money available in the trust fund.

^kA condition in which, because of failure of one or more dam gates or operating machinery, an inland navigation pool cannot maintain specific water depths. In these situations, boats and barges may not be able to transit the waterway, moorings may break loose, or barges may sit on the bottom of a river, which can possibly damage the barges.

Appendix V: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

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Related GAO Products

Army Corps of Engineers: Factors Contributing to Cost Increases and Schedule Delays in the Olmsted Locks and Dam Project. [GAO-17-147](#). Washington, D.C.: February 16, 2017.

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