

CORPS OF ENGINEERS—CIVIL WORKS

The President's Proposal:

- Focuses funding on projects that yield the most benefit for the least cost;
- Reduces the growing backlog of ongoing construction work; and
- Establishes principles to guide program improvement efforts.

The Agency's Major Challenges:

- Finishing the large backlog of ongoing construction work more quickly; and
- Targeting funding to priority projects.

Army Corps of Engineers—Civil Works

Thomas White, Secretary of the Army

www.hq.usace.army.mil/inet/functions/cw

703-695-3211

Number of Employees: 24,800

2003 Spending: \$4.1 billion

Field Offices: Eight Divisions; 38 Districts; and 15 laboratories and other offices.

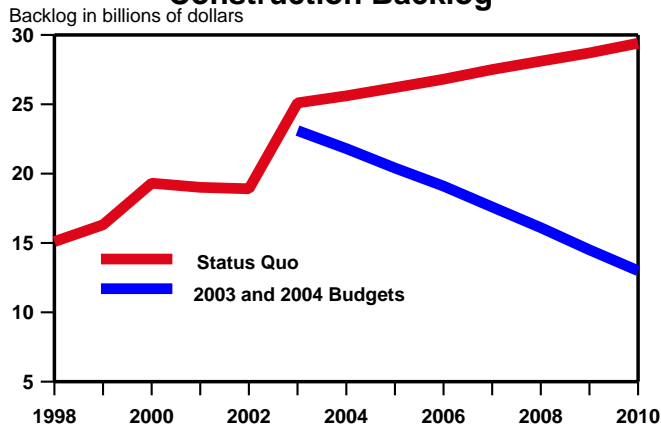
The civil works program of the Army Corps of Engineers (Corps) in the Department of Defense has three main missions: 1) reduce or prevent the expected damage caused by floods and storms; 2) facilitate commercial navigation; and 3) restore aquatic ecosystems. The Corps carries out this work in partnership with state and local governments and other non-federal entities. It also regulates development in navigable waters and wetlands, and is responsible for cleaning up about two dozen contaminated nuclear sites. For

2004, the budget proposes \$4.0 billion in discretionary budget authority for the civil works program.

Overview

The civil works program funds activities in every one of the 50 states. The Corps is responsible for the operation and maintenance of 926 harbors; navigation locks and dams at 230 locations; 383 major lakes and reservoirs; and 75 hydropower facilities. It also is building more than 160 authorized water resource projects across the nation, and faces an enormous backlog of ongoing construction work—\$23 billion in federal costs to complete the construction projects supported in the President's 2004 Budget. Unfortunately, despite a large increase in funding in recent years, the backlog of ongoing work—that is, projects started, but not completed—has been growing, not diminishing.

Two Possible Paths for the Construction Backlog



Construction funds are spread ever more thinly as new projects add to the Corps workload. As a result, citizens expecting flood protection have to wait longer; farmers and manufacturers who want to ship their products overseas more quickly or less expensively may have to wait yet another year; and the schedules for restoring streams and wetlands will, again, have to be stretched out. The budget proposes a comprehensive strategy to reduce these adverse impacts on the many Americans who rely on the completion of worthy projects already underway, while increasing the net return from the nation's investment in the civil works program.

The approach proposed in the budget reduces the construction backlog over time (see accompanying chart). Under the traditional path of adding projects with little or no restraint, the backlog continues to grow inexorably. While the level of funding can affect the rate at which the size of the backlog changes, the measures taken (or not taken) to limit the number of projects that become eligible for construction ultimately will determine whether we are making progress or are falling further behind.

Setting Construction Priorities

The construction program's goal is to produce as much value as possible from available funds. The budget achieves this key objective by proceeding with only five new high-priority studies and one construction start, and by limiting the number of projects not actively under construction that are funded for engineering and design.

The budget includes a high level of funding for eight projects that provide a very high net economic or environmental return to society relative to their cost. These investments will aid waterborne transportation at key locations, reduce the risk of flood damage in two urban areas, help restore the Everglades, and improve the prospects for recovery of endangered species in the Missouri River basin and the Pacific Northwest. These projects are the highest priorities now under construction.

The budget also provides the resources needed to complete 13 ongoing projects in 2004—removing them from the construction backlog. Seven will reduce flood damage, five will support commercial navigation, and one is designed to protect a commercial shipping channel from nuisance species.

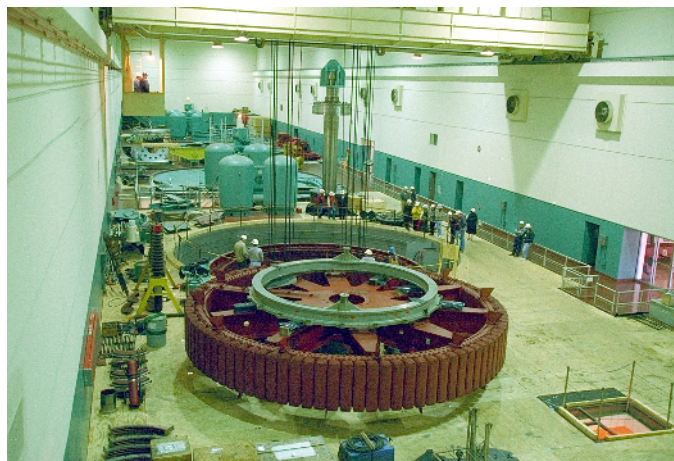


Navigation locks and dam under construction. The budget proposes to spend \$73 million in 2004 to rebuild Olmsted locks and dam to reduce delays on the Ohio River. Construction work began in 1991 and originally was scheduled to be finished by 2006. At this point, it may not be completed until 2010.

Priority Projects	2004 Budget Authority (in millions of dollars)	Project Purpose
Sims Bayou, Houston, TX	12	Flood Damage Reduction
West Bank, New Orleans, LA	35	Flood/Storm Damage Reduction
New York/New Jersey Harbor, NY, NJ	115	Navigation
Olmsted Locks and Dam, Ohio River, IL, KY.....	73	Navigation
Missouri River Fish and Wildlife Mitigation, IA, NE, KS, MO	22	Navigation/Endangered Species
Upper Mississippi River System Environmental Management Program, IL, IA, MN, MO, WI.....	33	Navigation/Environment
Columbia River Fish Recovery, OR, WA, ID.....	98	Hydropower/Endangered Species
Everglades, FL	145	Environment

To provide a basis for comparing all projects whose justification rests primarily on economic benefits, the Corps plans to make available information on each project annually. The Corps will rank these projects by the ratio of their remaining benefits to their remaining costs to complete, and will show for each of them the ratio of net benefits to total costs. Like the rest of the government, in calculating the effects of capital investments the Corps plans to present these data using a seven percent discount rate. This discount rate approximates the average real rate of return on private capital in the United States.

Benefit and cost information is only as useful as the analyses that produce it. The Corps will focus on developing options that are highly cost-effective. It plans to design and recommend projects that provide higher net benefits for each dollar invested, by excluding potential features and increments that do not significantly



A hydroelectric generator at a Corps dam: A major increase in spending for maintenance of Corps hydropower facilities has been requested. The budget proposes to pay for operation and maintenance by “direct funding” through payments from the revenue that federal Power Marketing Administrations earn when they sell the power that these generators produce.

Flood Control in Tucson

Between 1920 and 1954, the city of Tucson placed more than one mile of a local stream, the Tucson Arroyo, in covered culverts. Flood damages have occurred primarily because the city has grown considerably since 1954. Urban development prevents rainfall from seeping into the ground, and the limited capacity of these culverts caused water to back up and flood some areas. To reduce flood damage, the Corps proposed building two series of detention basins to hold back water upstream of the bottleneck. The first group of detention basins, located in the Randolph Park area, would cost about \$14 million and provide an estimated net return of 36 cents per dollar at a cost of \$12.6 million (a 1.36 to 1 benefit-cost ratio). The second group of detention basins, located in the Park Avenue area, would cost about \$17 million but would provide only a marginal net return on investment—about nine cents per dollar (a 1.09 to 1 benefit-cost ratio). Under the new policy, which aims to maximize the net benefits of the program and takes into account limitations on investment funds, the second group of detention basins would not be recommended for construction.

increase total net benefits relative to the costs. The objective is to ensure that any proposed new construction start is highly justified. Through the elimination of marginal features and incremental upgrades, additional funds can be made available to accelerate the completion of projects already under construction.

Problems With Some Projects

The Corps has played an important role in developing the nation's water resources, but it often faces difficult decisions. Some projects have strong local support, yet may not ultimately be in the national interest. In a number of cases, people have pointed to potential weaknesses in the Corps planning process. For example:

- The Corps justified dredging about 85 miles of the main channel of the Delaware River in a 1992 report, based largely on savings related to a predicted growth in ship traffic. Ten years later, as the Corps was preparing to begin construction, the General Accounting Office noted that the increase in traffic had not materialized. Net benefit estimates should be updated periodically along with project cost estimates.
- A probe by the Army Inspector General concluded that an economic analysis inappropriately favored construction of a proposed navigation project on the Upper Mississippi and Illinois Rivers.



Should the Corps expand its locks? The Corps is studying whether or not it makes economic sense to replace some 600-foot locks on the Upper Mississippi and Illinois Rivers with 1,200-foot locks. Under current conditions, the typical 1,200-foot barge passes through a 600-foot lock in two stages.

Estimating Navigation Benefits Properly

In estimating the benefits of some inland waterways navigation projects, the Corps historically has used an economic model called the tow-cost model. For the inland waterways of the Upper Midwest, the tow-cost model predicts that a growth in barge traffic could back up barges for increasingly long periods as the barges wait to use the locks—because more barges will enter the system and just sit there until it becomes cheaper to ship bulk commodities by land all the way to New Orleans. However, a recent report by the National Academy of Sciences (NAS) concluded that the Corps needs a new model to form the foundation for evaluating benefits in its feasibility study of this river system. The old model does not predict human behavior very well. Congestion increases shipping costs. According to the NAS report, as costs begin to increase, and barge traffic sits and waits, the people who buy and sell bulk commodities will begin to seek out new markets. For example, they may decide to ship the same commodities by land to a different destination or to process the goods in the Upper Midwest first. The Corps recognizes that its tow-cost model does not capture this common sense response, and is developing a new economic model so that it will be able to estimate properly the economic benefits of a range of possible improvements on these waterways.

Principles for Improving Program Performance

The Administration proposes five broad principles to guide future Corps authorization and funding legislation.

- The Corps should evaluate proposed water resources investments using analytically sound, modern methods, current data and, where appropriate, external review. The Corps should only pursue authorized federal water projects that meet current economic and environmental standards and that address contemporary needs.
- Until the federal government has reduced the construction backlog substantially, the federal government should only proceed with those new projects that provide a very high net economic or environmental return to society relative to their cost.
- In each of its three main missions (flood and storm damage reduction, commercial navigation, and aquatic ecosystem restoration), the Corps should establish priorities across and within watersheds based on the comparative net economic or environmental return that a given level of further investment would bring to the nation.
- In order to focus on the backlog of projects actively under construction in the three main mission areas, the Congress should adopt legislation to de-authorize or disallow funding for: 1) inactive projects automatically; 2) navigation projects for harbors and river segments that have extremely low commercial use; and 3) projects whose main purpose does not fall within the three main mission areas.
- The non-federal cost-share should reflect the extent to which a water resources project economically benefits commercial interests, property owners, or other identifiable private parties.

Common Measures

Wetlands. There are many different types of wetlands. They can serve multiple purposes such as fish and wildlife habitat, replenishment of groundwater, flood protection, and enhanced water quality. Wetlands still occur naturally across the nation—along the banks of our major rivers and our local streams; in the salt marshes behind the barrier islands of the Atlantic coast; the non-tidal forested backwater areas of the lower Mississippi River alluvial valley; the low-lying prairie potholes of the Dakotas; and the highest meadows of the eastern Sierra. There is no easy way to compare their quality and no way to quantify their value.

Using a rough common performance measure—the acres of wetlands improved or protected per \$1 million in total costs—OMB has been working with federal agencies that play crucial roles in wetlands conservation, improvement, and management to compare the cost-effectiveness of their efforts. These agencies are the Corps, the Environmental Protection Agency, the Department of the Interior's Fish and Wildlife and National Park Services, the Department of Agriculture's Natural Resources Conservation Service (NRCS), and the Department of Commerce's National Oceanic and Atmospheric Administration.

The costs of wetlands projects can be affected significantly by land values, the availability of water, vegetation type, soil and substrate conditions, and other factors. To facilitate a comparison across agencies and projects, the agencies have gathered data on their activities in four specific watersheds over a five-year period.



Restoring aquatic ecosystems is one of the missions of the Corps. For example, the Corps is helping to preserve the Atchafalaya Swamp in Louisiana.

On a per-acre basis, the Fish and Wildlife Service programs appear to be far more cost-effective than those of the other agencies, and the Corps construction program appears to be the least cost-effective. However, the data are preliminary and do not address possible differences in wetlands quality or other factors that may affect the cost of projects. OMB and the agencies will work together in 2003 to determine whether these data provide a reasonable basis for comparison of their overall wetlands efforts.

Flood Damage Reduction. OMB also compared the cost-effectiveness of the Corps, NRCS, and Federal Emergency Management Agency (FEMA) flood damage reduction programs. Corps projects generally involve structures such as dams or levees that redirect the impact of flood waters. NRCS projects usually feature a combination of dams, other structural modifications to a streambed, and payments to owners whose property will remain susceptible to flooding (to purchase easements). FEMA uses a variety of strategies to reduce flood damage, including non-structural measures such as buying buildings and relocating residents away from floodplains.

OMB asked these agencies to evaluate projects that they completed over a five-year period where flood damage reduction was the primary purpose. Because the projects within each agency’s program vary greatly in cost-effectiveness, the following table uses the median project as a basis for comparison:

Flood Damage Reduction: Net Benefits Per Dollar Invested	
Corps of Engineers	65 cents
FEMA	39 cents
NRCS.....	19 cents

As the table shows, each agency’s median project will result in estimated net flood damage reduction benefits. While the three projects depicted in the table are all cost-effective, the Corps project is the most cost-effective. However, several Corps projects resulted in a low economic return on investment. Over the five-year period, the two most cost-effective projects were funded by FEMA. The three projects with the least cost-effective flood damage reduction features (which resulted in a negative net economic return) were funded by NRCS.

OMB also asked the agencies for information on the federal share of the costs for their flood damage reduction projects. On average, the Corps and FEMA paid about 74 percent, while NRCS paid 82 percent. NRCS paid a much higher share of the costs of several projects. On its median project, NRCS paid 91 percent.

Performance Evaluation of Select Programs

Program	Rating	Explanation	Recommendation
Inland Waterways Navigation	Results Not Demonstrated	The Corps gives priority to maintaining high-use segments, but there is congestion at some locks. At present, the Corps is not able to estimate properly the benefits of major new investments.	The Corps should make greater efforts to reduce traffic congestion through scheduling and other demand-management approaches. It also should develop a new economic model to estimate properly the benefits of major new investments.
Non-regulatory Wetlands Activities	Results Not Demonstrated	The Corps has not evaluated the long-term ecological success of these efforts. On a per-acre basis, the average cost of wetlands restoration appears to be higher for Corps projects than for other federal agencies.	The Corps should develop ecological and cost criteria for proposed wetlands investments. The budget provides a high level of funding for three Corps efforts that are particularly significant for the nation: restoring the Everglades, revitalizing the side channels of the Upper Mississippi, and re-creating a string of natural areas along the lower Missouri River.
Flood Damage Reduction	Results Not Demonstrated	The Corps primarily reduces flood damages through structural means. Corps-owned flood control infrastructure typically functions properly. However, despite major investments by the Corps, flood damages nationwide have been rising.	The Corps should work more closely with other agencies, particularly with the Emergency Preparedness and Response Directorate of the Department of Homeland Security, (formerly the Federal Emergency Management Agency), to develop a coordinated federal approach to flood damage reduction. The Corps also should give equal weight to non-structural approaches when evaluating the best way to address flooding problems.

Update on the President's Management Agenda

The Corps recently reinstated a formal in-house training program and a separate, graduate-level education program to strengthen the capabilities of its project planning staff. The Corps also is reviewing its current organization and management in an effort to improve the quality and objectivity of project planning work. The Corps will make changes to strengthen oversight of project studies,

without causing unwarranted delays. As a first step, it will establish one or more centers of expertise that will be responsible for studies of projects that are likely to be costly, complex, or controversial.

	Human Capital	Competitive Sourcing	Financial Performance	E-Government	Budget and Performance Integration
Status	●	●	●	●	●
Progress	●	●	●	●	●

The Corps retains a red status for all five initiatives, but has started to make some progress over the past year. It has developed a human capital management plan that includes target dates for completion for each of the initiatives identified in Office of Personnel Management guidance. On financial performance, the Corps is working actively with the Inspector General for the Department of Defense to address concerns over its inventory and valuation of property, plant, and equipment, with the goal of achieving a clean balance sheet opinion for 2003, which will lead to a clean audit. The Corps has developed business cases for some of its major information technology investments, and has improved its enterprise architecture. On budget performance and integration, the Corps is working to identify suitable performance measures, as a first step toward collecting the outcome-based data that it needs to improve its management and inform budget decisions. The Corps has made the least progress on competitive sourcing. It has proposed to compete 37 percent of its Federal Activities Inventory Reform Act (FAIR Act) inventory positions by 2008, but more work is needed to determine which positions should be subject to competition.

Corps of Engineers—Civil Works
(In millions of dollars)

	2002 Actual	Estimate	
		2003	2004
Spending			
Discretionary Budget Authority:			
Construction	1,711	1,408	1,350
Operation and Maintenance	2,043	1,914	1,939
Mississippi River and Tributaries	346	281	280
General Investigations	154	103	100
Regulatory Program	127	144	144
Flood Control and Costal Emergencies.....	-25	20	70
General Expenses.....	153	155	171
Formerly Utilized Sites Restoration	140	140	140
Subtotal, Discretionary budget authority ¹	4,649	4,165	4,194
Legislative Proposal, Operation and Maintenance	—	-149	-145
Total, Discretionary budget authority	4,649	4,016	4,049
Total, Mandatory outlays	-116	49	27

¹ Includes \$0.2 billion in supplemental funding.