



American Society of Civil Engineers

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TESTIMONY OF
THE AMERICAN SOCIETY OF CIVIL ENGINEERS
ON THE
WATER RESOURCES DEVELOPMENT ACT OF 2004
BEFORE THE
THE SUBCOMMITTEE ON
TRANSPORTATION AND INFRASTRUCTURE
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
MARCH 31, 2004

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Mr. Chairman and Members of the Subcommittee:

Good afternoon. My name is Dominic Izzo. As you may know, I had the honor to serve as Principal Deputy Assistant Secretary of the Army for Civil Works from July 2001 until November 2002. I could not have done my job without the strong support of this Committee and its distinguished Members.

It's a great privilege for me to appear before this Committee today as a private citizen to testify on behalf of the American Society of Civil Engineers (ASCE) to present the Society's views on certain issues relating to the reauthorization of the Water Resources Development Act and the long-term future of the U.S. Army Corps of Engineers.*

I. Corps "Reform"

The U.S. Army Corps of Engineers has been subjected to a great deal of scrutiny in Congress and by the news media in recent years. That has led to widespread public criticism of the Corps and its programs. Some of that criticism is deserved; much of it is

* ASCE was founded in 1852 and is the country's oldest national civil engineering organization. It represents more than 130,000 civil engineers individually in private practice, government, industry and academia who are dedicated to the advancement of the science and profession of civil engineering. ASCE is a non-profit educational and professional society organized under Part 1.501(c) (3) of the Internal Revenue Service rules.

not. Regardless of one's view, we are again hearing an old Washington refrain — it's time to "reform" the Corps of Engineers.

Let me state at the outset one important principle: the Corps of Engineers does not need major overhaul. Naturally, like any institution, it can work better. Of course this is as true of Congress and other large government agencies as it is of the Corps.

But I think the larger point needs to be made at the outset — this nation needs the Corps of Engineers. It is uniquely situated to deal with large water resource projects having a distinct national or regional impact. No short-term process reforms, no matter how well intentioned or necessary, should be allowed to deflect the Corps from its mission of providing the comprehensive infrastructure and environmental protection this nation needs to remain competitive and healthy.

II. Areas for Improvement

Certainly the Corps can improve the economic analysis of major construction projects. Better mathematical models may provide better projections. In the end, however, these are just estimates based on many assumptions and, like all estimates, they can change. The analytical process must include improved *uncertainty analysis* to ensure that decision makers are fully aware of the quality of the data on which they are relying to make judgments. This should not discourage Congress or the Executive Branch from accepting prudent risks, but it should lead them to emphasize projects with less uncertainty in their projections.

An important aspect of improving economic analysis and avoiding decision-making gridlock in federal projects is establishing the *economic value of environmental*

costs and benefits. Of course monetizing environmental costs and benefits is an extremely challenging task.¹ Done properly, it will facilitate determining appropriate mitigation for major economic projects, like channel deepening or terminal construction, and it will also support prioritization of those projects. Water resources interests would do well to support this effort because it will make environmental decisions more rational. This will require a revision of the venerated *Principles and Guidelines*.² The Administration would do well to pursue this overdue revision aggressively in coordination with the environmental community and industry.

Most importantly, the justification of large projects for investment by the federal government is a *political* decision. The principle that the benefits of the project must exceed the cost is a good one. But more than pure economic benefits and construction costs are at stake. There are political, economic, and environmental costs and benefits, and these must all be weighed carefully. To the extent that you in Congress and Executive Branch officials agree on assumptions and objectives in advance, technicians

¹ Economists have developed a number of highly imperfect analytical tools to aid policymakers in determining the right balance between economic efficiency and environmental protection. At the center of the modern debate over investment projects and their impacts on the environment is “benefit-cost analysis” (BCA). BCA, which is founded on the need for tradeoffs among competing societal needs and wants, merely aggregates all preferences to determine a society’s willingness to pay for a non-marketable good. In the United States, the Corps of Engineers had standardized the practice as early as the 1920s.

² U.S. ARMY CORPS OF ENGINEERS, *ECONOMIC AND ENVIRONMENTAL PRINCIPLES AND GUIDELINES FOR WATER AND RELATED LAND RESOURCES IMPLEMENTATION STUDIES* (1983) (hereinafter *Principles and Guidelines*). The 1983 P&G replaced the P&S of 1980 (*not* 1973), which were a CFR-codified modification of the 1973 P&S with expanded guidance on environmental quality. The 1980 date is important to those knowledgeable about the P&G, because it represents the Carter Administration’s decision to issue the P&S as CFR regulations that arguably were third-party enforceable. That action, late in the term, was what generated the vehement opposition to the P&S early in the Reagan Administration, especially from Secretary Watt. Had Mr. Carter not issued the 1980 version as regulations, we might never have changed them in 1983.

can clarify economic and environmental factors so that there will be meaningful public discussion as part of the political decision-making process. Setting priorities for government spending unquestionably requires a political decision. No mathematical or economic modeling can change this. It can only provide a better framework for making an informed decision.

Project sponsors must predict or estimate the benefits of economic development and the cost of construction as the basis for a federal navigation and flood-control projects. They should also strive to identify the risks and assumptions inherent in those predictions. They should work together with other stakeholders, particularly conservationists, to establish environmental costs and benefits in economic terms that will justify appropriate mitigation when environmental damage is unavoidable. Such a methodology will produce a public record that should garner the political support necessary not just for a project authorization but also for a solid appropriation to build the project. Appropriations, after all, build projects while authorizations are just paper that may languish for years. Revising the *Principles and Guidelines* to emphasize uncertainty analysis and the economic value of environmental cost and benefits may result in fewer authorizations and longer studies but it should lead to more and better projects being built.

As the Corps of Engineers prepares projects and programs and presents them to Congress for approval, it is essential that the Corps be able to demonstrate unequivocally that the plans are the result of the best analysis that modern engineering, economics, and environmental science can provide. This Committee can play a key role in assisting the Corps in improving its planning and methods of analysis to achieve excellence in this

effort. The planning process starts with the *Principles and Guidelines* that underlie this work. President Reagan established the current *Principles* by Executive Order in 1983, replacing the 1980 Principles and Standards. These *Principles and Guidelines* have served the nation well. Using them, the Corps was able to evolve from unilateral initiatives and projects, to joint undertakings and partnering with non-federal entities as spelled out in the Water Resources Development Act of 1986. The Corps was also able to refocus its Civil Works mission from mainly commercial navigation and flood control to an increasing emphasis on environmental restoration and stewardship – now 19 percent of the Civil Works budget. Indeed, because the *Principles and Guidelines* mandates that projects contribute to economic development while protecting the environment, they have provided a key impetus to this change in focus. Under the *Principles and Guidelines*, the entire Corps project development process is subject to an extremely high level of Executive Branch and congressional oversight. Through the annual appropriations process, the Administration and the Congress have the opportunity to review projects at every stage of development. Indeed, the Corps only constructs 16 of 100 potential water resource projects that begin the project development process; that is testament to the efficacy of the oversight. The *Principles* are intended to ensure proper, consistent planning by Federal agencies in water resource studies. They state: “[T]he Federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the Nation’s environment, pursuant to national environmental statutes, applicable executive orders and other Federal planning requirements.” This is actually a practical definition of sustainable development and I do not believe it needs to change.

III. Monetizing Environmental Benefits

The *Principles and Guidelines* do allow some flexibility. Although plans that maximize economic benefits generally have been the focus, the *Principles and Guidelines* does not require an agency to select a course of action based on that criterion alone. The Secretary of the Army may also grant exceptions to the economic criterion under specific circumstances. The Corps also develops plans that maximize environmental restoration, as well as plans with “combined National Economic Development/National Economic Restoration” benefits. It is with these combined NED/NER plans that the economics get complex. It’s one thing to calculate, forecast, and say “This project will prevent X dollars in flood damage in the event of a storm of size Y,” or “This navigation project will save shippers X dollars over the cost of shipping by another mode, and these savings will be passed on to consumers.” It’s entirely more complicated to calculate and forecast “passive value” and say, “It’s worth X dollars to protect or restore Y acres of habitat.” Therein lies a major opportunity for improvement. The Corps is attempting to determine, and develop tools to evaluate, “willingness to pay” or benefit-cost ratios for projects where there are no direct monetary benefits.³ Some environmental economists have argued that “an intact ecosystem is worth 82 percent more, on average, than the same parcel clear-cut, drained, paved or otherwise developed in a non-sustainable way.” Such an economic valuation could seriously affect the BCR of Corps projects. Recent environmental restoration efforts reinforce this idea. In 2002, the

³ The benefit-cost ratio (BCR) is not the same as a benefit-cost analysis (BCA). The BCR is a first rough estimate of the desirability of a project. One divides the estimated benefits (in dollars) of a project by its total costs to get the ratio. A positive ratio of 1.5-to-1 or greater is frequently deemed acceptable. Willingness-to-pay (WTP) estimates are an attempt to establish the hypothetical dollar value for environmental amenities that have no readily identifiable market, i.e., clean air or species conservation.

Corps has recently estimated, albeit roughly, that it would cost \$10,000 an acre to create the remaining 130,000 acres of Missouri River Fish and Wildlife Mitigation authorized by the Congress. That includes about \$1,500 per acre for acquisition of agricultural land and the balance to convert that land back into natural wetlands or riparian habitat. If that is what we are willing to pay, does that not argue that we now value a natural ecosystem at least six times the value of agricultural land?

Finally, and not to belabor the point on monetizing benefits, but Civil Works projects often do not take credit for reducing the risk of environmental or health damages. The EPA often justifies actions on the basis of lives saved. I believe they recently have even claimed \$4.8 million for each “statistical life” that a regulation may save, for example by toughening standards for pollutants. Should not the Corps’ benefit-cost analysis do the same? When an inland navigation project keeps thousands of trucks off the road, statistically there are fewer accidents and fewer deaths annually. This very real benefit should accrue to a navigation project.

IV. Watershed approach

Another significant area to address is how projects affect other water resources needs and other projects within a watershed. As I said earlier, the Corps is uniquely able to carry out public works projects that adopt a regional perspective. Often, demands to balance these needs will require integration of multiple Corps programs and projects with each other and with the programs and activities of states and other agencies. In this regard, I would like to point out the excellent work of the Association of State Floodplain Managers. The Association espouses some common sense ideas about floodplain

management. One that appeals to me is the notion that no floodplain development should be allowed to cause an adverse effect on someone else's property in the floodplain. In other words, we should preclude the transfer of flooding problems from one property to another property or community. That simple idea is what watershed planning is about, and it ought to be a part of the *Principles and Guidelines*. It also requires someone to referee disputes between upstream and downstream interests, for example. Who could do this better than the Corps?

To institute a true watershed approach for planning and execution, the Corps may need authorization from Congress. Existing laws and policies encourage an individual project focus, and geographically limited projects, in which sponsors share the cost of the study. The current approach limits the Corps' ability to look comprehensively, and it fosters an atmosphere that may lead to inter-basin disputes. It also increases the risk that projects that solve one problem may inadvertently create others, even though the *Principles and Guidelines* and Corps guidance say the agency is supposed to avoid this. Too frequently the economic solution is selected over the environmental, when, in fact, an option must exist to have both. I believe the future is to look at watersheds first; then design projects consistent with the more comprehensive approach. This comprehensive approach is a reform, but a reform of the national water policy and the *Principles and Guidelines* to better meet the future environmental and economic needs of the nation.

V. Revising the Principles and Guidelines

At present there is no statutory requirement to revise the *Principles and Guidelines*. Under the current *Principles and Guidelines*, the nation has developed good

projects that promote economic development and benefit the environment, such as the Comprehensive Everglades Restoration Project, the Upper Saint John's River Basin Flood Control Project, and the Houston Ship Channel deepening. The Army and the Corps can work with other agencies to improve the way the Corps does water resources planning under the current *Principles and Guidelines*. Updating some Corps regulations alone might improve the process. However, while the Principles are acceptable as they are, I believe that revising the Guidelines in the *Principles and Guidelines* could lead to improvements. Fine-tuning the *Principles and Guidelines* could include revisions that would:

- Update the “willingness-to-pay” methods used to calculate such nonmonetized existence values as recreation and environmental benefits.
- Specify more clearly the acceptable assumptions and conditions for not undertaking the project. The Corps’ current benefit-cost analysis compares the benefit of doing “a” project against the cost of not doing it. There is too much ambiguity in the analysis of the cost of not doing the project, and the Corps needs to deal with that ambiguity.
- Formalize the methods for scenario-based planning (charrettes), which the Corps has used successfully on its Upper Mississippi Navigation Study.
- Update the assumptions used to calculate nonstructural flood-damage-reduction benefits. The Corps has pursued nonstructural flood control for decades, but it needs better economic tools to monetize the benefits of this practice.
- Reconsider the use (or nonuse) of Regional Economic Development benefits.
- Develop improved methods for risk and uncertainty analyses.
- Redirect the planning process to provide more benefit to the environment, perhaps by providing better guidance on mitigation.
- Accelerate the use of collaborative planning processes.
- Jump-start the use of other proven planning methods.

- Apply the *Principles and Guidelines* to the water planning of other federal agencies, such as the Federal Emergency Management Agency, the Department of the Interior, and the Environmental Protection Agency.

I think you can see that a revised *Principles and Guidelines* can add value to the Corps' planning process.

VI. Other Corps Issues

Two other basic issues Congress and the Corps need to address are reducing the backlog of "authorized" projects and improving the Corps' internal processes.

A. Project Backlogs

Let me first address the backlog. The Corps has about \$5 billion worth of inactive projects, whose designs probably won't solve the original problems they were intended to solve or for which there is no longer support. The creation of this "historical" backlog began somewhat accidentally. After authorizing no new projects for 16 years, Congress in 1986 included well over 200 projects in the Water Resources Development Act that year. Considerable time may elapse between when a problem is identified and studied, and when the project to address the problem is constructed. During that time lapse there may be scientific progress that could better address the problem, or there may even be shifts in public policy. Then there are projects that could have direct and immediate positive impacts, solve real problems, but are controversial for any variety of reasons. Congress authorized most of these inactive projects years ago, but the Corps never built them. Some of these show up on the "hit lists" of critics, and sometimes the critics are right. The challenge is how to determine whether or not we will still pursue these projects. Clearly, the congressional sponsors of these projects could withdraw their

support or even introduce language to de-authorize them in a future WRDA. Sometimes this is too difficult politically. It would be helpful for an interagency task force to take a fresh look at them, perhaps in the same way the BRAC Committees decide on which military installations to close.

B. Internal Processes

As for the Corps' *internal processes*, at your direction in the Water Resources Development Act of 2000, senior officials recently have focused on planning and review capability, reemphasizing such basics as environmental science, economics, public involvement, and internal review. The Corps also reviewed the best way to consolidate its planning and review capability for high-priority, low-volume activities, so that it could assign the best people to the most complex projects. One congressional requirement was an independent review by the National Academy of Sciences. The first part of the review was completed in 2002, and we understand that the remainder will be released within a few weeks. In this regard, I believe that General Flowers and his staff have made excellent progress, and I commend his good work to this Committee.

The 2002 study findings supported independent review for major Corps projects. The Corps has been implementing this recommendation. By the time I left, the Corps' preference was to incorporate it in the Chief of Engineers Report process so as not to increase the time from initiation of a study to authorization of construction. One possibility might be the kind of review provided by the old Board of Engineers for Rivers

and Harbors,⁴ but with external technical experts as well as Corps division commanders and employees. In the interim the Corps is using various new forms of review, internal and external, to improve and validate their studies and projects. The Corps is taking advantage of its value engineering expertise, its cross-district review capability, and outside experts to evaluate and validate its findings. Today I do not believe that there are any other projects, private or public, that receive the degree of review of Army Civil Works projects.

VII. Conclusion

Finally, I would submit that we must address the question of how the Corps goes about developing and recommending projects on a higher strategic plane: Where is our national policy for water resources heading next? Where should the Corps give priority to development of water resources for social and economic benefit and where should we restore them to their natural state? There will and must be times when the nation must choose one over the other. As science and engineering evolve, we can find more balance between these options, and working together, make the right choices.

We must also ask what water resource investments does the nation most need to make now. To what extent should these be a federal responsibility? To what extent should the Corps have this responsibility? Which investments should we defer until later? What can we do without? Should we continue all ongoing construction projects? Can we afford to build them all simultaneously? All these questions will require answers in the coming months and years.

⁴ This Board was established in 1902 and continued in operation until the early 1990s, when Congress disbanded it.

Let me emphasize again: The Army Corps of Engineers, more than any other Agency, is uniquely qualified to evaluate multiple and competing options objectively and assess the best course of action.

In conclusion, I can offer these three points as a personal vision for the future of the Corps of Engineers:

1. The Army Corps of Engineers must be the nation's water resources leader for sustainable watershed development and environmental restoration. The Corps' effort in stopping wetland loss and restoring riparian habitat and wetlands in the past decade is a dramatic example of what they can do when they get the mission. Congress should reaffirm this role in the next WRDA.
2. The Corps is the world's pre-eminent public construction agency. No other agency can take better care of our nation's water resource infrastructure than it does. The Corps is uniquely qualified to lead the protection and development of our water resources based on its 200+ years of experience on our rivers, ports and coastlines.
3. The Army Civil Works program must focus on local concerns while coordinating national resources in an open, collaborative decision-making process. The Corps cannot take sides or dictate solutions. Instead the goal is to build consensus. Based on my experience that is how the Corps is working today.

To the degree that this Committee can help improve planning and methods of analysis, you will do the Corps and the nation a great service.

Thank you for inviting me to be with you today. I would be happy to answer any questions you may have.

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