

Water Resources Development Policy



The future holds great challenges for the nation's water resources. Shifting weather patterns, more damaging floods, and rising water shortages will threaten communities, the economy, and the environment. This chapter is part of a larger report, ***Weathering Change: Policy Reforms That Save Money and Make Communities Safer***, which shows what the federal government must do to help the nation confront these looming challenges.

To see the entire report, visit www.AmericanRivers.org

Introduction:

Over the past century, the federal government has altered and reshaped many of the nation's waterways. The U.S. Army Corps of Engineers (Corps) has played a major role in this process by carrying out a wide variety of dam, levee, and river dredging projects. Congress authorizes these projects through periodic passage of Water Resources Development Act (WRDA) legislation. While these projects have benefited certain segments of society, the decision-making process and economic justifications behind them are often fundamentally flawed. As a result, Corps projects frequently degrade natural resources and undermine the ecosystems that buffer communities from floods and droughts. Congress must place greater scrutiny on the Corps and fund projects that protect communities and the environment, particularly as climate change causes a rise in severe weather and flood risk. The Corps also must fundamentally change its approach to water infrastructure by adopting a more holistic assessment of costs and benefits and prioritizing non-structural solutions that are cheaper, provide a wider array of benefits, and are better suited to the greater extremes of climate change.



When levees fail, catastrophic flooding can result as it did in New Orleans during Hurricane Katrina.

I. Today's Policy

Many federal water infrastructure projects increase flood risk, waste taxpayer money, and harm the environment.

Costly and environmentally-damaging projects:

The history of the Corps of Engineers is littered with politically-driven, environmentally-damaging projects that have done little to help surrounding communities. While some projects have satisfied narrow economic goals or provided a degree of temporary flood protection, too often they have failed to produce the promised benefits and have destroyed environmentally valuable ecosystems, increased downstream flood risk, and reduced water quality. One of the key factors that has enabled this dubious track record is a fundamentally flawed process for planning water resources projects. Current guidelines require projects to promote economic development over all other objectives.

Perhaps the most devastating example of this failed approach is the Mississippi River Gulf Outlet (MRGO). The Corps completed the 76-mile canal in 1956 in order to shorten the journey from New Orleans to the Gulf of Mexico, which previously required a 120 mile trip via the meandering Mississippi River. The canal never attracted the levels of

traffic the Corps predicted, and only one ocean-bound ship was using the canal on an average day by 2005.¹ The costs, however, were very real. The project was completed in 1968 at a cost of \$92 million (about \$550 million in 2009 dollars²) and cost \$13 million per year to maintain on average.³ The project directly destroyed over 20,000 acres of barrier wetlands and caused salt water intrusion into many more, impacting over 600,000 acres of wetlands in all.⁴ The canal and associated destruction of wetlands also created a flood hazard that raised the height and velocity of the storm surge and overwhelmed New Orleans' levees during Hurricane Katrina in 2005, leading to over 1,800 deaths and \$81 billion in damages. Without MRGO, the levees and wetlands would have provided stronger protection from the storm, and the destruction likely would have been far less.⁵

Rising flood risk: Over the years, the Corps has spent over \$123 billion to build and operate flood control structures throughout the U.S.⁶ Despite these considerable costs, flood damages have continued to rise steadily. Corps projects have relied primarily on levees and floodwalls to quickly pass water downstream, a process which elevates the height of floodwaters and can lead to cata-

strophic consequences when these structures fail. In effect, these structures decrease the frequency of small flood events but increase the risk of larger disasters. In addition, structural flood defenses have added to flood risk by providing a false sense of security and encouraging additional development in at-risk areas.⁷ Levee construction in New Orleans, for instance, encouraged development in low-lying areas that home-owners assumed were protected by the Corps' flood defenses. This pattern is being repeated as the city recovers from Hurricane Katrina. Similarly, ongoing floodplain development behind the extensive levee system in California's Central Valley — constructed by the Corps and local reclamation districts — has led to extremely high flood risk with the potential for catastrophic damages in the event of a large flood or earthquake.⁸

Failure to consider climate change: As poorly as many Corps projects have fared in recent decades, they face an even greater challenge as the climate changes. Projects that were designed to accommodate historical precipitation patterns will be at increased risk of failure as conditions shift. Unfortunately the Corps is not required to consider projected climate impacts in the siting or planning of its projects. An amendment offered by Senator John Kerry during the 2007 Senate WRDA debate would have required consideration of climate change in Corps projects. The amendment received more than 50 votes but was unable to overcome a filibuster.⁹

II. Risks and Consequences

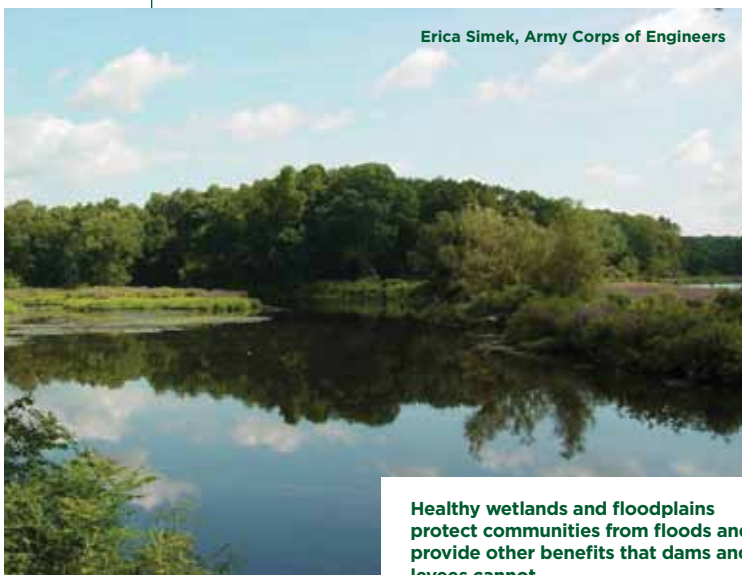
This backward-looking approach to water infrastructure planning and construction is poorly suited for a future climate defined by greater volatility and uncertainty. Destroying nature's ability to absorb rainfall and putting people in harm's way was never a sound strategy, but it is particularly dangerous as climate change increases the likelihood of extreme storms and floods. Flood control projects that rapidly move water downstream will exacerbate the consequences of a more volatile climate and will be at greater risk of failure. Projects designed and constructed based upon old climate models and data are not likely to achieve their intended goals. These structures will make surrounding communities and ecosystems more vulnerable to climate change and require further investments of taxpayer money to adapt to shifting conditions.

III. Preparing for the Future

A more rational and cost-effective approach to water infrastructure will reduce vulnerability to climate change and lower the long-term costs of adapting to greater volatility.

Prioritize nonstructural projects: The Corps of Engineers must fundamentally change how it plans, evaluates, and carries out projects. Fortunately reform has already begun. As instructed by Congress in WRDA 2007, the Obama Administration is developing new Principles and Guidelines (P&G) for all federal water resources projects to ensure that they protect the environment and promote sustainable economic development.¹⁰ These new standards, expected to be released in 2011, have the potential to correct many of the historical shortcomings detailed above.

In order to achieve these critical goals and prevent more ill-conceived and poorly justified projects, the new P&G must ensure that water project planning is driven by federal law and national priorities. The status quo approach of using benefit-cost analysis as the primary driver of project selection does not address whether a project meets national needs and priorities, unnecessarily damages the environment, increases risk for communities downstream, or complies with federal law. There must be a clear directive that all water projects protect and restore the environment, avoid the unwise use of flood-



Erica Simek, Army Corps of Engineers

Healthy wetlands and floodplains protect communities from floods and provide other benefits that dams and levees cannot.

plains, and rely on factors beyond a strict benefit-cost analysis in order to meet a broader range of societal goals. There must be a requirement for the use of nonstructural and restoration measures where those approaches are possible and cost effective.

Consider climate change in project planning:

Climate change must be a key consideration in the siting and design of proposed infrastructure projects. The P&G should require all new projects to address risk and uncertainty, including the effects of climate change. Planners should be required to demonstrate that a given project will increase community and ecosystem resilience to climate change impacts. Decades of WRDA bills have created a long list of authorized Corps projects that have never been built due to lack of funding. With the Corps' \$2 billion annual construction budget, it could take over 40 years to complete all the currently authorized projects. Whether through the ongoing P&G revision or future legislation, the Corps must be required to prioritize projects that maximize public benefits, protect natural resources, and build resilience to climate change. Before moving forward with any of these older projects, to be compliant with the National Environmental Policy Act (NEPA), the Corps is required to update its analysis and incorporate climate change in evaluating the project.

The new Principles and Guidelines also need to address the operations of existing facilities. The new P&G must direct agencies to periodically review operations plans for federal projects such as dams to ensure that they are responsive to shifting precipitation patterns and other changes. There must be a clear directive to manage projects in a manner that responds to the threat of rising floods and droughts and simultaneously helps make communities, fish, and wildlife more resilient to climate change.

IV. Benefits of Being Prepared

The past century has taught us many lessons about how to build and operate water infrastructure. We now know that there are more cost-effective and sustainable ways to secure clean water and manage floods than with large, single-purpose infrastructure projects. By prioritizing nonstructural solutions, keeping people out of harm's way, and planning for changing conditions, we can save taxpayer money, maintain a healthy environment, and reduce our vulnerability to climate change. Failure to embrace a more sustainable approach to water infrastructure will force us to repeat the mistakes of the past. ■

FOOTNOTES

- ¹ Statement of Mr. Scott Faber, Environmental Defense. Testimony before the U.S. Senate Committee on Environment and Public Works (November 9, 2005).
- ² Based on comparison of Consumer Price Index data, U.S. Department of Labor (2010).
- ³ U.S. Army Corps of Engineers. *The MRGO Report Re-evaluation Study* (U.S. ACE, 2003).
- ⁴ Day, J. et al. *A Guide for the Army Corps' Congressionally-Directed Closure of the Mississippi River Gulf Outlet* (2006).
- ⁵ *Ibid.*
- ⁶ Costenbader, K., Ellis, S., and Conrad, D. *Crossroads: Congress, the Corps of Engineers and the Future of America's Water Resources* (National Wildlife Federation and Taxpayers for Common Sense, 2004).
- ⁷ *Ibid.*
- ⁸ Galloway, G.E. et al. *A California Battle — Flooding in the Central Valley* (Independent Review Panel, 2007).
- ⁹ Global Climate Change Amendment to WRDA 2007, #1094.
- ¹⁰ Water Resources Development Act of 2007, Pub L. No. 110-80 (2007).