



New Orleans Following Hurricane Katrina, NOAA

## **Congress Should Require the Use of Low Impact Solutions to Water Resources Problems Whenever Practicable**

### ***Low Impact Solutions Protect People, Wildlife, the Environment, and Taxpayer Dollars***

Federal law and policy require use of the most environmentally protective approaches to addressing water resources problems. Requiring the use of nonstructural and restoration measures where they will solve all or a portion of a water resources problem and are practicable is the best way to meet these mandates, protect the public, achieve multiple benefits, and save scarce taxpayer dollars.

#### **THE PROBLEM:**

The U.S. Army Corps of Engineers (Corps) continues to ignore longstanding federal laws and policies that require the Corps to consider and utilize the most environmentally protective approaches to addressing water resources problems by pushing for large scale structural projects when nonstructural and restoration approaches could provide the same or greater project benefits.

Large scale structural projects typically cause significant harm to the environment and destroy vital fish and wildlife habitat. Structural flood protection projects often increase flooding downstream, induce development in high risk areas, and make coastal communities far more vulnerable to storms. Nonstructural and restoration measures, on the other hand, can solve many water resources problems while protecting and improving the health of the nation's rivers, floodplains, wetlands, and coasts. Nonstructural and restoration approaches typically cost less than structural measures and provide additional important benefits that include clean water, fish and wildlife habitat, recreational opportunities, sustainable economic development, and an increased ability for people and wildlife to adapt to climate change.

Importantly, nonstructural and restoration measures avoid the risks of catastrophic failure and overtopping created by structural projects like levees and floodwalls. The likelihood of such failures has caused the Association of State Floodplain Managers to urge communities to use nonstructural measures whenever possible instead of constructing new levees, which should be used only as an option "of last resort." ASFPM White Paper, National Flood Policy Challenges, Levees: The Double-edged Sword, Adopted February 13, 2007.

#### **THE SOLUTION:**

Congress should ensure that the Corps complies with the national water policy established in WRDA 2007 and other federal laws by requiring the Corps to utilize nonstructural and restoration approaches where those measures could provide an appropriate level of protection or benefits to address water resources problems and opportunities. This solution would build on existing law, codify what is supposed to be current practice, establish a common sense approach to planning, and promote sound floodplain management.

## **LAW AND POLICY CALL FOR LOW IMPACT SOLUTIONS:**

Federal law and policy, including those outlined below, require use of the most environmentally protective approaches to addressing water resources problems. To satisfy these requirements, federal planners should be required to utilize nonstructural and restoration measures where they will solve all or a portion of a water resources problem and are practicable. A federal project that does not meet these legal requirements cannot be in the public interest.

The Water Resources Development Act (WRDA) of 2007 requires that *all* water resources projects “protect the environment” by “protecting and restoring the functions of natural systems and mitigating any unavoidable damage to natural systems” and by “seeking to avoid the unwise use of floodplains.” WRDA 2007 Section 2031(a), (a)(2), and (a)(3), 42 U.S.C. 1962–3. WRDA 1974 requires the Corps to consider nonstructural alternatives when planning flood damage reduction projects. WRDA 1974, 33 U.S.C. § 701b-11.

The Clean Water Act Section 404 implementing regulations require strict efforts to avoid and minimize adverse impacts to the aquatic environment and prohibit construction of a structural federal water project if a nonstructural and/or restoration alternative will solve the problem, will cause less harm to the aquatic environment, and is practicable:

- The 404(b)(1) Guidelines prohibit the construction of a federal water project where, among other things, there are practicable alternatives that will cause less harm to the aquatic ecosystem and the agency has not taken “appropriate and practicable” steps to minimize potential adverse impacts to the aquatic ecosystem. 40 C.F.R. § 230.10.
- The Corps of Engineers’ section 404 regulations also prohibit construction of a federal water project that is not in the “public interest.” These regulations discourage the “unnecessary alteration or destruction of” wetlands “as contrary to the public interest” and require avoidance of impacts to or modifications of floodplains whenever practicable alternatives exist outside the floodplain. 33 C.F.R. §§ 320.4 and 323.6.

The National Environmental Policy Act requires a “thorough consideration of all appropriate methods of accomplishing the aim of the action” and an “intense consideration of other more ecologically sound courses of action.” *Environmental Defense Fund, Inc. v. Corps of Engineers*, 492 F.2d 1123, 1135 (5th Cir. 1974). Federal agencies are required to “rigorously explore and objectively evaluate all reasonable alternatives” in an environmental impact statement before a decision is made on whether or how to proceed with a project. 40 C.F.R. § 1502.14(a).

Executive Orders and Guidance call for approaches that avoid damage to wetlands and floodplains:

- Executive Order 11990 (Protection of Wetlands) directs each federal agency to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values in carrying out agency policy.
- Executive Order 11988 (Floodplain Management) directs each federal agency to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development

wherever there is a practicable alternative. Each agency is also “to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities.”

- Guidance issued by the Office of Management and Budget and the Council on Environmental Quality in 1997 directs federal agencies to consider and utilize nonstructural measures for flood damage reduction where practicable.

## **LOW IMPACT SOLUTIONS WORK:**

As demonstrated by the success stories below, low impact solutions are a cost effective way to address water resources problems. Wetlands act as natural sponges, storing and slowly releasing floodwaters after peak flood flows have passed, and coastal wetlands buffer the onslaught of hurricanes and tropical storms. Restoring a river’s natural flow and meandering channel, and giving at least some floodplain back to the river, will slow down floodwaters and give the river room to spread out without harming homes and businesses. These solutions protect people, protect and restore the environment, increase recreational opportunities, promote sustainable economic development, and save taxpayer dollars.

## **REFORM LANGUAGE:**

The following is an example of legislative language that would implement low impact planning:

### **LOW IMPACT PLANNING—**

(A) **Planning Requirements.** When formulating and evaluating a water resources project in a feasibility study or environmental review, the Secretary of the Army shall select and recommend nonstructural measures to address all or a portion of a water resources problem or opportunity whenever practicable, unless the Secretary issues a written finding stating that it is not in the Federal interest to utilize such measures for the project. Such approaches shall be presumed to be available and practicable unless clearly demonstrated otherwise.

(B) **Definition.** For purposes of this section “nonstructural measures” means actions that (i) use, enhance, facilitate, protect or restore naturally occurring hydrologic, geomorphic, and ecological functions and processes; and (ii) protect or restore the physical, chemical, or biological characteristics of streams, rivers, floodplains, wetlands, or coasts, without using structural measures. “Nonstructural measures” include, but are not limited to: (i) acquisition of land or easements; (ii) relocation, demolition, or elevation of flood-prone properties; (iii) removal of structures such as dams, levees, and culverts; or modification of such structures to restore natural hydrology, form, function, or processes of rivers, streams, floodplains, wetlands, or coasts; (iv) reestablishment of natural hydrology, form, function, or processes of rivers, streams, floodplains, wetlands, or coasts; (v) measures to increase water conservation, increase water efficiency, or improve water management; (vi) building or construction requirements or standards; (vii) land use restrictions or limitations; or (viii) removal of nonnative species or reintroduction of native species.

## LOW IMPACT SOLUTION SUCCESS STORIES

As demonstrated by the examples below, low impact solutions successfully protect communities from flooding while providing a host of other benefits.

**California – Coyote Creek.** The Santa Clara Valley Water District sought approval for levee setbacks and bypass channels after major flooding in 1983. The project was completed in 1995, and is credited for reducing flooding in 1997. According to the Santa Clara Valley Water District, flood waters would have been 40% faster and water volume would have been 57% higher without these improvements.

**California – Napa River.** The Napa River has flooded at least 30 times in the last 150 years, with residents sustaining more than \$540 million in flood damages in the past 40 years alone. After twice rejecting old-style Corps' plans for levees-only flood protection in 1998 a broad coalition worked to develop a "living river" plan that is reconnecting portions of the Napa River to its floodplain. This new plan replaces the Corps' proposed floodwalls and levees with terraced marshes, wider wetland barriers, and restored riparian zones. About 500 acres of previously drained farmland were returned to marshland. Though they were only partially completed, those natural flood control solutions are credited for lowering flood levels by about 2 to 3 feet during the 2006 New Year's Day flood.

**Florida – Upper St. John's River.** Florida has a long history of flooding caused by hurricanes, tropical storms, and heavy rainfall. By the 1970s, the St. John's River had lost more than 62 percent of its historic 400,000 acres of floodplain wetlands, aggravating extensive flooding in the region. In 1986, Congress authorized a combined structural and restoration project to reduce flood damages along the river. The backbone of this project is restoration of 200,000 acres of floodplain which will hold more than 500,000 acre-feet of water – enough to cover 86 square miles with 10 feet of water – and will accommodate surface water runoff from a more than 2,000 square mile area. The Corps predicts that this \$200 million project will reduce flood damages by \$215 million during a 100-year flood event, and provide average annual benefits of \$14 million.

**Illinois – Cache River.** Channelized, dredged, diverted, and leveed since the early 1900s, the Cache River today has lost 91% of its historic wetlands, leaving just 472,800 acres of its once 5 million-acre floodplain. Friends of the Cache, local landowners, The Nature Conservancy, and a variety of government agencies formed a partnership in 1995 that has resulted in the restoration of 9,000 acres of wetlands, reducing erosion and sedimentation, improving water quality, decreasing flooding, and allowing wildlife to flourish. The success of this project has inspired efforts to restore small creeks in the watershed to their original channels.

**Illinois – Grafton.** After the historic 1993 floods, and extreme flooding almost biannually for more than 150 years, the town of Grafton moved 70 homes and 18 commercial properties out of the floodplain to higher ground. The restored floodplain provides more room for the Mississippi and Illinois Rivers to spread out, reducing flood levels and damages, and providing recreational opportunities during dry periods. The 1995 Mississippi River flood left Grafton relatively unscathed.

**Iowa – Iowa River.** After the historic 1993 floods, communities in east-central Iowa looked to change how the land along the Iowa River was being used and purchased 12,000 acres in easements along the 45-mile river corridor for flood control purposes. Over the past decade, local communities are estimated to have saved \$7.6 million in flood damages.

**Iowa – Louisa Levee District 8.** In 1993, when an oxbow levee breached for the 17th time, farmers in the Louisa Levee District volunteered for a federal buyout program. More than 2,500 acres of cropland in the old levee district was converted into the Horseshoe Bend Wildlife Refuge, a combination of grassland, meadows, and wetlands, which provides natural flood protection and serves as a stopover for migrating waterfowl. Residents report that this project helped to reduce flooding in 1995. Relocating the farmers out of the floodplain kept their agricultural land safe from future flooding at a cost that was about 50 percent less than the estimated cost of repairing flood damages from the 1993 flood. The project also put a permanent end to repeated levee repairs and expensive damage payments.

**North Dakota and Minnesota – Red River.** The communities of Grand Forks, North Dakota and East Grand Forks, Minnesota have suffered through at least 12 major floods since 1871. Following severe flooding in the spring of 1997, the communities worked with the Corps to develop a flood protection strategy featuring a space to give the river room to expand. This project involved setting back levees and acquiring flood-prone property to create a 2,200-acre greenway along the Red River between the two cities. This greenway has produced considerable flood insurance savings and provides open space for year-round recreation.

**Massachusetts – Charles River.** Extensive suburban growth paved over much of the Charles River watershed in eastern Massachusetts, triggering flooding from stormwater runoff in Boston and other downstream communities. In 1972, the Corps abandoned a planned \$100 million levee and dam flood project along the Charles River after the agency determined that upstream wetlands were preventing some \$17 million worth of flood damages annually. The Corps instead developed a nonstructural plan at a fraction of the cost, the \$10 million Charles River Natural Valley Storage Project. This project, which included the purchase of 8,500 acres of wetlands with a storage capacity of 50,000 acre feet of water, helped reduce major floods in 1979, 1982, 1987, and 2006. In 1987, the storage area prevented an estimated \$3.2 million in damages. In 2006, the storage area reduced flooding to a 2 year event while nearby rivers were suffering 40 and 100-year flood levels. The storage area has the added benefit of providing important recreational opportunities for the Boston Metropolitan area.

**Missouri – Missouri River.** Severe flooding throughout the 1990s led local citizens to seek natural alternatives to structural flood control measures. Through a combination of fee title acquisition and easement acquisition, 19,000 acres on a 49 mile stretch between Boonville and Jefferson City, Missouri were purchased and set aside as flood overflow areas, including nearly 6,000 acres that were previously enclosed by levees. According to the Natural Resource Conservation Service, the Corps estimated that such reconnections of the river with its floodplain reduced flood levels in 1998 by about four feet.

**Oklahoma – Mingo Creek.** Once known as the flood capitol of the world, the city of Tulsa suffered the worst flood in its history in 1984. Five of the 14 deaths and \$125 million of the \$180 million in flood damage occurred along Mingo Creek. Rejecting the Corps' plan to build 5 structural detention sites, a team of civil engineers, urban planners, and landscape architects devised an alternative that included restoring open space where floodwater can safely overflow, creating permanent lakes, and relocating buildings from the Mingo Creek floodplain. Tulsa's flood insurance rates subsequently decreased by 25%, and repetitive loss properties declined from 93 in 1984 to just 5 in 1995.

**Wisconsin – Duffy's Marsh.** Located in Marquette County, Wisconsin, the Duffy's Marsh restoration project encompasses about 1,500 acres of open water, grassy wetland, and upland. The restoration work primarily involved filling agricultural ditches that drained the land. The marsh now holds approximately 55 million cubic feet of water.



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