



**THE FEDERAL WATER RESOURCES RESTORATION ACT:
A WHITE PAPER AND LEGISLATIVE PROPOSAL**

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September 25, 2008

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EXECUTIVE SUMMARY

We propose the enactment of a Water Resources Restoration Act that authorizes comprehensive water resources and ecosystem restoration as a discrete class of projects independent of the Water Resources Development Act (WRDA) process. A new legislative authority dedicated solely to restoration is essential to coordinate ecosystem-based protection and restoration of water resources and natural systems.

Consequences of delays and the necessity for a Water Resources Restoration Act

The current legislative method of combining environmental restoration with navigation and flood control projects into WRDA has created massive delays and the intermittent enactments cannot be considered a dependable means to fund the restoration of our natural water systems. Due to the extensive scope and nature of the bills, WRDA no longer offers a reliable process for authorizing time-sensitive ecosystem restoration projects.

- Delays in authorizations increase overall project costs, in billions of dollars, and severely compromise restoration efforts. The nation's water resources face continued degradation, while problems get worse and solutions get more costly.
- Federal funding has fallen behind federal commitments, jeopardizing federal and state partnerships. Local efforts cannot keep pace with escalating threats to the resource and ongoing delays in federal restoration authorizations.
- Ecosystem restoration will span decades. Unlike water development projects, large-scale restoration requires multiple authorizations over the lifetime of the restoration initiative.
- Restoration projects involve ongoing components that are a part of congressionally authorized comprehensive plans, with each component requiring additional congressional approval to implement the multiple phases of restoration. Success depends on completing all the interrelated project components of comprehensive plans and frameworks.
- The incorporation of adaptive management strategies means that projects will inevitably change over the course of planning and implementation, with each change requiring congressional action.
- Today's lengthy and cumbersome authorization process prevents the Corps of Engineers from applying integrated project planning and adaptive management techniques in a successful and meaningful manner.
- Large-scale ecosystem restoration projects require a commitment of timely authorizations and adequate funding with legislation that is responsive to modification of project objectives.

Complications of authorizing restoration projects within a Water Resources Development Act

The process of enacting a Water Resources Development Act has not kept pace with the demands of the U.S. Army Corps of Engineers' environmental mission, as evidenced by the interval between the 2000 and 2007 WRDA enactments. Due to the postponement of WRDA legislation, many ecosystem restoration projects across the country were significantly delayed by the lack of congressional authorizations.

The largest and most ambitious of these projects is the restoration of the South Florida ecosystem, America's Everglades. When entering into binding cooperation agreements and cost-sharing requirements, federal and state partners substantially relied on the biennial process of enacting WRDA as the vehicle to approve and amend the comprehensive plan and individual restoration projects and components contained within. However, federal authorization and funding has not been forthcoming due to significant delays in congressional enactments of WRDA. Legislative delays have jeopardized the feasibility and overall effectiveness of Everglades restoration projects, in addition to creating tension between federal and state partners.

Despite this history, Congress has increased the role of the Corps of Engineers in implementing large-scale, multi-purpose multi-billion dollar water restoration projects. Since 2000, Congress has used the Everglades as a template for inserting large-scale ecosystem restoration into WRDA, authorizing various stages of planning and implementation of restoration projects along the Louisiana Coast, Upper Mississippi River and Missouri River System.

If Congress continues to authorize such restoration initiatives through WRDA, problems with implementing ecosystem and water restoration will surface again, but next time on a much wider scale. The federal government has committed itself to implementing and funding large-scale and long-term restoration, but with no mechanism to streamline congressional authorization of individual projects and components that make up an initiative's comprehensive plan.

What a Water Resources Restoration Act would accomplish

A Water Resources Restoration Act would recognize the need to act on ecosystem restoration projects separately from WRDA enactments. The enactment of a Water Resources Restoration Act would give Congress the opportunity to prove its commitment to ecosystem restoration and a sustainable future by establishing an efficient and reliable authorization process. It would:

- Reform the Water Resources Development Act by creating a separate legislative vehicle focusing solely on the authorization of ecosystem and water restoration as a distinct class of projects.
- Establish a two-year cycle for the passage of a Water Resources Restoration Act.
- Strengthen the Corps of Engineers' environmental protection mission to expressly include the restoration of hydrologic and geomorphic processes as an objective of the agency's Civil Works Program.
- Provide consistency between the regulatory and civil works missions of the Corps of Engineers.
- Require additional assurances from the local non-federal sponsor in the form of cooperative agreements to not adversely affect the water resource being restored and statements of financial ability.
- Necessitate more cooperation among federal agencies when developing an ecosystem-based plan for restoration.
- Incorporate the mandatory use of adaptive management strategies when implementing a large-scale ecosystem's comprehensive plan for restoration.

Managing water systems requires a highly collaborative process, and requires coordination among government agencies and stakeholders at the federal, state and local level. Reliable passage of authorization bills is necessary to maintain federal partnerships with the key participants in ecosystem and water restoration. A Water Resources Restoration Act would strengthen the federal government's commitments and partnerships in the long-term funding of ecosystem restoration.

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I. INTRODUCTION

America today faces unprecedented challenges of ecosystem damages. In specific instances, the nation has engaged in economic development activities that have produced serious, but not yet irreversible, damage to the ecological health of natural water systems across the country. Much of this damage is the result of the unintended consequences of federal water development projects designed to provide public benefits such as flood control, irrigation, electricity and waterways in which commerce could flow. However, the needs and uses of our waterways have evolved, with communities now recognizing the importance of healthy water systems to their economic and social viability.¹ Federal programs and agencies have been a significant determinant of past modifications to water resources, and such a past requires a continued federal presence and further reform at the federal level as large-scale ecosystem restoration increases.²

Restoration of altered, damaged or destroyed rivers, lakes and wetlands has emerged as a high priority task for the U.S. Army Corps of Engineers.³ Aquatic ecosystems across the country share similar case histories and projects, large and small, in which the Corps of Engineers is working to restore ecological functions.⁴ In order to manage and mitigate the unprecedented rate of loss of aquatic ecosystems, an accelerated effort toward ecological restoration and preservation is needed.⁵ We propose the enactment by Congress of a Water Resources Restoration Act that authorizes comprehensive water resource and ecosystem restoration as a discrete class of projects independent of the Water Resources Development Act process.

The current legislative method of combining environmental restoration with navigation and flood control projects into a Water Resources Development Act (WRDA) has created massive delays. The intermittent enactments cannot be considered a dependable means to fund the restoration of our natural water systems. The authorization method and process that WRDA enactments have established now faces insurmountable political pressure to deal with project overload, fiscal constraint, a system for prioritization, environmental accountability, and independent review of water infrastructure projects. Due to the extensive scope and nature of the bills, WRDA no longer offers a reliable process for authorizing time-sensitive ecosystem restoration projects that may take decades to complete.

This legislative initiative focuses primarily on the authorization of water restoration projects. The proposed bill creates a new legislative vehicle, replicating the WRDA framework for water development projects, but in effect, to be used solely to authorize comprehensive ecosystem restoration projects. The legislation builds upon the environmental protection mission of the U.S. Army Corps of Engineers, Civil Works Program. Instead of consolidating the authorization of all Corps' civil works projects into one

¹ Statement by Michael Cameron, Nature Conservancy, *Army Corps of Engineers: Meeting the Nation's Water Resource Needs in the 21st Century*, S. Hrg. 108-501, p. 110.

Restoration ecology represents an acknowledged shift in what society demands from its aquatic ecosystems: more environmental services are expected. Restoration also is viewed as a way to gain some of the traditional economic services of reduced flood hazard and reliable water supply. National Research Council, *Restoration of Aquatic Ecosystems: Science, Technology and Public Policy*, National Academy Press, Washington, D.C. (1992) p. 350. (Hereinafter, "NRC, *Restoration of Aquatic Ecosystems*")

² NRC, *Restoration of Aquatic Ecosystems*, p. 351.

³ *Id.* at 15. Restoring altered, damaged, or destroyed lakes, rivers, and wetlands is a high-priority task at least as urgent as protecting water quality through abatement of pollution from point and nonpoint sources.

⁴ For a comparison of large-scale initiatives see K. Vigmostad, N. Mays, et. al., Northeast Midwest Institute, *Large-Scale Ecosystem Restoration: Lessons for Existing and Emerging Initiatives*, (2005). Available at http://www.nemw.org/restoration_products.htm

⁵ NRC, *Restoration of Aquatic Ecosystems*, p. 2.

legislative package, the proposed bill will transfer congressional authorization of water restoration projects from the WRDA process to the streamlined process of a Water Resources Restoration Act.

II. LEGISLATIVE HISTORY OF THE WATER RESOURCES DEVELOPMENT ACT

The U.S. Army Corps of Engineers is one of the federal government's largest water resources development and management agencies. Congress authorizes Corps water projects individually, based on project-specific reports and recommendations through periodic enactments of the Water Resources Development Act (WRDA). Congress uses WRDA as a legislative vehicle for approving all types of water projects on a case-by-case basis, including planning and construction, and for establishing policies for the Corps Civil Works programs.⁶ The provisions and contents of WRDA enactments are cumulative, and subsequent enactments do not supersede or replace previous Acts. In the past three decades, the periodic and timely enactment of WRDA bills has been critical to the orderly implementation and management of the Corps Civil Works Program.⁷

The Corps administers the Army's Civil Works Program, which includes the agency's core missions of navigation, flood damage reduction and environmental protection.⁸ The main purpose of the Civil Works Program is to address the Nation's critical water and related land resources issues, and for this reason, the program's missions have evolved to reflect the circumstances and needs of the times.⁹ Today, the Corps lists environmental protection and ecosystem restoration as among its principal missions, however this was not always the case.¹⁰ The emphasis on environmental concerns reflects a fundamental shift in policy over several decades, which has led the Corps to make aquatic restoration a program area on par with its traditional flood control and navigation programs.¹¹

In contrast to the agency's recent environmental initiatives, the Corps historically engaged in development projects that controlled the flow of water by constructing physical infrastructure or deepening navigation channels and coastal harbors.¹² Before the existence of WRDA, Congress had been

⁶ Nicole T. Carter and Betsy A. Cody, Congressional Research Service Report for Congress, *The Civil Works Program of the Army Corps of Engineers: A Primer*, Publication No. RS20866 (Sept. 20, 2006), p. 3. (Hereinafter "CRS Report for Congress, The Civil Works Program of the USACE")

⁷ S. Hrg. 104-42, p. 58.

⁸ For a description of the USACE Civil Works Program, see <http://www.nab.usace.army.mil/whatwedo/civwks/>

⁹ H. Hrg. 104-49, p. 288.

See S. Hrg. 108-501, p. 65. Response by Asst. Secretary of the Army for Civil Works, John Paul Woodley, "One of the five strategic goals for the Civil Works program is to repair past environmental degradation and prevent future environmental losses."

S. Hrg. 108-501, p. 71. Statement by Lieutenant General Robert B. Flowers, Chief of Engineers, "Our Civil Works program has changed along with society's changing needs, values, and priorities for good water management."

¹⁰ National Research Council of the National Academies, *U.S. Army Corps of Engineers Water Resources Planning: A New Opportunity for Service*, National Academies Press, Washington, D.C. (2004), p. 1. (Hereinafter "NRC, *USACE Water Resources Planning*")

See USACE Regulation, *Planning Guidance Notebook* ER-1105-2-100, Appendix E-145 (Apr. 22, 2000).

¹¹ National Research Council, *Water Resources Planning for the Upper-Mississippi River and Illinois Waterway*, National Academies Press, Washington, D.C. (2005), p. 21. (Hereinafter "NRC, *Upper-Mississippi River*")

See USACE, *Civil Works Strategic Plan Fiscal Year 2004 – Fiscal Year 2009*, (March 2004). Available at http://www.usace.army.mil/cw/hot_topics/ht_2004/cw_strat.pdf

¹² NRC, *USACE Water Resources Planning*, pp. 28-29.

directing the Corps of Engineers to construct, operate and maintain a large percentage of the Nation's dams, levees, and navigational channels for nearly 200 years.¹³ In 1824, Congress first enlisted the Army's military engineers to construct civil works projects, initially involving the Corps in the planning of rapid transit along roads and canals.¹⁴ With congressional recognition that improving the flow of commerce through harbors and inland rivers promoted interstate commerce, Congress focused the Corps' civil works activities on navigation, and such activities became accepted as a federal responsibility.¹⁵ Statutory directives to improve navigation on the Ohio and Mississippi Rivers launched the Corps into the first of thousands of projects that reshaped virtually all the Nation's river basins and coastal harbor areas.¹⁶ Thus began the Corps work in dredging, channel engineering, harbor construction and other "improvements" to facilitate navigation on rivers and canals.¹⁷ Congress governed the Corps' navigation activities through a series of River and Harbor Acts, increasing the agency's civil responsibilities in the creation and maintenance of the Nation's navigable channels.¹⁸

Devastating floods in the 1910s triggered the expansion of Corps authority over flood damage reduction, leading to the construction and operation of levees, dams and a variety of non-structural measures that would control the flow of water.¹⁹ In the early twentieth century, water resources planning was expected to maximize hydrologic control.²⁰ Rather than focus on watershed protection, Congress' response to flood control issues centered on managing the nation's rivers through structural, engineered solutions.²¹ The Corps used basin-wide plans to evaluate proposed development projects that emphasized engineering the control of entire river systems instead of targeting measures to the location of flood damages.²² Plans for water development projects consisted of engineering components that would eliminate the "waste" of water, manage natural systems, and control the imperfect and unpredictable course of nature.²³

Since the Army Corps navigation mission had been successful in supporting interstate commerce, administrations and congresses assigned new water-related missions to the Corps in areas such as flood control, hydropower, and water supply and quality.²⁴ Watershed proposals were fundamentally rooted in human use of water and economic development, as flood control measures would allow lands unsuited for

¹³ *Id.* at 28.

¹⁴ USACE Office of History, *The History of the US Army Corps of Engineers*, Publication No. EP-870-1-45 (January 1998), pp. 41-45.

¹⁵ NRC, *USACE Water Resources Planning*, p. 34.

¹⁶ *Id.* at 11.

¹⁷ H. Hrg. 104-49, p. 444.

¹⁸ River & Harbor Acts were enacted in 1899, 1902, 1909, 1917, 1927, 1938, 1940, 1945, 1946, 1948, 1950, 1954, 1958, 1960, 1962, 1965, 1966, 1968, 1970 – all of which accelerated the movement toward multi-purpose water management projects.

¹⁹ H. Hrg. 104-49, p. 444. See Arnold, Joseph L. *The Evolution of the 1936 Flood Control Act*, Office of History, USACE, Fort Belvoir, Virginia (1988).

²⁰ NRC, *USACE Water Resources Planning*, p. 38.

²¹ Adler, Robert W. *Addressing Barriers to Watershed Protection*. 25 *Envtl. L.* 973 (Fall 1995), pp. 1007, 1023. (Hereinafter "Adler, *Addressing Barriers to Watershed Protection*")

²² Adler, *Addressing Barriers to Watershed Protection*, p. 1007. (Discussing USACE 308 Reports under the "Newlands Act," otherwise known as the National Reclamation Act of 1902).

²³ NRC, *USACE Water Resources Planning*, pp. 38, 41.

²⁴ See Congressional Budget Office, *Current Cost-Sharing and Financing Policies for Federal and State Water Resources Development* (July 1983); Table I outlines how various federal omnibus acts expanded USACE authority in water resource development projects.

agriculture to be made productive and would allow cities to grow up along the river transportation system.²⁵ As a result, multi-purpose water development projects expanded rapidly, and large-scale public works programs became a favored means to stimulating economic recovery in the years following the Great Depression.²⁶

In 1936, Congress deemed flood damage reduction activities essential to national economic prosperity, and through periodic enactments of Flood Control Acts between 1936 and 1972, Congress increased Army Corps involvement in large, multi-purpose flood control projects.²⁷ Consistent with the theory that engineering solutions could best solve natural problems, the original Flood Control Act called for flood protection by “improving” waterways.²⁸ Subsequent Flood Control Acts established that “erosion, floodwater and sediment damages in the watersheds of rivers and streams” constituted a menace to the national welfare, and thereby instructed the federal government to cooperate with state and local governments to prevent damages from flooding and to further dispose of water.²⁹

By approving development projects that straightened channels and built reservoirs, these Acts addressed the symptoms but not the causes of flooding.³⁰ The enactments ultimately failed to address the modification of land uses that exacerbate erosion and runoff, much less restoration of natural land and water functions and interactions.³¹

“The riparian vegetation and wetlands that served as the best natural line of defense against flooding were destroyed by hastening the flow of water down the channel. In the meantime, this legislation did not address the root causes of increased flooding, such as the filling of wetlands, deforestation, and the development and management of farms, cities, and suburbs, all of which cause increased volumes and velocities of runoff from storms. By providing the illusion of safety in flood-prone areas, flood control laws encouraged rather than discouraged additional settlement in the floodplains.”³²

By the 1970s, the Army Corps was still operating under frequent enactments of Flood Control Acts and River & Harbor Acts, two separate legislative vehicles for the authorization of the agency’s projects. Congress ultimately consolidated its oversight of Corps water development into one legislative vehicle – the Water Resources Development Act. Beginning with WRDA 1974, Congress provided one comprehensive legislative vehicle to authorize water policies and projects considered appropriate investments of federal money. The underlying theory was that a two-year cycle was critical in maintaining an orderly and manageable water resources program.³³ Through WRDA omnibus legislation, Congress intended to establish a biennial process by which Congress would authorize the specific projects the Corps could undertake. Today, WRDA enactments continue to provide the primary mechanism for Congress to amend Army Corps authority over water resources and development projects that were once controlled by several independent and separate legislative actions.

²⁵ Adler, *Addressing Barriers to Watershed Protection*, p. 1007; NRC, *USACE Water Resources Planning*, p. 35.

²⁶ National Research Council, *Confronting the Nation’s Water Problems: The Role of Research*, National Academies Press, Washington, D.C. (2004), p. 37. (Hereinafter “NRC, *Confronting the Nation’s Water Problems*”)

²⁷ NRC, *USACE Water Resources Planning*, p. 35. Flood Control Acts were consistently enacted on two to three year increments throughout this entire period.

²⁸ Adler, *Addressing Barriers to Watershed Protection*, p. 1027.

²⁹ Adler, *Addressing Barriers to Watershed Protection*, p. 1030, (*citing* the Flood Control Act of 1954).

³⁰ *Id.* at 1032.

³¹ *Id.* at 1027, 1032.

³² *Id.* at 1032.

³³ H. Hrg. 104-49, p. 290.

Congress successfully enacted WRDA bills in 1974 and 1976 before fundamental disagreements, over fiscal concerns and the federal government's role in funding water development projects, halted WRDA legislation for a ten-year period. At issue was the cost-sharing responsibilities of a project's non-federal local sponsor. The necessity for major flood control projects had been decreasing since the 1950s, leading the Eisenhower Administration to call for a new partnership arrangement with increased local responsibilities, in order to reduce the amount of federal contribution.³⁴ Subsequent administrations continued to limit federal involvement and increased the role of project beneficiaries. Mandatory cost-sharing provisions were proposed by the Carter Administration and finally enacted by Congress under the Reagan Administration with WRDA 1986.³⁵ The enactment of WRDA 1986 renewed project funding and ended the stalemate between Congress and several administrations, and as a result, it reestablished the tradition of a biennial omnibus authorization bill.³⁶

WRDA 1986 fundamentally transformed the ground rules for Corps' water project planning and funding by establishing new cost-share formulas for each type of water resource project.³⁷ The cost-sharing concept embraced the principle that projects with primarily local benefits should require greater participation from the non-federal sponsor.³⁸ The cost-sharing provisions still serve as a market test of a project's merits, as the provisions guarantee the active participation and greater financial and decision-making roles of the local stakeholders in the water resources development process.³⁹

The WRDA authorization process remained relatively reliable throughout the 1990s, as evidenced by the successful enactment of WRDA bills in 1988, 1990, 1992, 1996, 1999 and 2000. Conversely, federal budgets for water projects declined, as public support for new development projects waned, and as many of the best construction sites for new projects had been developed.⁴⁰ Annual federal funding for water development projects fell from an average of \$4.5 billion to \$1.8 billion between the mid-1970s and mid-2000s.⁴¹ The Clinton Administration refocused the Corps on projects of broad national significance, thus resulting in the shift of responsibility for many water projects to the appropriate non-federal entity.⁴² The Corps began to identify candidate programs for devolution to lower levels of government or privatization and assessed whether certain programs had already accomplished their intended purposes.⁴³

Today, the Army Corps manages a mature physical infrastructure that controls vast amounts of water and related resources. One explanation for the agency's budgetary decline is that the original mission of harnessing the flows of major interstate rivers and coastal systems has been mainly accomplished.⁴⁴ The Corps has contributed substantially to the wholesale, structural re-engineering of the Nation's waters, building approximately 1,000 harbor projects, 230 lock and dam structures for navigation, and constructing hundreds, if not thousands, of channel modifications, small levees, coastal

³⁴ S. Hrg. 104-42, p. 50.

³⁵ Congressional Budget Office, *Current Cost-Sharing and Financing Policies for Federal and State Water Resources Development* (July 1983), pp. 5-9.

³⁶ S. Hrg. 103-84, p. 74.

³⁷ CRS Report for Congress, *The Civil Works Program of the USACE*, p. 6.; S. Hrg. 103-84, p. 74.

³⁸ S. Hrg. 103-84, p. 36.

³⁹ S. Hrg. 103-84, p. 76; CRS Report for Congress, *The Civil Works Program of the Army Corps of Engineers*, p. 6.

⁴⁰ NRC, *Upper-Mississippi River*, p. 15.

⁴¹ CRS Report for Congress, *The Civil Works Program of the USACE*, pp. 4-5 (citing S. Hrg. 106-951).

⁴² S. Hrg. 104-42, p.53-54. All federal agencies underwent a National Performance Review, a government-wide initiative to reinvent and streamline large parts of the federal government.

⁴³ S. Hrg. 104-42, p.54.

⁴⁴ NRC, *USACE Water Resources Planning*, p.49.

and riverine floodwalls and diversion channels.⁴⁵ In addition, the Corps attends to 12,000 miles of channels that support navigation and maintains over 377 dam and reservoir projects.⁴⁶

III. THE ARMY CORPS ENVIRONMENTAL PROTECTION MISSION

The Army Corps role in protecting the nation's water resources has evolved over time with each enactment of WRDA.⁴⁷ Due to the fact that projects undertaken by the Corps have modified many of the nation's rivers and coastlines, water resource and ecosystem restoration initiatives have brought past water development activities, as well as proposals for new development projects, to the center of the national debate over water management.⁴⁸ WRDA 1986 marked the beginning of legislative changes that vested the Corps with environmental responsibility beyond its traditional development projects and represented a preliminary shift towards water restoration rather than engineering and "improvement" projects.⁴⁹

The environmental provisions in WRDA 1986 were a reflection of how the 1970s environmental movement transformed Army Corps planning principles for water resources.⁵⁰ WRDA 1986 first provided the Corps with a programmatic Continuing Authority to restore environmental degradation caused by completed projects and to mitigate for environmental damages during the construction of water development projects.⁵¹ Under a Continuing Authorities Program, Congress authorizes the Corps to proceed with certain types of small projects, providing the Corps with general authority to implement projects up to certain cost limits, generally around \$5 million. Programmatic authorities are used as a funding alternative to seeking authorization for each individual project, relieving the Corps of petitioning for specific legislative action except for when individual projects exceed those maximum cost limits.

Since the passage of WRDA 1986, Congress has continued to expand activities for the Corps in the areas of environmental resource protection, remediation and restoration.⁵² Most significantly, Congress advanced environmental protection as a primary core mission to the agency's Civil Works Program within WRDA 1990.⁵³ Initially, Section 306 supplied the Corps with a generic Continuing Authority, unconnected to the Corps' navigational authority, to promote the environmental enhancement

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ USACE Office of History, *The History of the US Army Corps of Engineers*, Pub. No. EP-870-1-45 (January 1998), pp. 57-59.

⁴⁸ NRC, *USACE Water Resources Planning*, p. 42.

⁴⁹ Adler, *Addressing Barriers to Watershed Protection*, p. 1036-37. See CRS Report for Congress, *The Civil Works Program of the USACE*, p. 6.

⁵⁰ CRS Report for Congress, *The Civil Works Program of the USACE*, p. 5.

⁵¹ WRDA 1986, Section 1135.

Since environmental restoration was not a principal mission of the Corps' Civil Works Program at the time WRDA 1986 was enacted, cost-sharing for environmental projects was indirectly addressed by Section 1135 of the Act, which prescribed a 25% non-federal share, with cost limitations of \$5 million per project. [S. Hrg. 103-84, p. 35]

⁵² H. Hrg. 104-49, p. 444.

⁵³ WRDA, Sec. 306(a) states: "The Secretary shall include environmental protection as one of the primary missions of the Corps of Engineers in planning, designing, constructing, operating, and maintaining water resources projects."

For an explanation of how the Corps interchangeably uses the terms environmental restoration and ecosystem restoration, see USACE Regulation, *Planning Guidance Notebook*, Appendix E, Section V "Ecosystem Restoration," Sec. E-28 "Definitions," Publication No. ER-1105-2-100 (Apr. 22, 2000).

of water and port areas through the removal of toxic materials from such waters.⁵⁴ Section 306 did not originally provide a specific authority to study, construct or implement specific measures as part the Corps' water resources development program.⁵⁵ However, with each passing WRDA enactment, Congress has increasingly authorized individual projects under the agency's environmental mission, citing this provision to legitimize the enlistment of the Corps' expertise in ecosystem restoration of sites of significant national importance.⁵⁶

After reviewing changes in Army Corps civil works missions, Congress began to decrease approvals for local intrastate projects such as flood protection and shoreline damage, while simultaneously increasing the agency's role in environmental restoration of sites of significant national importance.⁵⁷ In response to directives to mitigate for fish and wildlife, the Corps reconsidered the scope of its mission to protect the environment by assembling an environmental task force to make recommendations on how to create a stronger and more robust environmental program.⁵⁸ Out of this taskforce the Corps established conservation, prevention, restoration and compliance as the four pillars of the agency's environmental strategy for the management of water resources.⁵⁹

Congress first responded to the Corps' environmental strategy by fully implementing and funding environmental programs under the established authority of Section 1135 of WRDA 1986.⁶⁰ In addition to authorizing individual projects dealing with the restoration of wetlands, riparian lands, floodplains and other aquatic systems, Congress continued to use WRDA enactments to vest the Corps with programmatic authority over ecosystem restoration. Congress expanded the agency's Continuing Authorities Program to encompass aquatic ecosystem restoration (WRDA 1996, Section 206), watershed management, restoration and development (WRDA 1996, Section 503), flood mitigation and riverine restoration (WRDA 1999, Section 212), and watershed and river basin assessments (WRDA 2000, Section 202).

Between 1990 and 2000, Congress began to authorize environmental restoration projects on a regional and watershed basis.⁶¹ In order to manage these expanding authorizations, the Corps redefined its ecosystem restoration mission under the Civil Works Program to reflect how WRDA enactments have increasingly focused on the comprehensive examination of water resources on a watershed scale. The Corps interpreted its policy mission in 1999 to include the restoration of significant ecosystem function, structure and dynamic processes by re-establishing the attributes of a naturalistic, functioning and self-regulating system.⁶² Recognizing the dynamic relationship between the health of the national economy and the sustainability of the Nation's environmental resources, the Corps has recommended that its

⁵⁴ S. Hrg. 101-717, p.54.

⁵⁵ S. Hrg. 103-84, p.88.

⁵⁶ S. Hrg. 103-84, p.88.

⁵⁷ S. Hrg. 104-42, p. 63. The proposed changes in the Civil Works mission and program focused primarily on concentrating the Corps on large multiple-purpose projects that were beyond the capability of non-Federal interest. In contrast to the Corps directives on flood control, the test for national significance of an environmental restoration project was not related to the size of the resource. See U.S. Water Resources Council, *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (March 1983).

⁵⁸ S. Hrg. 104-42, p. 55. See Section 306 of WRDA 1990 and Section 906 of WRDA 1986.

⁵⁹ USACE Regulation, Engineering and Design: Water Quality and Environmental Management for Corps Civil Works Projects, WE 111-1-8154 (May 31, 1995).

⁶⁰ S. Hrg. 104-42, p. 52.

⁶¹ See list of restoration projects included in WRDA 1996, 1999 and 2000.

⁶² USACE Engineer Regulation, Water Resources Policies and Authorities: Civil Works Ecosystem Restoration Policy, ER-1165-2-501 (Sept. 30, 1999), No. 6 Policy of Ecosystem Restoration, pp. 2-3.

planning for civil works incorporate a watershed perspective focusing on the interconnectedness of water and land resources.⁶³

Experts within the field of water resources planning and management have recommended since the 1970s that national policies should shift from water development to water restoration.⁶⁴ While the Corps faces waning support for its water development projects, the agency has expressed an emerging interest in relaxing the controls on hydrologic and geomorphic process across large watersheds.⁶⁵ According to the National Research Council, these two factors suggest the need for an authority that will enable the Corps to focus its planning functions and capabilities on these new realities.⁶⁶

Section 216 of WRDA 2000 authorized a series of studies by the National Academies of Sciences, requesting that the National Research Council conduct an assessment on Army Corps programs and the quality of its planning studies. The Council made specific recommendations that the Corps refocus its primary environmental mission on the restoration of hydrologic and geomorphic processes in large river and coastal systems.⁶⁷ As such, the agency's restoration projects should be directed at relaxing some of the control that has been put in place by 200 years of water development activities.⁶⁸ The recommendation to focus on hydrologic and geomorphic processes was offered due to the agency's emphasis and expertise, thereby enabling the agency to capitalize on its institutional knowledge. Moreover, a concentration on these components of water management will help distinguish Army Corps responsibilities from those of other federal agencies that are also working in ecosystem restoration.⁶⁹

IV. LARGE-SCALE ECOSYSTEM RESTORATION WITHIN WRDA ENACTMENTS

A. EVERGLADES RESTORATION

WRDA 1986 was intended to reestablish the biennial cycle of authorizing water resources projects and programs, and there were six WRDA enactments through 2000.⁷⁰ However, Congress was unable to update WRDA between early 2000 and late 2007, when reauthorization required an override of a presidential veto.⁷¹ Due to the suspension of WRDA legislation, many ecosystem restoration projects across the country were significantly delayed by the lack of congressional authorizations. The largest and most ambitious of these projects is the restoration of the South Florida ecosystem, familiarly known as the Everglades.

⁶³ USACE Engineer Regulation, Planning Guidance Notebook , ER-1105-2-100 (Apr. 22, 2000), Section 2-6. The regulation goes on to state that civil works planning should consider the sustainability of future watershed resources, specifically taking into account environmental quality, economic development and social well-being.

⁶⁴ Adler, *Addressing Barriers to Watershed Protection*, p. 1013 (citing Water Resources Council 1973 report).

⁶⁵ NRC, *USACE Water Resources Planning*, p. 50.

S. Hrg. 108-501, p. 120. Response by Dominic Izzo, American Society of Civil Engineers, "The bottom line is that ecosystem restoration is a natural mission for the Army Civil Works Program."

⁶⁶ NRC, *USACE Water Resources Planning*, p. 50.

⁶⁷ NRC, *USACE Water Resources Planning*, p. 5; NRC, *Upper-Mississippi River*, p. 21.

⁶⁸ NRC, *USACE Water Resources Planning*, p. 42.

⁶⁹ NRC, *Upper-Mississippi River*, p. 21.

⁷⁰ WRDA 1988 (P.L. 100-676), WRDA 1990 (P.L. 101-640), WRDA 1992 (P.L. 102-580), WRDA 1996 (P.L. 104-303), WRDA 1999 (P.L. 106-53 and 106-109), WRDA 2000 (P.L. 106-541).

⁷¹ *Congress Overrides Bush on WRDA*, National Journal (Nov. 10, 2007). WRDA 2007 carried a federal price tag of \$23 billion.

In 1948, Congress authorized the Central & Southern Florida Project, a massive undertaking in water management that would provide improved flood control and water supply by re-engineering the flow of water surrounding the Everglades ecosystem.⁷² Implementation by the Army Corps began in the 1950s and was essentially complete by 1973, with a flood protection and water drainage system that included over 1,000 miles of levees, 720 miles of canals, and almost 200 water control structures.⁷³ Restoration of these development projects began shortly thereafter, with Congressional authorization of the Kissimmee River Restoration, Modified Water Deliveries to Everglades National Park, and modification of the canal structures of the Central & Southern Florida Project. WRDA 1996 further authorized the Corps to complete a comprehensive restoration plan for South Florida, a plan that would ultimately demonstrate the Corps' expertise of environmental restoration on a watershed scale and the agency's ability to deal with complex tradeoffs among competing project purposes.⁷⁴

Within WRDA 2000, Congress authorized the precedent setting environmental restoration project known as the Comprehensive Everglades Restoration Plan (CERP). CERP represents the centerpiece of restoration efforts in "getting the water right" within the South Florida ecosystem.⁷⁵ Over 1.7 billion gallons of freshwater a day are released to the Atlantic Ocean and Gulf of Mexico in order to prevent the region from flooding.⁷⁶ CERP projects are designed to capture much of the water that is currently being diverted to the ocean, store the water in a network of reservoirs and storage wells, and then release the water as needed during the dry season.⁷⁷ More importantly, natural hydrologic functions will be restored by improving water quantity, distribution and flow to the Everglades ecosystem.⁷⁸

Restoration in the Everglades is the largest Army Corps ecosystem restoration effort to date.⁷⁹ WRDA 2000 approved the initial set of CERP restoration projects and authorized \$700 million in federal funds to implement the plan.⁸⁰ However, only \$341 million of those funds have been appropriated.⁸¹ Federal and state legislators included CERP in the WRDA process, anticipating that Congress would authorize and appropriate money for a new set of CERP projects every few years. The legislation

⁷² Flood Control Act of 1948 (P.L. 80-858).

⁷³ http://www.evergladesplan.org/about/restudy_csf_devel.aspx

For a detailed overview of the Everglades ecosystem and its water management history, see Lodge, Thomas. *The Everglades Handbook: Understanding the Ecosystem*, 2nd Edition, CRC Press (2004).

⁷⁴ H. Hrg. 104-49, p. 450. See Section 528 of WRDA 1996 (P.L. 104-33).

⁷⁵ *South Florida Ecosystem: Restoration is Moving Forward but is Facing Significant Delays, Implementation Challenges, and Rising Costs*. U.S. Government Accountability Office, Report to the Committee on Transportation and Infrastructure, House of Representatives, GAO-07-520 (May 2007), p. 12.

⁷⁶ Comprehensive Everglades Restoration Plan Fact Sheet, http://www.evergladesplan.org/docs/fs_cerp_english.pdf

⁷⁷ *South Florida Ecosystem*, U.S. GAO Report, GAO-07-520 (May 2007), p. 5.

⁷⁸ "Getting the water right" focuses on the quantity, quality, timing, distribution and flow of water. CERP: The Plan in Depth - Part 2: Cornerstone for the Entire South Florida Ecosystem Restoration Effort. Available at http://www.evergladesplan.org/about/rest_plan_pt_02.aspx

⁷⁹ Nicole T. Carter, et al., *Water Resources Development Act: Army Corps of Engineers Project Authorization Issues*, Congressional Research Service Report for Congress, IB10133 (June 17, 2005), p. 11.

For brief history of federal legislation involving the Everglades see Pervaze A. Sheikh, et. al., *South Florida Ecosystem Restoration and the Comprehensive Everglades Restoration Plan*, Congressional Research Service Report for Congress, RS20702 (Dec. 20, 2006).

⁸⁰ *Id.*

⁸¹ *South Florida Ecosystem*, U.S. GAO Report, GAO-07-520 (May 2007), p. 32, Table 4. CERP projects have received \$341.4 in federal appropriations, all of which were appropriated for support activities, not for construction activities.

outlined procedures for developing additional CERP projects and required the projects to be individually authorized by Congress through subsequent WRDA bills.⁸² Since 2000, the Corps of Engineers and the local sponsor have supported the inclusion of 60+ projects under CERP, only a handful of which were submitted to receive Congressional approval in WRDA 2007.⁸³

In 2000, CERP projects were estimated to be completed over the course of 30-years at a total of \$7.8 billion dollars.⁸⁴ By contrast, 2006 estimates project completion over the next 40-years, with costs rising to \$10.9 billion.⁸⁵ Over the life of the project, the expectancy from restoration partners was that CERP would receive a total of \$400 million per year, an average of \$200 million in contributions from both the state of Florida and the federal government.⁸⁶ Although it was recognized that yearly proportions would vary due to the state's assumption of responsibility for land acquisition, federal funding has fallen significantly short each year, resulting in a net \$1.4 billion federal shortfall between 2000 and 2007.⁸⁷ Funding has not been fully appropriated for CERP's initial projects, nor has the restoration initiative received Congressional authorization for additional projects that was expected to occur within this period.

It is well recognized within the Corps of Engineers that regular authorization of its Civil Works Programs is important to preserving the partnerships that the agency and the federal government has forged with non-federal project sponsors.⁸⁸ However, after four years without a WRDA reauthorization, the state of Florida recognized shortcomings in the federal legislative process and established the Acceler8 initiative, essentially expediting the design and construction of eight critical restoration projects with its own funding.⁸⁹ The state intended to create immediate environmental, flood control, and water supply benefits, and planned for such efforts to "jump-start" the larger CERP effort until Congress authorized federal implementation of these individual projects.⁹⁰

⁸² Comprehensive Everglades Restoration Plan, Pub. L. No. 106-541, Section 601, 114 Stat. 2572, 2680 (2000).

⁸³ Projects for Florida include the Indian River Lagoon Project, Picayune Strand restoration, Site 1 Impoundment Project, and dredging projects as well as water reuse and supply projects.

⁸⁴ SFWMD reference the initial cost at \$ 7.8 billion, *see* preamble to Acceler8 Resolution; whereas the GAO Report cites \$ 8.8 billion. *See* U.S. GAO Report, GAO-07-520 (May 2007), p. 35.

⁸⁵ *South Florida Ecosystem: Some Restoration Progress Has Been Made, but the Effort Faces Significant Delays, Implementation Challenges, and Rising Costs*, U.S. Government Accountability Office Report: Testimony before the Subcommittee on International Operations and Organizations, Democracy and Human Rights, Committee on Foreign Relations, U.S. Senate. GAO-07-1250T (Sept. 2007), p. 5.

See NRC, *Progress Toward Restoring the Everglades*, p. 1.

⁸⁶ *South Florida Ecosystem*, U.S. GAO Report, GAO-07-520 (May 2007), pp. 32-33.

⁸⁷ *South Florida Ecosystem*, U.S. GAO Report, GAO-07-520 (May 2007), pp. 8, 33.

See also NRC, *Progress Toward Restoring the Everglades*, p. 21. Current planned federal expenditures for fiscal year (FY) 2005 to FY 2009 fall far short of even those envisioned in the original CERP implementation plan. Although the CERP is intended to be a 50/50 cost-sharing arrangement between the federal and nonfederal (state and local) governments, Federal expenditures from 2005 to 2009 are expected to be only 21% of the total.

⁸⁸ H. Hrg. 104-49, p. 350; S. Hrg. 103-84, p. 75.

⁸⁹ Memorandum of Agreement Regarding Acceleration of the Comprehensive Everglades Restoration Plan. Signed by Governor Jeb Bush, State of Florida, and Nicolas Gutierrez, Jr. Chairman of SFWMD Governing Board, (Oct. 14, 2006). *Available at* https://my.sfwmd.gov/portal/page?_pageid=1855,2830547,1855_2831083&_dad=portal&_sc_hema=PORTAL&navpage=home.

⁹⁰ *South Florida Ecosystem*, U.S. GAO Report, GAO-07-520 (May 2007), p. 6.

In 2007, seven years after the authorization of CERP, the U.S. Government Accountability Office (GAO) completed a study on the progress of Everglades Restoration and the present status of certain ongoing CERP projects. GAO found that nine of the original CERP projects remain significantly behind their original implementation schedule.⁹¹ From planning to design to implementation, these projects were to be completed between 2001 and 2006, however, the target deadlines were not met and restoration officials now report that these projects will be completed in as many as six years behind schedule.⁹² Although development of initial procedures and legal assurances required by WRDA 2000 took longer than expected, delays in the implementation of project plans are generally attributable to the lack of consistent congressional authorization and federal funding.⁹³ It now appears that whether individual CERP projects reach their respective construction phases depends largely on the timing and availability of funds.⁹⁴

When given the necessary authority and funding, the Corps has demonstrated the capacity to carry out multi-stakeholder, multi-objective projects that incorporate a diverse range of economic and environmental issues over long periods of time.⁹⁵ Yet the lack of consistent federal authority and funding for water resources planning, management and implementation of ecosystem projects has hampered the Corps' ability to consistently carry out the federal government's commitment to restoration.

The restoration of the Everglades is an example of a federal commitment that has been substantially delayed by issues unrelated to environmental restoration, including the prioritization of the backlog of authorized projects, reorganization of the Corps, and fiscal responsibility to authorize projects that clearly have a federal role. The federal government has committed itself to implementing and funding Everglades restoration, but with no mechanism to streamline congressional authorization of the individual projects that make up CERP's master sequencing plan. The delay in restoring the Everglades ecosystem is not a matter of lack of federal support, but rather, the restoration initiative lacks a legislative vehicle able to navigate the cumbersome political process of WRDA reauthorizations.

The Corps of Engineers currently has a backlog of over 500 active authorized projects with a federal cost to complete these projects of approximately \$38 billion. Moreover, the agency has no priority setting process to cope with federal budgetary constraints.⁹⁶ WRDA 2007 authorized an additional 900 projects and studies at a price-tag of \$23 billion, but again, Congress failed to establish a system to prioritize any of the active or newly approved projects.⁹⁷ Since 1995, the Corps has alerted Congress that if it continued to enact WRDA bills without first recognizing federal budget pressures, then such actions could lead non-federal project sponsors to a false expectation that funds would ultimately be available.⁹⁸

⁹¹ *Id.*

⁹² *Id.*

See also NRC, *Progress Toward Restoring the Everglades*, p. 21, 159. Federal funding will need to be significantly increased if the original CERP commitments are to be met on schedule.

⁹³ *South Florida Ecosystem*, U.S. GAO Report, GAO-07-520 (May 2007), p. 6.

⁹⁴ *Id.* at 11, 12. *See also* Curtis Morgan, *State to Rethink Everglades Restoration Priorities*, *The Miami Herald*, Dec. 13, 2007, Section B3.

⁹⁵ NRC, *River Basins & Coastal Systems within the USACE*, p. 5.

⁹⁶ S. Hrg. 106-951, p. 5.

⁹⁷ Congressional Information Service, Bill Tracking Report for H.R. 1495 "Water Resources Development Act of 2007." The Senate defeated Boxer Amendment No. 1065, to establish a Water Resources Commission to prioritize water resources projects in the United States. 153 Cong. Rec. S. 6036, 6095.

See Everglades Deserve Strong Support, *The Miami Herald*, October 8, 2007, Section A-18.

⁹⁸ S. Hrg. 104-42, p. 55.

Despite the backlog of Army Corps projects, the Congress has increased the agency's role in implementing large-scale, multi-purpose multi-billion dollar water restoration projects. WRDA 2007 authorized the Corps to restore wetlands and shorelines of the coastal Louisiana ecosystem and to restore portions of the inland waterway system of the Upper Mississippi River.⁹⁹ The statutory language replicates the processes and procedures that Congress established for the Everglades in WRDA 2000. If Congress continues to utilize WRDA enactments as a vehicle for authorizing large-scale ecosystem restoration initiatives, problems with implementing ecosystem and water restoration will surface again, but next time on a much wider scale.

B. UPPER-MISSISSIPPI RIVER RESTORATION

Since the 1830s, the Corps has improved the Upper Mississippi River for commercial navigation by dredging channels, blasting rapids, constructing dikes, jetties and wing dams, and initiating a 4.5 foot channel project in 1878.¹⁰⁰ The Rivers & Harbors Act of 1930 expanded the channel project to 9-feet in depth throughout the entire navigable system. The Upper Mississippi River – Illinois Waterway (UMR-IWW) currently uses 35 dams and 37 lock structures to maintain over 1,200 miles of navigable channels. The inland waterway system carries about 16 trillion tons of goods annually and is the primary conduit for the international trade of grains produced in the five-state region project.¹⁰¹ However, the 9-foot channel project has produced several lasting, large-scale ecological changes to the system that continue to affect the river ecosystem and its users today.¹⁰² In addition to the navigation project, other development activities have affected river ecology and water quality, including levee construction, hydropower production, conversion of floodplains and watershed for agriculture, deforestation, and population and growth trends.¹⁰³

The formal feasibility study of the UMR-IWW began in 1993 and was completed in 2004.¹⁰⁴ With this study, the Corps took a major step forward by considering ecological restoration and commercial navigation within the same study.¹⁰⁵ With the next passage of WRDA, three years later, Congress authorized \$1.7 billion in ecosystem restoration efforts and \$1.9 billion in upgrades to locks, dams and other navigation improvements.¹⁰⁶ WRDA 2007 approved an estimated 225 restoration projects, with individual project limits at \$25 million, that are designed to address cumulative impacts resulting from the operation of the river for navigation, including the overall reduction in the river

⁹⁹ WRDA 2007 (P.L. 110-114), *see* Title VII for Louisiana Coastal Area and Title VIII for the Upper Mississippi and Illinois Water-Way System.

¹⁰⁰ NRC, *Upper-Mississippi River*, p. 8.

¹⁰¹ USACE Document, *Navigation & Ecosystem Sustainability Program for the UMR System* (Jan 2008). *See* <http://www2.mvr.usace.army.mil/UMRS/NESP/Projects/NESPPProjects/default.cfm?cat=np&sec=documents&tid=1>

¹⁰² NRC, *Upper-Mississippi River*, p. 42.

¹⁰³ NRC, *Upper-Mississippi River*, p. 42. Conversion of land for agriculture has resulted in the loss of up to 95 percent of wetlands in the Iowa and Illinois portions of the Upper Mississippi River basin. *See* http://www.umesc.usgs.gov/documents/reports/1999/status_and_trends/99t001_ch05lr.pdf

¹⁰⁴ NRC, *Upper-Mississippi River*, p. 8.

¹⁰⁵ *Id.* at 44.

¹⁰⁶ WRDA 2007 (P.L. 110-114), *see* Title VIII. Congress has directed the Corps to develop plans to ensure that both the navigation and ecosystem components of the program move forwards at a comparable rate. Section 8003(c).

system's flexibility and resilience to cope with floods.¹⁰⁷ This authorization represents the first increment of federal investment for ecosystem restoration, as the Corps' framework anticipates incremental implementation over the next 50 years at the estimated total cost of \$5.3 billion.¹⁰⁸

C. COASTAL LOUISIANA RESTORATION

WRDA 2007 also included Congressional action approving the initial steps to federal restoration of the coastal Louisiana ecosystem. The enactment authorized the Corps to respond to the increasing rate of coastal wetland loss by developing a Comprehensive Plan and ecosystem Task Force.¹⁰⁹ Over 1.2 million acres of wetlands have been converted to open water since the 1930s, accounting for 80 percent of the Nation's coastal land loss.¹¹⁰ The substantial loss is mainly attributable to a combination of human and natural factors.¹¹¹ With the goal of maintaining navigation and reducing flood damage, Congress had instructed the Corps to build an extensive system of levees along the Mississippi River between the 1950s and 1970s.¹¹² However, the levee system seriously impacted coastal Louisiana by channeling water and sediment into the Gulf of Mexico instead of depositing this natural rebuilding material onto the coastal wetlands.¹¹³ Stable wetland systems further inland were later disrupted in efforts to open and maintain navigation channels to the Gulf.¹¹⁴

The State of Louisiana initiated its Coastal Wetland Program in 1989 by amending the state constitution to include a renewing trust fund for restoration efforts.¹¹⁵ Shortly thereafter Congress passed the Coastal Wetlands Planning, Protection and Restoration Act in 1990, authorizing annual appropriations for federal restoration projects and planning activities.¹¹⁶ After years of planning, state and federal stakeholders launched the Coast 2050 Initiative to form a strategic plan for slowing the rate of wetland loss for the entire coastal zone of Louisiana.¹¹⁷ The Coast 2050 Plan calls for the restoration and protection of 450,000 acres of wetlands by implementing 77+ restoration projects over the course of 50 years, at an estimated cost of \$14 billion.¹¹⁸

¹⁰⁷ NRC, *Upper-Mississippi River*, p. 30. Restoration projects will include island building, construction of fish passages, flood-plain restoration, water level management, backwater and side channel restoration, island and shore protection, and topographical diversity. See FN 92 USACE Document, *Navigation & Ecosystem Sustainability*.

¹⁰⁸ N. Carter, Congressional Research Service Report for Congress, *Upper Mississippi River – Illinois Water-Way Investments: Legislation in the 109th Congress*, Pub. No. RL32915 (Dec. 2006) p. 1.

¹⁰⁹ WRDA 2007 (P.L. 110-114), see Title VII. See also J. Zinn, Congressional Research Report for Congress, *Coastal Louisiana Ecosystem Restoration After Hurricanes Katrina and Rita*, Pub. No. RS22276 (Oct. 2007).

¹¹⁰ K. Vigmostad, N. Mays, et. al., Northeast Midwest Institute, *“Large-Scale Ecosystem Restoration: Lessons for Existing and Emerging Initiatives,”* (2005), p. 123 (citing http://data.lca.gov/Ivan6/main/main_ch1_intro.pdf). (Hereinafter “NEMW, *Large-Scale Ecosystem Restoration*”).

¹¹¹ National Research Council, *First Report from the NRC Committee on the Review of the Louisiana Coastal Protection and Restoration Program*, National Academies Press, Washington, D.C. (2008), p. 8-9.

¹¹² NEMW, *Large-Scale Ecosystem Restoration*, p. 89.

¹¹³ *Id.* at 81, 89.

¹¹⁴ *Id.* at 89.

¹¹⁵ NEMW, *Large-Scale Ecosystem Restoration*, p. 93. See Louisiana Constitution, Article VII, Section 10.2, Wetlands Conservation and Restoration Fund.

¹¹⁶ P.L. 101-646, see Title III.

¹¹⁷ NEMW, *Large-Scale Ecosystem Restoration*, p. 96. Coast 2050 initiative was launched in 1997.

¹¹⁸ CRS, *Coastal Louisiana Ecosystem Restoration*, p. 3.

However, the widespread destruction caused by the 2005 hurricane season has greatly expanded the range of restoration options.¹¹⁹ The State of Louisiana immediately responded to safeguarding the state's coast by combining hurricane protection and coastal restoration activities into one administrative state entity, an agency that the Corps will work with in developing the federal comprehensive plan.¹²⁰ By including coastal restoration with coastal protection, restoration efforts will focus on the role that wetlands can play in absorbing storm surges and decreasing flood elevations.¹²¹ The distribution of impact from the hurricanes of the 2005 season has caused interest in neighboring coastal states to consider a restoration program that would provide benefits across the central Gulf Coast.¹²² In addition to coastal Louisiana, the Corps has already expressed its support for restoring coastal wetlands in Mississippi.¹²³

V. OPPORTUNITIES FOR COLLABORATION WITH OTHER FEDERAL AGENCIES

The Army Corps is not the only federal agency to evolve from massive water development missions to large-scale restoration initiatives. The Corps of Engineers and Bureau of Reclamation represent the largest federal agencies driven by missions to build large water projects regardless of impact on aquatic ecosystems as a whole.¹²⁴ Consistent with the philosophy during their times of origin, proposals for the two agencies were aimed at the comprehensive development of river basins for multiple-purpose use of water resources, with those purposes being largely utilitarian.¹²⁵ The Army Corps missions dealing with the reclamation of water for drainage purposes run parallel to the Bureau's directives for irrigation reclamation, the main difference being jurisdictional. The Bureau's operations are grounded in seventeen western reclamation states, where the Corps has authority to operate throughout the entire country.¹²⁶ The Bureau focuses on providing hydroelectric power and water for irrigation, while the Corps, which generates more hydropower than Reclamation, focuses more on flood control and navigation.¹²⁷ Both agencies have had major construction programs to develop dams and waterways, and are now responsible for the operation, maintenance and modernization of these facilities.¹²⁸

The Reclamation Act of 1902 was used as a mandate for the Bureau of Reclamation "to go forth and build dams and storage facilities" in order to serve communities of small farmers.¹²⁹ As a result, the

¹¹⁹ *Id.* at 5.

¹²⁰ See Coastal Protection & Restoration Authority, www.lacpra.org. WRDA 2007 instructs the Corps to develop a federal comprehensive plan consistent with the mater plan created by the state's Authority.

¹²¹ CRS, *Coastal Louisiana Ecosystem Restoration*, p. 3.

¹²² *Id.* at 5.

¹²³ Jenny Jarvie, *Coastal buyout talk roils lives in Mississippi*, Los Angeles Times, Oct. 2, 2007.

¹²⁴ Adler, *Addressing Barriers to Watershed Protection*, p. 994.

¹²⁵ Adler, *Addressing Barriers to Watershed Protection*, p. 1006.

¹²⁶ National Research Council, *Managing Construction and Infrastructure in the 21st Century – Bureau of Reclamation*, National Academies Press, (2006) p. 15. (Hereinafter "NRC, *Bureau of Reclamation*")

¹²⁷ NRC, *Bureau of Reclamation*, p. 49.

¹²⁸ *Id.*

¹²⁹ Rowley, William D. *The Bureau of Reclamation: Origins and Growth to 1945, Volume 1*, Bureau of Reclamation, U.S. Department of the Interior, Denver, Colorado (2006) pp. 33, 40. (Hereinafter "B.Rec., *Origins and Growth*").

Prior to the Bureau's conception, Congress enacted a series a free land legislation for the settlement of the west including the Homestead Act of 1862, Timber Culture Act of 1873, and Desert Land Act of 1877. However, in

Bureau's water conveyance systems and irrigation projects became a conduit for western settlement.¹³⁰ Congress deemed water commerce and land irrigation legitimate internal improvements for the Nation's welfare, thus allowing the federal government to assume responsibility.¹³¹ The Reclamation Act was followed by a large number of program specific statutes designed to authorize construction of individual reclamation projects.¹³² Huge federal projects and programs became standard New Deal policies in the 1930s, as such projects increased national employment rates and helped pave the road to recovery from the Great Depression.¹³³

The Bureau built much of the water infrastructure that was necessary to transform the arid land of little value without access to water into valuable lands once water and land were joined – establishing enormous multi-purpose water development projects in the form of dams, reservoirs, hydroelectric power plants, diversions, canals and vast networks of irrigation projects.¹³⁴ The Bureau's inventory is large and diverse, including about 673 facilities that have been constructed as part of 178 major projects.¹³⁵ Included in this inventory are 471 dams and dikes, 58 hydroelectric plants, and more than 300 associated features such as canal systems, pumping plants, pipeline systems, and diversion and drainage facilities, structures and buildings.¹³⁶

The big dams were once a celebrated part of the landscape.¹³⁷ However, the great infrastructure projects of one generation have now become subject to critical analysis by subsequent generations who have invoked a wave of environmental policy reforms, including accountability, assessment of project consequences, and mitigation of impacts.¹³⁸ These water engineering projects have become national monuments to economic and power security in the west, but the monuments that were used to harness the forces of western rivers have forever altered the west's land and water ecosystems, forcing wild rivers to disappear into a series of lakes.¹³⁹ By adopting the concept of maximum water development and an "irrigation-at-any-price" mentality, the original Reclamation Act has been widely criticized as causing extensive ecological damage.¹⁴⁰

With major water and power systems in place, the late 1980s marked the end of an era for the Bureau's mega-projects, and the agency suspended its traditional role as a major designer and constructor of new dams.¹⁴¹ Although the core of the Bureau's basic mission remains the same – to deliver water and

much of the far west, large farms without guaranteed water would mean failure in settlement attempts of the west's unclaimed public lands. *Id.* at 33.

¹³⁰ B.Rec., *Origins and Growth*, p. 101.

¹³¹ *Id.* at 53.

¹³² Adler, *Addressing Barriers to Watershed Protection*, p. 1018. (Referring to Acts authorizing Boulder Canyon Project, Colorado River Storage, Colorado River Basin Project, Columbia Basin Project)

¹³³ B.Rec., *Origins and Growth*, p. 36.

¹³⁴ *Id.* at xxv, 3.

¹³⁵ NRC, *Bureau of Reclamation*, p. 23.

¹³⁶ *Id.*

¹³⁷ B.Rec., *Origins and Growth*, p. 37.

¹³⁸ B.Rec., *Origins and Growth*, pp. 4, 33, 40. Noting that major projects such as the Hoover Dam, California's Central Valley Project, Colorado-Big Thompson, and Grand Coulee Dame in the Columbia River Basin laid the foundation for the Bureau's major role in utilizing and managing water resources in the post-WWII years.

¹³⁹ *Id.* at 3-4.

¹⁴⁰ Adler, *Addressing Barriers to Watershed Protection*, p. 1017 (Noting how the Act shunned the related water management concept of comprehensive, integrated planning); B.Rec., *Origins and Growth*, p. 53.

¹⁴¹ NRC, *Bureau of Reclamation*, pp. 27, 80.

to generate power – carrying out these core missions in the early twenty-first century is much different than it was during most of the twentieth century.¹⁴² The Bureau has changed course from water development to one of water management, concentrating on managing its existing projects, conserving water, and assuring good water quality projects.¹⁴³ With growing concern over environmental issues, Congress has added provisions to various reclamation laws to mitigate environmental impacts of existing projects.¹⁴⁴ In response, the Bureau has developed mitigation projects to deal with the agency’s past decisions that did not recognize environmental issues at the time of a project’s development.¹⁴⁵

After efforts in the 1990s to make the agency a smaller, more efficient water management agency, the Bureau’s mission was revised and now includes directives “to manage, develop, and protect water and related resources in an environmentally sound manner in the interest of the American public.”¹⁴⁶ The Bureau has continued to adapt to evolving goals and workloads, and Congress in turn has acknowledged opportunities for the agency to place more emphasis on environmental restoration and enhancement.¹⁴⁷ Today, the Bureau has moved beyond mitigation projects by taking on initiatives to restore the hydrological and biological integrity of entire ecosystems.

The California Bay-Delta is the largest estuary on the west coast, located at the confluence of the Sacramento and San Joaquin Rivers and the San Francisco Bay. The Bay-Delta is also the location of one of the most complicated and extensive hydraulic water management systems in the west.¹⁴⁸ Congress first authorized the construction of the Central Valley Project (CVP) in 1935, allowing the Bureau of Reclamation to begin a massive water planning project to divert water from the Sacramento Valley and Delta to farmland in California’s vast Central Valley.¹⁴⁹ The State of California developed its counterpart in 1957, when the California legislature enacted the State Water Project (SWP), authorizing the natural inflow of water into the San Francisco Bay to be diverted to consumers in Southern California and the San Joaquin Valley.¹⁵⁰ The reclamation projects would transport water down from the state’s northern mountains to irrigate twelve million acres in the Central Valley, improve navigation in San Francisco Bay, stop salt water intrusion into the rich delta lands of the San Joaquin and Sacramento Rivers, provide flood control, and produce enough electrical power to industrialize northern California.¹⁵¹ Together the federal and state water projects formed the world’s largest systems of dams, canals, and reservoirs, providing California with its first dependable source of water for agriculture, industry and urban water users.¹⁵²

The Bay-Delta now supplies water to 22 million people and millions of acres of farmland, however, decades of projects have fundamentally altered the physical environment of the Central Valley

¹⁴² *Id.* at 17, 88, 95.

¹⁴³ B.Rec., *Origins and Growth*, p. 41.

¹⁴⁴ Adler, *Addressing Barriers to Watershed Protection*, p. 1018.

¹⁴⁵ NRC, *Bureau of Reclamation*, p. 50.

¹⁴⁶ NRC, *Bureau of Reclamation*, p. 17; B.Rec., *Origins and Growth*, pp. 41-42.

¹⁴⁷ NRC, *Bureau of Reclamation*, pp. 22-23, 95.

¹⁴⁸ B.Rec., *Origins and Growth*, p. 13.

¹⁴⁹ *Id.* at 19.

¹⁵⁰ P. Sheikh and B. Cody, *Congressional Research Report for Congress, CALFED Bay-Delta Program: Overview of Institutional and Water Use Issues*, Publication No. RL31975 (February 2, 2005), pp. 3-4. (Hereinafter “CRS, *CALFED Bay-Delta Program*”) (citing K. Taylor, K. Jacobs, and S. Luoma, “CALFED: An experiment in Science and Decision-making.” *Environment*, v. 45 (2003) pp. 30-41).

¹⁵¹ B.Rec., *Origins and Growth*, p. 18.

¹⁵² *NEMW, Large-Scale Ecosystem Restoration*, p. 168.

as well as the Bay-Delta estuary.¹⁵³ The Bay-Delta ecosystem has experienced severe environmental deterioration due to the elimination or alteration of over 88 percent of the estuary's wetlands.¹⁵⁴ The natural water system has become unable to provide reliable amounts of water for water users and the natural environment.¹⁵⁵ When water quality issues threatened the operation of the CVP and SWP in the late 1980s, state and federal water managers responded to restoration and water supply issues in the Bay-Delta by forming the Bay-Delta Framework Agreement, which marked the beginning of the CALFED restoration process.¹⁵⁶ The long-term goals of CALFED include restoring the ecological health of the Bay-Delta ecosystem, improving water quality, stabilizing infrastructure for managing water, and improving water supply reliability.¹⁵⁷

The implementation of CALFED is expected to cost an estimated \$10 billion dollars over the next thirty years, with a projected cost-share responsibility of over \$2.4 billion for the federal government.¹⁵⁸ Congress approves federal participation in the CALFED program by authorizing the expenditure of a discrete amount of funds for specified periods of time. For instance, under the Water Supply, Reliability, and Environmental Improvement Act of 2004, Congress has authorized \$389 million for the CALFED program from 2005 to 2010.¹⁵⁹ Such authorizations of general program funding are necessary in order for appropriators to disperse federal monies for specific projects and activities. However, in order to avoid a breakdown in the appropriation process, Congress must reauthorize federal funding and participation in CALFED before the current authorization expires in 2010.

The Army Corps may not be the lead agency on CALFED, but the agency is still heavily involved with various stages and components of this restoration initiative. The Corps recently issued final environmental documents supporting the South Bay Salt Pond restoration project in San Francisco Bay.¹⁶⁰ The project will prospectively be the largest tidal wetland restoration project on the west coast, as restoration will encompass over 15,000 acres. Similar to the planning of restoration of the Everglades, the Corps of Engineers was an integral part in developing the long term 50-year plan, and similar in construction, the Bay's shoreline will shift from a series of levees, to a more natural aquatic habitat of tidal marsh, mudflats and shallow ponds.

With federal involvement in ecosystem restoration projects from coast to coast, a chance for collaboration exists in streamlining water restoration project approval into one legislative vehicle. Large-scale restoration initiatives are planned and implemented in phases, with each individual component requiring Congressional authorization. If Congress intends to approve a new set of restoration projects every couple of years for each restoration initiative, then it makes sense that these projects are assessed and authorized in relation to each other, in order to guarantee that national objectives are being met in an

¹⁵³ CRS, *CALFED Bay-Delta Program*, p. 4.

¹⁵⁴ NEMW *Large-Scale Ecosystem Restoration*, p.23 (citing <http://sfep.abag.ca.gov/wetlands.html>).

¹⁵⁵ CRS, *CALFED Bay-Delta Program*, p. 5.

¹⁵⁶ *Id.* at 4, 7. The Bay-Delta Framework Agreement was signed in 1995 by state and federal agencies; the CALFED program was created from this Framework Agreement.

¹⁵⁷ *Id.* at 1, 8.

¹⁵⁸ CRS, *CALFED Bay-Delta Program*, p. 10; NEMW, *Large-Scale Ecosystem Restoration*, pp. 174-75.

¹⁵⁹ P.L. 108-361.

¹⁶⁰ US DOI and US Fish & Wildlife Service Press Release, *Final Environmental Documents Released for South Bay Salt Pond Restoration Project*, US Fed News (Dec. 14, 2007). See also S. Hrg. 108-501, p. 48, 122-23.

Feasibility Study of the South San Francisco Bay salt ponds authorized by Section 4027, WRDA 2007. Napa River Salt Marsh Restoration authorized by Section 1001(12), WRDA 2007, includes the restoration of over 10,000 acres of wetlands that had been converted to salt ponds.

efficient and consistent manner. Although the Water Resources Restoration Act was written with specific reference to the Corps of Engineers, the proposed legislation addresses authorization issues that are widespread among comprehensive ecosystem restoration initiatives nationwide. The framework it provides can be easily amended to incorporate restoration activities by other federal agencies as well.

VI. MOMENTUM FOR A NATIONAL WATER RESTORATION ACT

The nation's physical landscape has been forever altered by thousands of projects constructed by the Corps of Engineers.¹⁶¹ Water development projects have been implemented by the Corps under numerous authorizations for flood damage reduction and navigation enhancement. Now, restoration initiatives seek to address the cumulative influence of Army Corps projects on other functions of riverine and coastal systems. Large-scale regional projects must be authorized within a comprehensive framework, rather than on an individual project-by-project basis.

Restoration initiatives will span decades, involving the coordination of goals and functions of federal and state water agencies and interested stakeholders, comprehensive water quality and quantity planning, cost-sharing tied to the benefits received from water projects, the linking of land and water uses, and the comprehensive evaluation of all issues from an ecosystem perspective.¹⁶² Compatible legislation is required in order to respond to changes that are necessary for the efficient and effective management of ecosystem restoration.

A new legislative authority dedicated solely to restoration is essential to coordinate ecosystem-based protection and restoration of water resources and natural systems. Managing water systems requires a highly collaborative process, and requires coordination among government agencies and stakeholders at the federal, state and local levels.¹⁶³ Restoration projects address broad problems with hydrology, geomorphology and biological integrity, implementation of which require vast coordination from federal agencies with expertise in ecosystem restoration and water management.

For example, integrated planning and adaptive management are the preferred policy approaches for ecosystem management.¹⁶⁴ An integrated and system-wide approach is used to adequately consider the trade-offs among flood protection, navigation and ecosystem services. The Corps must undertake integrated water project planning, adopt a watershed or regional approach, and include environmental and social perspectives in its planning process.¹⁶⁵ By using this process on the river basin and coastal system scale, multiple stressors, unintended consequences, and cumulative effects can be identified, while a more complete assessment of the costs and benefits of a project can be examined in a context that incorporates stakeholder interests.¹⁶⁶ Adaptive management strategies are then employed to execute this comprehensive planning framework, where restoration outcomes are monitored, evaluated and modified as new information is gathered and discovered.¹⁶⁷ Although Congress has instructed the Corps to utilize integrated project planning and adaptive management strategies, the present legislative authorization and

¹⁶¹ NRC, *USACE Water Resources Planning*, p. 50.

¹⁶² Adler, *Addressing Barriers to Watershed Protection*, p. 1005.

¹⁶³ NRC, *Bureau of Reclamation*, p. 51.

¹⁶⁴ Arnold, Craig. *Clean-Water Land Use: Connecting Scale and Function*, 23 Pace Envtl. L. Rev. 291 (Summer 2006), p. 322.

¹⁶⁵ NRC, *Upper-Mississippi River*, p. 19. Environmental perspectives include ecosystem health and biodiversity, while social perspectives include such aspects as risk exposure, economic development and recreation.

¹⁶⁶ NRC, *Upper-Mississippi River*, p. 19.

¹⁶⁷ Arnold, *Clean-Water Land Use*, p. 322; NRC, *Upper-Mississippi River*, p. 19.

funding process prevents implementation of these techniques from occurring in a successful and meaningful manner.¹⁶⁸

Effective ecosystem restoration requires a substantial change in the method by which the federal government carries out large-scale initiatives. When entering coordination agreements and cost-sharing requirements, federal and state partners have substantially relied on the biennial process of enacting WRDA as the vehicle to approve and amend comprehensive plans and individual restoration projects contained within. However, federal authorization and funding has not been forthcoming due to significant delays in the WRDA enactment process. These delays lead to funding gaps that potentially jeopardize the effectiveness of restoration. Water managers operate under a theory that funds for water resource restoration should be allocated efficiently so as to achieve the greatest environmental benefits per dollar.¹⁶⁹ Since ecosystem restoration projects will span decades, the plans designed to include federal funds will be unsuccessful if authorizations and funding measures are not consistently enacted.¹⁷⁰ Therefore, the key to a stable federal relationship with non-federal sponsors and stakeholders is a clear and responsive federal process.

The nation's water resources must be maintained and restored in order to ensure sufficient water for healthy ecosystems and ultimately for a healthy society. As Congress continues to commit federal resources to constructing and funding multi-billion dollar restoration initiatives, a dependable two-year authorization process is critical to the success of these comprehensive restoration initiatives. Legislation in the form of a Water Resources Restoration Act is necessary to guarantee that the Corps' environmental protection mission becomes more effective, efficient, and responsive, and to provide an opportunity for the federal government to keep pace with changing environmental demands.

Over the years, Congress has significantly expanded the Army Corps' responsibility over environmental protection. Restoration and environmental enhancement has become a central focus of the Corps, rather than just a principle considered during the planning process.¹⁷¹ The process of enacting WRDA, however, has not kept pace with the demands of the Corps' environmental mission, as evidenced by the seven year interval between WRDA enactments. Legislative delays jeopardize the feasibility and overall effectiveness of comprehensive ecosystem restoration projects.

Congress must remain attentive in its timing of legislation action with large-scale ecosystem restoration, particularly since these initiatives will require decades of timely authorization and appropriation acts. A dependable biennial authorization process is critical for the Army Corps to conduct an orderly and manageable water resources program, but absolutely imperative in administering ecosystem restoration projects where the environment is subject to continued degradation while legislation awaits final passage. Success depends on completing all the interrelated project components of large-scale comprehensive plans and frameworks.

A Water Resources Restoration Act recognizes the need to set aside ecosystem restoration projects from WRDA enactments. The strengthening of the Army Corps' environmental protection mission to expressly include the restoration of water resources legitimizes a legislative vehicle focusing solely on the authorization of this distinct class of projects. Accordingly, the enactment of a Water Resources Restoration Act gives Congress the opportunity to prove its commitment to ecosystem restoration and a sustainable future by establishing an efficient and reliable authorization process.

¹⁶⁸ NRC, *Upper-Mississippi River*, p. 19.

¹⁶⁹ Adler, *Addressing Barriers to Watershed Protection*, p. 998.

¹⁷⁰ NEMW, *Large-Scale Ecosystem Restoration*, p. 31.

¹⁷¹ See S. Hrg. 108-501.

WATER RESOURCES RESTORATION ACT:
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SEPTEMBER 25, 2008

WATER RESOURCES RESTORATION ACT:
AN ACT

To provide for the restoration of the Nation's water resources and to authorize the Secretary of the Army to develop various projects for the restoration and enhancement of these water resources.

SEC. 1. SHORT TITLE, FINDINGS, PURPOSES, AND TABLE OF CONTENTS.

(a) **SHORT TITLE.**-- This Act may be cited as the 'Water Resources Restoration Act of 2009.'

(b) **FINDINGS.**-- The Congress finds the following:

(1) It is in the national interest to protect, enhance, restore, and maintain natural systems and water resources that provide essential ecosystem services and functions, which are critical to sustaining the present and future well-being of the Nation, in a long-term, sustainable manner;

(2) Many of the Nation's natural resources have been significantly degraded and damaged through widespread destruction of wetlands, manipulation of flow regimes and sediment deposits, reduction of water quality and quantity, and massive loss of fish and wildlife habitat;

(3) Conversion of ecologically sensitive watersheds, river basins, and coastal systems for economic development and population growth has resulted in adverse and unintended impacts to essential components of water resources, including wetlands, floodplains, and aquifer recharge areas, which are vital to the overall health of the Nation's water resources;

(4) Wetlands and floodplains provide protection to our Nation's cities by mitigating the destructive impacts caused by natural disasters, shielding

landward areas from wave action, erosion, and storm damage, and serving as valuable storage areas for storm and flood waters;

(5) No other resource is as threatened as our Nation's waters in the face of global climate change. This threat makes it even more important to restore our Nation's waters that support both people and wildlife;

(6) The U.S. Army Corps of Engineers has played a critical role in the development and management of the Nation's rivers, lakes, bays and coastlines.

(7) However, the Nation's physical landscape has been forever altered by thousands of projects, often constructed by the U.S. Army Corps of Engineers, and other Federal agencies. Federal water infrastructure projects for navigation, flood control, drainage, irrigation, and other developmental purposes have reshaped virtually all of the Nation's river basins and coastal areas, resulting in severe degradation of the Nation's water resources;

(8) The environmental protection mission enacted by Section 306 of the Water Resources Development Act of 1990 (33 U.S.C. 2316), and other continuing and project-specific authorities, has provided the U.S. Army Corps of Engineers with directives to plan, engineer, design and carry out ground-breaking restoration activities, including large-scale ecosystem initiatives. This mission should expressly include the restoration of hydrologic and geomorphological processes in river and coastal regions where water development projects have significantly altered those processes;

(9) Substantial delays between congressional authorizations of Water Resources Development Acts jeopardize the feasibility and effectiveness of comprehensive ecosystem restoration initiatives, and as a result, ecosystems of national significance remain severely imperiled and subject to further degradation;

(10) The key to effective implementation of large-scale ecosystem restoration initiatives, in order to meet the timeframe of an initiative's goals and objectives, is to establish an efficient and dependable process for congressional authorization of such projects; and

(11) Uncertainty is an inherent part of the management of all natural systems. In the face of such uncertainty, adaptive management is a fundamental tool for resolving uncertainty and advancing scientific understanding of ecological processes. Adaptive management provides flexibility in determining the most effective manner in which to carry out and ultimately achieve the goals of large-scale ecosystem restoration projects.

(c) **PURPOSES.**-- The purposes of this Act are --

- (1) to ensure the coordinated protection, enhancement and restoration of water resources of national significance;
- (2) to authorize all water resources restoration projects through passage of a Water Resources Restoration Act,
- (3) to use a Water Resources Restoration Act as the sole authorization bill for the Congress to authorize, approve, modify and amend all restoration projects, plans and studies for the U.S. Army Corps of Engineers; and
- (4) to begin a two-year cycle for the passage of a Water Resources Restoration Act.

(d) **TABLE OF CONTENTS.**--

TITLE I	GENERAL PROVISIONS
TITLE II	COST SHARING
TITLE III	COMPREHENSIVE PLANS FOR RESTORATION
TITLE IV	AUTHORIZATION OF WATER RESOURCES RESTORATION

SEC. 2. DEFINITIONS.-- For purposes of this Act--

- (1) the term “Secretary” means the Secretary of the Army.
- (2) the term “water resources” includes aquatic, coastal, marine and estuarine ecosystems; wetlands and closely associated terrestrial systems; intermittent and perennial streams; rivers; watersheds, including urban watersheds; and other water bodies.
- (3) the term “restoration” means the process of implementing measures to return ecological values and functions to a degraded water resource, including its hydrology, water quality, wildlife and vegetative communities, and portions thereof, to a desired natural condition, to the extent it is justified and technically feasible. Restoration projects shall focus on ecosystem services such as water storage, natural hydropatterns, aquifer and groundwater recharge, nutrient and contaminant filtration, wildlife and vegetative habitat, food chain connections, biodiversity, and other functions that are critical to the ecosystem’s self-maintenance, and may restore degraded water resources as a means to control flooding, excessive erosion and sedimentation.

Comment: The terms ‘water resources’ and ‘restoration’ were partially derived from USACE Regulation EP 1165-2-1, July 30, 1999, Chapter 19: Environmental Restoration and Protection, as well as from definitions included in the Louisiana Coastal Wetlands Restoration Act, Public Law 101-646, Title III (16 U.S.C. 3951).

TITLE I - GENERAL PROVISIONS

SEC. 101. WATER RESOURCES RESTORATION MISSION.

(a) **IN GENERAL.**-- Consistent with section 306 of the Water Resources Development Act of 1990 (33 U.S.C. 2316), the Secretary shall restore, protect or enhance water resources through measures that will significantly contribute to the long-term restoration or protection of the physical, chemical and biological integrity of the Nation's water resources, including the restoration of hydrologic and geomorphological processes in large river and coastal systems. The primary purpose of restoration projects and activities shall not be to provide navigation, irrigation, or flood control benefits.

(b) **LIMITATIONS.**-- Nothing in this section affects:

- (1) existing Corps of Engineers' authorities, including authorities with respect to navigation and flood control;
- (2) Corps of Engineers' projects, agreements, programs, or plans authorized prior to the date of the enactment of this Act;
- (3) pending Corps of Engineers permit applications or pending lawsuits involving permits or water resources projects; or
- (4) the application of public interest review procedures for Corps of Engineers permits.

Comment: This section is intended to clarify the scope of the Corps' authority under Section 306 of WRDA 1990, which provides the Corps with a civil works mission of "environmental protection." The provision states that "The Secretary shall include environmental protection as one of the primary missions of the Corps of Engineers in planning, designing, constructing, operating and maintaining water resources projects."

The Corps environmental protection mission has been extensively interpreted by Corps regulations, and through Congressional WRDA authorizations of individual restoration projects, to include ecosystem restoration. By authorizing specific projects that focus primarily on restoration, Congress has already started to direct the Corps away from infrastructure and development projects and into this new area of national water management. The National Research Council recommends that restoration projects implemented by the Corps should focus on relaxing some of the control of natural systems that has been put in place by 200 years of water development activities and engineering. (NRCa).

The intent of this section is to link the Corps' restoration efforts to its traditional and historical areas of expertise in hydrology and engineering. Rather than create overlapping missions, the provision expands on the Corps' existing environmental protection mission and expressly includes the restoration of hydrologic and geomorphic processes in large river and coastal systems.

Note: Paragraph (b) of this section is identical to the Environmental Protection Mission set forth by Section 306(b) of WRDA 1990, except for the addition of subparagraph (2).

SEC. 102. CONDITIONS FOR CONGRESSIONAL AUTHORIZATION OF WATER RESOURCES RESTORATION.-- The following conditions must be fulfilled in order for a water resource restoration project or activity to be eligible for authorization under this Act.

(a) COMPREHENSIVE PLAN FOR RESTORATION.--

(1) The Secretary, in coordination with the interested non-Federal entities and in coordination with the public and the Administrative Procedure Act (5 U.S.C. 500 et seq.) notice and commenting, shall develop and submit to Congress for approval a plan for restoration in accordance with sections 301 and 302 of this Act. The Secretary shall consult with and seek assistance from each Federal natural resource management agency with jurisdiction over the resources being restored under such plan.

(2) Except that no such comprehensive plan for restoration shall be required to complete all measures under section 302 of this Act if the Secretary determines that the costs associated with planning a comprehensive plan would exceed the amount of the contribution required from the non-Federal entity. If the Secretary makes such a determination, the provisions of section 302 of this Act shall not apply, and the restoration project or activity shall be eligible for authorization upon completion of the remaining requirements of this section and submission to the Congress of a report on the project by the Secretary.

(b) COOPERATIVE AGREEMENTS.-- The interested non-Federal entities and respective State government must enter into a cooperative agreement with the Secretary, certifying not to take actions, or fail to take actions, that have the potential to adversely impact or jeopardize the water resources being restored and restoration projects, activities, comprehensive plans, and objectives authorized by this Act.

(c) STATEMENT OF FINANCIAL ABILITY.-- The interested non-Federal entities and respective State government must submit to the Secretary a statement of financial capacity describing their ability to carry out cost-sharing responsibilities in the implementation of restoration projects and activities and the continued operation and maintenance of such projects and activities.

Comment: This section establishes three prerequisites for the interested non-Federal entities prior to consideration of projects for Congressional authorization – a planning concept, a commitment to preserve and protect restoration objectives, and a demonstration of financial ability to fulfill cost-sharing responsibilities. Human activities that alter the function of various ecosystem components are not limited to activities planned and implemented by the Corps; state and local projects and land use practices can have a significant impact on watershed and coastal systems and on how these systems respond to Corps-implemented projects. (NRCb, p.22). In addition to promoting improved cooperation and coordination among all levels of government, these requirements are intended to provide Congress with adequate assurances of the locality's strong commitment to the long-term goals of restoration projects.

The "finding by the Secretary" provision is intended to address restoration plans of smaller short-term activities, that may for example focus more on design and implementation. Examples of smaller restoration measures include removing artificial obstructions to river flows, reestablishing wetlands that have been drained, inserting crevasses in levees to reconnect rivers and their floodplains, and allowing for the silting of river channels. (NRCa, p.58).

Note: The language triggering the need for a comprehensive plan in paragraph (a) is modeled after the Corps planning principle as expressed in USACE Regulation ER1105-2-100.

SEC. 103. JUSTIFICATION FOR THE RESTORATION OF WATER RESOURCES.--

(a) **IN GENERAL.--** Notwithstanding section 209 of the Flood Control Act of 1970 (42 U.S.C. 1962-2) or any other provision of law, in carrying out activities under this Act, the Secretary may determine that the activities--

- (1) are justified by the environmental benefits derived by the project; and
- (2) shall not need further economic justification if the Secretary determines that the activities are cost-effective.

(b) **COST-EFFECTIVE DETERMINATION.--** In determining whether a restoration activity is cost-effective, the Secretary shall evaluate the potential environmental benefits based on the goals of the proposed restoration activity and on qualitative measurements of ecosystem functions and services.

(c) **APPLICABILITY.--** Paragraph (a) shall not apply to any separable element of a comprehensive plan, undertaken pursuant to section 102 of this Act, intended to produce benefits that are predominantly unrelated to the restoration, preservation, and protection of the authorized restoration activity.

Comment: This section is intended to address problems with measuring environmental benefits within the Corps' traditional cost-benefit valuation under a national economic development (NED) analysis. The framework for Corps NED analysis is set forth by the document "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies." A positive cost-to-benefit ratio justifies Corps participation in development projects as well as incrementally expanding a project's scope based on quantitative, rather than qualitative, measurements. The federal objective for water development projects is to maximize net NED benefits, subject to compliance with all relevant environmental laws. The problem here is that environmental considerations are defined as legal constraints, and not as objectives to be achieved. (NRCa, p.40). This, however, is subject to change due to the enactment of Section 2031 of WRDA 2007 (P.L. 110-114), which calls for the revision of the above mentioned principle and guidelines.

Generally, water development projects are subject to Section 209 of the Flood Control Act of 1970, which states: "It is the intent of Congress that the objectives of enhancing regional economic development, the quality of the total environment, including its protection and improvement, the well-being of the people of the United States, and the national economic development are the objectives to be included in federally financed water resource projects (including shore protection projects such as projects for beach nourishment, including the replacement of sand), and in the evaluation of benefits and cost attributable thereto, giving due consideration to the most feasible alternative means of accomplishing these objectives."

Outputs of ecological restoration projects tend to include intangible values such as endangered species protection, aquatic ecosystem protection or restoration, as well as aesthetic values. These types of project outputs defy monetization and do not easily fit into a traditional benefit-cost valuation framework. (NRCc). As for the current analysis conducted on restoration projects, Section 1135 of WRDA 1986 authorizes the Corps to formally undertake environmental improvement and restoration projects without conducting a formal cost-benefit analysis as required by Section 209 of the Flood Control Act of 1970.

In 2000, the Corps issued planning guidance regulations (ER 1105-2-100) in which the agency formally adopted a national ecosystem restoration (NER) analysis, as a planning and evaluation objective of parallel and equal importance to NED. (NRCa, p.56). Even though the Corps formulates and evaluates environmental benefits in terms of NER, the Office of Management and Budget still requires a cost-benefit analysis for purposes of reviewing alternative projects. Additionally, in review of the Corps budget proposals, the current Administration has established a budget policy that places priority on Corps projects with potentially large net benefits compared

to their costs, and as a result, funding is directed toward “new start” projects that will provide the highest net environmental and economic return. The problem is that this traditional economic framework is not appropriate for quantifying ecosystem restoration and protection outputs.

Note: Paragraphs (a) and (c) appear in Modified Waters, Section 528 (d) of WRDA 1996, as well as the Comprehensive Everglades Restoration Plan, Section 601(f)(2) of WRDA 2000; however, paragraph (b) was added to stress the fundamental differences in measuring qualitative restoration outputs as opposed to quantifying benefits in economic terms.

TITLE II – COST SHARING

SEC. 201. IN GENERAL.-- Before implementing any restoration project or activity authorized by this Act, the Secretary shall enter into a binding agreement with the local non-Federal entities in accordance with 42 U.S.C. 1962d-5b. The agreement shall provide the terms for the non-Federal responsibility for its portion of the cost of any restoration activity as authorized by this Act and the cost of operation and maintenance.

SEC. 202. EXISTING AUTHORIZATIONS.-- Except of otherwise expressly provided in this Act, nothing in this section shall be construed to modify any existing cost share or responsibility specific to projects, programs, or plans authorized prior to the date of the enactment of this Act.

SEC. 203. FEDERAL LANDS.-- Notwithstanding any other provision of this title, the Federal share of the cost of a restoration project or activity carried out under this Act on federal lands, or a project or activity carried out primarily for the benefit of federal lands, shall be 100 percent, including the costs of operation and maintenance.

Comment: The language “an activity carried out primarily for the benefit of federal lands” was added to address cost-sharing where substantial restoration activities occur on privately held or state owned land in order to restore and preserve federal managed lands that have been disturbed and altered. Protection of ecologically important park waters can play an important role in the protection and restoration of a larger watershed, as exemplified by the extensive efforts to protect the Everglades and South Florida Ecosystem. (Adler, p.1082)

SEC. 203. MAXIMUM COSTS OF PROJECTS.-- Section 902 of the Water Resources Development Act of 1986 (33 U.S.C. 2280) shall apply to each separable element of a project’s plan for restoration as authorized under this Act.

Comment: If a project will exceed its maximum cost by 20 percent, then Section 902 of WRDA 1986 requires the Corps of Engineers to seek re-authorization of the project by Congress. For example, the provision is inserted into the Comprehensive Everglades Restoration Plan, Section 601(b)(2)(E) of WRDA 2000.

TITLE III – COMPREHENSIVE PLANS FOR RESTORATION

SEC. 301. IN GENERAL.-- A comprehensive plan for restoration shall be designed to coordinate and utilize ongoing or planned actions by other interested agencies, tribes, local municipalities, or nonprofit, nongovernmental organizations with expertise in ecosystem restoration that would increase the effectiveness or decrease the overall cost of implementing the plan.

Comment: The challenge for water resource project planning and implementation lies largely in developing the ability to consistently determine and account for the potential of system-wide impacts of projects that may involve a single component. (NRCb, p.39). Different components of a watershed are usually administered by different agencies and various levels of government. The intent of the planning requirement under Title III is to ensure that restoration managers take into account interrelated objectives of existing, connected restoration activities. Instead of addressing environmental harms through isolated projects, this provision calls for integrated resource management and require the coordination of restoration activities in order to restore aquatic structure and function on an ecosystem basis.

SEC. 302. CONTENTS OF COMPREHENSIVE PLANS.-- A comprehensive plan for restoration as required under section 102(a) of this Act shall reflect a systematic and comprehensive treatment of the natural systems of water resources and such plan shall include the following required elements:

- (a) the identification, including by map, of the entire area in the State or across States that contain the water resources subject to the plan, as well as the entire affected watershed;
- (b) analysis of the natural system of the water resources, including identification of all causes of impairment which, individually or cumulatively, may cause or contribute significantly to the degradation of the water resource;
- (c) a detailed description of the primary objectives and goals for the reestablishment of the ecological integrity of the particular water resource;
- (d) a list of individual water resource restoration projects and activities, including identification of potential benefits, a statement of estimated costs, and a timetable for completion of each individual project and activity;
- (e) a process for developing a sequencing plan for individual water resource restoration projects and activities, in order of priority;
- (f) identification of opportunities for the acquisition of land or other resources, and functional dependence on other projects, in restoring, protecting, or enhancing the long-term conservation of the water resource;
- (g) a strategy for the adaptive management of the project within a specified timeframe for use in reviewing and reevaluating the project and its objectives within the context of the comprehensive plan, including:
 - (1) the setting of performance measures in terms of measurable, ecological goals;
 - (2) a framework for monitoring and assessing the biota, habitats, water quality, water quantity, and other ecological elements of the water resource and its related ecosystems;

- (3) a method to assess ecological performance measures and evaluate the effectiveness of the water resource restoration project;
- (4) a process for subjecting all major aspects of implementing the comprehensive plan to credible and objective scientific review, consistent with section 2034 of the Water Resources Development Act of 2007 (33 U.S.C. 2343); and
- (5) a framework for incorporating new ecological, engineering, economic and other important information into restoration management decisions, and that major management decisions are based upon the best available scientific information.

Comment: Specificity of environmental objectives and results is critical to ensure program accountability. (Adler, p.1092). A comprehensive plan should identify the wide range of impairments to the health of an ecosystem. Such analysis should include longitudinal dimensions (upstream-downstream), lateral (floodplain-uplands), vertical (groundwater-surface water) and temporal (how all three dimensions change over time). (Adler, p.982). In order to define the scope of the restoration, resource inventories are necessary to evaluate the status of the resource, its potential health, existing sources of impairment and potential solutions. By focusing on the health of the whole ecosystem and on the multiple sources of harm, restoration managers are able to address environmental issues from a wide perspective and make decisions based on the integrated analysis of whole watersheds, river basins, or coastal systems. (Adler, p. 974).

Adaptive management is the preferred policy approach for any ecosystem management. (Arnold, p.322). Uncertainty is an inherent part of the management of all natural systems, and its presence is particularly obvious when ecological attributes are the main focus of project objectives.(NRCa, p.22). Adaptive management anticipates uncertainty and limited information in ecosystem management, and therefore involves a series of incremental decisions based on monitoring, evaluation and modification of actions in light of experiences. (Arnold, p.322).

Adaptive management calls for integrated research, monitoring, and modeling of outcomes to advance scientific understanding and to help adjust policies or operations within the management process. (NRCa, p.23). For this reason, adaptive management is not simply a line item in a project budget or something to be set aside according to available resources; it is from this standpoint that that National Research Council recommends that the Corps integrate this resource management process and perspective into the agency's organizational fabric. (NRCd, p.4-5).

When taking into account the complexity of large-scale ecosystems, adaptive management recognizes that ecological goals are interim goals and may shift over time. Restoration of large-scale ecosystems will cost billions of dollars, and for this reason, the integration of long-term research, monitoring and modeling insures that federal funds are being spent on meaningful and effective restoration.

SEC. 303. INDEPENDENT PEER REVIEW.-- Section 2034(h) of the Water Resources Development Act (33 U.S.C. 2343) is amended by striking “and ending 7 years after such date of enactment” from subsection (2).

SEC. 304. IMPLEMENTATION OF COMPREHENSIVE PLANS.-- Water resources restoration projects and activities included within a comprehensive plan for restoration shall be authorized by the Congress on an individual basis, contingent on the submission to and approval of the Congress of a report on the project by the Secretary.

SEC. 305. COMPLIANCE WITH APPLICABLE LAW.-- In carrying out the activities described in this title, the Secretary shall comply with any applicable Federal law, including the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.).

SEC. 306. PUBLIC PARTICIPATION.-- In developing activities described in this title, the Secretary shall provide for public review and comment on the activities in accordance with applicable Federal law.

SEC. 307. CONSISTENCY OF FEDERAL ACTION. Each Federal agency project and activity that affects any water resources being restored or restoration project or activity authorized by the Congress shall be carried out in a manner which is consistent to the maximum extent practicable with the policies and objectives of the applicable comprehensive plan for restoration.

(a) Each Federal agency carrying out such activity shall provide a consistency determination to the Secretary and relevant non-Federal sponsor at the earliest practicable time, but in no case later than 90 days before final approval of the Federal activity unless the Secretary, applicable Federal agency and the non-Federal sponsor agree to a different schedule.

(b) Should the U.S. Army Corps of Engineers carry out such an activity, the Secretary shall provide a consistency determination to the relevant non-Federal sponsor and to any Federal agency with jurisdiction over the resources being affected at the earliest practicable time, but in no case later than 90 days before final approval of the Corps of Engineers' activity unless the applicable Federal agency, non-Federal sponsor and the Secretary agree to a different schedule.

SEC. 308. CERTIFICATION OF CONSISTENCY FOR FEDERAL PERMITS. -- Any applicant for a required Federal permit under Section 404 of the Clean Water Act (33 U.S.C. 1344) to conduct an activity affecting any water resources being restored or restoration project or activity authorized by the Congress shall provide in the application to the permitting agency a certification that the proposed activity will be conducted in a manner consistent with the water resources being restored and the applicable comprehensive plan for restoration of the affected water resources.

Comment: Sections 306 and 307 were modeled after provisions dealing with the consistency of federal activity and certification requirements of federal permits within the Coastal Zone Management Act (16 U.S.C. 1456). In order to strengthen protection of Nation's restoration investments, the U.S. Army Corps of Engineers regulatory authority should be more consistent with the overall objectives of the agency's restoration initiatives, projects and civil works missions.

TITLE IV – AUTHORIZATION OF WATER RESOURCES RESTORATION

SEC. 401. AUTHORIZATION OF PROJECTS.-- The following restoration projects and activities for water resources are adopted and authorized to be prosecuted by the Secretary substantially in accordance with the respective plans for restoration, except as otherwise provided in this section: INSERT PROJECTS

SEC. 402. AUTHORIZATION OF STUDIES.-- The Secretary is authorized to carry out planning, engineering and design for the following projects: INSERT PROJECTS

WORKS CITED FOR COMMENTS:

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