Ecosystem Restoration in the Great Lakes: The Great Lakes Regional Collaboration Strategy

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January 30, 2008

Congressional Research Service
7-....
www.crs.gov
RL33411

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

The Great Lakes are recognized by many as an international natural resource that has been significantly altered over the past two centuries by human development. Problems in the Great Lakes include poor water quality, degraded fish and wildlife habitat, contaminated sediments, and non-native invasive species, among others. Restoration of the Great Lakes ecosystem has emerged as a top priority among a wide variety of federal, state, and local stakeholders, and among several members of Congress. In the past few decades, the U.S. Congress has enacted more than 30 federal laws specifically focused on restoring aspects of the Great Lakes basin.

Attention to restoration in the Great Lakes was heightened in 2004 with the creation of a federal Great Lakes Interagency Task Force. The purpose of the task force is to provide strategic direction for Great Lakes policies on restoration and to form a regional collaboration of stakeholders interested in restoring the Great Lakes ecosystem. The latter purpose was accomplished with the creation of the Great Lakes Regional Collaboration in 2004. The Collaboration, which consists of over 1,500 stakeholders, recently released the Great Lakes Regional Collaboration Strategy, a plan for restoring the Great Lakes ecosystem. The Strategy is a series of recommendations for actions and activities aimed at starting the restoration of the Great Lakes ecosystem over the next five years. The Strategy encompasses eight issue areas: aquatic invasive species, fish and wildlife habitat (habitat/species), coastal health, contaminated sediments, nonpoint source pollution, toxic pollutants, indicators and information, and sustainable development. The total cost of implementing the Strategy is estimated to be $20 billion over five years.

Some have criticized the Strategy for being too costly, relying too heavily on new sources of funding, and not establishing a governance structure to coordinate implementation. Proponents of the Strategy contend that the estimated funding needs for the Great Lakes ecosystem match the size and breadth of the ecosystem, and are similar to those of other large-scale ecosystem restoration initiatives, such as the Everglades and Chesapeake Bay. Further, they contend that one of the functions of the Interagency Task Force is to provide governance, and to oversee and coordinate restoration activities in the Great Lakes. This report summarizes the Strategy, analyzes issues related to the Strategy and its implementation, and discusses federal legislation related to restoration in the Great Lakes.

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Background

The Great Lakes watershed is the largest system of fresh surface water in the world. The watershed covers approximately 300,000 square miles and is shared by eight U.S. states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin) and one Canadian province (Ontario). (See **Figure 1**.) The Great Lakes have national and international importance because of their abundant natural resources and relationship to the economies of both the United States and Canada. The Great Lakes contain nearly 90% of the surface freshwater of the United States and 20% of the surface freshwater of the world. The Great Lakes basin also supports an expanding population and accompanying development. An estimated 40 million people rely on the Great Lakes basin to provide jobs, drinking water, and recreation, among other things.

The Great Lakes are recognized by many as an international natural resource that has been significantly altered over the last two centuries. In the last several decades, agricultural activity throughout the basin, and urban and industrial development concentrated along the shoreline, have degraded water quality in the Great Lakes, posing potential threats to wildlife populations, human health, and the Great Lakes ecosystem. Development has also led to changes in terrestrial and aquatic habitats, the introduction of non-native species, the contamination of sediments, and the listing of more than 50 threatened or endangered species in the basin. In response, the federal governments of the United States and Canada and the state and provincial governments in the Great Lakes basin are implementing several restoration activities.[1]

The U.S. Congress has recognized the importance of the Great Lakes ecosystem and has played a role in restoration efforts in the Great Lakes. Congress has enacted more than 30 federal laws specifically focused on restoring aspects of the Great Lakes basin. These laws have authorized several activities ranging from grant programs that fund mitigation of toxic substances to restoration programs that improve water quality and fish and wildlife habitat. Congress has not, however, enacted legislation to authorize an overall detailed plan for restoring the Great Lakes, such as the Comprehensive Everglades Restoration Plan for restoring the Greater Everglades ecosystem in Florida.

[1] For more information on U.S. federal and state programs aimed at restoring the Great Lakes, see U.S. Government Accountability Office, *Great Lakes: An Overall Strategy and Indicators for Measuring Progress Are Needed to Better Achieve Restoration Goals*, GAO-03-515 (Washington, DC: April 2003). Hereafter referred to as GAO, *Great Lakes Restoration.*

Figure 1. The Great Lakes Basin

Source: Based on a map from *The Atlas of Canada*. Adapted by CRS, 03/23/06.

Great Lakes Interagency Task Force

In 2004, the Great Lakes Interagency Task Force was created by an executive order.[2] Its purpose is to provide strategic direction on federal Great Lakes policy. The task force is chaired by the Administrator of the U.S. Environmental Protection Agency (EPA) and contains 10 agency and cabinet-level officers. The task force, in collaboration with the Council of Great Lakes Governors, the Great Lakes Cities Initiative, Great Lakes tribes, and the Great Lakes Congressional Task Force, convened a group known as the Great Lakes Regional Collaboration.[3] The Collaboration includes representatives from Great Lakes states, local communities, tribes, nongovernmental organizations, and other interests in the Great Lakes region. The structure and goals of the Collaboration were established through the Great Lakes Framework, which outlined three goals for the Collaboration.

[2] E.O. 12240, May 18, 2004.

[3] The Interagency Task Force and the Collaboration are two different entities.

The first goal of the Collaboration was to create a workable strategy to restore and protect the Great Lakes within one year of the creation of the task force.[4] This Great Lakes Regional Collaboration Strategy was released in December 2005.[5] The second goal of the Collaboration is to serve as a forum for addressing regional issues related to the protection and restoration of the Great Lakes. The third goal is to create an oversight forum to coordinate the implementation of the Strategy.[6]

Great Lakes Regional Collaboration Strategy

The Strategy is a series of recommendations for actions and activities aimed at restoring the Great Lakes ecosystem. Recommendations from the Strategy are intended to be implemented over the next five years and represent the highest priorities for restoration, according to the strategy teams.[7] The Strategy encompasses eight issue areas: aquatic invasive species, fish and wildlife habitat (habitat/species), coastal health, contaminated sediments, nonpoint source pollution, toxic pollutants, indicators and information, and sustainable development.

Under each issue area, a description of the issue and recommendations for addressing the issue are presented. Each recommendation contains several specific activities and is justified by the Collaboration with its rationale. The activities range from supporting existing programs to creating new ones, and in some cases, identifying projects to be implemented in specific geographical locations (e.g., the completion of a fish barrier in the Chicago Waterway system). An estimated cost for implementing the recommendations over five years is provided after each set of recommendations. The estimated costs represents the sum of federal and nonfederal contributions. Goals and interim milestones are also provided for each issue area.

The implementation of the Strategy relies on existing authorities, programs, and funding at federal, state, and local levels of government, as well as the creation of some new actions (e.g., enacting new legislation). Further, the Strategy aims to improve coordination among stakeholders and relies on the shared resources of all collaborators, especially noting the role of tribes. According to the Strategy, the coordinated use of existing resources should allow some of the recommendations to be implemented, but other recommendations will require "modest additional funding, and some [recommendations] will be impossible to implement absent substantial new expenditures."[8] The Collaboration emphasizes that the Strategy is not meant to chart out the complete restoration of the Great Lakes ecosystem, and that decisions to implement activities affecting the Great Lakes should be guided by the Strategy.[9]

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[4] For more information, see http://www.epa.gov/glnpo/collaboration/index.html, accessed January 30, 2008.

[5] The Great Lakes Regional Collaboration, *The Great Lakes Regional Collaboration Strategy* (December 2005), accessed at http://www.glrc.us/, January 30, 2008. Hereafter referred to as the *Strategy*.

[6] Framework for the Great Lakes Regional Collaboration, accessed January 30, 2008, at http://www.epa.gov/glnpo/collaboration/framework.html.

[7] More than 1,500 people representing federal, state, local, and tribal governments; non-governmental organizations; and private stakeholders participated on eight issue-specific strategy teams to develop recommendations for restoring the Great Lakes. The recommendations with the highest priority for early restoration activities are presented in the Strategy. Other recommendations for long-term restoration are listed in the appendices of the Strategy.

[8] *Strategy*, p. 12.

[9] According to the Strategy, additional actions for the complete restoration of the Great Lakes are included in the appendices.

The following sections provide a summary of issue areas and recommendations made in the Strategy.

Aquatic Invasive Species

The Great Lakes ecosystem is home to more than 160 non-native invasive aquatic species. Economic losses from invasive species (terrestrial and aquatic) were estimated at $5.0 billion annually in 2005.[10] According to the Strategy, existing measures to prevent the introduction and spread of aquatic invasive species (AIS) are inadequate. The goals of this issue area are to prevent all new introductions of AIS and to control existing AIS in the ecosystem.[11] This would be accomplished by preventing the spread of AIS through canals and waterways, and in the ballast water of ships, as well as by creating research and management programs on AIS.

Habitat/Species

Development, agricultural expansion, toxic pollutants, and invasive species have led to habitat loss and species declines in the Great Lakes basin. In addition to providing ecosystem services (e.g., filtering water), habitat and species support a booming recreation industry that is estimated to generate over $50 billion in economic activity annually.[12] The goals of this issue area are to improve fisheries and restore wetlands, riverine and riparian habitat, and coastal and upland habitat. The recommendations for this issue are to increase habitat conservation and species management funding by $288 million annually through existing programs, and through new authorizations where program gaps exist.

Coastal Health

Water quality in coastal areas of the Great Lakes is degraded and has led to outbreaks of disease among humans (e.g., diarrhea), beach closings, and drinking water advisories. The goals of this issue area are to eliminate inputs of untreated or badly treated human and industrial waste into the Great Lakes; reduce toxic contaminants at local beaches; and protect drinking water quality. The recommendations include implementing *wet weather* programs[13] and improving wastewater treatment systems; regulating and researching pollution sources; and managing waters used for recreation.

Sediment Contamination

In 1987, the United States and Canada identified 43 Areas of Concern (AOC) in the Great Lakes basin that represented the most degraded portions of the ecosystem.[14] The most common reason for degradation in AOCs is contaminated sediments. Contaminated sediments result from toxic

[10] *Strategy*, p. 14.

[11] The Strategy notes that several invasions of AIS will be impossible to eradicate in the Great Lakes, and that control rather than elimination of these AIS is the goal of the issue area.

[12] *Strategy*, p. 23.

[13] Wet weather programs employ mitigation strategies to reduce storm water and sewage overflow during periods of precipitation.

[14] Twenty-six AOCs are in U.S. waters, 12 in Canadian waters, and 5 shared by both countries.

pollutants that settle out of the water column and deposit in sediment. Agitation of underwater sediments can cause pollutants to be resuspended in the water column and potentially enter the air or food chain. The goal of this issue is to restore all AOCs in the United States through reauthorizing and funding programs under the Great Lakes Legacy Act, and promoting the development of sediment treatment and disposal technologies.

Nonpoint Source Pollution

Nonpoint source pollution has been identified as one of the main contributors to impaired waters in the Great Lakes ecosystem. Nonpoint source pollution cannot be traced to specific sources and generally comes from many diffuse sources (e.g., rainfall that moves over an area and picks up pollutants before entering a river would be a nonpoint source of pollution). Point source pollution can be traced to specific sources such as a wastewater treatment plant or factory. Some of the primary nonpoint source pollutants in the Great Lakes are excessive levels of nutrients such as phosphorus and nitrogen. Reducing excess sediment, phosphorus, and nitrogen loading into the Great Lakes ecosystem and improving flow regimes in waterways are goals of this issue. Recommendations include restoring 550,000 acres of wetlands and 335,000 acres of buffer habitat (to reduce excess nutrients); and reducing soil loss and waste flows into waterways.

Toxic Pollutant Strategy

Persistent toxic substances (PTS) have been a problem in the Great Lakes for many years, and are released from contaminated sediments, industrial processes, nonpoint sources, and atmospheric deposition. The goals of this issue are to *virtually* eliminate the discharge of PTS into the ecosystem and to increase scientific understanding of PTS. Recommendations include reducing PTS such as mercury, PCBs, dioxins, pesticides, and other new toxic chemicals from the ecosystem; creating a program to conduct research, monitoring, and forecasting of PTS in the Great Lakes; and increasing public education about PTS.

Indicators and Information

According to the Strategy, ecosystem monitoring, observation, research, modeling, and indicator development are all currently underfunded and lack a comprehensive ecosystem approach. The overarching goals of this issue are to create a network of monitoring and observing systems and to conduct Great Lakes research in a comprehensive and coordinated manner. Recommended actions include continuing the development of science-based indicators of ecosystem health; doubling research funding for the Great Lakes; and coordinating scientific and technical information.

Sustainable Development

The Strategy acknowledges that development in the Great Lakes should be balanced among economic, social, and ecological factors. The goal of this issue is to foster the development of the Great Lakes basin so that human activities support a strong economy that meets social and cultural needs, and is in balance with the ecosystem. To accomplish this goal, the Strategy contains several recommendations that would enhance the sustainable planning and use of resources in new and existing government programs, and promote the livability of the Great Lakes to the public.

Issues

Funding

The amount and sources of funding for the Strategy are contentious issues.[15] The Strategy calls for an estimated $20 billion from federal and nonfederal sources to implement all of its recommendations over the next five years. The most significant portion of funding would be for the coastal health issue, at $15.3 billion. Of this total, $13.7 billion in new funds is for wastewater treatment system improvements (the anticipated federal share is $7.5 billion and nonfederal share is $6.2 billion), and $1.3 billion for improvement of drinking water treatment facilities.

Some have asserted that $20 billion over five years is too high for restoring the Great Lakes ecosystem, and cite funding totals for other large-scale ecosystem restoration initiatives, namely the Florida Everglades, which has a total estimated cost of $10.5 billion. Further, the Interagency Task Force, in its annual report, stated that the Strategy should be funded from *existing* programs and use current funding from federal and state governments to be implemented.[16] According to the task force, existing federal programs and state, local, and tribal programs that have activities directly and indirectly related to restoring *water quality* in the Great Lakes spend approximately $523 million and $100 million, respectively, on restoration activities annually.[17] No figures for federal spending were given for other aspects of the ecosystem such as terrestrial habitat and shorelines.

Some proponents of the Strategy contend that some of the proposed funding already is being spent on existing programs, and that the expansive size of the Great Lakes ecosystem warrants a higher price tag than other large-scale ecosystem restoration initiatives around the country. For example, some have estimated that the restoration of the Chesapeake Bay will require between $15 billion and $19 billion to meet previously set restoration goals by 2010.[18] Some proponents also contend that one of the main barriers to restoration in the Great Lakes is inadequate funding.[19]

Separating the estimated new funding from existing funding is difficult because data for spending under current federal, state, and other recommended programs in the Strategy are not given for all components. (The exception is new funding for wastewater treatment plants, which is proposed to be a 55:45 federal/local cost-share in the Strategy.) Further, the Strategy does not provide or commit to a cost-sharing plan among federal, state, and other entities, thus making it difficult to determine where funding gaps may exist.

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[15] For FY2008, no funds were requested by the Administration specifically for the Strategy, although funds for some existing programs cited by the Strategy were included.

[16] Great Lakes Interagency Task Force, *Report to the President on the Implementation of the Great Lakes Executive Order* (October 28, 2005), accessed January 30, 2008, at http://www.epa.gov/glnpo/collaboration/final_rttp_10282005.pdf.

[17] Ibid.

[18] Chesapeake Bay Watershed Blue Ribbon Finance Panel, *Saving a National Treasure: Financing the Cleanup of the Chesapeake Bay* (October 2004) and The Chesapeake Bay Commission, *The Cost of a Clean Bay: Assessing Funding Needs Throughout the Watershed* (Annapolis, MD: January 2003).

[19] Testimony of Jan O'Connell, Director on the National Sierra Club Board, at House Committee on Science, Subcommittee on Environment, Technology, and Standards, *Great Lakes Restoration: How? How Soon?*, hearing, 109th Cong., 2nd sess. (April 21, 2006).

Governance

The Collaboration and Strategy were created partly to improve coordination of ecosystem restoration activities in the Great Lakes among federal, state, and local stakeholders. This focus was derived from the assertion that restoration efforts in the Great Lakes suffer from inadequate coordination and a lack of a comprehensive plan.[20] The Interagency Task Force and the Collaboration are viewed by some as entities facilitating the coordination of restoration activities; however, some others contend that the Strategy does not address governance issues that would increase coordination, limit overlapping efforts, and assign restoration responsibilities to all types of stakeholders.[21] The Strategy itself does not propose a specific governance structure or a plan for coordination. Questions such as who is in charge, what are the federal and state roles in restoration, and how will the implementation of the Strategy be governed are not specifically addressed in the Strategy. On the other hand, coordination of restoration activities in the Great Lakes is a stated function of the task force. In its annual report, the task force lists several examples of where a coordinated response to an ecosystem issue was undertaken successfully.[22] Further, the executive committee of the Collaboration will be creating plans for coordinating the implementation of the Strategy. According to the GLRC Strategy Implementation Framework, the executive committee will remain intact and serve as an administrative structure to implement the Strategy. The committee will direct activities of the GLRC, implement mechanisms to promote accountability, identify implementation issues, and facilitate coordination of restoration activities among stakeholders.[23]

In other large-scale ecosystem restoration initiatives, governance and coordination have been addressed in federal and state laws. For example, in the Everglades, governance is largely shared among the Department of the Interior, the U.S. Army Corps of Engineers, the state of Florida, and the South Florida Water Management District (the nonfederal sponsor of Corps activities). Policies explaining how these stakeholders interact and how the plan to restore the Everglades is implemented were required by federal law, and promulgated in programmatic regulations.

Setting Priorities

The breadth and estimated cost of the Strategy have led some to contend that implementing all the programs outlined in the Strategy would not be financially feasible within the five-year time span the Strategy covers. Some suggest that setting priorities for implementing programs within each element would help decision makers choose which programs to fund, if funds are limited. Some priorities discussed at a congressional hearing on the Great Lakes Strategy included restoring and protecting near-shore and coastal waters of the Great Lakes, controlling aquatic invasive species, and addressing the problems of nonpoint source pollution.[24]

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[20] *GAO, Great Lakes Restoration.*

[21] Testimony of Diane Katz, The Mackinac Center for Public Policy, U.S. Senate Committee on Environment and Public Works, *Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes*, hearing, 109th Cong., 2nd sess. (March 16, 2006).

[22] Great Lakes Interagency Task Force, *Report to the President on the Implementation of the Great Lakes Executive Order* (October 28, 2005), accessed January 30, 2008, at http://www.epa.gov/glnpo/collaboration/final_rttp_10282005.pdf.

[23] The Great Lakes Regional Collaboration Strategy Implementation Framework, accessed January 22, 2008, at http://www.glrc.us/documents/ImplementationFramework03152006.pdf.

[24] For example, see testimony of Dr. Donald Scavia, Associate Dean, School of Natural Resources and Environment, (continued...)

Congressional Role

Some have anticipated that the Strategy could be used as a platform for introducing federal legislation for restoring the Great Lakes. There are two main approaches to authorizing portions of the Strategy reflected in pending legislation. One approach is to authorize a large grant program to fund various aspects of restoration projects, and the other approach is to reauthorize existing programs to increase their funding to support restoration activities.

The Strategy contains several projects or programs that could be funded through grant programs targeting ecosystem restoration. One approach used in the 109th Congress would have authorized grant programs that could fund several recommendations under the Strategy. They would have authorized $4 billion and $6 billion for restoration activities in the Great Lakes. These proposed authorizations for federal funding could not be compared to the proposed funding needed for the Strategy, because the Strategy does not specify sources of funding for each of its categories.[25] Similar bills have not been introduced in the 110th Congress.

A different approach to enacting portions of the Strategy into federal law would be to reauthorize *existing* federal programs that the Strategy identifies for accomplishing its goals and recommendations. For example, The Great Lakes Fish and Wildlife Restoration Act of 2006 (P.L. 109-326) reauthorizes appropriations for the Great Lakes Fish and Wildlife Act of 1990 (P.L. 101-537; as amended; 16 U.S.C. §§941 et seq.) through 2012 and makes several amendments that will increase reporting requirements and allow the U.S. Fish and Wildlife Service to conduct regional projects.

A third strategy would use both approaches by authorizing new programs within the Strategy as well as reauthorizing existing programs to support the Strategy. In the 110th Congress, this strategy is incorporated into bills that would also authorize and prescribe duties for the task force, the executive committee, and the Collaboration that go beyond the creation of the Strategy. For example, the task force would be established within the EPA and would coordinate the implementation of the Strategy; the executive committee would hold meetings and report on the progress of the initiative; and the Collaboration would be responsible for developing a long-term restoration and protection strategy and creating a forum for program oversight.

Conclusion

The Strategy envisions itself as the first step towards restoring the Great Lakes in the near term. Its goals and recommendations reflect a five-year span and, according to the Strategy, "do not represent all that needs to be done to completely restore the Great Lakes." The short-term outlook of the Strategy and its $20 billion price tag generate questions regarding the process to completely restore the Great Lakes ecosystem. Such questions include (1) What will it take to completely restore the ecosystem? (2) How much will it cost and how long it will take? (3) What are the federal and non-federal roles in the process? (4) How will the process be governed? (5) How will success be measures and when will we know it is done? And, (6) How likely is it that

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University of Michigan, House Committee on Science, Subcommittee on Environment, Technology, and Standards, *Great Lakes Restoration: How? How Soon?*, hearing, 109th Cong., 2nd sess. (April 21, 2006).

[25] The Strategy would require $4 billion annually from federal, state, and other resources.

substantial increases will be made to current funding levels for restoration, given the current budget environment? The answers to these questions are not addressed in the Strategy, but may come from the collaborative process that created the Strategy. The Collaboration is expected to continue to serve as a broad forum to address issues related to restoration and protection of the Great Lakes ecosystem.

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