

# Envisioning a Chicago Waterway System for the 21<sup>st</sup> Century

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## Frequently Asked Questions

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### **What will the project accomplish?**

The project will evaluate potential scenarios for ecologically separating the Great Lakes and Mississippi River watersheds, including their costs, benefits and impacts. It will advance two strategic objectives:

- Evaluate the economic, technical, and ecological feasibility of ecological separation by illustrating scenarios to achieve it, along with associated costs, impacts and potential benefits for the greater Chicago area; and
- Support and complement the work of the Army Corps of Engineers under their Great Lakes and Mississippi River Inter-Basin Study by defining, assessing and vetting scenarios for ecological separation.

The project will characterize baseline conditions for current uses, quantifying the existing system's costs and benefits to stakeholders in Northeast Illinois and Northwest Indiana and the Great Lakes in general. A key outcome will be cost estimates for implementing the various options along with the costs (or risks) of not implementing them, including the cost of ongoing control and management activities. Another key outcome will be detailed analyses of the benefits to Chicago and the region of a redesigned waterway system.

### **How do you define “ecological separation?”**

“Ecological separation” is a relatively simple concept: it means preventing the interbasin transfer of aquatic organisms—at all life stages—through waterways. Ecological separation will impact a complex system of rivers, canals and navigation structures used for commercial and recreational boating, wastewater management, flood control and emergency response. Achieving eco-separation likely will require modifying existing water infrastructure or building physical barriers to stop the flow of water while maintaining the system's benefits. Currently eco-separation is a concept but not a readily conceivable reality. How to achieve ecological separation is unclear and difficult to visualize—and thus is the purpose of the project.

### **Why is this project needed?**

The immediate catalyst for this project is the imminent threat that Asian carp will get into the Great Lakes via waterways in the Chicago area. Asian carp have been migrating up the Mississippi River system since the early 1990s. For the past decade we have been taking actions to prevent them from entering Lake Michigan via the Chicago Sanitary and Ship Canal, which forms an artificial hydrological connection between the Great Lakes and the Mississippi River watersheds. Unfortunately, monitoring over the past year has shown that Asian carp are getting closer to Lake Michigan. In June 2010 a live Asian carp was captured in Lake Calumet, just six miles from the lake. This makes it clear that existing control efforts are inadequate. There is a consensus among many experts that the only permanent and totally effective way to keep Asian carp from entering the Great Lakes via waterways in the Chicago area is to completely disconnect the artificial hydrological connection between the two watersheds. The project will identify and evaluate options to achieve this. While the threat from Asian carp is the immediate catalyst for the project, it will also address the broader need to evaluate options for improving the effectiveness of the Chicago Area Waterway System for moving cargo and recreational vessels, controlling stormwater; disposing of treated wastewater, and other uses.

## **How will the project be conducted and how will it address the many complex issues related to the Chicago Area Waterway System?**

The Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative will assemble a multidisciplinary team of highly qualified experts to identify options for achieving ecological separation and evaluating their costs and impacts. This will include experts in the fields of hydrology, engineering, wastewater and stormwater management, transportation planning, water quality and environmental protection, and related disciplines. Substantial effort is being devoted to securing preeminent technical experts, with a special focus on the unique challenges associated with the Chicago Area Waterway System. Leadership from the City of Chicago and the State of Illinois, together with guidance from a broader stakeholder advisory committee, will ensure that all appropriate issues are considered.

## **Will hydrologic separation negatively impact businesses in and around Chicago, including the shipping industry?**

The goal is to have a positive impact. Ecological separation will have implications for many uses of the system, including commercial shipping, and the project will carefully assess them. The project will look at ways to maintain current uses of the Chicago Area Waterway System while also providing a permanent solution to the threat posted by Asian carp and other aquatic invasive species. If done right, ecological separation will be accomplished in a way that improves commercial transportation and water quality, and ensures that the flood control, tourism and recreational benefits currently provided by the Chicago Area Waterway System are accommodated and enhanced.

## **Will organizations and businesses that use the Chicago Area Waterway System have a say in how the project is conducted?**

Yes, the Chicago metropolitan area (including Northwest Indiana), the broader Great Lakes region, states, municipalities, businesses, industry, and nongovernment groups will be consulted in this investigation. The project will engage a broad stakeholder group to ensure a credible range of potential solutions is investigated and that benefits and costs of solutions are fully understood. Specifically, a stakeholder advisory committee with broad representation from key interest groups will be convened to provide guidance and input on the project, with an emphasis on developing and evaluating scenarios for ecological separation.

## **Why are we so worried about Asian carp? What would happen if they become established in the Great Lakes?**

Aquatic invasive species are among the greatest threats facing the ecological and economic health of the Great Lakes. More than 180 non-native aquatic species have become established in the Great Lakes, causing economic losses estimated at \$5.7 billion annually. Today the most imminent threat to the lakes is the introduction of Asian carp. Originally introduced in the southern reaches of the Mississippi River to support aquaculture operations, carp escaped from confinement facilities and migrated in high population levels through the Upper Mississippi and Illinois River systems. Asian carp are highly mobile, reproduce and grow quickly, and consume massive quantities of food, all of which enables them to compete against—and ultimately displace—native species. One species, the silver carp, pose a danger to people because they jump out of the water when disturbed by boat motors. Given the impacts caused by proliferation of the carp in the Mississippi and Illinois Rivers—where in places they make up 90 percent of the biomass—there is considerable concern over the potentially devastating impacts their invasion would bring to the Great Lakes and St. Lawrence River region.

While questions remain about exactly how Asian carp would colonize the Great Lakes should they become established, there is no doubt they would have devastating impacts. They likely would undermine the region's sport fishing industry, valued at \$7 billion annually. In addition, they are likely to be the most prolific in shallow, near-shore areas and tributaries. These are precisely the areas most heavily used for recreation, sport fishing, boating and other activities. Thus, the parts of the lakes that we use the most would suffer the most from an invasion of Asian carp.

## **How can we be sure Asian carp haven't already established a breeding population in the Great Lakes?**

Leading scientists, such as those who developed the state-of-the-art environmental DNA (eDNA) testing method, have not found evidence that a significant population of Asian Carp have made it into Lake Michigan. While several positive eDNA tests have indicated the presence of Asian carp, they have not shown a consistent pattern that would point to substantial numbers of fish in the Chicago Area Waterway System or Lake Michigan. In addition, several large-scale fishing and eradication operations have been conducted, with only one Asian carp found past the electric barriers on the Chicago Sanitary and Ship Canal. These and other efforts make it clear, however, that Asian carp are close to entering the Great Lakes in large numbers, which is why regional collaborations such as ours are needed to solve the problem in a way that allows continued recreational and commercial use of the waterway system while safeguarding both the Great Lakes and Mississippi River watersheds from damaging aquatic invasive species.

## **Can't Asian carp enter the Great Lakes through other pathways? The Chicago Area Waterway System is only one route for aquatic invasive species to enter the Great Lakes. You could spend a lot of money shutting down this pathway and still not solve the problem.**

We are concerned about all pathways through which Asian carp could enter the Great Lakes, but the current project is focused on the most urgent threat: the unrestricted access that Asian carp have to swim from the Mississippi River system into the Great Lakes system. Other pathways, such as the Maumee River leading to Lake Erie, are only a threat occasionally, when carp-filled rivers overflow temporarily into adjacent watersheds. We expect the outcomes from project to provide a collaborative model and scientific and technical information that will help address other potential pathways. In addition, legislation has been introduced in Congress that would implement a comprehensive risk assessment of pathways through which Asian carp could enter the Great Lakes.

## **Isn't the Army Corps of Engineers already doing a similar study? How is this project different? How does it relate to the Corps' work?**

This problem, which goes beyond aquatic invasive species to the fundamental goal of protecting the ecological and commercial vitality of the Great Lakes, is bigger than any one organization can solve alone. Our project will complement not only the work of the Corps of Engineers, but of the many other federal and state organizations that are committed to finding solutions to the problems facing the Great Lakes. In addition, with leadership from the Great Lakes states and cities, our project can provide a unique perspective on, and focus attention on the most critical challenges associated with, the Chicago Area Waterway System.

## **Why do we need complete ecological separation when we have the electric barrier on the Chicago Sanitary and Ship Canal? Isn't the federal government already implementing a strategy to keep carp out of Lake Michigan?**

The electric dispersal barrier system provides an important, interim mechanism for keeping Asian carp from migrating toward Lake Michigan. Similarly, the Asian Carp Control Strategy Framework currently being implemented by federal and state agencies outlines a variety of important short-term measures to monitor for and control Asian carp in the Chicago Area Waterway System. While necessary, these measures do not provide a permanent and fool-proof approach to keeping Asian carp out of the Great Lakes. Monitoring has already shown the presence of carp beyond the electric barrier system, and a live carp was caught in Lake Calumet in June 2010. Our current strategies have already shown their limitations and it is only a matter of time before they fail. It's important to remember that once carp become established in the Great Lakes, it likely will be impossible to control or eradicate them. Therefore, what we need is a permanent and fully effective solution that makes it impossible for Asian carp—or any other aquatic invasive species—to migrate between the Great Lakes and Mississippi River watersheds. If implemented properly, ecological separation will provide such as a solution.

**Why can't we just close the navigation locks to prevent Asian carp from swimming into Lake Michigan? Wouldn't that be cheaper way to achieve ecological separation?**

Closing navigation locks on the Chicago Area Waterway System would not provide a fully effective or sustainable way to separate the Great Lakes and Mississippi River watersheds. First, even when closed, the locks leak and could allow carp to pass through. Second, the locks provide important services to the Chicago area, including the transport of commercial and recreational boats and flood control. Closing the locks could threaten public safety, risk flooding during storm events, and undermine the economic vitality of the Chicago area. Federal agencies are exploring ways to operate the locks that might reduce the risk that Asian carp might pass through them.

**Will ecological separation include reversing the flow of the Chicago River so that it flows back into Lake Michigan, like it did originally? Wouldn't this threaten to contaminate Chicago's drinking water with the city's sewage?**

Ecologically separating the Great Lakes and Mississippi River watersheds is immensely complex and there are many issues that need to be considered, including the hydrology of the Chicago River. The feasibility and impacts of reversing the flow of the Chicago River will certainly be evaluated, but it's too early to know if it would be required. Any feasible scenario for ecological separation must safeguard Chicago's drinking water supply. Technologies for treating wastewater have improved dramatically over the past century and may create new options for the Chicago area. This is one of many important issues that need to be carefully considered.

**Is this just about Asian carp, or are there other reasons to evaluate options for ecological separation of the Great Lakes and Mississippi River watersheds?**

Ecological separation of the Great Lakes and Mississippi River watersheds will protect both watersheds from the transfer of all aquatic invasive species, not just Asian carp. The Chicago Area Waterway System is a two-way path that has enabled damaging invasive species—such as zebra mussels—to invade the Mississippi River basin. In addition to the threat from invasive species, there are other important reasons to examine how the system is structured and operates, including advancing restoration of urban waterways; improving management of stormwater and wastewater; enhancing the efficiency of commercial navigation operations; building infrastructure for tourism and recreation; and other restoration opportunities. The study will help the Chicago region advance a vision of a truly world-class, inter-modal transportation system for the 21st Century.

**If Asian carp are so close to Lake Michigan, we need action, not more studies. Haven't we already studied this issue enough?**

There is no doubt that we face an urgent need to keep Asian carp out of the Great Lakes. This must include both short-term and long-term actions. In the near-term, federal and state agencies are implementing a comprehensive control strategy to monitor for and control the forward movement of Asian carp toward Lake Michigan. The Great Lakes states, cities and other parties are supporting these efforts while also advocating strengthened actions. In the long-term we need to identify, evaluate and begin implementing a permanent solution that is effective, sustainable, and that accommodates benefits currently provided by the Chicago Area Waterway System. While some studies have been conducted toward this end, additional and more detailed analysis is needed. Chicago's current waterway system developed over more than a century and is immensely complex. Transforming this system will take time and will require careful analysis by experts in a variety of disciplines. This level of analysis has not been done and must begin now. Our project is directed toward this end and will provide the foundation for moving forward.

**How long will it take to accomplish ecological separation? Won't it be too late to stop Asian carp from invading the Great Lakes?**

It's unclear how long it will take to separate the Great Lakes and Mississippi River watersheds. This will depend on the options identified, their costs, impacts and other considerations. Given the size and complexity of the Chicago Area Waterway System, it likely will take some time to implement an effective plan to achieve

ecological separation. In the meantime, it's vital that we take effective short-term action to keep Asian carp out of the Great Lakes. Asian carp are not yet established in the basin and it's not too late to keep this from happening. We must be vigilant, however, in safeguarding the lakes while a long-term solution is developed and implemented. At the same time, it is vital that we develop a credible vision for this long-term solution.

**Can we really expect the Great Lakes states to cooperate in carrying out this project when they have been suing each other over the threat of Asian carp entering the Great Lakes from the Chicago Area Waterway System?**

While the states have disagreed on whether to temporarily close navigation locks in the Chicago area, they are in total agreement on the need to pursue ecological separation as the best permanent solution to safeguarding the Great Lakes from damaging aquatic invasive species. The project is being coordinated by the Great Lakes Commission, which represents all eight states that border on the lakes. The Commission's members have unanimously endorsed the goal of ecological separation and the project that will evaluate options for achieving it. The Great Lakes states, together with cities along the lakes, are committed to finding a long-term solution that safeguards both the ecological health of the lakes and the economic vitality of the Chicago area.

**Who are the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative, and why are they qualified to carry out this project?**

The Great Lakes Commission is an interstate agency established in 1955 to work on behalf of the eight Great Lakes states "to promote the orderly, integrated and comprehensive development, use and conservation of the water resources of the Great Lakes Basin." The Commission is governed by delegations from each of the Great Lakes states, with associate membership from the Canadian provinces of Ontario and Quebec. The Commission is chaired by Illinois Governor Pat Quinn and has a professional staff of approximately 25 people. Additional background on the Commission is available at [www.glc.org/](http://www.glc.org/).

The Great Lakes and St. Lawrence Cities Initiative is a binational coalition of more than 70 mayors and other local officials that works to advance the protection and restoration of the Great Lakes and the St. Lawrence River. It was founded by Chicago Mayor Richard M. Daley in 2003. It is governed by a Board of Directors comprised of eight U.S. mayors and eight Canadian mayors.

The Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative are well known and well respected, and have the credibility to lead this project. Their leadership will engage key stakeholders and ensure buy-in to the process and overall vision of the project. Their stature and ongoing engagement in Great Lakes management and policymaking will ensure that project outcomes are widely recognized and firmly established as the foundation for future discussion on the issue of ecological separation of the Great Lakes and Mississippi River watersheds. In addition, both organizations have strong ties to Chicago and northwest Indiana and in-depth knowledge of the economics, politics and jurisdictional arrangements in the region.