

# OUR WATERS

The waters of Southeastern Wisconsin are vast but vulnerable. We depend on our waters for drinking water, irrigation, industry, transportation, power production, recreation and scenic beauty.

Understanding our region's water-related issues and future challenges can help us protect clean, abundant water for generations to come.

## Diversions of Great Lakes Water

A diversion is any transfer of water across watershed boundaries through a man-made pipeline or canal. Diversions of Great Lakes water provide municipal supplies and support irrigation and industry in communities like Chicago, Detroit, and London, Ontario. Diversions also support shipping and recreational boating in canals in Illinois, Wisconsin, Ohio and New York, and hydroelectric power production in Ontario.

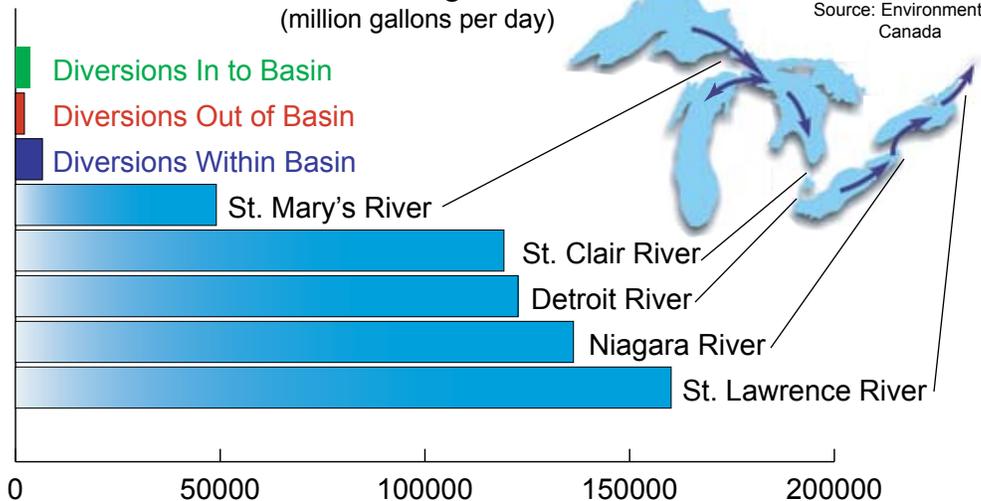
Diversions may transfer water in or out of the Great Lakes basin, or between the watersheds of different lakes or rivers within the basin. While the impacts of existing diversions on lake levels are minor, they alter the natural flow of the Great Lakes and water returned from diversions may be of a different quality than when it was withdrawn.

Changes to natural flow and water quality can impact wetlands and near-shore ecosystems like fish spawning grounds, influence tourism, recreation and shoreline property values, and affect hydro-electric power production and commercial shipping.

With ground water declines in Southeastern Wisconsin and populations and water needs rising across the United States, it is important to understand the effects of diversions so we can protect Great Lakes water resources.

### Average Annual Flow Through Diversions and Connecting Channels

(million gallons per day)



Source: Environment Canada

Source: "Protection of the Waters of the Great Lakes," International Joint Commission Interim Report, 1999.  
\*Data does not include the Straits of Mackinac. Because the connecting channel is so deep and wide, Lakes Michigan and Huron are at the same level, and hydrologically, are considered one lake.

### Water Talk

- A *watershed* is an area from which all surface waters (rivers, streams and runoff) flow toward the same river, lake or ocean.
- The *sub-continental divide* is a subtle ridge that separates two important regional watersheds. East of the divide, surface waters flow to Lake Michigan; west of the divide, they join tributaries to the Mississippi River.



- The *Great Lakes basin* is the watershed of the entire Great Lakes system, and includes surface and ground water within this area.
- *Consumptive use* refers to water withdrawn from the Great Lakes that evaporates, is incorporated into products, or for other reasons is not returned as treated wastewater to the lakes.
- A *diversion* is the transfer of water across watershed boundaries through a man-made pipeline or canal.

# Existing Diversions of Great Lakes Water

**Portage Canal**

- Up to 64.6 mgd into Lake Michigan
- Built in the 1860's to connect the Wisconsin River (Mississippi River watershed) to the Fox River (Lake Michigan watershed)

**Ogoki and Long Lac**

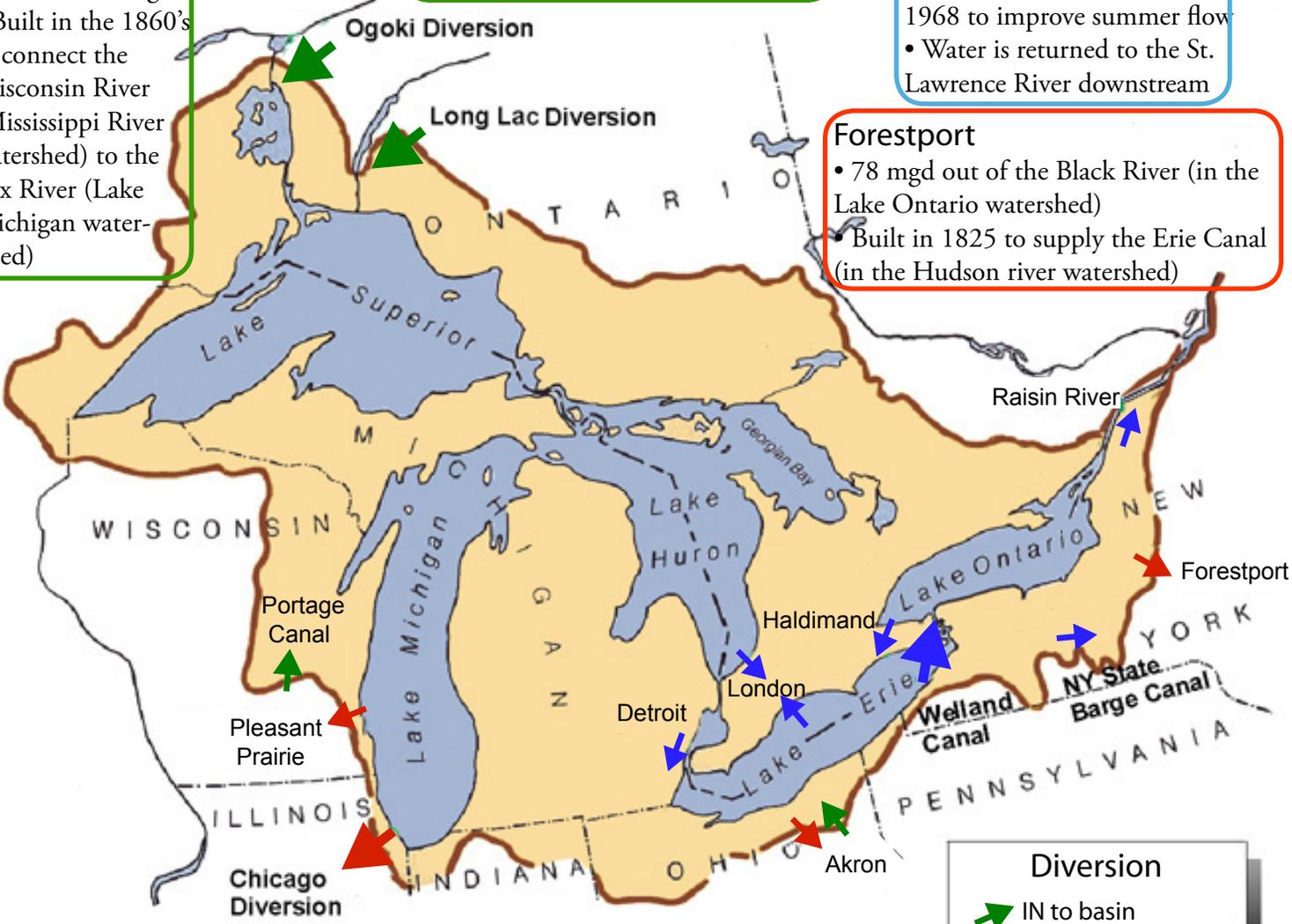
- 3,606 mgd into Lake Superior.
- Built during World War II for hydro-electric power and log transport

**Raisin River**

- 16 mgd out of St. Lawrence River for up to 100 days per year
- Approved by the IJC in 1968 to improve summer flow
- Water is returned to the St. Lawrence River downstream

**Forestport**

- 78 mgd out of the Black River (in the Lake Ontario watershed)
- Built in 1825 to supply the Erie Canal (in the Hudson river watershed)



**Diversion**

- IN to basin
- OUT of basin
- WITHIN basin

Source: "Protection of the Waters of the Great Lakes: Final Report to the Governments of Canada and the United States," International Joint Commission, 2000.

**Pleasant Prairie**

- 3.2 mgd out of Lake Michigan
- Approved by Great Lakes governors in 1990 to replace the village's radium-contaminated ground water
- Village straddles the sub-continental divide
- Wastewater flows toward the Mississippi River, but must be returned to the lake by 2010

**Chicago**

- 2,068 mgd out of Lake Michigan
- Completed in 1900
- Reversed the flow of the Chicago River to carry wastewater and shipping traffic toward the Mississippi River on the Ship and Sanitary Canal
- Supplies water to the city and suburbs

# Diversion Legislation

## New York State Barge Canal

- 450 mgd out of Niagara River
- Completed in 1918 for recreational boating
- Most water is returned to Lake Ontario through tributaries and canals
- During navigation season, an estimated 20 mgd flows into the Hudson River watershed

## Haldimand, Ontario

- 1.3 mgd out of Lake Ontario near Hamilton, ON
- Built in 1997 for municipal use
- Treated water returned to Lake Erie at Haldimand, ON

## London, Ontario

- 71 mgd from Lake Huron
- Built in 1967 for municipal supply
- Treated water returned to Lake St. Clair

## Detroit

- 94 mgd out of Lake Huron
- Built in 1975 for public supply
- Treated water returned to Detroit River

## Welland Canal

- 5,946 mgd between Lakes Erie and Ontario
- Built as a shipping route to bypass Niagara Falls
- Opened in 1829, has since been modified and deepened

## Akron

- 0.32 mgd out of the Cuyahoga River (Lake Erie watershed)
- An equivalent amount is diverted into Lake Erie from the Ohio River watershed
- Approved by Great Lakes governors in 1998
- Sold to suburbs outside the basin

## 1909 Boundary Waters Treaty

This treaty established the International Joint Commission (IJC) to prevent and resolve disputes over shared water resources. Under the treaty further uses, obstructions or diversions of Great Lakes water that affect natural flows or levels must be approved by the IJC.

## 1967 Lake Michigan Diversion Supreme Court Consent Decree (modified 1980)

The U.S. Supreme Court limited the Chicago diversion to its current average of 2,068 million gallons per day (mgd), after decades of negotiation.

## 1972 Great Lakes Water Quality Agreement (revised 1978, amended 1987)

This agreement established common U.S. and Canadian goals for Great Lakes resources. The countries agreed to control pollution, research and monitor lake health, and work toward restoration with an ecosystem approach (one that recognizes connections between resources, habitats and living things).

## 1985 Great Lakes Charter

The Charter, a good-faith agreement (legally unenforceable) between the eight governors and two Canadian premiers of the Great Lakes region, outlined water resource management principles. Under the Charter, new diversions or consumptive uses of more than 5 mgd require approval of all parties.

## 1986 Federal Water Resources Development Act (amended 2000)

This legally binding Act requires approval by all Great Lakes governors for any exports or diversions of Great Lakes water out of the basin. It also prevents federal agencies, except the IJC, from studying possible diversions.

## 2001 Great Lakes Charter Annex

U.S. governors and Canadian premiers established a framework for future binding agreements to regulate exports and diversions of water resources, and protect and restore waters in the Great Lakes basin.

## 2005 Great Lakes Water Resources Compact

Governors and premiers signed drafts of the interstate Compact and an international agreement that prohibit most new diversions and exports of water out of the Great Lakes basin. The Compact allows a community that straddles basin boundaries or lies within a straddling county to request a diversion if:

- It has no reasonable water supply alternative, including conservation
- Diverted water will be used solely for public supply and returned as treated wastewater to the source watershed

All Great Lakes governors must approve a diversion to a community in a straddling county.

The Compact includes goals for water conservation, sustainable use, and Great Lakes research. The draft provides baseline legislation; individual states can implement stronger diversion, export and conservation regulations. Minnesota passed the Compact in early 2007; it must be ratified by the remaining states and Congress. In Wisconsin, a legislative council committee charged with developing legislation to pass the Compact began meeting in fall 2006.

# Diversion Issues

## Bottled Water

The drafted Great Lakes Water Resources Compact regulates new diversions and exports of water out of the Great Lakes basin in pipelines, canals, and containers larger than 5.7 gallons.

Some conservationists worry this leaves water resources, including springs and ground water, vulnerable to exports in smaller containers - such as 20 ounce bottles - by bottled water companies. Critics of bottled water export argue that although water may be incorporated into exported products, public waters should not be privatized for direct profit by bottling companies. Individual states can expand legislation to regulate exports of water out of the basin in small containers.

Americans drank 6.8 billion gallons of bottled water in 2004, compared to 15.3 billion gallons of soda. The Beverage Marketing Corporation predicts bottled water will soon be Americans' 2<sup>nd</sup> most popular beverage (soft drinks rank 1<sup>st</sup>).

In Wisconsin more than 20 companies are licensed to bottle water; sources for nearly half of these operations are within the Great Lakes watershed.\*

\*Source: Wisconsin Department of Trade and Consumer Protection, 2006.

## Requests for Diversions and Exports of Great Lakes Water

- \*1981 Powder River Coal Company is denied a diversion of Great Lakes water to Wyoming to feed a pipeline that would carry coal slurry to the Midwest.
- \*1982 The U.S. Army Corps of Engineers studies and denies a diversion of Great Lakes water to recharge the Ogallala Aquifer that underlies 8 states from South Dakota to Texas.
- \*1990 Pleasant Prairie, WI, gains approval for a temporary 3.2 mgd diversion from Lake Michigan for public supply. The village must return treated wastewater to the lake by 2010.
- \*1992 Lowell, IN, is denied a 2 mgd diversion for public supply (vetoed by governor of Michigan).
- \*1998 Akron, OH, gains approval for a diversion from Lake Michigan of up to 4.8 mgd (an average 0.32 mgd is diverted) for public supply.
- \*1998 The Nova Group gains a permit from the Ontario Ministry of the Environment to export approximately 160 million gallons per year (an average 0.4 mgd) of Lake Superior water to Asia in bulk containers. The permit is revoked due to objections of Great Lakes governors and citizens.
- 2006 New Berlin, WI, applies for 1.83 mgd (and up to 2.48 mgd by 2050) of Lake Michigan water for parts of the community outside the Great Lakes basin. The application is submitted to the Wisconsin DNR and after a public comment period, returned to New Berlin for revisions. As of early 2008, New Berlin is in discussions with Milwaukee about a potential sale of Great Lakes water, and has not resubmitted its application to the DNR.

\*Source: "Great Lakes Water Management Chronology," Council of Great Lakes Governors.

## Who owns our water?

The answer to this question has long been, "We do." Water resources are historically governed by the Public Trust Doctrine. This means the state holds water in trust for the reasonable and beneficial use of the public. The Compact reaffirms that waters of the Great Lakes basin, including ground water, "are precious public natural resources shared and held in trust by the States."

Without this protection water becomes vulnerable to export as a "commodity" or "product." This could make water subject to international trade agreements and limit Great Lakes states' control of water exports from the basin in bottles, tankers or pipelines.

In a world where the United Nations predicts water demands in 2025 will be 50 percent greater than the current global supply, maintaining water as a public trust can protect our water resources for future generations.



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Find more information online at [www.glwi.uwm.edu/ourwaters](http://www.glwi.uwm.edu/ourwaters) or e-mail [our-waters@uwm.edu](mailto:our-waters@uwm.edu).

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