



GLPRN Policy Brief Series: Irrigation in the Great Lakes Basin

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Overview

A substantial amount of irrigation is present in the Great Lakes Basin, but only as a supplement to rain-fed agriculture. Most irrigation in the basin is small-scale in nature, with farmers using pump and sprinkler systems to irrigate from local streams and groundwater sources. Very little irrigation water is pumped directly from the Great Lakes themselves (Annin, 2006, p. 155).

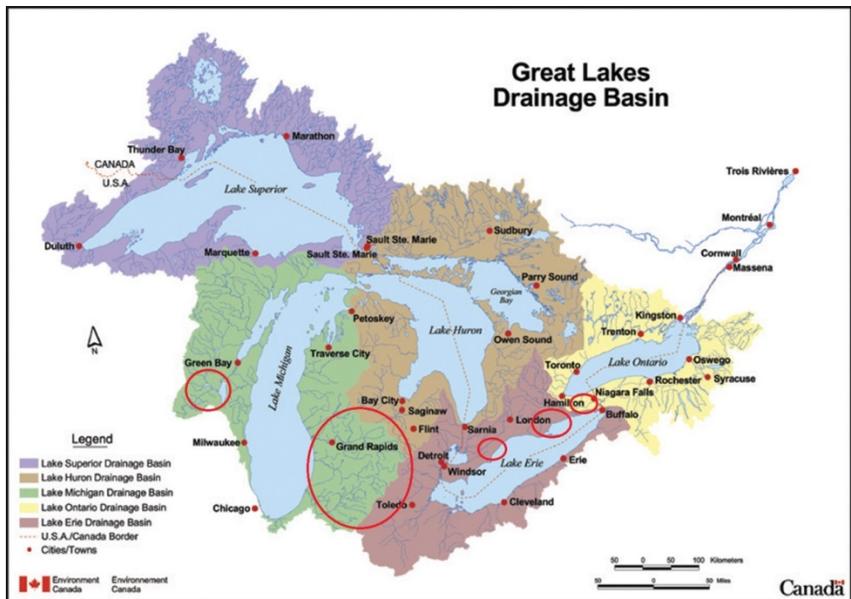
Irrigation is much more prevalent in some jurisdictions than in others: Michigan is by far the largest irrigator in the Great Lakes Basin, both in terms of acres irrigated and water used, with Ontario a distant second. Together, they account for over three-quarters of the irrigation in the basin, in most years. Irrigation is used to grow a wide variety of crops, ranging from annual field crops such as corn, soybeans, vegetables, potatoes, tobacco, and ginseng, to perennial horticultural crops such as apples and tender fruit. Given its supplemental nature, Great Lakes irrigators tend to use more water in years when precipitation and run-off levels are low in July and August. However, holding run-off levels constant, the amount of water used for irrigation in the basin has grown since 1998 (Great Lakes Commission, 2013).

Existing Policies and Legislation

Water-takings for irrigation are primarily regulated at the state/provincial level on both sides of the international border.

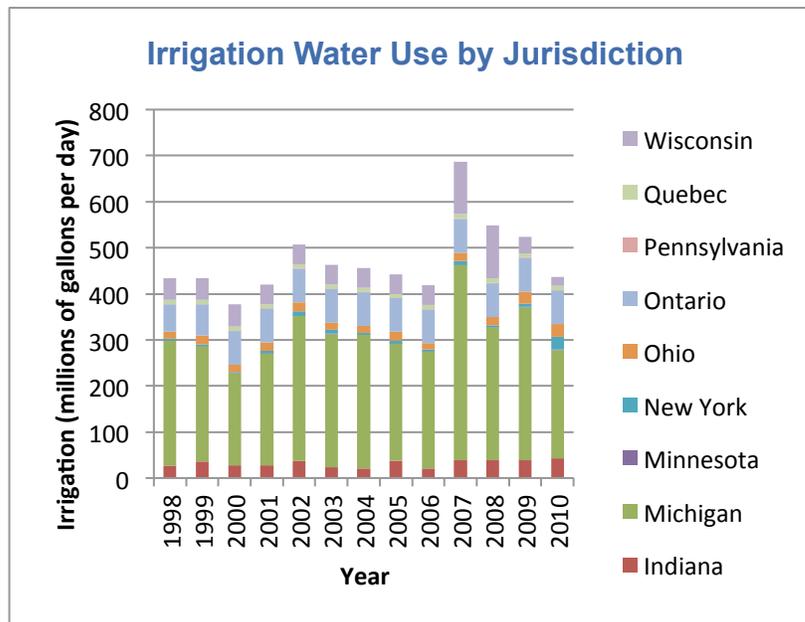
All Great Lakes jurisdictions govern water-takings through a system of regulated riparianism. Regulated riparian regimes draw a distinction between small and large water-takings. For small water-takings, common law riparian rights apply, so that water entitlements are tied to land ownership and anyone owning land that abuts or overlies a water source has a right to the 'reasonable use' of that water source. Large water-takings are regulated by statutory laws and riparian landowners planning a large

Major Irrigation Areas in the Great Lakes Basin



water-taking must obtain a government permit. The defined threshold between small and large water-takings varies by jurisdiction.

In most jurisdictions, applications for large water-takings are reviewed for their potential impact on the environment and existing water users. In Michigan, for example, applications are evaluated using a sophisticated tool known as the Water Withdrawal Assessment Process. As of 2009, riparian land owners undertaking a new large water-taking can access this tool online (at <http://www.miwwat.org>), input key data related to their water-taking, and the tool will evaluate the proposed water-taking and its risk of adverse impact (Hamilton & Seelbach, 2010). These review processes are very important if governments are to avoid irrigation-related over-allocation of water resources.



In December 2005, the Great Lakes states and provinces also signed the *Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement*, committing them to various irrigation-relevant water policy measures. One of the central features of the Agreement is the implementation of a “decision-making standard” for regulating large water-takings in the basin. It establishes five water conservation principles that states/provinces must adhere to in evaluating applications for new or increased large water-takings, including those for irrigation. The Agreement has brought greater uniformity in how Great Lakes jurisdictions define and regulate large water-takings, resulting in wider and tighter regulation of irrigation in the basin (Hall, 2006).



Stakeholders

Irrigators – Irrigators are riparian landowners whose water use may or may not be regulated by government permits, depending on the volume of their water use. The number of irrigators in the basin is expected to grow, in the future.

Other Riparians – These are riparian landowners who may be affected by irrigators' water use or vice versa. These include municipalities, manufacturers, electrical power generators, water bottlers, and regular domestic water users.

Non-Riparians – Some individuals rely on water resources but are not riparian landowners, such as fishers, boaters, and hunters. These stakeholders can come into conflict with irrigators when irrigation water-takings reduce streamflows and dry up wetlands.

Environmentalists – In places where irrigation is prevalent, environmentalists target irrigators as the largest consumers of water and the biggest contributors to the impairment of riparian environments. Irrigator-environmentalist conflicts have, thus far, been fairly minimal in the Great Lakes Basin.

Governments – Governments are often caught at cross-purposes with respect to irrigation: agricultural departments seek to encourage irrigation as a means of rural development, while environmental departments seek to limit irrigation to protect aquatic environments.

Policy Challenges

Two perennial policy challenges in irrigation governance are: 1) the avoidance of over-allocation, and 2) the management of stakeholder conflict.

Over-allocation occurs when too many water entitlements have been allocated for a given water source. There are many negative economic and environmental effects from over-allocation, such as unreliable water entitlements, dropping water tables, and degraded wetlands and stream flows. Once over-allocation occurs, it is very difficult to correct, as water entitlement holders become vested interests.

When water becomes scarce, conflicts among stakeholders advocating for competing water uses is endemic. In the worst case, unrestrained conflict can lead to breakdowns in the legitimacy and effectiveness of water governance institutions, resulting in open access free-for-alls that impair resources, damage social relations, and undermine economic stability.

In the context of climate change, these policy challenges are likely to become more severe. Most climate change studies predict a warmer and wetter climate, on average, for the Great Lakes Basin, but the climate is also expected to be much more variable with more intensive precipitation episodes and drier, more frequent summer low flows. It is expected that farmers will increasingly turn to irrigation as a means of coping with increased climatic variability, so over-allocation and conflict management challenges may intensify, as a result (Mortsch, Alden, & Scherago, 2003).

Policy Futures and Policy Alternatives

In a variable climate, irrigators and regulators will have to deal with water shortage situations more frequently. In shortages, the relative priority of different water uses becomes very important. However,

in the regulated riparian regimes of most Great Lakes jurisdictions, the prioritization of water entitlements is not as clear as it could be.

Water-takings of all sizes (from both surface and ground water) are subject to the limitations of the 'reasonable use' doctrine of the common law, with the courts determining what constitutes reasonable use in any given situation. Typically, the courts have ruled that 'natural' water uses for domestic purposes have priority over 'artificial' uses for industrial processes, power generation, and irrigation (Hall, Michigan Water Law Summary). However, when it comes to competing 'artificial' uses, prioritization is much less certain. Permits for large water-takings do not come with clear priority designations, so they are little help in resolving this matter.

Ontario has filled this policy gap with its Low Water Response Plan. The Plan distinguishes between three levels of drought/low water emergencies. In a Level II drought, a Low Water Committee (comprised of relevant government officials) and local Water Response Teams (comprised of relevant local stakeholders) are created. These bodies are tasked to distinguish between 'essential,' 'important' and 'non-essential' uses in affected areas, thereby determining a temporary prioritization of sorts among water uses (Ontario Ministry of Natural Resources, et al., 2010). While the Ontario Low Water Response Plan can be lauded for giving stakeholders a key role in determining prioritizations, its overall effect is to punt the problem of prioritization forward to a drought emergency when it will be much more urgent and politically charged, so it remains to be seen whether it should serve as a model for other Great Lakes jurisdictions.

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