



# Illinois Department of Natural Resources

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## Water Conservation and Efficiency Program Review Illinois' Third Report to the Compact Council and Regional Body

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### Illinois' water conservation and efficiency program

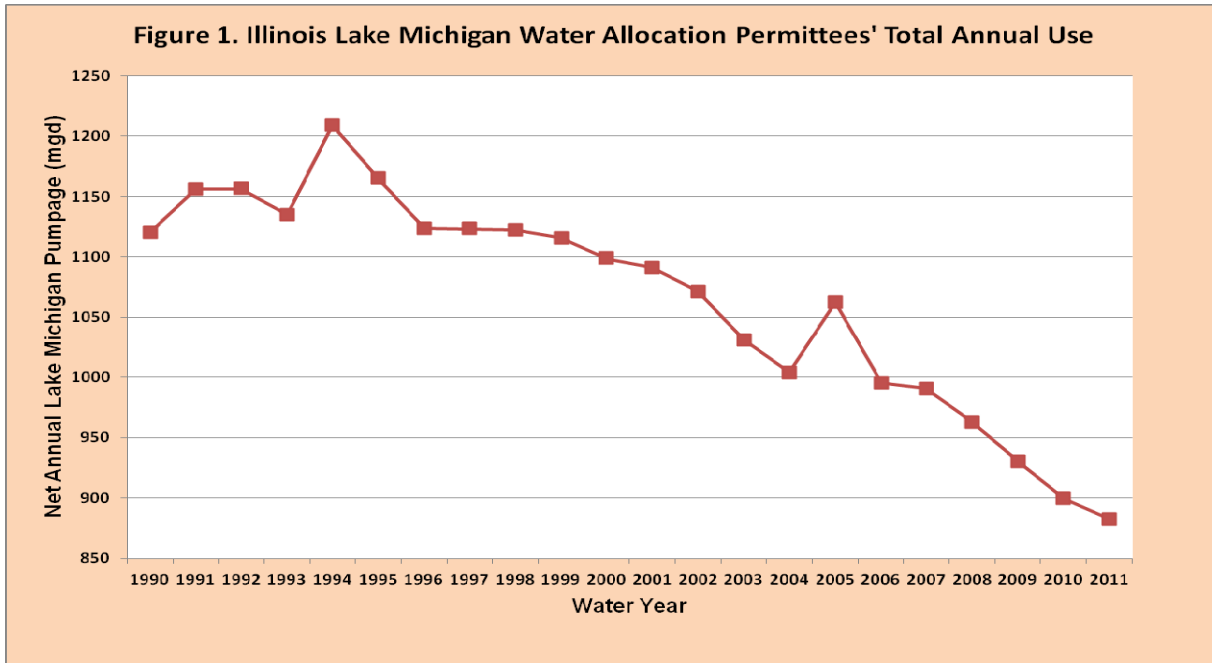
#### A. Status of Illinois' Domestic Water Use from Lake Michigan

Total domestic use of Lake Michigan water was 888 million gallons per day in Water Year 2011.

For a more detailed summary of water use in 2011 go to:

<http://www.dnr.illinois.gov/WaterResources/Pages/LakeMichiganWaterAllocation.aspx>. This

continues a downward trend in total domestic use of Lake Michigan water that we have observed since the early 1990s. The following chart illustrates this trend:



Since our last report, the northeastern Illinois region, along with most of the rest of the country, has suffered through one of the longest and most intense droughts in modern history. Preliminary information indicates that Lake Michigan domestic water use in Water Year 2012 will show an increase of around 4.3% compared to Water Year 2011. Given the length and severity of this drought, this is a relatively small increase, when compared to the spike in water use in previous drought years (in 1994 domestic use increased 6.5% and in 2005 it increased 5.9%). It is likely that the impact of ongoing conservation efforts in the region, along with substantially higher water rates, account for the smaller increase for the drought of 2012.

**B. Program Legal Basis**

A U.S. Supreme Court Decree [*Wisconsin v. Illinois*, 449 U.S. 48 (1980)] limits Illinois' diversion of Lake Michigan water to an annual average of 3200 cubic feet per second (cfs), approximately 2.1 billion gallons/day. The Decree and Illinois state law specifically require that:

“all feasible means reasonably available to the State and its municipalities, political subdivisions, agencies and instrumentalities shall be employed to conserve and manage the water resources of the region and the use of water therein in accordance with the best modern scientific knowledge and engineering practice.’ [Level of Lake Michigan Act (615 ILCS 50/5)]

This is the operative judicial and statutory language that directs the Illinois Department of Natural Resources (Department) to develop and implement a water management and conservation program covering all permittees of Lake Michigan water.

### C. Program Objectives

Illinois’ first report to the Compact Council and Regional Body (dated December 8, 2009) reviewed the water conservation requirements that all domestic users of Lake Michigan water must comply with as a condition of receiving a Lake Michigan water allocation permit. In 2010, the Department developed and posted to our website (see above) Illinois’ Lake Michigan Water Conservation Goals and Objectives, as required by the Compact and the Regional Agreement.

The Department’s water conservation and efficiency program objectives are:

- Enforce the adoption of standards that require the efficient use and conservation of Lake Michigan water by the end user (homeowner, business/industry).
- Establish standards for good water system management and leakage control by the owner/operator of a water supply system.
- Ensure that Lake Michigan water diverted directly into the Chicago Waterway system for various purposes is kept to a minimum.
- Collect water use data annually; monitor changes in water use patterns. Encourage public water supply systems to evaluate the effectiveness of their conservation efforts.
- Prepare and maintain long-term water demand forecasts.
- Promote the adoption of water rate structures that encourage conservation and water

efficiency.

- Encourage water suppliers to invest in water infrastructure and the use of innovative technology to improve water systems management.
- Encourage research, development and implementation of water efficient technologies. Develop linkages with organizations such as USEPA's WaterSense Program, the Alliance for Water Efficiency and others, to keep abreast of the latest conservation technologies.
- Inform, educate and increase awareness regarding water use, conservation and efficiency via newsletters and other such means of communication.
- Work with our Lake Michigan water allocation permittees and our Great Lakes basin partners to enhance information sharing.

#### D. Program Activity – Updating Administrative Rules

Last year's report contained an extensive discussion on our plans to update our administrative rules.

During this past year we completed work on drafting proposed revisions and also undertook an internal review. Our Lake Michigan Water Allocation permittees were contacted twice to request comments on the substance of our proposed changes, which focused on two areas: 1) updating the water efficient plumbing fixture section and 2) the elimination of the maximum unavoidable leakage allowance in the calculation of unaccounted-for-flow.

In response to our request for comments, no one expressed concern with updating the rules to reflect current low flow plumbing fixtures. However, we received 13 comments on our proposal to eliminate the maximum unavoidable leakage allowance. Two supported the proposal, while 11 recommended against it. The main concern appeared to be the economic cost to upgrade water system infrastructure to reduce water loss. Based on the concerns expressed, we revised our proposed Rules to explicitly recognize that for some permittees it will take a longer period of time to develop and implement a infrastructure program that will enable them to reduce system losses to a new, lower level.

We have not yet taken any official action. We still intend to circulate a final draft of the proposed

Rules revisions to our permittees for their review prior to taking any action to request approval of the revised Rules from the Joint Committee on Administrative Rules, the legislative body which oversees agency rulemaking.

During this past year we've also heard from a number of organizations that promote water conservation. They have suggested that we should consider, as an alternative, the adoption of the IWA/AWWA water audit method. This method does not utilize the term "unaccounted-for-flow", and would be a significant departure from our current regulatory standard relating to water loss. In the coming year we will be working with several of these organizations to further explore this option. Until this additional analysis is complete we will postpone taking any formal action on revising the Rules.

E. Program Activity –Lake Michigan Water Allocation Newsletter

In October, the Department released the 2012 Lake Michigan Water Allocation Newsletter, which is on our website:

<http://www.dnr.illinois.gov/WaterResources/Pages/LakeMichiganWaterAllocation.aspx> .

The annual newsletter is one of the primary tools the Department uses to inform our permittees on issues that impact the Lake Michigan water allocation program and to encourage them to continue efforts to promote the efficient use and conservation of Lake Michigan water. This year's issue discussed how a drought impacts Illinois' diversion as allowed under the U.S. Supreme Court Decree, the status of Illinois' diversion, an update of efforts to revise our Rules and a discussion on regional water management efforts by the Great Lakes Governors and Premiers.

F. Program Activity – Develop Linkages with other Conservation Organizations

One of the Department's water conservation program objectives is to 'encourage research, development and implementation of water efficient technologies', primarily through the development of linkages with organizations that focus on conservation. In 2012 the Department continued as a

‘WaterSense Partner’ with the USEPA’s WaterSense Program.

We’ve also begun working with several organizations, including the Chicago Metropolitan Agency for Planning, the Metropolitan Planning Council and the Center for Neighborhood Technology on a project that will involve these organizations working with a number of our Lake Michigan communities to assist them in better understanding the nature of their particular water loss issues and how their particular infrastructure needs can be clarified and an investment strategy developed. An additional aspect of their work will be to explore with these communities the use of the IWA/AWWA water audit method and how it compares to the Department’s current methodology for determining unaccounted-for-flow.

On a broader regional scale, during this past year program staff continued as a member of an advisory team for a Great Lakes project entitled “Piloting a Paradigm for Adaptive Management of Great Lakes Watersheds Based on Virtual Water’. The purpose of this project is to develop a comprehensive framework for watershed management to assist the Great Lakes States/Provinces in meeting obligations under the Compact and Regional Agreement.

#### G. Program Activity – Water Rate Survey

Last year we reported on the Department’s 2010 Water Rate Survey. We have been undertaking this survey every five years so are not due for the next survey until 2015. However, even though we are not collecting new survey data, we continue to see a lot of new activity driven by rapidly escalating water rates. For example, a number of south suburban communities that have been long term users and purchasers of Lake Michigan water have banded together to explore the possibility of developing their own water intake, treatment plant and transmission mains to reduce the cost of Lake Michigan water. We’re also hearing of numerous municipal proposals to increase water rates that are driven by the need for new investment in their water infrastructure.

#### H. Program Activity – Water Use and Water Loss Monitoring

As mentioned in our first report, we continue to believe that improving the management and accountability of a municipal water system offers the greatest potential for a significant reduction in water consumption. The Department continues to monitor, on a yearly basis, the reported unaccounted-for-flow (UFF) of all our domestic Lake Michigan water suppliers. In 2011, the average UFF in the Lake Michigan water service area was about 4.9%. While this regional average continues to be below our regulatory standard of 8%, in 2011 we had 37 permittees whose UFF exceeded the 8% standard. With the total number of Lake Michigan water systems reporting in 2010 at 215, this represents fewer than 18% of our permittees exceeding the standard. Water systems that have a very high UFF are contacted to ensure that they have a program in place to reduce UFF and return to compliance with the standard. Our goal remains to have all of our permittees in compliance with this standard.

To ensure consistent reporting of water use data by our Lake Michigan water allocation users, the Department requires the annual submittal of water use data on a form known as the Annual Water Use Audit Form (available on the Department's website). This form has been required since the late 1970s, so there is a longterm data base that enables the Department to monitor the impact of this conservation requirement. In 1979, the first year for which the Department compiled statistics on UFF for 182 water systems in northeastern Illinois, the average UFF was 10.4%. Over the last five years, the average UFF has been around 4-5%.

While the Department's standards have served as an incentive for communities to begin the necessary leakage control studies and water audits to improve their accountability, today the rising cost of water is becoming a primary driver for water infrastructure investment. For example, over half of our Lake Michigan water systems purchase water from the City of Chicago. Chicago's water rate, effective January 1, 2013 will be \$2.89/1000 gallons (in 2008 their water rate was only \$1.53/1000 gallons). Consider that a 3 million gallon per day system with a 20% UFF will cut consumption by 360,000 gallons per day if they reduce their UFF down to the required 8%. At 2013 water rates, this community would save \$382,000 the first year alone by taking action to eliminate this water loss. Looking at this from the opposite perspective, this community would be losing \$382,000 that year, and with the adopted future rates they would be losing over \$500,000

per year by 2015. The cost of inaction is becoming too severe to ignore.

I. Program Activity – Control of Direct Diversion into Chicago Waterway System

The total amount of Lake Michigan water diverted into the Chicago Waterway System for discretionary diversion and navigation makeup flow was 295.5 cubic feet per second (cfs) in 2011 and 273.34 cfs in 2012. For both years the amount diverted was less than the amount allocated. At the end of the 2012 Water Year, the five year running average of these two components of direct diversion stands at 293 cfs, or 12 cfs below the combined allocation for these two components of direct diversion.

The other primary use of Lake Michigan water diverted directly into the Chicago Waterway System is to operate the navigation locks at the mouth of the Chicago River and on the Calumet River. Both of these lock facilities are operated and maintained by the U.S. Army Corps of Engineers. In April of 2011, the Corps of Engineers completed a project to replace both the upper and lower lock gates at the Chicago River Controlling Works. Some additional work was necessary to properly align the new gates in 2012 and they are now fully operational. Illinois does not have any control over the amount of water diverted for lockage or for leakage through this structure.

Since our last report the level of Lake Michigan/Huron has continued to fall in response to a mild winter and dry conditions throughout this past spring and summer. With the water level in the Chicago Waterway System kept relatively constant, this lowered lake level means that the direct diversion of water from Lake Michigan into the waterway, especially for lockage of navigation vessels will be significantly reduced. On some days this fall, lockages were actually halted to protect Lake Michigan water quality as a result of water levels in the waterway higher than the lake.

J. Project Activity – Status of Water Demand Forecasts

In 2008, the Department completed a comprehensive water reallocation for all our water supply permittees. As part of this reallocation, water demand forecasts for each year, out to the year



2030, were developed and ultimately included in the Department's new Lake Michigan water allocations. A primary reason for this long timeframe is to ensure that the Department's water allocation program is sustainable over the foreseeable future, and will continue to keep Illinois' total diversion below the authorized U.S. Supreme Court Decree limit of 3200 cfs.

In 2012, the Department did not issue any new water allocations.

#### K. Project Activity - Water Infrastructure

Last year's report described a proposed City of Chicago water infrastructure program. Recently the City prepared and released a report entitled "2015 Sustainable Chicago", [http://www.cityofchicago.org/city/en/progs/env/sustainable\\_chicago2015.html](http://www.cityofchicago.org/city/en/progs/env/sustainable_chicago2015.html) which outlines a number of major initiatives the City plans to undertake with the overall goal of becoming a more sustainable city. A major component of this report is the City's commitment to upgrading their water, wastewater and stormwater infrastructure. They expect to achieve a 2%/year reduction in water use from this effort.

A number of other Lake Michigan communities have also developed, or are working on a conservation/sustainability initiative. The northeastern Illinois region has a number of organizations who work with local government to help them become more sustainable. Water conservation/infrastructure maintenance is an essential component of a sustainability initiative, and we are pleased to see these efforts initiated at the local level. Finally, a community that has recently applied for a new Lake Michigan water allocation has recognized the need to incorporate a plan to upgrade their water infrastructure as an essential element of their application submittal.

#### Conclusion

Illinois has had a Lake Michigan water conservation program for over 30 years. Our program is consistent with and fully supports the Great Lakes-St. Lawrence River Basin Water Conservation and Efficiency Objectives. The unique nature of Illinois' Lake Michigan water use and diversion as

allowed under a U.S. Supreme Court Decree has resulted in a water conservation and efficiency program that is implemented primarily as a regulatory program, with additional measures, such as conservation pricing, conservation education and information sharing, implemented through a non-regulatory effort.