

**Great Lakes-St. Lawrence River Basin Water Resources Compact  
Five-Year Program Review Report  
December 5, 2014  
State of Michigan**

This report fulfills Michigan's obligation under Section 3.4 of the Great Lakes-St. Lawrence River Basin Water Resources Compact (Compact), and under Article 300 of the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement (Agreement).

General Information

**1. Lead agency/agencies and contact person(s) and contact information.**

The Michigan Department of Environmental Quality (MDEQ) is the lead agency responsible for Michigan's water management and water conservation and efficiency programs. Mr. Jon W. Allan, Director, Office of the Great Lakes is the Compact contact at 517-285-5034, [allanj@michigan.gov](mailto:allanj@michigan.gov), and Mr. James F. Milne, Chief, Great Lakes Shorelands Unit, Surface Water Assessment Section, Water Resources Division, is the program contact at 517-284-5559, [milnej@michigan.gov](mailto:milnej@michigan.gov).

**2. Laws, statutes, rules, regulations, executive orders, administrative orders or other similarly enforceable documents that establish or implement programs meeting the requirements of the Compact.**

The Compact is enacted into law in Michigan under Part 342, Great Lakes-St. Lawrence River Basin Water Resources Compact, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). Additional legislation enabling specific aspects of Michigan's water management, and water conservation and efficiency programs is enacted in Part 327, Great Lakes Preservation, of the NREPA, 1994 PA 451, as amended; the Safe Drinking Water Act, 1976 PA 399, as amended; and the Safe Drinking Water Act Administrative Rules. Specific provisions from the Compact and Agreement for water management and water conservation and efficiency program elements and their corresponding legal citations are provided below:

- a. Compact Section 3.4/Agreement Article 300**  
Michigan Compiled Law (MCL) 324.34201
- b. Compact Section 4.1/Agreement Article 301**  
MCL 324.34201, 324.32702, 324.32705, 324.32707, 324.32708, 324.32710, 325.1004, Michigan Administrative Rules 325.11502, 325.11504
- c. Compact Sections 4.2(2), 4.2(4) and 4.2(5)/Agreement Article 304**  
MCL 324.34201, 324.32707, 324.32708a, 324.32723, 325.1004
- d. Compact Section 4.3/Agreement Article 200**  
MCL 324.34201, 324.32704a, 324.32705, 324.32706a-e, 324.32723, 325.1004
- e. Compact Section 4.8, 4.9 and 4.13/Agreement Articles 200, 201 and 208**  
MCL 324.34201, 324.32701, 324.32702, 324.32703, 324.32703a, 324.32704, 324.32704a, 324.32727
- f. Compact Section 4.10/Agreement Article 206**  
MCL 324.34201, 324.32704a, 324.32705, 324.32706a-e, 324.32723, 325.1004

**g. Compact Section 4.11/Agreement Article 207**  
MCL 324.34201, 324.32723

Water Management Program Report

**1. Water management program scope and thresholds.**

Michigan's water management program includes registration and water use reporting requirements for virtually all large quantity withdrawals (LQWs; MCL 324.32705, 324.32707, 324.32708), as well as an authorization process for new or increased LQWs which requires that an environmental impact standard must be met prior to registration (MCL 324.32706). LQWs include all water withdrawals with the capacity to withdraw over 100,000 gallons per day average in any consecutive 30-day period (MCL.324.32701). Exceptions to the registration and reporting requirements include LQWs undertaken for groundwater contamination remediation, small residential properties, and hydroelectric power generation (MCL 324.32727). Registered LQW facilities annually report their monthly withdrawal volumes, consumptive use, and return flow discharge information on forms provided by the MDEQ or the Michigan Department of Agriculture and Rural Development (MDARD; MCL 324.32707, 324.32708). Before new or increased LQWs can begin operating, they must be authorized based on an assessment of their predicted, cumulative impact along with other new LQWs to nearby river or stream flows. LQWs that are likely to exceed this environmental standard are restricted to a lesser amount, or may be prohibited in order to protect local streamflow (MCL 324.32706). Michigan's management of withdrawals and water resources at the sub-watershed level ensures the protection of the waters of the Great Lakes Basin.

**2. Management of Water Withdrawals by:**

**a. Sector [public water supply, commercial and institutional, irrigation, livestock, industrial, electric power production (once-through and recirculated cooling), hydroelectric power production (off-stream and in-stream), voluntary, and other];**

LQWs in all above mentioned water use sectors are subject to the Michigan water management program with the exception of hydroelectric power generation. Off-stream and in-stream hydroelectric water use are exempt from management under Michigan law (MCL 324.32727). All sectors are managed in essentially the same way, and the specific sector of water use is captured in the annual water use reporting.

**b. Water source (groundwater, Great Lakes-St. Lawrence River surface water, and other surface water);**

LQWs from all water sources including groundwater, the Great Lakes and their connecting waters, and other surface water are subject to the Michigan water management program. The specific water source is captured in the annual water use reporting. New LQWs are assessed based on the environmental impact to their source if from Great Lakes or other surface water, or to nearby rivers or streams if the source is groundwater (MCL 324.32706, 324.32723, 325.1004).

**c. Quantity (regulatory thresholds, volumes, rates, and reporting requirements);**

The Michigan water management program regulates the quantity, volume, and/or rate of new or increased LQWs by tracking their cumulative impact to river and stream flows at

a sub-watershed scale, or to the lake level if a direct withdrawal from a lake. The environmental impact standard is scaled to the size of the impacted stream or river and is dependent on its ecological classification, therefore the regulatory limits are variable across sub-watersheds (MCL 324.32701). When the cumulative impact to a sub-watershed reaches the environmental impact standard limit, new or increased LQWs are restricted to a lesser amount, or may be prohibited in order to preserve the local water resources (MCL 324.32706b, 324.32723). LQWs that withdraw less than 1,500,000 gallons of water in a given year are not required to report specific water use volumes, but are required to file an annual report stating the water usage was less than 1,500,000 gallons (MCL 324.32707).

**d. Location (Statewide/Province-wide or Great Lakes-St. Lawrence River Basin);**

The Michigan water management program applies statewide.

**e. Any specific exemptions as allowed in the Agreement and the Compact.**

Michigan law includes exemptions from its water management program for LQWs undertaken for groundwater contamination remediation, small residential properties, and hydroelectric power generation (MCL 324.32727). LQWs utilized solely for fire suppression are exempt from the environmental impact standard, but are required to be registered and report their annual water use (MCL 324.32721).

**3. Application of the Standard of Review and Decision.**

**a. Decision Making Standard for Withdrawals and Consumptive Uses.**

The Michigan water management program applies the Compact's Standard of Review and Decision to all new or increased withdrawals greater than 2 million gallons per day (MGD) capacity (MCL 324.32723). An application for these withdrawals requires each criterion of the Decision-Making Standard to be addressed by the applicant, and is evaluated by the MDEQ during the application review. Most criteria are evaluated on a scientific basis, with the exception of 4.11.5.c (the balance between economic development, social development, and environmental protection for the existing and proposed LQWs). For this criterion some deference is granted to the weight of public comments received on the proposed withdrawal to aid in the MDEQ's evaluation.

LQWs subject to Michigan's water management program but less than 2 MGD capacity are required to meet an environmental impact standard, but are not evaluated by the criteria of the Decision-Making Standard.

**b. Exception Standard for Diversions.**

The Michigan water management program applies the Exception Standard and evaluates each criterion for any proposed Diversion. In Michigan law, diversion does not include the supply of ballast for vessels; use in a noncommercial project on a short-term basis for firefighting, humanitarian, or emergency response purposes; a transfer of water from a Great Lake watershed to the watershed of its connecting waterways; or a transfer of water out of the Great Lakes Basin in a container 5.7 gallons or less (MCL 324.32701).

**4. Reporting and database of Withdrawals, Consumptive Uses and Diversions.**

Michigan's water management program requires annual water use reporting for virtually all LQWs. Separate databases of Withdrawals, Consumptive Uses and Diversions are maintained by the agencies responsible for each branch of the Michigan water management program: the MDEQ Community Water Supply Program for public water supplies, the MDARD for agricultural water uses, and the MDEQ Water Use Program for all other LQWs. LQW owners have the option of reporting via paper forms provided by the agency, or directly into the MDEQ or MDARD databases through an online reporting system. All methods of measurement of water use volumes are approved, as are acceptable estimation methods in lieu of a measurement device. A separate database is also maintained by the DEQ Water Use Program for tracking the cumulative impact of new or increased LQWs relative to the environmental impact standard for each sub-watershed in the state (MCL 324.32706e).

## **5. Withdrawal application forms.**

Michigan's water management program utilizes an online application, the Water Withdrawal Assessment Tool (<http://www.deq.state.mi.us/wwat>) to process all applications for new or increased LQWs up to 2 MGD capacity. A water withdrawal permit is required for new or increased LQWs greater than 2 MGD capacity; the water withdrawal permit application form is attached.

## **6. Initiatives to support an improved scientific understanding of the Waters of the Basin and an improved understanding of the groundwater of the Basin and the role of groundwater in Basin water resource management**

In February 2013 the MDEQ convened the Water Use Advisory Council (WUAC), a diverse group made up of key stakeholder representatives and technical experts, to organize scientific and policy discussions for the purpose of informing and updating Michigan's water management and water conservation and efficiency programs. The WUAC's final report is due December 16, 2014, and will make specific recommendations as a result of research efforts to increase our understanding of Michigan's surface and groundwater resources. The Department of Natural Resources, Fisheries Division deploys temperature loggers to study stream temperatures and conducts fish population surveys in Michigan's lakes and streams. The MDEQ and U.S. Geological Survey have a joint funding agreement for operating stream gages and monitoring wells, as well as collecting miscellaneous stream flow measurements. Each of these monitoring and data collection efforts have been stepped-up and focused in areas of the state where groundwater LQWs are most prevalent to increase understanding of groundwater-surface water interaction, and the effects of groundwater use on stream ecology especially.

The glacial geology of Michigan is quite complex and varied, and is one of the major challenges in gaining a better understanding of Michigan's groundwater resources. Research is continually ongoing by state, federal, and academic institutions. Examples of current research include a joint project with MDEQ and the Michigan State University Department of Civil and Environmental Engineering to develop innovative ways of using technology to process and analyze existing information in Michigan's extensive groundwater database. In addition to data collection and monitoring efforts mentioned previously, the Michigan Geological Survey performs surveys and sample collections to map Michigan's glacial geology in three dimensions on a county-by-county basis.

## Water Conservation and Efficiency Program Report

### **1. Water conservation and efficiency goals and objectives.**

Michigan adopted goals and objectives consistent with the basin-wide conservation and efficiency goals and objectives set forth in Section 4.2(1) of the Compact on December 8, 2010 (Appendix 1). These goals and objectives were developed by the former Water Resources Conservation Advisory Council (WRCAC), a stakeholder forum of executive and legislative appointees that was established for collaborative study, evaluation, and advisement for Michigan's water management and water conservation and efficiency programs. The WRCAC was eliminated by executive order of the Governor in October 2009. In 2013 the DEQ established a similar forum, the WUAC, to convene discussions and evaluation of Michigan's water management and water conservation and efficiency programs, including the conservation and efficiency program's goals and objectives.

Michigan's water conservation and efficiency goals and objectives continue to be met through the program that was initiated with the adoption of the Compact. Public comments for ways to enhance Michigan's water conservation and efficiency program have been sought, and a major theme of these comments was the importance of a collaborative council to advise on technical issues, assist in implementation, and monitor overall progress of Michigan's program. This issue was addressed by the formation of the WUAC and the charge to the WUAC is inclusive of these general issues. Other public comments on the program are being addressed through the proceedings of the WUAC and its work groups.

## **2. Water Conservation and Efficiency Program Overview.**

The foundation of Michigan's water conservation and efficiency program is the water withdrawal assessment required of all new or increased LQWs (MCL 324.32705). The assessment process evaluates proposed water withdrawals relative to environmental impact standards set for conserving and protecting the water resources of the Great Lakes Basin. Through the assessment process, the likely resource impacts of a proposed withdrawal are predicted in advance of withdrawing water and a proposed withdrawal must meet the environmental impact standard before the withdrawal can occur (MCL 324.32706, 324.32723). To gain authorization to make a LQW, water users consider conservation and efficiency of use as a means to reduce their impact. LQWs are cumulatively tracked and accounted for against the environmental standard at a sub-watershed scale, ensuring that the water resources of the basin are conserved even at a small scale (MCL 324.32706e).

Michigan's water conservation and efficiency program goes beyond the assessment process to comprise a comprehensive program of water use management. This program establishes an integrated framework of roles and responsibilities for private and public water users and governmental agencies in managing Michigan's water resources. Further, this framework creates opportunities for involvement by the public (e.g., local committees and volunteer efforts such as stream monitoring); universities (e.g., research and technical assistance); and other interested parties resulting in a latticework of shared investment in the sustainability of Michigan's lakes, streams, and groundwater.

In conjunction with annual water use reporting, all LQW owners are required to review water conservation measures applicable to their water use sector. Implementation of conservation measures is voluntary (MCL 324.32707, 324.32708). In sub-watersheds that are approaching the environmental impact standard, as a condition of approval an applicant must implement the water conservation measures they deem to be reasonable (MCL 324.32706c, 325.1004). For applications greater than 2 MGD capacity the approval condition requires that all sector or withdrawal-based conservation measures are complied with (MCL 324.32723).

**3. Water conservation and efficiency program consistency with regional objectives, and promotion of Environmentally Sound and Economically Feasible Water Conservation Measures.**

**a. Guide programs toward long-term sustainable water use.**

Michigan's LQW assessment process, environmental impact standard and cumulative impact tracking system have effected significant changes in the planning and development of LQWs. This process has forced long-term sustainable water use concepts into water management decisions, and has raised the awareness of water use and resource impact implications.

**b. Adopt and implement supply and demand management to promote efficient use and conservation of water resources.**

The MDEQ works with many water users and industry contractors through the assessment process on an individual basis to help implement withdrawals in efficient manner that reduces the impact to water resources.

**c. Improve monitoring and standardize data reporting within water conservation and efficiency programs.**

Measurement and evaluation of water conservation and water use efficiency remains difficult to track from an agency perspective. Recent improvements and consistency gains in water use data collection methods are expected to result in a better ability to identify trends in water use and account for variability.

**d. Develop science, technology and research.**

Michigan is actively developing science, technology and research on an ongoing basis through the efforts of various projects by state, federal and academic institutions. Significant investments have been made as funding is available to further these developments. The WUAC convened scientific and policy discussions amongst stakeholders and technical experts to evaluate Michigan's water management and water conservation and efficiency programs, and to identify where improvements and updates could be made.

**e. Develop education programs and information sharing for all water users.**

A dedicated educational program has not been developed in Michigan, although MDEQ and MDARD staff have made educational presentations and share information at various conferences and upon request to many varied interested parties. The WUAC and its subcommittee meetings are open to the public, and information from their proceedings is posted on the DEQ webpage. Michigan State University Extension also convenes several meetings and focus group sessions around the state primarily with agricultural water users and some for other sectors for informational purposes.

**4. Water conservation and efficiency program implementation timeline and status.**

All components of Michigan's water conservation and efficiency program have been implemented. The foundation of the program, the water withdrawal assessment process, has been fully in effect since July 2009. Sector-based water conservation measures have been developed and are in use. Facilitation materials are being developed for the formation

of local water user committees. Additional state funding resources have recently been allocated to bolster program areas of need. From the beginning, it has been acknowledged that the program would continually adapt and that the staff would be open to changes necessary for improvement and enhancement. Michigan has shown strong commitment to this forward-looking approach, and seeks to remain vigilant for the betterment of the program and to uphold the ideals of the Compact.