



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING



PHILLIP D. ROOS
DIRECTOR

November 20, 2023

VIA EMAIL

David Naftzger, Executive Director
Great Lakes St. Lawrence River Basin Water Resources Council
Secretary, Great Lakes St. Lawrence River Water Resources Regional Body
Conference of Great Lakes St. Lawrence Governors and Premiers
20 North Wacker Drive, Suite 2700
Chicago, Illinois 60606

Dear Dave:

SUBJECT: 2023 Water Conservation and Efficiency Program Annual Assessment
Submitted on behalf of the State of Michigan

On behalf of the State of Michigan, enclosed is the 2023 Water Conservation and Efficiency Program Annual Assessment being sent pursuant to and in satisfaction of the obligations included in Section 4.2 of the Great Lakes St. Lawrence River Basin Water Resources Compact. Please note that these reports are subject to revision and update during the Compact Council and Regional Body program review process.

If you have any questions, please do not hesitate to contact me.

Sincerely,

James Clift
Deputy Director

Enclosure

cc: Peter Johnson, Conference of the Great Lakes St. Lawrence Governors and Premiers
Phillip D. Roos, Director, EGLE
Emily Finnell, Great Lakes Senior Advisor and Strategist, EGLE
Jim Milne, EGLE

GREAT LAKES-ST. LAWRENCE RIVER BASIN WATER RESOURCES COMPACT WATER CONSERVATION AND EFFICIENCY PROGRAM ANNUAL ASSESSMENT

State of Michigan
November 20, 2023

This Water Conservation and Efficiency Program Annual Assessment fulfills Michigan's obligation under Section 4.2.2 of the Great Lakes-St. Lawrence River Basin Water Resources Compact (Compact).

LEAD AGENCY AND OFFICE CONTACTS

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) Water Use Program is the lead agency responsible for Michigan's water conservation and efficiency program.

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Program Contact: James F. Milne, Supervisor, Water Use Assessment Unit, Permits Section, Water Resources Division; 517-285-3253, MilneJ@Michigan.gov.

STATUS OF MICHIGAN'S WATER CONSERVATION AND EFFICIENCY 2023 GOALS AND OBJECTIVES

Michigan adopted water conservation and efficiency goals and objectives that are consistent with the Basin-wide goals and objectives. These goals and objectives were developed by the former Water Resources Conservation Advisory Council, 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. Michigan's water conservation and efficiency goals and objectives continue to be met through the water conservation and efficiency program that was initiated with the adoption of the Compact.

The Water Use Advisory Council (WUAC), established under Part 328, Aquifer Protection, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), continues to play an integral part in Michigan's water management and water conservation and efficiency program. It provides a platform for raising water withdrawal related issues and establishes an integrated framework of roles and responsibilities for all stakeholders in managing Michigan's water resources. The WUAC collaboratively studies, evaluates, and provides advice regarding Michigan's water management, conservation, and efficiency programs. It also assists on technical issues, implementation, and monitoring overall progress of Michigan's water use program. The WUAC creates opportunities for the public, university researchers, industry professionals, advocacy groups, and other interested parties to be involved and to work directly with state agencies to set policy and shape the program's direction. This promotes better understanding and cooperation to the benefit of the program and

results in shared investment in the management and sustainability of Michigan's streams, lakes, wetlands, and groundwater.

The WUAC is charged to report biennially to the Michigan Legislature, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the Michigan Department of Natural Resources (DNR), and the Michigan Department of Agriculture and Rural Development (MDARD). The WUAC released its first [biennial report](#) to the Legislature in December 2020 and its second biennial report in December 2022. The Council's recommendations have the potential to advance and improve data collection, modeling, research, and refine administration of the water withdrawal assessment process and Michigan's water conservation and efficiency program. They will also benefit many other state water management issues. In all, the 2022 report recommendations included funding requests to the Legislature totaling \$5.2 million in Fiscal Year 2022 and \$4.9 million in Fiscal Year 2023. In fiscal year 2022, \$10 million was appropriated to support the WUAC 2020 recommendations.

The WUAC's open and ongoing discussions keep agency program staff informed on the effectiveness and progress of these programs, providing valuable insight to guide Michigan's efforts to improve water conservation and efficient use of water.

In addition to the WUAC's collective work, Michigan is focused on the impacts of climate change, including building resilience to high water, reducing Michigan's carbon footprint, and addressing ageing water infrastructure. Michigan Governor Gretchen Whitmer has ordered EGLE's Office of Climate and Energy to coordinate the state's efforts to achieve carbon neutrality by 2050 through development and implementation of the MI Healthy Climate Plan, which is outlined in Executive Order 2020-182 and Directive 2020-10. The MI Healthy Climate Plan, released in April 2022, lays out a broad vision and roadmap to carbon neutrality. The Plan is meant to protect public health and the environment while also helping to develop new clean energy jobs by making Michigan fully carbon-neutral by 2050.

In March 2022, Governor Gretchen Whitmer signed the bipartisan [Building Michigan Together Plan](#) (Public Act 53), the state's largest-ever infrastructure investment at \$4.7 billion, including more than \$1.9 billion to be administered by EGLE over two fiscal years from the federal American Rescue Plan Act (\$1.3 billion), the federal Infrastructure Investment and Jobs Act (\$470 million), and the state's general fund (\$130 million). This includes \$1.27 billion allocated to the state's drinking water and wastewater and Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF). Through those revolving funds, EGLE approved more than \$932 million in loans in Fiscal Year 2023 for 71 wastewater, stormwater, and drinking water infrastructure projects – compared to \$352 million and 29 projects just two years ago.

Efforts continue to assess Michigan's new and existing climate, energy, and water infrastructure programs and initiatives to identify opportunities to further advance Michigan's water conservation goals and objectives.

Michigan also continues to implement the Michigan Water Strategy, an all-inclusive vision and blueprint to ensure Michigan's water resources continue to support healthy ecosystems, communities, and economies for current and future generations. Implementation efforts focus on building capacity for shared governance for water and water stewardship.

WATER CONSERVATION AND EFFICIENCY PROGRAM OVERVIEW

Michigan's water conservation and efficiency program is founded on the water withdrawal assessment requirement that applies to all new or increased large quantity withdrawals (LQWs). The assessment process evaluates proposed water withdrawals relative to the environmental impact standards set for conserving and protecting the water resources of the Great Lakes Basin.¹ The likely resource impacts of a proposed withdrawal must meet the environmental impact standard and be authorized by EGLE before the withdrawal can begin.² If the withdrawal is likely to exceed the environmental impact standards, the applicant must reduce their withdrawal or show by site-specific data and analysis that their withdrawal's impact won't exceed the standard. 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.³

Michigan's water conservation and efficiency program goes beyond the assessment process to include 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 that is required for LQWs, owners are required to review water conservation measures applicable to their water use sector. Implementation of conservation measures is voluntary.⁴ In sub-watersheds that are approaching the environmental impact standard, to have a withdrawal approved, an applicant must implement the water conservation measures they deem to be reasonable.⁵ For applications greater than two million gallons per day (MGD) capacity, it is required that all sector or withdrawal-based conservation measures are complied with as a condition of approval.

¹ Michigan Compiled Laws (MCL) 324.32705

² MCL 324.32706b, 324.32706c, 324.32723

³ MCL 324.32706e

⁴ MCL 324.32707, 324.32708

⁵ MCL 324.32706c, 325.1004

WATER CONSERVATION AND EFFICIENCY PROGRAM CONSISTENCY WITH REGIONAL OBJECTIVES, AND THE PROMOTION OF ENVIRONMENTALLY SOUND AND ECONOMICALLY FEASIBLE WATER CONSERVATION MEASURES

Compact's Water Conservation and Efficiency Objectives	Summary of Current Efforts
I. Guide programs toward long-term sustainable water use.	<ul style="list-style-type: none"> • Regulatory framework that requires resource conservation. • Adaptive programs that integrate new data, methods, and policies in response to changing environmental conditions. • Develop centralized comprehensive groundwater database to inform decision-making.
II. Adopt and implement supply and demand management to promote efficient use and conservation of water resources.	<ul style="list-style-type: none"> • Sub-watershed scale cumulative impact limits for withdrawals. • Notification of nearby water users and local government when limits are approached. • Restrictions on withdrawals when local impact would exceed limit or is unreasonable. • Drinking water infrastructure grants to communities involving water main work, service line replacements, plant enhancements, and other upgrades. • Launched Retired Engineers, Scientists, Technicians, Administrators, Researchers, and Teachers (RESTART) program to provide assistance to institutions, government agencies and businesses with 500 or fewer full-time employees with on-site energy and sustainability assessments.
III. Improve monitoring and standardize data reporting within water conservation and efficiency programs.	<ul style="list-style-type: none"> • Increased water use reporting data quality. • Continuing efforts to bring into compliance previously unreported water uses. • Outreach efforts continue with property owners, well drillers, and other interested parties to increase awareness of Part 327's requirements and increase compliance. • Continue to improve usability of new database for agricultural water users. • Continue asset management planning initiatives, including a grant program administered by EGLE to further mature local community's asset management programs.
IV. Develop science, technology, and research.	<ul style="list-style-type: none"> • Ongoing state/federal glacial geology mapping partnership.

	<ul style="list-style-type: none"> • Approximately 200 streamflow measurements per season in 52 water use management areas. • Increased use of site-specific data and regional withdrawal impact models. • Funded research study to identify innovations and technological advancements in water conservation and efficiency best management practices for business and industry sectors. • Dedicated funding source for research and innovation through the Michigan Great Lakes Protection Fund.
<p>V. Develop education programs and information sharing for all water users.</p>	<ul style="list-style-type: none"> • Additional water use data made available online. • Water use data published in media outlets. • Integrated assessments provide on-site, direct assistance services to help businesses and communities to meet their sustainability goals. • Funded pilot program to build capacity to deliver existing education programs and trainings on water efficiency for the agricultural sector including animal industries. • Annual agriculture irrigation practices workshops. • Generally Accepted Agricultural and Management Practices for irrigation water use continue to be reviewed and updated on a yearly basis. This assures the most up-to-date standards are in place for agricultural water use at Michigan’s farms. • Michigan Water School available as online modules to educate and train local appointed and elected officials on water management. • EGLE continues the interagency work group to fund development of statewide collaborative Great Lakes education and outreach strategies and programming on water stewardship. • Hosted annual Great Lakes Freshwater week to celebrate water resources and encourage Michigan residents to experience water, become educated about water resources, take action to become water stewards, and promote water workforce development. • Hosted a webinar to promote water conservation and efficiency in and around the home. • Partnered with EPA WaterSense Program and hosted a Fix a Leak week.

	<ul style="list-style-type: none"> Completed Phase 2 of From Students to Stewards Initiative to integrate water literacy principles into K-12 school curriculum and build a culture of stewardship; 13 schools are participating in 2022-2023 academic year. A total of 22 schools have participated in program.
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I. Guide programs toward long-term sustainable water use.

Michigan continues to guide programs toward long-term water sustainability through the implementation of its water withdrawal assessment program. 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 driven the integration of long-term sustainable water use concepts into water management decisions and has raised the awareness of water use and resource impact implications. The LQW assessment process is designed to be adaptive and able to respond to changing environmental conditions. Additional hydrologic data is continually being collected and combined with refined models to inform LQW assessment methods and policies to support better decision making and ensure long-term sustainable water use.

Additionally, the WUAC works collaboratively to continuously assess and improve the program based on new science, data, advancements in modeling and new technology. The WUAC created the Water Conservation and Efficiency Committee (WCEC) as a standing committee under the WUAC. The WCEC advises and makes recommendations to the WUAC on opportunities to improve and enhance Michigan’s water conservation and efficiency program and support sustainable water use. The WCEC is working with state, academic, industry, and utility partners on projects and programs that advance water conservation and efficiency within Michigan’s water sectors through best practices, improve public education on Great Lakes water conservation; accounting and measuring water and energy savings from water infrastructure improvements; and building public private partnerships with energy utilities to promote technical assistance and residential programs.

As part of the recommendations included in the WUAC 2020 biennial report, EGLE’s Office of the Great Lakes (OGL) released a request for proposals for a project to identify innovations and technological advancements in water conservation best practices that can benefit Michigan’s water sectors. The project will summarize existing Michigan water sectors’ processes to review and/or change water conservation best management practices (BMPs). The project will also research innovation and technological advancements in water sector water conservation BMPs and their impacts within the business and industry sectors in other Great Lakes states and provinces and other innovative jurisdictions. This grant will be co-funded by the Michigan Great Lakes Protection Fund (MGLPF) and funding appropriated by the Michigan Legislature to EGLE through the American Rescue Plan Act to support implementation of the 2020 WUAC recommendations.

In addition, EGLE will build more capacity to deliver existing education programs and trainings on water efficiency for the agricultural sector including animal industries. Funding was appropriated by the Michigan's Legislature to support implementation of the 2020 WUAC recommendations. Educators are planned to start their work in late 2023 through a contract between EGLE, MDARD and Michigan State University Extension.

EGLE released a request for proposals as part of the Michigan Clean Diesel Program to replace diesel equipment, vehicles, and engines with zero tailpipe emission, hybrid, or alternative fuel vehicles, engines, or equipment. One of the types of equipment targeted are diesel agricultural irrigation pumps. Pumps replaced as part of this program will deliver carbon emissions reductions and improve efficiency of water usage.

Current state policy initiatives are focused on climate, energy, and water infrastructure investments which have resulted in more opportunities to guide programs toward sustainable water use. Efforts are ongoing by many actors across the state to implement Michigan's Water Strategy, the 30-year roadmap to ensure the viability and sustainability of Michigan's water resources for current and future generations. For example, in 2022, EGLE formed an interagency work group to develop a concept for creating a collaborative statewide Great Lakes education and outreach program focused on water stewardship. The group continued its work in 2023 and sought input from external partners delivering on the ground programming to refine the program concept and funding opportunity to address highest priority needs. Creation of a statewide education and outreach program on water conservation was also recommended in the WUAC's December 12, 2014, report.

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

EGLE works with many water users and industry contractors on an individual basis throughout the assessment process to ensure withdrawals are implemented in an efficient manner. This assessment process incorporates both supply-side management of the water resources using a specialized database that tracks cumulative impacts of withdrawals at the sub-watershed level, and demand-side management by notifying all affected water users when withdrawal limits begin to be approached in an area. Michigan's common law reasonable use doctrine is the legal foundation underlying the assessment process and promotes the conservation and efficient use of water in its own way when conveying to water users that water is a shared, finite resource under this doctrine. Users are encouraged to conserve as a matter of routine, as opposed to conserving only when required, such as in the event of a conflict situation when supplies are limited or overtaxed. The LQW assessment process is designed to be adaptive and able to respond to changing environmental conditions.

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

EGLE and MDARD collect annual water use reporting which includes reporting of water conservation and efficiency best practices. Some water use sectors (e.g., industry, public water supply) have better capabilities for accurate water use reporting because they meter their withdrawals and discharges. Measurement and evaluation of water conservation and water use efficiency, and changes over time, remain difficult to track from an agency perspective based on water use reporting data alone. Ongoing improvements to electronic data collection systems and databases and use of new tools are resulting in better consistency in water use data collection, and a better ability to identify trends in water use and account for variability. EGLE compliance staff continue to work on a case-by-case basis with property owners, well drillers, consultants, and other interested parties to bring newly discovered unauthorized LQWs and other violations of Part 327 into compliance.

State and federal agencies, research institutions, and stakeholders continue to assess available groundwater data and develop strategies for effective data integration to advance coordinated water monitoring programs and improve decision making. EGLE has prioritized investments in staff and resources to improve its technology and database management. Currently, data have been collected and are frequently compartmentalized to meet the needs of narrowly defined programs. Therefore, existing data are found in many locations and formats. Typically, the data are housed by categories of surface water (quantity and quality), groundwater (water levels, aquifer properties, and quality), geologic data (stratigraphy), climate data (precipitation, temperature, and evapotranspiration).

The WUAC Data Collection Committee developed recommendations for the biennial report to the legislature for the creation of an Integrated Water Management Database. The purpose of the database would be to increase the effectiveness and efficiency of all water related programs in Michigan by making all these data easily accessible and in a common geospatial format. This effort should include obtaining groundwater data currently only available in paper form (e.g., monitoring well data collected under Part 115, Solid Waste Management; Part 201, Environmental Remediation; or Part 213, Leaking Underground Storage Tanks, of NREPA). Michigan's water programs rely on sophisticated models and technical analyses to accomplish their goals. These all require high quality data, and enough data to adequately define water resources in Michigan to make proper management decisions.

As part of the effort to make data more accessible, the Michigan Hydrologic Framework (MHF), another recommendation from the WUAC, would facilitate the creation of models to support statewide sustainable water management of both surface water and groundwater. The MHF recognizes the critical importance of accessing a wide range of water-related data. The MHF will be linked to the EGLE Groundwater Data Management System.

Multiple divisions in EGLE are collaborating in developing the Michigan Groundwater Data Warehouse Lean Process Improvement project. EGLE's Groundwater Data Management System will provide a common location and format for groundwater data submitted by EGLE staff and external parties. The data management system will be expanded in future phases to include other environmental media besides groundwater. The Groundwater Data Management System has a lot of overlaps with the Integrated Water Management Database mentioned previously. The Michigan Integrated Water Management Database project will be incorporated into the implementation of the Michigan Hydrologic Framework project. The data management system will be linked to Geographic Information System (GIS) data layers for visual presentation of data as well as being linked to other external databases (e.g., federal agencies' databases).

Responses to the request for proposals for the Groundwater Data Management System are under review by EGLE and the Michigan Department of Technology, Management and Budget. Work on the Groundwater Data Management System is expected to begin in the first quarter of calendar year 2024.

The WUAC recommendations are consistent with Michigan's Water Strategy, which also includes a recommendation to create a coordinated strategy for groundwater data collection, including a data management system. Such data is a critical measurement and indicator of the effects of water use and the effects of water conservation and efficiency practices. The WUAC 2022 recommendations, in most cases, require Michigan's legislature to appropriate additional funding in order to be implemented.

Other efforts underway to improve data collection include the work of the Michigan Infrastructure Council and the Michigan Water Asset Management Council. Both Councils were created in statute to develop and direct implementation of a statewide strategy to standardize and streamline data collection, storage, and analysis related to infrastructure. EGLE continues to provide financial support for asset management planning for water utilities through grants under its drinking water asset management program, in addition to providing Stormwater, Asset Management, and Wastewater Program (SAW) grants and technical assistance.

IV. 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. Michigan is funding several research projects in high water use areas to better understand the groundwater-surface water interaction. This data will be used to improve the assessment and forecasting of new water uses' impact on the resource through increased use of site-specific data and more localized regional models. Increasing and improving the quality of data is imperative to effectively promote proactive conservation and efficient use to water users before shortage issues occur. Michigan's Quality of Life Agencies (EGLE, MDARD, and the DNR)

have been implementing several key research priorities from the WUAC's December 12, 2014, final report including:

Temperature Logging Sensor Studies and Research to Water Withdrawal on Fish Communities: The DNR, Fisheries Division, deploys temperature loggers to study stream temperatures and conducts fish population surveys in Michigan's lakes and streams.

The DNR, through its Partnership for Ecosystem Research and Management (PERM) with Michigan State University (MSU), supports studies to evaluate the impacts of climate and the effects of cumulative withdrawal in a stream network. The project titled, "*Improving Michigan's Water Withdrawal Assessment Tool (WWAT)*" has the following objectives: 1) improve performance of WWAT by including cumulative withdrawals; and 2) determine effects of high-capacity groundwater withdrawal on downstream warming trends in streams. The research is funded by the United States Fish and Wildlife Service, State Wildlife Action Plan through the DNR, and by the United States Geological Service (USGS), 104b dollars through the Institute for Water Research. Work in 2023 focused on characterizing changes in stream flow over time and associating patterns in stream flow with patterns in precipitation for select watersheds. This work is ongoing and will be supported further in 2024. Downstream streamflow accounting and depletion research is proposed and in need of funding in 2024 and 2025.

USGS Monitoring Partnerships: EGLE and the USGS have joint funding agreements for operating stream gages and monitoring wells, as well as collecting miscellaneous stream flow measurements. The WUAC report contains recommendations to Michigan's legislature to provide continued long-term funding for stream gages, miscellaneous flow measurements, and monitoring wells. USGS Upper Midwest Water Science Center staff are developing a regional groundwater model for Calhoun County in south central Lower Michigan. USGS staff from the Ohio-Kentucky-Indiana and the Upper Midwest Water Science Centers are collaborating with EGLE and the Michigan Geological Survey (MGS) to collect additional geologic and groundwater data from the Michindoh Aquifer (a glacial aquifer underlying portions of Michigan, Indiana, and Ohio) and to develop a groundwater model for the Michindoh Aquifer.

Geologic and Groundwater Research

In October 2022, the MGS was successful in obtaining an annual appropriation by the Michigan Legislature of \$3.0 million per year to map and support the identification and protection of Michigan's geologic resources. Today, approximately 8% of Michigan's geology has been mapped at some level of detail. Some more specifically selective areas have been mapped in three dimensions (3D). The detailed 3D maps include detailed subsurface geology associated with MGS drilling results to assess the geologic section for water and other natural resources. The MGS engaged EGLE and the DNR to determine their areas of need and interest. Based on this input, the MGS conducted mapping in Cass, Ottawa, and Allegan counties, and more recently completed Barry and Calhoun counties.

In 2023, the MGS continued to assess and compile the geology in Allegan, Ottawa, and Kalamazoo Counties and has published these county maps. The maps are available for all citizens along with technical reports that present additional data on groundwater gradients, depth to bedrock, location of water wells and source of water, bedrock or glacial, and potential for sand and gravel resources in the near surface material. The MGS has been gathering this data with well borings, drill core and rotosonic holes, the majority drilled from surface to bedrock, to compile the total geologic package. The MGS has recently begun to install monitoring wells in selective drill holes to monitor the groundwater system in Ottawa and Allegan counties. These wells are being proposed to be in the National Groundwater Monitoring Network (NGWMN). The MGS will continue to contact and interact with citizens, stakeholders, and Michigan state agencies through presentations to identify the areas or regions that need valid geologic data to support the natural resources.

The MGS will be mapping and drilling in Muskegon County and will begin reviewing other areas of the state needing geologic data to support scientific decisions. The MGS is also working on YouTube videos to explain some geologic areas of interest in Michigan for use by all. The MGS offers several video series regarding topics such as drilling operations, water resources in Michigan, introductory geology lessons specific to the state, and more.

With the implementation of media-based outreach, the MGS has been able to share valuable information with the public regarding Michigan's resources and our organizational ongoings in an accessible format to nearly 50,000 users during the short lifetime of the YouTube channel. The MGS will continue to release content to inform the public as interest and engagement continues to increase and encourages topics of interest from users of the data format.

The discovery of per- and polyfluoroalkyl substances (PFAS) at locations across the state has required expedited geologic and aquifer mapping and data compilation to identify and protect potential receptors from exposure to the contaminants. The Michigan PFAS Action Response Team (MPART) contracted with the MGS to complete this mapping and as of June 30, 2023, had prepared geologic and aquifer mapping packages for a total of 31 sites and compiled well data for an additional 37 sites. Under the geological mapping contract, a total of 68 focused 2- to 5-mile radius area sites have been completed by the MGS's efforts. As part of the contract, the MGS is also correcting and completing digital records in Wellogic. As of the end of June 2023, the MGS had corrected and/or input missing data for 780,112 well logs.

The Michigan Great Lakes Protection Fund exists as a dedicated funding program to support research to improve scientific understanding of Great Lakes issues. The fund is administered by the Michigan Office of the Great Lakes.

- V. Develop education programs and information sharing for all water users.** Michigan has several new and ongoing outreach and education programs that provide information about water conservation and efficiency and promote water stewardship principles and practices. Efforts are also ongoing to promote water stewardship through effective statewide communication strategies to improve the public's understanding of their impact on water resources and actions and behaviors that support responsible water use.

Presentations, Conferences, Webinars, and Trainings

EGLE and MDARD staff make educational presentations at meetings and various conferences as well as share information upon request, to a variety of interested parties. The WUAC and its subcommittee meetings are open to the public and provide educational opportunities and information sharing for water users and water managers about Michigan's ongoing program implementation. Meeting notes and informational materials from the WUAC proceedings are posted on an EGLE webpage.

EGLE continues to increase public awareness of water use information and access to data by publishing additional water use data online, holding public information meetings, and utilizing various media outlets. In addition, EGLE provides webinars, conferences, training, and information for businesses and industry to support enhanced water conservation and efficiency.

Outreach for Agricultural Irrigators

MSU Extension convenes meetings around the state with agricultural water users to share information about conservation practices for irrigation.

Fix a Leak Week

EGLE's Office of the Clean Water Public Advocate promotes the United States Environmental Protection Agency's (USEPA) Fix a Leak Week each March to raise awareness about common household plumbing leaks and resources to fix them. Fixing leaks can save money, energy, and reduce health risks for individuals and communities. This event focuses on:

- Sharing educational and how-to materials about the importance of finding and repairing household water leaks.
- Promoting water conservation resources available to Michigan residents.

Source Water Protection Webinar Series

EGLE has begun hosting a webinar series on Source Water Protection topic in partnership with Michigan State University's Institute of Water Research and Michigan Rural Water Association (MRWA). The series titled, Drinking Water: Protecting MI Source, hosted three webinars as of October 2023. The series kicked off on May 23, 2023, with a presentation titled "Healthy Forests Protect Drinking Water" featuring the Forests to MI Faucet Michigan Department of Natural Resources discussing how this program promotes clean source water. The second webinar in the series, "Drops of Resilience: Empowering Communities through Source Water Plans," featuring MRWA's presenting on the development and

implementation of source water protection plans. The third webinar hosted to date, “Blooming Waters: Understanding Harmful Algal Blooms and Safe Drinking Water,” featured EGLE’s Water Resources and Drinking Water and Environmental Health Division’s experts on cyanotoxins and sampling efforts around the state to identify them in the source water at community water supplies across Michigan. The events have been attended by steadily increasing audiences of more than 300 attendees by community water supplies, watershed organizations, local public health staff, consultants, the public and others to learn more about important topics related to source water protection. Future webinars will continue to feature current and relevant topics with case studies and examples of how source water programs are working in other states leading up to EGLE’s Source Water Protection Conference featuring an expanded drinking water focus and celebration of the Safe Drinking Water Act’s 50th Anniversary planned for the fall of 2024.

Michigan Water School

MSU Water Resources Institute, MSU Extension, and Michigan Sea Grant continue to offer the Michigan Water School now available in an online module series. This program is focused on educating local appointed and elected officials and staff about critical, relevant information needed to understand Michigan’s water resources to support sound water management decisions. The program includes modules on water quantity, water quality, water finance and planning, and water policy issues. Topics covered include the Blue Economy, fiscal benefits of water management, incorporating water into local planning and placemaking, resources to help address water problems, water policy at the federal, tribal, state, and local levels.

From Students to Stewards Initiative

In 2020, EGLE launched an initiative to integrate water literacy principles in K-12 school curriculum, in partnership with the Michigan Departments of Labor and Economic Opportunity, Education, and Natural Resources, along with numerous community partners. This effort, called the From Students to Stewards Initiative, is intended to develop a life-long culture of stewardship by integrating Great Lakes and freshwater literacy principles into standards-based school curricula through place-based, authentic-experience approaches to improve stewardship behavior and provide an engaging context to motivate school performance. This initiative will teach STEM concepts using place-based, problem-based, and project-based approaches with a focus on Great Lakes literacy principles to foster the next generation of water stewards, leaders, skilled workers, and decision makers needed to solve complex water issues in a changing world. Six Michigan school districts participated in Phase 1 of the program to integrate water literacy principles and place-based education into school curricula and their continuous improvement plans. The program includes a toolkit and roadmap that other schools can use to develop their own Great Lakes-based curriculum to cultivate the next generation of water stewards.

EGLE secured additional funding from the USEPA Great Lakes Restoration Initiative through the Great Lakes Restoration Initiative Program to implement Phase 2 of the From Students to Stewards Initiative in the 2022 and 2023 academic years. Phase 2

supported grants to 16 schools; interaction between Phase 1 and 2 cohorts, and additional program evaluation. A total of 22 schools have participated in the program.

Great Lakes Fresh Water Week

EGLE and its partners hosted the annual Great Lakes Fresh Water Week June 3-11, 2023, to celebrate Michigan's water resources, encourage Michigan residents to experience water resources, become educated about water resources, and take action to become water stewards. The event focused on building the water workforce. One of the events was a webinar, hosted by EGLE, that assembled a variety of experts from organizations across Michigan to discuss ways to utilize new tools, resources, programs, and partnerships to support filling the water talent pipeline. In addition, many Michigan organizations, regional and local units of government, and other community partners hosted events to encourage water stewardship.

Water Conservation Webinar

EGLE hosted a webinar about in-home water conservation in August 2023. The webinar featured presentations about the USEPA's Water Sense program, indoor water fixtures, home irrigation and water-efficient landscaping, especially in the context of climate change.

EGLE Classroom

EGLE helps educators, youth, and families access resources they need to learn about Michigan's environment, EGLE's work to protect it, and what they can do to participate in that work through EGLE Classroom. Operated by EGLE's Environmental Education program, EGLE Classroom provides Michigan-based environmental curriculum, free hands-on resources to classrooms, professional development opportunities for educators, and video lessons on Michigan's environment and environmental careers. EGLE Classroom also administers the Michigan Green Schools certification program and hosts an annual Earth Day educational event. To view EGLE's environmental education opportunities or to borrow a hands-on activity from the [Environmental Education Lending Station](https://www.michigan.gov/EGLEclassroom), visit [Michigan.gov/EGLEclassroom](https://www.michigan.gov/EGLEclassroom) and follow #EGLEClassroom on social media.

Integrated Assessments for Sustainability

EGLE's Sustainability Section provides a variety of on-site, direct assistance services to help businesses and communities meet their sustainability goals. Benefits of the integrated assessments include an increase of efficiencies and cost savings, elimination/minimization of waste streams, conservation of energy and water resources, and mitigation of risks and the potential for noncompliance.

EGLE also holds a Sustainability Webinar series promoting sustainability practices targeted toward businesses and industries in the water sector.

EGLE has reinstated its program formerly known as RETAP (Retired Engineer Technical Assistance Program) with a new program called Retired Engineers,

Scientists, Technicians, Administrators, Researchers, and Teachers (RESTART). RESTART will provide assistance to institutions, government agencies and businesses with 500 or fewer full-time employees with on-site energy and sustainability assessments.

Forest to Mi Faucet

The DNR has launched a three-year initiative called Forest to Mi Faucet. The DNR Forest Stewardship Program is leading twenty partners in connecting conservation groups to municipal water utilities and educating woodland owners about the relationships between forests and drinking water. Forest to Mi Faucet will strategically plant more than 800,000 trees to maintain or enhance water quality benefits.

The project builds on the federal Forests to Faucets 2.0 analysis of priority watersheds for protecting surface drinking water. The analysis, detailed in an interactive story map, identifies watersheds with potential for forest protection or restoration.

Forest to Mi Faucet has six components:

1. Help 15+ municipal water utilities implement their source water protection plans.
2. Protect forests in important watersheds through conservation easements, nature preserves, etc.
3. Manage forests better with forest certification and Master Loggers using best management practices.
4. Expand forests by planting 80,000 trees in strategic urban and rural riparian zones to reduce pollution runoff.
5. Ecological restoration of forests for water quality with prescribed fire and reducing invasive species.
6. Educate landowners and the public about connections between forests and their drinking water.

The goal of Forest to Mi Faucet is to build the foundation for a program to provide payment for ecosystem services where forest owners are compensated for practices that provide clean water. Forest to Mi Faucet is funded by United States Department of Agriculture, Forest Service. All partners are equal opportunity providers and employers. More information is at www.Michigan.gov/ForestToMiFaucet.

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 in effect since 2009. Sector-based water conservation measures are required to be reviewed annually by all large water users. Additional state funding resources have recently been allocated to bolster program areas of need. From the

beginning, it has been recognized that the program would continually adapt based on new science, data, research, advancements in modeling, and technological innovation to improve and enhance sustainable water use. Michigan has shown a strong commitment to this forward-looking approach, continuing to improve its program, and remains dedicated to the betterment of the program and to upholding the ideals of the Compact.

Michigan is advancing new policies and programs to address climate, energy, and water that will further impact both state and Compact goals. This focus on climate, energy, and water presents new opportunities to identify specific innovative opportunities to improve Michigan's water conservation and efficiency program by building connections between current and new policies and programs and technological innovations. EGLE and the WUAC Water Conservation and Efficiency Committee are working collaboratively to identify strategies to integrate water stewardship into climate, energy, and water infrastructure policies, programs, including innovative technologies. These efforts will support the WUAC charge to identify priority recommendations for improvements to Michigan's Water Use Program and Water Conservation and Efficiency Program. In addition, new state policies and offices focused on environmental justice and clean water advocacy are improving state program administration and outreach and engagement efforts to address goals of equity, diversity, and inclusion.

Appendix 1 provides a full list of the water conservation and efficiency goals and objectives of Michigan's water conservation and efficiency program.

APPENDIX 1: MICHIGAN WATER CONSERVATION AND EFFICIENCY PROGRAM

Water Conservation and Efficiency Goals and Objectives

Goals

1. Ensuring improvement of the waters and water dependent natural resources;
2. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;
3. Retaining the quantity of surface water and groundwater in the Basin;
4. Ensuring sustainable use of waters of the Basin; and,
5. Promoting the efficiency of use and reducing losses and waste of water.

Objectives

1. Utilize Michigan's Water Use Program and Water Withdrawal Assessment Process to guide long-term sustainable water use.
 - a. The programs will be adaptive, goal-based, accountable, and measurable.
 - b. Continue to develop and implement programs openly and collaboratively, with local stakeholders, Tribes and First Nations, governments, and the public.
 - c. Prepare and maintain long-term water demand forecasts.
 - d. Develop long-term strategies that incorporate water conservation and efficient water use practices.
 - e. Review and build upon existing planning efforts by considering practices and experiences from other jurisdictions.
2. Adopt and implement supply and demand management to promote efficient use and conservation of water resources.
 - a. Maximize water use efficiency and minimize waste of water.
 - b. Promote appropriate innovative technology for water reuse.
 - c. Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies.
 - d. Provide incentives to encourage efficient water use and conservation.
 - e. Consider water conservation and efficiency in the review of proposed new or increased uses.
 - f. Promote investment in and maintenance of efficient water infrastructure.
3. Improve monitoring and standardize data reporting among State and Provincial water conservation and efficiency programs.

- a. Improve the measurement and evaluation of water conservation and water use efficiency.
 - b. Encourage measures to monitor, account for, and minimize water loss.
 - c. Track and report program progress and effectiveness.
4. Develop science, technology, and research.
- a. Encourage the identification and sharing of innovative management practices and state of the art technologies.
 - b. Encourage research, development, and implementation of water use and efficiency and water conservation technologies.
 - c. Seek a greater understanding of traditional knowledge and practices of Basin First Nations and Tribes.
 - d. Strengthen scientific understanding of the linkages between water conservation practices and ecological responses.
5. Develop education programs and information sharing for all water users.
- a. Ensure equitable public access to water conservation and efficiency tools and information.
 - b. Inform, educate, and increase awareness regarding water use, conservation, and efficiency and the importance of water.
 - c. Promote the cost-saving aspect of water conservation and efficiency for both short and long-term economic sustainability.
 - d. Share conservation and efficiency experiences, including successes and lessons learned across the Basin.
 - e. Enhance and contribute to regional information sharing.
 - f. Encourage and increase training opportunities in collaboration with professional or other organizations to increase water conservation and efficiency practices and technological applications.
 - g. Ensure that conservation programs are transparent and that information is readily available.
 - h. Aid in the development and dissemination of sector-based best management practices and results achieved.
 - i. Seek opportunities for the sharing of traditional knowledge and practices of Basin First Nations and Tribes.

APPENDIX 2: LINKS TO MICHIGAN WATER CONSERVATION AND EFFICIENCY DOCUMENTS

[Michigan Water Strategy](#)

[2020 Water Use Advisory Council Biennial Report to the Michigan Legislature](#)

[2022 Water Use Advisory Council Biennial Report to the Michigan Legislature](#)