

Background

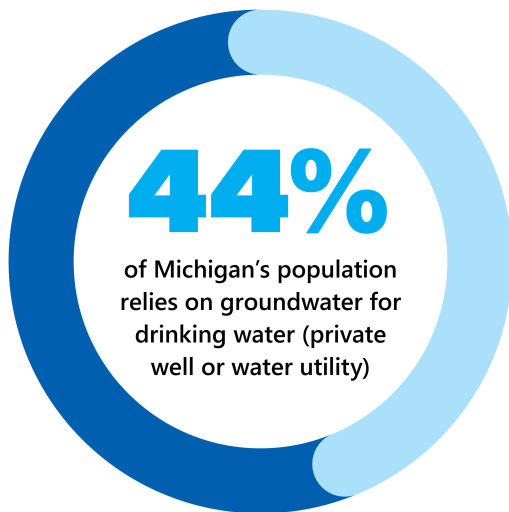
The Great Lakes Commission (GLC) passed a policy resolution in March 2024 which called upon partners and agencies to engage with the GLC toward a better understanding of the current state of groundwater management in the Great Lakes basin.¹ Then, in December 2024, the GLC received funding from the Joyce Foundation to develop groundwater management summaries for each Great Lakes jurisdiction, building upon previous reports supported by the Joyce Foundation.² This report summarizes groundwater management in Michigan, both statewide and within the Great Lakes basin.

State Agency Authority

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) houses a Water Resources Division and a Geologic Resources Management Division that issue groundwater permits.³ EGLE and the Michigan

Department of Health and Human Services (MDHHS) are responsible for managing drinking water supply. **Table 1** highlights the state agencies in Michigan which play a role in managing groundwater in the state.

Michigan groundwater statute casts reasonable use of groundwater in terms of nuisance and abatement. (MCL § 600.2941(2)). When a well is declared a nuisance, a court “shall specify in some practicable manner the daily amount or volume of water that may be used or allowed to flow therefrom.” (MCL § 600.2941(3)).



¹ Great Lakes Commission. March 6, 2024. [Understanding Impacts to Great Lakes Agriculture and Water Use Under Changing Climate Conditions.](#)

² The Joyce Foundation. [Groundwater Governance in EPA Region 5.](#)

³ Michigan Department of Environment, Great Lakes, and Energy. [Water Use Program.](#)

Table 1. Michigan state agency authorities on groundwater management priority areas.

Agency	Michigan Dept. of Environment, Great Lakes, and Energy	Michigan Dept. of Health and Human Services	Michigan Dept. of Agriculture and Rural Development
Groundwater Priority Area	Groundwater withdrawal and discharge permitting Groundwater use, availability, and ecological impacts Contamination investigation and remediation Drinking water supply	Drinking water supply monitoring and outreach	Agricultural pesticide and fertilizer contamination Groundwater use data collection

Groundwater Science and Knowledge Production

Michigan EGLE developed a Water Withdrawal Assessment Tool (WWAT) to assess the impacts of pumping groundwater on surface water features.⁴ Beginning in 2009, use of the WWAT is required to provide an estimate of the impact of a well on nearby stream and river flows.

Groundwater users are registered and new withdrawals are regulated by cumulative impact limits. However, groundwater quality appears to be increasingly impacting available quantity. The Michigan Geological Survey (MGS) is currently housed at Western Michigan University and provides data on geology and hydrogeology.⁵ The MGS also maintains a GIS data map that includes the location of water wells throughout the state.⁶ The U.S. Geological Survey (USGS) has two cost-share mapping programs that have been used for the limited mapping and drill-core information that is available, EDMAP⁷ and STATEMAP.⁸ Additionally, partnerships between MGS, USGS, and EGLE produce various mapping and groundwater data collection efforts through specific projects joint-funded by the Michigan Legislature.

EGLE is also partnering with USGS to upgrade surface water and groundwater monitoring wells through the Hydrologic Enhancement for Michigan (HEMI) project.⁹ Michigan Wellogic well records, streamflow and stream temperatures, and other water use and climate data will be reviewed as part of the HEMI project to identify where additional monitoring and data may be needed to better manage the water resources of the state.

Legislation and Regulations

Historically, the primary source of water law in Michigan has been case law. In *Michigan Citizens for Water Conservation v. Nestlé Waters North America Inc.* (2005), the Michigan Court of Appeals noted that Michigan law on groundwater use applies a “reasonable use balancing test” to “ensure the greatest possible access to water resources for all users while protecting certain traditional water uses.”

⁴ Michigan Department of Environment, Great Lakes, and Energy. [Water Withdrawal Assessment Tool.](#)

⁵ Michigan Geological Survey. [Geological Data.](#)

⁶ Michigan Geological Survey. [MGS Water Well & Parcel Viewer.](#)

⁷ U.S. Geological Survey. [EDMAP.](#)

⁸ U.S. Geological Survey. [STATEMAP.](#)

⁹ Michigan Department of Environment, Great Lakes, and Energy. [Hydrologic Enhancement for Michigan \(HEMI\).](#)

The *Michigan Citizens* court explained that courts considering groundwater disputes should apply a balancing test that considers several factors on a case-by-case basis, including:

- (1) the purpose of the use, (2) the suitability of the use to the location, (3) the extent and amount of the harm, (4) the benefits of the use, (5) the necessity of the amount and manner of the water use, and (6) any other factor that may bear on the reasonableness of the use.

Michigan requires registration for withdrawals with the capacity to exceed 100,000 gallons per day (GPD) in any consecutive 30-day period (MCL § 324.32705(1)). In 2006, Michigan enacted a law that requires all new withdrawals to pass an assessment prior to use and meet an environmental impact standard that prohibits causing adverse impact to lakes, rivers, and streams in order to obtain a registration. Michigan also has a permitting system with more rigorous review for the largest withdrawals that exceed 2 million gallons per day (MGD) capacity (MCL § 324.32723(1)(a)). Annual water use reports are required to be submitted for all registered and permitted withdrawals (MCL § 324.32707(1)).

Article IV, Section 52 of the Michigan Constitution states that “The conservation and development of the natural resources of the state are hereby declared to be of paramount public concern in the interest of the health, safety and general welfare of the people. The legislature shall provide for the protection of the air, water, and other natural resources of the state from pollution, impairment, and destruction.” Although, neither the Michigan courts or legislature have yet extended the public trust doctrine to groundwater. In *Bott v. Natural Resources Commission* (1982), the Michigan Supreme Court stated that the “public trust doctrine applies only to navigable waters and not to all waters of the state

Great Lakes Basin Groundwater Management

Michigan enacted the terms of the Great Lakes-St. Lawrence River Basin Water Resources Compact (Compact) in MCL § 324.34201 in July 2008. Michigan EGLE (formerly the Michigan Department of Environmental Quality) is the lead agency responsible for Michigan’s water management and water conservation and efficiency programs.

Registration is required for users with the capacity to withdraw 100,000 GPD up to 2 MGD (except hydroelectric power production and contamination remediation withdrawals);¹⁰ a \$200 annual fee is assessed to some users.¹¹ Since 2006, a permit is required for users seeking new or increased capacity to withdraw over 2 MGD; a \$2,000 permit application fee is required.

Per the Compact, its party states commit to the development of a collaborative strategy to guide the collection and application of scientific information to support the “improved understanding of the role of groundwater in basin water resources management.”

Michigan adopted water conservation and efficiency goals and objectives that are consistent with the Compact’s 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.

The State of Michigan’s program is consistent with, and fully supports, the goals and objectives of the Compact, including promoting the efficiency of use and reducing losses and waste of water in the basin and retaining the quantity of surface water and groundwater in the basin.

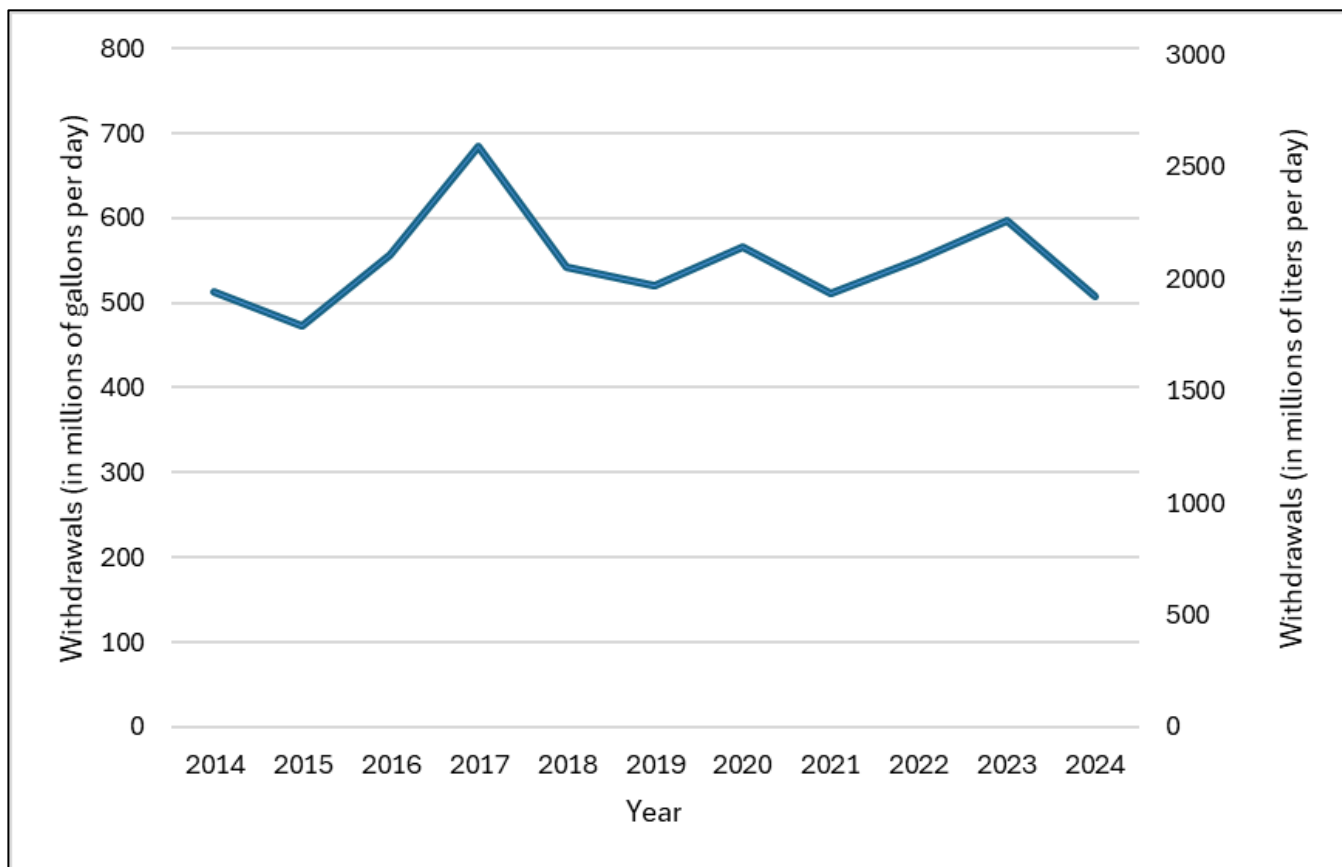
¹⁰ Hydroelectric power production and contamination remediation withdrawals are exempt from registration.

¹¹ Public supply and agricultural users are exempt from this annual fee.

Great Lakes Basin Groundwater Usage

Michigan’s groundwater withdrawals from the Great Lakes basin have varied in volume between 470 million and 690 million gallons per day over the last decade. This interannual variation is primarily due to changes in water use for the industrial and irrigation sectors. See **Figure 1** below to view trends in Michigan’s reported groundwater withdrawals within the Great Lakes basin from each facility withdrawing at least 100,000 gallons per day from 2014 to 2024.

Figure 1. Michigan Great Lakes Basin Groundwater Withdrawals from 2014-2024.¹²



Statewide Definitions

Groundwater: the water in the zone of saturation that fills all of the pore spaces of the subsurface geologic material.¹³

High-capacity well: a well which has the capacity to withdraw more than 100,000 gallons per day in any consecutive 30-day period.

¹² As reported to the [Great Lakes Regional Water Use Database](#).

¹³ Act 451 of 1994. <https://www.legislature.mi.gov/Laws/MCL?objectName=mcl-324-31701>.