

WISCONSIN DEPARTMENT OF NATURAL RESOURCES WATER MANAGEMENT AND CONSERVATION AND EFFICIENCY PROGRAM REVIEW

July 19, 2024

General Information

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

Lead agency: State of Wisconsin Department of Natural Resources (WDNR)

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2. Identify all laws, statutes, rules, regulations, executive orders, administrative orders or other similarly enforceable documents (collectively, “Laws”) that establish or implement programs meeting the requirements of the following provisions of the Compact or Agreement. In particular, ensure that all such citations address the following sections and articles of the Compact and Agreement. Include a brief lay person description for each section of the program and weblink for more information (registration, reporting, diversion, decision making standard for water use permits, water conservation program, science and research, etc.)

The Wisconsin Legislature ratified the *Great Lakes–St. Lawrence River Basin Water Resources Compact* (Compact) in 2007 Wisconsin Act 227. Section 281.346 of the Wisconsin Statutes details Wisconsin’s program for managing and regulating new or increased water withdrawals, diversions and consumptive uses consistent with the provisions of the Compact. There have been some changes to Wisconsin’s laws related to Compact implementation since 2007 Act 227. All relevant changes are noted below. Additional detail is provided in the table below.

COMPACT	AGREEMENT	IMPLEMENTING LAWS AND ADMINISTRATIVE CODES*
Compact Section 3.4	Agreement Article 300	§281.343(3)(d); §281.346(11)
Compact Section 4.1	Agreement Article 301	§281.343(4); §281.346(3); §281.346(11); NR 856
Compact Sections 4.2(2), 4.2(4), and	Agreement Article 304	§281.343(4b)(b), (d) & (e); §281.346(8) and (11)(d); NR 852

Compact Section 4.3	Agreement Article 200	§281.343(4d); §281.346; NR 850; NR 852; NR 856; NR 860
Compact Sections 4.8, 4.9, and 4.13	Agreement Articles 200, 201 and 208	§281.343(4m), (4n) and (4v); §281.346(4), (5m), (6) and (7); NR 851; NR 852; NR 854; NR 856
Compact Section 4.10	Agreement Article 206	§281.343(4p); §281.346 (4m), (4s), (5), (5e) and (5m); NR 860
Compact Section 4.11	Agreement Article 207	§281.343(4r); §281.346(6); NR 860

*NR references refer to chapters or sections of the Wisconsin Administrative Code; § references refer to sections of the Wisconsin Statutes.

Registration: Water withdrawers must register a water withdrawal if the water supply system (e.g. high capacity well or surface water intake pipe) has the capacity to withdraw at least 100,000 gallons per day (70 gallons per minute) (including from the Great Lakes basin) in any 30-day period. The two exemptions to this requirement are: withdrawals to supply vehicles for the needs of the persons or animals being transported or for ballast or other needs related to the operation of the vehicles and temporary withdrawals for fire-fighting, humanitarian or emergency response purposes. Ch. NR 856, Wis. Adm. Code; <https://dnr.wi.gov/topic/WaterUse/registration.html>

Reporting: Registered withdrawers are required to measure or estimate the volume of water they withdraw every month and report that information annually to the WDNR. Even if water is not withdrawn during the previous year, a withdrawal report is still required. Reporting is required for: all high capacity well properties (statewide); permitted (Chapter 30, Wis. Stats.) surface water withdrawals (statewide); properties with a Water Use Permit (Great Lakes basin); and any properties that withdrew an average of 100,000 gallons per day or more in any 30-day period. Ch. NR 856, Wis. Adm. Code; <https://dnr.wi.gov/topic/WaterUse/report.html>

Water Use Permits: Since December 8, 2011, WDNR requires water use permits in the [Great Lakes Basin](#) (Lake Superior or Lake Michigan) for properties that plan to withdraw water at an average of 100,000 gallons per day or more in any 30-day period. There are two types of water use permits:

- **Water Use General Permit** - Required for withdrawals that average 100,000 gallons per day or more in any 30-day period but do not equal at least 1,000,000 gallons per day for 30 consecutive days.
- **Water Use Individual Permit** - Required for withdrawals that equal at least 1,000,000 gallons per day for 30 consecutive days.

Applicants must receive a water use permit prior to withdrawing water. There are no Water Use Permit application fees. § 281.346(4m), (4s), (5), Wis. Stat.; Ch. NR 860, Wis. Adm. Code; <https://dnr.wi.gov/topic/WaterUse/permits.html>

Water Conservation and Efficiency: Wisconsin implements a water conservation and efficiency program in line with the Wisconsin and Great Lakes basin-wide water conservation and efficiency goals and objectives. The water conservation and efficiency program is implemented by the WDNR, in cooperation with the Public Service Commission of Wisconsin, and the Wisconsin Department of Safety and Professional Services. Wisconsin provides [annual reports](#) on its water conservation and efficiency program to the Compact Council and Regional Body. § 281.346(8), Wis. Stat.; Ch. NR 852, Wis. Adm. Code; <https://dnr.wi.gov/topic/WaterUse/conservation.html>

Diversions: The Great Lakes Compact and Agreement ban diversions of Great Lakes water with limited exceptions. These exceptions allow a “straddling community” or “community in a straddling county” to apply to divert water (i.e., to move water out of the Great Lakes basin). “Straddling community” refers to communities that straddle the Great Lakes basin boundary. These are communities that lie partly within the Great Lakes basin and partly outside of the Great Lakes basin. Examples of straddling communities in Wisconsin are the City of New Berlin, Village of Mount Pleasant, and the Village of Somers. “Community in a straddling county” refers to communities that are wholly outside of the Great Lakes basin but located in a county that straddles the Great Lakes basin boundary. An example of this type of community is the City of Waukesha. § 281.346(4), Wis. Stat.; Ch. NR 851, Wis. Adm. Code; <https://dnr.wi.gov/topic/WaterUse/compact.html>

Other: Wisconsin summarizes water use reporting data annually and [reports](#) are available on the WDNR’s website. Additionally, Wisconsin annually provides aggregate water use data to the Great Lakes Commission to include in the Great Lakes Commission’s Great Lakes [water use report](#). Wisconsin also provides an on-line search tool of [water withdrawal sources](#).

3. Identify any changes from the 2019 report, highlighting in particular major changes from 2019 throughout the response. If there are no changes, please indicate accordingly.

Wisconsin promulgated two rules related to implementing the Great Lakes Compact. These rules include Ch. NR 851, Wis. Adm. Code, Management of Great Lakes Diversions and Ch. NR 854, Wis. Adm. Code, Water Supply Service Area Plans, which went into effect July 1, 2024. The Management of Great Lakes Diversions administrative code defines the application requirements and the DNR’s review processes for Great Lakes diversions. The Water Supply Service Area Plans administrative code contains the water supply service area plan requirements and procedures for public water supply systems to follow when preparing water supply service area plans. These plans are required for most diversion applications. No other statutory or administrative code changes have occurred since 2019.

The high capacity well application review process has changed since 2019. These applications relate to implementation of the Compact as they are the review mechanism for impacts from high-capacity wells on waters of the state, including waters in the Great Lakes Basin. In July 2021, the Wisconsin Supreme Court issued a decision in *Clean Wisconsin v. Wisconsin Department of Natural Resources*, 2021 WI 72, affirming the WDNR’s constitutional duty and statutory authority to consider environmental effects on the waters of the state when reviewing high capacity well applications. This decision affirmed the court’s

previous ruling in *Lake Beulah Management District v. Wisconsin Department of Natural Resources*, 2011 WI 54. In accordance with the *Clean Wisconsin* decision, the WDNR high capacity well application review process considers environmental impacts to the waters of the state when reviewing a proposed high capacity well application, makes a fact-specific determination for each application, and considers sufficient concrete, scientific evidence of potential harm to waters of the state.

Water Management Program Report

- 1. Summary description of the State’s or Province’s Water management program scope and thresholds, including the current status of program implementation and a description of which New or Increased Withdrawals, Consumptive Uses and Diversions are subject to the program. The summary should include information on registration (if applicable), management and regulation, and reporting elements of the program.**

Water Use Program Management: The Water Use Program at WDNR was created to implement the Compact and *Great Lakes–St. Lawrence River Basin Sustainable Water Resources Agreement* (Agreement) and to focus on sustainable and efficient water use. Wisconsin’s Compact-implementing legislation (2007 Wisconsin Act 227) and related regulatory and case law provide the foundation for the Water Use Program. While most of the program applies statewide, there are specific requirements for water users in the Great Lakes Basin. Information related to the Water Use Program is available on the WDNR website: <http://dnr.wi.gov/topic/wateruse/>.

The Water Use Program is focused on achieving Wisconsin’s goal, as described in [the state’s water conservation and efficiency goals and objections](#), to:

“Sustainably manage the quantity and quality of water in the state to ensure that water is available to be used to protect and improve our health, economy and environment now and into the future.”

Water Use Program components include:

- Documenting and monitoring water use through registration and reporting;
- Implementing the Compact through water use permitting and regulating diversions of Great Lakes Basin waters;
- Helping communities plan water supply needs;
- Reviewing the construction and environmental impact of high capacity wells;
- Building a statewide water conservation and efficiency program;
- Developing and maintaining a statewide water resources inventory, including a better understanding of water loss and consumptive use in Wisconsin; and
- Providing information to the public on water withdrawal sources in Wisconsin, applications for new high capacity wells, and opportunities for public participation on significant Compact related proposals.

Statewide water use registration and reporting

Section 281.346(3), Wis. Stat., and Chapter NR 856, Wis. Adm. Code, requires people to register water withdrawals and report of water withdrawal data annually to the WDNR to support management of the state's water resources.

Registration

Any person who proposes to begin a new or increased withdrawal from waters of the state using a water supply system¹ with the capacity to withdraw 100,000 gallons per day (~ 70 gallons per minute) or more in any 30-day period, must register the withdrawal with the WDNR. Examples of water supply systems that may fall under this category include:

- All high capacity well properties;²
- Permitted (Wis. Stat. Chapter 30) surface water withdrawals;
- Any other properties statewide on which there is a water supply system with the capacity to withdraw an average of 100,000 gallons per day or more in any 30-day period from surface water or groundwater.

Prior to the effective date of the Compact, December 8, 2008, any approved and permitted water supply systems with a capacity to withdraw at least 100,000 gallons per day through several programs were automatically registered with the WDNR. Following implementation of the Compact, all new or increased withdrawals that meet the withdrawal threshold must register with the WDNR prior to withdrawing groundwater or surface water. This is typically done in conjunction with other approval or permitting procedures. As of 2024, WDNR has approximately 15,400 registered withdrawal sources statewide, of which, approximately 14,300 are wells and 1,100 are surface water sources. The public may search for water withdrawal locations through WDNR's [water quantity data viewer](#).

Reporting

In addition to registering water withdrawals, persons who make withdrawals from the waters of the state that average 100,000 gallons per day or more in any 30-day period must annually report to the WDNR the monthly volumes of the withdrawal.³

Owners with registered withdrawals must measure or estimate their monthly withdrawal volumes and report the previous calendar years' monthly water use by March 1 of each year. Methods for measuring water for reporting purposes are outlined in s. NR 856.31, Wis. Adm. Code. Owners report on-line or through mailed copies. Reporting response rate is

¹ "Water supply system," when not preceded by "public," means one of the following: 1. Except as provided in subd. 2., the equipment handling water from the point of intake of the water to the first point at which the water is used. 2. For a system for providing a public water supply, the equipment from the point of intake of the water to the first point at which the water is distributed. Wis. Stat. § 281.346(1)(wp).

² Section NR 812.07(51), Wis. Adm. Code, defines "high capacity property" as "one property on which a high capacity well system exists or is to be constructed." Further, s. NR 812.07(53) defines "high capacity well system" as "one or more wells, drillholes or mine shafts used or to be used to withdraw water for any purpose on one property, if the total pumping or flowing capacity of all wells, drillholes or mine shafts on one property is 70 or more gallons per minute based on the pump curve at the lowest system pressure setting, or based on the flow rate from a flowing well or wells."

³ Pursuant to Wis. Stat. s. 281.346 and Ch. NR 820, Wis. Adm. Code, high capacity well owners must annually report withdrawals to the WDNR, regardless of withdrawal volume. Further, under Ch. NR 860, Wis. Adm. Code, water use permittees must also annually report withdrawals, regardless of volume.

consistently around 92%. These reports are stored in a database and analyzed for errors and inconsistencies.

Wisconsin summarizes water use reporting data annually and [reports](#) are available on the WDNR's website. Water use information is available to the public by source or aggregated through the WDNR's online [water withdrawal data portal](#) and geospatially through the [water quantity data viewer](#). Water use data are provided upon request to governmental partners, researchers, businesses and private individuals.

The Regional Body and Compact Council Water Use Reporting Protocols require that States and Provinces report aggregate water use to the Great Lakes Commission annually to include in the Great Lakes Water Use report. Wisconsin provides this information annually by the specified August 15 deadline.

Water Use Permitting

Sections 281.346(4m), (4s), and (5), and Chapter NR 860, Wis. Adm. Code, establish the process, requirements and criteria for implementing water use permitting. A water use permit is required before persons may withdraw water in quantities that average 100,000 gallons per day or more in any 30-day period from groundwater or surface water in the Great Lakes basin.

WDNR approved coverage for 912 water withdrawals to operate under Water Use General Permit No. 1 and 309 water withdrawal to operate under Water Use General Permit No. 2. WDNR has issued 326 Individual Water Use Permits. The General Permits will be reissued in 2036 and individual permits are valid for 10 years. In 2021 WDNR reviewed and reissued all active Individual Water Use Permits.

Water use permits for pre-existing withdrawals

In Wisconsin, water use permitting requirements began on December 8, 2011. WDNR issued automatic coverage under Water Use General Permit No. 1 to persons in the Great Lakes Basin with the capacity to withdraw an average of 100,000 gallons per day or more, but less than 1 million gallons per day, in any 30-day period. WDNR issued automatic Water Use Individual Permits to persons with a water supply system or systems on one property or a public water supply system having approval to withdraw at least 1 million gallons of water per day for any 30 consecutive days.

The automatic permits included a baseline, set at the maximum hydraulic capacity of the most restrictive component of the water supply system or a withdrawal limit contained in a permit or approval as of December 8, 2008. Wis. Stat. § 281.346(4e). (For baselines, *see* Wis. Stat. § 281.346(2)(e)). The automatic permits issued in December 2011 also included an authorized withdrawal amount, which was based on the maximum hydraulic capacity of the most restrictive component of the water supply system or a withdrawal limit contained in an approval or other permit. If a person proposes to modify their authorized withdrawal amount before December 8, 2021 so that it equals 1 million gallons per day or more over

the baseline for any 30 consecutive days, the withdrawal must meet the State Decision-Making Standard (Wis. Stat. § 281.346(5)(f)1.). If a person proposes to modify the withdrawal before December 8, 2021, so that it equals 10 million gallons per day or more over the baseline for any 30 consecutive days, the withdrawal must meet the Compact Decision-Making Standard (Wis. Stat. § 281.346(5)(f)2.).

Water use permits for new or increased withdrawals in the Great Lakes Basin

After December 8, 2011, persons proposing new withdrawals averaging 100,000 gallons per day or more in any 30-day period or proposing to increase an existing withdrawal so that it will equal 100,000 gallons per day or more in any 30-day period (but will not equal at least 1 million gallons per day for any 30 consecutive days) must apply for and receive coverage under the Water Use General Permit No. 2. Persons proposing Great Lakes basin withdrawals that will equal at least 1 million gallons per day for any 30 consecutive days must apply for an Individual Water Use Permit and the state decision-making standard and conservation and efficiency measures apply.

If a person proposes to increase a withdrawal above the withdrawal amount authorized in an existing permit, the person must apply to modify the permit and implement water conservation and water use efficiency measures related to the new or increased source. Beginning December 8, 2011, coverage under the Water Use General Permit No. 2 is accompanied by a notice of coverage (NOC) letter that includes: an authorized withdrawal amount, requirements for reporting water use, and a copy of the required water conservation and efficiency measures.

Public notice and comment are required for each individual water use permit application. Any interested party may also request a public hearing on an individual water use permit. If a new general permit is proposed by WDNR, public notice and comment on the proposed general permit is also required.

Persons receiving coverage under Water Use General Permit⁴ must satisfy the following requirements:

- Meet water conservation requirements in Wis. Adm. Code ch. NR 852;
- Ensure the water withdrawal is consistent with an approved water supply service area plan, if a plan is required; and
- Receive all necessary permits or approvals for the withdrawal under Wis. Stat. §§ 30.12, 30.18, 281.34, 281.35, 283.31, and 281.41, or § 281.17, 2001 Stats.
 - WDNR may only issue an individual permit if all the following requirements are satisfied:
 - The person withdrawing water will meet water conservation requirements in Wis. Adm. Code ch. NR 852;
 - The water withdrawal is consistent with an approved water supply service area plan, if a

⁴ These are the permit requirements for General Permit 2 – which is applicable for proposed new or increased water withdrawals. General Permit 1 applied to withdrawer that existed at the time of the Compact ratification and General permit 3 applies to temporary construction dewatering.

plan is required;

- The person withdrawing water has all necessary permits or approvals for the withdrawal under Wis. Stat. §§ 30.12, 30.18, 281.34, 281.35, 283.31, and 281.41, or §. 281.17, 2001 Stats.;
- The withdrawal meets the state decision-making standard or compact decision-making standard, if applicable; and
- If applicable, WDNR has provided notice to the Regional Body and if required, WDNR has considered the Regional Review declaration.

Wisconsin’s water use permits reference several other water management regulations. Most proposed water withdrawals are reviewed based on these additional regulations.

Statute Section	Subject	Standards
30.12	Structure and deposits in navigable waters	- Establishes standards for general permits and individual permits - Establishes exemptions from permit requirements
30.18	Withdrawal of water from lakes and streams	- Applies to withdrawals of any amount for maintaining flow or lake level, and for agriculture or irrigation - Withdrawals may not injure public rights
281.34	Groundwater withdrawals	- Applies to withdrawal of 100,000 gallons per day or more - Approval conditions or denials may be necessary to avoid significant adverse impacts for withdrawals that: fall within a groundwater protection area, impact a spring, result in 95% water loss, impact a municipal well, impact groundwater quality or quantity.
281.41	Wastewater Treatment Plant Plans	- Requires plan and specification approval for reviewable projects

Water Loss and Consumptive Use

“Consumptive Use” is “a use of water that results in the loss of or failure to return some or all of the water to the basin from which the water is withdrawn due to evaporation, incorporation into products, or other processes.” § 281.346(1)(e), Wis. Stat. WDNR uses consumptive use coefficients, as outlined in ch. NR 142, Wis. Adm. Code, to calculate consumptive use. WDNR estimates consumptive uses on an annual basis, based on water use coefficients and reporting data. Site specific data for consumptive use may be

submitted to the department by the withdrawer. WDNR also refers to tables within United States Geological Survey (USGS) publications SIR 2007-5197 and Fact Sheet 2008-3032 for consumptive use coefficient information.

Water loss approvals are required statewide for new or increased withdrawals that will result in a water loss averaging more than 2 million gallons per day in any 30-day period. § 281.35, Wis. Stat. WDNR must determine the following in order to issue a water loss approval:

- No public water rights in navigable water will be adversely affected;
- The proposed withdrawal does not conflict with any applicable plan for future uses of the waters of the state;
- The applicant's current water use and proposed plans incorporate reasonable conservation practices;
- The proposed withdrawal and uses will not have a significant adverse impact on the environment and ecosystem of the Great Lakes basin or the upper Mississippi River basin;
- The proposed withdrawal and uses are consistent with the protection of public health, safety and welfare and will not be detrimental to the public interest; and
- The proposed withdrawal will not have a significant detrimental effect on the quantity and quality of waters of the state.

In addition, if the proposed withdrawal will result in an interbasin diversion and water loss applies, WDNR must determine all of the following:

- Each state or province to which the water will be diverted has developed and is implementing a plan to manage and conserve its own water quantity resources, and that further development of its water resources is impracticable or would have a substantial adverse economic, social or environmental impact;
- It will not impair the ability of the Great Lakes basin or upper Mississippi River basin to meet its own water needs;
- The interbasin diversion alone, or in combination with other water losses, will not have a significant adverse impact on lake levels, water use, the environment or the ecosystem of the Great Lakes basin or upper Mississippi River basin; and
- The proposed withdrawal is consistent with all applicable federal, regional and interstate water resources plans.

Persons with water loss approvals must annually report water loss to WDNR. WDNR publishes a public notice upon receipt of a complete water loss application.

Diversions

A "diversion" is "a transfer of water from the Great Lakes basin into a watershed outside the Great Lakes basin, or from the watershed of one of the Great Lakes into that of another, by any means of transfer, including a pipeline, canal, tunnel, aqueduct, channel, modification of the direction of a water course, tanker ship, tanker truck, or rail tanker except that the "diversion" does not include any of the following:

- The transfer of a product produced in the Great Lakes basin or in the watershed of one of the Great Lakes, using waters of the Great Lakes basin, out of the Great Lakes basin, or out of that watershed.
- The transmission of water within a line that extends outside the Great Lakes basin as it conveys water from one point to another within the Great Lakes basin if no water is used outside the Great Lakes basin.
- The transfer of bottled water from the Great Lakes basin in containers of 5.7 gallons or less.” § 281.346(1)(h), Wis. Stat.

WDNR issued grandfathered diversion approvals to water supply systems that diverted water prior to December 8, 2008. For the diversion approvals that returned water to the Great Lakes basin, the authorized diversion amount identified in the approval was based on the amount of water necessary to provide water for public water supply purposes within a sewer service territory that provides for the return of wastewater to the Great Lakes basin and that is specified in the sewer service area provisions of an area-wide water quality management plan approved by WDNR before December 31, 2007. The approved diversion amounts for these public water systems were based on approved sewer service areas, and population and related water supply service projections for build-out conditions in those communities. *See* § 281.344(3e) and (3m), Wis. Stat. For diversion approvals that discharge wastewater to the Mississippi River basin, the diversion amount was based on the maximum hydraulic capacity of the most restrictive component of the water supply system. *See* § 281.343(4t)(b), Wis. Stat.

Relevant provisions of the Compact and s. 281.346(4), Wis. Stat., govern diversions in the state. No person may begin a diversion, unless as authorized under s. 281.346(4), Wis. Stat., and no person may increase the amount of a diversion over the diversion amount specified in an approval under that subsection without prior approval from WDNR. For each diversion application, WDNR is required to provide public notice, offer a public comment period, and hold a public hearing if requested. WDNR is required to provide access to information on diversion applications. To facilitate public access to information on diversion applications, WDNR has provided a webpage for each diversion application and posted all official correspondence between WDNR and the applicant on these webpages. WDNR has an electronic subscription for members of the public interested in Great Lakes Compact issues. Public notices related to diversion applications are also provided via email to the Great Lakes Compact issues electronic subscription list. The list currently has more than 7,500 subscribers.

WDNR has approved three straddling community diversion applications since 2008, including the City of [New Berlin \(approved in 2009\)](#), the City of [Racine \(approved in 2018\)](#), and the Village of [Somers \(approved in 2022\)](#). All straddling community diversion are required to return their treated wastewater to the Great Lakes less an allowance for consumptive use.

In 2012 and 2013, WDNR approved intrabasin transfers for Enbridge to conduct hydrostatic testing of pipeline segments between Superior, WI and Sarnia, ON and between Superior, WI and Mokena, IL. WDNR required that all water was discharged into

Lake Huron and Lake Michigan. WDNR notified the Regional Body of these intrabasin transfers through email correspondence.

WDNR has approved one community in a straddling county diversion application since 2008. WDNR issued the City of Waukesha a diversion approval in 2021 after the City of Waukesha received approval from the Compact Council in 2016 and obtained all necessary federal and state approvals and permits to implement the diversion. The City of Waukesha began diverting water in 2023, and WDNR will submit its first annual report on the diversion to the Compact Council in August 2024. The City of Waukesha is required by condition of approval to return approximately 100% of the volume of diverted water to the Great Lakes Basin.

2. Describe specifically how Water Withdrawals in the State are managed by:

a. *Sector*

Each withdrawal source and property is assigned a [water use code](#). Water use codes that represent specific sectors are assigned based on the purpose for which most of the water is used. For the most part, water withdrawals in Wisconsin are not regulated by sector but are regulated based on water source, quantity, and location. There are a few exceptions: 1) surface water withdrawals of any amount from a stream for the purposes of agriculture or irrigation are regulated under s. 30.18, Wis. Stat.; 2) water conservation and efficiency requirements differ among sectors under ch. NR 852, Wis. Adm. Code; and 3) the public water supply sector is subject to a separate set of requirements⁵ and is also regulated by the Public Service Commission of Wisconsin.

b. *Water source*

i. *Surface water withdrawals (Lake Michigan, Lake Superior, and other surface waters)*

Surface water withdrawals are required to register if the water system has the capacity to withdraw 100,000 gallons per day. Surface water withdrawals with the capacity to withdraw 100,000 gallons per day are required to report withdrawals over 100,000 gallons per day. Surface water withdrawals are also managed under s. 30.18, Wis. Stat. WDNR regulates surface water withdrawals of any amount from streams for purposes of agriculture or irrigation (§ 30.18(2)(a)2., Wis. Stat.); withdrawals of any amount from a stream to maintain or restore lake levels or stream flows (§ 30.18(2)(a)1., Wis. Stat.); and withdrawals from a stream or lake resulting in a water loss of more than 2 million gallons per day in any 30-day period (§ 30.18(2)(b), Wis. Stat.). An individual permit is required for withdrawals falling into any of the categories above. WDNR evaluates permit applications to ensure that the proposed withdrawals do not injure public rights in navigable waters and either withdraw only surplus water or have the consent of all possibly adversely affected riparian owners. § 30.18(5), Wis. Stat.

ii. *Groundwater withdrawals*

⁵ Including chs. NR 809, 810 and 811, Wis. Adm. Code.

Groundwater withdrawals are required to register if the water system has the capacity to withdraw 100,000 gallons per day. Groundwater withdrawal sources with the capacity to withdraw 100,000 gallons per day are required to report water withdrawals of any volume. Groundwater withdrawals are further regulated under ch. 281, Wis. Stat., chs. NR 812 and 820, Wis. Adm. Code, and related case law. All public and private wells, except those community water system wells that are subject to separate regulations, are subject to ch. NR 812, Wis. Adm. Code regulations that govern their location and provide standards and requirements for well construction, pump installation, and water treatment. High capacity wells are those with a capacity of more than 100,000 gallons per day from one or more wells on a system or contiguous property. As part of the high capacity well application process, WDNR is required to undertake an environmental review if the proposed well may impact a spring with a normal flow of 1 cubic foot per second; is in a groundwater protection area (i.e., is within 1,200 feet of a trout stream or outstanding or exceptional resource water); or will have a water loss of more than 95 percent of the amount withdrawn. *See* Wis. Stat. § 281.34(4) and (5). Additionally, WDNR conducts a case-by-case analysis of all high capacity well applications that considers the needs of the property and the environmental effects that the proposed high capacity well may have on the waters of the state, individually and combined with existing environmental impacts. A complete description of the review process can be found at <https://dnr.wisconsin.gov/topic/Wells/HighCap>

c. Quantity

Water withdrawals are required to register if the water system has the capacity to withdraw 100,000 gallons per day. Groundwater withdrawal sources with the capacity to withdraw 100,000 gallons per day are required to report water withdrawals of any volume. Surface water withdrawals with the capacity to withdraw 100,000 gallons per day are required to report withdrawals over 100,000 gallons per day.

New or increased water withdrawals in the Great Lake Basin proposing to withdraw between 100,000 gallons per day and 1,000,000 gallons per day for 30 consecutive days are required to receive coverage under a general water use permit. New or increased water withdrawals in the Great Lakes Basin proposing to withdraw 1,000,000 gallons per day for 30 consecutive days or more are required to obtain an individual water use permit and are subject to the state decision-making standard. New or increased water withdrawals in the Great Lakes Basin proposing to withdraw 10,000,000 gallons per day for 30 consecutive days are subject to the Compact decision-making standard.

d. Location

The primary geographical distinction affecting water withdrawal management in Wisconsin is that between withdrawals and uses in the Great Lakes basin (Lake Michigan and Lake Superior basins) and withdrawals and uses outside of the basin (i.e., in the Upper Mississippi River basin). Regulations specific to the Great Lakes basin include: water use permits, mandatory conservation and efficiency plans, diversion prohibitions, and regional notification and review procedures. These additional Great Lakes requirements are discussed below.

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

The scope and thresholds for the water management program are described above.

Wisconsin's Compact-implementing legislation does not include any specific exemptions to the water management program.

3. Description of how the provisions of the Standard of Review and Decision are applied. The description should include information on how each criterion of the Decision-Making Standard and Exception Standard is addressed.

a. State decision-making standard

Under s. 281.346(5), Wis. Stat., WDNR may not approve an application for a new withdrawal that will equal at least 1 million gallons per day for any 30 consecutive days, or for an existing withdrawal that is not covered by a general permit that is proposed to be modified so that it will equal at least 1 million gallons per day for any 30 consecutive days, unless the withdrawal meets the state decision-making standard.

To meet the state decision-making standard, applicants for a new or increased withdrawal must attach documentation describing how the withdrawal will be implemented such that the following criteria, listed in s. 281.346(5m), Wis. Stat., are met:

- The amount of the withdrawal or increase in the withdrawal is needed to meet the projected needs of the person who will use the water.
- For an increase in a withdrawal, cost-effective conservation practices have been implemented for existing uses of the water, consistent with ch. NR 852, Wis. Adm. Code.
- The applicant has assessed other potential water sources for cost-effectiveness and environmental effects.
- Cost-effective conservation practices will be implemented to ensure efficient use of the water;
- One of the following applies:
 - o No significant adverse environmental impacts to waters of the state will result;
 - o If the withdrawal is from a surface water body, the withdrawal will not result in the violation of water quality standards under s. 281.15, Wis. Stat., or impair fish populations;
 - o WDNR has issued a permit under s. 30.18, Wis. Stat., for the new or increased withdrawal or has issued a permit under s. 30.12, Wis. Stat., for a structure that will be used for the new or increased withdrawal; or
 - o WDNR has issued an approval under § 281.34, Wis. Stat., or § 281.17, 2001 Stats., for the new or increased withdrawal.

Under s. NR 860.31(3)(a)12., Wis. Adm. Code, an applicant for an individual water use permit that is subject to the state decision-making standard must submit to WDNR

additional information and documentation including:

- Documentation that the proposed withdrawal amount is needed to meet the applicant's projected needs;
- Documentation of compliance with the applicable provisions of ch. NR 852, Wis. Adm. Code (Water Conservation & Water Use Efficiency);
- An alternatives analysis comparing other potential water sources for cost-effectiveness and environmental effects;
- A description of the baseline conditions of the source including hydrologic flow, water quality, and for surface water sources, habitat of the source (not required if there is a permit or approval under ss. 30.12, 30.18, or 281.34, Wis. Stat.); and an assessment of the potential impacts of the withdrawal on the waters of the state (not required if there is a permit or approval under ss. 30.12, 30.18, or 281.34, Wis. Stat.).

An applicant must comply with all the above state decision-making standard requirements prior to the proposed withdrawal.

Since December 8, 2011, the WDNR has reviewed and approved one application for an individual permit and the WDNR has reissued two water loss approval in the Lake Michigan basin.

b. *Compact decision-making standard*

Under Wis. Stat. s. 281.346(5), WDNR may not approve an application for a new withdrawal that will equal at least 10 million gallons per day for any 30 consecutive days, or for an existing withdrawal that is not covered by a general permit and that is proposed to be modified so that it will equal at least 10 million gallons per day for any 30 consecutive days, unless the withdrawal meets the Compact decision-making standard.

However, the state decision-making standards apply if the person proposing a new or increased withdrawal to which the Compact decision-making standard would otherwise apply, demonstrates using procedures in s. 142.06, Wis. Adm. Code, that the water loss would average less than 5 million gallons per day in every 90-day period. § 281.346(5)(f), Wis. Stat.

To meet the Compact decision-making standard, an applicant must demonstrate the following, as required by s. 281.346(6), Wis. Stat.:

- All of the water withdrawn from the Great Lakes basin will be returned to the source watershed, less an allowance for consumptive use;
- The withdrawal will result in no significant adverse individual impacts or cumulative impacts to the quantity or quality of the waters of the Great Lakes basin, to water dependent natural resources, to the source watershed, or, if the withdrawal is from a stream tributary to one of the Great Lakes, to the watershed of that stream;
- The withdrawal will be implemented in a way that incorporates environmentally

sound and economically feasible water conservation measures;

- The withdrawal will be in compliance with all applicable local, state, and federal laws and interstate and international agreements, including the Boundary Waters Treaty of 1909; and
- The proposed use of the water is reasonable, based on a consideration of all of the following:
 - Whether the proposed withdrawal is planned in a way that provides for efficient use of the water and will avoid or minimize the waste of water;
 - If the proposal would result in an increased water loss, whether efficient use is made of existing water supplies;
 - The balance of the effects of the proposed withdrawal and use, and other existing or planned withdrawals and water uses from the water source, on economic development, social development, and environmental protection;
 - The supply potential of the water source, considering quantity, quality, reliability, and safe yield of hydrologically interconnected water sources;
 - The probable degree and duration of any adverse impacts caused or expected to be caused by the proposed withdrawal and use, under foreseeable conditions, to other lawful consumptive uses or nonconsumptive uses of water or to the quantity or quality of the waters of the Great Lakes basin and water dependent natural resources, and the proposed plans and arrangements for avoidance or mitigation of those impacts; and
 - Any provisions for restoration of hydrologic conditions and functions of the source watershed or, if the withdrawal is from the stream tributary to one of the Great Lakes, of the watershed of that stream.

Under s. NR 860.31(3)(a)13., Wis. Adm. Code, an applicant for an individual water use permit that is subject to the compact decision-making standard must submit to WDNR additional information and documentation including:

- An assessment of the potential impacts of the withdrawal on the waters of the state and water dependent natural resources including wetlands, and possible modeling of anticipated hydrologic impacts or water quality evaluation to determine if the withdrawal or return flow will meet established water quality standards;
- Documentation of compliance with the applicable provisions of ch. NR 852, Wis. Adm. Code;
- Documentation of compliance with all applicable local, state, and federal laws, rules, and regulations, and interstate and international agreements, including the Boundary Waters Treaty of 1909;

- An analysis of the efficiency of the proposed water use, and if there is an expected increase in water loss, an analysis of the efficiency of the use of existing water supplies. The analysis shall include a comparison of the proposed water use intensity with the water use intensity of similar facilities or operations. The analysis may include information from the water conservation plan prepared in compliance with s. NR 852.07, Wis. Adm. Code;
- An analysis of the impacts of the withdrawal over the next ten years on economic development, social development, and environmental protection taking into consideration other existing and planned withdrawals from the same source.
- The supply potential of the water source including quality, quantity, and reliability taking into consideration interconnected water sources and water dependent natural resources; and
- A description of mitigation measures that will be implemented to prevent or eliminate significant impacts.

Applicants must comply with all the above Compact decision-making standard requirements prior to the proposed withdrawal. Since the effective date of the Compact, no permit applications have been submitted in Wisconsin that required compliance with the Compact decision-making standard.

c. Exception standard for diversions

The Exception Standard for Diversions that has been integrated into Wisconsin’s Compact-implementing legislation mirrors the Exception Standard in the Compact and Agreement with a few additions:

1. The proposal for a diversion must be consistent with an approved water supply service area plan under s. 281.348, Wis. Stat., that covers the public water supply system, unless the proposal is to provide water to a straddling community that includes a designated electronics and information technology manufacturing zone. § 281.346(4)(c)2m. and (e)1.em., Wis. Stat.
2. The place at which the water is returned to the source watershed must be as close as practicable to the place from which it is withdrawn, unless that place is not economically feasible, not environmentally sound, or not in the interest of public health. § 281.346(4)(f)3m., Wis. Stat.
3. If the water will be returned to the source watershed through a stream tributary to one of the Great Lakes, the physical, chemical, and biological integrity of the receiving water will be protected and sustained, considering the state of the receiving water before the proposal is implemented and considering both low and high flow conditions and potential adverse impacts due to changes in temperature and nutrient loadings. § 281.346(4)(f)4m., Wis. Stat.
4. Wisconsin has defined “reasonable water supply alternative” to mean “a water supply alternative that is similar in cost to, and as environmentally sustainable and protective of public health as, the proposed new or increased diversion and that does

not have greater adverse environmental impacts than the proposed new or increased diversion.” § 281.346(1)(ps), Wis. Stat.

4. Overview of State reporting and database of Withdrawals, Consumptive Uses and Diversions including implementation status and database elements and capabilities, and reporting mechanisms (e.g., electronic submission, etc.). The overview should include methods of measurement (e.g., flow volume or rate meters, flow gauging, timing devices, etc.) approved by the State/Province for measuring Water volumes.

Registered water users must annually report monthly withdrawal amounts for each calendar year by March 1 of the following year. § NR 856.30(2), Wis. Adm. Code. Each report contains monthly withdrawal amounts, the primary use of the water and the method used to measure or estimate the water use, consistent with requirements for reporting to the Great Lakes Commission (GLC). *See* § NR 856.30(2), Wis. Adm. Code. Registered withdrawers can report water use through a web-based application or using paper forms which are entered into the WDNR’s Water Use database.

In accordance with ss. NR 812.39(2), NR 820.13 and NR 856.31(1), wells with a pumping capacity of 100,000 gallon per day (70 gallons per minute) or more shall be equipped with a means of accurately measuring water withdrawal, typically an hour meter or totalizing flow meter. Unless otherwise specified in approval conditions, wells with a pumping capacity of less than 100,000 gallons per day (70 gallons per minute) may either be equipped with means of measuring water withdrawals or water use may be estimated using a method approved by WDNR. Surface water withdrawals are measured by totalizing flow meters or estimated using the [measurement instructions](#) provided to water use reporters. Other methods can be used if approved by WDNR if none of the existing methods is sufficient. § NR 856.31(1)(a)5. and (b)6., Wis. Adm. Code. WDNR provides [measurement instructions](#) to water use reporters.

Information about the primary use of the withdrawn water enables WDNR to assign water use codes. Water use codes are detailed codes specifying public water supply uses (municipal systems, community water systems, non-transient, non-community systems, transient, non- community systems and K-12 schools), industrial uses, commercial and institutional uses, power generation, irrigation, other agricultural uses, domestic supply and fire protection. Each WDNR water use fits under a more general Great Lakes Commission water sector for annual reporting to the Great Lakes Commission. A list of the water use codes can be found in the [Water Withdrawal Report Guidance](#).

WDNR has determined water loss coefficients for each water use code based on various sources such as USGS published values, ch. NR 142, Wis. Adm. Code, or assumed general practices.

In addition to reporting monthly withdrawal data to WDNR, persons with approved Great Lakes basin diversions are required to report the monthly volumes diverted and the volume returned to the Great Lakes basin. Withdrawal, diversion, and return flow volumes are tracked and reported to the Great Lakes Commission annually.

All water use data is housed in a dedicated geographic information system database that is updated by WDNR staff through a web-based application. Water use data is used to support WDNR decision-making and serves as the basis for annual withdrawal report summaries and sector specific studies. Water use data is available to the public through the [Water Quantity Data Viewer](#) and the [Water Withdrawal Query Tool](#). Governmental partners, university researchers, businesses and private individuals may also request data to be delivered in tabular or spatial formats.

- 5. Include a web link to the State or Province’s Withdrawal application form(s). In addition, include a section on web access to additional information on the program, link to any application forms and links to tools for improving the management of water resources or sharing information about water withdrawals.**

Throughout this document, WDNR has provided links to water use program web pages, applications, tools and program information related to water withdrawals.

- 6. Summary description of the State’s or Province’s 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. A description of State or Provincial initiatives or mechanisms to support an improved understanding of individual or cumulative impacts of Withdrawals, Consumptive Uses and Diversions on the Basin ecosystem should also be provided.**

WDNR has supported a variety of projects to improve the understanding or management of groundwater and surface water quantity in Wisconsin. WDNR has continued or developed the following projects in the past 5 years:

- Wisconsin’s Long-Term Groundwater Level Monitoring Network –WDNR partners with the USGS and the Wisconsin Geological and Natural History Survey (WGNHS) to continue [monitoring water levels](#) in aquifers across Wisconsin with a network of approximately 100 monitoring wells. Data collected from this network are used for monitoring local water resources, assessing aquifer response to drought or flooding, calibrating groundwater flow models, and measuring the effect of pumping on groundwater levels.
- WDNR continues to maintain the [Water Quantity Data Viewer](#) and the [Water Withdrawal Query Tool](#) for the public to search water withdrawal data and related water quantity monitoring data.
- Following on the 2019 [Wisconsin Springs Inventory](#) of approximately 400 springs with flows greater than 0.25 cfs, WDNR continues to revisit and identify additional springs across the state. In addition, eight reference springs are monitored quarterly to develop a long-term record on spring flow variability and water chemistry. A summary of the springs inventory has also been published in a [final report](#).
- [Central Sands Lakes Study](#) – The Wisconsin legislature instructed WDNR to evaluate and model the hydrology of Pleasant Lake, Plainfield Lake and Long Lake to determine whether existing and potential groundwater withdrawals are causing or

are likely to cause a significant reduction of the lakes' water levels below their average seasonal levels. This area of Wisconsin straddles the Great Lakes Basin divide. The three-year study, in partnership with USGS, WGNHS, and the University of Wisconsin, found significant impacts to two of the three study lakes. WDNR issued findings and recommendations to state legislators in June 2021.

The study included a calibrated groundwater flow model of the designated study area that simulates the water budget associated with the three lakes and to evaluate their interactions with groundwater withdrawals. As part of the study, WDNR partnered with University of Wisconsin and the agricultural community to directly measure evapotranspiration, a critical component to consumptive use. The approach for determining significant impacts to the three lakes may be applicable throughout the Great Lakes basin for determining impacts to surface waters based on groundwater withdrawals.

WDNR developed several story maps in the past five years to communicate about Wisconsin Water Use and Management. These include:

- [A Decade of Wisconsin Water Withdrawals](#)
- [Wisconsin Groundwater](#)
- [Working Together to Collect Wisconsin Water Quantity Data](#)

Water Conservation and Efficiency Program Report

1. Status of the State or Province's Water conservation and efficiency goals and objectives consistent with the Basin-wide goals and objectives. If developed, include State or Provincial goals and objectives or link to electronic version.

Wisconsin adopted water conservation and efficiency goals and objectives that are consistent with the Basin-wide goals and objectives. The goals and objectives, which were first adopted in 2008 and most recently revised in 2011, can be found on the Department website at:

http://dnr.wi.gov/topic/WaterUse/documents/WDNR_Statewide_WCE_Objectives_2011.pdf. WDNR reviews these goals and objectives every five years.

2. Water Conservation and Efficiency Program Overview

- a. *Citations to State Water Conservation and Efficiency Program implementing laws, regulations, and policies.*

The Wisconsin Legislature ratified the Great Lakes—St. Lawrence River Basin Water Resources Compact (Compact) in 2007 Wisconsin Act 227. Wisconsin adopted additional water conservation and efficiency requirements that go beyond the minimum required by the Compact. These requirements are codified in s. 281.346(8), Wis. Stat., and ch. NR 852, Wis. Adm. Code. For Tier 1,⁶ these requirements include programs such as water use audits, leak detection and repair programs, information and education programs, source

⁶ Ch. NR 852, Wis. Adm. Code, includes a three-tier process for water conservation and efficiency requirements, depending on the type of withdrawal, diversion, or water loss.

measurement. For Tier 2, additional requirements are dependent on the water sector. For Tier 3, an analysis and implementation of all cost-effective water conservation and efficiency measures must be implemented.

b. *Summary description of Wisconsin's Water Conservation and Efficiency Program including what elements are voluntary and mandatory.*

The Water Use Section of WDNR's Bureau of Drinking Water and Groundwater developed a statewide water conservation and efficiency program that is based on Wisconsin's adaptation of the Great Lakes Regional Conservation and Efficiency Objectives. The program requires mandatory water conservation and efficiency measures for new or increased withdrawals in the Great Lakes Basin, for any new or increased diversions from the Great Lakes Basin, and for any new or increased withdrawals—statewide—that will result in a water loss averaging more than 2 million gallons per day in any 30-day period. Voluntary water conservation and efficiency measures are encouraged for all existing water users throughout the state. Water conservation measures are required through municipal water systems through the Public Service Commission of Wisconsin water loss control program. This program includes requirements to meter all sales, maintain and verify the accuracy of meters, identify and repair leaks in the distribution system, control water usage from hydrants, maintain records of system pumpage and consumption and conduct an annual water audit.

The conservation and efficiency program is implemented through administrative rules, water use permits, and guidance developed in cooperation with the Public Service Commission of Wisconsin and the Wisconsin Department of Safety and Professional Services. Rules implementing the program, primarily ch. NR 852, Wis. Adm. Code, outline the necessary conservation and efficiency measures. Under ch. NR 852, Wis. Adm. Code, conservation and efficiency measures vary depending on the withdrawal amount and calculated water loss:

- For new or increased Great Lakes basin withdrawals averaging 100,000 gallons per day or more in any 30-day period but less than 1 million gallons for any 30 consecutive days, Tier 1 water conservation and efficiency requirements apply. § NR 852.04, Wis. Adm. Code, including Table 1.
- For new or increased Great Lakes basin withdrawals equaling 1 million gallons per day or more for any 30 consecutive days, Tier 1 (see above) and Tier 2 water conservation and efficiency requirements apply. § NR 852.05, Wis. Adm. Code, including Table 2.
- For new or increased withdrawals (statewide) resulting in a water loss averaging more than 2 million gallons per day in any 30-day period; or for new or increased Great Lakes diversions, in addition to Tier 1 and Tier 2 requirements, Tier 3 water conservation and efficiency requirements are required—including an analysis to determine whether additional cost-effective conservation and efficiency measures are available (other than those in Tier 1 and Tier 2). § NR 852.06, Wis. Adm. Code.

The Public Service Commission of Wisconsin also relies on administrative rules (chs. PSC 184 and PSC 185, Wis. Adm. Code) for authorizing and monitoring voluntary water

conservation programs for municipal water systems. For other withdrawals subject to mandatory water conservation and efficiency, requirements increase as the volume of withdrawal increases.

In addition, water supply service area plans for public water supply systems must consider water conservation alternatives when identifying options for supplying water. These plans are required by 2026 for all public water systems in Wisconsin serving populations of 10,000 or more. Plans are required immediately for any Great Lakes Basin public water systems serving populations of 10,000 or more that are seeking a new or increased withdrawal, and for applicants for diversions of Great Lakes water, except that a water supply service area plan is not required for a proposed diversion to a straddling community that includes an electronics and manufacturing technology zone.

- 3. For each of the regional objectives, identify how the State/Provincial program is consistent with the regional objective, and a description of how the State or Province promotes Environmentally Sound and Economically Feasible Water Conservation Measures. More details for each objective are available at http://www.glsregionalbody.org/Docs/Resolutions/GLSLRWRRB_Resolution_6-Conservation-Efficiency.pdf and can be provided in the table below.**

As shown in the table below, the Wisconsin program is consistent with the regional objectives in the promotion of environmentally sound and economically feasible water conservation measures.

OBJECTIVES	LEGISLATIVE OR PROGRAM DESCRIPTION
Guide programs toward long- term sustainable water use.	<ul style="list-style-type: none"> ▪ Adoption of Water Conservation and Water Use Efficiency Rules. ch. NR 852, Wis. Adm. Code (1/1/2011). ▪ Mandatory water conservation plans and conservation and efficiency measures for new or increased Great Lakes Basin withdrawals, all diversions of Great Lakes water, and withdrawals with a water loss of more than 2 million gallons per day. ▪ Water Supply Service Area Planning. § 281.348, Wis. Stat.; ch. NR 854, Wis. Adm. Code.
Adopt and implement supply and demand management to promote efficient use and conservation of water resources.	<ul style="list-style-type: none"> ▪ The Public Service Commission of Wisconsin rules include requirements for all public water utilities to meter customer water use, test meter accuracy, conduct annual water audits, and identify and repair leaks. ▪ Required water conservation plans are in place for approximately 200 water use permittees. ▪ Drought management and conversation webpage.

<p>Improve monitoring and standardize data reporting among State and Provincial water conservation and efficiency programs.</p>	<ul style="list-style-type: none"> ▪ Developed a new database for water use data. ▪ Developed an on-line registration and reporting system, with ongoing system refinement. On-line reporting is available for all registered water users and reporting forms are mailed to those who choose not to report on-line. On- line system automated quality checks continue to improve reporting quality. ▪ Water use data by source and aggregated is available on the WDNR water use webpage. ▪ WDNR is implementing a USGS Water Use data and research grant 2023-2025 to improve water use data quality and pilot developing a water supply service area geographical information systems layer.
<p>Develop science, technology, and research.</p>	<ul style="list-style-type: none"> ▪ Co-funded a project with the Public Service Commission of Wisconsin titled “Water Efficiency Potential Study for Wisconsin,” which was completed in late 2011. ▪ Funded a project titled “Ecological Limits of Hydrologic Alteration” focused on understanding stress to fish populations due to reduced stream flows. ▪ Funded a project to develop a hydrogeologic data viewer for Wisconsin hydrogeologic data. ▪ Funded a “proof-of-concept” hydrological model to optimize stream flow, withdrawals and crop rotations in a small watershed in central Wisconsin. ▪ Funded a project entitled “Impacts of potato and maize management and climate change on groundwater recharge across the Central Sands” to better understand impacts of groundwater dependent agro-ecosystems. ▪ Funded a project to compile groundwater and lake level data for Wisconsin and develop statistical models to understand linkages between groundwater, climate and water levels of seepage lakes. ▪ Conducting a study authorized by the Wisconsin legislature to evaluate and model the potential impacts of groundwater withdrawals on three specific lakes in Central Sands region of Wisconsin. ▪ Evaluated remote sensing evapotranspiration models for use in Wisconsin and evaluated differences in evapotranspiration rates relative to agricultural practices. ▪ Partially installation and operation of eddy covariance towers to directly measure evapotranspiration. ▪ Ongoing delivery of spatial water use data to governmental and university partners for use in modeling projects and scientific research. ▪ Funded a pilot groundwater flow model that allows for incorporation of management objectives in a groundwater stress area of Wisconsin. ▪ Updated inventory of 400 springs in Wisconsin with flows greater than 0.25 cubic feet per second. Recently published by the Wisconsin Geological and Natural History Survey – An inventory of Springs in Wisconsin. ▪ Worked with the USGS Upper Midwest Water Science Center to develop Python tools for streamflow depletion and aquifer drawdown analysis that allows for more flexibility and efficiency in high-capacity well application reviews.

Develop education programs and information sharing for all water users.	<ul style="list-style-type: none"> ▪ Promotion of EPA <i>WaterSense</i> Fix-a-Leak, including webpage, promotional video, social media posts. ▪ Initiated a program of water use benchmarks for geographic and sector specific withdrawals. ▪ Promoting irrigation conservation at Farm Technology Days. This includes promotion of irrigation scheduling tools developed by the University of Wisconsin.
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4. Description of the State or Provincial Water conservation and efficiency program implementation timeline and status.

Wisconsin completed its Water Conservation and Efficiency Goals and Objectives in 2008 and updated these Goals and Objects for statewide application in 2011. Wisconsin’s administrative rules for Water Conservation and Efficiency, ch. NR 852, Wis. Adm. Code, became effective in January 2011. A Water Conservation and Efficiency webpage is available at the [WDNR website](#) and at the [Public Service Commission of Wisconsin website](#). Wisconsin promotes “Fix a Leak Week” annually. Water conservation plan requirements are integrated into the water use permit review and issuance process.