

Guidance for Groundwater Governance in EPA Region 5

Water is essential to life, and groundwater has its own unique benefits and limitations on its use. Groundwater is a hidden reservoir supporting biodiverse surface-water ecosystems, human establishments, industries, irrigated agriculture, and more.¹ New and accelerated demand for water-intensive crops, artificial intelligence powered by data centers, and sustainable aviation fuel bring industries to the region.² As climate shifts, towns across the United States (U.S.) that grapple with water scarcity look to this area. As the need for water increases, so does the pressure to understand how much can be used before sacrifices must be made. Some states in the region are trying to prepare for future water scenarios but there is uncertainty about how to proceed.³

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- 1 Bhagwat, Vinod R. "Safety of Water Used in Food Production." Edited by Ram Lakhan Singh and Sukanta Mondal. Food Safety and Human Health, August 9, 2019, 219–47. <https://doi.org/10.1016/b978-0-12-816333-7.00009-6>.
 - 2 Huang, H.W., S. Jiang, S.Y. Zhang, Y.M. Wang, J.C. Wang, X.N. Zhao, and X.R. Gao. "Agricultural and Energy Products Trade Intensified the Water Scarcity in the Grain and Energy Base in Northern China." Agricultural Water Management 307 (February 1, 2025): 109208. <https://doi.org/10.1016/j.agwat.2024.109208>.
 - 3 Grumke, Kate. "Missouri and the Midwest Are Gearing up for Water Fights Fueled by Climate Change." St. Louis Public Radio, August 30, 2024. <https://www.stlpr.org/health-science-environment/2024-08-30/missouri-midwest-gearing-up-water-fights-climate-change>.

Executive-branch agencies and planning groups report that decision-makers need more information to weigh long-term water-use alternatives. At the local resident level, there is uncertainty over who is in charge, how to engage, and if the preferences of community members are being heard. At every level, more clarity is needed on which other jurisdictions share their groundwater and how to collaborate equitably. There is a need for cohesive regional water governance.⁴

Introduction

This project builds on previous collaborative work between Freshwater, the legal consultancy Water365, the University of Minnesota, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), the Bureau of Indian Affairs (BIA), and their contributing partners. Referred to in this report as Phase I, it resulted in a foundational report that assessed the status of the groundwater governance framework and the potential for future policy work in Environmental Protection Agency's (EPA) Region 5 – an area that includes the six western Great Lakes states of Minnesota, Wisconsin, Michigan, Illinois, Indiana, and Ohio and 35 federally recognized Tribal nations.^{5 6 7 8} The report covered groundwater institutions, governance approaches, and some of the challenges that existed. Although the report focused on groundwater quantity, groundwater of sufficient quality also impacts the quantity available.

The purpose of this second phase of work is **to help to build a regional groundwater governance system based on common understanding that fosters inclusive prosperity, ecological health, and repairs past harm, while being resilient to climate and population stresses over the next generation.** To do this, Freshwater conducted four activities during the 18-month-long project:

- I. **Groundwater knowledge workshops:** Focused conversations at three groundwater workshops identified specific regional issues, promoted an understanding of current practices and challenges and management strategies for shared groundwater sources, and elevated local groundwater concerns with decision makers. Invitations went to individuals actively navigating and effecting change in groundwater policy and intended to emphasize Tribal stakeholders and community groups to reveal their lived experiences. Meeting locations were aligned with treaty territories and

4 Palermo, Fabrizio. "Water Security: How to Ensure Access to Water in a Changing World." World Economic Forum: Food and Water, January 14, 2025. <https://www.weforum.org/stories/2025/01/water-security-changing-world-wef25/>.

5 **Note:** This report may be referenced as Phase I, the first report, phase one, or the first phase of the project. It is the foundation upon which all following work in Phase II was built.

Mayer, Terin V, Eileen J Kirby, Linda Reid, Carrie E Jennings, Lila Franklin, and Benjamin Edelstein. "Groundwater Governance in EPA Region 5." The Joyce Foundation, May 2024. <https://www.joycefdn.org/groundwater-governance-report>.

6 "Region 5 Tribal Program." EPA, February 18, 2025. <https://www.epa.gov/tribal/region-5-tribal-program>.

7 **Note:** This does not include two pieces of trust land held by federally recognized Tribes located outside of EPA Region 5; trust land in Indiana held by the Miami Tribe of Oklahoma headquartered in Oklahoma and trust land in Illinois held by the Prairie Band of Potawatomi Nation headquartered in Kansas.

8 **Note:** Choices made in this report align with the style guide produced by Native Governance Center. Tribe, Tribal, Indigenous, Native, and similar words are intentionally capitalized. For other references, refer to Native Governance Center: Style Guide, Feb 2021.

hosted or supported by Tribal partners with participation by other political jurisdictions.

- II. Ongoing Tribal government influence amplification:** Technical support and assistance in decision-making and planning forums related to groundwater policy prioritized by Tribal partners included connecting Tribal staff with common interests and groups, providing scientific support for public comments, and assisting ongoing Tribal policy engagement in local processes.
- III. Improving intergovernmental policy and practice:** Freshwater supported the Chicago Metropolitan Agency for Planning (CMAP) as they interviewed stakeholders in the Northwest Water Planning Alliance (NWPAA) to document existing groundwater management practices and developed recommendations for best practices for groundwater conservation, appropriation, and control with focus on high-capacity wells.
- IV. Cross-area comparisons:** Rural and metropolitan area comparisons provided model groundwater principles, best practices, and specific policy language to facilitate improved intergovernmental collaboration and sustainable groundwater sharing. These were compared with existing groundwater-sharing agreements both in the region and around the world.

From this project a question has emerged: **Is there a reasonable pathway to participate in the governance of groundwater?** Currently, the laws, regulations, ordinances, and policies governing the use of groundwater in Tribal, federal, state, and local jurisdictions throughout EPA Region 5 are not well-connected. This is largely intentional and a result of the distributed structure of governance in the U.S. As new interest groups vie for this region's groundwater, governance gaps create a vulnerability for communities that depend on groundwater to support their basic needs.

The analysis and results of this work are intended for citizen-residents, planners, policy makers, implementors, and any who are affected by the decision-making of groundwater governance. This work is intended to be inclusive of western science and Traditional Ecological Knowledge (TEK) and looks toward potential paths forward for collaborative and equitable groundwater governance in the region.⁹

The remainder of this chapter provides a brief overview of the current water governance landscape at the Tribal, federal, state, and local levels throughout EPA Region 5, with a continued emphasis on groundwater quantity. This chapter also provides an overview of the work conducted in Phase II. The sections that follow provide a summary of how the groundwater science workshops were conducted (Section 2); a comparison of the four focus areas where work was conducted (Section 3); an assessment of opportunities for collaborative transboundary governance (Section 4); and conclusions and recommendations for next steps toward regional groundwater governance systems rooted in inclusive prosperity, ecological health, and future generations in EPA Region 5 (Section 5). A more in-depth assessment of regional policy institutions, actors, and hydrogeology exists in the report from Phase I of this project: Groundwater Governance in EPA Region 5.

⁹ **Note:** There are many articles and websites on TEK as traditional ecological knowledge is both specific and regional to place. The following is one reference that provides a broad framework on TEK.

Inglis, Julian T. Traditional ecological knowledge: Concepts and cases. Ottawa: IDRC Books / Les Éditions du CRDI, 2014.

Regional Groundwater Governance Systems

Groundwater governance encompasses how people and their institutions collaborate across various jurisdictional levels to establish laws, policies, and decisions to manage the groundwater they share.

Groundwater management encompasses the practical implementation of those laws, policies, and decisions.¹⁰

In the U.S., approximately 38% of Americans use groundwater as their primary source of drinking water, though the numbers are higher in EPA Region 5 (see Table 1.0).¹¹ While surface water and groundwater are often connected, they are regulated differently, and water quality is regulated differently than water quantity. The following sections discuss the roles of the Tribal, federal, state, and local governments in the regulation of water overall (quantity and quality). This report focuses on the governance of groundwater quantity, but it is helpful to provide a brief background on other types of water law and policy for context.

Table 1.0. Population in EPA Region 5 Whose Drinking Water is Sourced From Groundwater

	MN	WI	IL	MI	IN	OH
Percentage of population whose drinking water is sourced from groundwater (water utility or private well)	75% ¹²	66% ^{13 14}	26% ^{15 *}	44% ¹⁶	60% ^{17 **}	~42% ¹⁸
<p>Percentage of the population within EPA Region 5 that uses groundwater as their source of drinking water. Following the format of the Phase I report, columns move west to east and will throughout this report.</p> <p>*In IL, ~65% of community water systems are also groundwater dependent.</p> <p>**Data for Indiana was sourced from Phase I report. Currently there is only regional data for drinking water sourced from groundwater.</p>						

10 Lopez-Gunn, E., M. R. Llamas, A. Garrido, and D. Sanz. "Management of Water Resources." Chapter. In *Treatise on Water Science* 1, 1:97–127. Elsevier Science, 2011. <https://doi.org/10.1016/B978-0-444-53199-5.00010-5>.

11 "Groundwater: Groundwater Facts." Groundwater Facts, 2024. <https://www.ngwa.org/what-is-groundwater/About-groundwater/groundwater-facts>.

12 "Groundwater." Minnesota Department of Natural Resources, February 6, 2025. https://www.dnr.state.mn.us/waters/groundwater_section/index.html.

13 *Ibid.*

14 "Water: Drinking Water." Wisconsin Department of Health Services, October 24, 2023. <https://www.dhs.wisconsin.gov/water/drinking.htm>.

15 Annual groundwater and drinking water program review, 2023. <https://epa.illinois.gov/content/dam/soi/en/web/epa/documents/compliance-enforcement/drinking-water/2023-Annual-Groundwater-and-Drinking-Water-Report.pdf>.

16 "Mi Drinking Water Sources." SOM - State of Michigan. Accessed February 26, 2025. <https://www.michigan.gov/mdhhs/safety-injury-prev/environmental-health/topics/care-for-mi-drinking-water/sources>.

17 Mayer, Terin V, Eileen J Kirby, Linda Reid, Carrie E Jennings, Lila Franklin, and Benjamin Edelstein. "Groundwater Governance in EPA Region 5." The Joyce Foundation, May 2024. <https://www.joycefdn.org/groundwater-governance-report>.

18 "Groundwater Resources." <https://ohiodnr.gov/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/groundwater-resources>, n.d. Accessed February 26, 2025.

The multi-jurisdictional groundwater governance landscape present across the region today is complex and at the same time, not comprehensive or well connected. Groundwater is managed by a combination of appropriation doctrines, pollution regulations, and land ownership rights that are set by the state. At times, a dissonance exists between the intention and effect of these systems which encompass laws, acts and statutes, ordinances, regulations, and policies¹⁹ (see Table 1.1).

Table 1.1. Policies and Regulatory Systems at Play in Governance

System	Definition	Federal	Tribal	State	Municipal
Law	A rule or system of rules passed by the legislative branch of the government that can be legally enforced.	x	x	x	x
Act / Statute / Resolution	A written law which, when passed by a legislative body, becomes enforceable as a law.	x	x	x	
Regulation / Rule	An official rule issued by an administrative agency through the executive branch of the government with the weight of a law.	x	x	x	
Ordinance / Code	A local law or decree enacted by a city, town, or other municipal-level government.		x		x
Policy	A non-legally binding guideline or directive implemented to address specific issues or to achieve specific outcomes.	x	x	x	x

This table provides clear definitions as used in governance practice, and includes which body has authority to create and implement a practice, and at what level(s) of jurisdiction the practice may be found.

Tribal Governance and Treaties

Within Indigenous culture, many stories are passed down through oral tradition. As a result, there are variations in the written versions that document Indigenous history. Different communities and dialects use different spellings for the same or similar words. The names and words used in this report are one version.

This section is intended to provide an overview of Tribal governance as it relates to groundwater quantity, the realm of environmental governance, and the jurisdictional complexities that arise when a domestic dependent nation exists within and across city and township borders, within and across county lines, within a state, and a nation. This section does not cover specifics of civil or criminal law, or specifics of state and Tribal relationships; this section does not provide in-depth knowledge or interpretation of treaties or the history of treaties. Each Tribal nation is unique and is an independent, sovereign legal and political entity. Tribal nations may also be co-signatories to treaties and may

¹⁹ Kosti, Nir, David Levi-Faur, and Guy Mor. "Legislation and Regulation: Three Analytical Distinctions." *The Theory and Practice of Legislation* 7, no. 3 (September 2, 2019): 169–78. <https://doi.org/10.1080/20508840.2019.1736369>.

share rights and relationships with other Tribal nations through ceded territories that stretch across state lines. For further knowledge, seek out information from official Tribal resources.

Tribal governance and treaties are complicated and complex. Each Tribal nation is sovereign and has the inherent authority to regulate its own land and citizens. While Tribal nations existed long before the U.S., a series of treaties led to the creation of both reservations and states. In regions where prior appropriation is followed, the creation of reservations ahead of the creation of states has implications in water law. Further treaties also explicitly reserved usufructuary rights of certain Tribes in this region. These reserved rights still exist and have been upheld through state and federal courts, including a U.S. Supreme Court decision.²⁰ With regards to these treaties, it can be argued that groundwater must exist in sustainable quantities to support usufructuary rights of signatory Tribes. Any withdrawals or impairment to groundwater quantity that interfere with the right to hunt, fish, gather, or otherwise travel and occupy within or across ceded territories – with court acknowledgement that the waters of the Great Lakes cannot be settled – can be an infringement of the treaties and treaty-reserved rights.²¹

The place now referred to as North America has been inhabited for over 20,000 years.^{22 23} Though part of a longer migration story, EPA Region 5 is now home to 35 federally recognized Tribal nations. Research in this report focuses mainly on Dakota and Anishinaabe nations due to the geographic scope where the workshops took place and because a majority of the Tribal participants were either Dakota or Anishinaabe nations. This section provides a brief overview of treaties in EPA Region 5, usufructuary rights, and the rights of Tribal nations in managing water today.

Tribal Governance

As sovereign nations, federally recognized Tribes hold a unique legal and political position. Formally, “American Indian” is a legal and political designation of a citizen of a tribal nation, rather than as a racial or ethnic category.²⁴ The Commerce Clause (U.S. Const. art I, §8, cl.1) of the U.S. Constitution vests Congress with the authority to engage in relations with the Tribes. This was upheld by a decision in the Marshall Trilogy which articulates that Tribes retain inherent powers of self-government as “domestic dependent nations” and that the Tribe is “distinct community.”²⁵ As such, the laws of the state have no force.²⁶

20 Minnesota v. Mille Lacs Band of Chippewa Indians, 526 U.S. 172 (1999).

21 Fox Opinion, 1979.

22 Becerra-Valdivia, Lorena, and Thomas Higham. “The Timing and Effect of the Earliest Human Arrivals in North America.” *Nature* 584, no. 7819 (July 22, 2020): 93–97. <https://doi.org/10.1038/s41586-020-2491-6>.

23 Praetorius, Summer K., Jay R. Alder, Alan Condron, Alan C. Mix, Maureen H. Walczak, Beth E. Caissie, and Jon M. Erlandson. “Ice and Ocean Constraints on Early Human Migrations into North America along the Pacific Coast.” *Proceedings of the National Academy of Sciences* 120, no. 7 (February 6, 2023). <https://doi.org/10.1073/pnas.2208738120>.

24 “Frequently Asked Questions about Native Americans.” Office of Tribal Justice, August 24, 2023. <https://www.justice.gov/otj/about-native-americans>.

25 Cherokee Nation v. Georgia, 30 U.S. (5 Pet.) 1 (1831).

26 Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832).

Today, Tribal sovereignty, though diminished, remains intact, and Tribal governments retain the ability to govern their citizens and lands.²⁷ On reservations, there is a mix of land types such as Tribal fee land, trust land, member fee land, member trust land, and nonmember fee land. Colloquially, these lands are known as “Indian Country,” and include land owned by nontribal members within the bounds of the reservation.

Trust land – Land title is held by the federal government for either a Tribe or by Tribal members, as allotments may be managed for the benefit of families as well as individuals. Land cannot be sold, mortgaged, leased, or otherwise encumbered without federal government approval.

Fee land – Land on reservation not held in trust by federal government. May be owned by individual Tribal members, nontribal members, other entities, collectives, or governments.

For Tribal nations, there may be specific laws or regulations that govern water management and appropriations as set forth and enforced by the Tribal government. Tribal regulations, including water quality standards and permit requirements, may differ from the requirements set forth by the state and may be enforceable on reservations, trust lands, and fee lands.²⁸ Nontribal members may also be held to these standards and regulations when 1) authority is authorized by Congress – as in the case of Tribal Implementation Plans (TIPs) and the delegated authority of the EPA with the Clean Air Act (CAA) – or 2) when a Tribal regulation is necessary to protect Tribal self-interest and internal Tribal relations.²⁹ The U.S. Supreme Court has historically decided in favor of state and nonmember interests over Tribal interests.

Recent attempts to improve working relationships between states and Tribal nations in Minnesota, Wisconsin, and Michigan include a series of executive orders, and in some later cases state statutes, establishing Tribal-state liaisons.^{30 31 32 33} These liaisons are positioned with state agencies with the responsibility to conduct outreach and act as a point of contact with that agency for Tribal nations.

27 American Indians, Indian Tribes, and State Government, and Mary Davis, MN House Research § (2023). <https://www.house.mn.gov/hrd/pubs/indiangb.pdf>.

28 “Understanding Tribal-State Jurisdiction.” Native American Rights Fund, September 12, 2023. <https://narf.org/tribal-state-jurisdiction/>.

29 Montana v. United States, 450 U.S. 544 (1981)

30 Government-to-Government Relationships with Tribal Governments. Minnesota Statutes. Stat. 10.65 (2021).

31 Wisconsin Executive Order 018 of April 9, 2019, Relating to an Affirmation of the Intergovernmental Relationships Among the State of Wisconsin and Tribal Nations Located Within the State.

32 Michigan Executive Order 2019-17 of February 21, 2020, Tribal Relations.

33 Office of the Legislative Liaison. Michigan Compiled Laws, act 208 § 4.791.new-4.794.new (2024).

Treaties in EPA Region 5

The long history of land stewardship and management began with the original stewards, Indigenous peoples and Tribal nations. The history of the United States and Tribal nations has always included treaties. According to the Supremacy Clause (U.S. Const. art VI, cl. 2), which was ratified in 1788, treaties made “under the authority of the United States remain the supreme Law of the Land.”

“

This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

– Article VI, Clause 2, United States Constitution

”

In EPA Region 5, Tribal nations began to sign treaties with the U.S. in 1785, with the Treaty with the Wyandot, in the state now known as Ohio.³⁴ This treaty began the practice of annual payments from the U.S. of goods, supplies, and food in exchange for land concessions from Tribal nations and established boundaries of Tribal land. The Treaty of Greenville was signed 10 years later in the same geographic region with many of the original signatories and recognized that Tribal nations, party to the treaty, retained the right “to hunt within the territories and lands...ceded to the United States, without hindrance or molestation.”³⁵ This established a practice of usufructuary rights for Tribal nations, or the right to use and benefit from a property while ownership belongs to another.

Throughout 1795 and 1871, the U.S. and Tribal nations signed multiple treaties, which were ratified by Congress, across the western Great Lakes region. These culminated in agreements like the Treaty of Greenville; a guarantee of goods, supplies, and food from the U.S., and expanded to include hiring, covering debts, support of education, and annual cash payments in addition to food and other goods in exchange for land concessions from Tribal nations. These treaties also established Tribal land

³⁴ Treaty with the Wyandot, etc., U.S.-Wyandot, Delaware, Ottawa, Chippewa, Jan. 21, 1785.

³⁵ Treaty with the Wyandot, etc., U.S.-Wyandot, Delaware, Ottawa, Chippewa, etc, Aug 3, art, VII ,1795. Commonly referred to as the Treaty of Greenville.

boundaries. Treaties with the Ojibwe nations in what are now Michigan, Wisconsin, and Minnesota included explicitly reserved usufructuary rights, including the retained rights to hunt, fish, gather in ceded treaty territory, and to occupy the land.^{36 37 38 39 40 41 42}

These treaties established boundaries for lands within which Tribes could exercise sovereign authority over their members, known as reservations, and in the case of some Ojibwe nations with usufructuary rights, established land referred to as “ceded treaty territory” in which those rights could be exercised. Certain Tribes have co-management agreements with the state governments within the boundaries of these ceded territories. Co-management is supported through intertribal commissions, including Great Lakes Indian Fish and Wildlife Commission (GLIFWC), Chippewa Ottawa Resource Authority (CORA), and 1854 Treaty Authority, which have delegated authority to regulate those rights and support Tribal enforcement.

The sustainability of groundwater is crucial for upholding treaty-reserved usufructuary rights.⁴³ Beyond 1871, court cases at the state and federal level upheld the rights of treaty holders. In 1905, a U.S. Supreme Court Case concluded that Tribal nations retained any rights not expressly surrendered in the treaty, including the rights to fish, hunt, and other privileges.⁴⁴ In 1908, Tribal water rights were

36 **Note:** This does not encompass all treaties signed by parties within the region but focuses on treaties that include usufructuary rights, establish specific boundaries, or named parties who were within Phase II of this project. For further references, check the Library of Congress or Oklahoma State University’s Tribal Treaties Database.

37 Treaty with the Chippewa, U.S.-Chippewa, 1819, art. V. Commonly referred to as the Treaty of Saginaw. Reserved the right to hunt upon land ceded, and “and the Indians shall, for the same term, enjoy the privilege of making sugar upon the same land, committing no unnecessary waste upon the trees.”

38 Treaty with the Ottawa, U.S.-Ottawa, Chippewa, art. XIII, 1836. Commonly referred to as the Treaty of Washington. Reserved the right to hunt and “the other usual privileges of occupancy, until the land is required for settlement.”

39 Treaty with the Chippewa, U.S.-Chippewa, art. V, 1837. Commonly referred to as the Treaty of St. Peters or the White Pine Treaty. Guaranteed the privilege “of hunting, fishing, and gathering the wild rice, upon the lands, the rivers and the lakes included in the territory ceded.”

40 Treaty with the Chippewa, U.S.-Chippewa of Lake Superior, Chippewa of the Mississippi, art. II-III, 1842. Commonly referred to as the Treaty of La Pointe. Reserved the right to hunt on the ceded territory, “with the usual other privileges of occupancy” and established “all the unceded lands belonging to the Indians of Fond du Lac, Sandy Lake, and Mississippi bands, shall be the common property and home of all Indians, party to this treaty.”

41 Treaty with the Chippewa, U.S.-Chippewa of Lake Superior, Chippewa of the Mississippi, art. VIII, art. XIII, 1854. Commonly referred to as the Treaty of 1854. Treaty established reservation boundaries (art. III) and confirmed benefits of former treaties prior to 1847 (art. VIII), and acknowledge the signatories, with the exception of the Chippewa of the Mississippi, as the Chippewa of Lake Superior (art. XII).

42 Treaty with the Ottawa and Chippewa, U.S.-Ottawa, Chippewa, art. III, 1855. Commonly referred to as the Treaty of Detroit. Renewed the reserved right by the Chippewa of Sault Ste. Marie to fish and occupy ceded territory as established by previous treaty of 1820.

43 **Note:** Courts are still hearing and upholding the rights of Tribes and treaties today. In 2018, a case commonly known as the Culverts Case, or U.S. v. Washington, No. 13-35474 (9th Cir. 2017), affirmed the reserved rights of Tribes in the Pacific Northwest. The U.S. Supreme Court amended its previous opinion and affirmed a Washington state district court’s order issuing an injunction against the state. SCOTUS concluded that the state violated and continued to violate its obligation to the Tribes under the fishing clause of the treaties.

44 United States v. Winans, 198 U.S. 371 (1905).

acknowledged, particularly related to the survival and self-sufficiency of Indigenous peoples.⁴⁵ In 1983, the Winters Doctrine was extended by holding that water rights are reserved sufficient to support hunting and fishing rights as part of the purpose of the treaty.⁴⁶

Federal Governance

At the federal level, groundwater governance is managed by administrative agencies through the executive branch of the government. The federal government and all administrative agencies hold a legal trust obligation to Tribal nations, and as a signatory to many treaties, arguably have an additional responsibility to ensure the sustainability of treaty resources. Federal administrative oversight largely pertains to water pollution levels, the discharge of pollutants, and other water quality standards, including minimum safe drinking water standards. The federal government also retains the right to regulate all navigable waters. As a result, federal agencies largely focus on the enforcement, implementation, and research of cohesive water management policies that concentrate on water quality. Some of the federal administrative agencies' ability to regulate groundwater has changed since the Chevron Doctrine was overturned by the U.S. Supreme Court in June 2024.^{47 48} The Chevron Doctrine previously required courts to defer to agency interpretations of ambiguous statutes.⁴⁹ *Loper Bright Enterprises v. Raimondo* reasserted the judiciary's role in interpreting statute.

Most federal acts are intended to improve drinking water quality and apply to groundwater and surface water used as a source of drinking water. At this time, there are no federal programs that regulate or manage water quantity. Some of these federal rules and acts require the states to design and implement a program, with EPA oversight. The EPA oversees several federal programs that regulate water quality including the 1972 Clean Water Act (CWA), the 1974 Safe Drinking Water Act (SDWA), and the 2006 Ground Water Rule (GWR).^{50 51 52} The 1986 amendment to the SDWA expanded the EPA's authority to include wellhead protection and required each state to develop and submit a wellhead protection program for EPA approval.

45 Winters v. United States, 207 U.S. 564 (1908).

46 Adair v. United States, 723 F.2d 1394 (9th Cir. 1983).

47 Rodman, Rachel, and Alec Albright. "U.S. Supreme Court Strikes down Chevron Doctrine—What You Need to Know." White & Case LLP, July 8, 2024. <https://www.whitecase.com/insight-alert/us-supreme-court-strikes-down-chevron-doctrine-what-you-need-know>.

48 Loper Bright Enterprises v. Raimondo, 603 U.S. 2024.

49 Chevron U.S.A., Inc. v. NRDC, 467 U.S. 837 (1984).

50 The basis of the CWA was established in 1948 as the Federal Water Pollution Control Act but was reorganized and expanded in 1972. the official text can be found in the United States Code. 33 U.S.C. §1251 et seq. (1972).

51 SDWA was originally passed in 1986 and amended in 1986 and 1996. It does not regulate private wells which serve fewer than 25 individuals. 42 U.S.C. Ch. 6A, Sub. XII; 40 CFR 141.

52 40 CFR Parts 9, 141, 142 Subpart S.

In other cases, the federal government delegates authority to the state, and allows the state to administer programs, such as state authority to issue CWA Sec. 402 and Sec. 404 permits which regulate direct discharge as part of the National Pollutant Discharge Elimination System (NPDES).⁵³ A federally recognized Tribe may apply to the EPA for Treatment as a State (TAS) status with regards to the CWA.⁵⁴ This status expressly provides authority for Tribal nations to have the same delegated authority within reservations boundaries and allows Tribal governments to adopt, implement, and manage federal CWA programs as states do.⁵⁵ As obtaining TAS status is reported to be strenuous, many Tribal water suppliers instead participate in the Tribal Public Water System Supervision Program (TPWSSP) which is administered by the EPA and fulfills the same functions as the SDWA.^{56 57}

In EPA Region 5, the EPA Water Quality Standards (WQS) program allows states and Tribes with TAS approval for the WQS program to set specific water quality standards under the CWA.⁵⁸ For more in-depth information on water quality standards and interactions with Tribal rights, see Appendix A.

State Governance

The U.S. federal government is one of limited power when it comes to groundwater quantity. While the federal government retains authority to regulate pollution and discharge to groundwater, individual states are responsible for the governance and appropriation of surface water and groundwater within their borders. States utilize a series of management systems to regulate and permit water allocations. In many cases, a state may use one system for surface water and another system for groundwater. As surface water and groundwater may be connected, and as water ignores geopolitical borders, equitable and sustainable use in regulatory practice requires technical mapping, scientific understanding, and cooperative management agreements across jurisdictions.

53 CWA, Sec. 404 broadly establishes a program to regulate the discharge of dredged or fill materials into the waters of the U.S., including wetlands. CWA, Section 402 relates to the permits for discharge of pollutants. Subsection 1314 discusses state administration of permit programs for discharges into navigable waters within its jurisdiction. Certain activities and sectors are excused.

54 **Note:** In Indian country, TAS may be known as Treatment as a Sovereign.

55 Beyond the CWA, Tribes may also apply for TAS with the Clean Air Act (CAA), the Toxic Substance Control Act (TSCA), and the SDWA.

56 The purpose of the Public Water System Supervision (PWSS) program is to establish, implement, and enforce health protection standards for drinking water systems that serve the public. 1986 amendments allow Tribes to assume PWSS if they meet necessary standards.

57 "Tribal Public Water System Supervision Program | US EPA." 2015. US EPA. January 12, 2015. <https://www.epa.gov/tribaldrinkingwater/tribal-public-water-system-supervision-program>.

58 US EPA. 2019. "Water Quality Standards Handbook | US EPA." US EPA. October 4, 2019. <https://www.epa.gov/wqs-tech/water-quality-standards-handbook>.

As the law has evolved, so have the systems. State courts have generally followed one of these common law “rules” (doctrines) to regulate their surface and groundwater:

- I. Riparian Rights.** Rights are rooted in the English common law system and based on property rights and ownership of shoreland adjacent to a waterway. The expectation is rights will be exercised reasonably and will not interfere with the riparian rights of others.
- II. Prior Appropriation.** The first landowner to put a water source to beneficial use or divert water is granted a priority right.
- III. Absolute Ownership Rule.** Also called the Absolute Dominion Rule, the oldest and simplest doctrine gives landowners an unlimited right to withdraw any water beneath their land for any purpose.
- IV. Correlative Rights.** This requires that groundwater shared among overlying landowners, in times of shortage, must limit withdrawals to a “fair and just proportion” of the supply.
- V. Reasonable Use.** Groundwater must be put to reasonable use and used on the overlying land. Also referred to as the “American Rule.”
- VI. Public Trust Management.** Groundwater is considered to be public property, and the state administers permits for groundwater use. Authority for state regulation of groundwater is established from the Police Power of the U.S. Constitution, which allows states to take action to protect the safety, health, and general welfare of citizens.
- VII. Restatement (Second) of Torts Rule.** A hybrid of Absolute Ownership Rule and Reasonable Use Rule, it uses a combination of factors to determine if water use is appropriate including but not limited to purpose of use, suitability of waterway, economic and social value of use, harm caused, practicality of avoiding harm by adjusting method or use of a party, quantity of use, protection of investments. This approach is utilized in Ohio (1990) and Wisconsin (1974).^{59 60}

The eastern U.S. tends to use riparian rights to regulate surface water, while the western U.S. either follows the rule of prior appropriation or a hybrid system of both riparian law and prior appropriation. Today, most riparian right states have shifted toward a regulated riparian system which requires a permit for the allocation of surface water used for consumptive purposes, including diversions and withdrawals from waterways.⁶¹

States that follow riparian water law for surface water regulation usually follow the public trust doctrine for groundwater regulation, though both Ohio and Wisconsin practice the Restatement (Second) of Torts Act. The public trust doctrine establishes certain natural and cultural resources are preserved for public use, with the public as the owner and the state responsible for protection and maintenance of these resources. Traditionally, the public trust doctrine has applied to the beds and banks of streams, tidelands, and navigable waters and these natural resources are held in trust.

59 “Section 1521.17 - Ohio Revised Code | Ohio Laws.” 2025. [Ohio.gov](https://codes.ohio.gov/ohio-revised-code/section-1521.17). 2025. <https://codes.ohio.gov/ohio-revised-code/section-1521.17>.

60 “Wisconsin Legislature: 281.31.” 2025. [Wisconsin.gov](https://docs.legis.wisconsin.gov/statutes/statutes/281/iii/31). 2025. <https://docs.legis.wisconsin.gov/statutes/statutes/281/iii/31>.

61 The National Agricultural Law Center. 2013. “Water Law Overview - National Agricultural Law Center.” National Agricultural Law Center. 2013. <https://nationalaglawcenter.org/overview/water-law/>.

Since the 1990s, courts have used state constitutions and constitutional amendments to extend state government control over natural resources, including groundwater.⁶² However, because the public trust doctrine has its origins in navigability, attempts to expand the doctrine to cover groundwater have largely been rejected by states.⁶³ As of 2025, no state has extended the public trust doctrine to groundwater.⁶⁴ However, all six states impose restrictions on groundwater use.

State agencies, such as departments of environmental quality or natural resources, set regulations through rulemaking, and implement and enforce groundwater protection programs, including permitting, monitoring, and remediation. States may implement policies aimed at ensuring the sustainable use of groundwater, such as limits on withdrawals and measures for aquifer recharge. These policies are supported through technical assistance, mapping, and modeling of available groundwater in an area. Some states have developed comprehensive groundwater management plans to address specific challenges, such as overdraft or contamination.

Overall, groundwater governance across EPA Region 5 is fragmented. As such, states' legal frameworks for groundwater governance often do not reflect the current state of hydrologic knowledge. However, certain states have implemented laws, regulations, and policies which address the evolving understanding of groundwater and its sustainable use. The table below compares key aspects of existing groundwater withdrawal regulation in EPA Region 5 (Table 1.2). State summaries from Phase I of this project include more detail about state agencies and specific management practices.

Table 1.2. Comparison of Existing Groundwater Withdrawal Regulation in EPA Region 5

Policy or Regulation	MN	WI	IL	MI	IN	OH
Defines what a high-capacity well is		X	X	X	X	
Includes special groundwater districts	X	X			X	X
Considers the cumulative impact of withdrawals	X	X		X	X	X
Recognizes the groundwater-surface water connection*	X*	X		X		
Considers other states' water use	X	X		X	X	

A breakdown of groundwater regulation and the practicing states in EPA Region 5.⁶⁵

*Minnesota recognizes groundwater-surface water connections in limited cases; specifically, fens and trout streams.

62 Williams, Kirsten. 2021. "Fundamental Environmental Rights: State Constitutions as a Vehicle of Change." www.jurist.org. November 1, 2021. <https://www.jurist.org/commentary/2021/11/kirsten-williams-environmental-rights-amendments/>.

63 Mich Citizens v. Nestle Waters, 709 N.W.2d 174, (2005).

64 "State Bar of Michigan." 2022. [Michbar.org](http://www.michbar.org). 2022. <https://www.michbar.org/journal/Details/Michigans-groundwater-and-the-public-trust-doctrine?ArticleID=4451>.

65 Minnesota's Water Supply: Natural Conditions and Human Impacts, September 2000, 4.

Local Governance

Local legislation deals with a wide variety of local government units (LGUs). These include regional, county, and hyper-local governments and may also be referred to as municipal governments, which include cities and townships.⁶⁶ Local government units also may contain nested jurisdictions. A piece of land may be under the jurisdiction of the hyper-local township or municipality, and under the jurisdiction of the local county, and may also be part of a special district government. Because of the varied nature, varied size, and varied terms used for LGUs, work at the local level is complex and can be confusing for non-locals.

At the county and regional level, authorities may be involved in managing local groundwater, particularly in states where groundwater management districts are established. Counties can influence groundwater use indirectly through zoning and land-use regulations, which can impact the location and amount of groundwater extraction.⁶⁷ Counties may enact ordinances that further regulate groundwater use, particularly in areas facing scarcity or contamination issues. For example, Eau Claire County, Wisconsin has a groundwater advisory committee that oversees the management of their groundwater resources.⁶⁸ Two cities and eight counties in Minnesota have their own well management programs, delegated from the State.⁶⁹

At the municipal level, municipal governments may have their own regulations regarding groundwater extraction, particularly for municipal water supply purposes. These can include building and construction codes outlining requirements for well construction and maintenance within city or town boundaries. This can also include land-use planning, where decisions related to economic development and infrastructure can impact groundwater resources and are often regulated at the municipal level. Most LGUs plan their land use and infrastructure needs every 10 years in a comprehensive planning document and use these plans to guide interim decisions until the plan is updated.

The Role of Governance in EPA Region 5

This report is intended to gather initial recommendations regarding regional groundwater governance. Most of the recommendations start with trust building, knowledge sharing, and education between entities in shared jurisdictions, shared aquifers, and shared watersheds. Primary mechanisms for these recommendations are legislation, workshops, and conferences to further legally enforceable frameworks and to intentionally create spaces to share knowledge and to build trust among knowledge holders and community members. This is a lot easier said than done. Governance is complicated.

66 Griffin, Chelsea, and MN House Research. 2024. "Terms Used in Local Government Law." <https://www.house.mn.gov/hrd/pubs/ss/sslgterms.pdf>.

67 "Groundwater Management Districts Association." 2022. [Gmdausa.org](https://www.gmdausa.org/). 2022. <https://www.gmdausa.org/>.

68 "Groundwater Advisory | Eau Claire County." 2025. [Eauclairecounty.gov](https://www.eauclairecounty.gov/our-government/county-board/boards-commissions-and-councils/groundwater-advisory/-folder-1447). 2025. <https://www.eauclairecounty.gov/our-government/county-board/boards-commissions-and-councils/groundwater-advisory/-folder-1447>.

69 "Delegated Well Programs - MN Dept. Of Health." 2025. [State.mn.us](https://www.health.state.mn.us/communities/environment/water/wells/delegated.html). 2025. <https://www.health.state.mn.us/communities/environment/water/wells/delegated.html>.