

Background

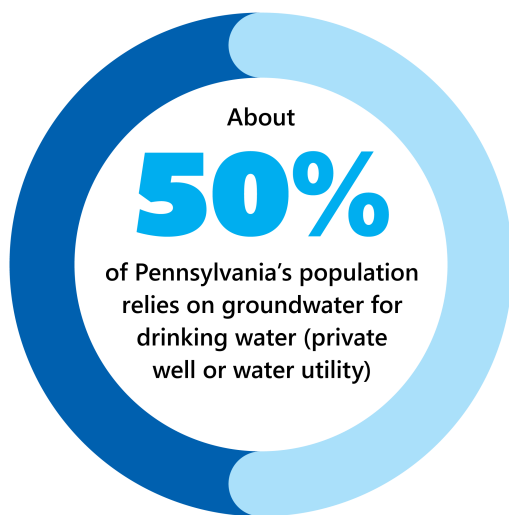
The Great Lakes Commission (GLC) passed a policy resolution in March 2024 which called upon partners and agencies to engage with the GLC toward a better understanding of the current state of groundwater management in the Great Lakes basin.¹ Then, in December 2024, the GLC received funding from the Joyce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

State Agency Authority

The Pennsylvania Department of Environmental Protection (DEP) oversees groundwater quality in cooperation with the U.S. Geological Survey (USGS) by sampling wells to monitor ambient groundwater quality conditions throughout the commonwealth.³ The DEP issues permits for new groundwater sources for public water supply, only after the aquifer is tested and evaluated for water quality and for compliance with primary and secondary

drinking water maximum contaminant levels (MCLs). Each groundwater source is also evaluated for groundwater under the direct influence of surface water (GUDI). GUDI sources are classified as surface water and must meet the requirements of the Surface Water Treatment Rule.⁴ The DEP also manages the Source Water Assessment and Protection Program to protect source water and inventory potential sources of contamination.⁵

The Pennsylvania Department of Conservation and Natural Resources (DCNR) maintains the Pennsylvania Groundwater Information System (PaGWIS), which catalogs groundwater well records.⁶ **Table 1** highlights the state agencies in Pennsylvania which play a role in managing groundwater in the state.



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

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

³ Pennsylvania Department of Environmental Protection. [Groundwater Monitoring Network.](#)

⁴ Pennsylvania Department of Environmental Protection. [New Groundwater Sources.](#)

⁵ Pennsylvania Department of Environmental Protection. [Source Water Protection Program.](#)

⁶ Pennsylvania Department of Conservation and Natural Resources. [Pennsylvania Groundwater Information System.](#)

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

Agency	Pennsylvania Dept. of Environmental Protection	Pennsylvania Dept. of Conservation and Natural Resources
Groundwater Priority Area	Groundwater quality oversight Groundwater appropriation or permitting Drinking water supply Industrial contamination High-capacity well impact investigations State and regional water supply planning	Groundwater availability Water well driller licensing PaGWIS database management

Groundwater Science and Knowledge Production

The DCNR’s Pennsylvania Groundwater Information System contains publicly accessible data on water well and spring records.⁷ Most of the well data in the system are from completion reports submitted by water well drillers and field-located well records from a U.S. Geological Survey database and PaGWIS. The DCNR’s accompanying Pennsylvania GEOlogic Data Exploration (PaGEODE) interactive map allows users to view and extract information on bedrock and surficial geology and groundwater well site locations and yields.⁸

The DEP manages several Geographic Information Systems (GIS) mapping tools, including a GIS Open Data Portal which provides access to public data on water pollution control and surface and groundwater withdrawals across the commonwealth, among other information.⁹

The Pennsylvania Geological Survey compiles a group of datasets on the bedrock geology of the commonwealth, consisting of ArcGIS shapefiles for geologic units, and publishes Pennsylvania Geology – a free online magazine that includes articles about Pennsylvania’s geology.¹⁰

Legislation and Regulations

The statewide process of collecting groundwater data through the licensing of water well drillers was initiated by the passage of Pennsylvania Water Well Drillers License Act of 1955.¹¹ The Commonwealth of Pennsylvania requires that all owners of a public water supply agency or hydropower facility and each person withdrawing more than 10,000 gallons per day in any 30-day period must register with the DEP and follow specific monitoring, record keeping and reporting requirements.¹² The DEP also issues permits for withdrawals through multiple permitting programs that focus on the type of industry and activity.

The Water Resources Planning Act, Act 220 of 2002, mandates the preparation and quinquennial update of the Pennsylvania State Water Plan. The plan includes a comprehensive report that highlights statewide and regional water resource priorities, outcomes from past reports, goals, climate change adaptation strategies, and recommendations for action. Act 220 requires that the plan includes an inventory of the groundwater resource of each region of the commonwealth, including an identification of aquifers and groundwater basins and an assessment of their safe yield, prime recharge areas, recharge capacity, withdrawal limits and relationship to stream base flows. The Act mandates the assessment of existing and future withdrawal use demands, including

⁷ Pennsylvania Department of Conservation and Natural Resources. [Pennsylvania Groundwater Information System.](#)

⁸ Pennsylvania Department of Conservation and Natural Resources. [PaGEODE - Pennsylvania GEOlogic Data Exploration.](#)

⁹ Pennsylvania Department of Environmental Protection. [Geographic Information Systems \(GIS\) Mapping Tools.](#)

¹⁰ Pennsylvania Department of Conservation and Natural Resources. [Geologic Publications and Data.](#)

¹¹ Pennsylvania Department of Conservation and Natural Resources. [Water Well Drillers License Act \(Act 610\).](#)

¹² 25 Pa. Code § 110. [Water Resources Planning.](#)

the identification of the potential problems with water availability or conflicts among water uses and users.¹³ Implementation of the State Water Plan's recommendations and actionable steps are voluntary.

Critical Water Planning Areas (CWPAs), established under Act 220, are defined as watersheds in the commonwealth where the existing or future water demand exceeds water availability. In 2010, four watersheds were officially classified as CWPAs, two in both the Potomac and Ohio Regions. Each CWPA has a Critical Area Resource Plan that highlights water availability, water quality issues, adverse impacts and conflicts, supply-side and demand-side alternatives, recommendations, and a variety of other elements.¹⁴ Water purchased from a CWPA has a more restrictive registration threshold of 10,000 gallons per day in any 30-day period, as compared to the general requirement of 100,000 gallons per day in any 30-day period.¹⁵

Withdrawals within the Southeastern Pennsylvania Groundwater Protected Area are regulated under 18 CFR Part 430.¹⁶ Portions of Berks, Bucks, Chester, Lehigh, and Montgomery counties have groundwater demands that exceed or threaten to exceed availability. Unless prescribed by Title 18, daily withdrawals greater than 10,000 gallons are prohibited.

General groundwater use, specifically in areas that are not CWPAs or the Southeastern Pennsylvania Groundwater Protected area, is managed according to the American Rule doctrine. Under the doctrine, landowners may withdraw percolating groundwater from beneath their property for any "natural and ordinary" use without regard for neighboring users.¹⁷ Landowners may withdraw an unlimited amount of groundwater from beneath their land, even if to the detriment of a neighboring landowner, qualified by the requirement that the use of the groundwater be "reasonable."¹⁸

Under Article I, § 27 of the Pennsylvania Constitution, the government of Pennsylvania is responsible for protecting the environment and natural resources of the commonwealth on behalf of its citizens. In the Pennsylvania Commonwealth Court case *Payne v. Kassab (1973)*, a three-factor test was established to determine whether a citizen may challenge the actions of a Pennsylvania agency.¹⁹ Though Article I, § 27 establishes a public trust of the commonwealth's natural resources, it does not appear that Pennsylvania has explicitly extended the public trust doctrine²⁰ to apply to groundwater.

Great Lakes Basin Groundwater Management

Pennsylvania was authorized to join as a party to the Great Lakes-St. Lawrence River Basin Water Resources Compact (Compact) in Act 43 in 2008.²¹ The threshold for management of withdrawals within the Great Lakes-St. Lawrence River basin is any new or increased withdrawal in an amount that equals or exceeds 100,000 gallons per day averaged over any 90-day period.

¹³ 1 27 Pa.C.S.A. §§ 3101 et seq. <https://www.palegis.us/statutes/unconsolidated/law-information?sessYr=2002&sessInd=0&actNum=0220>

¹⁴ Pennsylvania Department of Environmental Protection. [Critical Water Planning Areas](#).

¹⁵ Pennsylvania Department of Environmental Protection. [State Water Plan Chapter 110 – Requirements for Water Withdrawal Registration & Reporting](#).

¹⁶ Code of Federal Regulations. <https://www.govinfo.gov/app/collection/cfr/2025/title18>.

¹⁷ United States Department of Agriculture. March 2021. [Pennsylvania Ground Water Withdrawal Guidelines](#).

¹⁸ Linda Reid et al. (n.d.). High-Capacity Wells: A Survey of Groundwater Withdrawal Rights and Regulations. In <https://nationalaglawcenter.org>. The National Agricultural Law Center. Retrieved July 2, 2025, from <https://nationalaglawcenter.org/wp-content/uploads/assets/articles/highcapacity-wells-report-reid.pdf>

¹⁹ The Widener School of Law's Environmental & Natural Resources Law Clinic. 2010. [A Citizen's Guide to Article I, § 27 of the Pennsylvania Constitution](#).

²⁰ National Sea Grant Law Center. [Overview of the Public Trust Doctrine](#).

²¹ Pennsylvania General Assembly. 2008 Act 43. <https://www.palegis.us/statutes/unconsolidated/law-information/view-stature?sessind=0&actnum=43&txttype=htm&sessyr=2008>

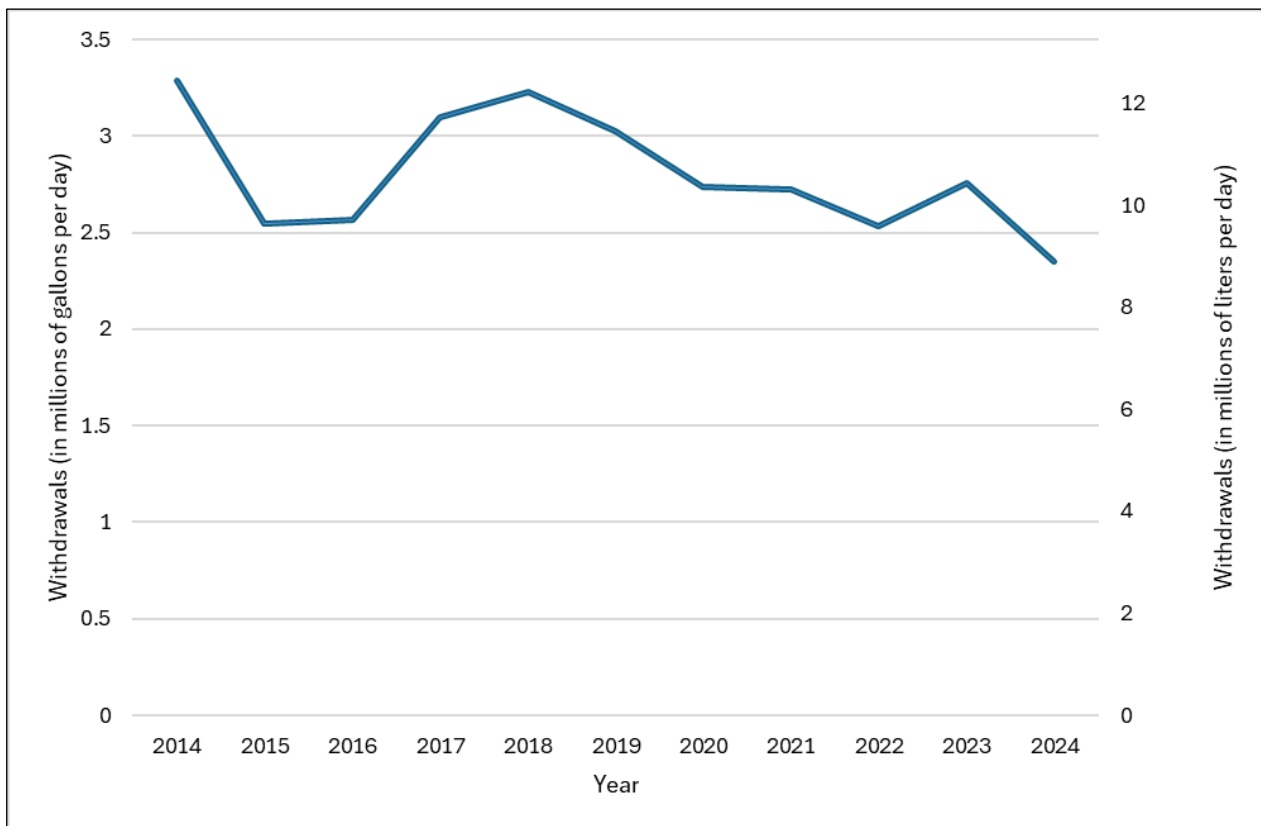
Pennsylvania has implemented the water conservation and efficiency provisions of the Compact. The Commonwealth of Pennsylvania’s program is consistent with, and fully supports, the goals and objectives of the Compact, including promoting the efficiency of use and reducing losses and waste of water in the basin and retaining the quantity of surface water and groundwater in the basin.

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

Great Lakes Basin Groundwater Usage

Pennsylvania’s groundwater withdrawals from the Great Lakes basin have varied in volume between 2.3 million and 3.3 million gallons per day over the last decade. This interannual variation is primarily due to changes in water use for the public supply and self-supply livestock sectors. See **Figure 1** below to view trends in Pennsylvania’s reported groundwater withdrawals within the Great Lakes basin from each facility withdrawing at least 100,000 gallons per day from 2014 to 2024.

Figure 1. Pennsylvania Great Lakes-St. Lawrence River Basin Groundwater Withdrawals from 2014-2024.



Statewide Definitions

Groundwater: subsurface waters of the commonwealth.²²

High-capacity well: a well from which the total withdrawal from a point of withdrawal, or from multiple points of withdrawal operated as a system either concurrently or sequentially, within a watershed exceeds an average rate of 10,000 gallons per day in any 30-day period.

²² 25 Pa. Code § 89.5. Definitions.

<https://www.pacodeandbulletin.gov/Display/pacode?file=/secure/pacode/data/025/chapter89/s89.5.html&d=reduce>.